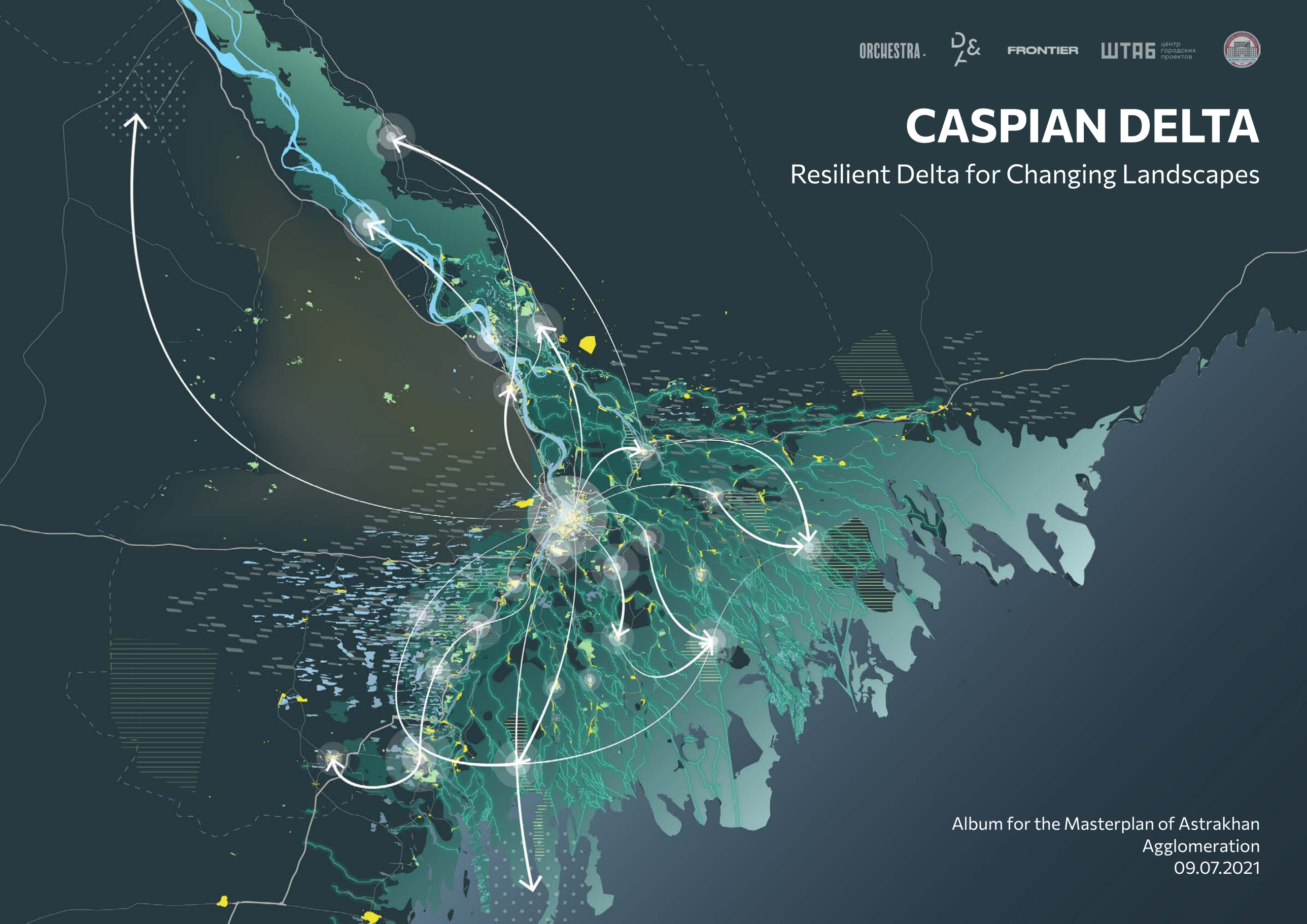
ORCHESTRA. D&A FRONTIER ШТАБ центр городских проектов

CASPIAN DELTA

Resilient Delta for Changing Landscapes



Album for the Masterplan of Astrakhan Agglomeration
09.07.2021

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VISION

CHANGING LANDSCAPES

Where the Volga hid with an arrow
To the laughter of the young sea,
Mount Bogdo with its features
The fisherman's eyes darken.

The steppe is getting dark; far away khurul
It turns black with its dark roof,
And the city sleeps and the world sleeps,
Tired of revelry and trade.

Victor Vladimirovich Khlebnikov

VISION
PROJECT MISSION

A RESILIENT DELTA FOR CHANGING LANDSCAPES

Astrakhan's history has been characterised by a high adaptation need to its complex and rich environment. The region's geography, with its delta and surrounding desert steppe, is by nature a changing landscape. Climate change and the intensive exploitation of natural resources have in the last decades further accelerated these changes.

Deep and complex interconnections between human activities and the environment are particularly visible in the Astrakhan agglomeration and region.

These changing landscapes are therefore not only environmental, but also economic, social and cultural. These complex interactions cannot be answered by one single solution, urban project or a single economic industry. It requires a multi-disciplinary and multi scale resilient strategy around a coordinated set of key initiatives aimed at building up resilience.

A changing environment is both a risk factor that needs to be mitigated, but also a source of opportunities for the development of a diverse and sustainable delta economy that benefits all citizens.

We propose not to stop changing landscapes, but to create the necessary infrastructure for better adaptation to their change.

Astrakhan can become the leading resilient region in Russia. A leading role which will put back Astrakhan on the map, mobilize energy, attract public and private investments, create new job opportunities and inspire the youth.

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UNIQUE CASPIAN DELTA BRAND WITH A MANAGEMENT STRUCTURE

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01.

STRATEGY

APPROACH

A DELTA OF CHANGING LADNSCAPES

The Delta is by nature a changing landscape, with its river flows changing over centuries. Along its history, people of Astrakhan has shown a high adaptation to their environment, taking advantage of the nature with fishing, and of the geography with the Silk Road.

The Volga Delta has in reality grown significantly in the 20th century because of changes in the level of the Caspian Sea. Since 1880, the delta had an area of 3,222 km^2 whilst today 27,224 km^2 is covered. The delta lies in the arid climate zone with strong winds often sweep across the delta and form linear dunes (Baer Hills) which slowly forms and moves.

The delta is a major staging area for many species of water birds, raptors and passerines, most of them considered endangered. Since the 90s, the population of sturgens has decreased dramatically, threatening the fishing industry and tourism. Lotus forms in some location very attractive yet fragile ecosystem. More regular sand storms poses serious threats in local infrastructure and city confort.

Industrial and agricultural modification to the delta plain has resulted in significant wetland loss. Between 1984 and 2001, the delta lost 277 km^2 of wetlands from natural and human causes.

The Volga discharges large amounts of industrial waste and sediment into the relatively shallow northern part of the Caspian Sea - an issue shared with Kazakstan. The added fertilizers nourish the algal blooms, resulting in water's oxygen depletion.

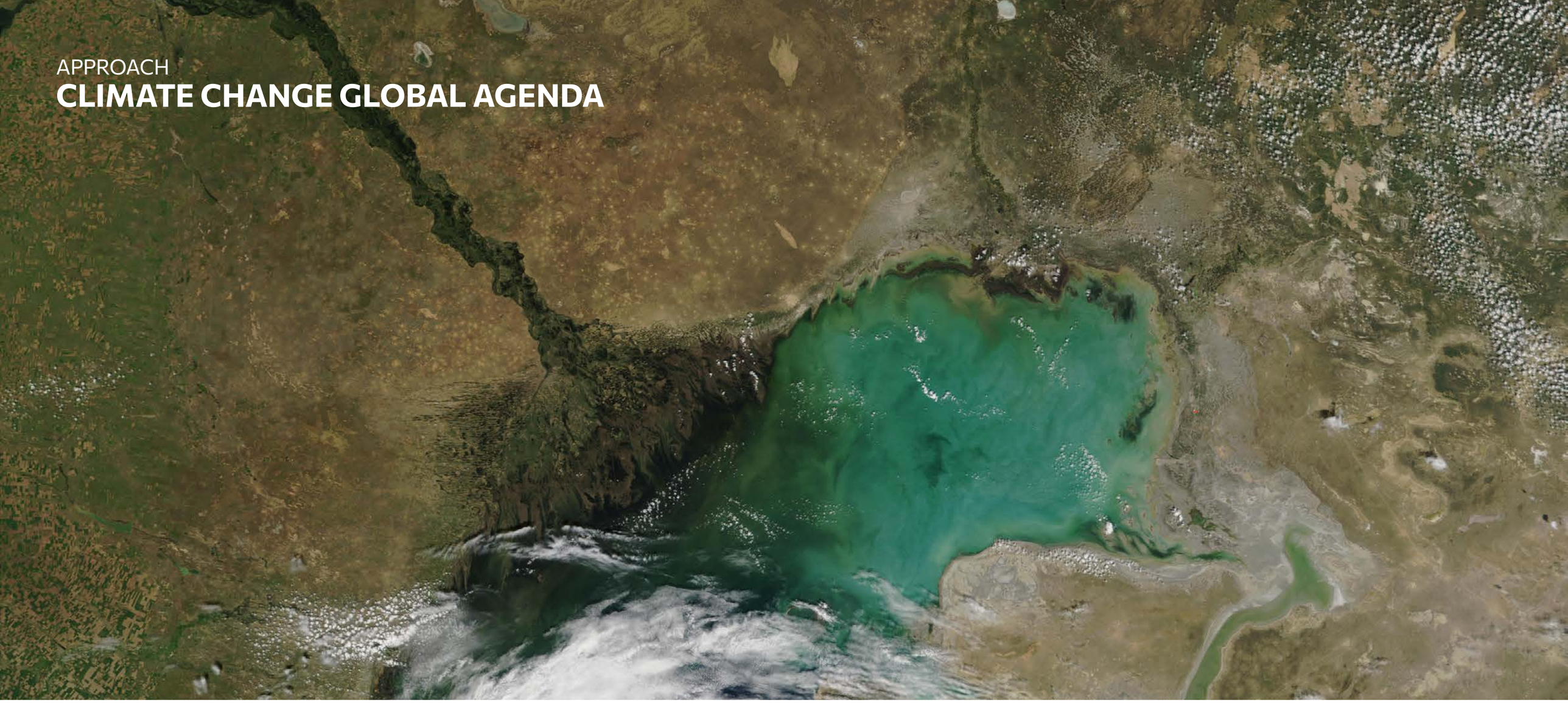
There is in reality deep and complex interconnections between human activities and nature : oil extraction and port activities have had a significant impact on the fishing industry. Water levels have direct impacts on insect nuisances and flooding threatens regional settlements and their access roads. Sand storms in the wider region are more regular and wildfires bring dust to the city.

This **"environmental sensitivity"**, experienced on a daily basis by citizens, poses obvious challenges which can be addressed through a resilient delta strategy which will not aim to stop this highly dynamic interaction between activities and environment - an impossible task - but to better adapt.

These changing landscapes are also source of immense opportunities if we develop the necessary understanding and infrastructure : Astrakhan region is one of the most appropriate region in Russia for the developent of renewable energy (wind and solar energy), sustainable agrictulture can be developed with minimum use of pesticides with the right economical and technological support; and ecotourism can support local development and the preservation of the environment.

APPROACH

CLIMATE CHANGE GLOBAL AGENDA



Many countries are implementing or planning adaptation measures to negative consequences of climate change, including around sea/water level rise, following the latest scientific data from the UN Intergovernmental Panel on Climate Change and more local/regional climate research. By contrast, the projected impact of global warming on falling water levels in enclosed seas and lake systems due to continental drying in vast regions of the world receives much less attention.

Rising surface temperatures will intensify evaporation over land and lakes. during the twenty-first century. These changes act to reduce lake levels and surface areas, and are exacerbated by decreasing precipitation in many regions of the world. Endorheic lakes that do not have an outflow are particularly sensitive to climatic change, because their water levels are determined by the delicate balance between precipitation and discharge into the lake and evaporation over the lake surface. While the climate-driven drying of continental interiors is recognized as an important problem in terms of fresh water scarcity., its impact on lake levels will have many other far-reaching consequences that are underappreciated, but affect the livelihoods and economies of millions of people all over the world.

A massive warning signal is the projected catastrophic drop in water levels for the Caspian Sea, the largest lake in the world, which could hit stakeholders unprepared.

As one of the most «environmentally sensitive» region in Russia, Astrakhan can become a leader in adapting to climate change and develop national and international cooperation in this field.

Project partners: Ministry of Economic Development of the Russian Federation, Ministry of Natural Resources and Ecology of the Russian Federation, Climate Center of Roshydromet, Institute of Water Problems RAS, Russian Geographical Society, Astrakhan University, Astrakhan Reserve

APPROACH

WHAT IS URBAN RESILIENCE?

What is Urban Resilience?

Urban resilience is the ability of urban systems to adapt to changing conditions (positive or negative) by working in a coordinated way. Urban resilience has parallels with the «agile business» approach, in thinking as much about infrastructure than processes, management and leadership.

Why a strong vision is essential for a Strategy ?

To mobilise local communities energy, increase media visibility and attract investments, our experience has shown the important to develop a strong brand and a uniting vision, in particular for the youth.

What will it bring to Astrakhan ?

Resilience can be the common mechanism to coordinate all the projects which will structure the agglomeration for the next 15 years within a holistic approach to find synergies and reduce cost. It will help governance to take informed decisions, adapt to the changing economic environment and mitigate potential risks.As a result, it will create job opportunities, attract private and public investments, and retain youth to work in the green industries of the future.

How to include the traditional industries of oil and gas in the Resilient Caspian Delta Strategy ?

Major public and private players in traditional energy sector have strong environmental agenda and invest in renewable energies, mitigation of pollution and research and innovation. Their international profiles require a commitment in following the fight against climate change and the Resilient Caspian Delta Strategy can be an ideal territoriy of opportunities to follow such agenda.

What can be the role of Astrakhan in the Russia's Climate Change efforts ?

Urban resilience has gained greater prominence over the past decade in international development discourse and has emerged as one of the core principles of sustainable urban development in the global development frameworks and targets, including UN-Habitat and Paris Climate Change Agreements, ratified by the Russian Federation in 2019.

We believe resilience can be the banner under which Astrakhan can adopt a leading role within Volga Cities, with the Caspian area and within Russia.

RESILIENT GLOBAL RESILIENT CITIES NETWORK

PRINCIPLES OF THE DEVELOPMENT MODEL

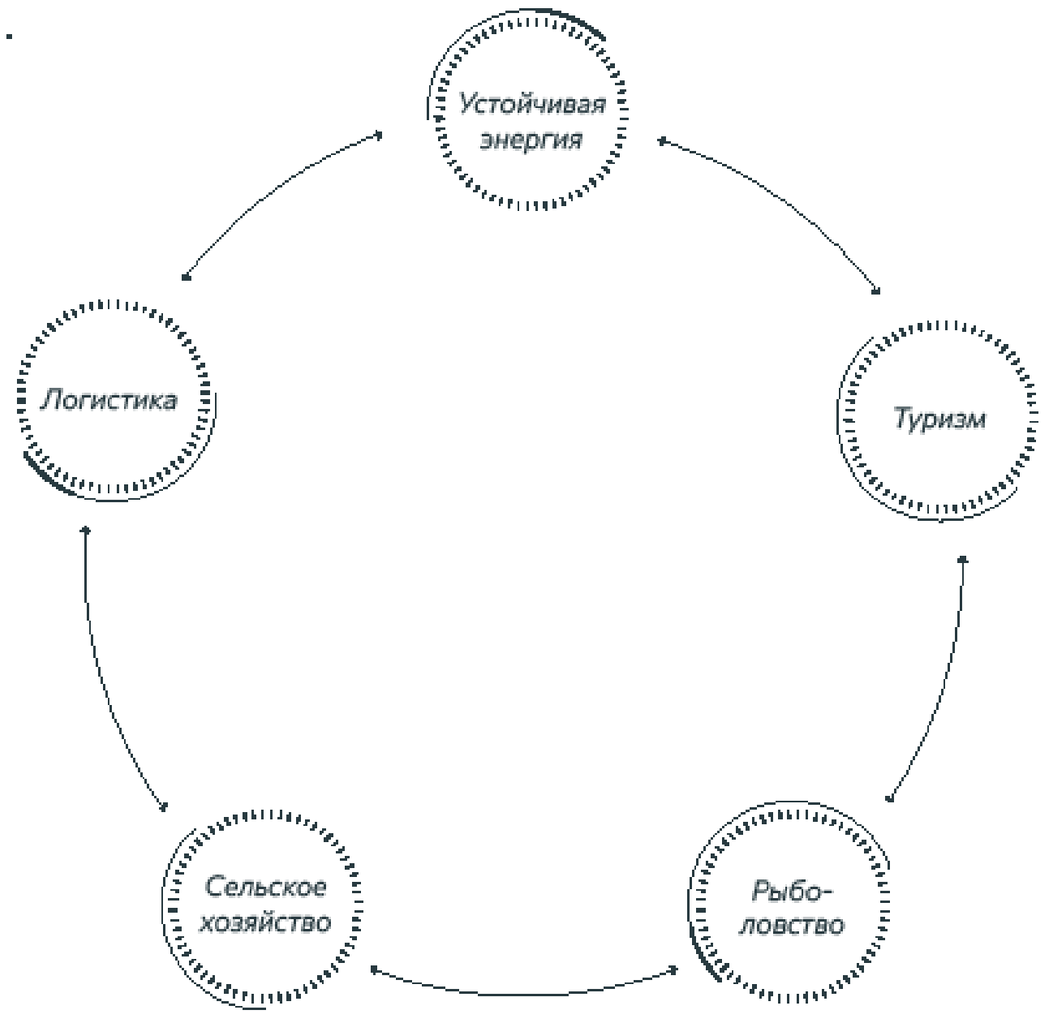
SUSTAINABLE DELTA ECONOMIES

The Delta is rich in natural resources but is currently dominated by the traditional economy of oil and gas, with fishing and agriculture representing a minor part. The current main issues are the over-dependance on carbon based energy whose revenues are not directly captured by the region and which has some negative impacts on the region's ecology thus indirectly on other industries.

We propose to build up a sustainable Delta economy by :

- **diversify the economy** with 5 priority sectors (see chapter 7):

  - **Устойчивая энергия :** Astrakhan can be a leading region in renewable energy thanks to a very attractive solar and wind potential (insert here some data from study). 13 solar plants are already operational in the region. We also propose to develop a know-how in the implemtation of mini-grids, to utilise renewable energy locally to support decentralised infrastructure, in particular in tourism, where traditional energy infrastructure are costly to bring from centralised infrastructure.
  - **Туризм :** eco-tourism, but also cultural, business (MICE), gastronomical and health tourism can be developed through a combination of major infrastructure (Delta Museuma nd Passenget Terminal,) and agile infrastructure (camping, routes, shuttle buses, etc.) . The development of Caspian Delta brand and associated festivals will help to put Astrakhan on the map of national and international tourists.
  - **Логистика :** major projects of logistics are planned (Port Olya, North South Corridor) and for which the impact on local economy can be maximised by developing local logistic hubs, such as the proposed one in the south of the center of Astrakhan.
  - **Рыболовство:** Astrakhan can capitalize on historical region advantages with unique fish species and transform its industry to a more sustainable and qualitative production,aiming to restore fishing ecosystems and reducing risks.
  - **Сельское хозяйство**: Sustainable agriculture can not only mitigate the negative impact on the environment but also provide growth perspective in more qualitative organic products. This economic sector, like the four other ones, should be supported by research and innovation capacities to reduce irrigation needs and diversify the production whilst focusing on local specicifities (indigenous types of tomatoes, watermelons etc.).



- **coordinate these economical sectors** to maximise synergies and minimise negative impacts on each other. For example, the development of a sustainable agriculture can support gastronomical tourism, whilst logistics can support a network of local markets.

- **capture locally the value** of economical sectors which can be more easilly controllable at the level of the aggomeration than the traditional oil and gas sector.

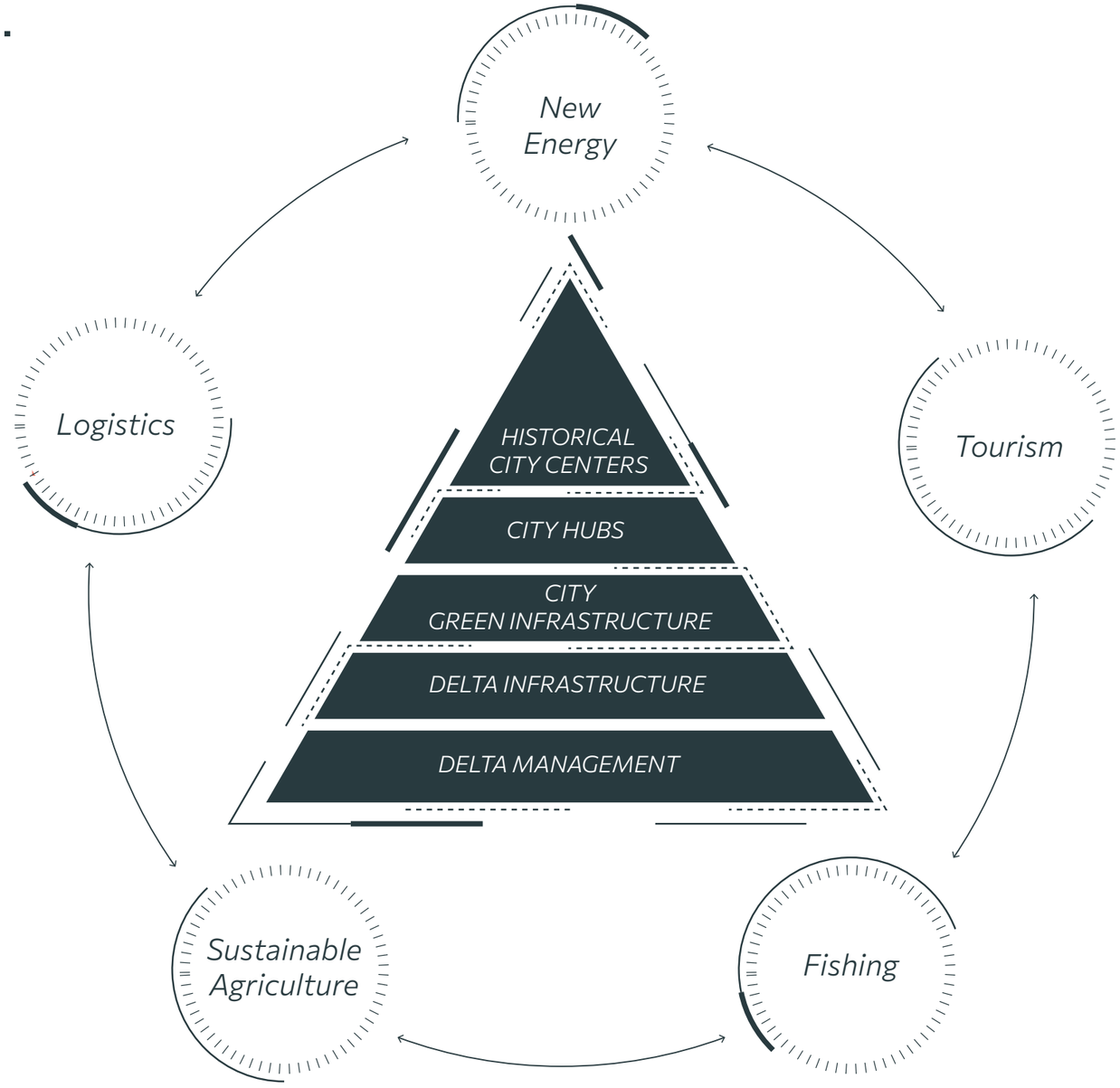
PRINCIPLES OF THE DEVELOPMENT MODEL

PRINCIPLES OF DEVELOPMENT VECTORS

5 main vectors of development will help support the delta economies:

- **Управление Дельтой:** To coordinate research, foster innovation and attract agglomeration-wide investment.
- **Delta Infrastructure:** Designed to stimulate the development of economic foundations through a dual approach - “big infrastructure” and decentralized flexible infrastructure.
- **Green City Infrastructure:** Will help improve the quality of life, work and education needed to retain and attract youth.
- **City hubs:** complex territorial developments, with development anchor and a mixed-use program to create both destinations and place to live, work and play.
- **Historic Center of Astrakhan:** Will create an attractive historic city where culture is a tool to attract investment and make a loud statement about Astrakhan.

This multi-scale strategy allows to create synergies between Astrakhan and the agglomeration. For example, an environmental monitoring system (Delta Infrastructure) will be piloted and analysed by the proposed Caspian Delta Research Center as part of a city campus (City Hub), will informed decisions at the (Delta Management)



STRATEGY

INVOLVING RESIDENTS IN THE DEVELOPMENT OF A MASTER PLAN

Based on the results of surveys of residents of Astrakhan and the Astrakhan region, key project solutions were developed.

Residents of Astrakhan (Leninsky, Soviet, Trusovsky, Kirovsky districts).

- Young Astrakhan residents consider environmental problems to be the most important (after transport infrastructure problems).
  - Environmental solutions of the project are designed for a long-term perspective and are focused on future generations of Astrakhan residents:
    - plant 1 million trees
    - to create an ecopark on the City Island with an area of 245 hectares; - to create green canals with an area of 44.5 hectares in the city center.
    - Expected results:
      - protection and preservation of the Delta ecosystem through the emergence of new green spaces
      - improving the health of citizens, preventing and reducing respiratory and cardiovascular diseases
      - reduction of frequent sandstorms in the region
      - decbonization of energy and reduction of the level of carbon dioxide emissions by enterprises
      - lowering the temperature of rivers and preserving aquatic biodiversity
- Residents unanimously highlight the problem of the lack of green spaces, the lack of places for recreation in nature and near the water.
  - The project proposes the creation of a comfortable urban environment for people with disabilities:
    - create 10 descents to the water for people with limited mobility
    - launch educational programs for people with limited mobility throughout the entire Astrakhan agglomeration
    - creation of eco-routes adapted for people with limited mobility
    - Expected results:
      - increasing the comfort of the urban environment for people with limited mobility
      - creating opportunities for rehabilitation, socialization and self-realization of people with limited mobility
      - creating conditions for a variety of leisure and recreation for people with limited mobility;
- They note the problems of an accessible environment for people with limited mobility.
  - The project solutions are aimed at developing opportunities for sports and outdoor activities in the city:
    - -creation of a sports park with skate areas, boat stations and swimming pools
    - on the territory of the Delta University Campus, it is planned to open a sports and entertainment center for students
    - 40 km of bike paths within the boundaries of the historic city center
    - -activation of water routes along the Volga for water sports
    - Expected results:
      - improving the health and longevity of citizens by improving social infrastructure
      - development of a healthy lifestyle among students, a variety of leisure activities
      - activation of the development of cycling culture and the emergence of cycling communities
      - unleashing the tourist potential of the region thanks to the emergence of new water and bicycle routes

Residents of the Astrakhan areas (Volodarsky, Ikryaninsky, Kamyzyaksky, Krasnoyarsky, Limansky, Narimanovsky, Privolzhsky).

- Older residents report a shortage of sports facilities.
- We would like to position the city as a cluster of aquaculture and fisheries.
  - The project offers solutions for the preservation and development of the fish ecosystem of the region and the development of sustainable fisheries:
    - creation of new fishing piers along the city embankment as a historical fishing place for the townspeople
    - opening of fishing centers in the Astrakhan region with the possibility of sustainable fishing
    - development of new tourist routes with visits to fisheries and environmental education centers;
    - Ожидаемые результаты:
      - повышение здоровья и долголетие граждан за счет улучшения социальной инфраструктуры
      - развитие здорового образа жизни среди студенческой молодежи, разнообразие досуна
      - активизация развития велосипедной культуры и появление велосообществ
      - раскрытие туристского потенциала региона благодаря появлению новых водных и велоипедных маршртуов
- Ecological tourism is singled out as the most promising for development and the attractiveness of the Astrakhan region is noted due to its unique natural features.
  - The project offers solutions for the development of ecological tourism:
    - opening of the Ecological Park of the Caspian Delta with new tourist routes;
    - creation of thematic eco-trails and tourist navigation of the Caspian Delta
    - opening of the tourist quarter of the Delta with a developed infrastructure
    - improvement of the city park on the eco-island, which provides residents and tourists with access to water
    - creation and promotion of the Caspian Delta brand, launch of the Delta Ambassador program
    - Expected results:
      - disclosure of the natural and recreational potential of the region
      - formation of an attractive brand of the Caspian Delta, increasing the recognition of the Astrakhan region among Russian and foreign tourists
      - the launch of new entrepreneurial projects and the emergence of new jobs, the economic development of the region

STRATEGY

INVOLVING RESIDENTS IN THE DEVELOPMENT OF A MASTER PLAN

General solutions residents

- Landscaping, renovation of public space
  - The creation of «green channels» is the natural framework of the historical center of the city. Eco-island opening.
- Restoration of historic buildings.
  - Activation of historic streets and buildings - cultural heritage sites.
- Development of master's programs at universities.
  - Possibly based on the Caspian Delta University Campus
- Sharing tools in the economy - the ability to rent production sites.
  - Possibly based on the Caspian Delta University Campus

Suggestions for University campus

- The campus should be in an urban environment - so that universities and the city mutually enrich each other.
  - The campus will be located on the territory of the Machine-Tool Building factory in the city center.
- Abandoned buildings can be used for the development of universities.
- Use of common spaces by different universities
  - The possibility of creating a university technopark in cooperation with regional and international universities is being considered.
- Modern infrastructure for education.
  - The campus will house 4 technopark buildings, 4 educational buildings, 8 student dormitories, as well as a public space for students' leisure.
- Large seating areas.
- Student shuttle system for fast and convenient travel to campus.
  - A high-speed bus corridor (BRT) will be launched, as well as a city train, a new station of which will open next to the territory, will connect the campus with the key passenger hub of the city and metropolitan area - Pryvokzalnaya Square.
- Bicycle parking on site.
  - The campus will be equipped with bicycle parking.

suggestions to improve urban environment

- Greening of the city
  - The creation of «green channels» is the natural framework of the historical center of the city. Eco-island opening.
- Improvement of Kosy streets - the district should become the "face of the city".
  - Activation of the historic city center (Posad, Kos)
- Cleaning of canals and city rivers.
  - A plan has been developed for clearing the river bed, deepening the bottom, creating and improving urban infrastructure - a system of phyto-purification of
- Restoration of the historical appearance of the Bolshiye Isady district
- Restoration of the area of settlements and the territory north of the Kutum River.
  - Infrastructure saturation is planned along the Kutum river arm.
- Expansion of the Arcadia park
  - Expansion possible green links between Arcadia Park and other green areas of the city.
- Solving sewerage problems.
  - Wastewater phyto-treatment plan has been developed.

On June 23, at the Boiling Point site at the Astrakhan State University, a project seminar "Astrakhan-2030: the city of the young" was held.

The meeting was devoted to the analysis of the current situation and the formation of a vision for the development of the Astrakhan agglomeration as a territory attractive for life, work and personal development of young people.

The focus on youth is due to the fact that the agglomeration needs an influx of young specialists for development, and the attractiveness of the region for young people is one of the indicators of the success of the development of the territory.

STRATEGY

INVOLVING RESIDENTS IN THE DEVELOPMENT OF A MASTER PLAN

STRATEGY
EXPERT COMMUNITY

CULTRE AND TOURISM

Sergey Lvov

Local historian, member of the Council of the Astrakhan branch

All-Russian Society for the Protection of Monuments

history and culture.

Deals with the protection of historical and cultural monuments

in Astrakhan. I am convinced that the historical center of the city requires restoration work, funding, and strict control at all phases of the implementation of specific programs to preserve the city's cultural and historical heritage, which will be of interest to future generations of Astrakhan residents.

Natalia Tuigunova

Journalist, editor-in-chief of the Astrakhan portal «Dvor.media», author of the project «Hulihanskie excursions».

He is the self-proclaimed ambassador of Astrakhan, conducts informal "hooligan" excursions around the historical center of the city. He believes that it is important to develop tourist infrastructure in the city - master classes, interactive programs, concert measures. Something that will allow tourists to wait out the heat in the city.

Sergey Stepanov

Local historian, collector, deputy head of the Astrakhan branch of the IOPS.

Considers that the problems of preserving cultural heritage are relevant within the framework of the issue of attracting

tourist flow to the Astrakhan region.

I am sure that multi-storey buildings made of glass and concrete will not surprise the guests of the city, therefore it is necessary to preserve Old Astrakhan as a beautiful old city with a peculiar architecture. Notes that this must be done correctly, competently, and not doomed to the destruction and destruction of the heritage.

ECOLOGY AND ENVIRONMENT

Nikolay Tsimlyansky

Director of Astrakhan

state natural biosphere reserve /

He believes that in order to preserve the Delta, it is necessary to unite the entire territory of the Delta into a single national park, which will have a single funding and management mechanism.

Vladislav Ivanov

Head of the territorial headquarters of the ECA movement in the Astrakhan region, environmental activist.

Organizes volunteer forestry activities in the region. He believes that such stocks need to be scaled up for them to be of real value. Notes that now people are indifferent, they need to be involved in environmental problems.

Yuri Chuikov

Doctor of Biological Sciences, Professor of the Department of Ecology of the Astrakhan State University.

Notes that now the city canals are blocked by a dam, there is no natural flow of water in Volha. Water is pumped into canals, and its level is higher than the level of the Volga River, as a result of which the first floors of the buildings of the historical center are flooded. This problem needs to be solved.

Elena Kolpakova

Coordinator of the movement in defense of the Volga "Let's help the river".

He believes that the water level in the Volga and the speed of the current depend on the functioning of the cascade of the Volga hydroelectric power plants. Due to the reservoirs, the flow rate is very low, there is no natural cleansing of the river. It is necessary to bring the flow of water from the reservoirs closer to natural processes. change the rules for using the reservoir

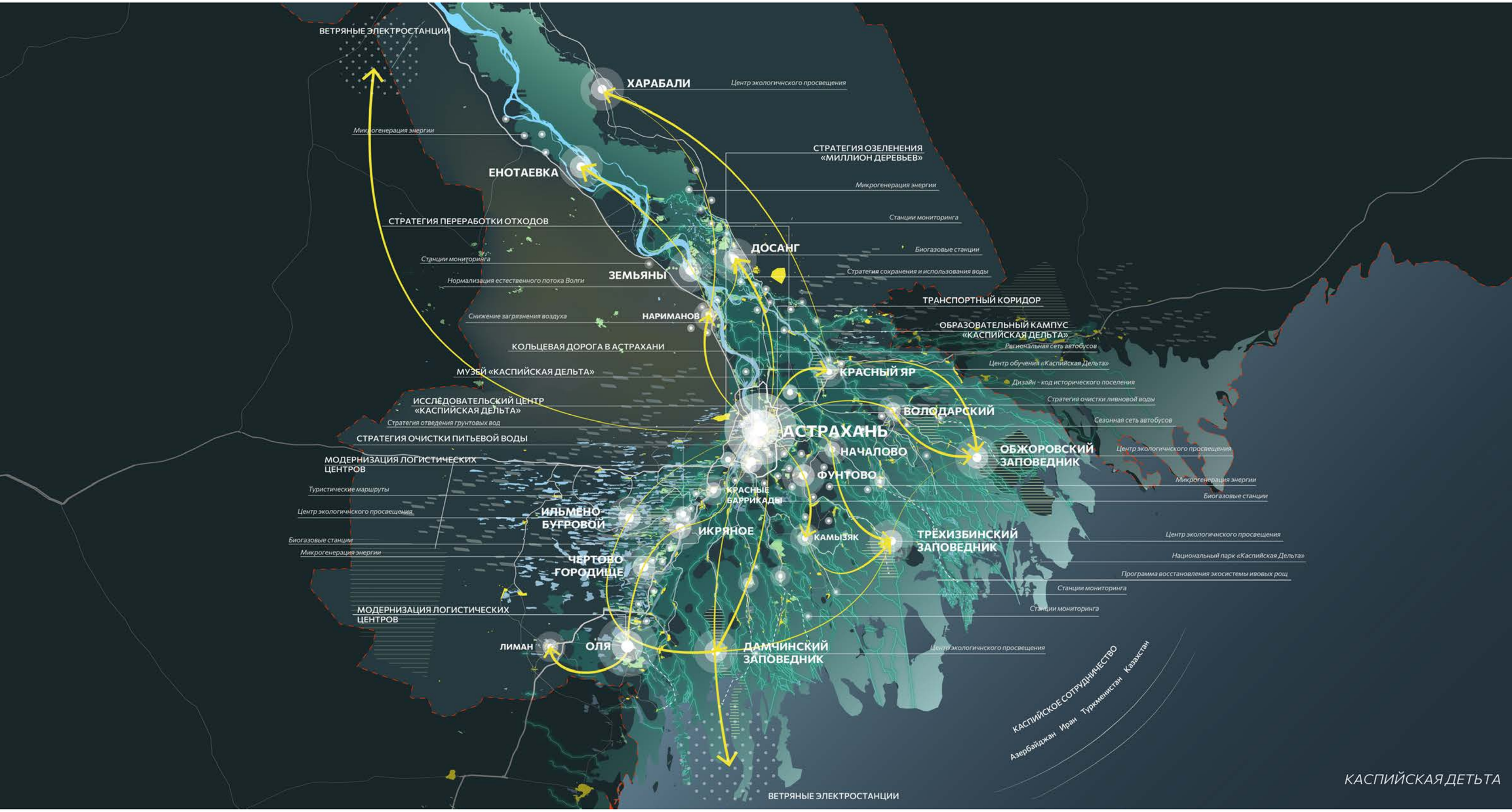
Olga Ukhanova

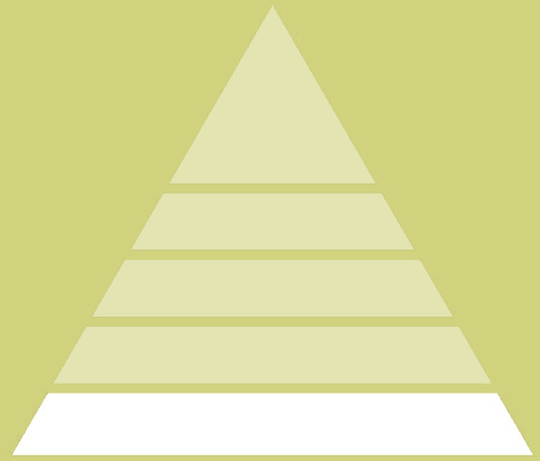
Senior Expert of the Renewable Energy Development Association (ARVE).

Notes that for the development of «green» energy in the region, it is necessary to use solar panels and wind turbines. Solar panels are especially useful in agriculture, since farms are usually located far from large utilities. Local farmers would find it particularly beneficial to use such panels.

STRATEGY
MASTERPLAN

The Caspian Delta Masterplan will coordinate actions and focus investments to build up the resilience and support the development of sustainable delta economies





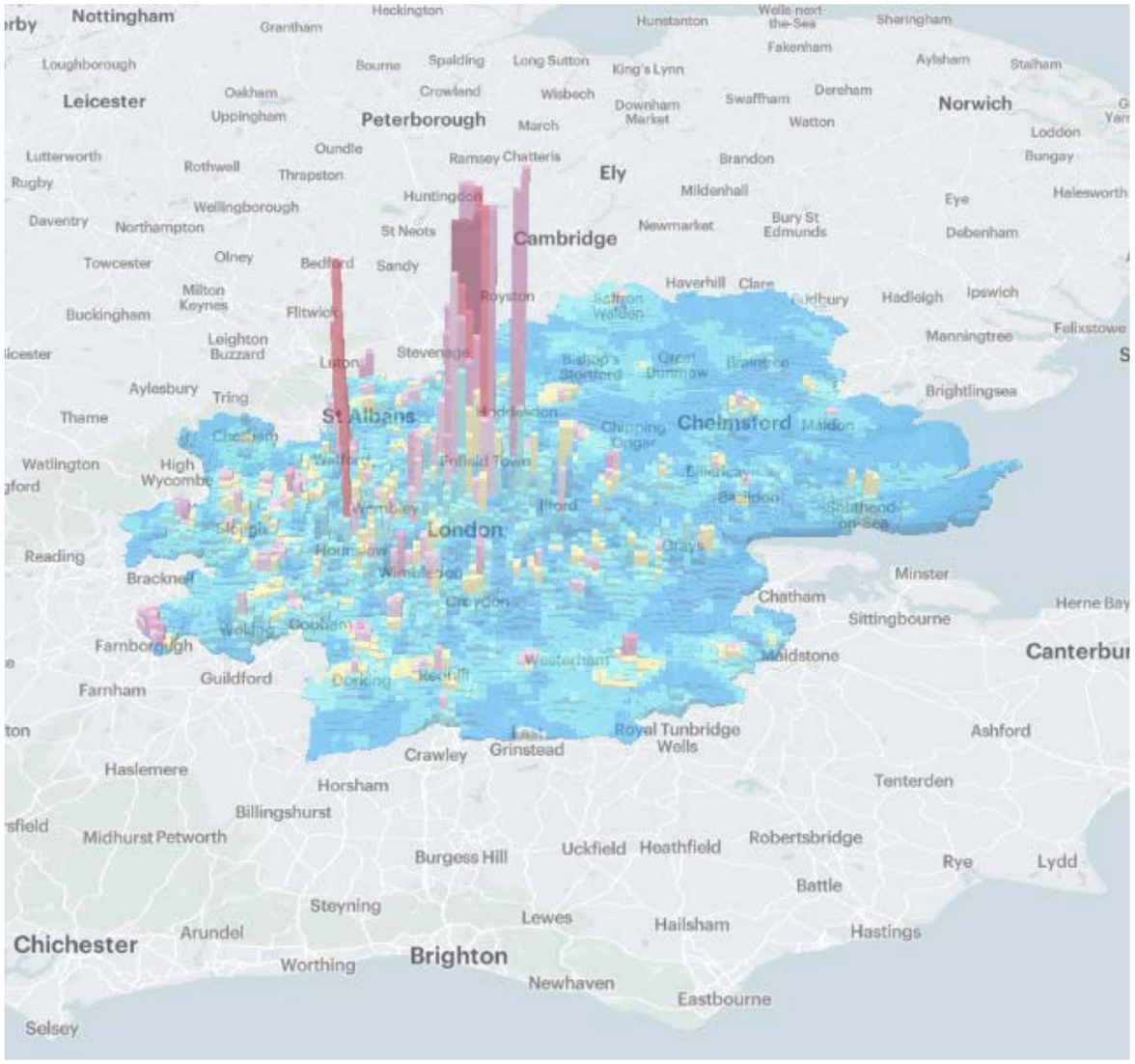
02.

DELTA MANAGEMENT

ORGANIZATIONAL CHART OF AGGLOMERATION FUNCTIONING

BASIC PRINCIPLES OF THE MANAGEMENT MODEL

based on the analysis of foreign projects of urban agglomerations



Beijing, Shanghai, Seoul, Tokyo, New York, London, Buenos Aires, European cities, Moscow

1 Adequacy to the scale of the tasks being solved

projects affecting the interests of the agglomeration as a whole should be regulated by structures created at the level of the agglomeration, and not at the level of individual territories (districts) included in it

2 Sufficient authority

powers should be sufficient for the implementation of projects, depending on the specifics of the project and the course of its implementation, the authorities of the Agglomeration may be delegated the authority to make managerial, financial, and strategic decisions

3 Minimizing bureaucratic mechanisms

The internal organization of the management model should allow you to quickly respond to changes in the political, economic, social, housing and communal life of the territory.

In addition, the procedures for making and coordinating decisions during the implementation of the project with all stakeholders, including government bodies of various levels, the population of the territories, investors, should be debugged.

POSSIBLE WAYS OF FORMING MANAGEMENT MODELS

SINGLE-TIER MODEL

single-tier model

THE MERGER OF SEVERAL MUNICIPALITIES INTO ONE

Association of municipalities

Examples: USA, Belgium

Contractual model

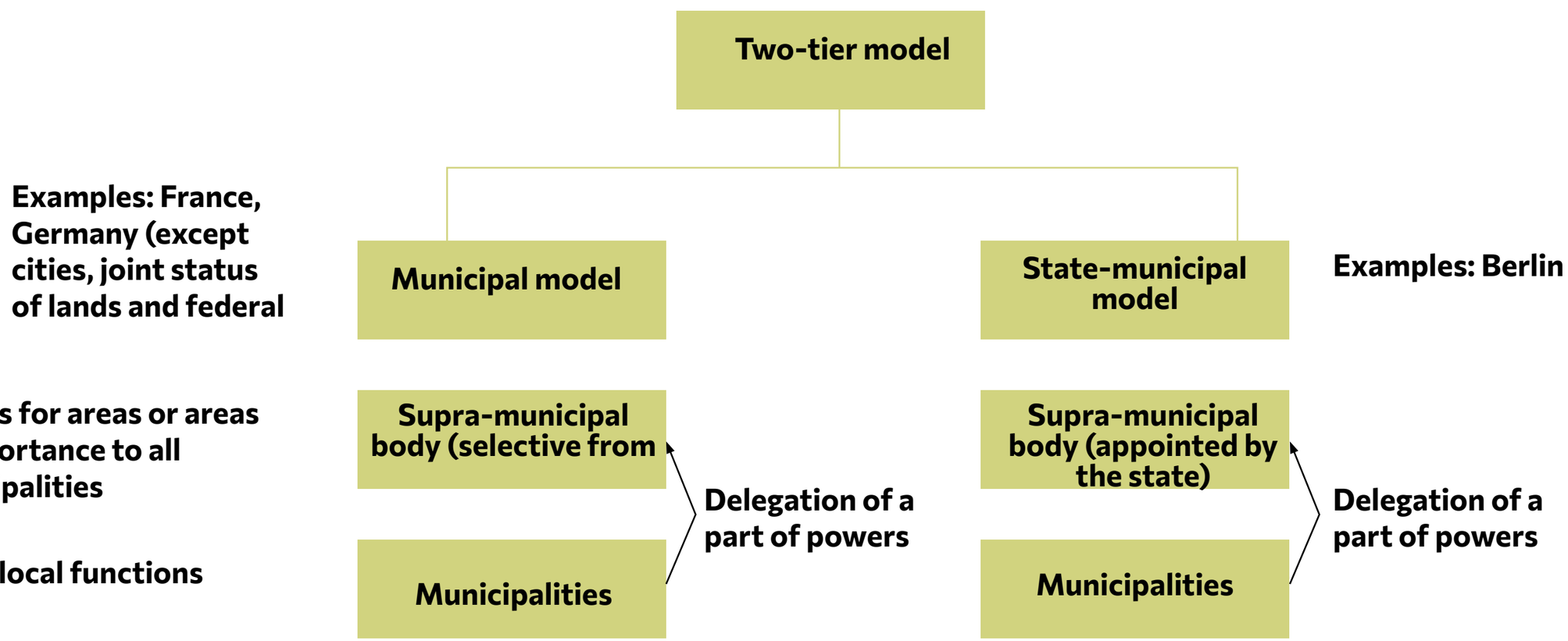
INTER-MUNICIPAL COOPERATION TO ACHIEVE A UNIFIED APPROACH, OFTEN FOR SPECIFIC PROJECTS

New municipality	**State subject**	**Coordinating form of management**	**Administrative form of management**	**One-tier model**
Examples: Shanghai, Toronto, Naberezhnye chelny, Komsomolsk on Amur	Examples: formally impossible in the Russian Federation, de facto	**Coordination of development plans of all municipalities**	**Delegation of a part of powers to a supra-municipal body**	**Financial cooperation**
APPLICABILITY FOR THE CASPIAN DELTA	✗	✗	✓	✓	✓

✓ **Applicable** ✓ **Applicable with reservations** ✗ **Not applicable**

POSSIBLE WAYS OF FORMING MANAGEMENT MODELS

TWO-TIER MODEL



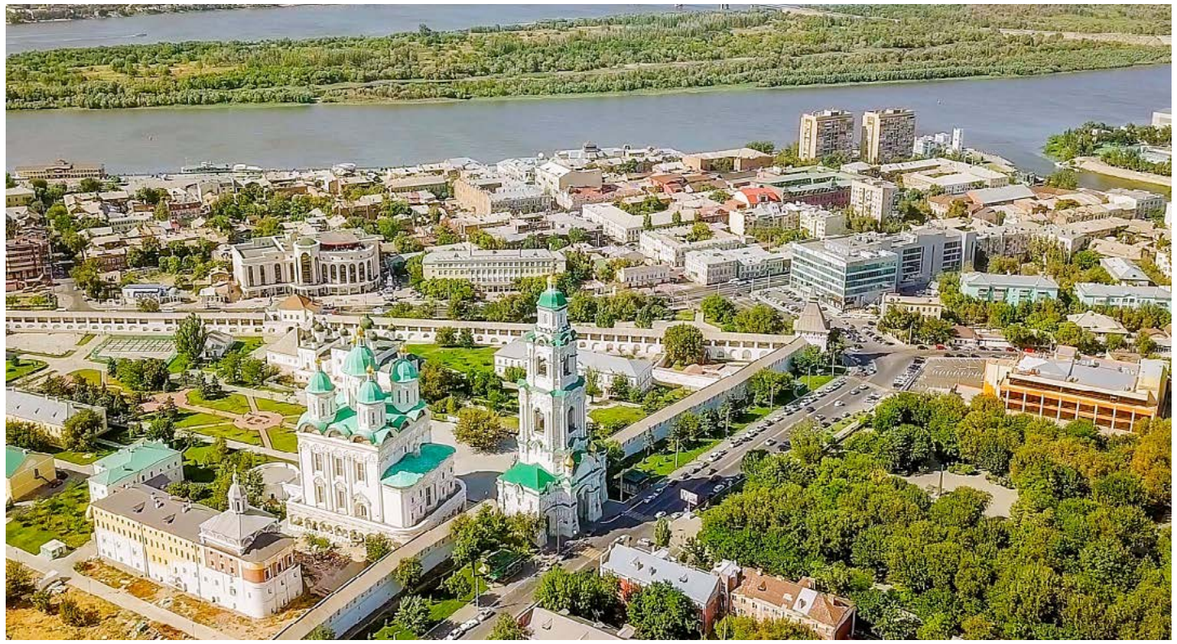
APPLICABILITY FOR THE CASPIAN DELTA

Applicable

Applicable with reservations

Not applicable

MAIN INPUTS TO THE CASPIAN DELTA MANAGEMENT MODEL



1 Absence of duplication of powers with a sufficient scope of powers

Management mechanisms do not duplicate the management of the Oblast or municipal districts

In key areas for the agglomeration, powers are delegated to the managing body of the Agglomeration (for example, from territorial units to the administrative body)

2 Focus on agglomeration as an interconnected system

Agglomeration must deal with problems and directions that cover several areas in their interconnection («the whole is more than just the sum of its constituent elements»)

issues related to the development of the region as a whole should be resolved at the level of the Astrakhan region, issues related to a separate municipal district - at the level of the district

3 Minimizing bureaucratic mechanisms

Institutions that are already operating in the Astrakhan region (for example, the Public Chamber) should not be created at the managerial level of the model.

Where possible, directional governing bodies should be formed as commissions or working groups, which include current employees of administrations, regional and federal authorities, etc.

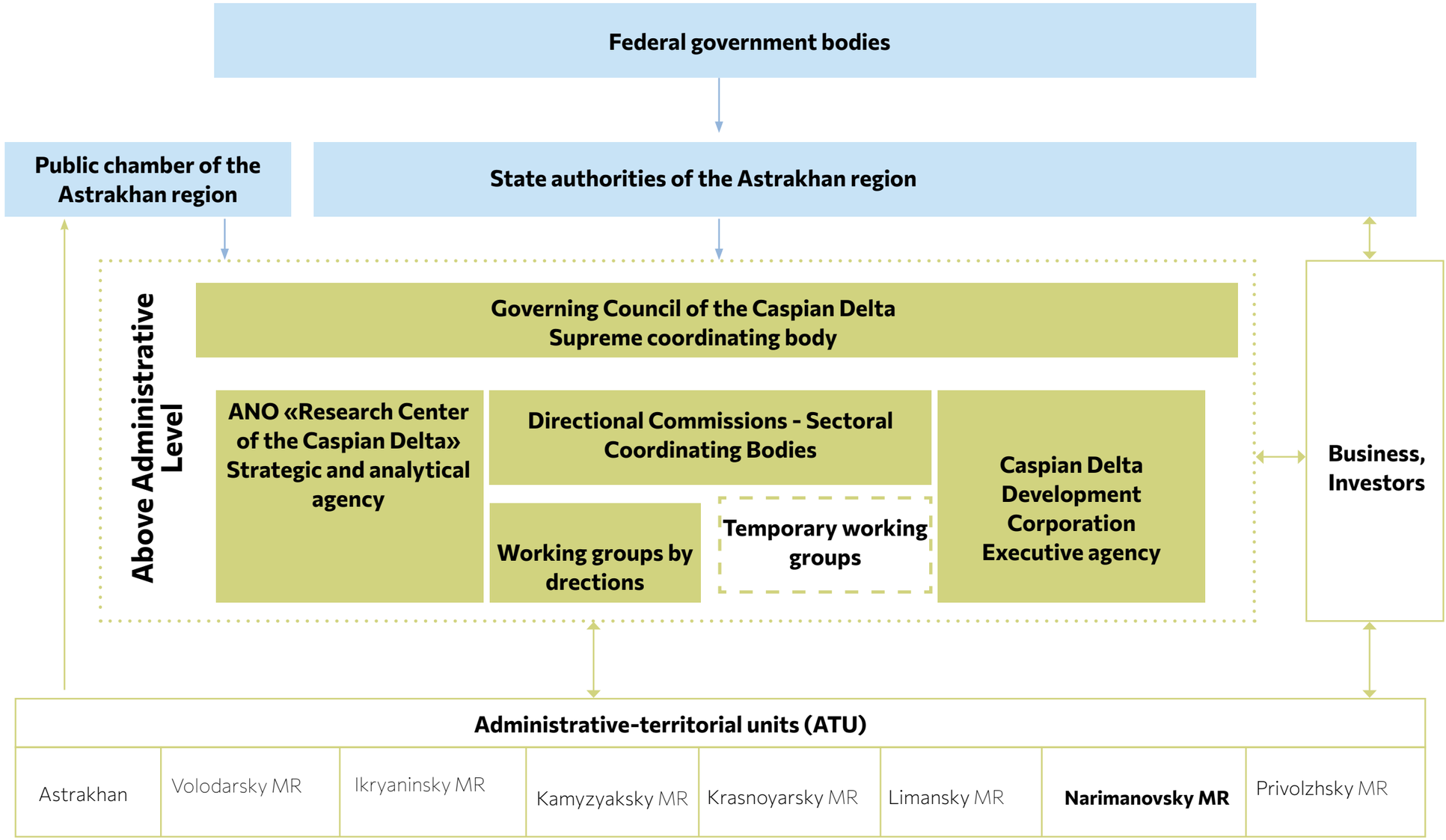
4 Flexibility and adaptability

Ability to respond to new challenges and changes

Providing feedback «from the field», that is, from the territorial units that make up the Agglomeration

PROPOSED MANAGEMENT MODEL FOR THE CASPIAN DELTA

TWO-LEVEL WITH ELEMENTS OF A CONTRACTUAL MODEL



Determination of the federal policy for the development of territories, federal programs

Powers at the Oblast level (all ATEs), implementation of federal programs

Authority to plan and implement strategies for key directions and elements of the Caspian Delta

Transport

Infrastructure, Construction and utilities (water, garbage, waste)

Logistics

Agriculture and Fishing

Sustainable energy

Culture and tourism

Local powers (powers in key areas are delegated to the supra-administrative level)

MAIN ELEMENTS OF THE MANAGEMENT MODEL OF THE CASPIAN DELTA

	MAIN TASKS AND POWERS	STRUCTURE
AHO	- Develops and updates the Agglomeration strategy - Develops projects for the implementation of the strategy, monitors their implementation - Takes into account agglomeration resources - Collects information from MR (ATE), tracks key indicators, manages information and knowledge - Interacts with commissions and working groups in the areas of development - Engages external independent experts in various fields	New structure (10-12 people) with the functionality of the agglomeration «think-tank»
Governing Council of the Caspian Delta	- The supreme coordinating body, responsible for the adaptive and sustainable development of the Caspian Delta - Approves and accepts the development strategy of the Caspian Delta, is responsible for its implementation - Coordinates Commissions and working groups in areas	Federal representative (s) Governor of the Astrakhan region Representatives of the government of the Astrakhan region ATE chapters
Caspian Delta Development Corporation	- State Regional Development Institution - Implements investment projects in the region - Makes decisions on attracting investors, including foreign - Responsible for the formation of a favorable investment climate - Responsible for the implementation of strategic projects for the development of the Caspian Delta - Implements and promotes public-private partnership (PPP) mechanisms - Forms and promotes the image of Delta among investors (Russian and foreign) - Responsible for SMP support and business support	Can be allocated within the framework of the Investment Development Agency of the Astrakhan Region (focus on Agglomeration development) It is necessary to «recruit» specialists in socio-economic development, urban planning and development of territories
Commissions and working groups by areas		Representatives of sectoral ministries Representatives of ATE authorities External experts Business representatives
Temporary working groups by areas	- Forms a strategy for the development of the Agglomeration in a given direction - Proposes projects for the implementation of such strategies - Interacts with other management bodies of the Agglomeration and related commissions to agree on strategies	Representatives of sectoral ministries Representatives of ATE authorities

COMMISSIONS AND WORKING GROUPS IN AREAS

Determination of the management level

Относится к развитию всех МР в Астраханской

→ **Region level**

Project or problem

→ **Region level**

Project or problem
- Affects several areas of the Delta?
- Does it affect the interconnection of districts?
- Has socio-economic, environmental, etc. effects for multiple areas, even if implemented в одном?

→ **Caspian Delta Level**

AT THE FIRST STAGE (2022-2024), WE PROPOSE THE CREATION AND LAUNCH OF THE WORK OF STANDING COMMISSIONS IN KEY INFRASTRUCTURE AND OTHER AREAS.

- Transport
- Construction and utilities infrastructure (water, garbage, waste ...)
- Culture and tourism development
- Climate and ecology

МР – муниципальный район

PRINCIPAL ORGANIZATIONAL DIAGRAM OF THE AGGLOMERATION FUNCTIONING

To determine the legal status of Astrakhan by this agglomeration, a number of actions at the level of the region and administrative and territorial units included in the agglomerations

1. Develop a law of the subject of the Russian Federation on the redistribution of the sex of the numbers between local self-government bodies, municipalities of the central formations of the agglomeration and state authorities of the Region

2. Develop a separate planning document for the development of agglomeration (in the format of the concept of agglomeration development)

3. Develop a separate planning document for the development of agglomeration (in the format of the concept of agglomeration development)

4. Develop provisions on development governance agglomerations

To create the Governing Council of the Caspian Sea Deltas need to be developed and approved under the Governing Counci

1. To create the Governing Council of the Caspian Sea Deltas need to be developed and approved under the Governing Counci

2. To create the Governing Council of the Caspian Sea Deltas need to be developed and approved under the Governing Counci
   — created at the head of the subject of the Russian Federation
   — created at the head of the subject of the Russian Federation

03.

DELTA
INFRASTRUCTURE

ANALYSIS OF SOCIO-ECONOMIC, URBAN PLANNING AND OTHER PREREQUISITES THAT DETERMINE
POTENTIAL OPPORTUNITIES AND LIMITATIONS OF DEVELOPMENT OF AGGLOMERATION AND THE MUNICIPAL DISTRICT «CITY OF ASTRAKHAN»

SWOT ANALYSIS OF THE ASTRAKHAN

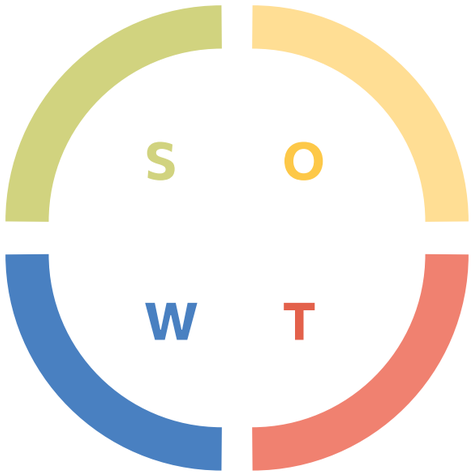
Results of the analysis of the key problems of socio-economic and spatial development, internal and external risks of the development of the agglomeration territory and individual municipalities:

Strengths

- Unique natural ecosystem of the Caspian region
- Traditional carbon energy sector
- Large federal infrastructure projects are planned in the near future (modernization of the Port of Olya, creation of the North-South transport corridor, ..)

Weaknesses

- Excessive dependence on carbon energy
- Limited benefit from traditional logistics and energy industries
- Limited regional control over traditional logistics and energy
- Environmental sensitivities that citizens face on a daily basis (air pollution, sandstorms, insect harm, etc.)
- Low water levels, pollution and overfishing that threaten fisheries
- Low density of transport inter-municipal links in the Delta
- Lack of reliable ecological data on changes in the landscapes of the delta and the Caspian

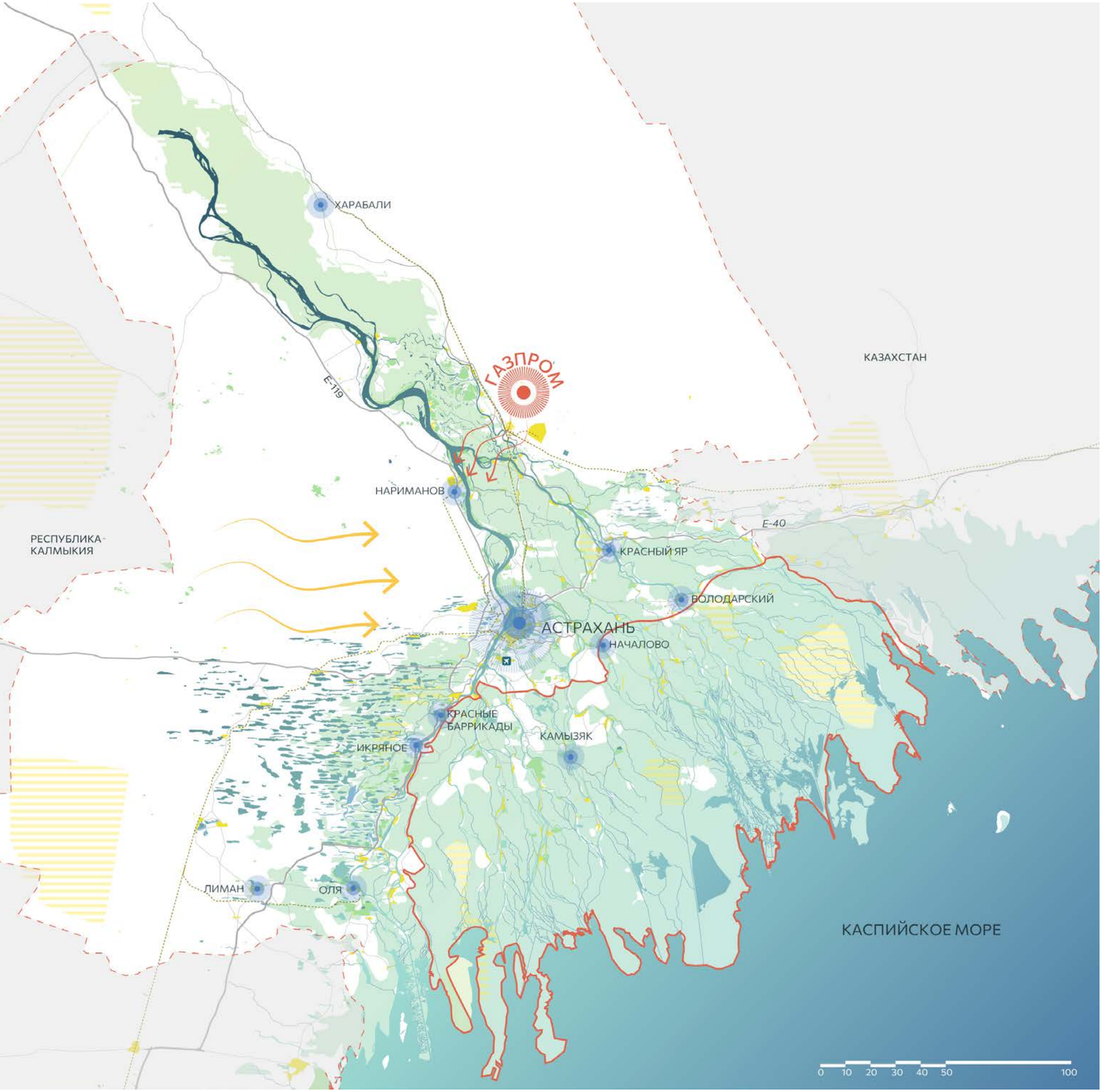


Opportunities

- Solar power to boost solar energy production (trunk grids and mini-grids)
- Wind power to boost wind power generation
- Ecotourism, business and cultural tourism opportunities
- Potential for the development of sustainable agricultural production combined with gastronomic tourism
- Premium dining experience / fishing
- International collaboration between delta strategies
- Regional Studies and Economic Cooperation in the Caspian Region
- Collaborating with traditional energy players to invest in renewable energy sources

Threats

- More frequent sandstorms and other environmental problems
- Localized floods in the Delta, restricting access to main roads
- Decrease in the level of watercourses in the Delta
- Long-term consequences of climate change for the ecosystem of the Caspian Volga



DELTA INFRASTRUCTURE

CASPIAN DELTA CONSTRAINTS

1 BAD LOGISTICS

lack of transport links between settlements within the agglomeration, in particular in the Volga delta.

2 TRANSPORT LOAD ON ASTRAKHAN

the concentration of all logistics links around Astrakhan creates a lot of pressure on the city.

3 ECOLOGICAL PROBLEMS OF THE DELTA

- drop in the level of the Volga and the Caspian Sea
- Forest fires
- reduction of vegetation
- decline in biodiversity

4 AIR POLLUTION

air pollution from industry and transport

5 SANDSTORMS

degradation of the topsoil and the formation of dust, together with the absence of green barriers, contribute to the spread of sandstorms near settlements

6 INFRASTRUCTURE PROBLEMS

- lack of a modern drinking water purification system
- no waste recycling system

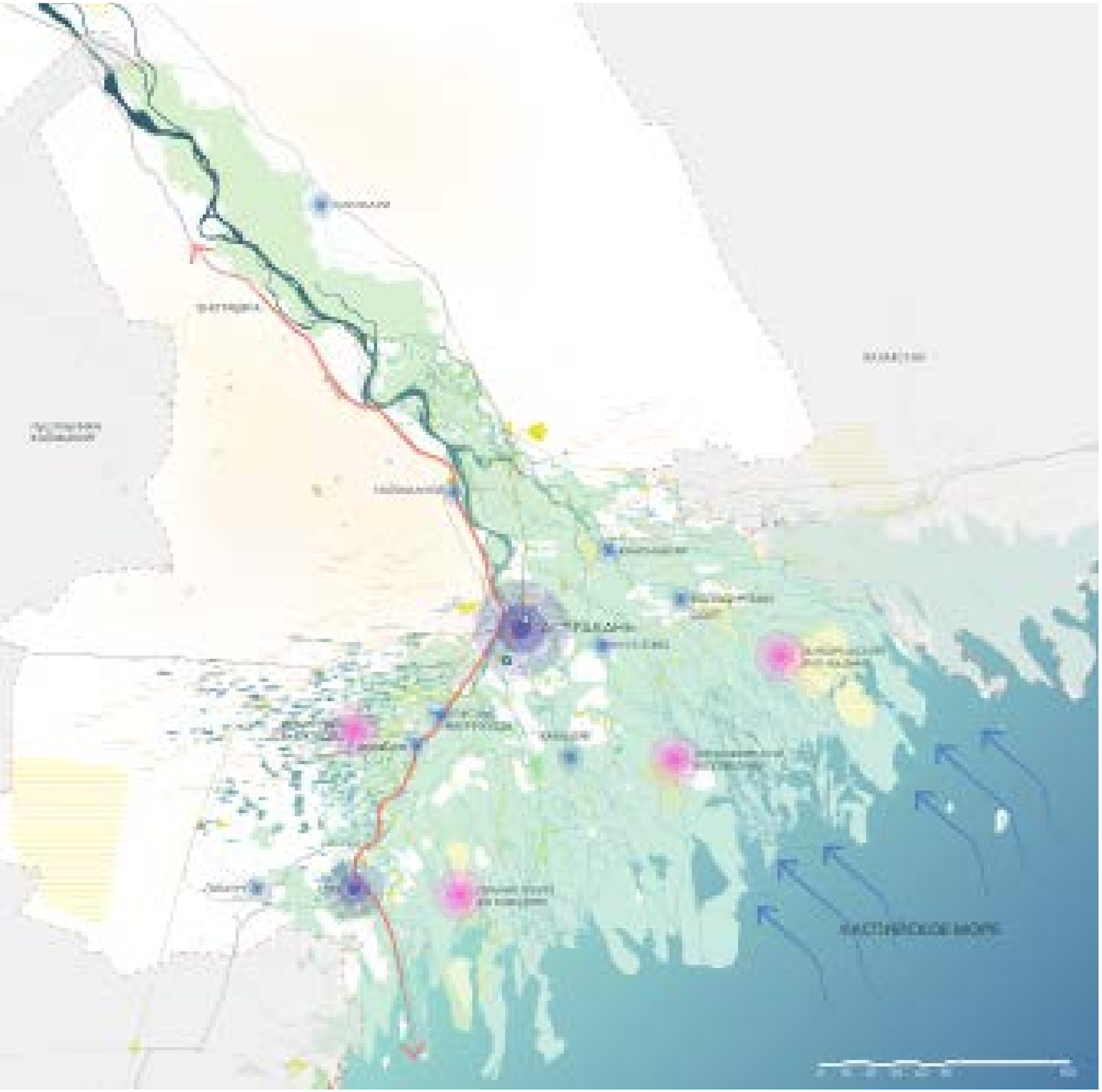
cities within the agglomeration

sandstorms

air pollution

lack of transport links

vulnerable ecosystems, forest fires



DELTA INFRASTRUCTURE

CASPIAN DELTA OPPORTUNITIES

1 DEVELOPMENT OF LOGISTICS HUBS

- international transport corridor «North - South»
- the international cooperation
- logistics center and port «Olya»

2 CLIMATIC AND GEOGRAPHICAL FEATURES

- large amount of sun and potential for the development of renewable energy systems
- potential for offshore wind energy development
- fertile soils and the potential for the development of organic agriculture and permaculture
- agricultural land - potential for biogas production

3 NATURAL FEATURES

- unique ecosystems of the delta, which are of international value - the Volga delta with flooded meadows and gallery forests (Caspian jungle) is a transfer hub for migratory birds and a place for increasing the biodiversity of the region.
- Ilmeno-Bugrovsky valleys
- semi-desert

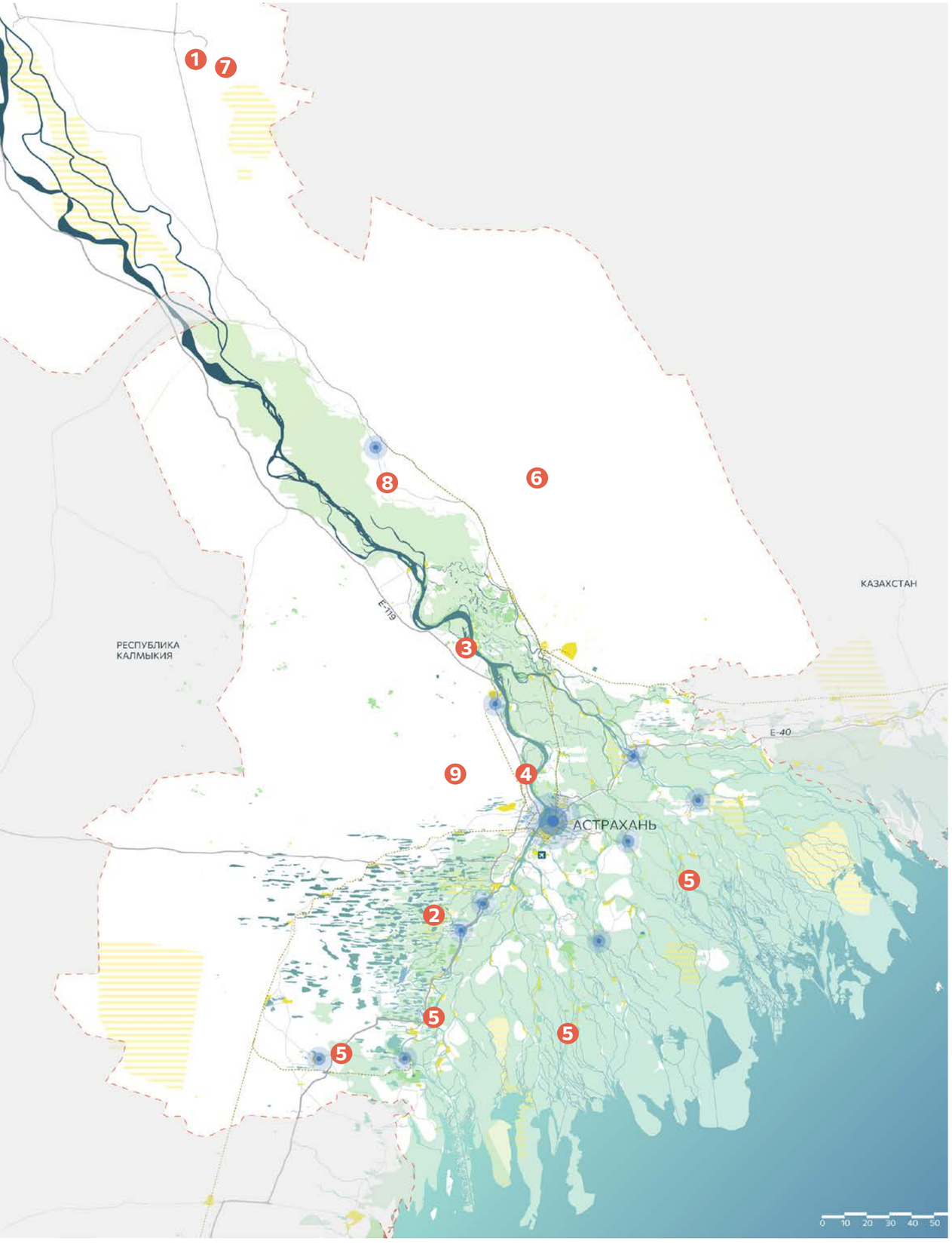
logistics centers

cities within the agglomeration

development points

wind energy potential

transport corridor «North - South»



SCHEME OF A COMPREHENSIVE ASSESSMENT OF THE AGGLOMERATION

POTENTIAL DISPLAY TARGETS

The region has a large number of natural attractions that are attractive to different audiences of tourists:

1 **Baskunchak cave -** the largest cave in the Northern Caspian region on the northwestern shore of Lake Baskunchak

2 **Berovsky hillock «Devil's settlement» -** the southernmost monument of the Golden Horde time on the Lower Volga

3 **Astrakhan water divider** is a unique hydraulic structure that regulates the level of the Volga

4 **Tinaki salt lake** with curative mud and unique mineral composition of water

5 **The lotus fields** in the Delta are the northernmost lotus habitat and extend over several thousand hectares

6 **Tract «Cordon»** a section of the steppe landscape on which a unique species of Mexican cactus from the prickly pear genus grows

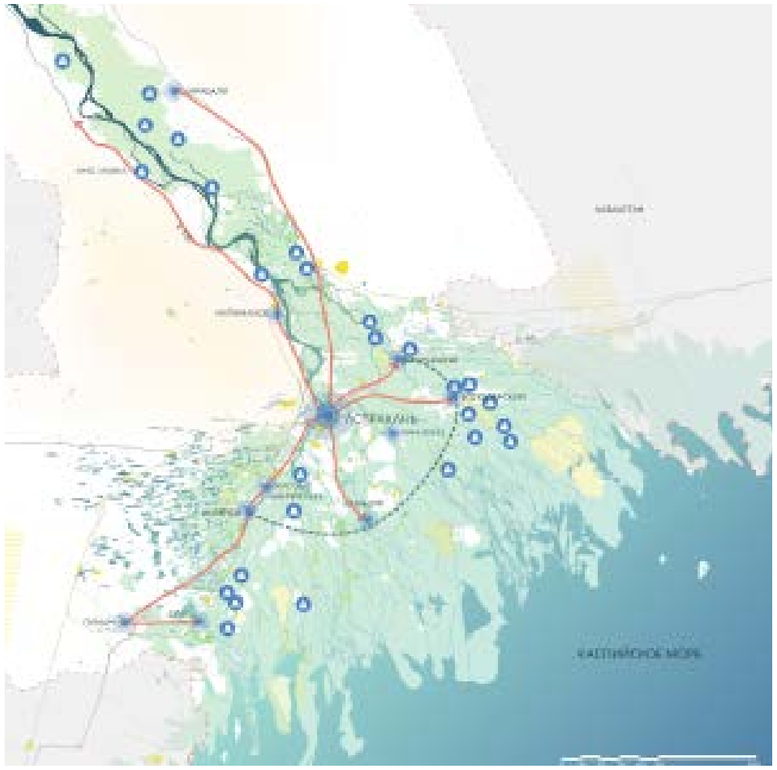
7 **Lake Baskunchak** is a salt lake that is part of the Bogdinsko-Baskunchaksky nature reserve

8 **Saray-Batu Tourist Center** dedicated to the history and culture of the Golden Horde Khanate

9 **Dune «Big Brother»** is the largest dune of the Astrakhan region

SCHEME OF A COMPREHENSIVE ASSESSMENT OF THE AGGLOMERATION TERRITORY

KEY CHARACTERISTICS OF TRANSPORT INFRASTRUCTURE



Road infrastructure

- Low density of intermunicipal connections due to the radial structure of the road network: communication between agglomeration settlements is mainly carried out through Astrakhan, which leads to overruns of transport and an increased load on the road network of the regional center;

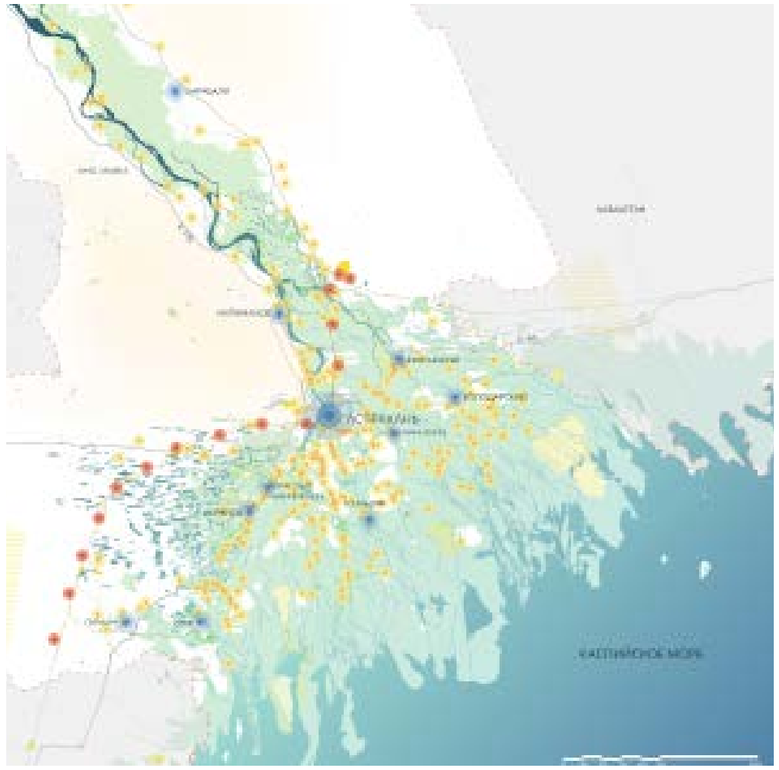
- Lack of bridges on a significant part of the routes between the settlements of the agglomeration;

- Insufficient number of paved roads: only in two regions of the agglomeration their share exceeds 50%

strong transport links

weak transport links

crossings without a bridge



Public transport

- Lack of a unified system of passenger transport on the territory of the agglomeration;

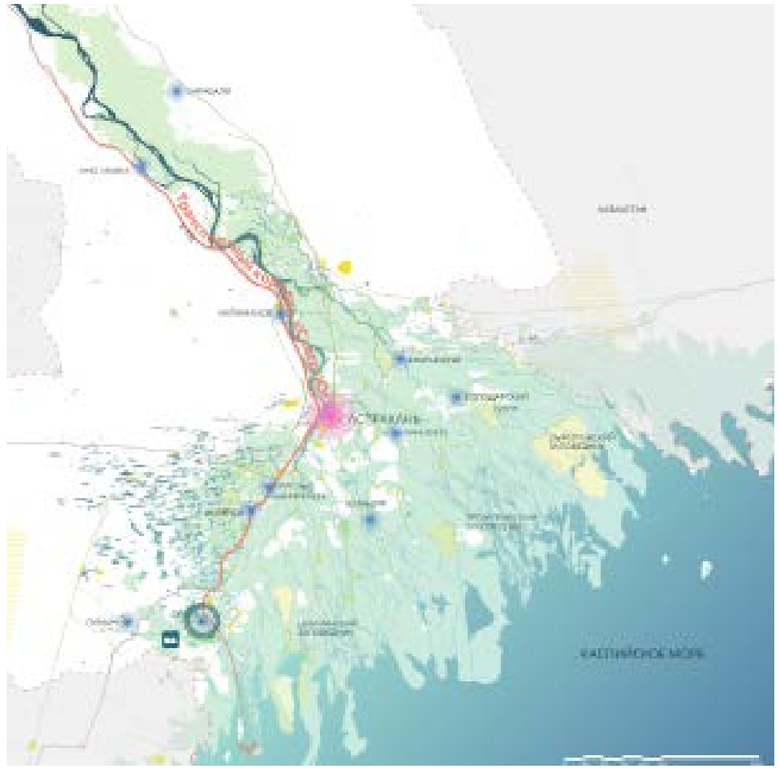
- Low provision of the territory with railway infrastructure, low intensity of passenger suburban railway communication;

- Underdevelopment of passenger water transport;

- Dependence of inter-municipal mobility on road and bus connections;

bus stops (within a 2 km radius)

railway platforms (with a radius of accessibility of 2 km)



Freight transport and logistics

- Potential for the development of the logistics potential of the territory in the context of the development of the North-South transport corridor, incl. Infrastructure of the port of Olya, due to the favorable geographical position of the Astrakhan agglomeration;

transport corridor «North-South»

Olya port

ANALYSIS OF THE EXISTING DELTA INFRASTRUCTURE

Improving engineering infrastructure on the Delta scale is associated with many challenges: high investment costs, low profitability and availability, such as significant investment costs, low profitability and low accessibility of some settlements. Environmental impacts such as lower water levels in sources can also increase stress in existing systems.

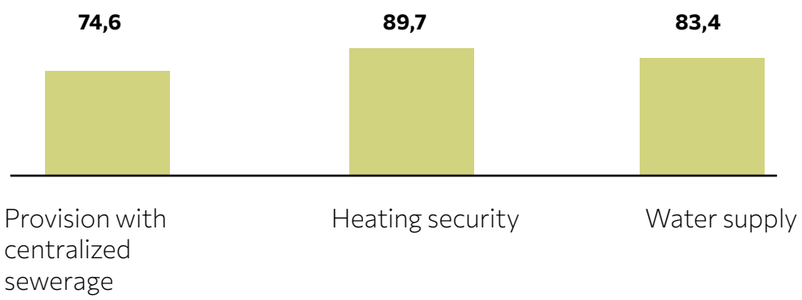
More than **65% of the water supply network and 75% of the sewerage network** in the region are in poor condition, which leads to numerous accidents and shortages.

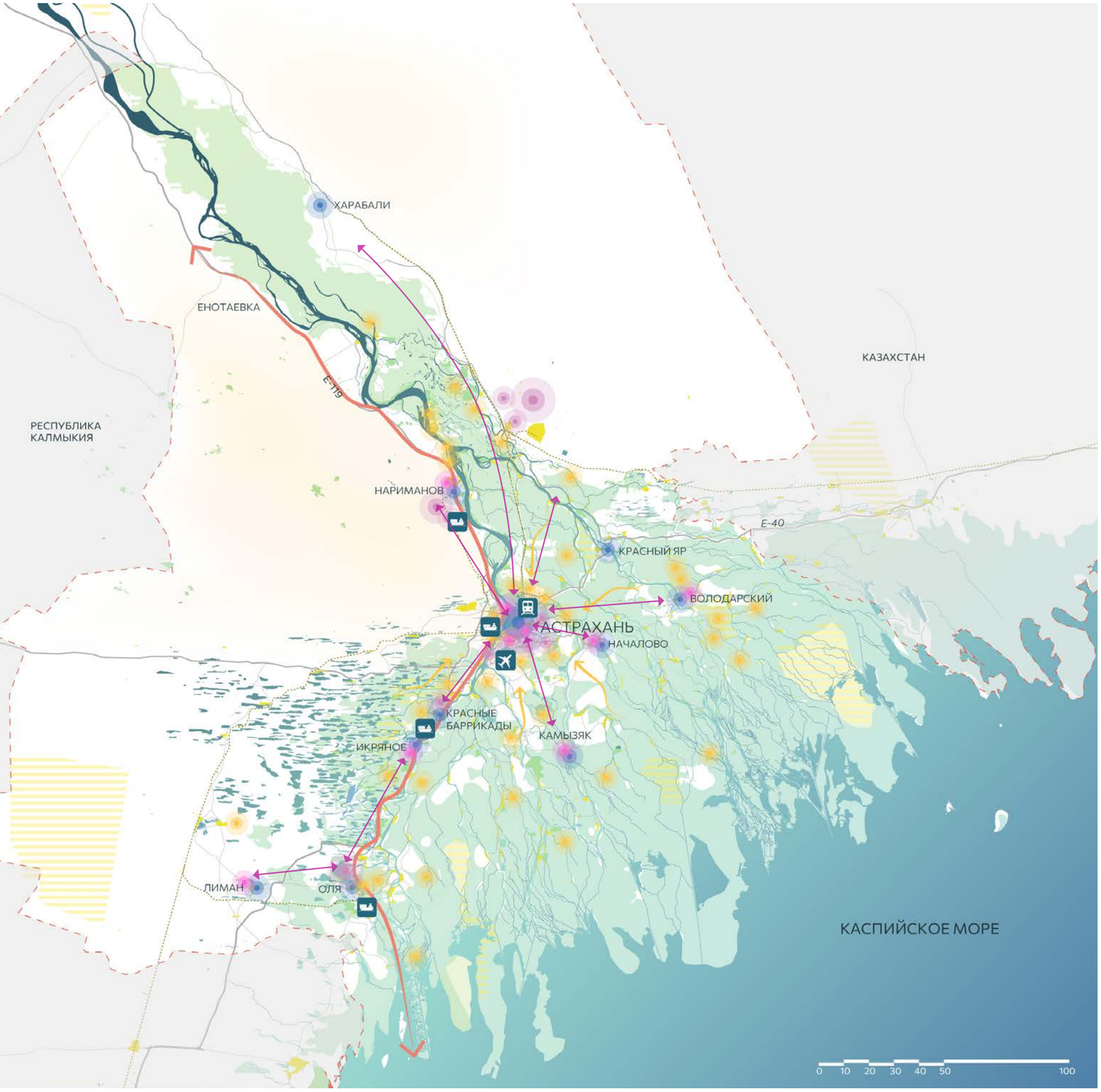
50% of settlements have no access to drinking water, and 19% have no access to water at all.

The regional program «Clean Water» in the Astrakhan region is designed for 2019-2024: it is designed to increase the safety of drinking water for residents connected to the central water supply, from 78% to 88% (2.7 billion rubles, including 1.7 billion rubles). - federal budget funds).

Along with this, some opportunities are underutilized, such as the use of biogas in agricultural centers or solar / wind mini-grids to maintain and supply decentralized facilities and communities.

Provision with a centralized system of engineering support in the city of Astrakhan,%





KEY PROBLEMS OF THE SOCIO-ECONOMIC AND TERRITORIAL DEVELOPMENT OF THE AGGLOMERATION WITH THE DISPLAY OF INTRA-AGGLOMERATION LINKS

PRECONDITIONS FOR THE DEVELOPMENT OF THE POLES

The main socio-cultural objects (education and scientific activity, sports, culture) are located in the regional centers - Narimanov, Volodarsky, Nachalovo, Kamyzyak, Liman. There are practically no connections between them, but they all depend on and obey the central facilities in Astrakhan.

Zones of natural value are not equipped with a sufficient number of research centers and scientific stations; transport links between settlements within the agglomeration function poorly.

Transport load on Astrakhan. The concentration of all logistics links around Astrakhan creates a lot of pressure on the city.

Large logistics centers and shipyards are located along the planned North-South transport corridor. These logistics centers have the preconditions for further growth, the trade route makes it possible to link them into a single network of international importance.

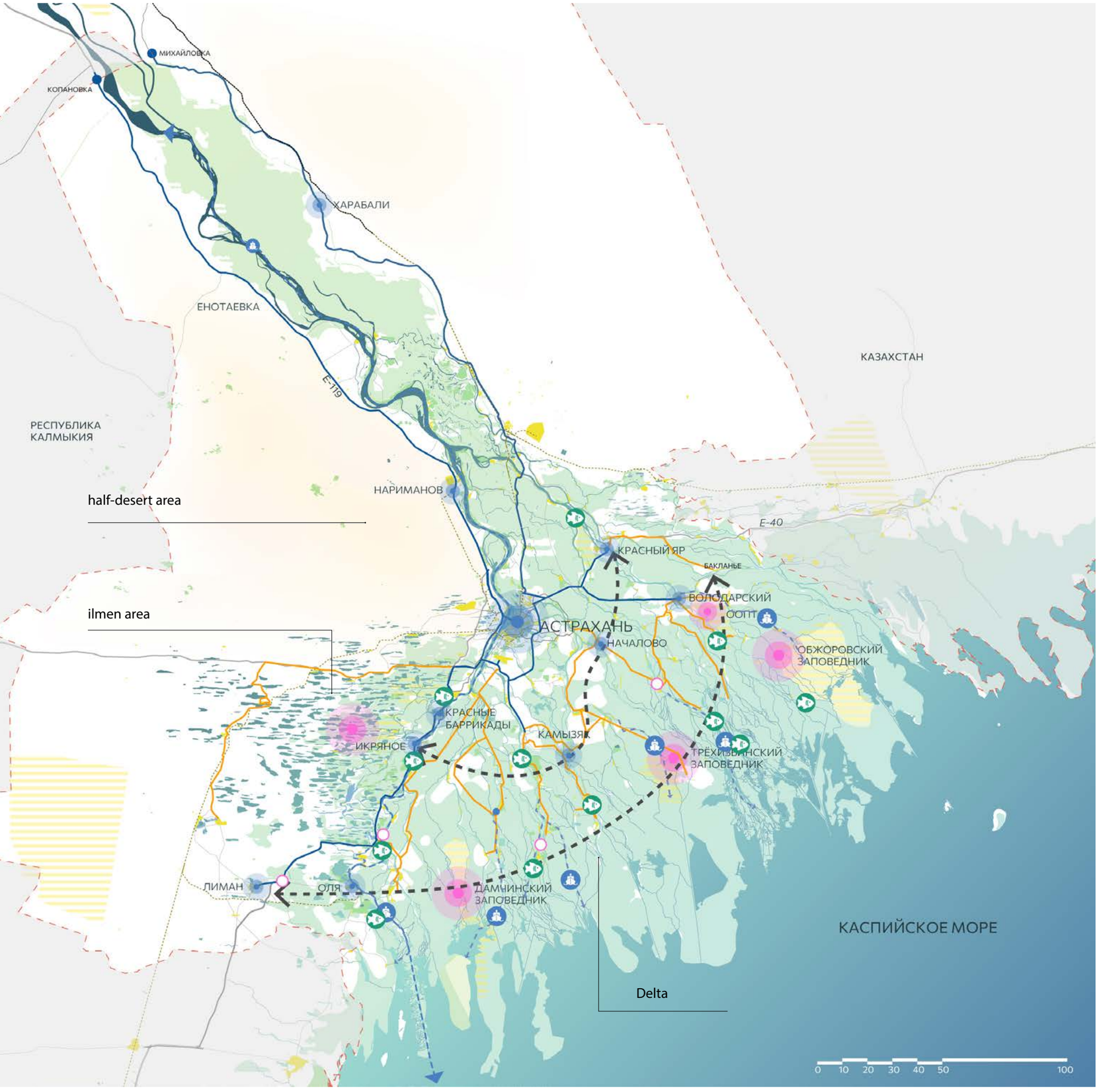
Agricultural and fishing centers are far from infrastructure. This makes it difficult and expensive to provide electricity and running water to households.

- аэропорт
- железнодорожный вокзал
- порт, судостроительный и ремонтный завод
- города внутри агломерации, районные центры
- социокультурные объекты (образование, спорт, культура)
- сельское хозяйство и рыболовство
- транспортный коридор «Север - Юг»

A DIAGRAM OF THE AGGLOMERATION TERRITORY WITH THE DISPLAY OF THE MAIN CITY-FORMING FACTORS, INCL. TRANSPORT, WATER AND NATURAL RECREATIONAL FRAMEWORKS AND INTRA-AGGLOMERATION CONNECTIONS

PRECONDITIONS FOR THE DEVELOPMENT OF THE POLES

- **Bad logistics. Lack of transport links between settlements within the agglomeration, in particular in the Volga delta.**
- **It is necessary to change the system of public transport and highways in order to experience the situation when all communications pass through the center - Astrakhan. This requires the construction of new bridges and roads.**
-
- **The Astrakhan region has a unique ecosystem. There are semi-deserts, valuable hillock-ilmen zones, a river delta with many branches and flooded areas - habitats for birds and fish, gallery forests and lotus valleys, biosphere reserves. However, this area is subject to strong anthropogenic impact and suffers from natural disasters.**
-
- **Ecological problems of the delta:**
- **drop in the level of the Volga and the Caspian Sea**
- **Forest fires**
- **reduction of vegetation**
- **decline in biodiversity**



cities within the agglomeration, regional centers

nature reserves and protected areas

directions of bus routes from the bus station

directions of bus routes from the airport

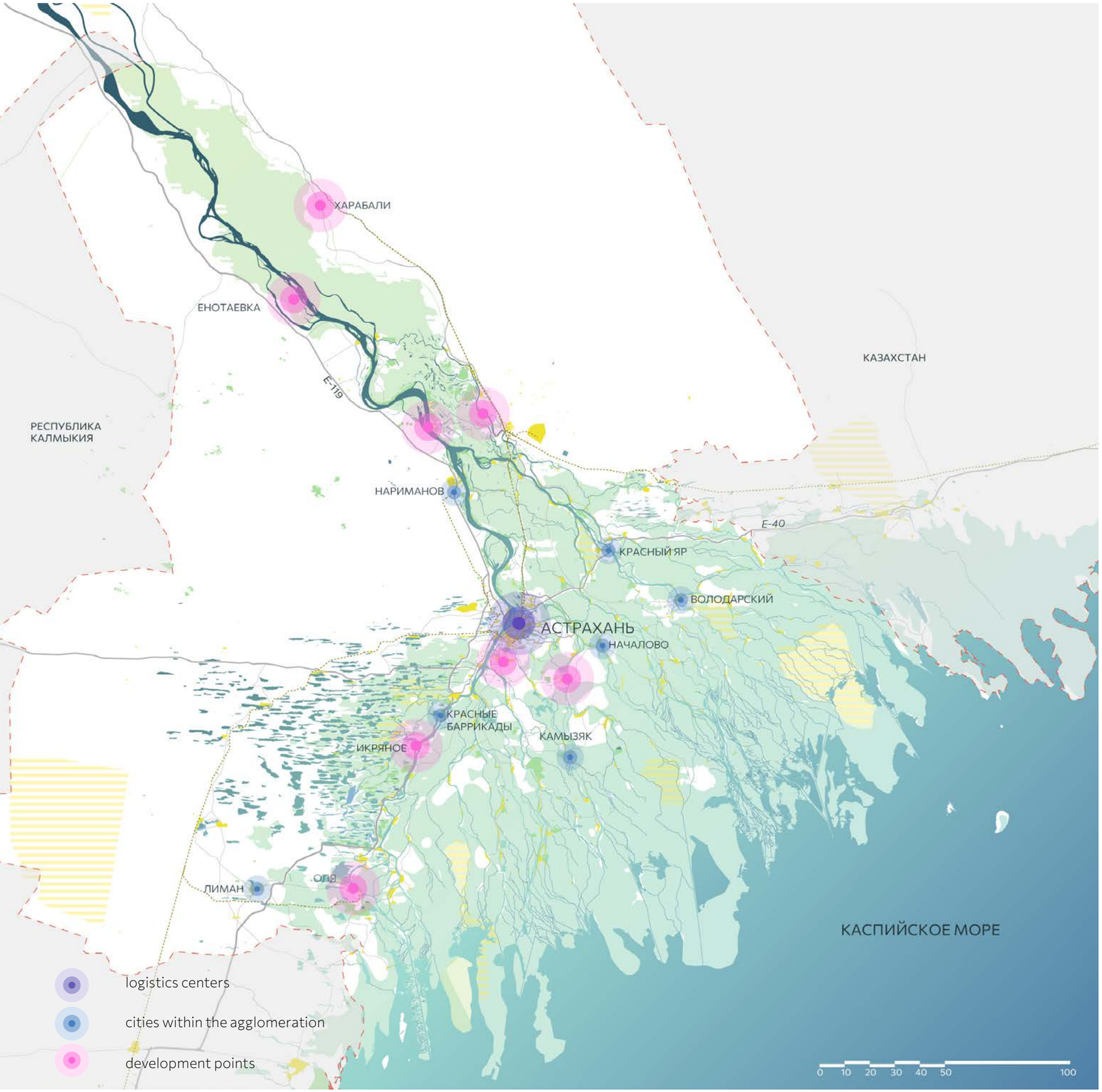
water routes

lack of comfortable transport links

fishing spots

water transport

lotus plantations



RESULTS OF THE ANALYSIS OF KEY PROBLEMS OF SOCIO-ECONOMIC AND SPATIAL DEVELOPMENT

PRECONDITIONS FOR THE DEVELOPMENT OF THE POLES OF THE DELTA. REGIONAL CENTERS AND MO

The main directions and key tasks of the spatial development of municipalities that make up the agglomeration

SOUTH ASTRAKHAN CENTER

A logistics center inside Astrakhan, which unites the airport, passenger terminal and cargo port of Astrakhan. All this will be connected into a single system and brought to the outskirts of the city to relieve the historical center.

Polyus will develop through the creation of a large logistics center here.

Transport (cargo) communication will be carried out along the transport corridor «North - South»

OLYA

a village in the Limansky district of the Astrakhan region, the administrative center of the Olin village council. The village is located on the shores of Bakhtemir, in close proximity to the Caspian Sea and about 120 kilometers southwest of Astrakhan. The village has the seaport Olya.

Polyus will develop through the creation of a large logistics center here.

Transport accessibility will be provided by shuttles and seasonal and regional buses. Transport (cargo) communication will be carried out along the transport corridor «North - South»

PRECONDITIONS FOR THE DEVELOPMENT OF THE POLES OF THE DELTA. REGIONAL CENTERS AND MO

The main directions and key tasks of the spatial development of municipalities that make up the agglomeration

IKRYANOYE

A village in the Astrakhan region of Russia, the administrative center of the Ikryaninsky district and the Ikryaninsky village council. It is located 40 kilometers below Astrakhan, in the Volga Delta on the bank of Bakhtemir, on both sides of the P215 highway. The Golden Horde settlement of the XIV century is located near the village on the Berovsky hill.

Pole will develop through fishing and tourism services. Recreation centers and a special zone for sustainable fishing will be created here. In Ikryan, on the basis of the existing fisheries museum, an educational and research laboratory will be established to study sustainable fisheries.

Transport accessibility will be provided by shuttles and seasonal buses.

FUNTOVO

A village in the Privolzhsky district of the Astrakhan region, the administrative center of the Pound village council. The distance to Astrakhan is 13 kilometers, to the regional center of the village of Nachalova - 14 kilometers.

The Pole will develop at the expense of agriculture. This is a large farming center with a developed tourist infrastructure (sale of local products, master classes and excursions, recreation centers) and provides itself with energy from renewable sources and biogas production, as well as the use of a special irrigation system «drop by drop»

Transport accessibility will be provided by shuttles and seasonal buses.

ENOTAEVKA

A village in the Astrakhan region, the administrative center of the Enotaevsky district and the municipal formation «Selo Enotaevka». The oldest Russian settlement in the Astrakhan region. Its construction began by order of Empress Elizabeth Petrovna.

Pole will develop through fishing and tourism services. Recreation centers and a special zone for sustainable fishing will be created here.

Transport accessibility will be provided by shuttles and seasonal buses.

DOSANG

A settlement in the Krasnoyarsk district of the Astrakhan region, is a part of the Akhtuba village council.

Polyus will develop through agriculture and the introduction of renewable energy sources, biogas plants, as well as through the development of tourism services. A center for environmental education will appear here, studying the dune sands to the north of the village and telling visitors about this phenomenon.
Also, the Pole of the Delta is already attracting entomologists, and in the future, special objects will be created for them.

Transport accessibility will be provided by shuttles and seasonal buses.

HARABALY

A city in the Astrakhan region, the administrative center of the Kharabalinsky district and the municipal formation «City of Kharabali». The city is located on the left bank of the Ashuluk River, 142 km north of Astrakhan.

Polyus will develop through the creation of a research center here and the development of tourist services. The main role is assigned to the conservation and study of the golden sands ecosystem.
The tourist route along the Volga floodplain and the desert zone will begin here.

Transport accessibility will be provided by shuttles and seasonal buses.

ZAM'YANY

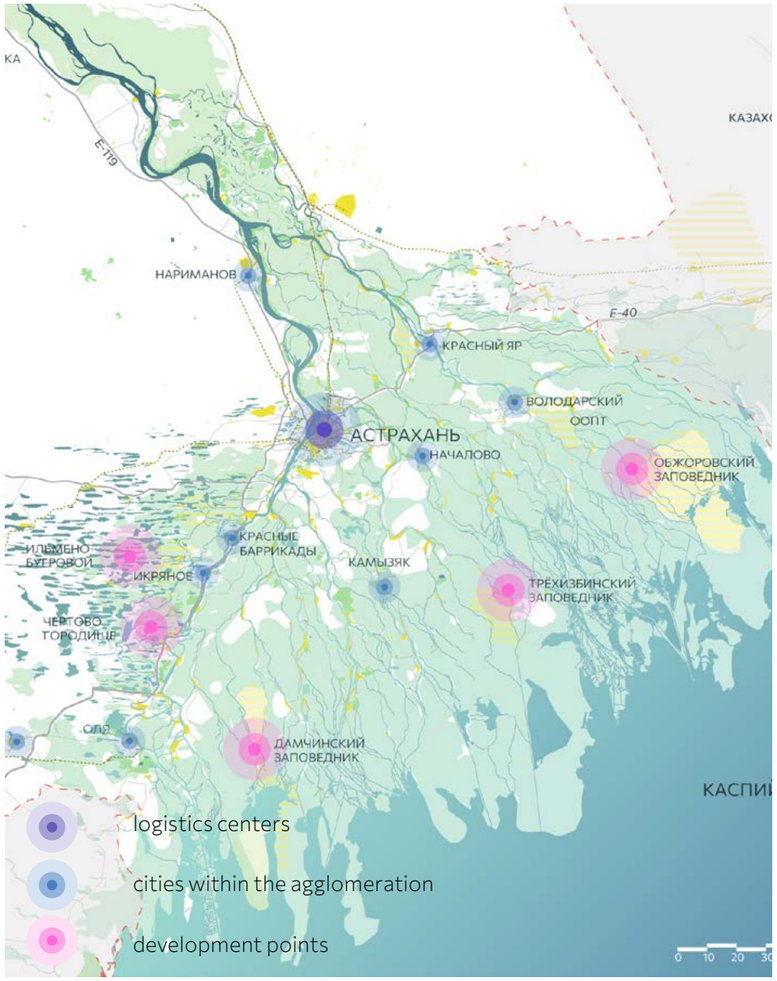
A village in the Enotaevsky district of the Astrakhan region, the administrative center of the Zamyansky village council. By road, the distance to the regional center of the city of Astrakhan is 67 km, to the regional center of the village of Enotaevka - 75 km, to the nearest town of Narimanov - 24 km. The Caspian federal highway passes near the village.

Pole will develop through fishing and tourism services. Recreation centers and a special zone for sustainable fishing will be created here.

Transport accessibility will be provided by shuttles and seasonal buses.

PRECONDITIONS FOR THE DEVELOPMENT OF THE POLES OF THE DELTA. REGIONAL CENTERS AND MO

The main directions and key tasks of the spatial development of municipalities that make up the agglomeration



TREKHIZBINSKY RESERVE

A site of the Astrakhan Biosphere Reserve, located in the central part of the Delta.

The Pole will develop through the creation of a research center here and the development of tourist services, where the main role is assigned to the preservation and study of the ecosystem of the Volga Delta with its branches, gallery forests and flooded fields - resting places for migratory birds.
A tourist route through protected biotopes with gallery forests and reed supports will begin here.
Delta monitoring stations will be organized on the basis of the research center.

Transport accessibility will be provided by shuttles and seasonal buses.

ILMENO-BUGROVY RESERVE

Ilmenno-Bugrovy Nature Reserve is located on the territory of Ikryaninsky and Narimanovsky districts of the Astrakhan region and is part of the Western Ilmenno-Bugrovy region.

The Pole will develop through the creation of a research center here and the development of tourist services, where the main role is assigned to the study of the Baer Hills and Ilmenei, as well as the semi-desert zone.
Regional hiking trails across the hills and desert will begin here.
Scientific activities will be accompanied by open events for tourists and local residents.
Delta monitoring stations will be organized on the basis of the research center.

Transport accessibility will be provided by shuttles and seasonal buses.

CHERTOVO SETTLEMENT - OOPT

Bugor Bera «Devil's settlement», located on the right bank of the Bakhtemir River, 2 km from the Astrakhan-Ikryanoye highway, 12 km from the Ikryanoye regional center. The Golden Horde settlement of the XIV century was located here.

Polyus will develop through agriculture and the introduction of renewable energy sources, biogas plants, as well as through the development of tourism services. A center for environmental education will appear here, telling and studying the Ber and Ilmeni hillocks.
The tourist route along the Berovsky hills and Ilmeny will begin here.
Delta monitoring stations will be organized on the basis of the research center.

Transport accessibility will be provided by shuttles and seasonal buses.

OBZHOROVSKY RESERVE

A site of the Astrakhan Biosphere Reserve located in the eastern part of the Delta.

Polyus will develop through the creation of a research center here and the development of tourist services, where the main role is assigned to the preservation and study of the Volga Delta ecosystem.
A tourist route through the floodplains - habitats of migratory birds, will begin here.
Delta monitoring stations will be organized on the basis of the research center.

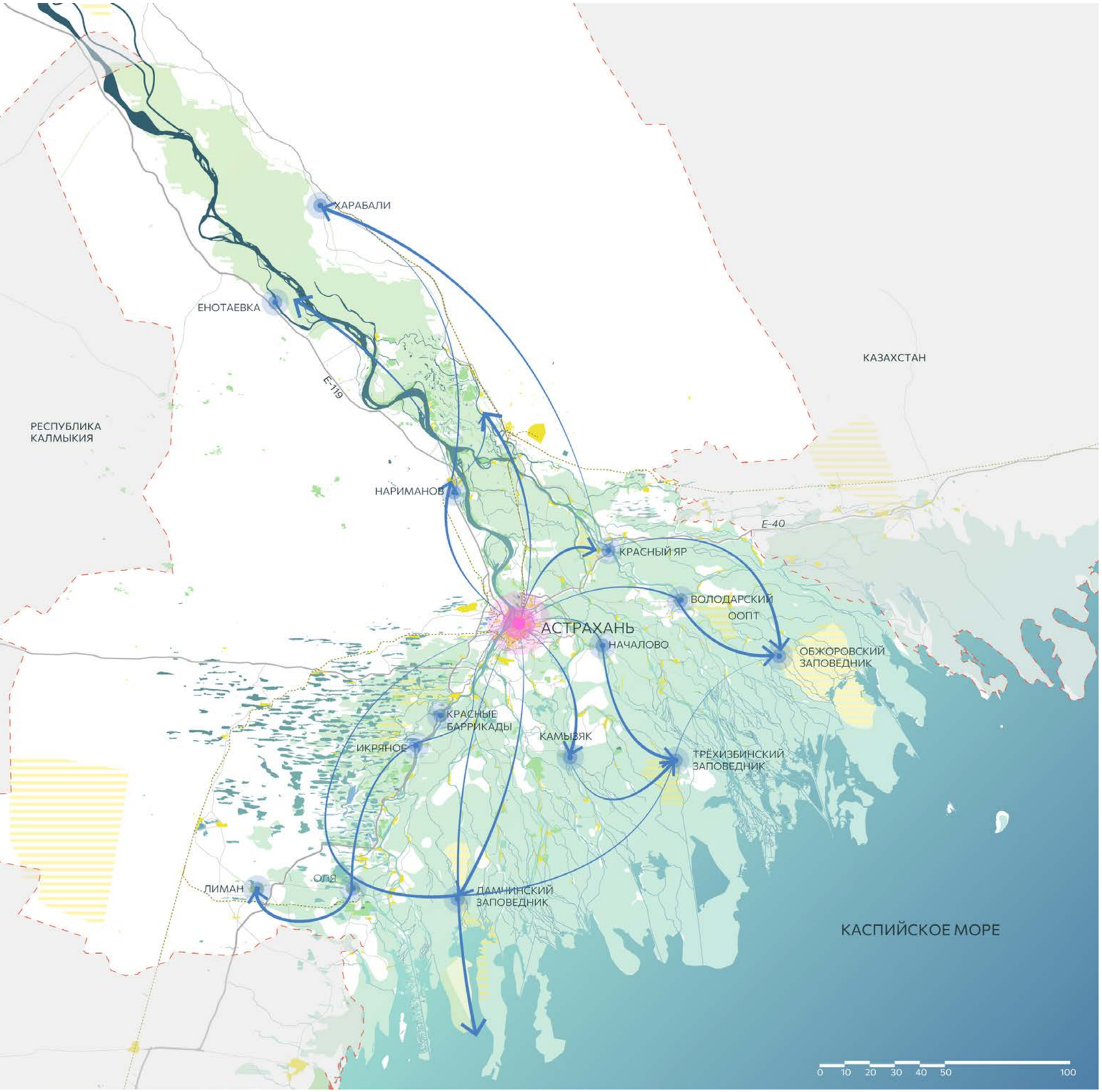
Transport accessibility will be provided by shuttles and seasonal buses.

DAMCHIK RESERVE

A site of the Astrakhan Biosphere Reserve, located in the western part of the Delta.

Polyus will develop through the creation of a research center here and the development of tourist services, where the main role is assigned to the preservation and study of the Volga Delta ecosystem. Scientific activities will be accompanied by open events for tourists and local residents.
The tourist route along the lotus canals will begin here.
Delta monitoring stations will be organized on the basis of the research center.

Transport accessibility will be provided by shuttles and seasonal buses.



PROMISING DIRECTIONS OF DEVELOPMENT OF ASTRAKHAN AS A CENTER AGGLOMERATION DEVELOPMENT

DEVELOPMENT OF ASTRAKHAN AS AN AGGLOMERATION CENTER

Consolidated problems of the spatial development of the municipal district «City of Astrakhan» as a center of agglomeration:

1. Transport load on Astrakhan. The concentration of all logistic connections around Astrakhan, as well as the low municipal connectivity, creates a lot of pressure on the city

2. Environmental sensitivities that citizens face on a daily basis (air pollution, sandstorms, insect damage, etc.)

3. Insufficient share of cultural and educational tourism

4. Centralization of infrastructure systems (water supply, water treatment) around and inside Astrakhan

5. Ineffective use of the potential for development in the city center for the creation of objects of regional, federal, international significance

Астрахань — главный центр компетенции Каспийской Дельты

Astrakhan will become a Delta Competence Center with two major new infrastructure facilities: the Caspian Delta Museum and the Caspian Delta Exploration Center. They will support the development of ecotourism in the Delta, as well as innovation and applied technologies in renewable energy, sustainable agriculture and fisheries.

Astrakhan, as the center of the agglomeration, and the cultural and research facilities located in it will be the coordinators of all research and educational events taking place at the poles of the Delta.

Astrakhan will also become a logistics center. A shuttle and seasonal bus system will be created to the Delta poles with three major bus stations (train station, tourist area and airport) and river transport (see page for transport infrastructure). But at the same time, the historical center of Astrakhan will be unloaded from public and freight transport due to the fact that a new hub (South Astrakhan center) will be created and a new system of intracity public transport will be developed.

DELTA INFRASTRUCTURE PRINCIPLES

MAJOR INFRASTRUCTURE

Large infrastructure represents the development of major economic and logistics centers, as well as the implementation of long-term strategies to improve urban infrastructure, the creation of research and museum centers and the conclusion of important Caspian commonwealths.

The development of large infrastructure will create the basis for the sustainability and resilience of the region and enable flexible solutions.

AGILE INFRASTRUCTURE

Flexible infrastructure is a decentralized solution that can be adjusted to a specific territory and needs. Small and large infrastructure solutions are interconnected, for example, monitoring stations are supervised by a large research center.

These include renewable energy sources, environmental education centers, monitoring stations, ecosystem restoration strategies and local transport links.

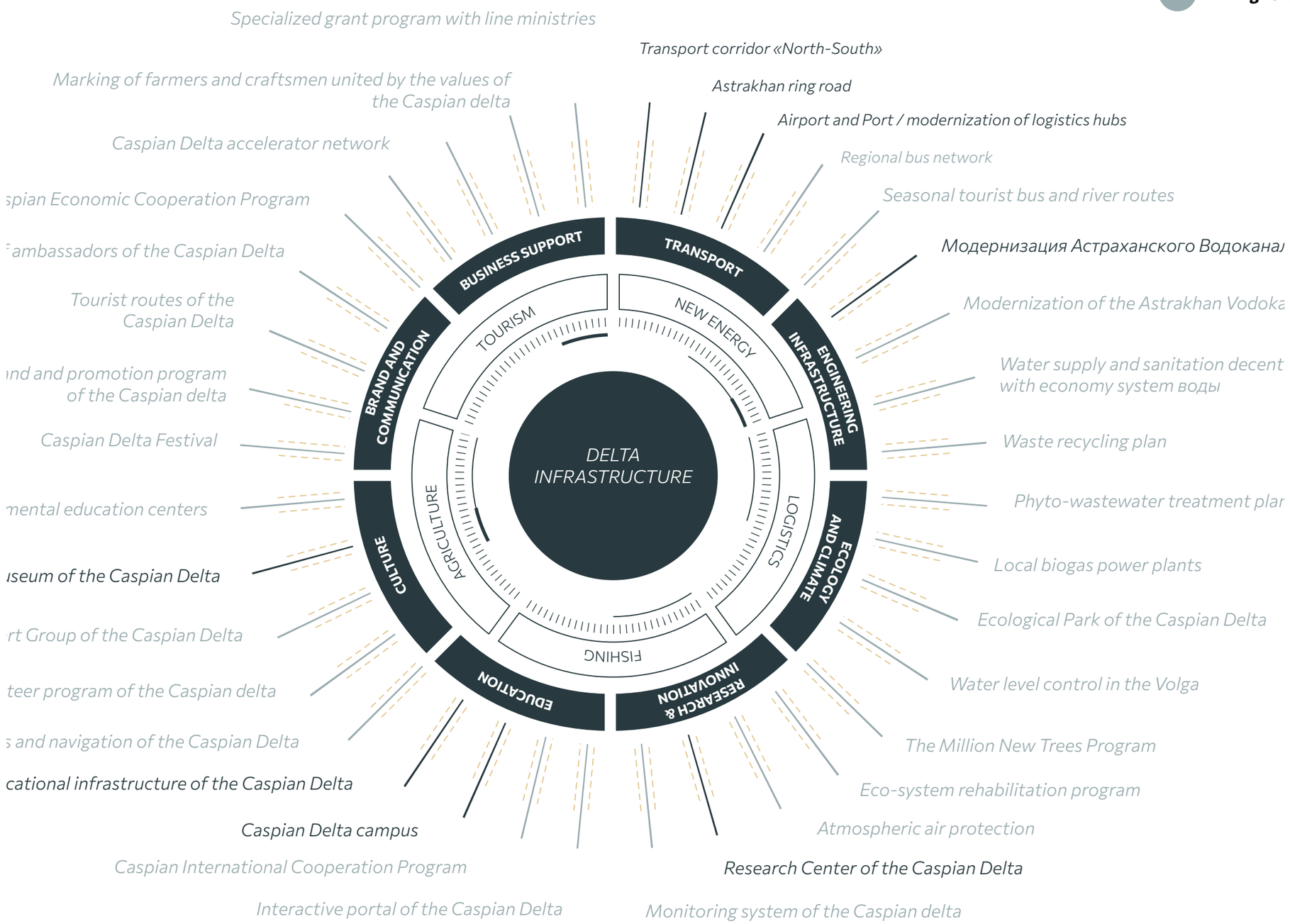
CONCEPT

DELTA INFRASTRUCTURE PRINCIPLE

35 proposed infrastructure projects, about 8 infrastructure support units that will support the development of the regional economy. It is a hybrid approach that combines large infrastructure projects with co-financing from federal funds and private investment, as well as flexible, decentralized

Major infrastructure

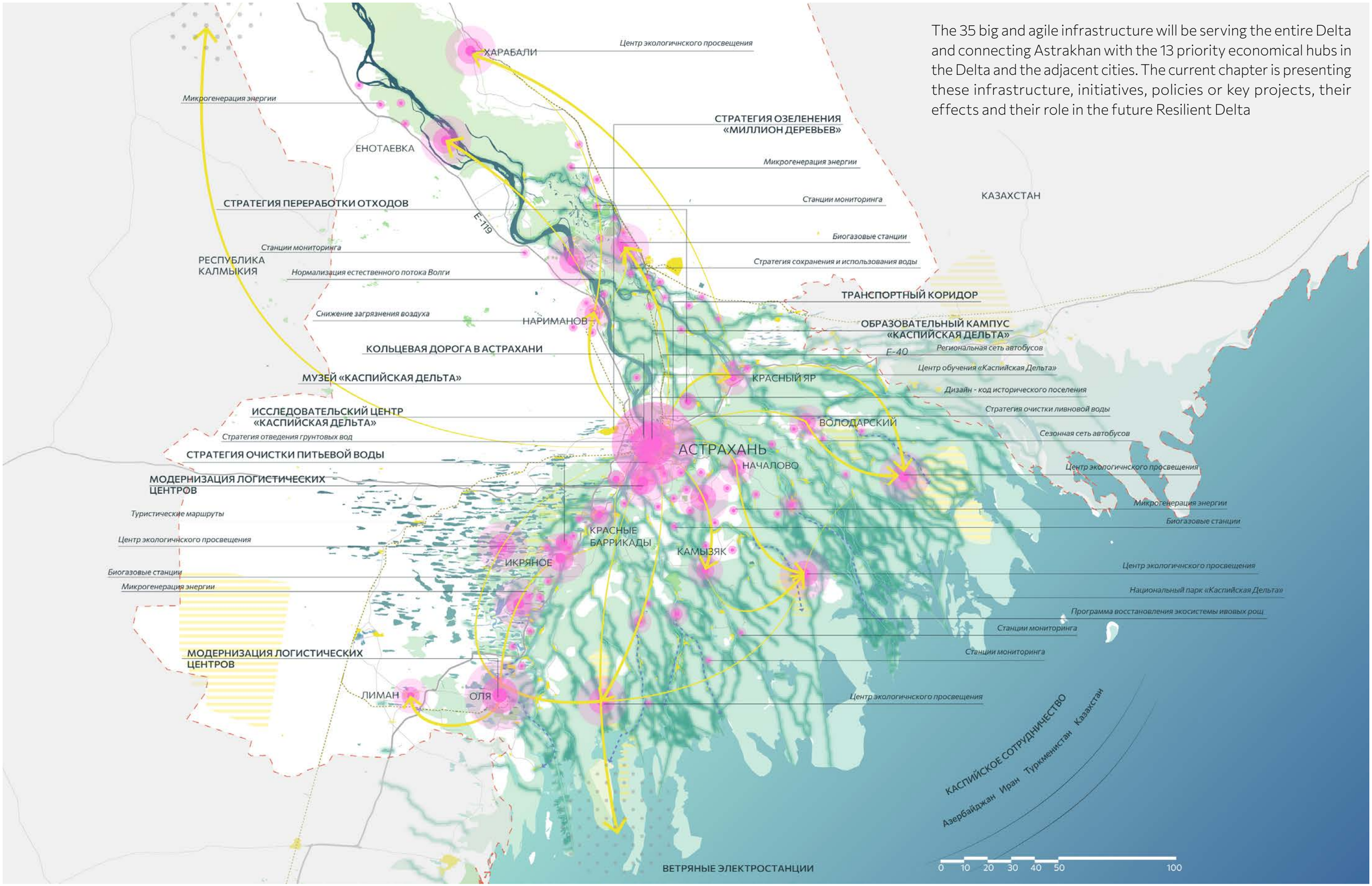
Agile infrastructure



CONCEPT

DELTA INFRASTRUCTURE

The 35 big and agile infrastructure will be serving the entire Delta and connecting Astrakhan with the 13 priority economical hubs in the Delta and the adjacent cities. The current chapter is presenting these infrastructure, initiatives, policies or key projects, their effects and their role in the future Resilient Delta



MAIN CHARACTERISTICS AND INDICATORS FOR SPATIAL DEVELOPMENT SCENARIOS

INDICATORS CHARACTERIZING THE DEVELOPMENT TASKS OF THE AGGLOMERATION AND THE

The strategy focuses on the «Delta economy», the value of which can be obtained locally (increasing the share of the tax on total revenue in budget revenues) through the main infrastructure to encourage applied research and innovation (research center and campus of the Caspian Delta), which will increase the number of filed patent applications and improve the efficiency of agricultural and fisheries production and logistics.

A green belt with agricultural function around Astrakhan and a local accelerator in the municipality will stimulate further agricultural production.

The “river arms” strategy will add more redevelopment opportunities in the periphery in addition to the center in order to meet the planned construction volumes.

Finally, “green” infrastructure radically improves the quality of the urban environment: there are ten times more green spaces in the center of Astrakhan, and the speed of transit and traffic in the center has been reduced to make pedestrians and pedestrians more priority.

INDICATOR NAME	CURRENT RATE	SIR 2035		OPTIMIZATION SCENARIO			АКСЕЛЕРАЦИОННЫЙ СЦЕНАРИЙ		
		2024	2035	2024	2027	2032	2024	2027	2032
AVERAGE GRP GROWTH RATE OF CO,% PER YEAR		2, 75	5, 56	1,2	3,3	2,9	5,8	6,3	4
SHARE OF TAX ON TOTAL INCOME IN BUDGET REVENUES OF THE ASTRAKHAN REGION,%	2	–	–	5	7	10	5	10	15
SPECIFIC VOLUMES OF HOUSING CONSTRUCTION IN THE CITY OF ASTRAKHAN, M2 / PERSON. IN YEAR	240	–	–	300	500	500	500	500	600
AVERAGE URBAN ENVIRONMENT QUALITY INDEX FOR THE AGGLOMERATION TERRITORY	161	–	–	166	172	181	170	181	185
VOLUME OF PRODUCTION OF FISH RAISED IN AQUACULTURE, THOUSAND TONS	20	23	25	22	27	35	22	35	40
THE SHARE OF VEGETABLE AND POTATO PRODUCTS UNDERGOING DEEP PROCESSING IN THE AGGLOMERATION,% OF THE TOTAL VALUE OF THESE PRODUCTS PRODUCED IN THE AGGLOMERATION	5	–	–	5	7	10	5	10	15
NUMBER OF FILED PATENT APPLICATIONS, UNITS	104	–	–	150	175	200	200	400	600
INCLUDING WITH BUSINESS	7	–	–	10			10	25	50

AGGLOMERATION SPATIAL DEVELOPMENT ACTIVITIES

STAGES OF IMPLEMENTATION OF INFRASTRUCTURE PROJECTS

	Projects	Description	Partners	Fast changes	Stage 1 (2021-2024)	Stage 2 (2024-2027)	Stage 3 (2027-2032)
#1	Transport corridor «North-South»	The transport corridor is designed to provide transport links between the Baltic States and India through Iran (7.2 thousand kilometers). The main advantages: a two-fold or more reduction in the distance of transportation, as well as a decrease in the cost of transporting containers in comparison with the cost of transportation by sea.	Министерство transport РФ Министерство transport и дорожной инфраструктуры Астраханской области Правительство Астраханской области		●		
#2	Astrakhan ring road	The new ring road will form a green ring around Astrakhan, reduce the traffic load on the historical center and increase the transport accessibility of the development centers of Astrakhan, which will improve the connectivity of the city center and periphery	Министерство transport РФ Министерство transport и дорожной инфраструктуры Астраханской области Правительство Астраханской области		●		●
#3	Airport and Port / modernization of logistics hubs	The emergence of new logistics centers - an airport, a cargo and passenger port, will improve communication between Astrakhan and other cities and will contribute to the socio-economic development of the region. A network of tourist shuttles will be launched from the Airport, connecting the airport and the tourist center of the city, which will increase the comfort of tourists in the city.	Министерство transport РФ Министерство transport и дорожной инфраструктуры Астраханской области ОАО «РЖД»		●	●	●
#4	Regional bus network	The updated network of suburban buses with modern rolling stock and optimal timetables will connect settlements with the regional center and with each other through two passenger hubs - Privokzalnaya Square and the Airport. Routes to the most populated areas of the Astrakhan region will be sent from the Airport.	Министерство transport РФ Министерство transport и дорожной инфраструктуры Астраханской области		●	●	
#5	Seasonal tourist bus and river routes	Hard-to-reach places in the Delta, including nature reserves and recreation centers, will be provided with river passenger traffic on Meteor-class vessels. Together with the bus service, they will create multimodal routes that will increase the comfort of tourists in the city.	Министерство transport РФ Министерство transport и дорожной инфраструктуры Астраханской области Министерство культуры и туризма Астраханской области		●		
#6	Modernization of the Astrakhan Vodokanal	The project provides for the reconstruction of the Astrakhan water treatment plant, which will improve the central water supply system. Such renovation should be carried out in parallel with an intensive environmental education program that will disseminate knowledge about the need to save and use water efficiently.	Муниципальное унитарное предприятие г. Астрахани «Астрводоканал» Министерство строительства и жилищно-коммунального хозяйства Астраханской области		●		
#7	Water supply and sanitation decentralization plan with economy system	The introduction of a decentralized water supply and sanitation system implies the creation of stations for the production and consumption of water near settlements or residential buildings, which reduces the cost of infrastructure for laying long underground water pipelines.	Муниципальное унитарное предприятие г. Астрахани «Астрводоканал» Министерство строительства и жилищно-коммунального хозяйства Астраханской области		●	●	
#8	Waste recycling plan	Biogas plants enable efficient utilization of organic waste and benefit from it. The introduction of biogas plants will solve both environmental and energy problems	Министерство строительства и жилищно-коммунального хозяйства Астраханской области Администрация города Астрахани Региональный оператор в сфере обраще-		●	●	
#9	Phyto-wastewater treatment plan	The project involves the creation of hydro-botanical sites in addition to the existing system of wastewater treatment plants in Astrakhan and the settlements of the Astrakhan region. Such sites will allow the treatment of urban and agricultural wastewater to avoid pollution of rivers and wastewater.	Министерство строительства и жилищно-коммунального хозяйства Астраханской области Муниципальное унитарное предприятие г. Астрахани «Астрводоканал»		●	●	
#10	Mini power plant (solar panels)	The introduction of local solar panels will be especially beneficial for the agricultural sector, where local farmers could use local power plants if located remotely from large engineering networks.	Администрация города Астрахани Астраханский ЦНТИ – филиал ФГБУ «РЭА» Минэнерго России Частные компании		●	●	

AGGLOMERATION SPATIAL DEVELOPMENT ACTIVITIES

STAGES OF IMPLEMENTATION OF INFRASTRUCTURE PROJECTS

	Projects	Description	Partners	Fast changes	Stage 1 (2021-2024)	Stage 2 (2024-2027)	Stage 3 (2027-2032)
#11	Local biogas power plants	The introduction of local biogas stations will solve the problem of Russian agricultural enterprises for waste disposal and will make it possible to efficiently dispose of organic waste and derive benefit from it. The introduction of biogas plants will solve both environmental and energy problems, such as soil acidification, alienation of agricultural land, groundwater pollution and greenhouse gas emissions.	Администрация города Астрахани Астраханский ЦНТИ – филиал ФГБУ «РЭА» Минэнерго России Частные компании		●	●	
#12	Ecological Park of the Caspian Delta	The creation of a national park in the Astrakhan region will contribute to the protection and restoration of ecosystems in the Volga delta by establishing a special protected status and designating the international significance of the territory. Ecological trails will be launched on the territory of the park and special navigation will be developed, which will attract an additional tourist flow to the region.	Министерство природных ресурсов и экологии Российской Федерации. Астраханский государственный биосферный заповедник Астраханский университет	●	●		
#13	Water level control in the Volga	The water level management plan is able to solve the problem of water discharge from the cascades of reservoirs, which disrupt the natural circulation of water in the Volga. The plan involves the development of rules for water use in accordance with international standards and the development of a system for the conservation and accumulation of water for agricultural purposes.	Отдел государственного контроля, надзора, охраны ВБР и среды обитания по Астраханской области Служба природопользования и охраны окружающей среды Астраханской области		●		
#14	The Million New Trees Program	The implementation of the federal program for planting a million trees with the involvement of volunteer organizations and private companies can solve several environmental problems of the region at once - preventing sand storms, reducing carbon emissions, lowering river temperatures and preserving aquatic biodiversity.	Министерство природных ресурсов и экологии Российской Федерации. Администрация города Астрахани Администрации муниципальных районов Астраханской области	●	●	●	●
#15	Eco-system rehabilitation program	The ecosystems of the Caspian delta are unique in nature and are comparable to the mangroves and forests of the Amazon, but they need protection and rehabilitation. For this, a set of measures has been developed to support and restore ecosystems.	Министерство природных ресурсов и экологии Российской Федерации Правительство Астраханской области Служба природопользования и охраны окружающей среды Астраханской области	●	●	●	
#16	Atmospheric air protection	A set of measures for the protection of atmospheric air in the region involves reducing the emission of harmful substances into the atmosphere through open monitoring of industrial enterprises and the creation of green buffer zones around them. In the long term, these measures will help preserve the health and well-being of citizens.	Правительство Астраханской области Администрация города Астрахани Администрации муниципальных районов Астраханской области	●	●		
#17	Research Center of the Caspian Delta	The new research center will become the main headquarters for the study of the Volga delta and its changes, a major scientific, cultural and educational platform in the region. The activities of the center will be aimed at studying and preserving the biodiversity of the ecosystems of the Caspian Delta, ecological monitoring of the environment and cooperation with international scientific centers.	Астраханский государственный биосферный заповедник Астраханский университет Астраханское отделение РГО	●		●	
#18	Monitoring system of the Caspian delta	Local monitoring centers will be distributed throughout the region and will be subordinate to the main research center. Environmental monitoring involves monitoring the quality of water, air and soil in the region using automated and manual stations.	Межрегиональное управление Росприроднадзора по Астраханской и Волгоградской областям Министерство государственного управления, информационных технологий и связи Астраханской области		●	●	
#19	Interactive portal of the Caspian delta	The portal will be an information system in the field of environmental protection and nature management, which will be created with the aim of publishing information on environmental monitoring, the state of the region's environment, publishing popular science materials, news and announcements of environmental events.	Министерство культуры и туризма Астраханской области Туристский информационный centera Астрахани Астраханский государственный	●	●		
#20	Caspian International Cooperation Program дельты	The launch of a program of international cooperation between the Caspian countries in the field of economics, ecology, science and education will contribute to solving socio-economic problems and problems of climate change within the boundaries of the natural zone of the Caspian.	Агентство международных связей Астраханской области Астраханский университет Программа Erasmus+	●	●		

AGGLOMERATION SPATIAL DEVELOPMENT ACTIVITIES

STAGES OF IMPLEMENTATION OF INFRASTRUCTURE PROJECTS

	Projects	Description	Partners	Fast changes	Stage 1 (2021-2024)	Stage 2 (2024-2027)	Stage 3 (2027-2032)
#21	Caspian delta campus	The university campus will become the leading educational and research center of the Caspian region, which will unite the advanced faculties and research centers of higher educational institutions of the Astrakhan and Caspian regions.	Астраханский государственный университет Астраханский государственный технический университет	●	●	●	●
#22	Educational infrastructure of the Caspian delta	Образовательная инфраструктура в регионе будет представлена широким спектром образовательных программ, активностей и мероприятий на базе университетского Кампуса для жителей Астрахани и в Centerax интерпретации для жителей Астраханской области. Планируемые образовательные программы будут способствовать самореализации молодых и высококвалифицированных специалистов.	Министерство образования и науки Астраханской области Правительство Астраханской области Администрация города Астрахани		●	●	
#23	Eco-trails and navigation of the Caspian delta	To get acquainted with the Caspian Delta, eco-educational routes will be developed through the most interesting areas of the region - natural parks and reserves. Thus, townspeople and tourists will be able to learn about the rich natural heritage of the region, the existing natural zones and their differences, the unique flora and fauna of the region.	Астраханский государственный биосферный заповедник Астраханский университет Компания Мобильные ТелеСистемы (МТС)		●		
#24	Volunteer program of the Caspian delta	The volunteer program of the Caspian Delta will be carried out in close collaboration with environmental organizations and environmental movements to study and preserve the Volga River and the ecosystem of the Caspian region.	Астраханское отделение Межрегиональной общественной экологической орhанизации «Зеленое движение России «ЭКА» Астраханский государственный биосферный заповедник	●			
#25	Expert Group of the Caspian Delta	The purpose of creating an expert group is to develop a model for sustainable development of the Caspian Delta in the context of modern economic, political and social changes. It will include representatives of the international and Russian economic, research and environmental communities.	Администрация города Астрахани Астраханский государственный биосферный заповедник Астраханский университет	●			
#26	Museum of the Caspian Delta	The Research Museum for the Study of Climate, Nature, Geography and History of the Caspian Delta will become the largest museum and exhibition space in the region and a leading center for research in the field of natural and exact sciences. The museum will become a point of attraction for residents and tourists of the city, helping them learn more about the unique natural heritage of the region.	Министерство культуры и туризма Астраханской области Туристский информационный centera Астрахани Астраханский университет			●	
#27	Environmental education centers	Interpretation centers are created to disseminate knowledge and information about the unique historical, cultural and natural heritage of the Caspian delta. The centers will be located in the region next to iconic objects and landmarks that reflect the historical, geographic or emotional identity of the region.	Администрация города Астрахани Администрации муниципальных районов Астраханской области Министерство культуры и туризма Служба природопользования и охраны		●	●	
#28	Caspian Delta Festival	The festival will become a large-scale image event designed to reveal the unique tourist and recreational potential of the region and promote the region's brand among the Russian and international communities. The festival program will include significant events reflecting the cultural traditions of residents of Astrakhan and the region, as well as residents of the countries of the Caspian region.	Администрация города Астрахани Министерство культуры и туризма Астраханской области Региональные культурные учреждения		●		
#29	Recognizable brand and promotion program of the Caspian delta	The creation of a single territorial brand of the Caspian Delta region will increase the attractiveness of the region in the economic, political and tourist arena, which will attract additional flows of tourists, new investment projects and expand the region's foreign economic relations.	Администрация города Астрахани Министерство культуры и туризма Астраханской области Брендинговые и коммуникационные агентства	●	●		
#30	Tourist routes of the Caspian delta	The development of new tourist routes in the Caspian delta region will reveal the natural and recreational potential of the region, acquaint Russian and foreign tourists with the unique natural and historical heritage of the territory. Collaboration with leading telecommunications companies will make it possible to develop interactive excursions that are relevant and in demand for modern tourists.	Министерство культуры и туризма Астраханской области Туристский информационный center Астрахани Региональные туроператоры	●	●		

AGGLOMERATION SPATIAL DEVELOPMENT ACTIVITIES

STAGES OF IMPLEMENTATION OF INFRASTRUCTURE PROJECTS

	Projects	Description	Partners	Fast changes	Stage 1 (2021-2024)	Stage 2 (2024-2027)	Stage 3 (2027-2032)
#31	Community of ambassadors of the Caspian delta	As part of the development of the brand and the program for promoting the Caspian Delta, it is planned to create a community of Delta Ambassadors - media and recognizable indigenous people who could profitably represent the region's brand in the communication field.	Government of the Astrakhan region Ministry of Culture and Tourism of the Astrakhan Region Branding and communication agencies	●			
#32	Caspian Economic Cooperation Program	Economic cooperation between the Caspian countries to address economic and environmental issues within the boundaries of the natural zone of the Caspian will become more possible thanks to the development of transport and logistics ties, the opening of centers and international cooperation programs and a program to promote the region's brand.	Ministry of Economic Development of the Astrakhan Region International Relations Agency of the Astrakhan Region		●		
#33	Caspian delta accelerator network	The Acceleration Center Launch Program will allow local farmers and craftsmen to gain access to business consulting, educational and grant programs. Residents of the region will not have to travel to the administrative center to receive assistance for their entrepreneurial projects; they will be able to receive it on the basis of regional centers of environmental education.	Ministry of Economic Development of the Astrakhan Region Autonomous institution of the Astrakhan region «Astrakhan regional innovation center»		●		
#34	Marking of farmers and craftsmen united by the values of the Caspian delta	On the basis of environmental education centers, a program will be launched to identify and support local entrepreneurs united by common traditions and values of the Caspian delta.	Ministry of Economic Development of the Astrakhan Region Autonomous institution of the Astrakhan region «Astrakhan regional innovation center»	●	●		
#35	Specialized grant program with line ministries	Creation of programs to support local farmers to participate in competitions for entrepreneurial projects and receive grants for the implementation of business projects or ideas. Specialists will provide consulting services on state support and subsidy programs based on environmental education centers.	Ministry of Economic Development of the Astrakhan Region Autonomous institution of the Astrakhan region «Astrakhan regional innovation center»		●		

DELTA INFRASTRUCTURE # 1:

REGIONAL TRANSPORT NETWORK

The priority goal is to develop the connectivity of the road network.

1. Construction of the Northern and Eastern bypasses, as well as the Southern bridge across the Volga in the airport area will create the Outer Ring Road. Its appearance will speed up trips between settlements of the agglomeration by 20-40 minutes, save Astrakhan from transit traffic, reducing environmental costs and the number of serious accidents.

2. Reconstruction of the main road to the border with Kazakhstan will increase the availability of settlements in the Krasnoyarsk region and international communication.

3. The construction of six new bridges across the Delta rivers will improve the mobility of thousands of residents in the region, increase the tourist attraction of the area and contribute to the development of economic activity in the Delta.

EFFECTS:

improving the comfort of the urban environment

increasing the comfort of tourists' stay in the region, forming an attractive destination brand

increasing mobility and economic activity of the population

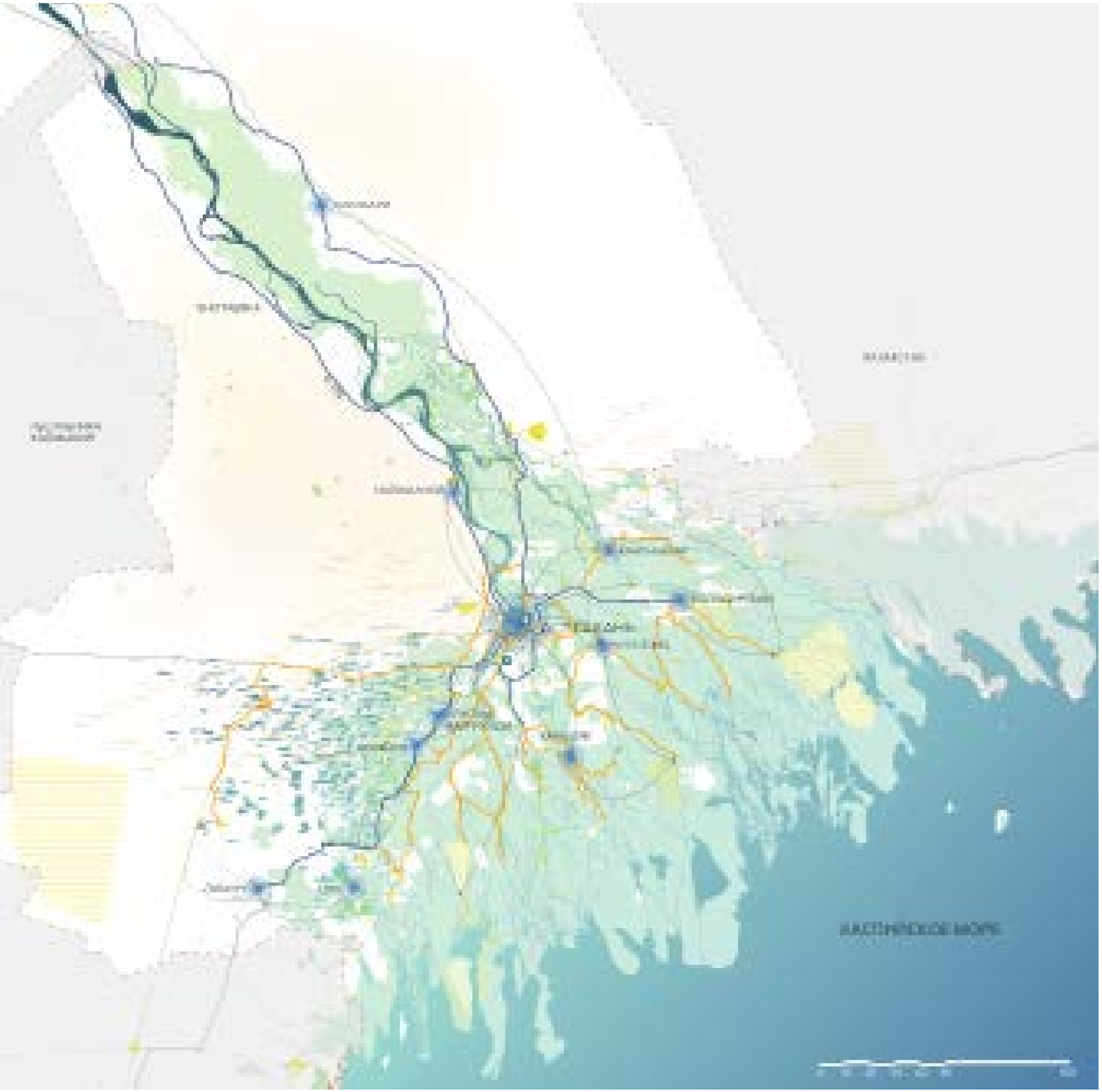
2 400

MIn. RUB.

3 - 5 YEARS

PERIOD OF

IMPLEMENTATION



DELTA INFRASTRUCTURE # 1:

REGIONAL BUS NETWORK

The updated network of suburban buses with modern rolling stock and optimal timetables will connect settlements with the regional center and with each other through two passenger hubs - Privokzalnaya Square and the Airport.

From the Airport, routes will depart in the most demanded directions:

- The airport
- Kamyzyak
- Ikryanoe - Liman
- Three Ducts - Nachalovo
- Krasny Yar
- Volodarsky
- Starokucherhanovka - Solyanka - Tinaki 2nd
- Narimanov - Enotaevka
- Kharabali

Routes will be organized from the bus station in the city center to all settlements of the region, except for the least populated ones.

Bus station

Directions of routes from the bus station

Highly comfortable branded shuttles will depart to popular destinations from two tourist hubs - from the Delta Tourist Quarter in the center of Astrakhan and from the Airport. Traffic intensity and timetable will be flexible according to seasonal demand.

Seasonal Teristic Shuttle Routes

EFFECTS:

improvement of social infrastructure at the regional level

improving the quality of tourism infrastructure, promoting regional tourism products

creation of new jobs for the population

DELTA INFRASTRUCTURE # 1:

SEASONAL TOURIST BUS AND RIVER ROUTES

Hard-to-reach places in the Delta, including nature reserves and recreation centers, will be provided with river passenger traffic on Meteor-class vessels. Together with the bus service, they will form multimodal routes.

Partners

- Ministry of Economic Development
- Astrakhan Regional Innovation Center
- Municipal District Administrations

Financing

- ПЛК “Каспий”
- НП безопаснве и качествен-ные дороги
- ФП Коммуникации между centerами экономического

37 200

MIn. RUB.

3 - 10 YEARS

PERIOD OF IMPLEMENTATION

EFFECTS:

creating new tourist routes, attracting tourists and increasing the income of the destination

disclosure of the tourist potential of the region as an attractive natural and recreational cluster

stimulating the creation of new jobs and the economic development of the region

tourist routes

Delta river routes

transportation by shuttle to the starting point of the tourist route

REGULATORY NEED FOR MODERNIZATION OF TRANSPORT INFRASTRUCTURE

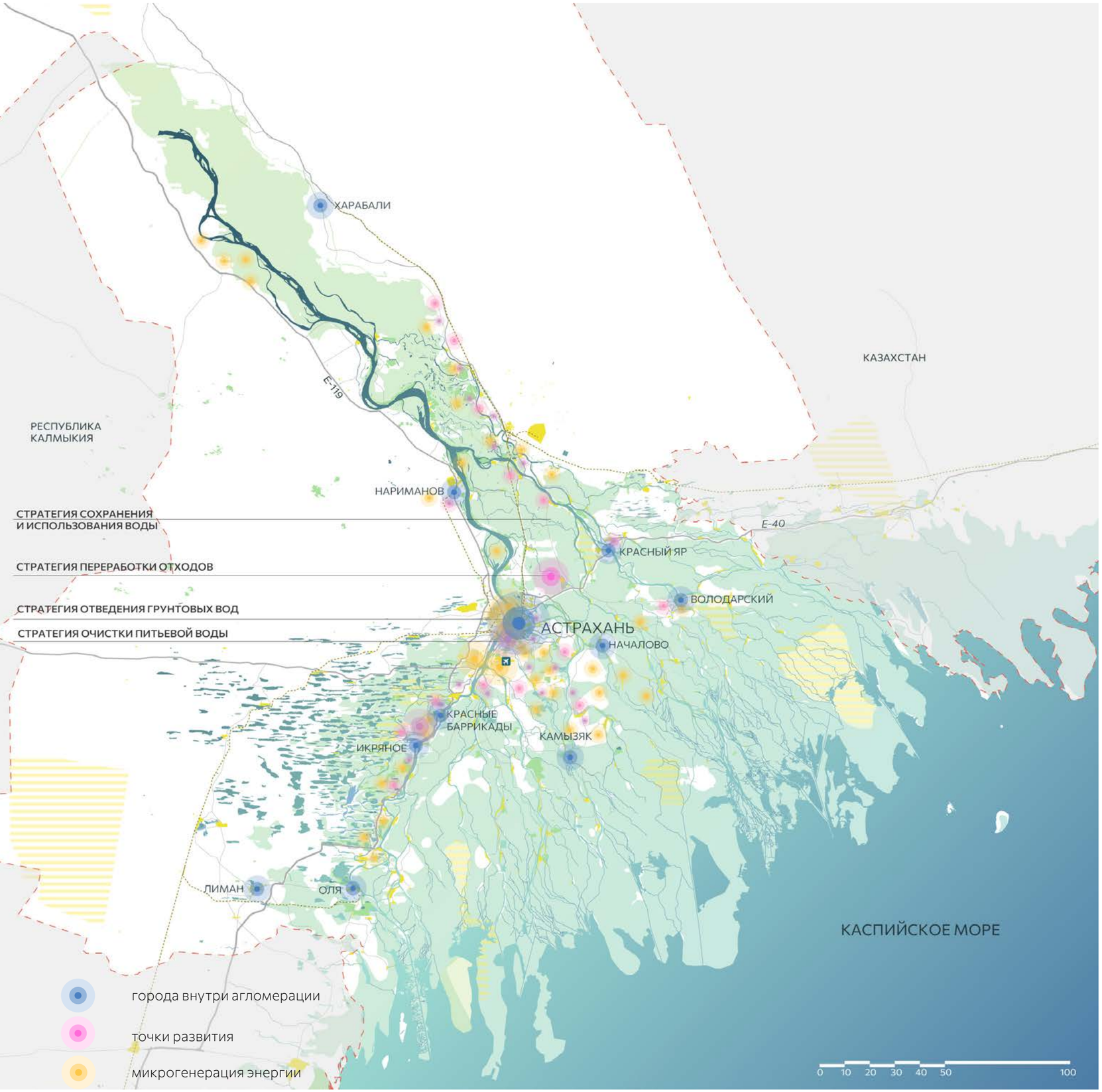
The master plan provides for the construction of more than 75 km of federal, regional, intermunicipal and local roads. It is also planned to work on the reconstruction of roads with the organization of an improved hard surface, as well as measures to bring the roads to regulatory requirements. The scope of work under the reconstruction programs should be at least 30 km annually.

CURRENT INDICATORS

	TOTAL	including			
		federal significance	regional or inter-municipal significance	local significance	departmental and private
Total length of highways	7640,9	577,9	2203,0	4512,8	347,2
including:					
hard surface	4522,9	577,9	2062,3	1544,8	337,9
of which with improved coating	3582,4	569,2	1656,7	1031,4	325,1
Share of roads that do not meet regulatory requirements,% of the total length	–	–	57,2	74,4	–

EXPECTED RESULTS

	TOTAL	including			
		federal significance	regional or inter-municipal significance	local significance	departmental and private
Total length of highways	7742,6	624,3	2203,0	4515,0	347,2
including:					
hard surface	4522,9	624,3	2164,4	1622,1	337,9
of which with improved coating	3582,4	615,6	1908,8	1258,7	325,1
Share of roads that do not meet regulatory requirements,% of the total length	–	–	37,7	68,2	–



PROJECT # 2: INFRASTRUCTURE FACILITIES

INFRASTRUCTURE DEVELOPMENT STRATEGIES

Improving the engineering infrastructure on the Delta scale poses many challenges, such as significant investment costs, low profitability and low accessibility of some localities. Environmental impacts such as lower water levels in sources can also increase stress in existing systems.

More than 65% of the water supply network and 75% of the sewerage network in the region are in poor condition, which leads to numerous accidents and shortages. 50% of settlements have no access to drinking water, and 19% have no access to water at all.

The regional program «Clean Water» was adopted in the Astrakhan region for 2019-2024, it is designed to increase the safety of drinking water for residents connected to the central water supply from 78% to 88% (2.7 billion rubles, including 1.7 billion of funds federal budget).

In addition, some opportunities are underutilized, such as the use of biogas in agricultural centers or solar / wind mini-grids to maintain and supply decentralized facilities and communities.

We propose to use a hybrid approach of centralized distribution and decentralized, flexible solutions to adapt to the needs in the delta, in particular around the priority economic centers:

Modernization of the Astrakhan Vodokanal: the planned reconstruction of the Astrakhan water treatment facilities will improve the central system. The renovation should be accompanied by a water saving education program to reduce consumer demand.

WATER SUPPLY AND SANITATION DECENTRALIZATION PLAN WITH WATER SAVING SYSTEM

WASTE RECYCLING PLAN

PHYTO-WASTEWATER TREATMENT PLAN

MINI POWER PLANTS

LOCAL BIOGAS POWER PLANTS

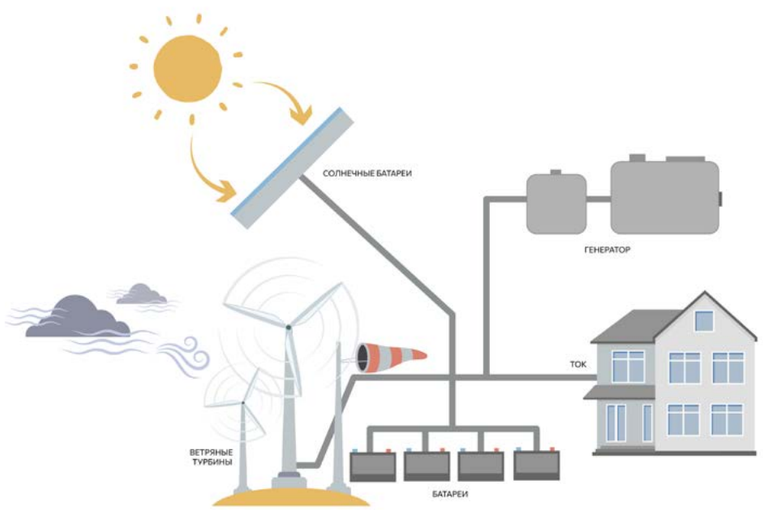
MICRO ENERGY GENERATION

A mini power grid is an autonomous distribution network that includes small power generation. The generated electricity is not returned to the main grid, but is used locally using a battery.

Mini-grids can be used in more remote areas to support, in particular, priority economic centers: campgrounds, information centers, monitoring stations, etc.

The hybrid energy system includes wind, solar and diesel energy with storage. When combined with the Smart Mini-Grid system, the hybrid power system can work to best connect, store and distribute different energy sources.

The effectiveness of mini-grids is driven by effective business models to support their operations. Support can be provided through government loans and incentives for private operators.



Partners

- City administration
- Астраханский ЦНТИ
- Hevel, Рязанский ЗМКП, Краснодарский «Сатурн»

Micro-power generation

Financing

- ФП «Внедрение наилучших доступных технологий»
- Грант «Агростартап»

30 Mln. RUB.

1 - 6 YEARS

PERIOD OF IMPLEMENTATION

EFFECTS:

development of renewable energy and development of a green economy

reduction of water consumption in agriculture

improvement of the ecological situation and the well-being of the population

WATER SUPPLY AND SANITATION DECENTRALIZATION PLAN AND WATER SAVING PLAN

Decentralized water treatment is the practice of locating wastewater treatment plants in the supply and demand area. It is a flexible and sustainable alternative to large wastewater treatment plants that require a large amount of expensive supply and delivery infrastructure. It is a solution for both individual construction and communities. The exact choice of technology depends on the availability of suppliers.

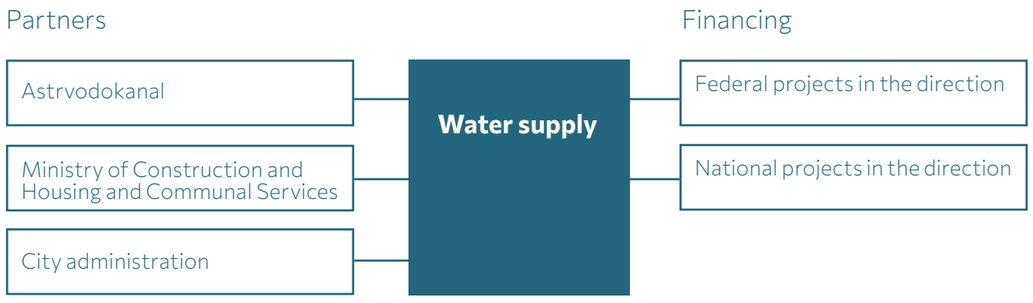
To control the use of decentralized units in networks, it is necessary to create an appropriate monitoring system.

The widespread availability of fresh water from the Delta enables a decentralized treatment infrastructure to be implemented, subject to a demand reduction strategy through a “water saving plan” to raise public awareness of the importance of water conservation.

Other water conservation policies aimed at reducing impacts on water sources include widespread drip irrigation.

The supply of water for non-potable purposes can be arranged through constructed wetland systems (see dedicated page) to treat waste water, recycled water or irrigation water.

Decentralized water treatment plants can be combined with mini-grids to provide the most remote areas with the required electricity.



EFFECTS:

introduction of new life support technologies and improvement of the ecological situation

improving the quality of life of the population of villages and villages

development of small settlements

100 Mln. RUB.

1 - 3 YEARS

PERIOD OF IMPLEMENTATION

PHYTO-WASTEWATER TREATMENT PLAN

A hydrobotanical site is an artificial wetland designed to treat urban or industrial wastewater, gray water (all streams except for toilet wastewater), or drainage effluent.

Hydrobotanical sites are a biological filter capable of removing a number of pollutants from water (organic substances, nutrients, pathogens, heavy metals).

Hydrobotanical sites can complement the existing system of water treatment facilities in Astrakhan. They can also be used in small towns or villages. With the help of such sites, urban and agricultural wastewater can be treated to avoid pollution of rivers and wastewater. Treated water can drain directly into rivers or be reused, for example, for irrigation or flushing toilets.

ADVANTAGES:

1. Because constructed wetlands are self-sustaining, their operating costs are significantly lower than traditional treatment systems. Their capital costs are often lower compared to conventional purification systems. In general, the cost of such systems can be 50% lower than the cost of conventional systems.
2. the scale of this system is easy to change and adapt to the requirements
3. can be integrated into reserves
4. can restore some previously lost wetlands and serve as habitat for local and nomadic wildlife.

Partners

- «Астрводоканал»
- Ministry of Construction and Housing and Communal Services

Phyto-wastewater treatment plan

Financing

- ФП «Чистая вода»
- ФП «Оздоровление Волги»
- ФП «Внедрение наилучших доступных технологий»

700 Mln. RUB.

1 - 6 YEARS

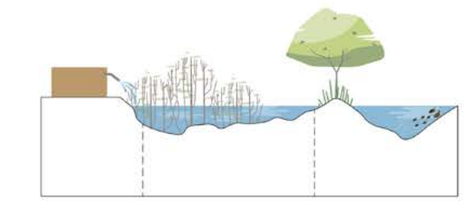
PERIOD OF IMPLEMENTATION

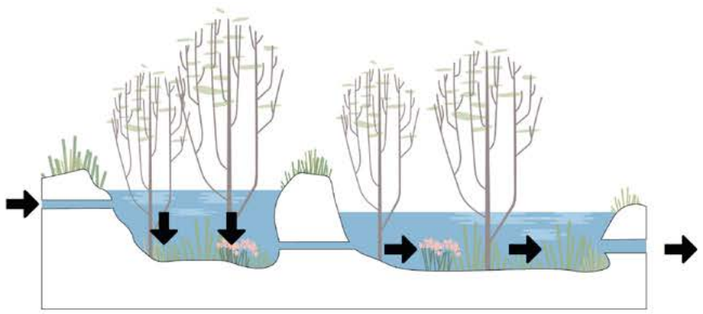
EFFECTS:

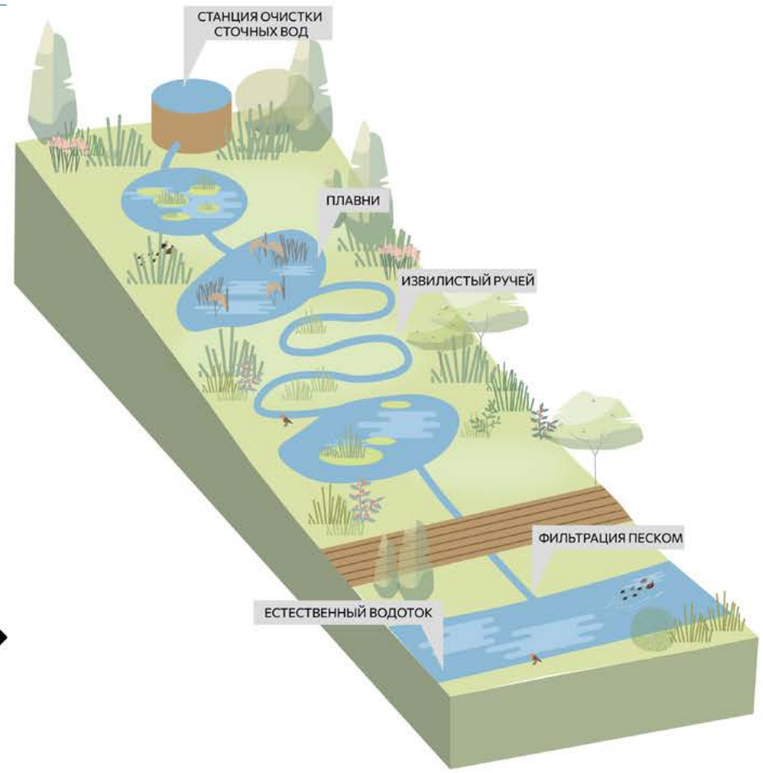
creation of a natural cycle of nature management, creation of conditions for sustainable development of the region

maintaining the ecological balance in the region

prevention of infectious diseases, improvement of health and well-being of the local population







DELTA INFRASTRUCTURE # 3: ECOLOGY AND CLIMATE CHANGE

LOCAL BIOGAS STATIONS

Today one of the main problems of Russian agricultural enterprises is waste disposal. Most often, it is carried out near farms, which leads to soil acidification, alienation of agricultural land (in Russia, more than 2 million hectares are occupied for storing manure), groundwater pollution and emissions of greenhouse gas - methane - into the atmosphere.

Biogas plants enable efficient utilization of organic waste and benefit from it. The introduction of biogas plants will solve both environmental and energy problems.

NETWORK BIOGAS PLANTS

major decisions

Biogas station «Luchki», Belgorod

The country's first industrial scale biogas plant. The plant's capacity is 3.6 MW.

Waste from meat processing plants, food factories, plant biomass are used as raw materials for biogas production at the station. At the station, raw materials are processed by anaerobic digestion. The biogas produced by bacteria is used to generate electricity and heat, and the processed biomass is used to produce high-quality organic fertilizers.

OFF-GRID BIOGAS PLANTS

local solutions

**A station used by farmers for their own needs.
Using agricultural waste from their fields and pastures to generate biogas.**

Sustainable agriculture and the possibility of using the generated gas for heating, power supply of their households, as well as the use of methane for refueling vehicles and large industrial equipment.

Farmer support programs in Russia

1 **federal target program «Sustainable development of rural areas» of the Ministry of Agriculture of the Russian Federation**

2 **Grant «Agrostartup»**

the grant can be obtained either alone or as part of a cooperative.

3 **grant for agricultural cooperatives**

the cooperative must operate for at least 12 months, unite at least 10 agricultural producers

4 **grant for implementation of initiatives**

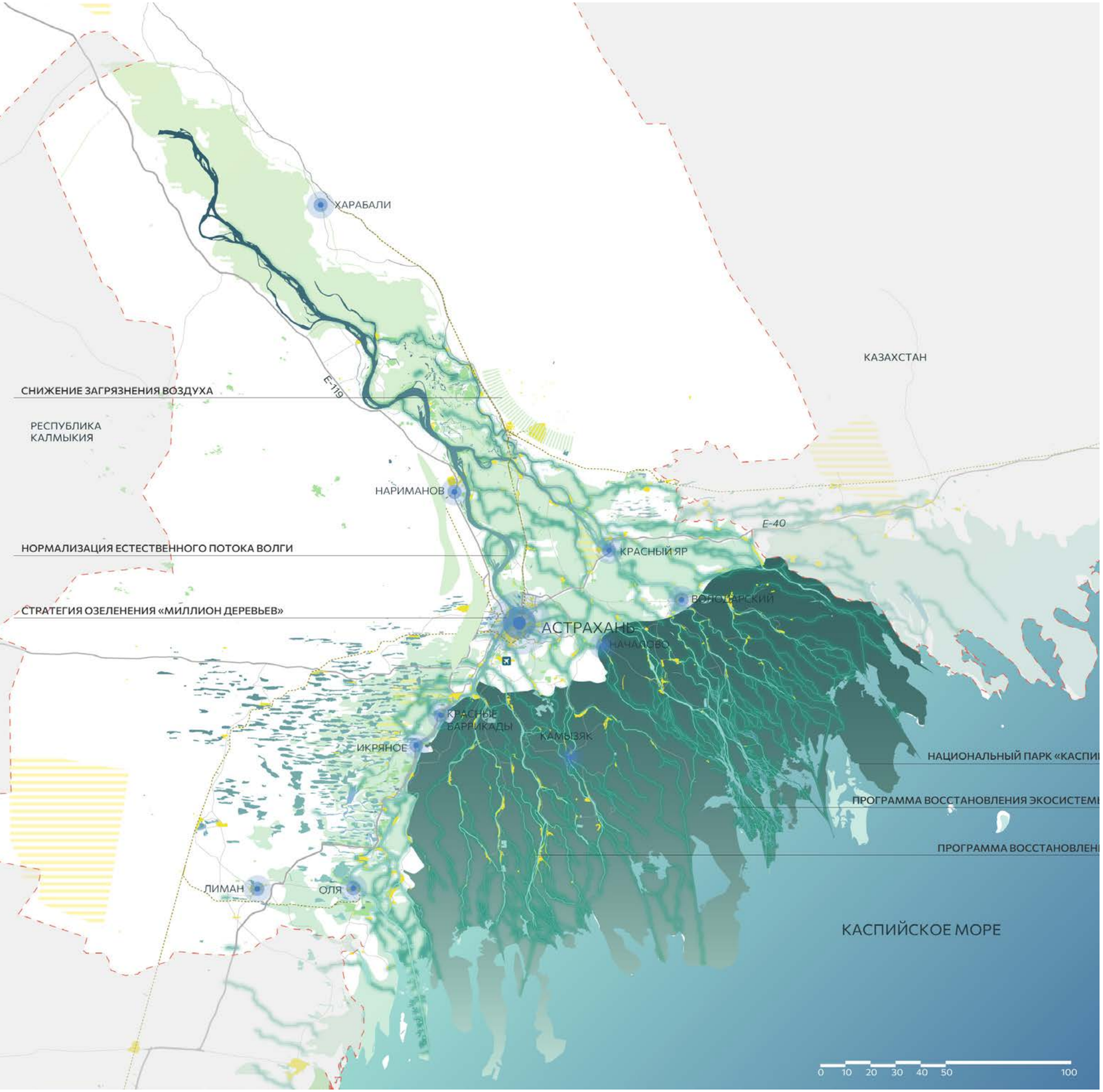
residents of rural areas can receive the grant.

EFFECTS:

reduction of harmful atmospheric emissions, improvement of the environmental situation

development of renewable energy

sustainable agriculture development



DELTA INFRASTRUCTURE # 3: ECOLOGY AND CLIMATE CHANGE

ENVIRONMENT AND ECOLOGY

CASPIAN DELTA NATIONAL PARK

protection and restoration of ecosystems of the Volga delta by establishing a conservation status, designation of the international significance of the territory, comparable to the significance of the ecosystem of Lake Baikal and the park «Land of the Leopard».

WATER LEVEL CONTROL IN THE VOLGA

bringing the river flow as close to natural as possible, managing the cascade of Volga reservoirs and working with small rivers

MILLION NEW TREES PROGRAM

large-scale landscaping of the region, planting trees to restore the ecosystem, planting the White Willow to restore gallery forests in the Volga delta.

MICRO ENERGY GENERATION

creation of off-grid RES solutions for specific enterprises - local solar panels and wind turbines.

LOCAL BIOGAS STATIONS

production of biogas and energy for farming enterprises by burning agricultural waste.

ECOSYSTEM REHABILITATION PROGRAM

the delta contains unique ecosystems that are comparable to the mangroves and forests of the Amazon, but they need protection and rehabilitation. For this, a set of measures has been developed to support and restore ecosystems.

REDUCTION OF AIR POLLUTION

reducing the emission of harmful substances into the atmosphere through open monitoring of industrial enterprises and the creation of green buffer zones around them.

DELTA INFRASTRUCTURE # 3: ECOLOGY AND CLIMATE CHANGE

ECOLOGICAL PARK OF THE CASPIAN DELTA

The new ecological park will unite the existing territories of the Astrakhan reserve and will be a single national park dedicated to the study, preservation and restoration of the ecosystem of the Caspian Delta.

EFFECTS:

preservation of the biodiversity of the ecosystem and natural heritage of the region

disclosing the natural and recreational potential and increasing the tourist attractiveness of the region

the formation of new eco-routes and the development of ecological tourism

«Now only on the territory of the reserve have been preserved the natural complexes of the delta, in order to preserve biodiversity, the entire Volga delta must become a natural park if we want to preserve and restore it»

Nikolay Tsimlyansky,
director of the Astrakhan reserve

ADVANTAGES OF CREATING A NATIONAL PARK FOR THE REGION:

1. Unified mechanisms of management, regulation and financing in the territory
2. Highest conservation status, privileges
3. The status of protected areas and national treasure, recognition of the importance of the ecosystem of the Caspian Delta at the federal level, the formation of a single
4. Ensuring the protection of the park's facilities in international legal acts, designating the significance of the park and the importance of the ecosystem of the Caspian Delta for the international community;
5. Ensuring the protection of the park's facilities in international legal acts, designating the significance of the park and the importance of the ecosystem of the Caspian Delta for the international community;

Control

- Astrakhan reserve
- Ministry of Natural Resources and Environment of the Russian

Financing

- Ministry of Natural Resources and Environment of the Russian
- НП «Экология»
- ФП «Сохранение биологического разнообразия и развитие
- ФП «Оздоровление Волги»
- WWF Nature Reserve and National Park Grant Program
- Regional enterprises
- Private investments, charitable donations

National park

«Land of the Leopards»

Under the leadership of the Land of the Leopard Federal State Budgetary Institution, there are specially protected natural areas (SPNA) of the Primorsky Territory: the state natural biosphere reserve «Kedrovaya Pad» (the oldest in the Far East) and the National Park «Land of the Leopard». The institution is managed by the Ministry of Natural Resources and Environment of the Russian Federation.

Tasks:
- preservation and increase of the Amur tiger population
- environmental education activities
- development of tourism in the Far East

WATER LEVEL CONTROL IN THE VOLGA

The Volga River is operated by the Volga-Kama cascade of hydroelectric power stations, the largest in Europe, built in the 1930-1980s. The most important waterway of Russia, in fact, is not a river, but a system of artificial lakes formed by the nine largest hydroelectric power plants.

The discharge of water from the cascades of reservoirs is controlled and adapted in order to obtain the greatest economic efficiency, however, it completely disrupts the natural processes of river flooding, the flow rate is controlled, there is no natural purification of the river, the amount of water released is far from natural. The situation could be corrected by bringing the rules of water use in line with international standards, such as the Guidelines “Ensuring the Sustainability of Hydropower Projects” developed by the International Finance Corporation.

In addition to the issue of river flow management, a plan for the conservation and storage of water for agricultural purposes must be followed. An example of such a system is drip irrigation - bringing water as close to the plants as possible and watering only part of the soil with a small amount of water.

TECHNICAL SOLUTIONS

1. adjusting the rules for the operation of the reservoir, taking into account the interests of various parties, with a key focus on natural systems
2. drip irrigation of agricultural fields to preserve and accumulate water

ECOSYSTEM SOLUTIONS

1. clearing the river bed, deepening the bottom, creating green infrastructure along the banks
2. a system of connections between small rivers and tributaries of the Volga as a single water basin that complements each other

«The shallowing and the water level on the Volga are due to the fact that river flows are managed primarily based on industrial and economic needs, and issues related to long-term consequences for the economy and preservation of the natural state of water bodies are in last place.»

Elena Kolpakova,

coordinator of the movement «Let’s help the river»

EFFECTS:

creating conditions for sustainable development of the region

conservation of biodiversity of the Volga ecosystem

stabilization of river tourism, development of the tourist potential of the region

DELTA INFRASTRUCTURE # 3: ECOLOGY AND CLIMATE CHANGE

THE MILLION NEW TREES PROGRAM

The new reforestation program will be implemented with the support of the Federal Forestry Agency of the Russian Federation, in cooperation with the regional ECA movement in the Astrakhan region and regional companies interested in improving environmental performance in the region.

«To protect the regions from sandstorms, large-scale forest plantations are needed»

Vladislav Ivanov

Head of the territorial headquarters of the ECA movement in the Astrakhan region, environmental activist.

BY ATTRACTING VOLUNTEERS, IT IS PLANNED TO PLANT 1 MILLION TREES. A LARGE-SCALE FOREST PLANTING PROGRAM WILL SOLVE THE FOLLOWING PROBLEMS OF THE REGION:

1 Reduction of frequent sandstorms in the region

Degradation of the topsoil and the formation of dust, together with the absence of green barriers, contribute to the

2 Reducing the level of carbon dioxide emissions into the atmosphere as a result of the activities of industrial enterprises

To neutralize the effects of enterprises' activities on the environment, it is necessary to develop the direction of decorbanization of energy and utility enterprises, the development of renewable energy sources and the growth of forest plantations as a way to increase the absorption of carbon emissions.

3 Lowering river temperatures and preserving aquatic biodiversity

Forest plantations along river banks are capable of creating shady areas and thereby reduce temperatures in the river by 2-3 degrees. compared to warm underwater currents and during hot summer days. Normalizing the temperature will help preserve the health and diversity of river fish in the Volga.

Partners

- Ministry of Natural Resources and Environment
- Green movement of Russia «ECA»
- District and city administration

5000 ha (approximate size)

5 Mln. RUB.

1 - 10 YEARS

PERIOD OF IMPLEMENTATION

EFFECTS:

improving the ecological situation in the region, reducing the threat of sand storms

preservation of the biodiversity of the Volga

reducing the negative impact of industrial enterprises on air pollution

DELTA INFRASTRUCTURE # 3: ECOLOGY AND CLIMATE CHANGE

ECO-SYSTEM REHABILITATION PROGRAM

The Volga Delta is the largest river delta in Europe and the 8th in the world. It begins at the point where the Buzan branch separates from the Volga channel (46 km north of Astrakhan) and has up to 500 branches, channels and small rivers. Due to a decrease in the level of the Caspian Sea, the area of the delta has increased nine times over the past 130 years.

The unique flora and fauna of the delta are protected by the state as the Astrakhan reserve, and in 1976 it was included in the list of wetlands of international importance. The Volga Delta is a transfer hub for migratory birds; about 20 million individuals are «transplanted» here every year.

Environmental restoration contributes to protecting biodiversity, improving human health and well-being, economic prosperity, climate change mitigation, resilience and adaptation. It is an approach based on engaging communities, scientists and policymakers to address environmental damage and restore a healthier relationship between humans and nature. Combined with conservation and sustainable use, environmental remediation is the nexus needed to move environmental conditions from a state of constant degradation to a state of positive improvement.

The role of environmental restoration is important in achieving social, social, production goals and sustainable development goals.

Now the Astrakhan Biosphere Reserve is engaged in the restoration of ecosystems, which has allocated three reference zones in the river delta. In this example, we can see successful steps to restore the lotus and fish plantations.

"The depth there is shallow, the vegetation is quietly sticking out above the water, in places where you can still distinguish the branches - a bunch of islets and something similar, and below it all gradually passes into the Caspian Sea. Convergent things can be seen in the Mekong Delta and in the mangroves of the Micronesian islands. «

Sergey Abdulmanov,
researcher

1 000 000 ha

(approximate size)

1 - 10 YEARS

PERIOD OF IMPLEMENTATION

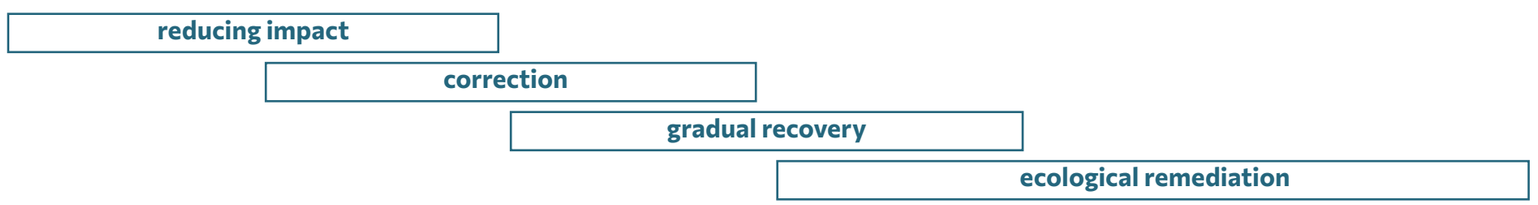
EFFECTS:

preservation and restoration of the ecosystem of the region

improving the quality of the environment for the local population

creating conditions for sustainable development of the region

DECREASE	IMPROVEMENT	CORRECTION	LAUNCH	PARTIAL	COMPLETE
anthropogenic impact	ecosystem management	ecosystem functioning	recovery ecosystems	restoration of natural ecosystem	restoration of natural ecosystem



AIR POLLUTION REDUCTION

Air pollution is one of the main risk factors for human health and the cause of the accumulation of carbon dioxide in the atmosphere, which has been linked to climate change.

Urban green infrastructure can mitigate air pollution. Trees and other vegetation play a significant role in regulating air quality by absorbing pollutants. Deciduous trees effectively purify the air.

Ecosystems regulate the global climate by storing greenhouse gases. Carbon build-up occurs when trees and other plants absorb carbon dioxide from the atmosphere and bind it in their tissues. Trees absorb carbon dioxide and give off oxygen.

Another effective element of influencing air quality is a system for monitoring industrial enterprises, the state of air in the city and the publication of open data.

All industrial enterprises must be provided with a modern filtration and waste disposal system.

INDUSTRY AND AGRICULTURE ECONOMY

1. clean technologies that help reduce emissions from industrial chimneys;
2. green buffer
3. improved utilization of urban and agricultural waste, including capturing (capturing) methane or biogas plants
4. recycling

TRANSPORT

1. priority of electric urban transport, walking and cycling networks in cities
2. a shift towards low-emission vehicles as well as cleaner fuels

URBAN PLANNING

1. greening the city, reducing the heat island effect
2. use of renewable energy sources
3. waste reduction and recycling strategy

Partners

- Service for Nature Management and Environmental Protection
- Regional government
- City and district administration

Financing

- FP «Clean Air»

EFFECTS:

improving the health and well-being of the local population

preventing climate change

reduction of anthropogenic impact on the environment

DELTA INFRASTRUCTURE # 4

RESEARCH AND INNOVATION

CASPIAN DELTA RESEARCH CENTER

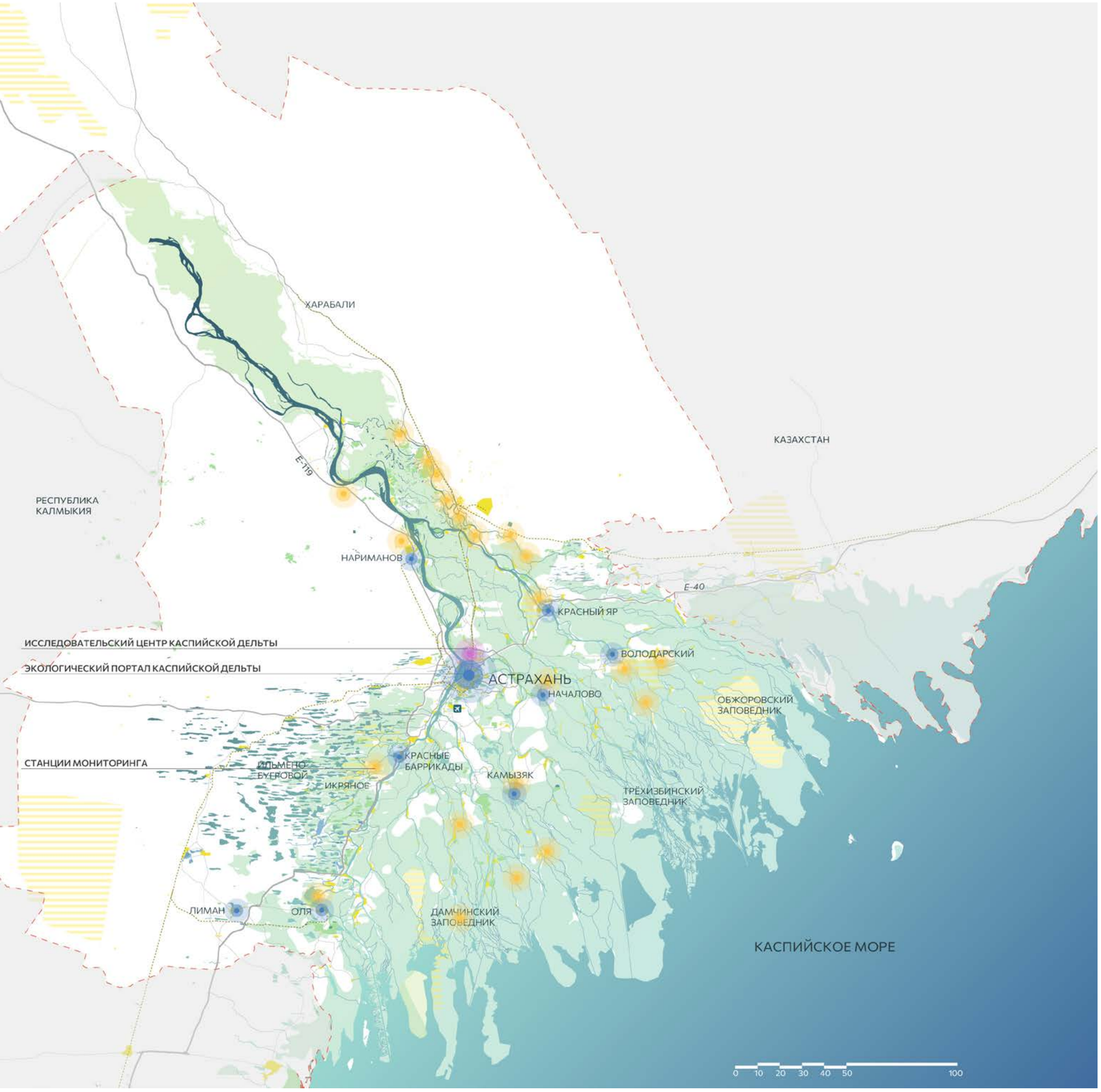
the research center is located in Astrakhan and serves as the main headquarters for the study of the Volga delta and its changes. This is an important cultural and educational point of attraction.

CASPIAN DELTA MONITORING SYSTEM

local monitoring centers are distributed throughout the delta and are subordinate to the main research center. Monitoring centers monitor the state of the ecosystem in specific areas.

CASPIAN DELTA INTERNATIONAL COOPERATION PROGRAM

cooperation between the Caspian countries to address economic issues and climate change within the natural zone of the Caspian



cities within the agglomeration

development points

monitoring stations

DELTA INFRASTRUCTURE # 4: RESEARCH AND INNOVATION

CASPIAN DELTA RESEARCH CENTER

The research center will become the largest center for the study and conservation of the Volga River and the Caspian region.

MISSION OF THE CENTER:

STUDY AND PRESERVATION OF THE UNIQUE NATURAL AND HISTORICAL HERITAGE OF THE CASPIAN REGION AND ECOSYSTEMS WITHIN THE VOLGA RIVER BASIN AND ADJACENT TERRITORIES.

THE MAIN ACTIVITIES OF THE CENTER:

- Wildlife protection: study and protection of endangered plant and animal species, conservation of biological diversity of the Caspian Delta;
- Specially protected natural areas: participation in the creation, planning and operation of the National Park of the Caspian Delta;
- International cooperation: cooperation with leading international research centers and environmental organizations, implementation of joint research, organization of international conferences;
- Environmental monitoring: collection of data on the results of monitoring the quality of water, air, soil, state environmental supervision, the results of industrial control and the results of scientific research, obtaining, storing and processing data on the state of the Volga River and the Caspian environment, predicting changes and developing a proposal to prevent negative impacts for public authorities;
- Environmental education: publishing a research journal, organizing scientific seminars and conferences, coordinating all-Russian and international environmental organizations in the Caspian region.

Partners

- Astrakhan reserve
- Astrakhan University
- Regional branch of the Russian Geographical

Delta Research Center

Financing

- FP «Development of scientific and scientific-industrial cooperation»
- FP «Development of advanced infrastructure for research and development in the Russian Federation»
- FP «Development of human resources in the field of research and development»

8 000 m2
(approximate size)

200-400
MIn. RUB.

1- 2 YEARS
PERIOD OF IMPLEMENTATION

CASPIAN DELTA RESEARCH CENTER

Research Center

Mississippi River, USA

Laboratory Planning, Water and Soil, Modeling and Assessment of Hydrological Processes, Providing Conditions for Sustainable Development of the Mississippi River Basin

Center for the Study of the Fusion of Natural and Social Sciences and Humanities, Lyon

A multidisciplinary research center combining natural science and socio-cultural fields.

Saint Lawrence Center, Quebec, Canada

Development of an integrated management system for the St. Lawrence River, taking into account environmental, socio-economic and public interests.

DELTA INFRASTRUCTURE # 4: RESEARCH AND INNOVATION

ENVIRONMENTAL MONITORING NETWORK OF THE CASPIAN DELTA

The environmental monitoring network will be an integrated system of knowledge, technologies and experts in the field of ecology and nature management, functioning on the basis of the Research Center of the Caspian Delta.

THE MONITORING SYSTEM WILL CONSIST OF SEVERAL ELEMENTS:

- Unified Monitoring Center: a center for collecting, storing and processing the results of monitoring the quality of water, soil and air in the Caspian Delta;
- Technologies: automated environmental monitoring stations, mobile environmental laboratories, databases and information systems for storing and processing information;
- Parameters: physicochemical, biological and additional integral indicators of water, soil and air quality;
- Expert group: an administrative and research group for assessing the state of the environment, pronouncing possible changes, developing proposals for preventing environmental problems and sending recommendations to state authorities, legal entities and individual entrepreneurs;
- Cooperation: active interaction with international and regional universities, research institutes, state environmental organizations, industrial and high-tech events.

328

Mln. RUB.

1-6 YEARS

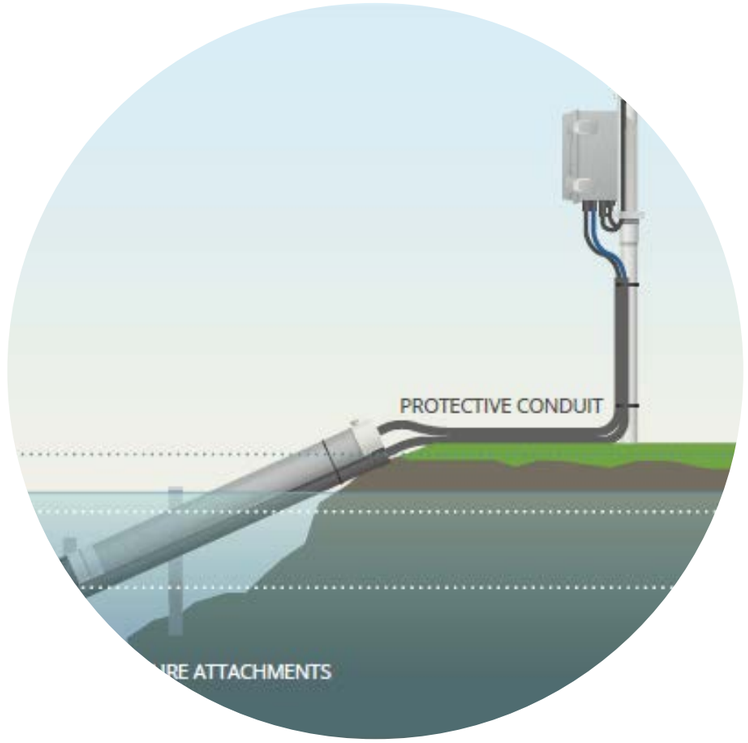
PERIOD OF IMPLEMENTATION

EFFECTS:

improvement of the ecological state of the region

preservation of the environment and natural resources

ensuring the health and well-being of the local population



EXAMPLES OF ENVIRONMENTAL MONITORING

Stockholm. The Water Monitoring

The project was implemented jointly with the Stockholm City Administration and the Swedish company Ericsson, which proposed the introduction of Sensors for monitoring water quality, which allow to quickly and accurately detect changes in water quality.

Technologies allow tracking changes in the composition of water and detecting pollution in lakes and rivers (for example, Lake Mälaren in Sweden), monitoring water resources for bacterial contamination of fresh water, monitoring the sewage system for pollution.

Paris. Water monitoring system.

The monitoring system in Paris allows monthly manual samples to be taken at dozens of stations in the region (only one station is installed in the center of Paris), covering all rivers, springs and lakes small and large. Monitoring covers dozens of physical and chemical parameters and pollutants. Data is available on an online platform, annual reports are published.

Project results: 40 years ago, only two species of fish were recorded in the Seine River, and now there are more than 30 species of them. In 2024, Paris aims to make the Seine sailable. тыквариумистами, обще-ственные и социальные measures .

DELTA INFRASTRUCTURE # 3: RESEARCH AND INNOVATION

INTERACTIVE PORTAL OF THE CASPIAN DELTA

The information system in the field of environmental protection and nature management will be created to publish information on environmental monitoring, the state of the environment of the Caspian Delta, as well as to publish popular science materials, news and announcements of environmental events.

Partners

- Ministry of Culture and Tourism
- Tourist Information Center
- Astrakhan University

Water supply

15 Mln. RUB

1 YEAR

PERIOD OF IMPLEMENTATION

OPERATING PRINCIPLES:

1 Transparency and accessibility of information: information on the results of environmental monitoring will be available, visual and easy to understand for a wide range of people;

2 Ease of use: the results will be published on the website for viewing and downloading in the format of a diagram, interactive map or table;

3 Real-time system: using specialized sensors, data will be uploaded to the site in real time, users will receive the most relevant information about the state of the environment;

4 Feedback: portal users will be able to contact the support service for complaints, requests and suggestions;

5 Environmental education: weekly publication of popular science materials, scientific research results, information about upcoming environmental events, volunteer actions.

6 Экопросвещение: еженедельная публикация научно-популярных материалов, результатов научных исследований, информации о предстоящих экологиче-

7 Mobility: the portal will be available both in the desktop version of the site and in a specialized application for smartphones (for Android and iOS).

EFFECTS:

raising public awareness about the ecological state of the region

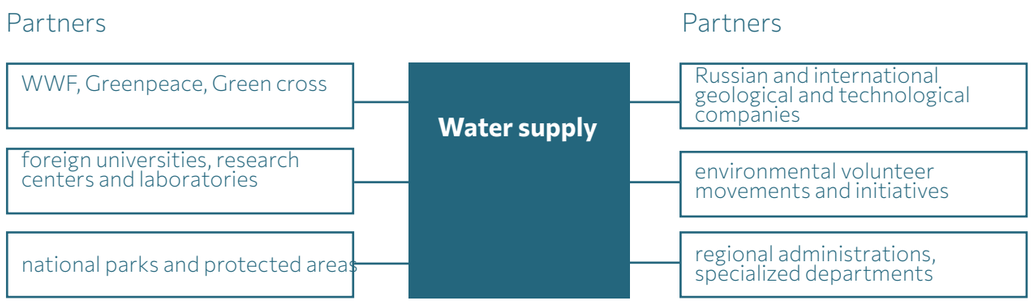
environmental education of the local population

the emergence of opportunities for public participation in environmental decision-making

DELTA INFRASTRUCTURE # 4: RESEARCH AND INNOVATION

INTERNATIONAL COOPERATION PROGRAM OF THE CASPIAN DELTA

The international cooperation program provides for close interaction with the research, environmental and diplomatic communities of the countries of the Caspian region (Iran, Kazakhstan, Turkmenistan, Azerbaijan), as well as the countries of Europe, North and South America.



1 - 2 ГОДА
ПЕРИОД РЕАЛИЗАЦИИ

EFFECTS:

formation of conditions for sustainable development of the region

promoting an attractive territorial brand of the region

exchange of experience and competencies, socio-economic development of the region

ISSUES AND AREAS OF COOPERATION:

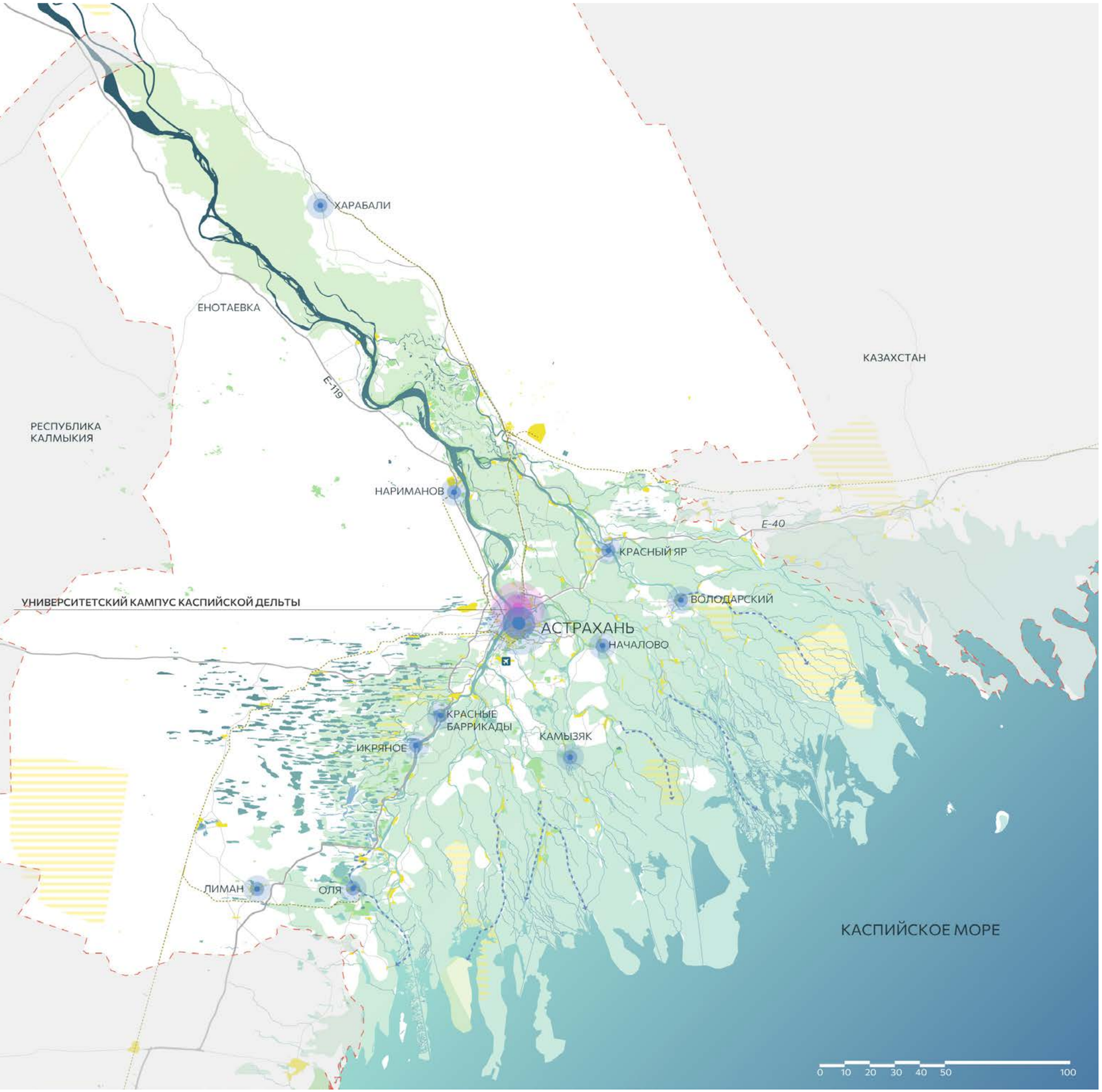
1 educational activities (academic mobility programs for teachers and students, double degree programs, scientific cooperation on the basis of the Delta University campus);

2 research cooperation (joint research programs for the study and conservation of biodiversity of rivers and ecosystems)

3 public and social initiatives (cooperation with international public environmental organizations and environmental initiatives, implementation of joint projects, actions and events).

DELTA INFRASTRUCTURE # 5

EDUCATION



educational and research center of the Caspian region, which will unite the advanced faculties and research centers of higher educational institutions of the Astrakhan and Caspian regions.

EDUCATIONAL PROGRAM OF THE CASPIAN DELTA

the program will be based on the University Campus for residents of Astrakhan and at the Hospitality Centers for residents of the Astrakhan region.

ECO-TRAILS AND NAVIGATION OF THE CASPIAN DELTA

basic infrastructure for the creation of a network of regional tourist routes with a delicate introduction into natural areas.

VOLUNTEER PROGRAM OF THE CASPIAN DELTA

will be carried out in close cooperation with environmental organizations and environmental movements to study and preserve the river / Волги и экосистемы Каспийского региона.

EXPERT GROUP OF THE CASPIAN DELTA

development of a model for sustainable development of the Caspian Delta in the context of modern economic, political and social changes.

- cities within the agglomeration
- development points
- eco-trails

DELTA INFRASTRUCTURE # 5: EDUCATION

UNIVERSITY CAMPUS OF THE CASPIAN DELTA

The university campus will become the leading educational and research center of the Caspian region, which will unite the advanced faculties and research centers of higher educational institutions of the Astrakhan and Caspian regions.

The interaction of leading universities and institutes will make it possible to implement progressive scientific research, international projects, open new educational programs, thereby turning Astrakhan into a leading scientific center of the Caspian region.

Research centers and laboratories, spacious lecture halls and conference rooms, student cafes and canteens, comfortable hostels, libraries and sports centers, a botanical garden with rare plant species will be located on the campus.

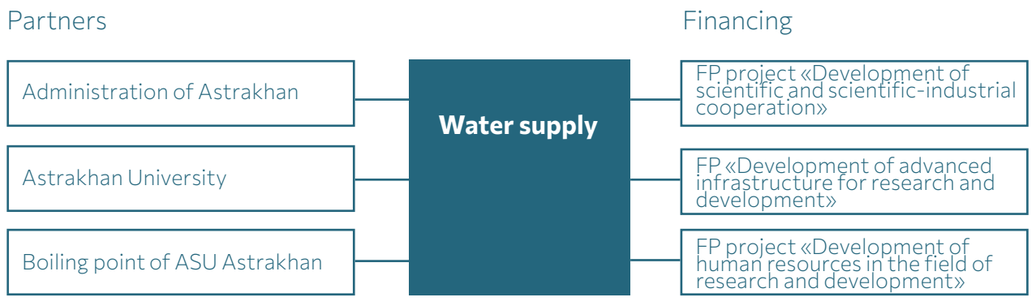
UNIQUE ADVANTAGES:

1. Cooperation: international and regional cooperation in the field of natural and exact sciences, international research projects and events, academic mobility programs;
2. Education: unique educational programs in partnership with leading universities and high-tech companies, double degree programs, international grants and scholarship programs;
3. Science: the advanced research center of the Caspian Delta, the largest center for the study and conservation of the Volga River and the Caspian region;
4. Infrastructure: a single platform for education and leisure, a wide range of accommodation and food options, modern scientific laboratories and classrooms, the presence of gyms and facilities.
5. Social interaction and professional opportunities: a close-knit scientific community, a rich program of events, interaction with international experts, representatives of business and government.

University Paris-Saclay, France

One of the leading academic and scientific centers in the field of natural and exact sciences in the world, located in the south of Paris. The campus of the university covers an area of 580,000 m2, making it the largest campus in France. Университет объединяет ведущие выс

The university brings together the leading higher schools, universities and research centers in France, which allows it to take the first lines in the international academic rankings. In addition to educational institutions, the campus is a developed business cluster, on the territory of which interaction with the country's leading companies is carried out: Renault, Transdev.



EFFECTS:

development and support of young talents

creation of new jobs for highly qualified specialists development of international

cooperation of the region in research and educational activities

10 ha (approximate size)
38 900 Mln. RUB.
3 - 5 YEARS
PERIOD OF IMPLEMENTATION

EDUCATIONAL INFRASTRUCTURE OF THE CASPIAN DELTA

The educational program will be represented by a wide range of educational activities and cultural events for residents of Astrakhan and the Astrakhan region. The program will be implemented on the basis of the University Campus for residents of Astrakhan and at the Interpretation Centers for residents of the Astrakhan region.

EDUCATIONAL PROGRAM PROJECTS:

1 Delta Leader educational project: the project was created to support the younger generation by immersing themselves in the world of history, culture and art, increasing literacy and teaching in-demand skills. Graduates of schools and technical schools in the Astrakhan region will be able to increase their chances of admission to higher educational institutions, choose the demanded specialties by participating in lectures and workshops, summer camps and employment programs.

2 Delta Talent Academy project for the search and development of young talents: the project cooperates with schools in the Astrakhan region to conduct a competition and select the most successful high school students. The project offers a wide range of activities - educational and creative laboratories, career guidance excursions, summer camps, travel clubs, educational games and quests.

3 Delta Plus additional education project: a program of additional courses for graduates of technical colleges and qualified specialists wishing to get higher education or change their profession. The program offers offline and online courses in financial literacy, computer literacy, foreign languages, and flexible skills.

4 Delta of Opportunities project: a project for people with disabilities, contributing to their rehabilitation, socialization and self-realization through inclusive educational and creative workshops.

Educational Talent Search (TRIO Program), USA

The US Department of Education's Talent Search program aims to make higher education more attractive to high school graduates. The program primarily supports graduates from low-income families or families with no higher education.

Young Leaders Program, Netherlands

The Global Center for Adaptation (GCA) offers internships for young leaders. Together with experts in the field of ecology and sustainable development, they work to study the environmental problems of the region, thereby helping the development of scientific and social activities of the center.

Partners

- Ministry of Education and Science
- Governance of the region
- Administration of Astrakhan

Water supply

Financing

- Ministry of Education and Science of the Russian Federation
- Ministry of Education and Science of the Astrakhan Region

300 Mln. RUB.

1 - 6 YEARS

PERIOD OF IMPLEMENTATION

EFFECTS:

professional development of youth in small towns

creating educational opportunities for people with limited mobility

training and retraining of adult personnel, reducing the unemployment rate in small towns

DELTA INFRASTRUCTURE # 5: EDUCATION

ECO-TRAILS AND NAVIGATION OF THE CASPIAN DELTA

To get acquainted with the Caspian Delta, eco-educational routes will be developed through the most interesting areas of the region - natural parks and reserves. Thus, townspeople and tourists will be able to learn about the rich natural heritage of the region, the existing natural zones and their differences, the unique flora and fauna of the region.

The routes will be developed in close partnership with the Astrakhan Nature Reserve, the Caspian Delta Museum, regional travel agencies and telecommunications companies.

Eco-route «In the Valley of Lotus» - a trip to the Damchinsky reserve

Damchiksky Reserve knows not only rare species of plants and mammals from the Red Data Book, but also lotus. Summer blooming of lotus or «Caspian rose», as it is called, is a real holiday that annually attracts thousands of tourists.

The eco-route offers a boat excursion-observation of blooming lotuses in the Caspian Delta, during which tourists will not only be able to admire the water expanses of the Volga, smell the blossoming lotuses, but also listen to an interesting audio story about the history of the creation of the reserve and the natural resources of the Delta using a special mobile application ...

Thanks to the virtual guide in the application, which operates on the basis of a GPS navigator, the excursion around the reserve will become even more interesting - you can listen to interesting comments and stories about the creation of the park in real time, voiced by the famous journalist and Ambassador of the Delta - Natalia Tuigunova.

After the end of the water route, tourists are invited to visit the Center for Environmental Education, located on the territory of the reserve. In the center, tourists will be told about the study and preservation of the Caspian Delta, its unique history and geography.

At the end of the inspection of the reserve, tourists will be able to take a game test in a mobile application, which will check the attentiveness and knowledge about the wild nature of the region and the Caspian Delta.

Partners

- Astrakhan reserve
- Regional government
- Administration of Astrakhan

Water supply

Financing

- FP «Conservation of biological diversity and development of ecological tourism»

10 Mln. RUB.

1 - 3 YEARS

PERIOD OF IMPLEMENTATION

EFFECTS:

disclosure of the natural, recreational and tourist potential of the region

formation and promotion of an attractive destination brand

development of ecological tourism in the region


КАСПИЙСКАЯ ДЕЛЬТА
Сохраняя адаптивность в потоке изменений

DELTA INFRASTRUCTURE # 5: EDUCATION

VOLUNTEER PROGRAM OF THE CASPIAN DELTA

The volunteer program of the Caspian Delta will be carried out in close collaboration with environmental organizations and environmental movements to study and preserve the Volga River and the ecosystem of the Caspian region.

effects:

development of volunteering in the region

creative and educational development of the young population

socio-economic development of the region

1 YEAR

PERIOD OF IMPLEMENTATION

VOLUNTEER PROGRAM PROJECTS:

1 School of volunteers «Save the Delta»: educational workshops and summer environmental camps offering classes in firefighting, reforestation, studying and accounting for rare asthenia and animals, organizing environmental events;

2 Ecological squad «Delta Club»: a volunteer squad to control unauthorized garbage dumps and the release of pollutants;

3 Forest Volunteer project: volunteer actions on forest planting, planting trees, appropriate to the ecosystem and climate to preserve the biodiversity of the region;

4 “Let’s Save the Delta” project: volunteer actions to clean up the banks of the Volga, its tributaries and banks, collecting garbage on kayaks and SUP-surfs;

5 Project «Explore the Delta»: actions for participatory monitoring of water in the Volga River, measuring hydrochemical indicators of water using sensors, uploading data to the ecological portal of the Delta;

6 Delta National Park volunteer program: actions for cleaning the park territory, assistance in conducting educational events, environmental actions, assistance in research work, informing visitors and tourists.

Tenorio Volcano National Park Volunteer Program, Costa Rica

The park actively attracts volunteers to protect the biodiversity of the region’s tropical forests and maintain the park’s tourist infrastructure. Volunteers prevent poaching, advise visitors and tourists, and participate in educational seminars.

Calanques National Park in Marseille, France

Eco-volunteers are recruited to inform visitors and monitor their

behavior. Eco-patrols inform visitors, tell about the history, features and rules of the park. Forest volunteers prevent forest fires, prevent fires in the most dangerous «red» zones of the park.

DELTA INFRASTRUCTURE # 5: EDUCATION

EXPERT GROUP OF THE CASPIAN DELTA

The purpose of creating an expert group is to develop a model for sustainable development of the Caspian Delta in the context of modern economic, political and social changes.

Partners

- Astrakhan reserve
- Astrakhan University
- City administration

Eco-system rehabilitation program

1 YEAR
PERIOD OF IMPLEMENTATION

EFFECTS:

ensuring conditions for sustainable development of the region

development of international cooperation and the formation of external relations of the region

promoting an attractive brand of the region in the international arena

THE GROUP WILL INCLUDE:

1 representatives of the Russian and international research community;

2 representatives of relevant departments and ministries;

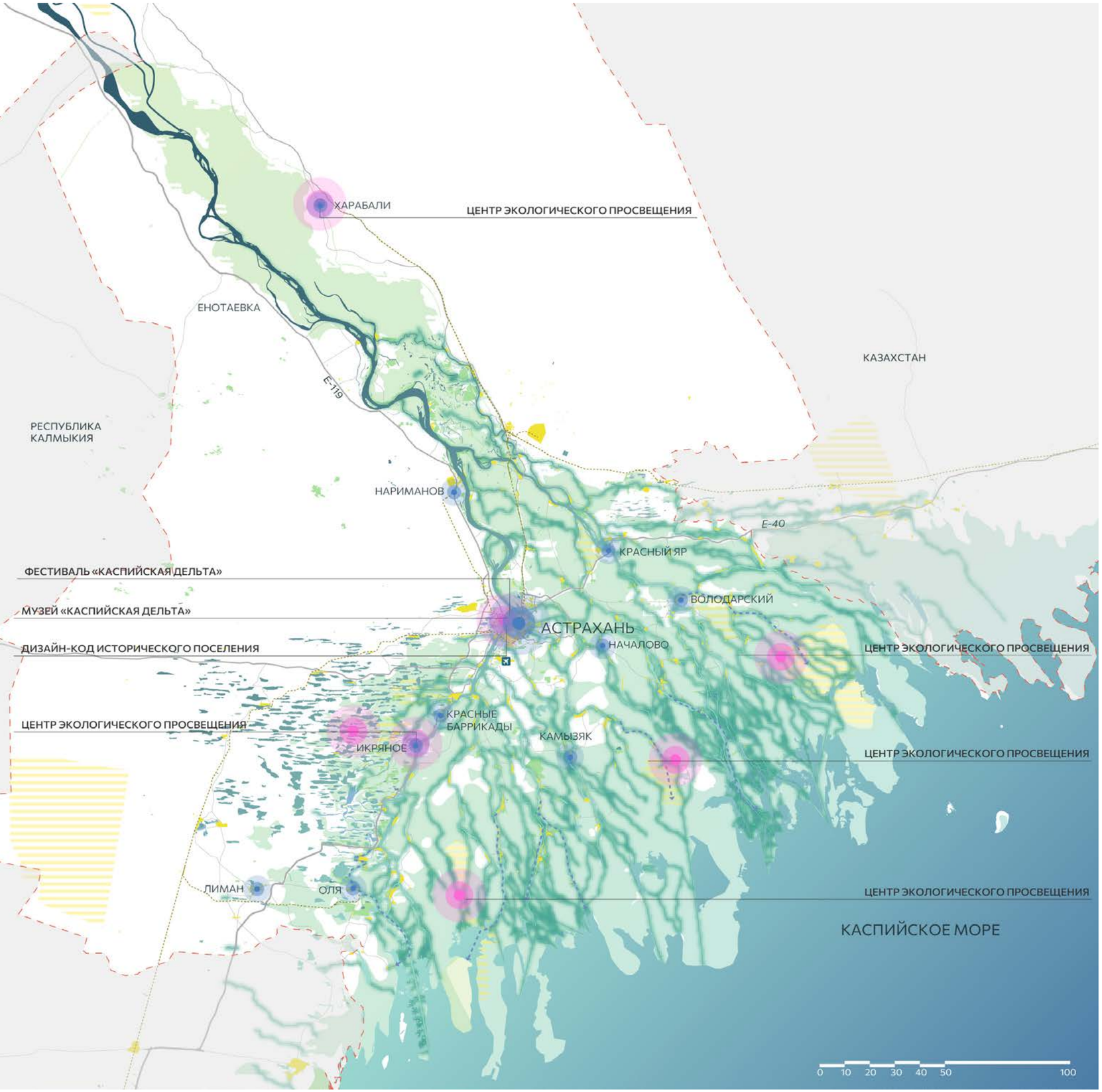
3 specialists in the field of ecology and nature management;

4 employees and representatives of environmental organizations;

5 representatives of the directorate of national parks and management organizations;

6 environmental activists and coordinators of environmental movements;

7 environmental experts, journalists and bloggers.



DELTA INFRASTRUCTURE # 6: CULTURE

CULTURE

Culture can be a powerful tool for supporting tourism, stimulating new development and improving the image of a city. We propose to focus on three key projects to achieve the image of the «cultural capital» with its unique identity:

MUSEUM OF THE CASPIAN DELTA

a major cultural focus will help promote the uniqueness of the region and raise environmental awareness

ENVIRONMENTAL EDUCATION CENTERS

will unleash the research and educational potential of the Caspian Delta for visitors and school groups

CASPIAN DELTA FESTIVAL

will help to loudly announce Astrakhan and support the economy.

- agglomeration center
- cities within the agglomeration
- development poles

DELTA INFRASTRUCTURE # 6: CULTURE

CASPIAN DELTA MUSEUM

The Research Museum for the Study of Climate, Nature, Geography and History of the Caspian Delta will become the largest museum and exhibition space in the region and a leading center for research in the field of natural sciences.

14 500 m² (approximate size)
2 BLN. RUB.
3 - 10 YEARS

MISSION OF THE MUSEUM

Collect, preserve and pass on to future generations materials and knowledge on the study of the Caspian Delta.

ORGANIZATION OF SPACE

The exposition space of the museum will be built in accordance with the key areas of the museum's activities - the department of history and local history, the department of geography and tourism, the department of biology, flora and fauna, the department of ecology and nature protection, the department of renewable energy sources, the «Museum of Water», lecture halls, open scientifically -research laboratories and conference rooms.

MUSEUM PROGRAMS:

1. Guided tours of the permanent exhibition of the museum with ecologists, researchers and volunteers;
2. Audio and video tours in partnership with technology companies (MTS, IZI Travel);
3. Thematic exhibitions dedicated to environmental problems of the Caspian region, partnership projects with international museums and research centers;
4. Art and Science - projects at the intersection of natural sciences and arts, drawing attention to the environmental problems of the Caspian region;
5. Ecological quests and quizzes for adults and children;
6. Educational lecture hall and cinema for schoolchildren and students;
7. Interactive programs - immersion in the history of the Caspian Delta (5D cinema), interactive walks and excursions around the museum (Google Arts & Culture, Google Street View-tool)

EFFECTS:

unlocking the tourism potential of the region

variety of cultural activities for townspeople and tourists

creation of new jobs for highly qualified specialists

CASE STUDIES OF INTERNATIONAL RESEARCH MUSEUMS

Museum of Ecology «Biosphere», Montreal

The museum is managed by Environment Canada and is dedicated to the environment and water resources. Located in Jean-Drapeau Park on Saint Helena in the middle of the Saint Lawrence River. The domed structure was erected in 1967 by the architect Richard Fuller and is one of the hallmarks of the city.

The museum is powered by solar panels placed on the surface of the sphere. The exhibition introduces visitors to the fragile ecosystem of the Great Lakes.

NEMO Museum, Amsterdam

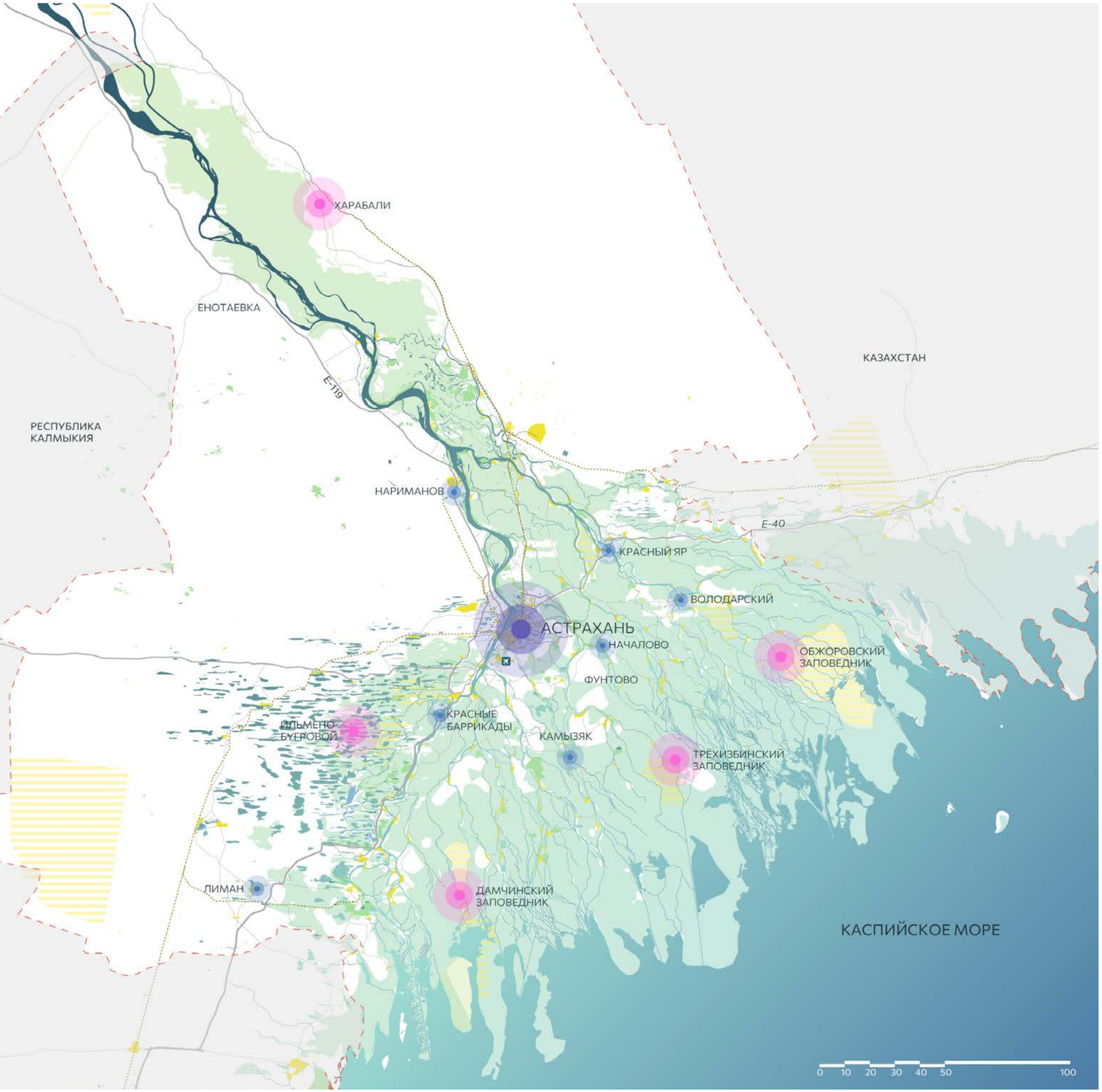
The largest science museum in the Netherlands offers an extensive exposition in the natural and exact sciences. To a greater extent, it is aimed at children and schoolchildren, but also offers interesting programs for adult visitors.

The five floors of the museum correspond to five natural science themes - natural phenomena, technology, atoms, anatomy and energy. The exhibits of the museum are made from scrap materials, they are allowed to touch and study. The museum offers a wide range of guided tours, games and interactive programs for visitors of all ages.

Natural History Museum of Utah, USA

The Natural History Museum of Utah (NHMU) is located in downtown Rio Tinto on the University of Utah campus and is housed in a new modern building from 2011, designed by a New York-based architect.

The museum's collection includes over 1.3 million objects with a primary focus on the natural history of the state. It is distinguished by great geological, biological and cultural diversity, and the museum is constantly replenishing it.



DELTA INFRASTRUCTURE # 6: CULTURE

ENVIRONMENTAL EDUCATION CENTERS

Interpretation centers are created to disseminate knowledge and information about the unique historical, cultural and natural heritage of the Caspian delta. Such centers can become new points of attraction for citizens and tourists, and unleash the potential of remote areas of the Astrakhan region. The centers will be located in the Astrakhan region next to iconic objects or landmarks reflecting the historical, geographic or emotional identity of the region.

Unlike traditional local history or natural science museums, interpretation centers are platforms for telling about the region's heritage using non-standard educational and excursion formats and modern technologies.

PROGRAMS AND SERVICES:

1. permanent and temporary exhibitions about the history, geography and nature of the region;
2. lectures and educational workshops on the ecological development of the region, preservation of cultural heritage and sustainable agriculture;
3. screenings of documentary entertaining and educational films about the history of the region for children and adults;
4. creative activities for children and schoolchildren;
5. «Days of the Delta»: festival programs dedicated to the history and heritage of the Caspian delta.

- agglomeration center
- cities within the agglomeration
- development poles

DELTA INFRASTRUCTURE # 6: CULTURE

CULTURAL PROGRAMME

The main competitive advantage of the Astrakhan agglomeration as tourist destination

The main competitive advantage of the Astrakhan agglomeration as a tourist destination

Unique natural area with non-binary set landscapes and a wide range of possible activities

A vast urban historical center that is lacking in traditional tourist destinations

A vast urban historical center that is lacking in traditional tourist destinations

The main competitive advantage of the Astrakhan agglomeration as tourist destination

Promoting a synergistic vision of the territory as a unique tourist and recreational destination, value which is shared by both external and internal audiences

Objectives of the cultural programme Caspian Delta

For all audiences: Formation of saturated an event and service program of a gram linking the water but cultural and cognitive urban activity aspect and Natural Recreational aspect of suburban activity

For external audiences: Promotion of the Caspian Sea Deltas as a significant alternative for leisure activities.

For an internal audience: Increasing the value of the Caspian Delta by increasing the popularity of external audiences.

Inner audience

Astrakhan citizens regret that their region not so well known for Russians and foreign tourists. We are convinced that despite the centuries-old history of the region, now visiting tourists have nothing to show - there are no recognizable and famous sights, phenomena or events. It is important to get confirmation cultural and tourist identity Astrakhan from external audiences

External audience

Residents of Russian cities are interested in acquaintance with the Caspian region, they are attracted by favorable climatic features, natural recreational opportunities and an original history and culture of the region. Consider a trip to Astrakhan as an unusual and new tourist experience, as an alternative way of relaxation and a new direction for travel to the south of Russia.

Tourism and cultural calendar Caspian Delta programs.

spring

Comes sooner than throughout Russia - this forms natural competitive advantage.

Urban aspect
The opportunity to relax from the winter grey of large cities on the streets of a historic city. Informal excursions downtown. Fishing festival on the city embankments «Vobla Fest.»

Country aspect
Tulip flowering and poppies in the steppe, return birds in the Volga Delta, observation of astronomical phenomena, enlightenment

winter

Short and comfortable - time for meetings and warm gatherings in the cafe.

Urban aspect
Caspian Theater Festival - unique performances and concerts in Astrakhan Opera and Ballet Theater with the participation of stars of Russia and the countries of the Caspian region. Visit museums and cultural centres.

Country aspect
Watching wintering birds in the reserve. Leisure in suburban SPA complexes.

summer

Hot and long, rich on natural phenomena - time.
Urban aspect
Bathing in urban water mas and specially organised bathing rooms, visiting cultural

Country aspect
The main fish season in Delta, lotus flowering and agrotourism

autumn

Long and comfortable - this is makes it the most suitable for large-scale cultural events on a scale agglomeration.
Urban aspect
Delta Fest - large-scale city festival

Country aspect
Fish season in the Volga Delta and agrotourism.

DELTA INFRASTRUCTURE # 6: CULTURE

DELTA FEST

PURPOSE:

Promotion of the Volga River Delta as a key water, economic, tourist and creative resource of the Astrakhan region, disclosing its potential for citizens and tourists.

Mission:

The festival aims to rediscover the significance of the Volga River Delta for townspeople and tourists.

FORMAT:

The annual festival will take place in September - the most pleasant season for visiting Astrakhan due to the comfortable temperature and colorful nature (lotus bloom, golden trees).

The duration of the festival will be 21 days, during which cultural and entertainment, cultural, educational and social events will be held. The events of the program are planned in such a way as to maximize the activation of the historical center of Astrakhan, the Volga embankment and launch tourist routes to the settlements of the Volga River Delta.

IDEAS:

1. Delta and Volga River as a place for recreation and tourism;
2. Delta and Volga River as a natural resource that needs to be taken care of;
3. The Volga River and its branches as key transport arteries linking Astrakhan ский ре-
4. Delta and Volga River as a source of water and creative energy;
5. Delta and Volga River as a Determinant Factor in the Development of Agriculture and

EFFECTS:

formation and promotion of an attractive Delta brand

a variety of leisure activities for citizens and tourists, saturation of the eventful life of the city

development of festival and youth tourism, attracting a new segment of tourists

80 Mln. RUB.

70% sponsor money(Lukoil. Gazpromneft)

3 - 10 YEARS

PERIOD OF IMPLEMENTATION

THE PRINCIPLES OF FORMING A CULTURAL PROGRAM:

1. Environmental safety and education

   The program of activities is developed in accordance with the criteria of environmental safety, the implementation of activities should not threaten the preservation of the biological diversity of the region, its ecosystem. Each event should contribute to

2. Benefits for the local community

   Each event should leave useful infrastructure or tourism facilities for the local community.

3. Longevity and scalability

   The festival program is designed for a long-term perspective with the subsequent scaling of events in the Astrakhan region, reflecting the ongoing changes in the Volga River Delta and its branches.

4. Multi-format

   The program assumes a combination of classic and modern event formats, offline and online events.

DELTA FEST

THE TARGET AUDIENCE

Residents of Astrakhan

We are interested in the diversity and saturation of cultural and leisure life, activation of the city's tourist potential.

Residents of central cities of Russia

Interested in getting to know South Russian culture and the Astrakhan region.

Inhabitants Astrakhan region

They need new formats of leisure, want to change their surroundings and visit Astrakhan at the weekend.

Foreign tourists

Interested in getting to know

The Caspian region as part of cruise tours or individual travel.

City dwellers Caspian region

Interested in visiting the Astrakhan region, acquaintance with its history and culture.

VISITOR SCENARIOS

Travel scenario

Foreign and Russian tourists will be interested in the scenario with a visit to the city of Astrakhan and the cultural and entertainment events taking place there, as well as a short trip to the settlements of the Astrakhan region. This format involves an individual visit to Astrakhan for 2-3 days in order to visit the Delta Festa and get acquainted with the natural, historical and cultural features of the region.

Weekend scenario

Residents of Astrakhan and nearby cities of the Caspian region, interested in a variety of individual or family leisure, will be able to take part in the cultural and entertainment program of the festival at the weekend. They will visit new formats of events, walk along new excursion and tourist routes that open to them a region or city from the other side.

Weekday script

Residents of the city of Astrakhan and the Astrakhan region will be able to attend not only large-scale events on weekends, but also get acquainted in detail with the regular program of the festival on weekdays. After a working day, the townspeople will be able to attend the evening events of the program - open air concerts, lectures and master classes.

THEMATIC PLATFORMS AND EVENTS

Embassies

Caspian cities

The cities of the Caspian region will present their sites, where visitors can get acquainted with the history, culture and modern life of the cities.

Gastronomy of Astrakhan

Off-site lecture halls of the Museum of Watermelon and Fisheries, dugastation of Astrakhan wine and beer, Vobla Fest, culinary master classes and markets from local farmers.

Exploring the Delta

Visiting lecture hall of the Delta Museum, educational program of the Delta campus, lectures on the nature, geography and ecology of the Caspian Delta.

Public art

Festival «Chilim», descent of art objects along the Volga, flash mobs, competition of public art objects, activation of industrial facilities in the Tourist Quarter

Water

Excursions along the rivers and canals of Astrakhan, catamaran walks, fancy-dress SUP-surf festival, kayaking trips from Tver to Astrakhan.

Fashion and design

Caspian Fashion Week,

lectures and workshops on sustainable fashion and sustainable design, fashion shows, eco-clothing markets

..

Theater and music

Open-air concerts, theater excursions, Delta Jazz festival, open days of theaters, philharmonic and conservatory.

Tourism

Short-term and long-term excursion tours to the cities of the Astrakhan region, informal excursions in the historical center of Astrakhan.

Volunteer program «Let's help дельте»

A series of subbotnik walks with environmentalists, eco-quests, master classes for volunteers, actions to clean up the Volga.

EXAMPLES OF FESTIVALS

Totally Thames, London

The festival is dedicated to exploring and highlighting the River Thames through cultural events, water sports, educational programs, heritage conservation programs and environmental initiatives.

The festival takes place in September on the embankments of the River Thames and in the industrial areas of London. For 30 days, the festival program is full of various events - from sailboat races and fishing competitions to public art on the water and concert events.

Birthday of rivers, Perm

The three-day festival «Birthday of the Rivers» takes place in the valleys of small rivers, on the embankment of the Kama River and at the PERMM Museum of Contemporary Art. The festival is intended to develop a careful and meaningful attitude of city residents to the river water area of Perm, as well as to draw attention to the environmental, urban planning and cultural problems of the development of small rivers in the city.

The festival program includes eco-quests and subbotniks in the valleys of small rivers, music concerts and art programs.

Volgafest, Samara

The festival is aimed at supporting creative initiatives and unleashing the creative potential of cities on the Volga. Every year the festival takes place on the Volga embankment, where a vast elongated territory is located, divided into many zones. For 13 days, activities and events are organized in each thematic zone.

The program of the festival is notable for its scale and diversity - the public art competition «Barriers», the design laboratory «Made in Kartoniya», the art project «Common Solutions» to activate the fence of the Samara State District Power Plant, concerts, market exhibitions and much more.

DELTA INFRASTRUCTURE # 7: BRAND AND COMMUNICATION

RECOGNIZABLE BRAND AND PROMOTION PROGRAM OF THE CASPIAN DELTA

КАСПИЙСКАЯ ДЕЛЬТА

The marketing strategy of the project is based on promoting the brand of the Caspian Delta, which translates the key values of the project:

adaptation to environmental changes, ecological restoration and protection of ecosystems, ecotourism, inclusion, representation of local culture and historical heritage of the region, development of local communities

43 -110

MIn. RUB / YEAR

1 -3 YEARS

PERIOD OF IMPLEMENTATION

EFFECTS:

formation and promotion of an attractive Delta brand

increasing the competitiveness of the region in the economic and tourism field

disclosing the tourism potential of the region, promoting the region as an attractive tourist destination

1

The nature of the

The Caspian Sea and the Volga are world famous brands that attract residents of Russia and foreigners with lotus valleys, gallery forests, semi-deserts and mounds of Baer. At the same time, even Russians know about this land at all Little. You can get to know the Delta start by visiting nature reserves and development poles, touching the unique ecosystem.

2

Culture

Hospitality, generosity, openness the multinational Astrakhan region is a visiting region card. The region is glad to show its guests legends, traditions, holidays, crafts, gastronomy of those living here peoples. The proximity to water has formed a special way of life of the peoples, which may be of interest to tourists

3

Fertility

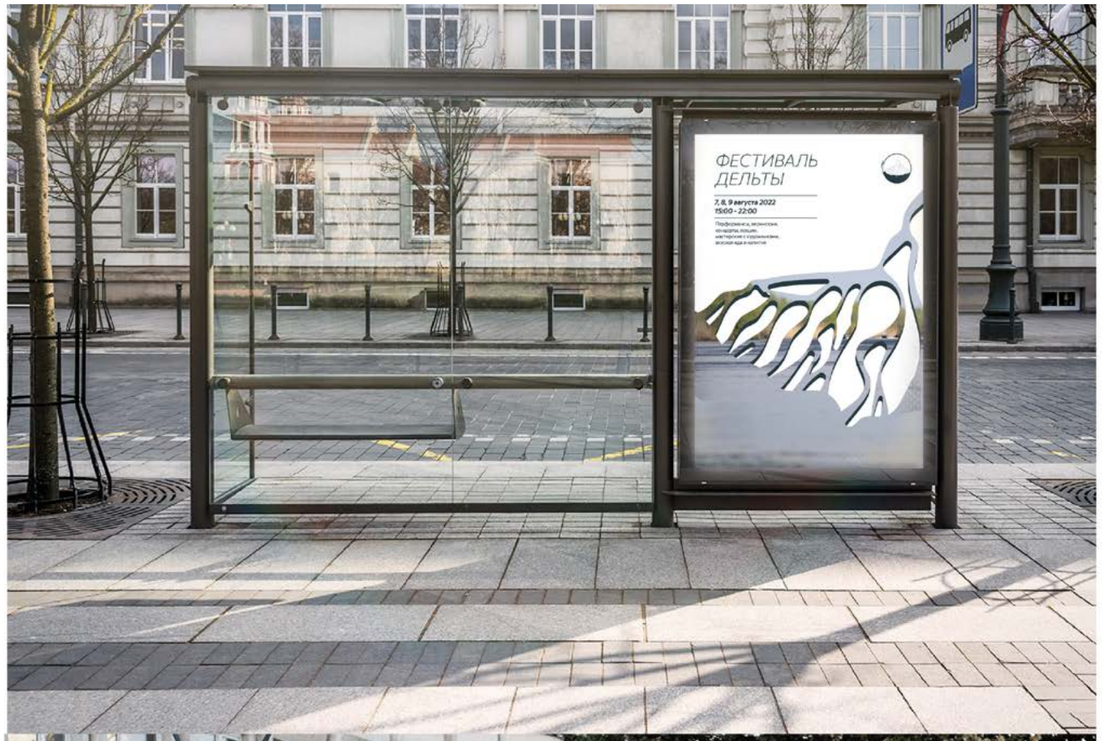
The unique climatic conditions and geographic location have created opportunities for the region's agriculture and biodiversity to flourish. The region is famous for its products, which, together with an ecological approach to cultivation, can become a vivid image of a place and reveal its gastronomic and agricultural potential.

4

Economy

Trade routes historically passed through the Astrakhan region, which put it as an important point on the international map. The renewed logistics centers and the development of renewable energy sources will enhance the importance of the region and make it the most important point in the future of the world economy.

RECOGNIZABLE BRAND AND PROMOTION PROGRAM OF THE CASPIAN DELTA



PROMISING GROWTH POINTS IN THE FIELD OF TOURISM IN THE

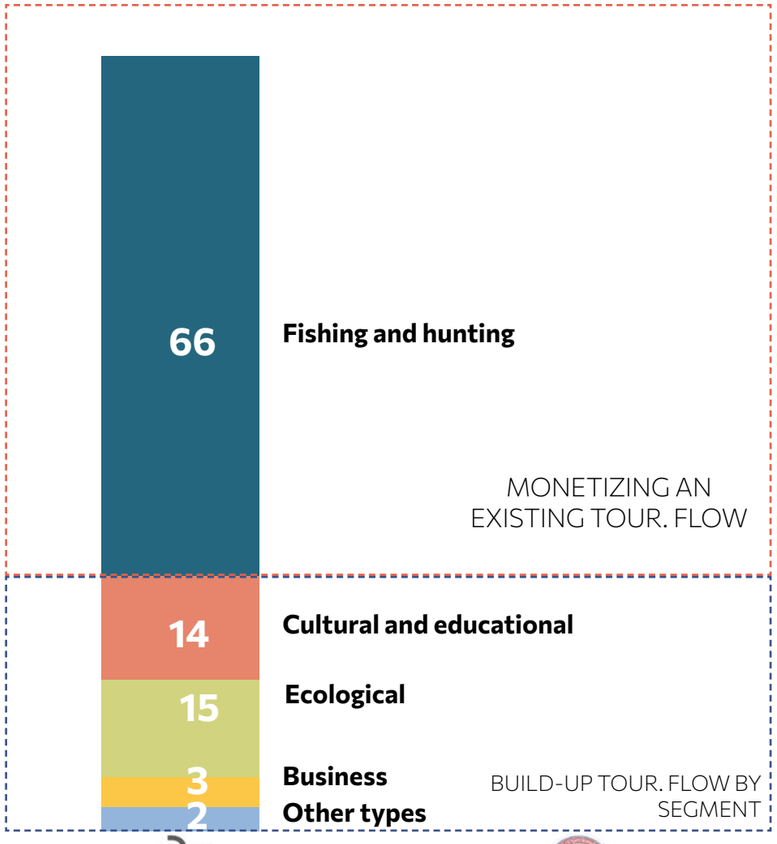
Despite a significant increase in interest in cultural, educational and ecological tourism focused on recreational activities in nature, the tourism sector in the Astrakhan region is characterized by a low level of tourist spending due to the influence of two factors:

The main segment is fishing and hunting tourism

An increase in the flow of tourists traveling in the format of amateur tourism, incl. by private car... which reduces the number of «points of contact» with the tourism infrastructure and services of the region, as well as the accompanying spending of tourists.

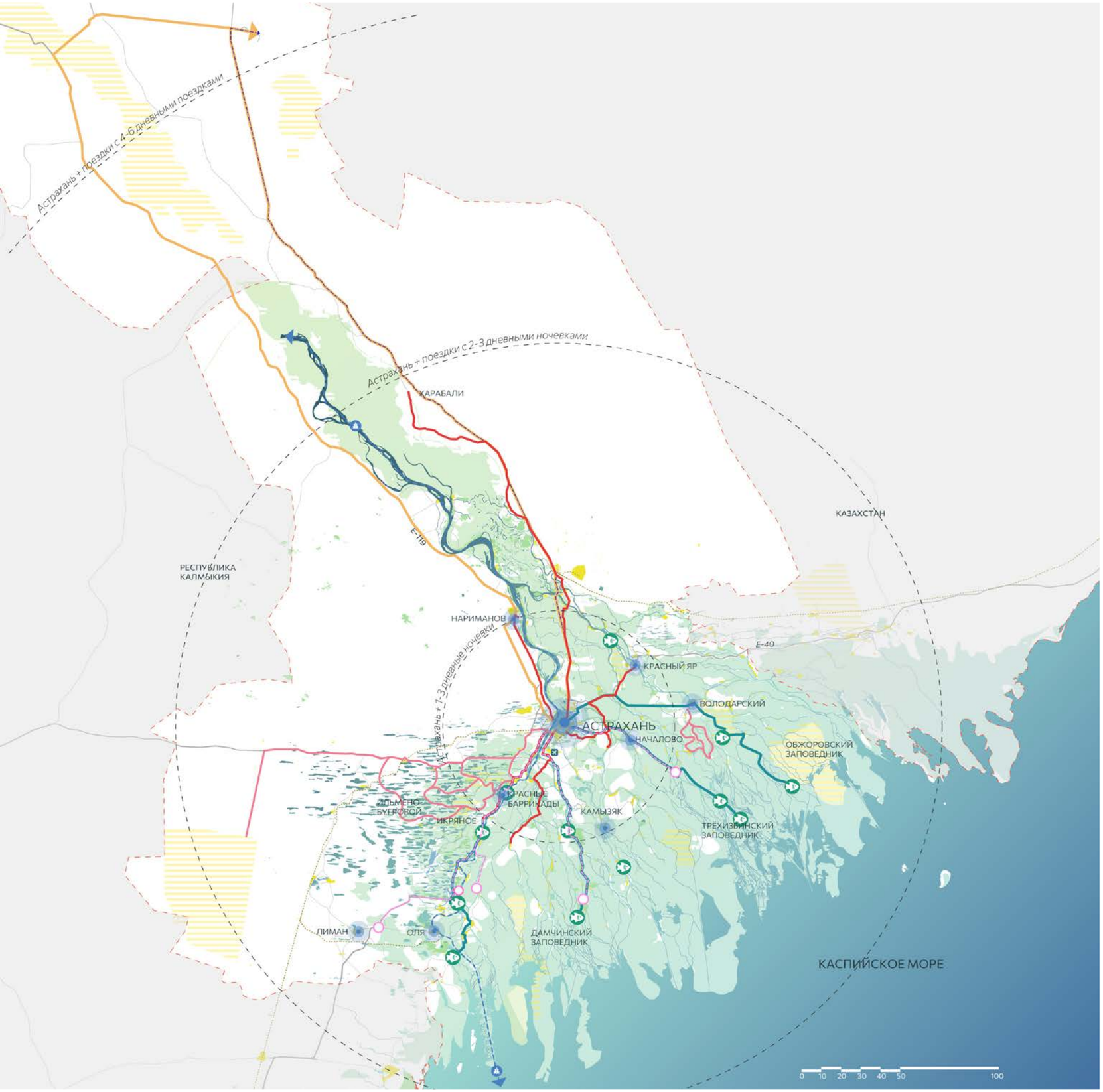
At the same time, the region has significant potential for cultural, educational, natural (eg, ecological) and business tourism.

Approximate percentage of each areas of tourism:



To develop tourism, it will be necessary to respond to a number of challenges in various areas:

DEVELOPMENT OF TOURIST DESTINATIONS	**Fishing and hunting**	• Low level of spending and contribution to the local economy (self-organized trips «savage»)
	Cultural and educational	• A large number of cultural heritage sites, natural sites, but an insufficient number of entertainment facilities • Sanatorium infrastructure requires renovation and promotion • The developed event agenda contains mainly cultural events and
	Business tourism and MICE	festivals, there are no large regular conferences or congresses, despite the developed industry in various fields (including oil and gas production) • There is no modern congress infrastructure that meets the current requirements of customers • The airport has a reserve of capacity, but it loses to its neighboring
LOGISTICS	**Air traffic**	competitor - Volgograd airport, which has a wider geography of flights • There is no passenger terminal in Astrakhan
	Sea and river cruises	• International sea cruises have not yet been launched, which could increase foreign tourist flow • Low loading DAC
SERVICE	**Collective accommodation facilities**	• Presumably lack of quality (stellar) DACs that are necessary for the development of foreign and business tourism • Low level of service in the tourism and hospitality industry
	Service level	• Low readiness to receive foreign tourists (a small number of guides who speak foreign languages) • Presumably, more efforts are required to promote the tourism
	Promotion	opportunities of the region in the domestic and foreign markets



DELTA INFRASTRUCTURE # 7: BRAND AND COMMUNICATION

TOURIST ROUTES CASPIAN DELTA

Creation of a network of ecological routes for a variety of recreation in the region for different groups of users and of varying duration. All tourist routes are connected with hospitality centers, infrastructure services and public transport.

Tourist routes:

- **«Safari fishing»: for a mini-group or as Incentive tourism: 1-2 days in Astrakhan, 3-5 days in the Volodarsky district with an individual program (natural, lotus, fishing, protected areas), return to Astrakhan (4-6 days in DAC)**
- **Nature and health improvement: 1-2 days in Astrakhan, 1-2 days Enotaevka and Kharabali, 5-7 days Baskunchak (one-day visits to the protected areas, Cherny Yar, health-improving rest), return to Astrakhan (6-9 days in the KSR region)**
- **«Lotus Blossom»: 1-2 days in Astrakhan, 3-4 days in Ikryanoye or Liman with day trips to the Lotus bloom or in protected areas, return to Astrakhan (in total 3-5 nights KSR Astrakhan, Limansky or Ikryaninsky districts)**
- **Ecotropics «Bugra Ber»**
- **«Historical»: 1-2 days in Astrakhan, 3-4 days in Enotayevka or Kharabali and the surrounding area (Astrakhan water divider, Saray-batu, the temple of the architect Charlemagne, cultural heritage sites, Tsagan-Aman protected area,), return to Astrakhan (4- 6 days in DAC),**

EFFECTS:

variety of tourist routes, attraction of tourists

disclosing the tourist potential of the region as an ecological and cultural destination

promoting an attractive brand of the region

TARGET AUDIENCES AND PROMISING GROWTH POINTS

Urban cultural tourism	Business tourism and MICE	Festival tourism	Natural and ecological tourism	Fishing and hunting	Treatment, recovery
Age: 18-34 Income: average and above average Length of stay: 3-5 days Higher education	Age: 25-44 Income: average and above average Length of stay: 2-5 days Higher education	Age: 18-34 Income: average and above average Length of stay: 3-5 days Higher education	Age: 18-34 Income: average and above average Duration: 7 days Education: 50/50 higher / secondary	Age: 25-55 Income: average and above average Length of stay: 5-10 days Education: secondary Higher education	Age: 35-54 Income: average and above average Length of stay: 8 days Higher education

DOMESTIC TOURISTS

Age: 25-44 Income: above average Profession: office workers Length of stay: up to 7 days Higher education Traveling with: friends / couple, no children Countries: China, EU countries, Caspian region countries, Middle East	Age: 25-44 Income: above average Profession: office Length of stay: 3-5 days Higher education Gender: men (73%) Countries: Caspian region, Middle East, China		Age: 25-44 Duration: 7 days Education: 50/50 higher / secondary Countries: China, EU countries, Caspian region countries, Middle East	Age: 25-44 Duration: 7 days Education: 50/50 higher / secondary Countries: China, EU countries, Caspian region countries, Middle East	

INTERNATIONAL TOURISTS (BASED ON INTERNATIONAL TOUR FLOWS)

TARGET AUDIENCES AND PROMISING GROWTH POINTS

Description of the most significant characteristics for consumers of potential objects of display of the agglomeration territory (municipal district «City of Astrakhan» and municipal districts) and key factors of the competitiveness of the territorial product

Urban cultural tourism	Business tourism and MICE	Festival tourism	Natural and ecological tourism	Fishing and hunting	Treatment, recovery
DOMESTIC TOURISTS					
Attraction tour. flow through new products and promotion of opportunities in Astrakhan and Delta	Attraction tour. flow in key areas - oil and gas industry, energy, agriculture and fish farming Promotion Incentives	Creation of 1-2 mega-events (festivals), promotion of Delta opportunities	Attraction tour. flow through new products, promoting the unique features of Delta	Monetizing segments by injecting value elements into wild tourism scenarios	Attraction tour. stream for spa treatment
Build-up tour. flow through new products and promotion of opportunities in Astrakhan and Delta Build-up tour. flow through new products and promotion of opportunities in Astrakhan and Delta	Attraction tour. flow in key areas - oil and gas industry, energy, agriculture and fish farming Promotion of Incentives as part of a business trip, exotics (fishing, hunting)		Attraction tour. flow through new products, promoting the unique features of Delta Attraction of small groups or individual tourists, environmental activists	Exotization (fishing, hunting, safari) Attraction of small groups or individual tourists	
INTERNATIONAL TOURISTS (BASED ON INTERNATIONAL TOUR FLOWS)					

DELTA INFRASTRUCTURE # 7: BRAND AND COMMUNICATION

COMMUNITY OF AMBASSADORS OF THE CASPIAN DELTA

As part of the development of the brand and the program for promoting the Caspian Delta, it is planned to create a community of Delta Ambassadors - media and recognizable indigenous people who could profitably represent the region's brand in the communication field.

Residents of Astrakha and the Astrakhan region can become ambassadors, who can tell about their roots, traditions, legends and atmosphere of the region.

"I was born in Astrakhan. My grandmother was a sailor, my mother was an Astrakhan, great-grandmother and great-grandfather were all Astrakhan people who lived in the Caspian Sea. I love Astrakhan, local history. I've always wanted to talk about it. Journalistic experience and natural courage allowed me to embody this in an informal way «

Delta Ambassador
Natalia Tuigunova
Journalist, editor-in-chief of the Astrakhan portal «Dvor.media», author of the project «Hooligan excursions».

"I know how to promote our region at the level of other cities, at the level of the capital. At forums and conferences, they know me as a person who sincerely loves this region and is ready to advertise it to everyone. I got inspiration on how to promote my region from my friend from Bashkiria, blogger Rais Gabitov. I watched them develop a regional brand, love for their region, and realized that I want to promote Astrakhan in the same way. Not at the level of popular prints, stories in kokoshniks, fishing naphthalene pieces, but modern, with good PR «

Partners

- Astrakhan reserve
- Astrakhan University
- Research Center of the Caspian Delta

Eco-system rehabilitation program

EFFECTS:

promoting an attractive brand of the region

unlocking the tourism potential of the region

attraction of investment projects

1 YEAR

PERIOD OF

DELTA INFRASTRUCTURE # 8: BUSINESS SUPPORT

ACCELERATOR NETWORK OF THE CASPIAN DELTA

The program of launching acceleration centers in the Astrakhan region will allow local farmers and craftsmen to get access to business consultations, educational and grant programs.

Residents of the Astrakhan region will not have to travel to the administrative center to receive assistance for their entrepreneurial projects; they will be able to receive it on the basis of regional centers of environmental education.

Benefits of acceleration centers for entrepreneurs

Mentoring and coaching programs
An intensive consulting program with career development professionals, business experts and investors will provide invaluable experience and expand the entrepreneurial abilities of program participants.

Innovative educational programs
Lectures and workshops on creative entrepreneurship, financial literacy, marketing and communication will allow participants to develop business plans for their ideas.

Specialized Grant Program
The opportunity to participate in a competition for entrepreneurial projects and receive a grant for the implementation of a business project or idea. Consulting on programs of state support, subsidies.

Formation of a local community of farmers and craftsmen of the Caspian Delta
Identification of entrepreneurs united by common traditions and values of the Caspian Delta, development of professional networking.

Partners

- Ministry of Economic Development
- Astrakhan Regional Innovation Center
- Municipal District Administrations

Caspian Delta accelerator network

Financing

- FP «Acceleration of small and medium-sized businesses»

EFFECTS:

development and support of entrepreneurial activity in the region

formation of new skills and competencies among young people in small towns and villages

stimulating the development of the agricultural sector in the region

1-3 YEARS

PERIOD OF

EFFECTS OF MODERNIZATION OF DELTA INFRASTRUCTURE

1.

Prevealing the natural, recreational and tourist potential of the region

Formation and

2.

promotion of an attractive brand of the region

Development of

3.

the region’s tourism infrastructure and creation of new jobs

Exploring and

4.

sustainably restoring ecosystems and biodiversity

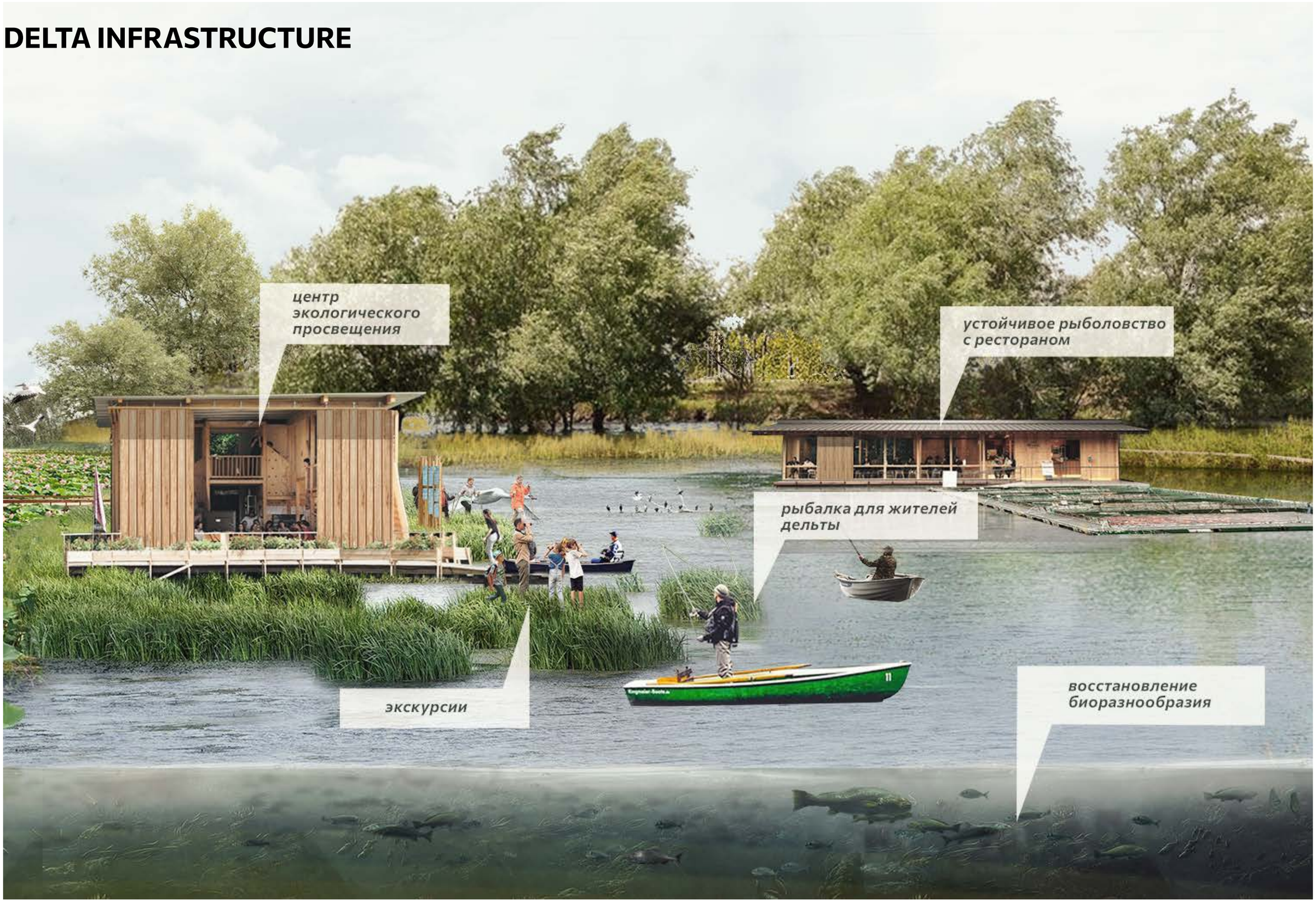
Improving the health

5.

and well-being of the population

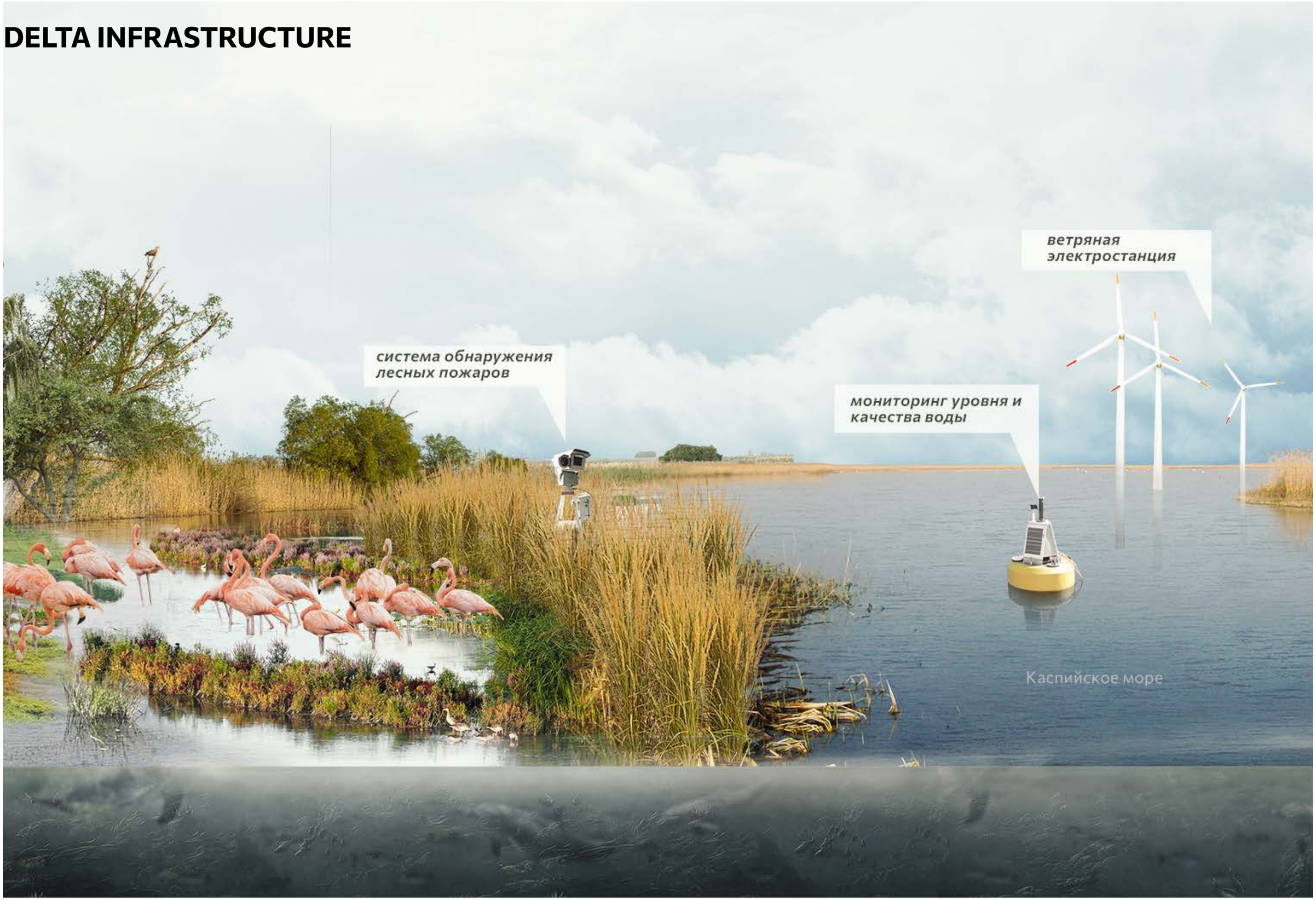
DELTA INFRASTRUCTURE

DELTA INFRASTRUCTURE



DELTA INFRASTRUCTURE

DELTA INFRASTRUCTURE



04.

GREEN INFRASTRUCTURE OF THE CITY

SCHEME OF A COMPREHENSIVE ASSESSMENT OF THE POTENTIAL OF THE TERRITORY OF THE MUNICIPAL DISTRICT «CITY OF ASTRAKHAN» WITH THE DISPLAY OF KEY PROBLEMS AND FEATURES OF SPATIAL

CITY POTENTIALS

The city of Astrakhan has great natural, cultural and logistical potential to become a city comfortable for life, education and business development, but today it faces the following problems:

- Ineffective use of the natural spaces of the city, namely, urban islands, embankments of canals and small rivers, agricultural land around the city, as well as insufficient greening of city streets
- High road traffic through the city center, communication between agglomeration settlements is mainly carried out through Astrakhan, which leads to overruns of transport and increased load on the road network of the regional cen

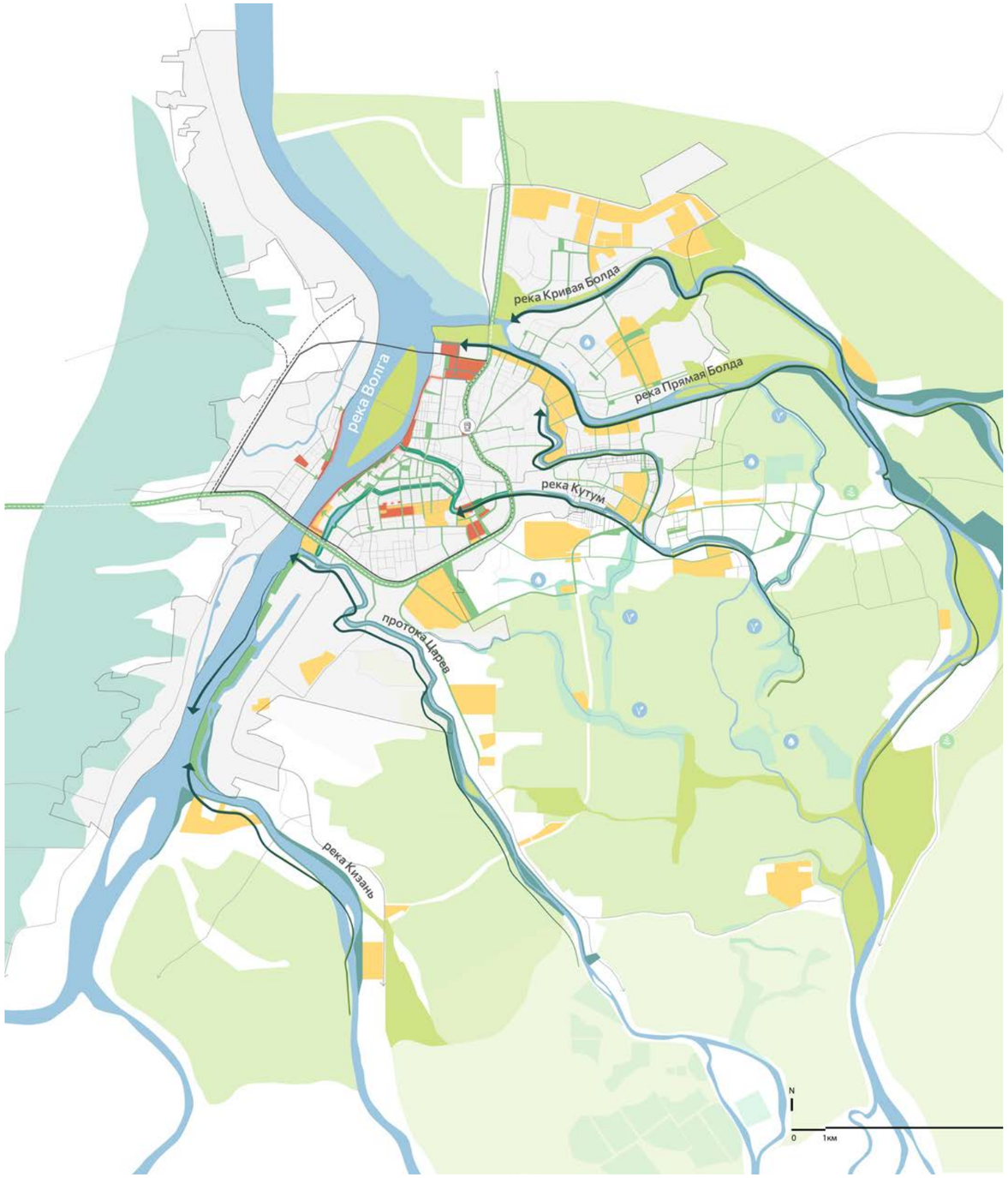
- Insufficient share of cultural and educational tourism in the historical center of Astrakhan: tourists do not stay in the historical center, which leads to a general decline in interest in cultural heritage sites
- Expansion of city boundaries: the trend of urban development is aimed at construction outside the city center, which leads to the growth of Astrakhan, with the existing promising development sites in the center
- The potential for the development of modern residential buildings and the creation of public spaces along the river branches is not used

PROPOSAL:

1.
Formation of a «green» city infrastructure that improves the quality of the urban environment

2.
implementation of projects for the integrated development of territories with a unique functional value in the city center

3.
gradual preservation of the historical center, revealing the tourist potential of the historical settlement of Astrakhan



- Astrakhan city border
- agricultural areas
- city river channels
- promising development sites in the city center
- development sites on the outskirts and outside the city
- eco-islands
- natural areas along small rivers

HISTORICAL RETROSPECTIVE

FROM NATURAL LANDSCAPE TO GREEN INFRASTRUCTURE

XVI century

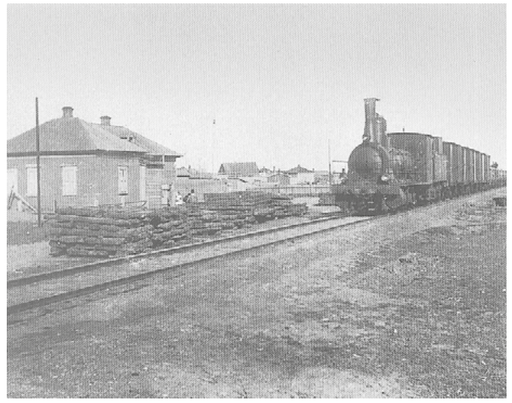
Astrakhan - a city on the Volga

The Astrakhan settlement arose on the Volga River in the X year. The river provided the city with security, logistical advantages, and also supplied the city with fish. In 1817, the Varvatsia Canal was built, the task of which was to drain the salt marshes on the southern outskirts of the city.

XIX century

Строительство канала Варвация

In 1817, a canal was built in the center of the city, connecting the Tsarev and Kutum rivers, whose task was to drain the swamps in the southern part of the city. The canal also began to be used as a logistics corridor for the transport of goods and fishing.



XX century

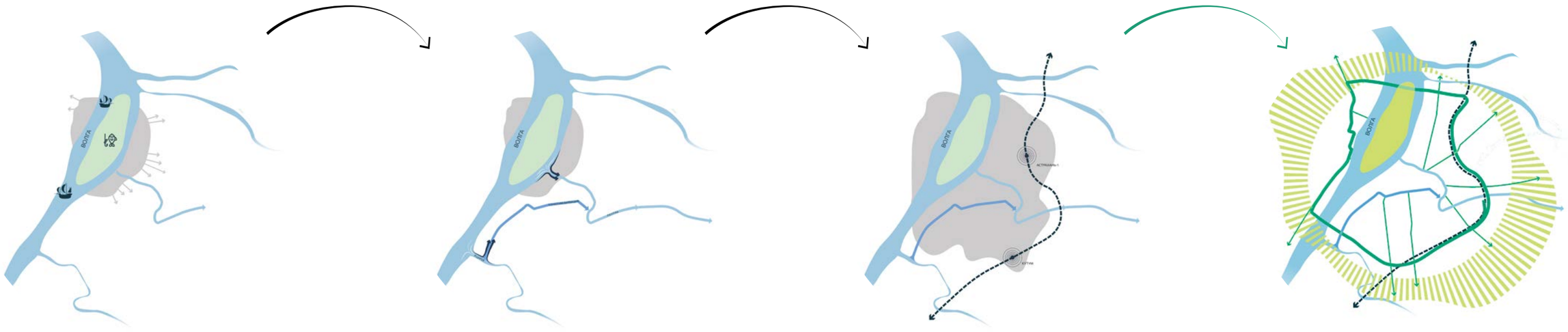
Industrialization and railway development

The development of railway communications has served as an impetus for the development of urban infrastructure. In 1907, a section of the Buzan-Astrakhan railroad of the Volga Railway was put into operation, and in 1909 the Astrakhan-1 railway station was opened.

XXI century

Sustainable Landscape and Green Infrastructure

In the 21st century, Astrakhan is faced with the task of responding to the challenges of climate change and starting to use the landscape of the city and the region as an infrastructure that ensures its adaptability to changes. Improve the comfort of the urban environment and form urban communities that will support the ecology and «green infrastructure» of the Caspian Delta



CONCEPT
GREEN INFRASTRUCTURE OF ASTRAKHAN

VOLGA EMBANKMENT

1. Will connect the main urban infrastructure centers
2. Will become an experimental platform for studying the ecology of the Volga River
3. Create a new coastline zone adaptable to flooding and climate change

GREEN CANALS

1. Will form the main recreational zone in the historical center of the city
2. Restore the historical activity of the channels and become a platform for the development of small and medium-sized businesses

ECO-ISLAND

1. Will create opportunities for launching pilot projects in the field of ecology of the Volga
2. Will create a platform for eco-education
3. Will become the largest park in the city center

TACTICAL LANDSCAPING

1. Will connect the historic center with the outskirts of the city
2. Will improve the climatic performance of city streets
3. Will make the urban environment more comfortable for movement

CENTRAL RING ROAD

1. Forms a green ring around the city center.
2. Reduce the traffic load on the historic center: reduce environmental costs, increase safety, free up central streets for pedestrians, cyclists and public transport.
3. Increase the transport accessibility of the development centers of Astrakhan, the station hub, as well as existing residential areas and places of employment.

RIVER ARMS

1. Increase transport accessibility to settlements outside the city
2. Will create a comfortable environment for living outside the city

PRODUCTIVE GREEN BELT

1. Will increase the density and saturation of the urban environment
2. It will allow you to more effectively use the natural and recreational potential

CONCEPT

SEVEN PROJECTS CREATING AN ADAPTIVE GREEN CITY

The strategy consists of the creation of seven complex projects, each of which will help create an adaptive urban environment and use natural processes for the development of the urban economy.

We propose to form a «green» infrastructure of the city, which will allow Astrakhan to adapt to climate change:

- additional landscaping of existing green areas

- control over the expansion of the boundaries of the city of Astrakhan

- using the potential of small rivers

- increasing the efficiency of the use of agricultural land

- reduced car traffic through the city center

PROJECT 1
VOLGA EMBANKMENT

PROJECT 2
GREEN CANALS

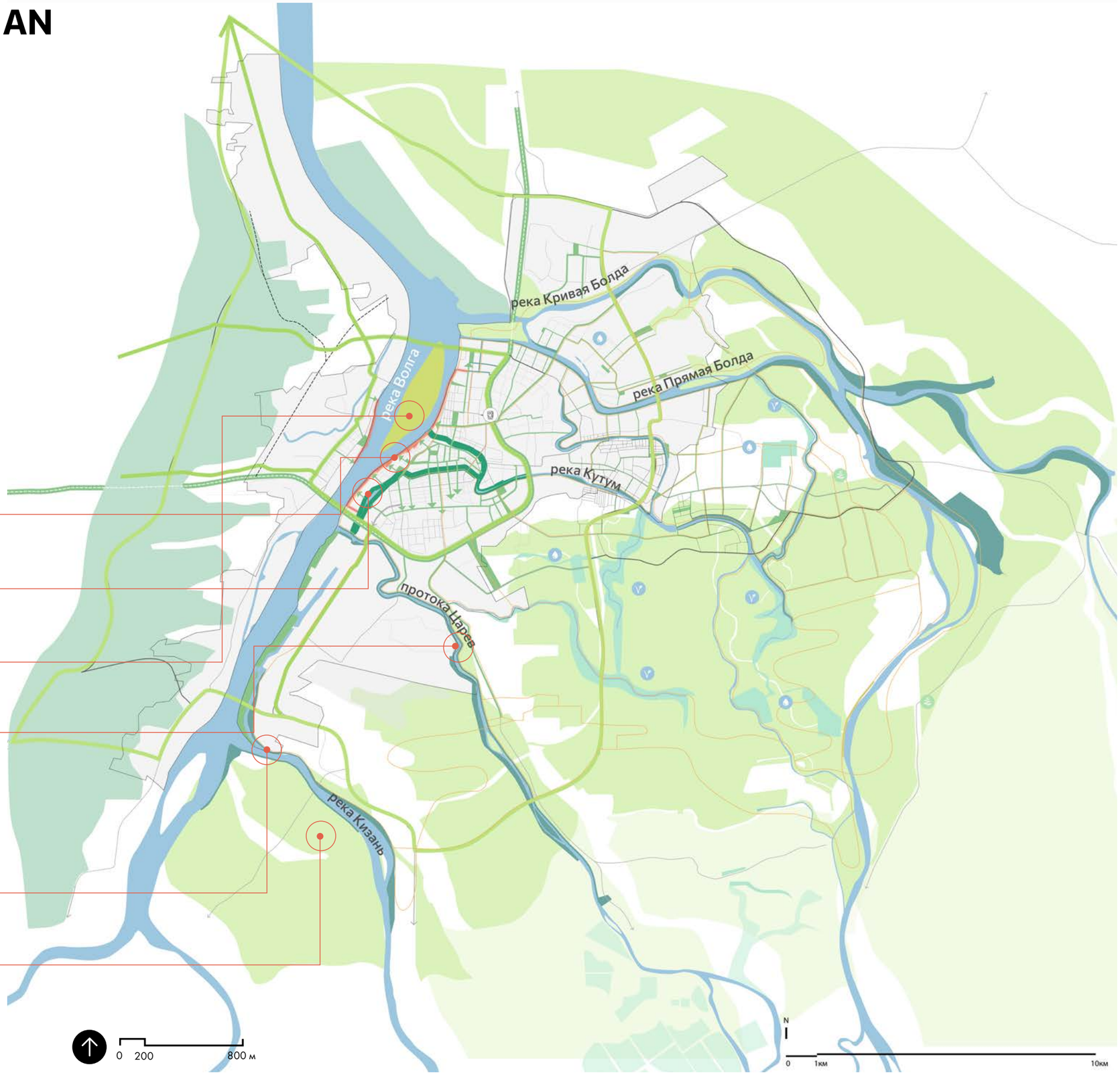
PROJECT 3
ECO-ISLAND

PROJECT 4
TACTICAL GREENING

PROJECT 5
CENTRAL RING ROAD

PROJECT 6
RIVER ARMS

PROJECT 7
PRODUCTIVE GREEN BELT



CONCEPT

GREEN INFRASTRUCTURE EFFECTS

The long-term strategy for the development of «green» infrastructure in the city of Astrakhan was created as a guide to the modification of the urban and non-urban environment. The «green» infrastructure should help Astrakhan optimize the use of its natural and recreational potential and improve the indicators of the comfort of the urban environment.

9,5 km
total length of embankments by 2032

44,5 ha
area of the territory of «green channels»

43,8 km
reorganization of streets with additional landscaping and new bike paths

1969 ha
the total area of the new development along the river branches

29 500 HA
the area of the production green belt around Astrakhan

PROJECT #1

VOLGA EMBANKMENT

The Volga embankment will be continued on both directions and connect important new hubs (Tourism Quarter, Campus to the North and a new mixed-use residential quarter to the South). Different zones will be created and destination points will create rythm along the promenade and encourage visitors to explore to the next destination. Finally a cultural program will activate further an already popular destination for Astrakhan.

PRINCIPLES

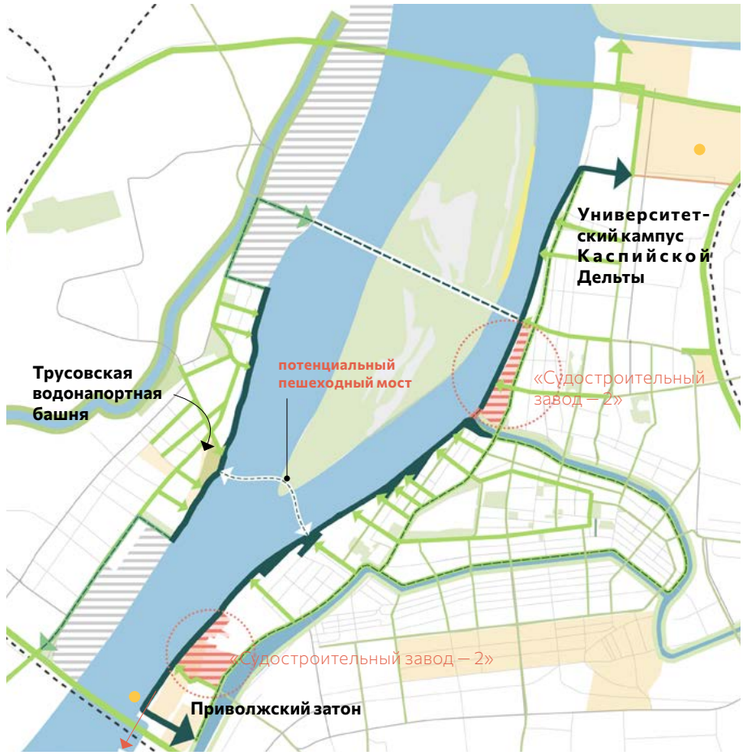
1. utilise the existing potential of the existing embankment to create a major public space

2. help to reconnect existing districts with the Volga

13 348 MILLION RUBLES IMPLEMENTATION COST

PROJECT # 1

VOLGA EMBANKMENT



1.

Single public space

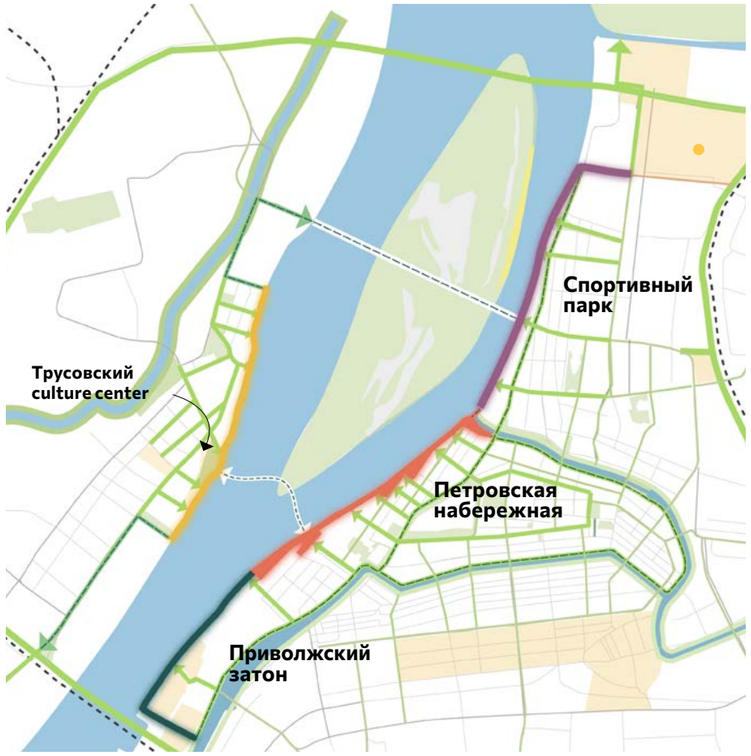
Move «Shipbuilding Plant - 2» to the territory of a new logistics hub in the region. Connect the University campus of the Caspian Delta and the Volga backwater with a single public space, as well as reactivate the territory of the architectural monument - the Trusovskaya water tower on the right bank of the Volga.

3 km
length of the existing Petrovskaya embankment

9,5 km
total length of embankments by 2032

2,8 km
left bank embankment

6,7 km
right bank embankment

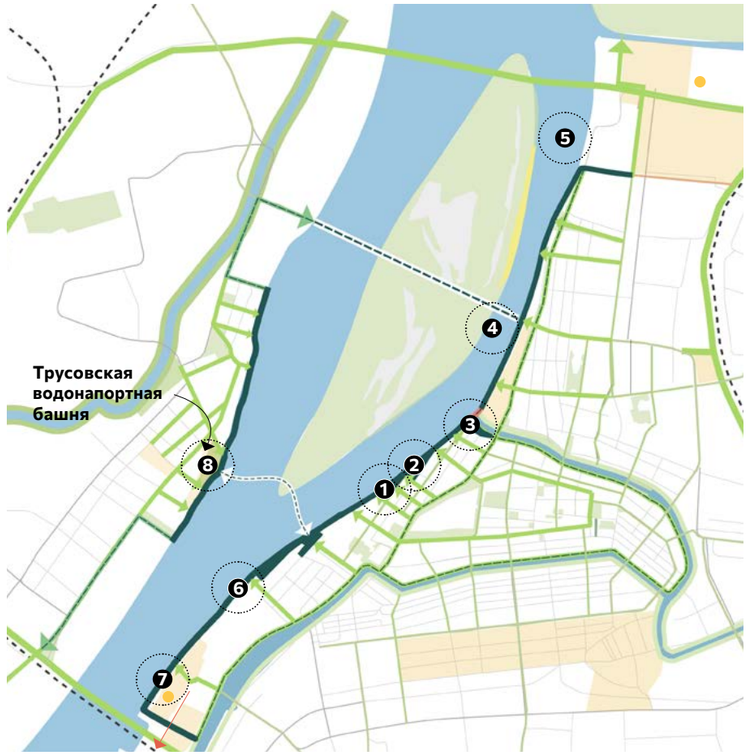


2.

Pedestrian coastal connectivity

A 1 km long pedestrian bridge will connect the historical center of the city on the right bank with the historical settlement on the Trusovskaya side

1
pedestrian bridge across the Volga



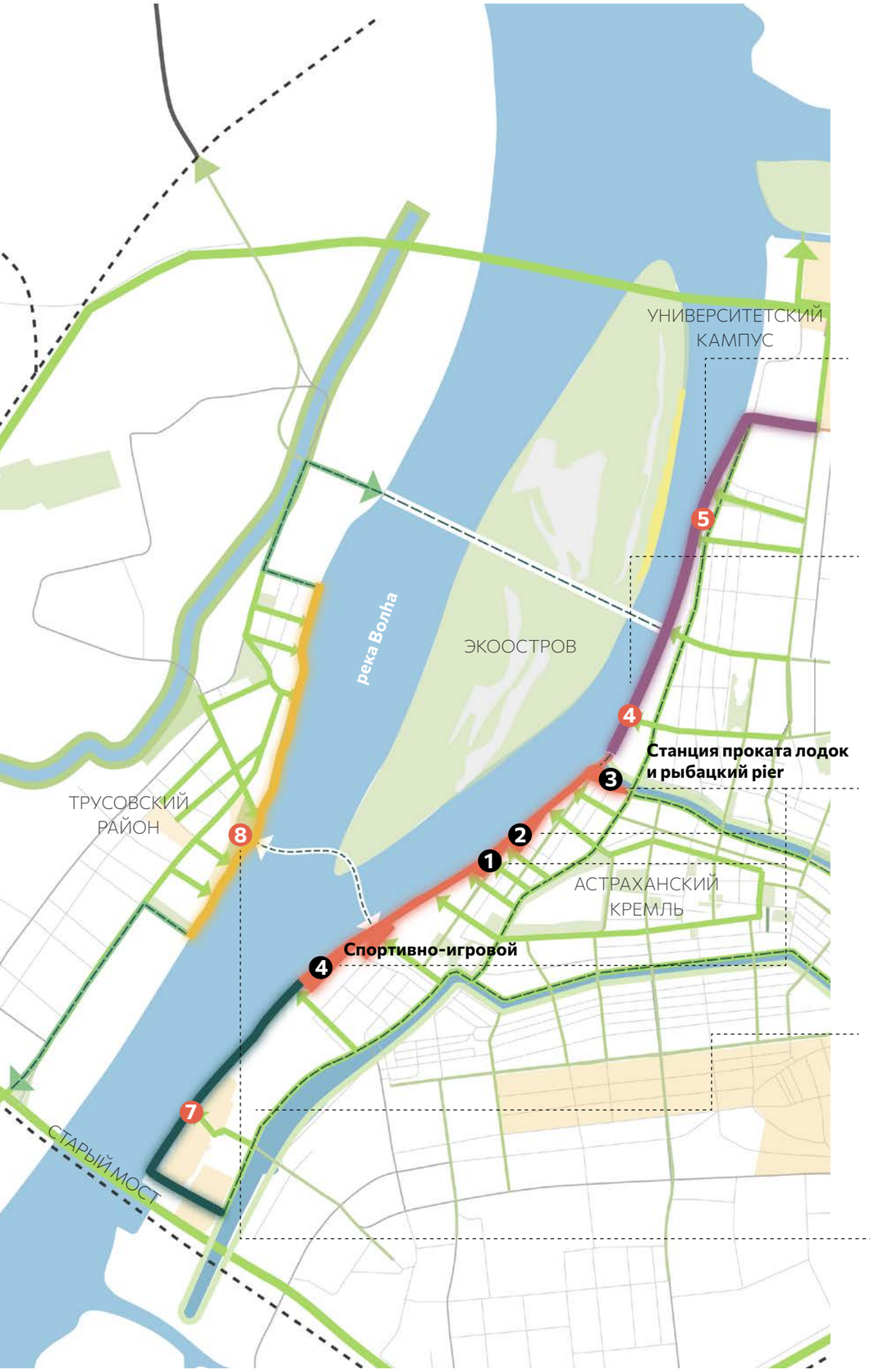
3.

Key centers of the active waterfront

Festival of promoting the Volga River Delta as a key water, economic, tourist and creative resource of the Astrakhan region, disclosing its potential for citizens and tourists.

1
the duration of the annual Delta Fest festival

8
active centers



PROJECT # 1

ACTIVATED CENTERS OF THE VOLGA EMBANKMENT

Eight key points stand out along the entire length of the embankment, each of which is an active center of attraction with a specific function.

Sports park

On the territory closest to the University campus of the Caspian delta, it is proposed to organize a sports park with skate grounds, boat stations and floating pools

Tourist quarter of the Delta

On the embankment of the tourist quarter of the Caspian Delta, it is proposed to create large event venues with a stage and amphitheaters for holding city concerts and forums.

Historical Petrovskaya embankment

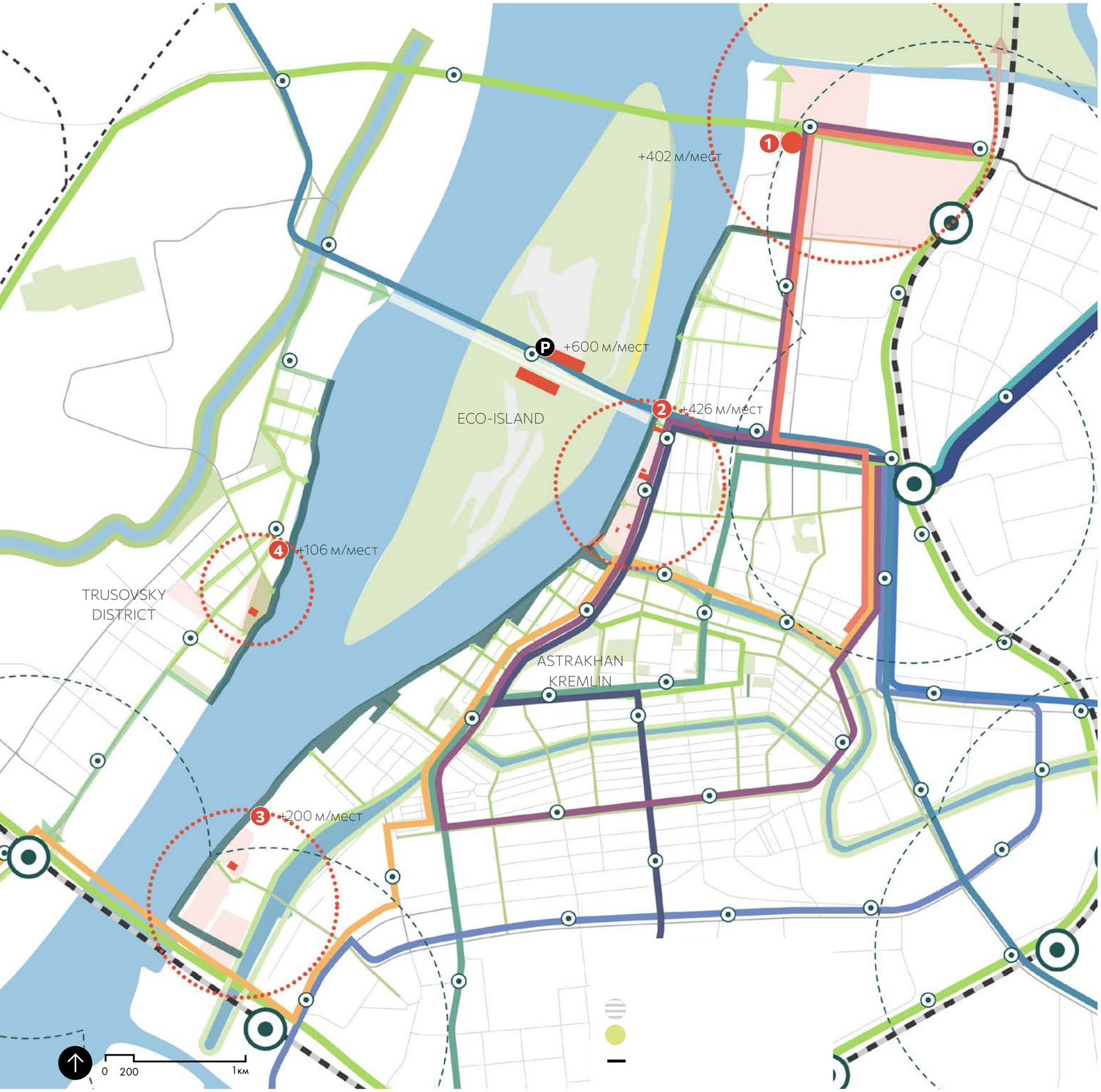
The existing section of Petrovskaya Embankment is being reactivated due to the new cultural program of the embankment and the annual Delta Fest festival, for which Petrovskaya Embankment will become the launching pad. In addition, the embankment will be saturated due to additional multi-level landscaping, the creation of awnings, terraces of Easter cake cafes, as well as a pavilion в котором могут

Viewpoint

On the extreme southern section, as a final element, a cantilever observation deck will be made with a view of the Old Bridge and the eco-island

Парк культурного centera в Трусовской водонапорной башне

On the site of the Astrakhan Vodokanal in the Trusovskaya water tower, it is proposed to open a culture center with an adjoining park and an embankment that will connect the culture center with educational institutions (schools and universities) using a linear green space



PROJECT # 1: DIAGRAM SHOWING BASIC TRANSPORT AND LOGISTICS SOLUTIONS

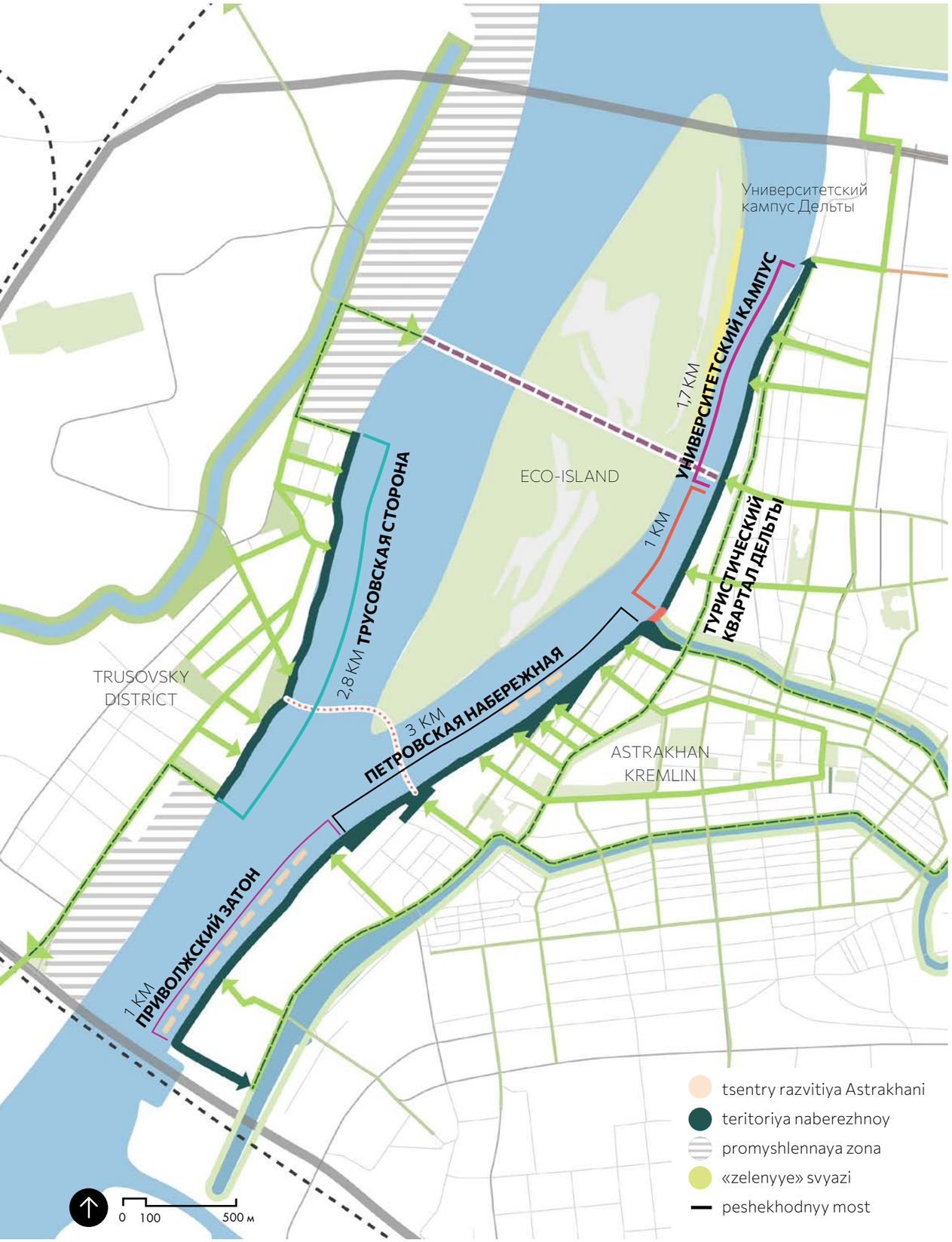
TRANSPORT AND LOGISTICS SOLUTIONS

Transport accessibility and provision of the Volga embankment with parking spaces is ensured by several factors:

1. Organization of parking spaces on the territory of the Astrakhan Development Centers located in the immediate vicinity of the embankment:
- University campus of the Caspian Delta (+ 402 parking spaces in the multi-level parking lot of the campus)
- Tourist quarter of the Caspian Delta (+ 426 parking spaces in a covered parking lot and in an open parking lot)
- Shipbuilding quarter (+200 parking spaces)
- Trusovsky quarter (+106 parking spaces)

2. Ensuring priority of public transport in trunk corridors: creation of BRT (Express Bus) lines where the profile of the streets allows, and dedicated lanes for public transport in places of congestion.

3. The railway will connect the development centers of Astrakhan by passenger traffic between the stations Astrakhan-2 and Trusovo, which will have 9 platforms, two of which are located near the Old Bridge.



PROJECT # 1

VOLGA EMBANKMENT

The goal of the project is to create an interconnected space between the Caspian Delta University Campus, the historical center and a new redevelopment project in the south of the city. Create an ecological zone uniting an innovative research center and an eco-island

STAGE 0 - 2021:

3 км

reactivation of the existing Volga embankment in the area of the historic center

MEASURES :

1. Tactical landscaping
2. Tactical infrastructure saturation
3. Cultural program

PHASE 1 — 2024:

4 км

improvement on the site of the tourist quarter of the Caspian Delta

MEASURES :

1. Various landscaping of the site
2. New commercial features

PHASE 2 — 2027:

6,7 км

improvement on the site of the University Campus and Privolzhsky Zaton

MEASURES :

improvement on the site of the University Campus and Privolzhsky Zaton

PHASE 3 — 2028:

9,5 км

improvement on Trusovskaya side

MEASURES :

1. Various landscaping of the site
2. New commercial and cultural features
3. Measures to preserve the historical buildings of the quarters

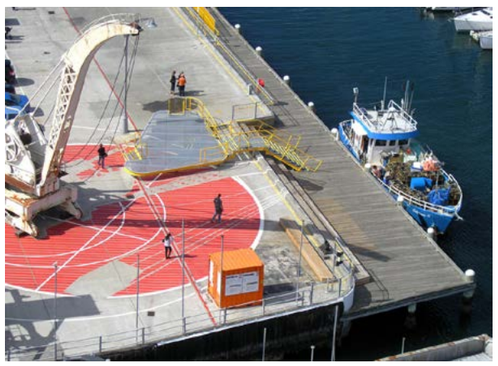
ПРОЕКТ #1

EXAMPLES OF NAVIGATION AND FURNITURE DESIGN

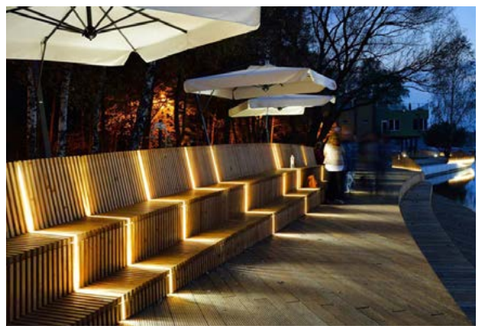
Bench

shelters

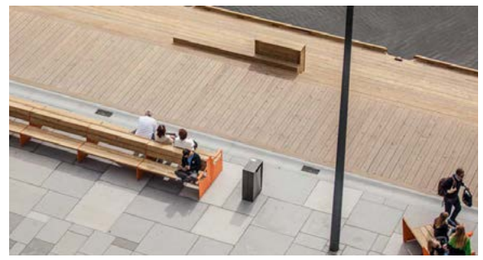
preserve port identity



Lighting



Pavement



Navigation

PROJECT # 1: PROPOSAL FOR THE FORMATION OF A UNIQUE EVENT PROGRAM

CULTURAL ACTIVATION OF THE VOLGA EMBANKMENT

The Volga embankment is a favorite walking place for Astrakhan residents and guests of the city.

The project involves the creation of a single public space and the activation of eight points of the embankment - along the left and right banks of the river.

The new embankment centers will be activated due to a rich cultural program - at the same time the embankment will become «dancing», «sports» and even «theater».

Every citizen or tourist will be able to walk along the entire embankment and choose something interesting for himself.

In the evening, the Volga embankment will come alive with a multimedia show and the sounds of classical music.

EFFECTS:

- saturation of the eventful life of the city, a variety of leisure activities for citizens
- disclosure of the tourist potential of the region as a cultural and event destination
- attracting a new youth segment of tourists to the city
-

Sports embankment

Running and cycling marathons, open yoga and Pilates classes, dance workshops.

Bright embankment

3d-mapping show, projection to different points of the embankment (water tower, bridge, university campus, island, port cranes), musical accompaniment.

Narodnaya embankment

National fairs, games, fun, ethno-rock and ethno-jazz, performances, theater and dance performances

Theater embankment

Street performances, lectures on modern theater and ballet, puppet and shadow theater for children, theater tours around the city.

Historic embankment

Reconstruction battles, visiting lecture halls of museums, master classes on creating traditional boats «kulas», master classes on fencing.

Scientific embankment

Visiting lecture halls of different faculties of Astrakhan University, scientific shows and presentations, open master classes in robotics.

PROJECT #7

ECO-ISLAND

The eco-island will represent the new «central park» of Astrakhan, a green destination, symbolically located on the Volga, with great views on the city. We propose to clean the existing park and create a network of floodable pathes which can accomodate flooding events and reduce the cost of construction compared to a traditional park. River shuttles will be possible from the city center in summer; in the last phase, an iconic pedestrian bridges connecting the two river banks with the island, wil be a new symbol for Astrakhan.

PRINCIPLES:

1. provide a new large park for Astrakhan citizens

2. improve the image of Astrakhan in line with the Resilient Delta philosophy

PROJECT#2

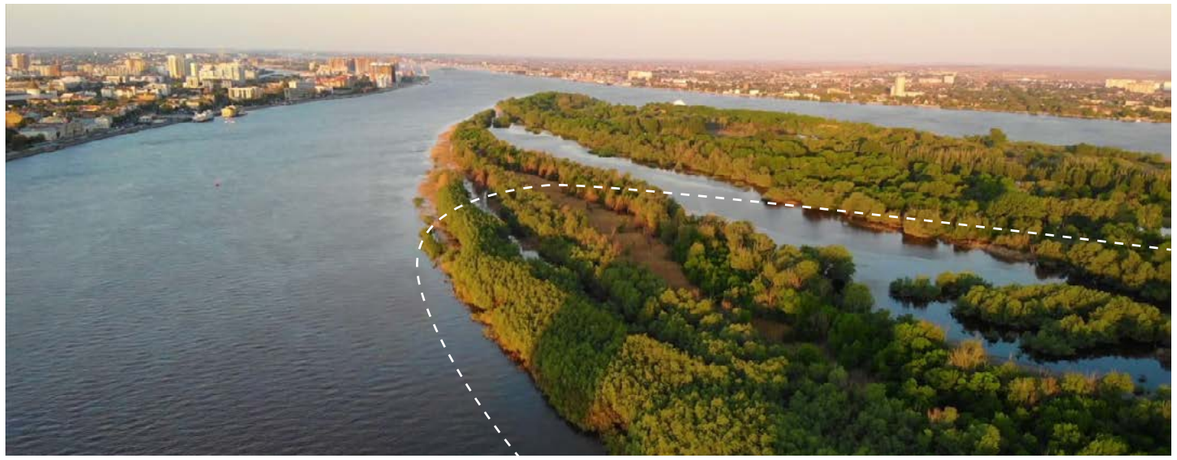
ECO-ISLAND

3 ha
the area of the existing beach

85 ha
urban eco-park improvement area

160 ha
ecological zone of the island with reduced anthropogenic load, closed for permanent access

245
total area of the ecopark



TERRITORY DEVELOPMENT PRINCIPLES:

1. Improving the walking and cycling accessibility of the island for the townspeople

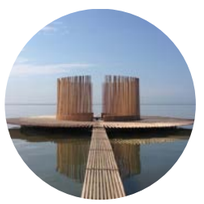
2. Creation of a model of the research site

3.Access by water to the island (historical value)


городской пляж


экотропы


водяной сад

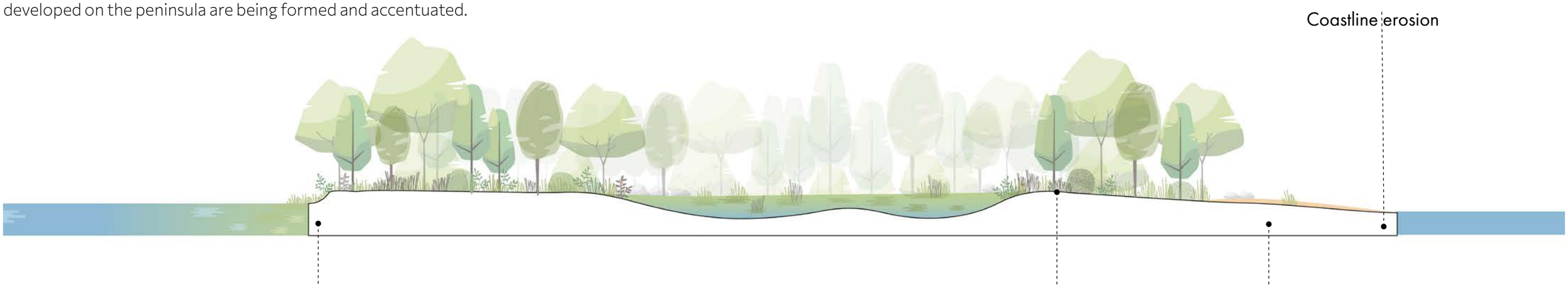

плавающие павильоны


смотровая площадка

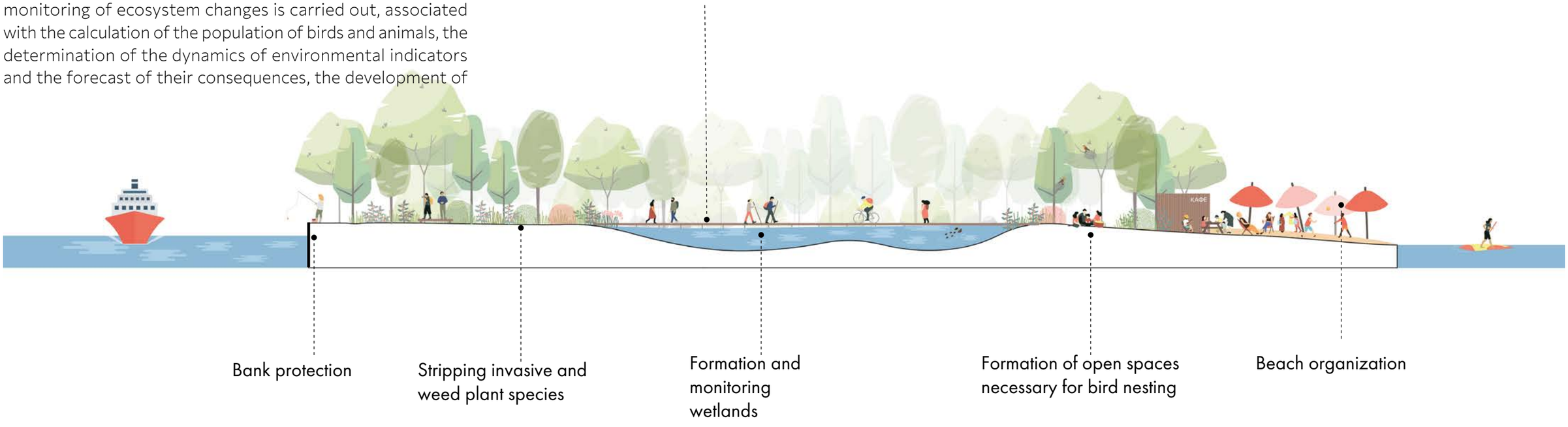
PROJECT # 2

ECO-ISLAND. SECTION

Gorodskoy Island is a special territory of the park, which is the territory of an ecological oasis. There is no lighting on the peninsula, footpaths are shrinking, and wetlands that have developed on the peninsula are being formed and accentuated.



After the change in the program of the island, regular monitoring of ecosystem changes is carried out, associated with the calculation of the population of birds and animals, the determination of the dynamics of environmental indicators and the forecast of their consequences, the development of

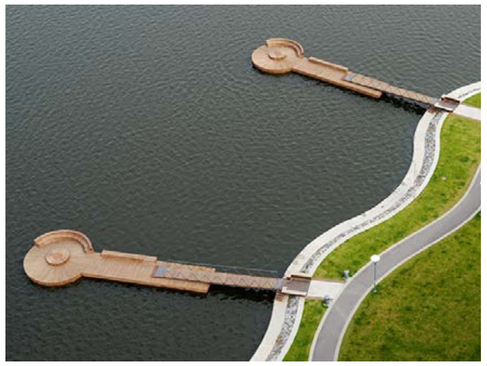


PROJECT # 2

EXAMPLES OF NAVIGATION AND FURNITURE DESIGN

Bench

Pier



viewpoints

Lighting

Navigation

Pavement

PROJECT #3

GREEN CANAL

The greening of the existing canals on May 1 and the Kutum River is designed to create the main recreational zone in the historical center of the city, which will encircle the historical center (Posad, Kos) and at the same time connect it with the territories around it, including the development centers of Astrakhan (KRT). An important task is also the opening of locks and the restoration of the natural channel between the Volga and the Varvatsiya canal, in order to prevent stagnation of water and create an environmentally sustainable system.

PRINCIPLES:

1. Create a new large park for the Astrakhan people.

2. To increase the attractiveness of the image of Astrakhan in accordance with the values of sustainable development of the Delta.

425 MILLION RUBLES IMPLEMENTATION COST

PROJECT #3

GREEN CANALS

MAIN RECREATIONAL AREA OF THE HISTORIC CENTER

The greening of the existing canals on May 1 and the Kutum River is designed to create the main recreational zone in the historical center of the city, which will encircle the historical center (Posad, Kos) and at the same time connect it with the territories around it, including the development centers of Astrakhan (KRT). An important task is also the opening of locks and the restoration of the natural channel between the Volga and the Varvatsiya canal, in order to prevent stagnation of water and create an environmentally

400

new trees planted along the green canals

20,5 км

length of bike paths along the «green» canals

44,5 ha

the total area of the recreational zone of «green channels», landscaped with various multi-tiered vegetation

THREE KEY FUNCTIONAL CENTERS

Key functional centers with commercial functions are being created along the «green» canals - near the Lovers, Victory Bridge, and the Russia-Azerbaijan Friendship Bridge near the Volga Zaton. Also, additional parking spaces will be organized near them, which will reduce the traffic load on the territory of the canals.

7

new commercial outlets with cafes and tourist information center

520

new parking spaces will appear near the canals due to multi-level parking lots

2

berths for boats with the possibility of renting

Существующие объекты:

- pharmacy
- monument
- shop
- Cafe
- restaurant
- cultural heritage site
- art galleryобъект культурного

Проектные решения:

- information center
- pier
- bicycle parking
- кафе

- territory of «green channels»
- development centers of Astrakhan
- opening of a free channel between the Volga, the Varvatsia channel and the Kutum river

ORCHESTRA. D&L FRONTIER ШТАБ

PROJECT #2

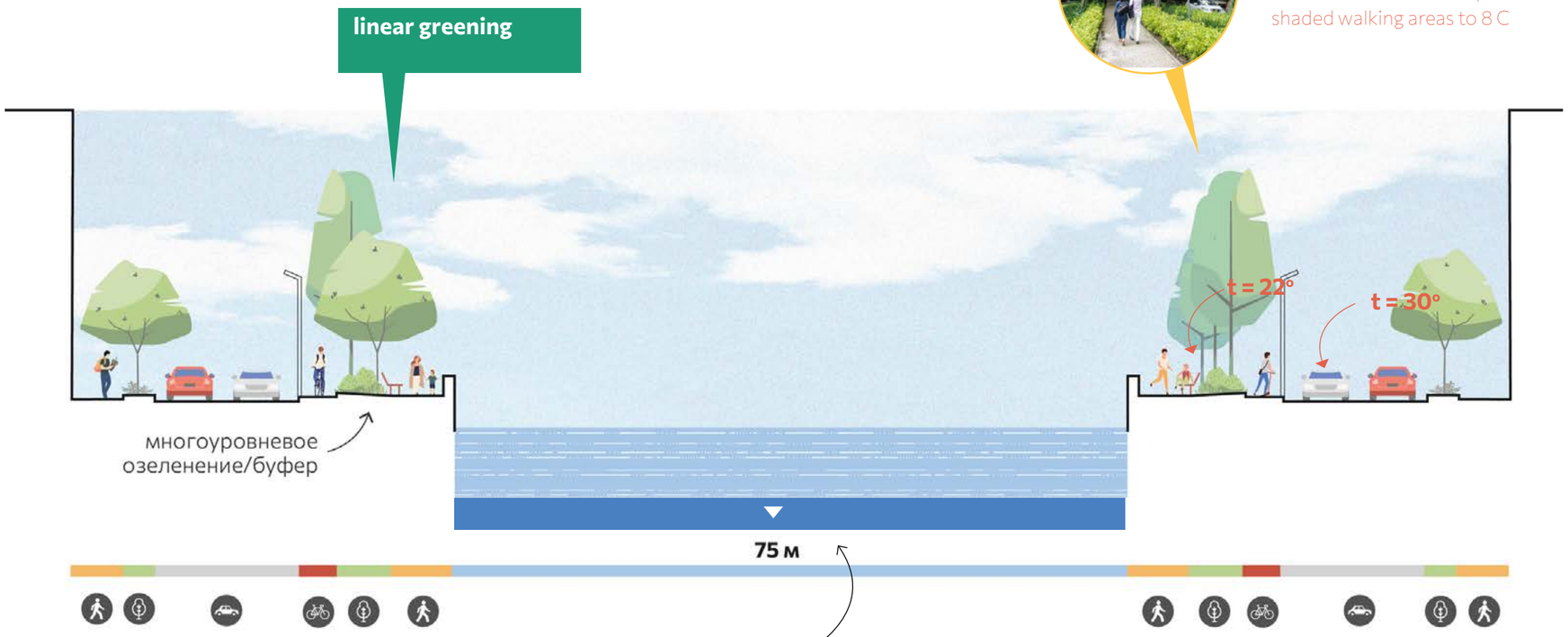
GREEN CANALS - THE NATURAL FRAMEWORK OF THE HISTORIC CENTER

Section 1 illustrates an example of a section along a narrow street with a width (taking into account the channel width) of 75 meters. On this site, multilevel landscaping is created with shrubs and trees, to create shady areas in the promenade zones. A cycle path is added on both sides of the canal along the carriageway

The canals around the city center are closed by a dam, there is no natural movement of water and treatment (there is an unpleasant smell, silting). Now, with the help of a pump, water is pumped into the canals and its level is higher than the natural level of the Volga, groundwater rises, which floods the basements and first floors of historic buildings in the city center, since the building is not adapted to such a water level. open channels and restore the natural movement of water and level, deepen the bottom and clean it.

Yuri Chuikov,
Astrakhan State University

Multilevel landscaping along the canals will reduce the noise level, as well as lower the temperature in shaded walking areas to 8 C



PROJECT #2

GREEN CANALS ACTIVATE CITY LIFE BY THE WATER

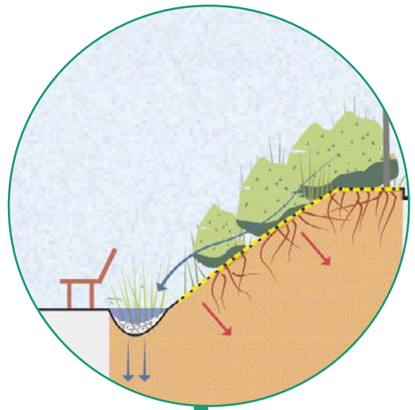
Section 2 illustrates the functional center at the Lovers' Bridge with new commercial pavilions under the café, as well as boat docks. Additional parking spaces are being organized near the pavilions so that citizens and tourists can leave their cars in one specially designated place and walk along the "green" canals on foot.

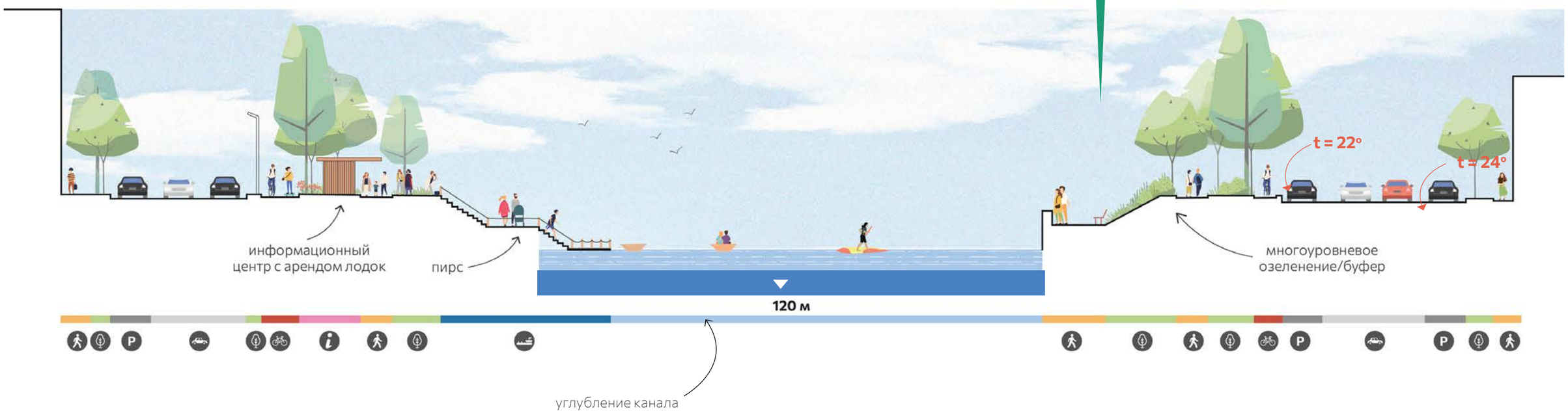
ПРОЕКТ #2

«GREEN» CHANNELS AS A CONNNECTOR

«Greens» encircle the historical center of the city: the territory of Posada and Kos, is located in close proximity to cultural heritage sites of federal and regional significance and is part of the tourist routes along these sites. Therefore, along the canals, it is also proposed to place tourist information centers, where tourists can get acquainted with possible routes in the historical center of Astrakhan.

view from the Volga backwater
to the Astrakhan Kremlin



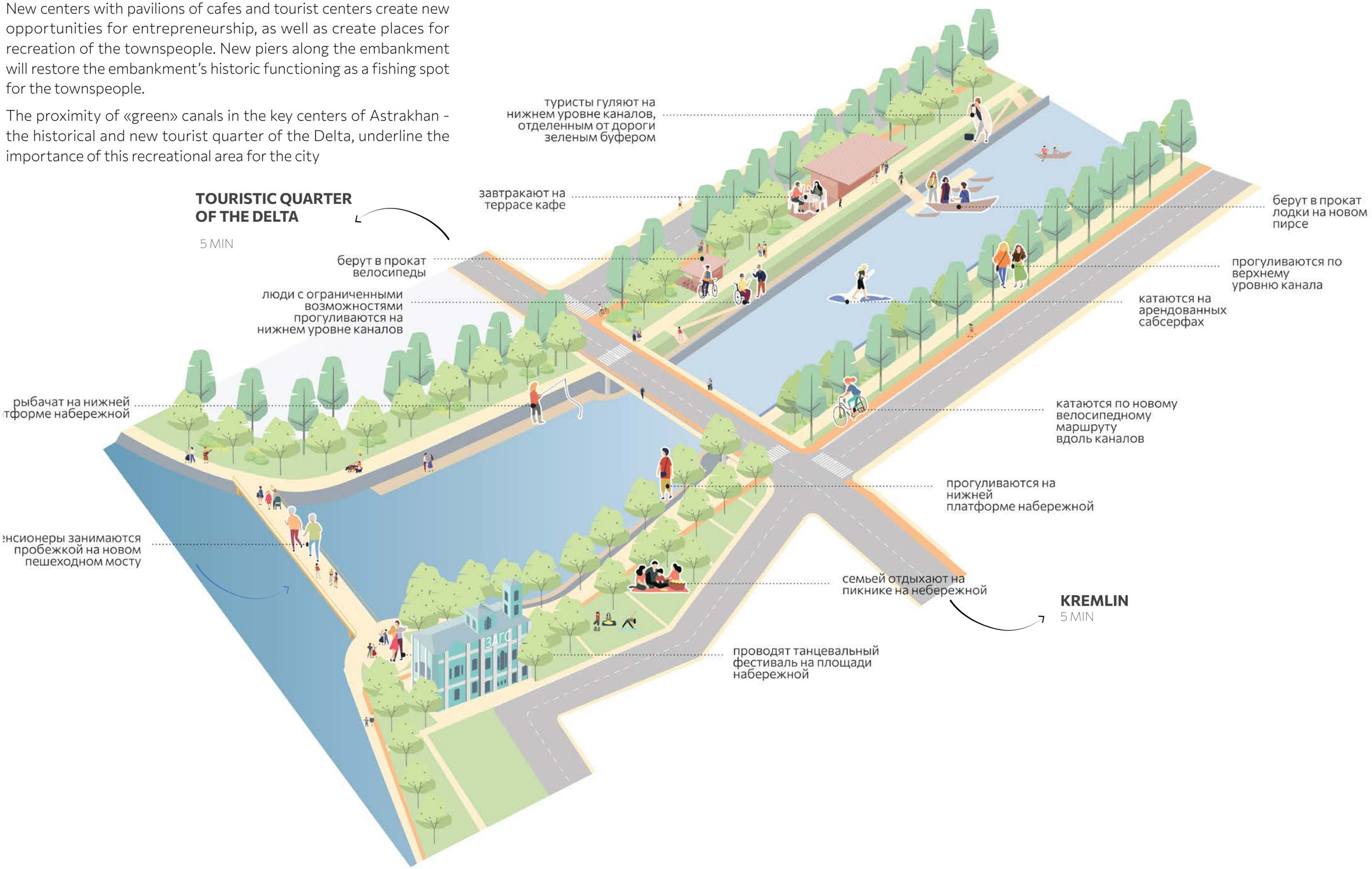


PROJECT #2

MAIN RECREATIONAL AREA OF THE HISTORIC CENTER

New centers with pavilions of cafes and tourist centers create new opportunities for entrepreneurship, as well as create places for recreation of the townspeople. New piers along the embankment will restore the embankment's historic functioning as a fishing spot for the townspeople.

The proximity of «green» canals in the key centers of Astrakhan - the historical and new tourist quarter of the Delta, underline the importance of this recreational area for the city



PROJECT #2

EXAMPLES OF NAVIGATION AND FURNITURE DESIGN

pier

Bench

Lighting

pavilions

Navigation

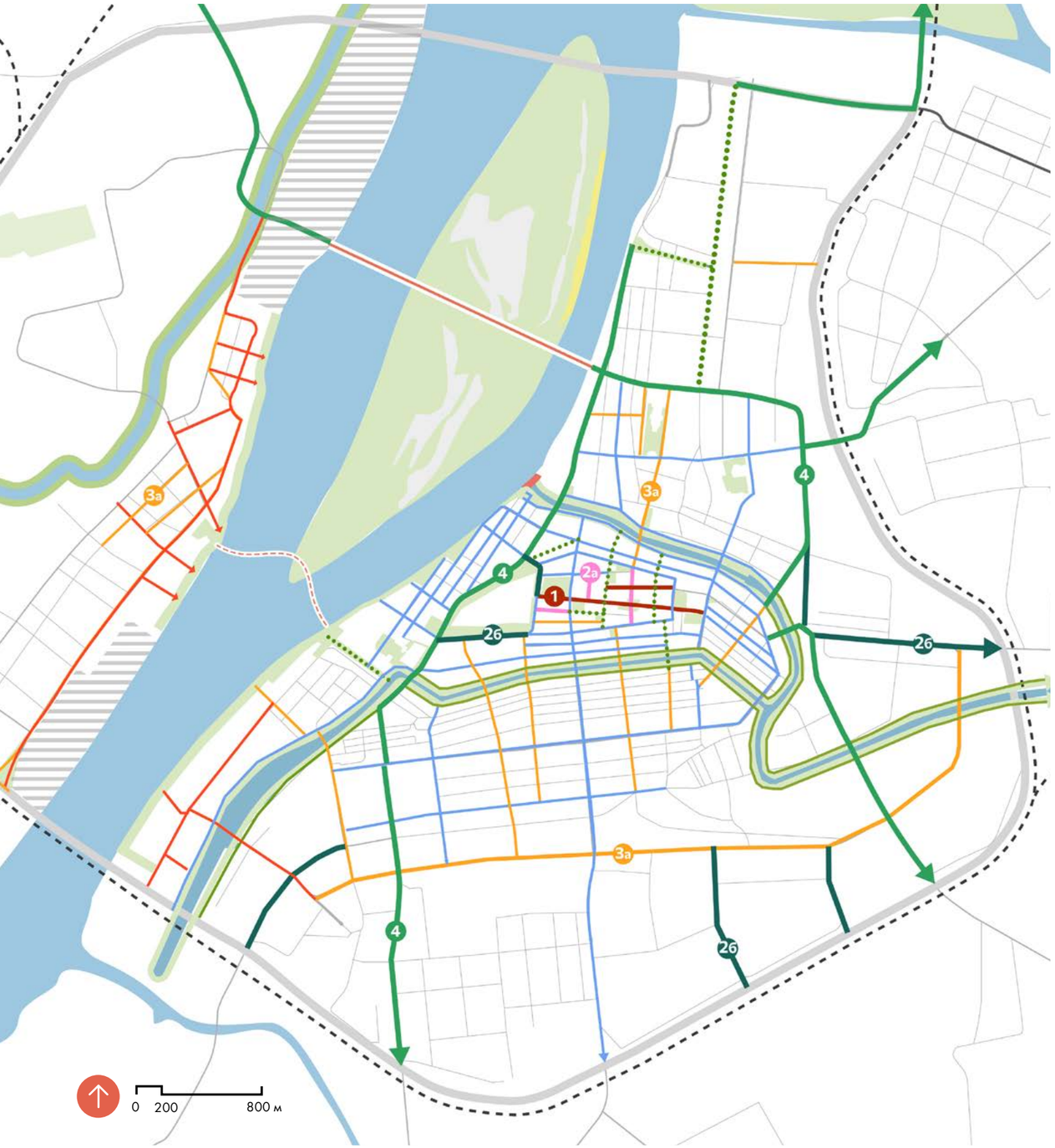
PROJECT #3

TACTICAL LANDSCAPING

Tactical landscaping consists in analysing closely a historical city fabric to find opportunitities to create public space, to plant or to integrate bike and public transport lane. Often, this is possible by reducing road lane width or removing parking along streets. This is made possible by three infrastructure planned in the Strategy: the new city ring roads which will reduce the transit traffic, three new parking silos located within short distance of the Kremlin and a bike/public network at the scale of the entire city which will encourage more visitors not to come by cars.

PRINCIPLES:

1. create a more pedestrian friendly environment for visitors
2. support more active ground floors businesses with terrasse spaces
3. improve the image of the historical center and its attractivity



благоустренные улицы 2019-2021 гг,
улицы перспективного благоустройства 2022-2024 гг **30.8 км**

визуально привлекательные улицы (без изменений)

реорганизация улиц вдоль каналов **13 км**

новые улицы с новой конфигурацией **10.2 км**

PROJECT #4

TACTICAL STREET GREENING

The task of tactical greening of streets is to improve connections between the historical center and the outskirts of the city, improve the quality of the urban environment, as well as climatic indicators.

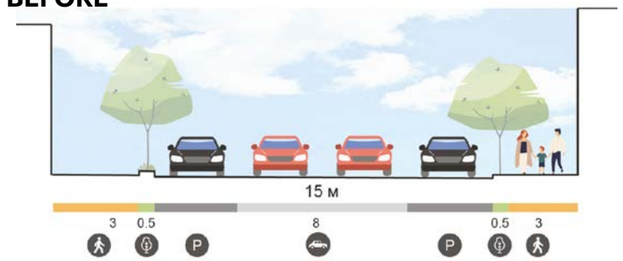
street reorganization:

- **type 1:** pedestrianization — **1.6 км**
- **type 2a:** widening the sidewalk, installing street terraces, landscaping — **0.8 км**
- **type 2b:** widening the sidewalk, adding a bicycle paths, landscaping — **4.7 км**
- **type 3a:** sidewalk widening, landscaping, alternating with parking lots — **16.6 км**
- **type 4:** widening the sidewalk, adding cycling track — **15.5 км**

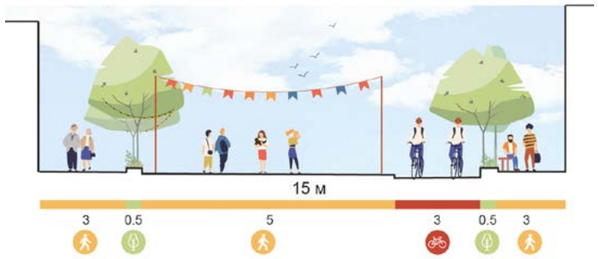
total length of projected streets: 62 км

TYPE 1

BEFORE

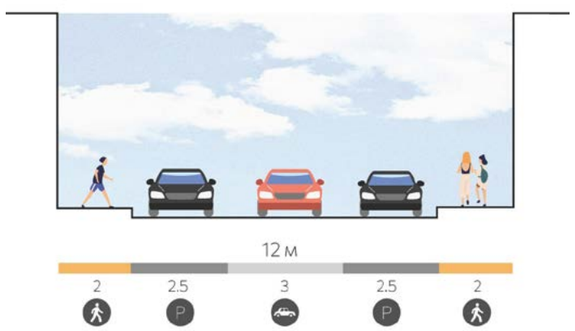


AFTER



TYPE 2a

BEFORE



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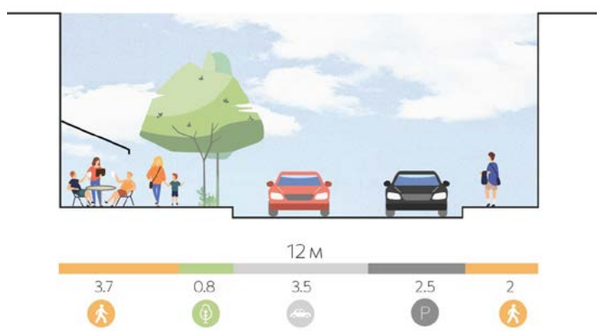


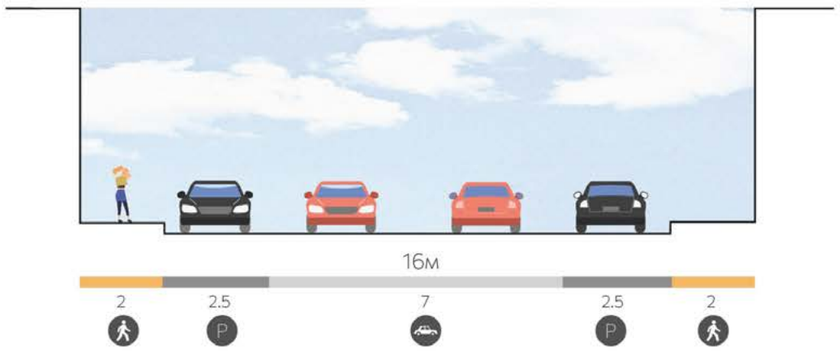
PROJECT #4

ACTIVATION OF THE HISTORIC CENTER

Tactical changes in the streets connecting the center and the outskirts of the city are designed to create more comfortable conditions for pedestrians to move along the streets, to increase transport connectivity by laying new bike paths.

TYPE 26

BEFORE



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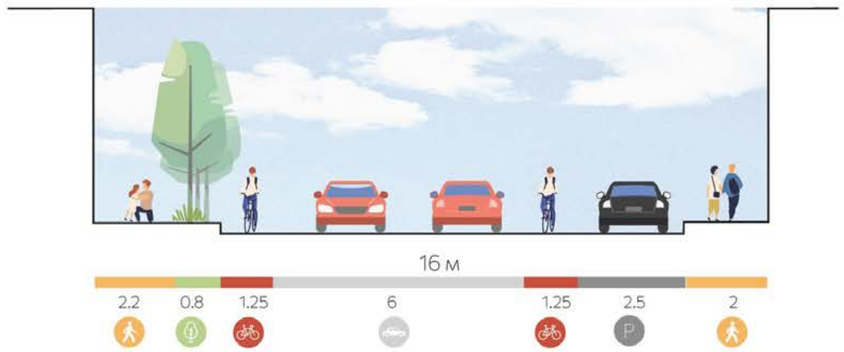
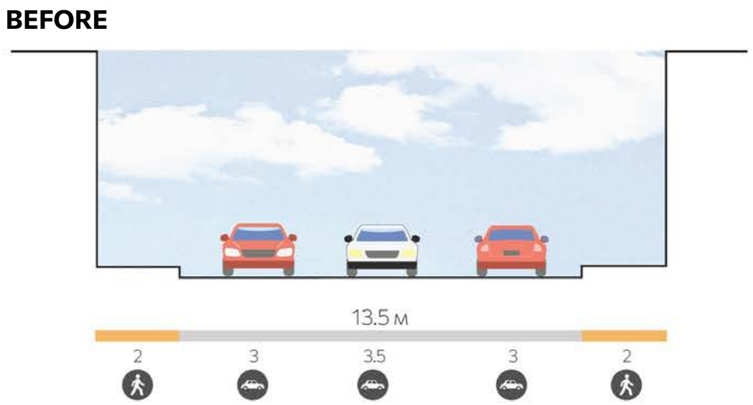


TYPE 3a

BEFORE



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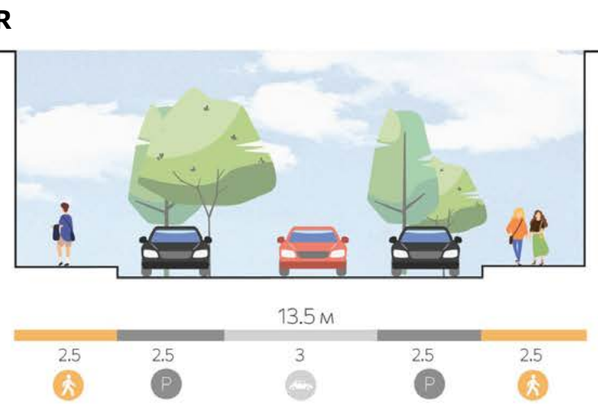
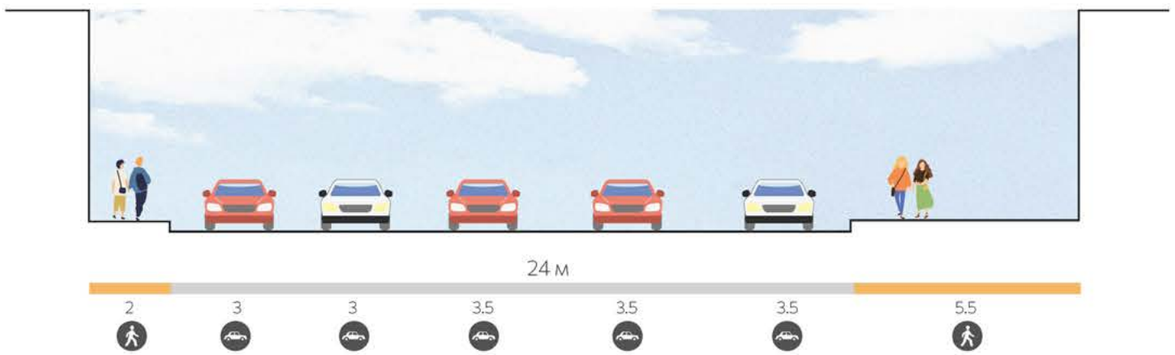


TYPE 4

BEFORE



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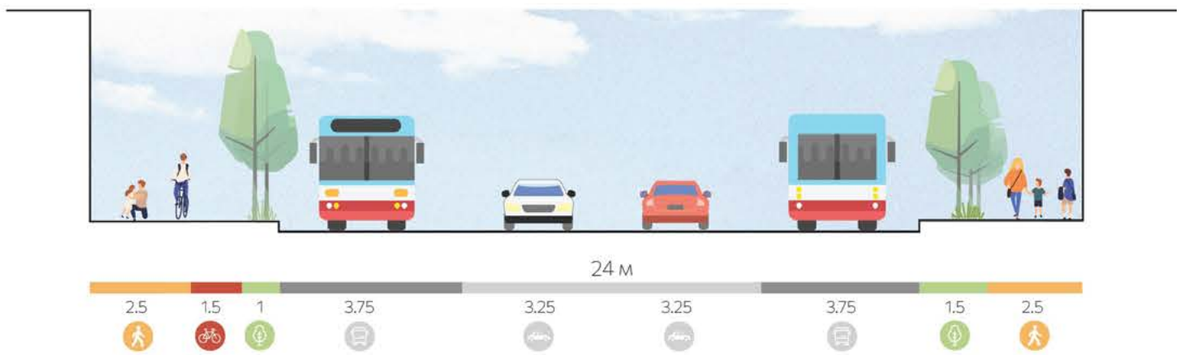
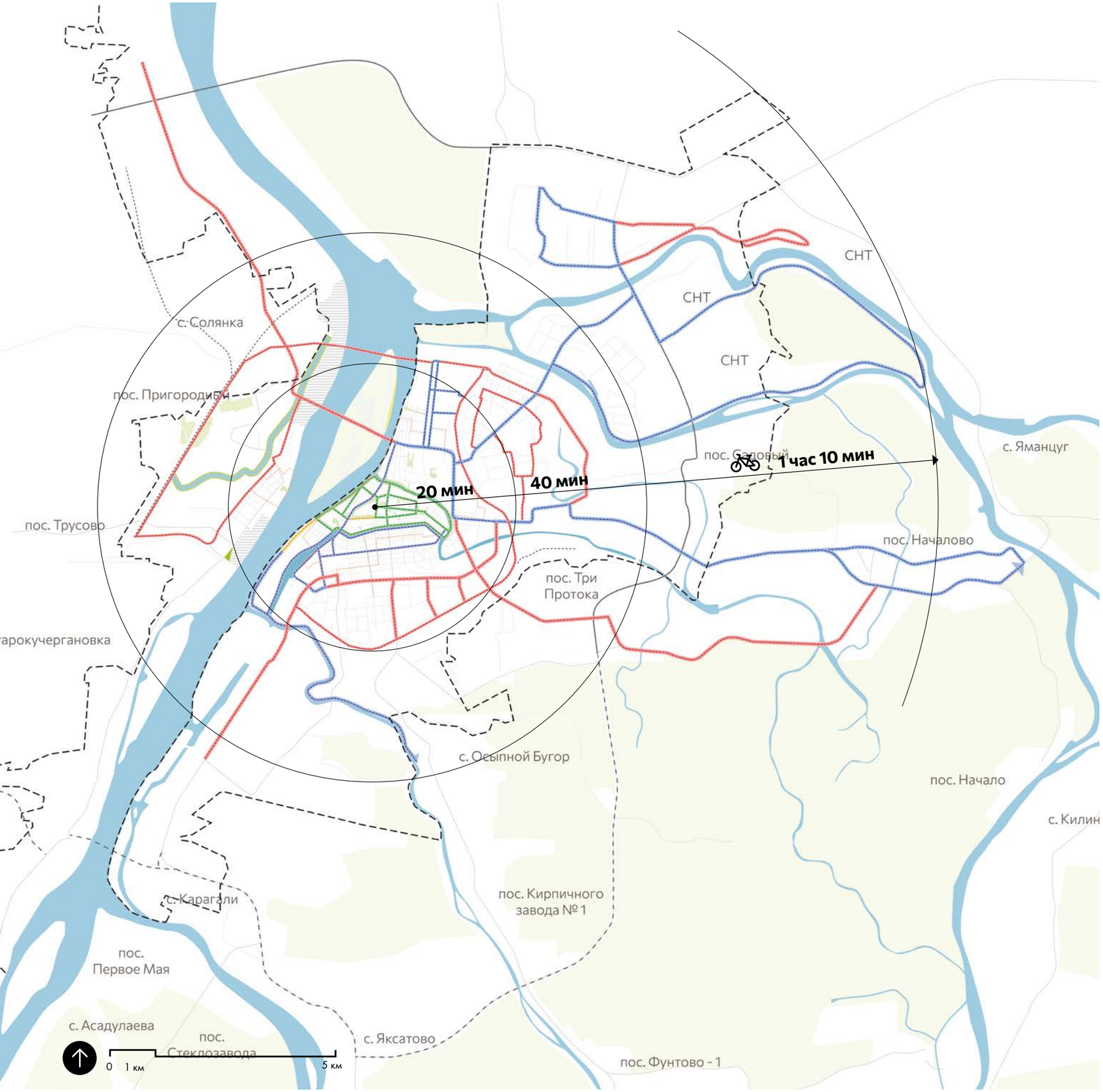


PROJECT #4

CYCLING ROUTES



current bikelane
1 phase
2 phase
3 phase

PROJECT #4

EXAMPLES OF NAVIGATION AND FURNITURE DESIGN

Bench

Lighting

navigation

PROJECT #4

CENTRAL RING ROAD

The city center will be surrounded by a green buffer, consisting of a renewed railway and the Central Ring Road. This project will create new connections, connecting the city's districts and reducing the traffic load on the historic center. A large amount of landscaping will create a comfortable environment and reduce the environmental burden on the surrounding areas.

PRINCIPLES:

1. Updated ring railway
2. Reconstruction of the building of the railway station Astrakhan-1
3. Establishing a green ring along the railroad

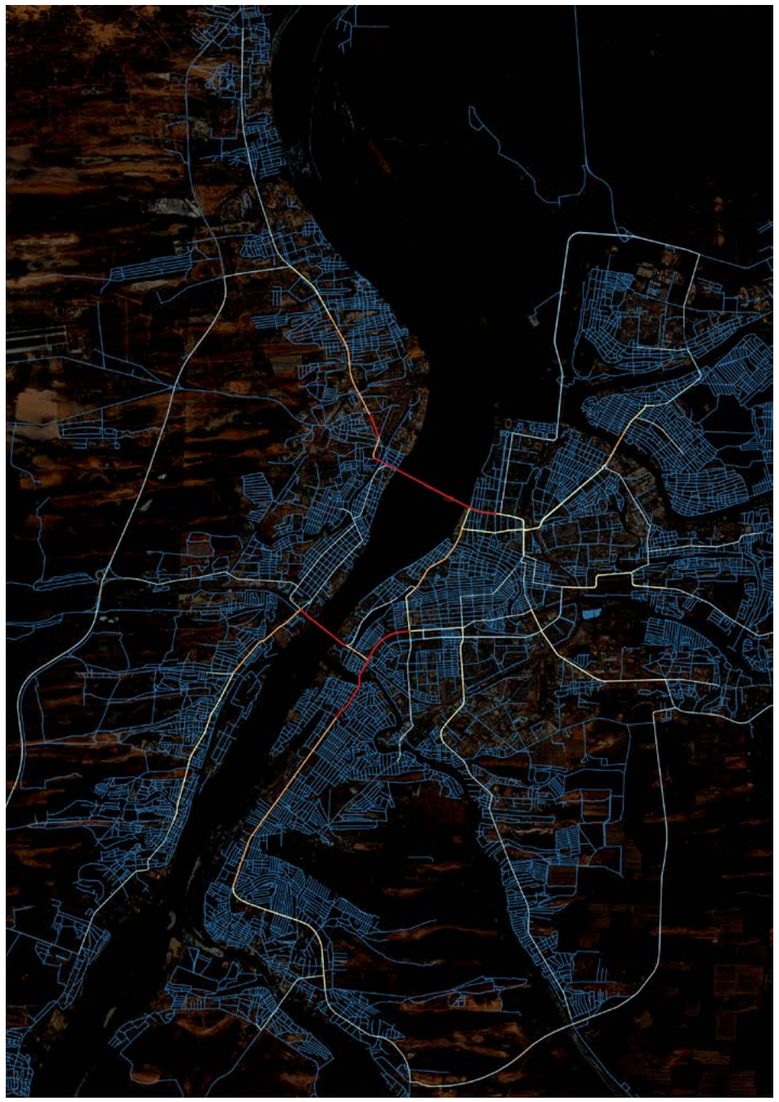
32,3 MILLION RUBLES IMPLEMENTATION COST

ПРОЕКТ #5

CREATING AN INNER RING WILL SOLVE THE TRAFFIC PROBLEM

The organization of two ring roads will reduce the amount of traffic in the central part of the city - where a large number of public activities, including pedestrian traffic, are concentrated. Negative externalities of heavy car traffic are accidents with serious consequences (since 2015, more than 2.5 thousand accidents with victims have occurred within the proposed Inner Ring Road alone, including more than 50 accidents with fatalities), air and noise pollution, delays traffic movement.

Topological analysis of the transport graph using the Space Syntax methodology demonstrates that organizing only the Outer Ring Road will not be a sufficient measure to reduce the amount of traffic in the historical center. With such a scheme, the Novy Most, Anri Barbusse, Admiralteyskaya, Pobeda and a number of others remain of high transport importance. Only the organization of the Inner Ring Road, together with complete and consistent measures to calm traffic and develop public transport, will solve the traffic problem in the city center.



current

inner road ringroad

inner and out ringroad

territory of «green channels»
infrastructure centers of the city
railroad

Type 1: city street
existing bridge
Type 2: bypass road
new bridge
railway overpass
passenger railway platforms

PROJECT #5

CENTRAL RING ROAD

The railway will connect the development centers of Astrakhan by passenger traffic between the stations Astrakhan-2 and Trusovo using seven existing, two new and one relocated passenger platform. Electric trains will run along the railway line with an interval of 20-30 minutes during peak hours. The trains will be integrated into the city's passenger transport system.

26 KM
total length of the «green» center ring

22,5 KM
New construction

- **10 KM** green city streets
- **9,5 KM** country bypass road
- **1,8 KM** new bridge across the Volga
- **1,2 KM** overpasses across the railway and the Kutum

3,5 KM
existing sites including:

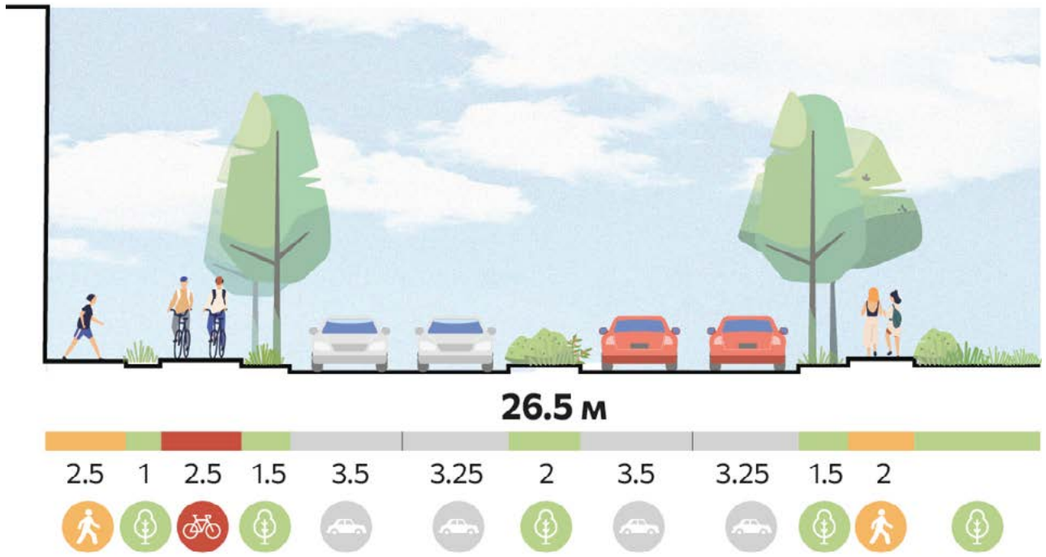
- **0,7 KM** Old bridge

The ring road will consist of two sections: a boulevard-type city street within high-density urban development and a bypass road on the right bank of the Volga.

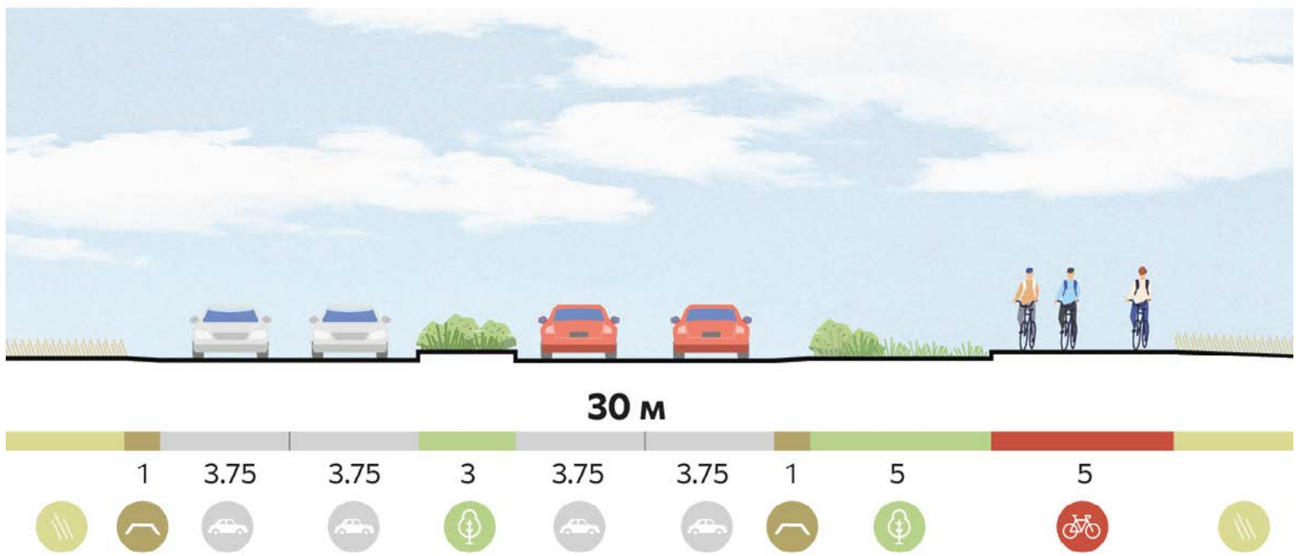
PROJECT #5

CENTRAL RING ROAD. SECTION

City Road



Bypass road on the right bank



PROJECT #6

RIVERARMS

Linear green spaces along rivers that form river arms. River promenades are green areas with bicycle and pedestrian links along the water. The promenades serve a recreational and transit function, and are also a green buffer that will help protect the coastal ecosystem. River promenades are provided with public transport and are located within 15 minutes walking distance from residential areas.

PRINCIPLES:

1. Improving the accessibility of rural areas around the city through transport links along the rivers
2. New development in promising territories
3. Creation of cycling and walking areas along small rivers

PROJECT #6

RIVERS ARMS

5

river branches along which river promenades are created

63,5 км

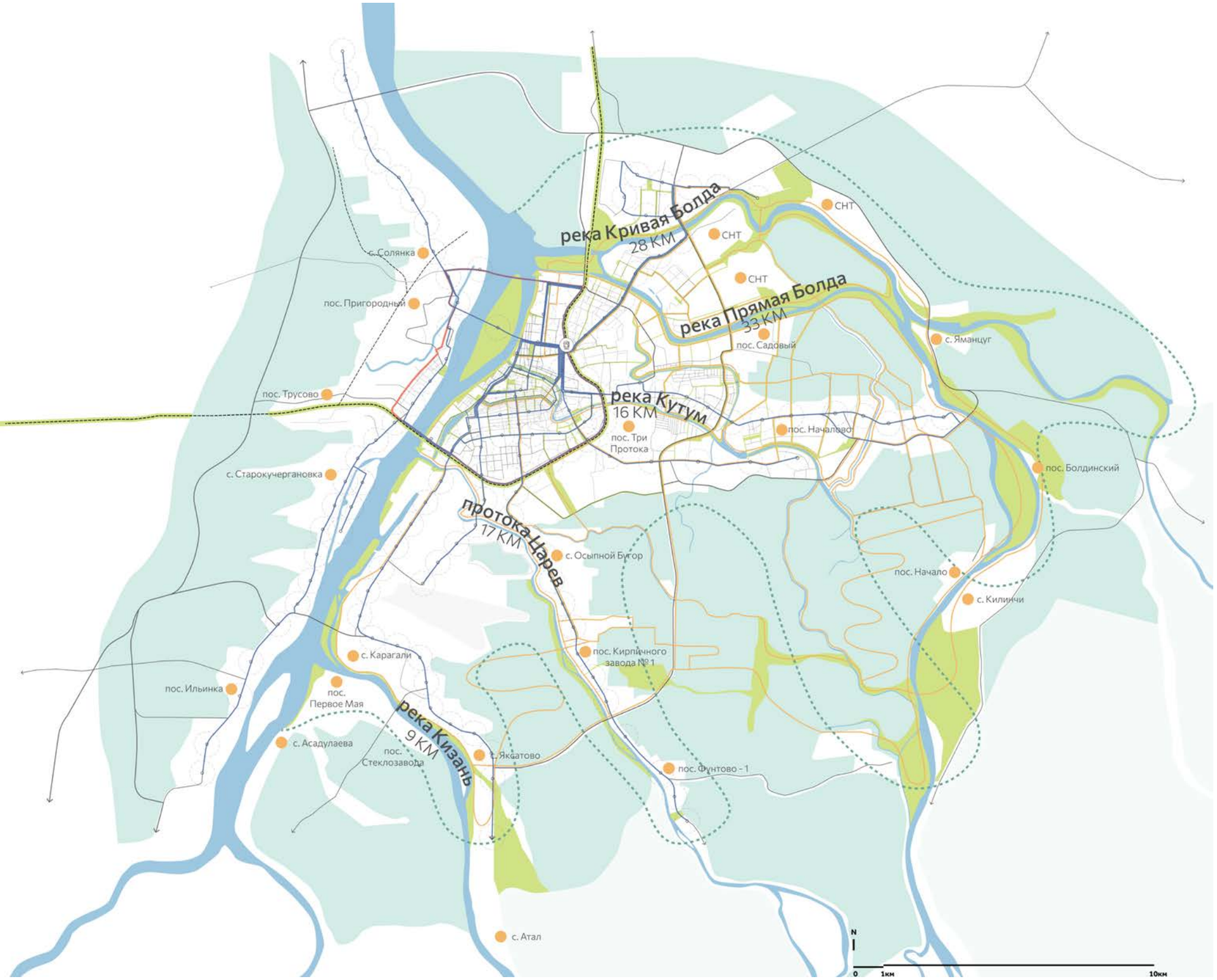
total length of river arms

15 мин

pedestrian accessibility to river arms from public transport stops

1969 ha

the total area of the new development along the river branches



territory of food gardens
natural parks
points of attraction
route public transport
stops public transport
tourist routes

Settlements connected by river branches:

р. Кизань

- г. Астрахань
- с. Яксатово
- пос. Стеклозавода
- пос. Первое Мая
- с. Татарская Башмаковка

р. Царев

- г. Астрахань
- пос. Кирпичного завода №1
- с. Осыпной Бугор

р. Кутум

- г. Астрахань
- с. Началово
- пос. Новый Кутум
- с. Три Протока

р. Прямая Болда

- г. Астрахань
- пос. Садовый
- с. Яманцуг

р. Кривая Болда

- г. Астрахань
- СНТ
- СНТ

bus routes

BRT (express bus line)

ring route along the renovated railway

railway transport

PROJECT #6

PUBLIC TRANSPORT

10
new bus routes

1
BRT line
(express bus)

15 МИН
pedestrian accessibility to main public transport stops for 85% of Astrakhan residents.

PRINCIPLES OF DEVELOPMENT

1. Ensuring priority of public transport in trunk corridors: creation of BRT (express bus) lines where the profile of the streets allows it, and dedicated lanes for public transport in places of congestion.

2. Creation of an inter-municipal structure responsible for the operation of public transport in the agglomeration.

3. Transit-oriented development: organization of new high-density construction, provided the territories are provided with mainline public transport.

4. Application of a wide range of measures to calm movement, incl. organization of a speed limit zone in the central part of the city.

1 phase Cover all current densely populated areas within city boundaries with public transport routes

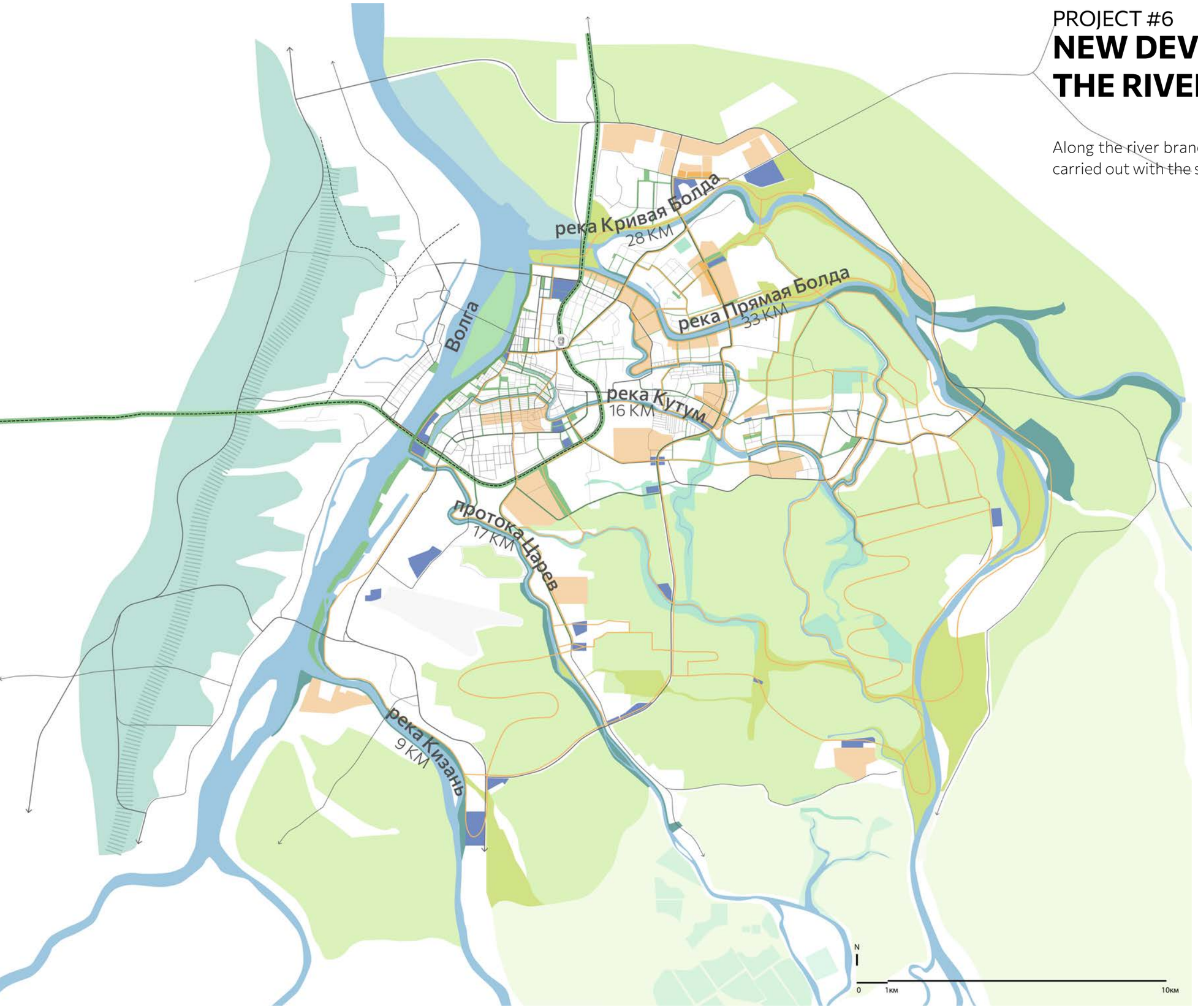
2 phase Provide river arms with public transport lines

3 phase Launch a circular route along the renovated railway

PROJECT #6

NEW DEVELOPMENTS ALONG THE RIVER ARMS

Along the river branches, new construction of silt houses is being carried out with the saturation of their commercial functions



1969 ha

the total area of the new development along the river branches

1580 ha

new development area for residential development

103 ha

new development area for commercial building

286 ha

new development area for tourist infrastructure

- flooded areas and swamps
- agricultural areas
- natural parks
- neighboring parks
- eco-island
- special forests (to protect against sandstorms)
- hillock-ilmenny territory

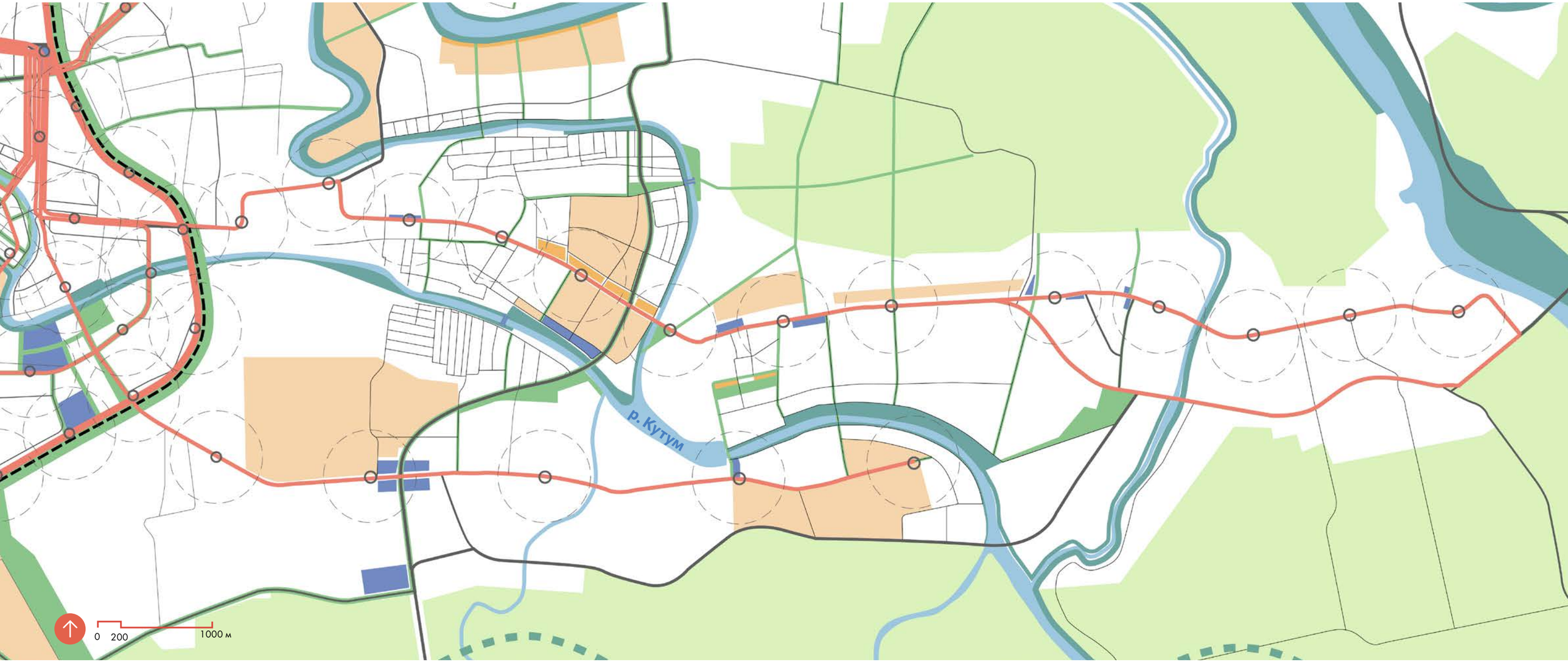
- area of redevelopment for residential buildings
- redevelopment area for commercial development

PROJECT #6

RIVER ARMS : RIVER KUTUM

The fragment illustrates the Kutum hand arm with river promenades and public transport lines running along.

- public transport stop
- car ring road
- public transport line
- mid-rise development area
- «Green belt» with agricultural function
- river promenades



PROJECT #6

RIVER ARMS : RIVER KUTUM

SECTION ❶

An example of infrastructure saturation along a river arm

PROJECT #7

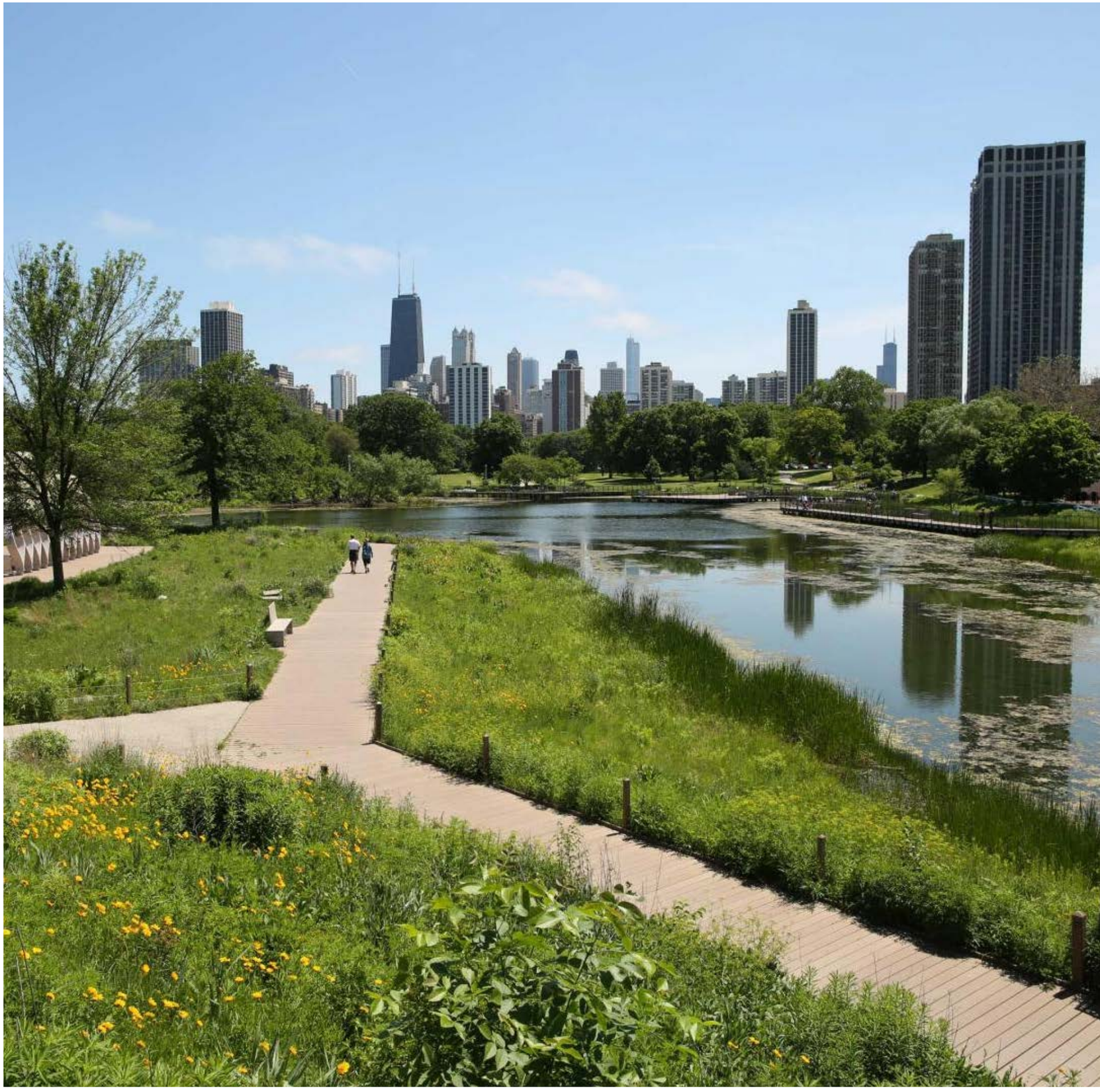
PRODUCTIVE GREEN BELT

The productive green belt represents the 21st century infrastructure, after the canal (18th-19th century) and the railway (20th century). It will make the best use of the hinterland to modernise agricultural land around more sustainable productions sold in Astrahan markets. Reforestation will protect the city from sand storms coming from the west and support new cycling pathes connecting natural areas transformed into natural parks and local attractors. Floodable zones along rivers will be integrated to the parks to mitigate risks.

PRINCIPLES:

1. limit urban sprawl
2. support local economy of agriculture and trade
3. make the periphery of the city more attractive for living and for investments

25 258 MILLION RUBLES IMPLEMENTATION COST



ПРОЕКТ #6

PRODUCTIVE GREEN BELT

Green links along rivers lead from the city center to its periphery, which is bounded by the Green Belt, in order to protect the city from sprawl and stimulate compact development within existing boundaries and redevelopment of industrial areas. The Green Ring includes parks, farmland and forests. All this is connected by pedestrian and bicycle paths, public transport lines.

29 500 HA

the area of the production green belt around Astrakhan

20 870 HA

area of the city of Astrakhan

neighbor park

nature Park

river promenades

orchards

flooded areas

points of attraction (farmers markets)

46% of the green belt is agricultural land. Thanks to high quality soils and favorable climatic conditions, Green Belt farms and businesses provide a variety of local food products, making the Green Belt cost effective.

- eco-island
- Volga embankment
- neighbor park
- nature Park
- river promenades
- productive green belt
- flooded areas
- green corridors
- tourist routes
- points of attraction

2000 HA

area of the territory for new development

19

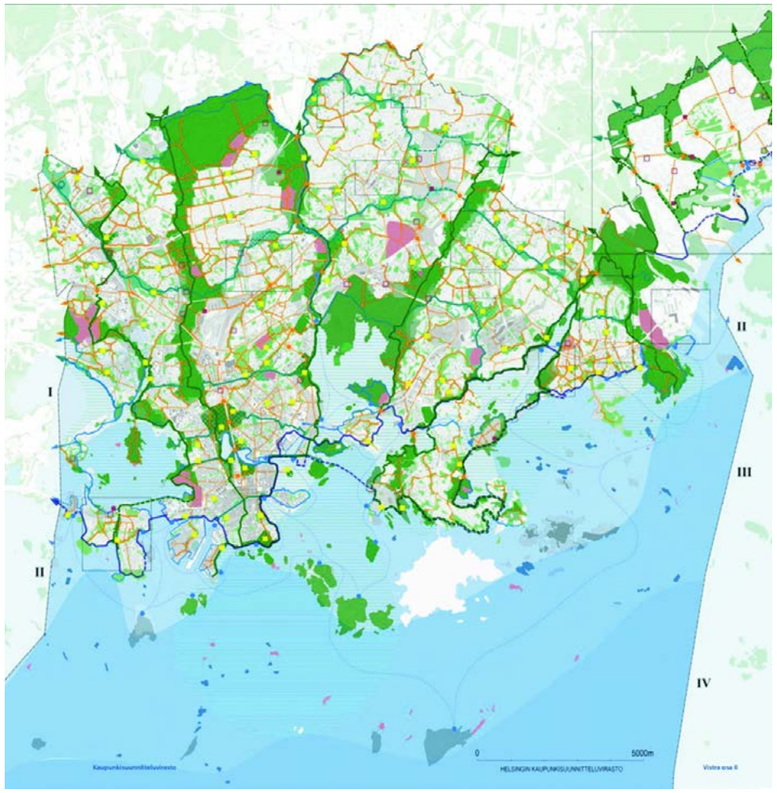
points of attraction for tourists and city residents in the green belt

20.5 KM

radius of the green belt around the city

АНАЛОГ

EXAMPLES OF GREEN BELTS AROUND MAJOR CITIES



Helsinki, Finland

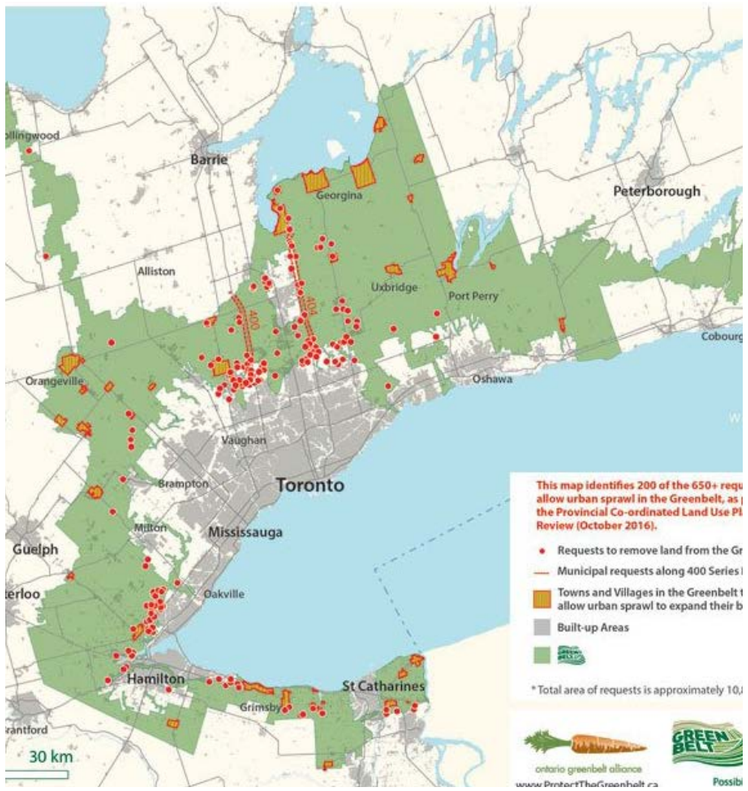
The creation of a green belt around Helsinki is consolidating the urban structure and expanding the city center, developing a railway line, creating a network of green spaces and vast green spaces, and creating new urban areas. The presence of a green belt makes it possible to turn entrance highways into city boulevards and create a comfortable urban environment on their territory. The largest area for new development will be Helsinki-Malmi Airport, which could be expanded to accommodate 25,000 residents.

EFFECTS:

- disclosure of the natural and recreational potential of the region, the development of ecotourism

-improvement of residential infrastructure, construction of new housing

- preservation of biodiversity and protection of natural areas, creation of conditions for sustainable development of the region



Toronto, Canada

Conservation of natural heritage.

932,436 hectares of land are agricultural land (more than 50% of the total area of protected land). Agriculture in the Green Belt stimulates the local economy.

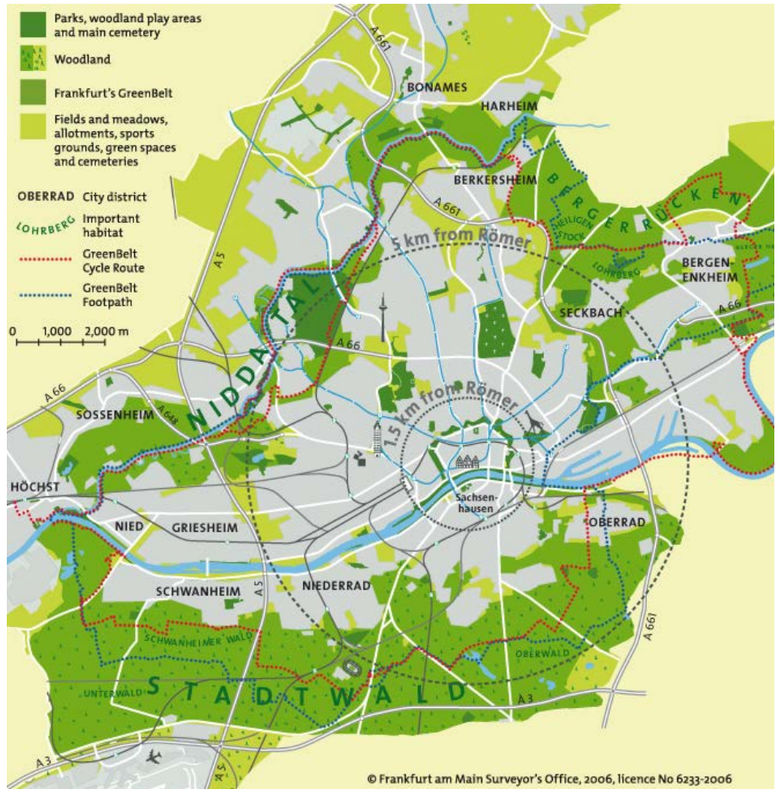
With high-quality soils, favorable climates and proximity to Canada's largest market, Green Belt farms and businesses provide a staggering variety of local food and beverages.

EFFECTS:

- development of sustainable agriculture, variety of local gastronomy

- preservation and protection of the natural heritage of the region

- development of a green economy and resilience of the region to environmental changes



Frankfurt, Germany

As part of the green belt project, a 65-kilometer-long bicycle trail is planned, which offers views of the forests, lakes, rivers and green valleys of Frankfurt. Also, within the framework of the project, a new park with walking and cycling routes is planned. Agricultural and farm enterprises in the local park provide residents and tourists with fresh fruits, vegetables and other projects. 8,500 fruit trees have been planted in the Nieder-Erlenbach area.

EFFECTS:

- creation of shadow zones in public spaces, mitigation of the effects of heat

- development of sports and active tourism in the city

- improving the quality of the urban environment, improving social infrastructure

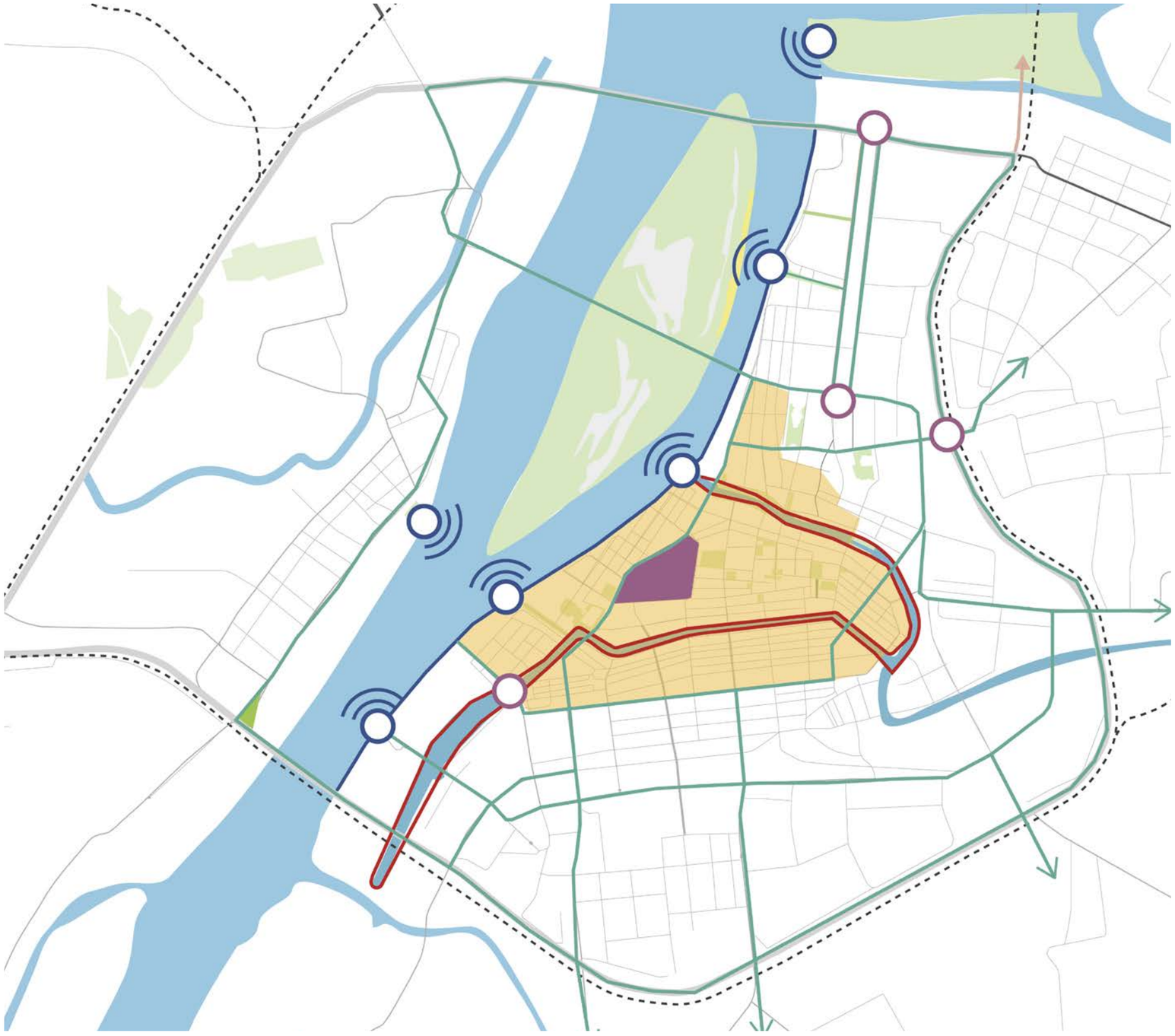
VISUALISATION
GREEN INFRASTRUCTURE

VISUALISATION
GREEN INFRASTRUCTURE

VISUALISATION
GREEN INFRASTRUCTURE

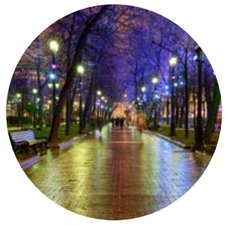
VISUALISATION

GREEN INFRASTRUCTURE



PRINCIPAL LIGHTING SCHEME

The lighting approach for the city center should follow best international practices for historical cities, consisting in a « differentiated approach». This approach seeks to create different lighting ambiance (intensity and type of lighting) to create rythm and highlights to support historical views and city structure.



City Boulevard Lighting - higher intensity compare to standard streets, with a focus on public spaces and streetscape.

Volga Embankment - a special lighting focus on the landscape and the water edge.

Special Artistic Lighting - on key buildings/objects along the embankement.

Canal Lighting - festive type of lighting along the canal

Special Historical Lighting,lower level of intensity, focused on highlighting facades (see Historical Center Chapter)

Kremlin - white artistic lighting to reinforce the Kremlin walls and remarquable structures.

City Landmark Lighting - artistic lighting to reinforce the remarquable landmarks, with a special attention to long views along boulevards.

SCHEME OF STAGED IMPLEMENTATION OF COMPLEX PROJECTS

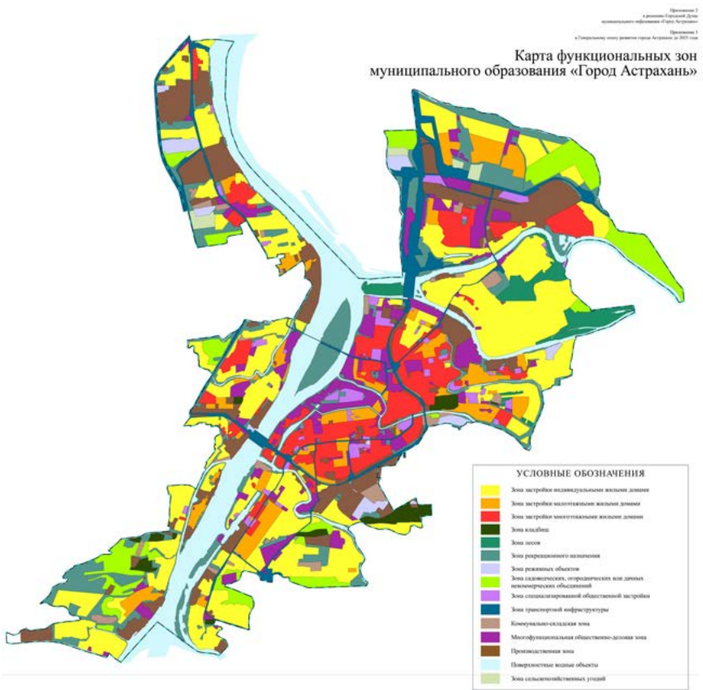
STAGED IMPLEMENTATION, TAKING INTO ACCOUNT THE MASTER PLAN

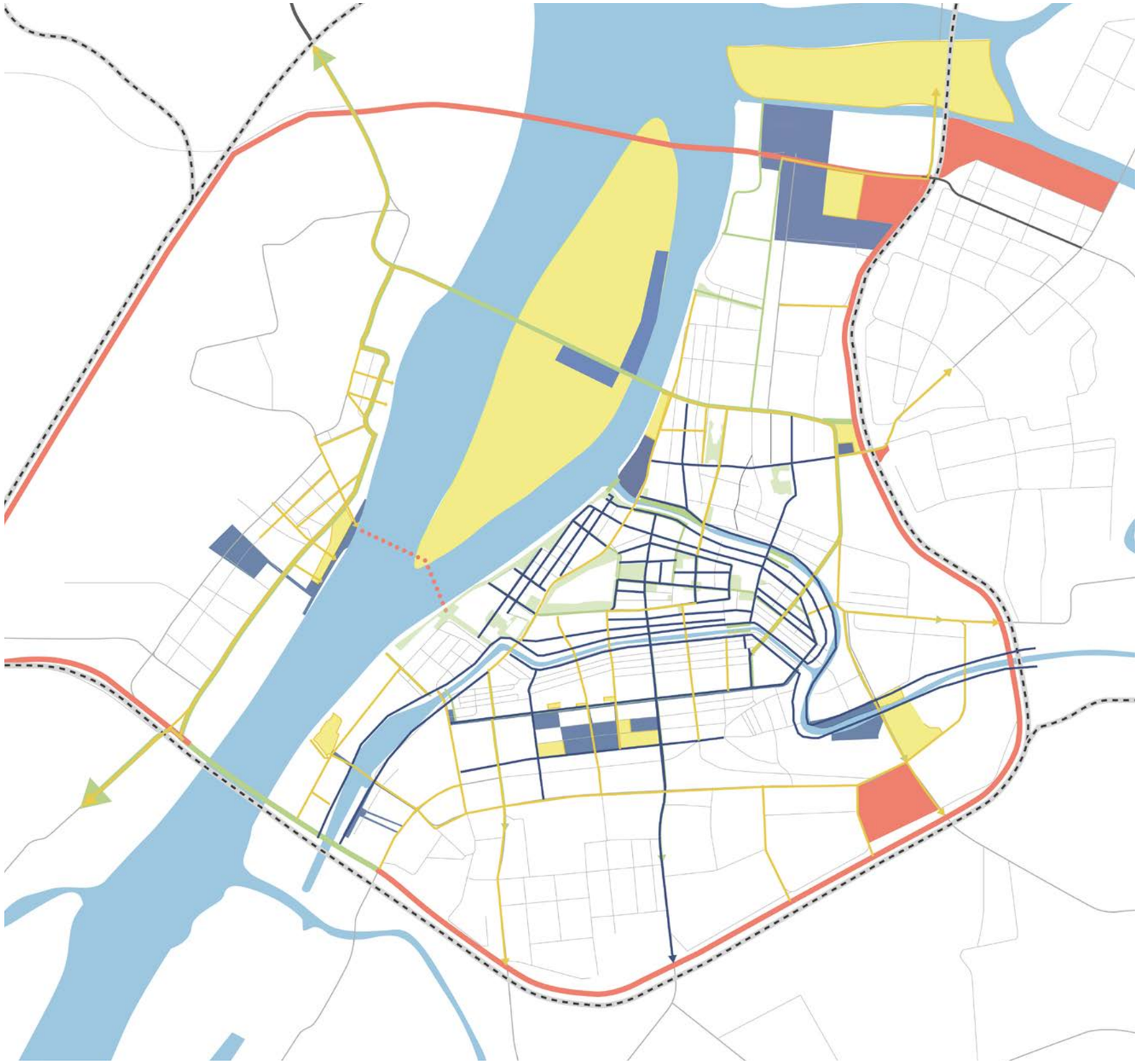
The green infrastructure development plan was developed in accordance with the existing regulations of the city, in particular with the master plan of the city.

One of the most important recommendations for making changes to the existing master plan is to expand the city's boundaries to include a wider green belt, which will improve the coherence of public transport networks and include the outskirts of the city in the development plan of Astrakhan.

The project strategy envisages several key changes to the road network with the creation of two additional bridges across the Volga and minor modifications to one additional section of the master plan. In addition, the project proposes the creation of a new track along the railroad to better connect the existing periphery to the city center. The new road network will create two new urban ring roads.

All proposed centers and architectural solutions meet the requirements of the general plan.





2021 - 2024: 1 implementation stage

2025 - 2027: 2 implementation stage

2028 - 2032: 3 implementation stage


ЭКООСТРОВ
ЗЕЛЕНЫЙ ПОЯС
КОЛЬЦЕВАЯ АВТОДОРОГА
УНИВЕРСИТЕТСКИЙ КАМПУС
РЕЧНОЙ РУКАВ
ТУРИСТИЧЕСКИЙ КВАРТАЛ
Ж/Д ВОКЗАЛ «АСТРАХАНЬ-1»
РЕЧНОЙ РУКАВ
КОЛЬЦЕВАЯ АВТОДОРОГА
ЖИЛАЯ ЗАСТРОЙКА КРЕАТИВНЫЙ КЛАСТЕР
РЕЧНОЙ РУКАВ
Google Earth

05.

CITY HUBS

INTEGRATED TERRITORIAL DEVELOPMENT PROJECTS

PRINCIPLES OF FORMATION OF DEVELOPMENT CENTERS IN ASTRAKHAN

We offer an integrated approach of territorial development (CTD) for 7 districts in the city center, dividing into the following characteristics

- an anchor of development - for example, a museum, a renovated historical public building - a symbol of a new quarter, attracting investments and increasing the prestige of the quarter,

- an associated key public space that will be a new addition to what Astrakhan is currently offering - a residential area that follows a design code to ensure architectural consistency and maximum use of active land floors for the benefit of the wider community,

- a mixed program with trade, offices, hotels and the public. functions to provide a more mixed and vibrant area The combination of these elements creates a targeted effect.

- a well-defined neighborhood, the brand of which will bring further investment, attract the best operators or tenants.

The future KTR site may consist of several plots of different forms of ownership - some of them should be redeemed with compensation for creating a wider territory. The financial arrangements are different for all seven areas of the program centers.

integrated territorial development projects

new roads and infrastructure creates new plots

Pre-activation of the site can occur on the site to identify and report the project

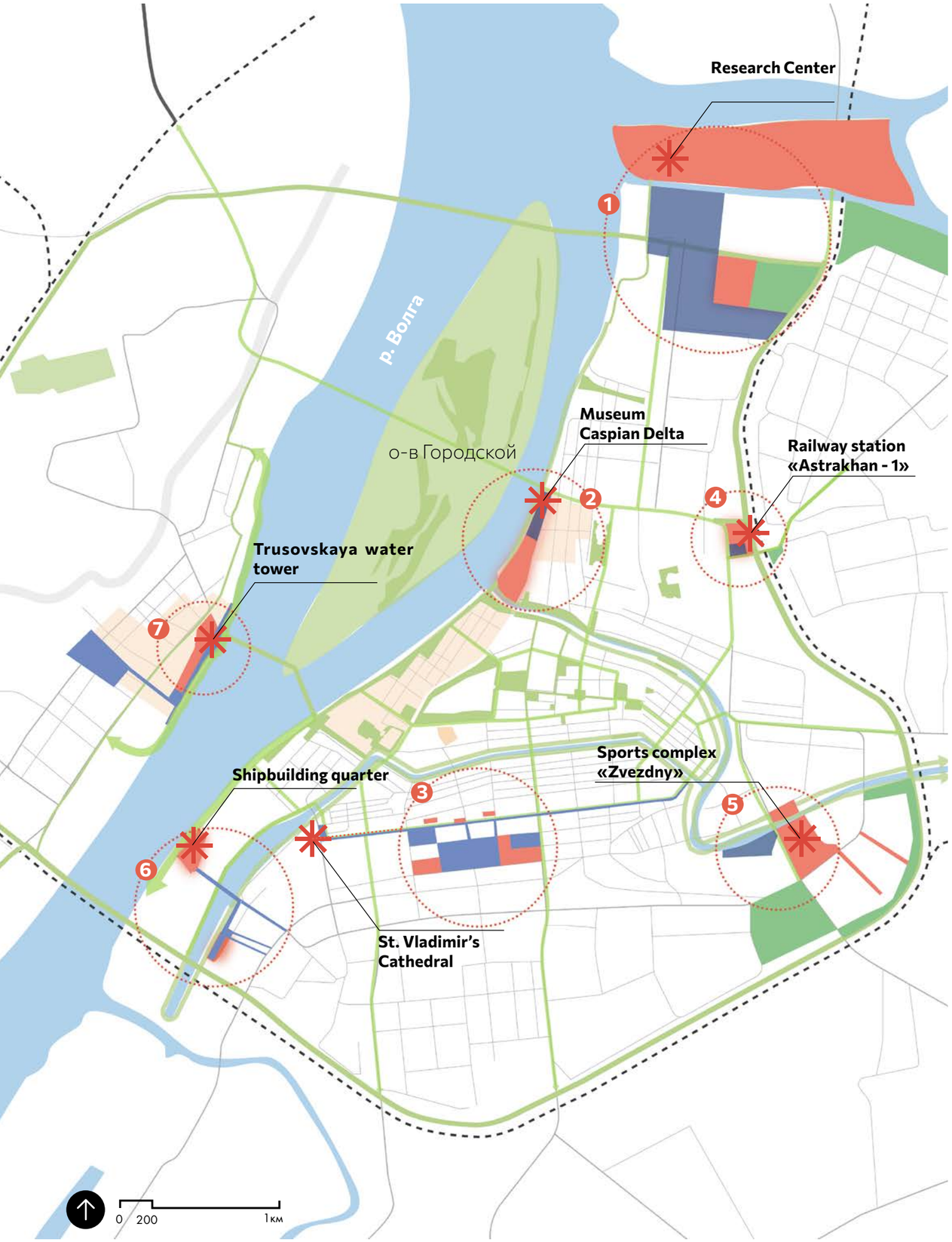
anchor project with accompanying development in the 1st stage of implementation

the rest of the area is developed in one or more stages, benefiting from anchor design and infrastructure

ASSESSMENT OF THE URBAN PLANNING POTENTIAL OF THE TERRITORY OF THE MUNICIPAL DISTRICT «CITY OF ASTRAKHAN» AND THE LAYOUT OF NONLINEAR CAPITAL CONSTRUCTION OBJECTS OF LOCAL, REGIONAL, FEDERAL AND INTERNATIONAL SIGNIFICANCE

EIGHT DEVELOPMENT CENTERS OF ASTRAKHAN

The future development centers of Astrakhan (CDT) are located within the new central road ring and are linked by «green corridors», forming an integral urban structure.



Caspian Delta University Campus

Tourist quarter of the Caspian Delta

Redevelopment for residential development

Reconstruction of the square and the railway station «Astrakhan - 1»

Sport center

Sports and entertainment center

creative cluster Trusovsky quarter

- 2021 - 2024: 1 implementation stage
- 2025 - 2027: 2 implementation stage
- 2028 - 2032: 3 implementation stage

SUMMARY DATA OF CAPITAL CONSTRUCTION OBJECTS

EIGHT DEVELOPMENT CENTERS OF ASTRAKHAN

The total area of development centers for the development of Astrakhan (CDT) on seven sites by 2032 will reach 1,001,350 m2, 685 of which will be residential development, 7% - trade, 16% - cultural functions and 14% of office premises. This ratio will form functionally balanced centers with unique public spaces, which in total will occupy an area of 181.2 hectares, including an eco-park with an area of 120 hectares on Oblivnaya Island.

	Название centera развития Астрахани	Адрес	Development areas on the territories of KRT	**total area of**	**total area m2**	residential area m2 residential area	infrastructure facilities, m2	hotels, m2	retail space, m2	cultural space, m2	office space, m2	**total area of public spaces, m2**	renovation of public spaces, ha	new public spaces, ha	ecopark, ha
1	Caspian Delta University Campus	The territory of the plant «Machine-tool plant «territory, limited: p. Straight Bolda, hands. City, square them. 60th anniversary of the Battle of Stalingrad and the railway right-of-way	общая площадь 2021-2024 2025-2027 2028-2032	**0** 0 0 0	**103 000** 32 600 70 400 0	**27 800** **0** **27 800** **0**	**3800** 3800 0 0	**0** 0 0 0	**4 500** 0 4500 0	**31 900** 0 31900 0	**34 000** 0 34 000 0	**152,6** 32,6 120 0	**32,6** 32,6 0 0	**0** 0 0 0	**120** 0 0 0
2	Tourist Delta quarter	limited area: p. Kutum, st. Admiralteyskaya, New bridge, hands. Urban, The area near the Opera and Ballet Theater	общая площадь 2021-2024 2025-2027 2028-2032	**5550** 5550 0 0	**82 050** 16 100 60 400 0	**25 000** 0 25 000 0	**8 600** 8600 0 0	**21 000** 0 21 000 0	**4 900** 0 4400 0	**15 550** 5000 5 000 0	**7 500** 2 500 5000 0	**51, 7** 36 15,7 0	**0** 0 0 0	**54,9** 36 15,7 0	**0** 0 0 0
3	Baku quarters	The area along the street. Baku, limited by st. Baku, st. Volzhskaya, st. Akhsharumova and R. Kutum	общая площадь 2021-2024 2025-2027 2028-2032	**0** 0 0 0	**462 500** 324 400 138 100 0	**420 000** 295 000 125 000 0	**0** 0 0 0	**0** 0 0 0	**11 500** 8 500 3 000 0	**20 900** 20 900 0 0	**10 100** 0 10 100 0	**78,2** 0 0 0	**0** 0 0 0		**0** 0 0 0
4	Reconstruction of the square and the railway station «Astrakhan - 1»	Territory within a radius of 500 m from the building of the railway station «Astrakhan-1»	общая площадь 2021-2024 2025-2027 2028-2032	**6790** 6790 0 0	**51 400** 10 900 21 100 19 400	**0** 0 0 0	**10900** 10 900 0	**18 100** 0 18 100 0	**11 900** 0 3 000 8 900	**0** 0 0 0	**10 500** 0 0 10 500	**34,6** 14,6 20 0	**14,6** 14,6 0 0	**0** 0 20 0	**0** 0 0 0
5	Sports and entertainment center	Nikolay Ostrovsky Street, 147	общая площадь 2021-2024 2025-2027 2028-2032	**0** 0 0 0	**188 000** 45 000 125 000 23 000	**135 000** 45 000 90 000 0	**3 000** 0 3000 0	**0** 0 0 0	**9 000** 0 7000 2000	**20 000** 0 20 000 0	**21 000** 0 0 21 000	**54,9** 32,9 22 **0**	**32,9** 32,9 0 0	**22** 0 22 0	**0** 0 0 0
6	Privolzhsky backwater	The territory at the Old Bridge near the street. Bekhterev, bounded by the embankment of the Volga backwater and the Old Bridge	общая площадь 2021-2024 2025-2027 2028-2032	0 0 0 0	**93 000** 50 800 31 200 0	**65 800** 35 500 30 300 0	**0** 0 0 0	**0** 0 0 0	**7 600** 7 600 0 0	**14 600** 7 700 6 900 0	**5 000** 5000 0 0	**1,2** 0,8 0,4 0	**0** 0 0 0	**1,2** 0,8 0,4 0	**0** 0 0 0
7	Trusovsky quarter	The area along the street. Baku, limited by st. Baku, st. Volzhskaya, st. Akhsharumova and R. Kutum	общая площадь 2021-2024 2025-2027 2028-2032	**5 000** 0 5000 0	**20 400** 0 6000 14 400	**4 500** 0 0 4500	**0** 0 0 0	**2 700** 0 0 2 700	**2 500** 0 0 2 500	**6000** 0 6000 0	**4 700** 0 0 4 700	**5,9** 4,9 1 0	**4,9** 4,9 0 0	**1** 0 1 0	**0** 0 0 0
ИТОГО:				**17 340**	**1 000 850**	**679 100**	**29 300**	**41800**	**51 900**	**108 950**	**92 800**	**181,2**	85		

Enlarged technical and economic indicators of key development areas and objects of interregional and regional significance, including indicators of social and commercial infrastructure infrastructure

DEVELOPMENT SCENARIOS

SCENARIOS FOR THE IMPLEMENTATION OF THE PROJECT OF THE UNIVERSITY CAMPUS OF THE CASPIAN DELTA

We propose to consider three spatial scenarios for the creation of an international Caspian Delta Campus. These scenarios answers the recommendations from the федеральный проект «Развитие инфраструктуры для научных исследований и подготовки кадров» национального проекта «Наука и университеты» for integrated campus effects.

• The first base scenario is the one currently envisoned project of out-of-center campus with a mixed of research facility, technopark, co-living and sports facilities.

+ ease of implementation (green field).

- lack of interactions with existing universities.

- lack of positive effects on the city development.

• The second scenario is a hybrid model, where under-utilised industrial land in the vicinity of the existing universities are redeveloped into a technopark with offices, co-living and retail functions. In addition, the island is made accessible and turned into an eco-park for outdoor sports in link with the existing stadium. The research and

+ more interaction with the university

+ campus participates in the improvement of the city

- medium difficulty of implementation

• The third scenario (recommended) is the most ambitious one, where the island is hosting an iconic research center and more industrial land are redeveloped to host additional leaning facilities, sports facilities and co-living

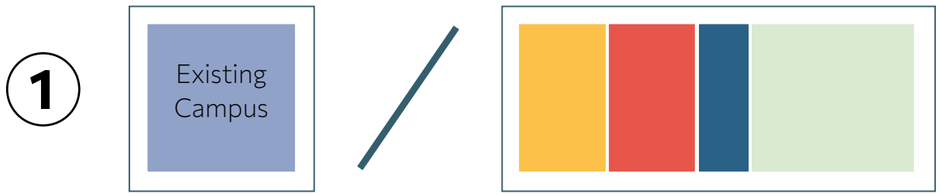
+ iconic development

+ campus participates in the improvement of the city

+ maximise the synergy between education and research by sharing the same district

- difficulty of implentation

Base Scenario : Existing Campus + Out of Center Campus



Alternative scenario 1 : Hybrid City Campus + Out of Center Research Center

Alternative scenario 2 : Full City Campus (recommended)

research & innovation

technopark / incubator

sports

co-living

DEVELOPMENT CENTER OF ASTRAKHAN # 1

UNIVERSITY CAMPUS CASPIAN DELTA

The recommended campus development center implies the integration of the campus into the existing urban environment in the immediate vicinity of universities (AGASU, AGTU, AKVT). The strategy proposes the reactivation of existing public spaces, the construction of a modern technopark, as well as an anchor project - a research center on the island. Oblivnaya, which will become the main recreational area of the district.

103 000 M²
University campus (technopark + residential development)

+

9,3 HA
potential development of the technopark territory

32 HA
total area of tactical transformations (landscaping and improvement of public spaces)

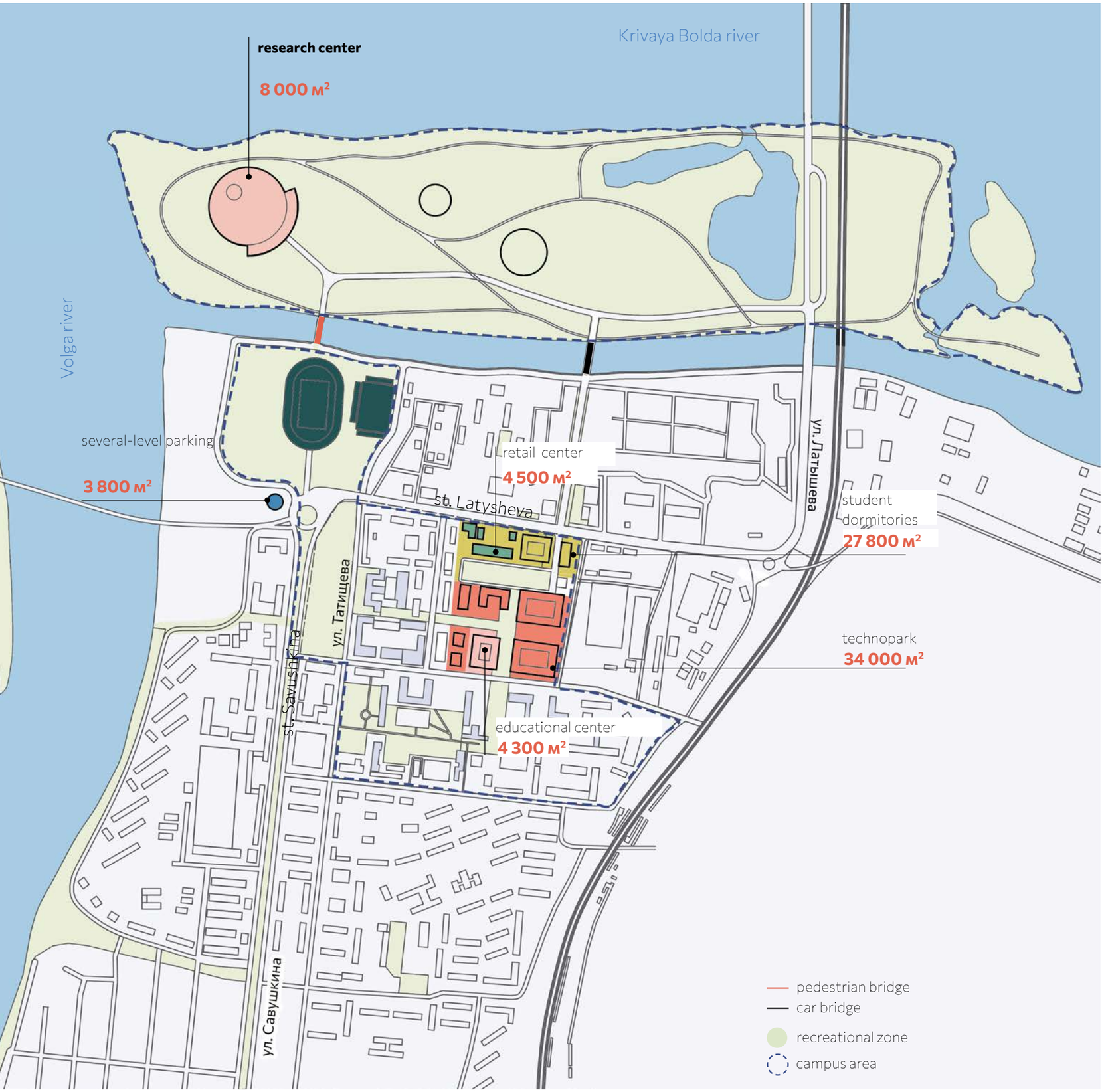
+

44,5 HA
potential development of territories for new development

120,6 HA
the area of the eco-park on the island

DEVELOPMENT CENTER OF ASTRAKHAN # 1

UNIVERSITY CAMPUS RESEARCH CENTER



FUNCTIONAL PLANNING ORGANIZATION DIAGRAM

UNIVERSITY CAMPUS IN AN URBAN ENVIRONMENT

The territory of the university campus of the Caspian Delta includes 4 buildings of a technopark, 4 educational buildings, 8 buildings of student dormitories, as well as a public space that unites students after school hours. Near the university campus, there is a large recreational area with sports functions, including those located on the Oblivny Island.

The island is home to the scientific research center of the Caspian Delta.

The territory of the «Machine-Tool Plant» is also considered as a promising platform for the development of the university technopark

103 300 м²
Development area

27%
RESIDENTIAL DEVELOPMENT
- student dormitories

4%
INFRASTRUCTURE FACILITIES
- multilevel parking

4%
TRADE
- shopping center

31%
CULTURAL AND EDUCATIONAL FUNCTIONS
- Research Center
- Education Centre

33%
OFFICE ROOMS
- technopark

SCHEME OF TRANSPORT AND LOGISTICS SOLUTIONS

CAMPUS TRANSPORT CONNECTIVITY

1. Through a network of main bus routes, the campus will be connected by high-density public transport to all major residential areas of the city and centers of economic activity.

2. A separate high-speed bus corridor (BRT), as well as a city train, a new station of which will open next to the territory, will connect the campus with the key passenger hub of the city and metropolitan area - Pryvokzalnaya Square.

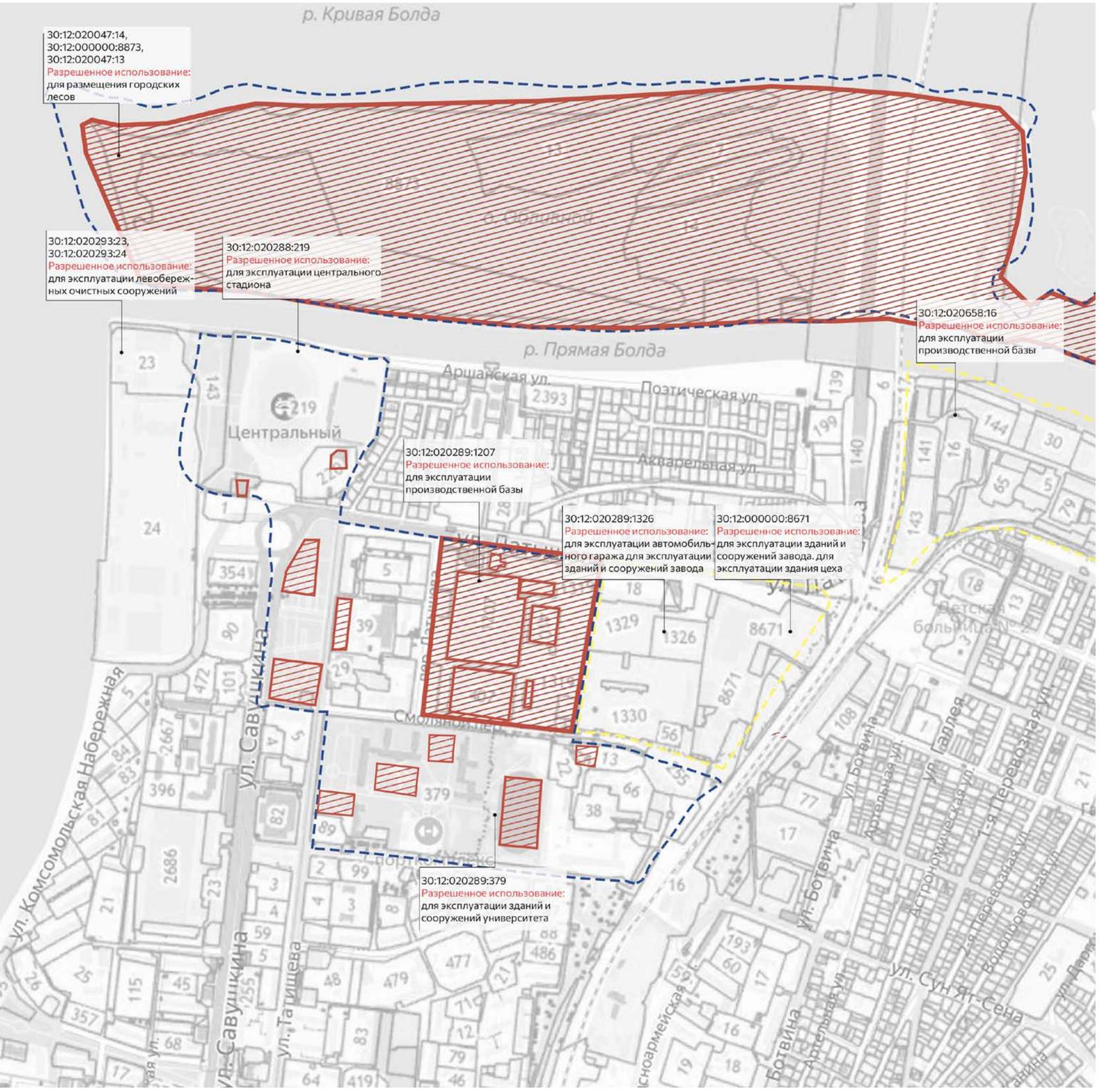
3. The Central Ring Road will pass through the territory. It will increase the connectivity of the campus with all districts of the city, but will not become a negative factor for the quality of the urban environment, since it will be executed in the format of a boulevard-type city street.

4. The campus will be provided with cycling infrastructure connected to the urban cycling network. There will be many bicycle parking lots on the territory.

5. For students, staff and guests of the campus, a multi-level parking is provided, which is primarily designed for the duration of major events on the campus - forums, conferences, olympiads

+402
additional parking spaces in a multi-level parking lot

- multilevel parking
- dedicated BRT line
- public transport stop
- public transport route
- railway station
- railroad track
- bike path



STAGES OF IMPLEMENTATION OF THE ACTIVITIES OF THE MASTER PLAN

STAGES OF IMPLEMENTATION OF THE UNIVERSITY CAMPUS

The gradual development of the university campus is expected in three stages and begins with the transformation of the public spaces of the territories of universities. The construction of a technopark, student dormitories, educational buildings, as well as the organization of a sports zone on the territory of Oblivnaya Island - the main stage of the strategy implementation is expected at the second stage (2024-2027)

1 PHASE **3 800 м²**

Tactical transformations of public spaces in the areas adjacent to the campus, as well as providing a service

2 PHASE **99 200 м²**

Construction of a technopark, student dormitories, educational buildings on the territory of the cadastral site 30: 12: 020289: 1207, as well as the implementation of an anchor project - a research center of the Caspian Delta in an eco-park on the island. Oblivny

3 PHASE **53,8 НА**

The territory of the Machine-Tool Plant, as well as the territory along the Kutum River, can potentially become a platform for the expansion of the technopark and the construction of new residential quarters

DEVELOPMENT CENTER OF ASTRAKHAN # 2

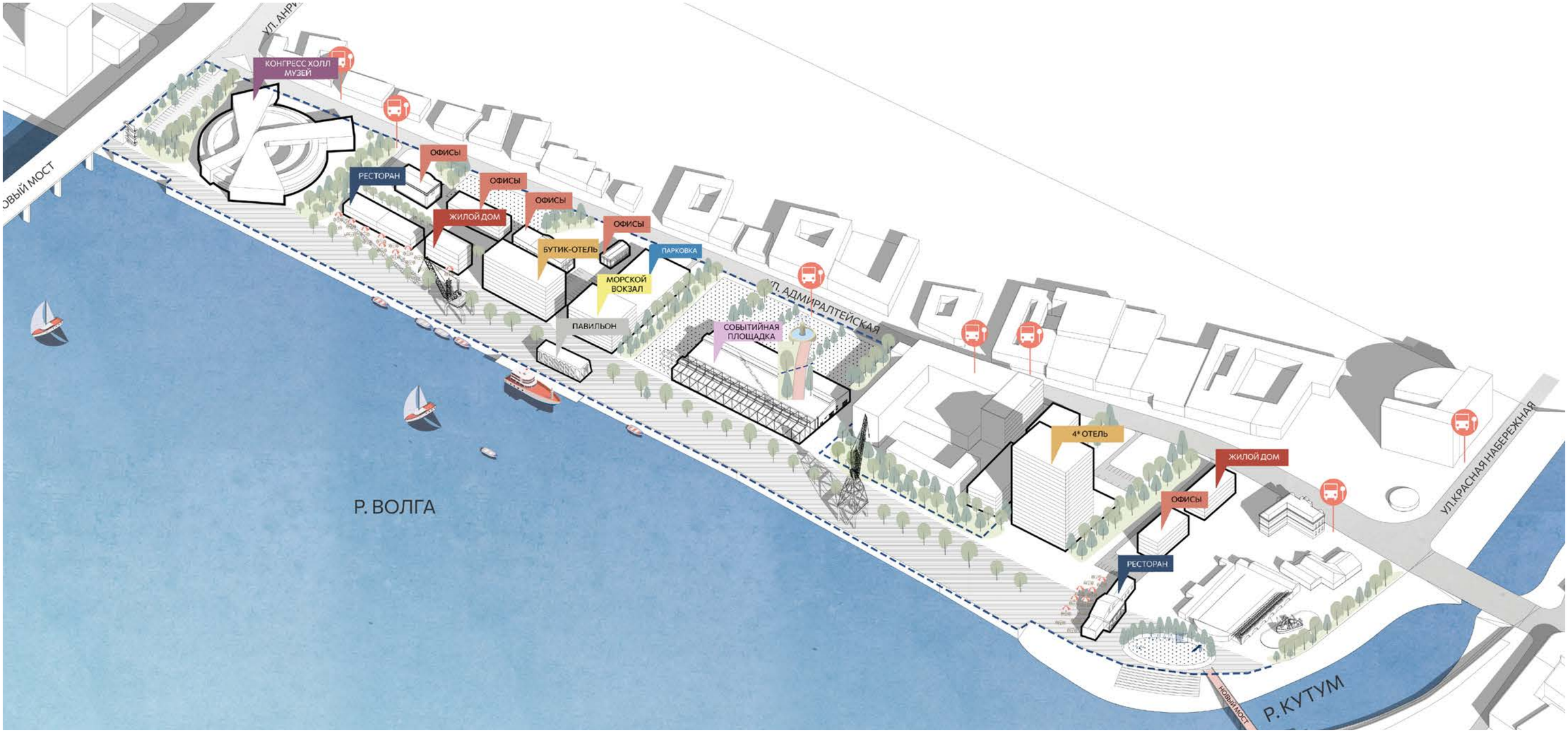
TOURIST QUARTER OF THE CASPIAN DELTA

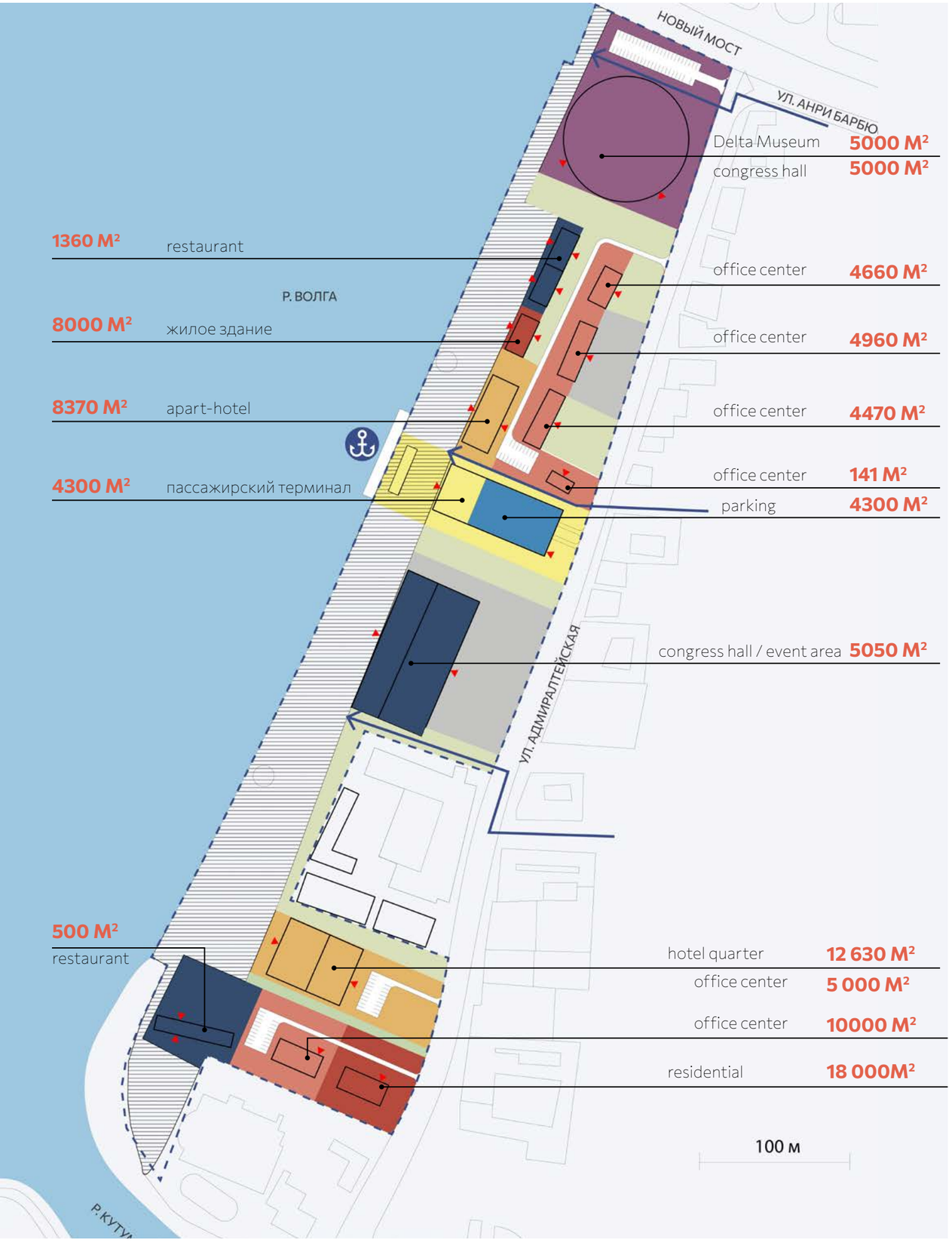
The tourist quarter of the Caspian Delta will become a center that combines the business, tourist and cultural life of the city on one site. The quarter will inspire citizens to study the nature and culture of the Volga Delta, raise awareness of the region's unique opportunities, and hold major cultural and business events.

The project proposes to preserve the industrial aesthetics of the port by preserving river cranes on the territory of the new Quarter

82 050 м²
total area of development in the tourist area of the Caspian Delta

51,7 НА
area of public spaces on the territory of the former cargo port with a view of the Volga





FUNCTIONAL PLANNING ORGANIZATION DIAGRAM

TOURIST AREA OF THE DELTA

The functional scheme of the tourist quarter is based on a combination of a logistics center (passenger terminal), a cultural and educational center (Caspian Delta museum, exhibition hall / congress hall) and commercial functions such as offices and restaurants, as well as development of residential complexes with apartments

82 5 50 м²
total area of development in the tourist area of the Caspian Delta

25%
HOTLE
- hotel complexes, apart-hotels and boutique hotels

10%
INFRASTRUCTURE
- parking silo

6%
RETAIL
- restaurant

19%
CULTURAL-EDUCATIONAL
- Museum Caspian Delta
- congress hall

9%
OFFICES
- Office center

30%
RESIDENTIAL
- residential complex

- the territory of the tourist quarter
- plaza
- embankment
- recreational zone

SCHEME OF TRANSPORT AND LOGISTICS SOLUTIONS

TRANSPORT FRAME OF THE QUARTER

The tourist quarter is located in the very center of Astrakhan and has good pedestrian and transport accessibility. A new cycle path will pass along Admiralteyskaya Street, which will additionally connect the quarter with other development centers of Astrakhan, as well as with the outskirts of the city.

Four open and one closed parking is organized on the territory at the passenger terminal with a total capacity of 426 parking spaces

- 15 minutes by bike to anywhere in the city center

- no more than 45 minutes to most residential areas and places of applications by public transport

426
total number of parking spaces

106
outdoor parking spaces

320
parking spaces in the covered parking near the passenger terminal

the territory of the tourist quarter

stops public transport

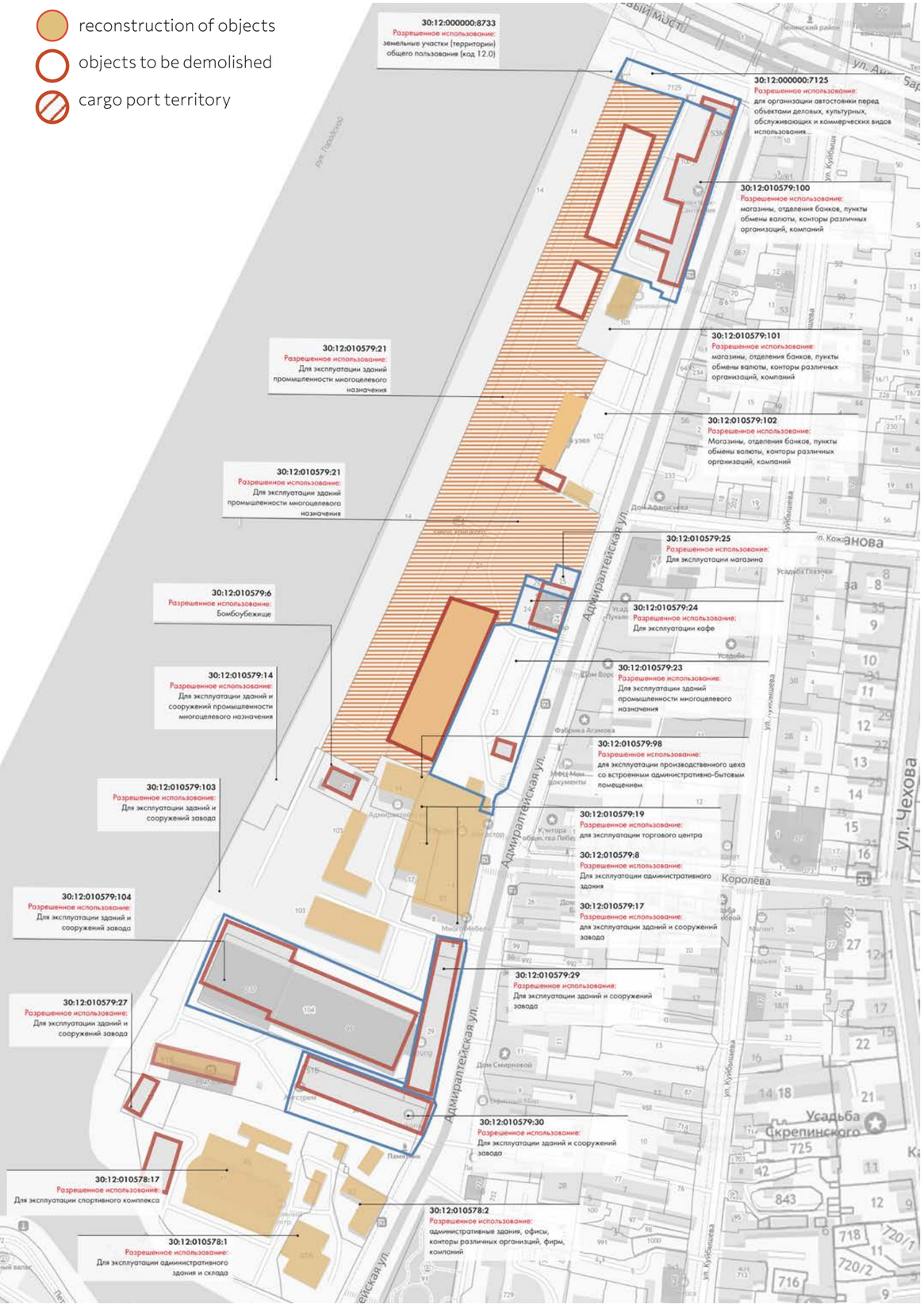
route public transport

pier

technical route

several-level parking

bike lane



TAGES OF IMPLEMENTATION OF THE ACTIVITIES OF THE MASTER PLAN

STAGED IMPLEMENTATION

The project will be implemented in two phases with the gradual launch of facilities on the territory of the cargo port.

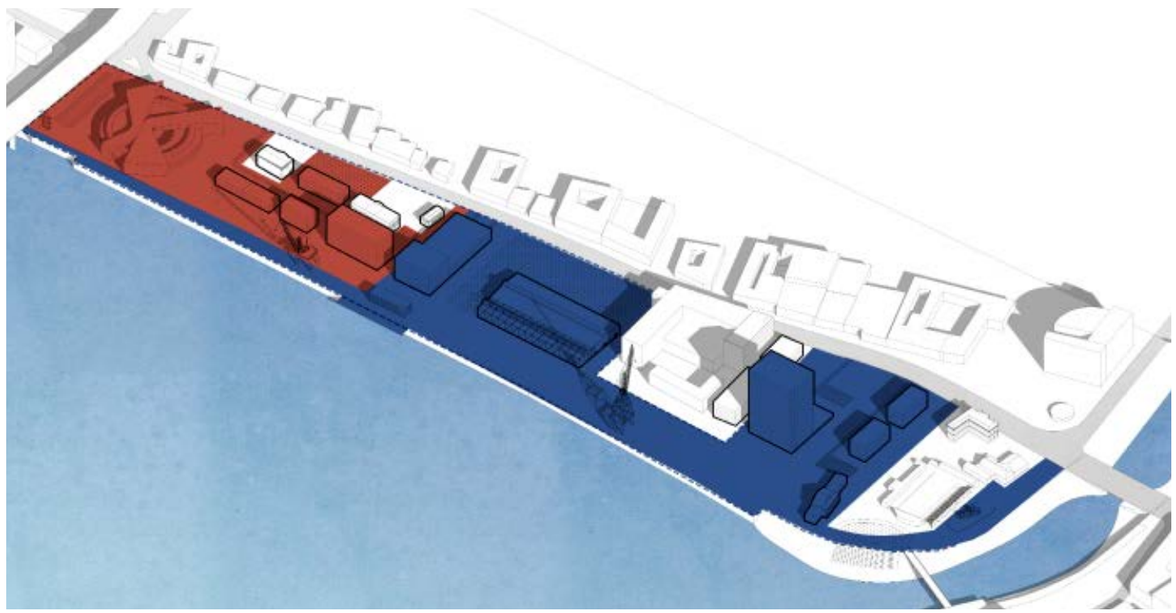
1 PHASE **16 100 M²** **+ (5050 M²** reconstruction

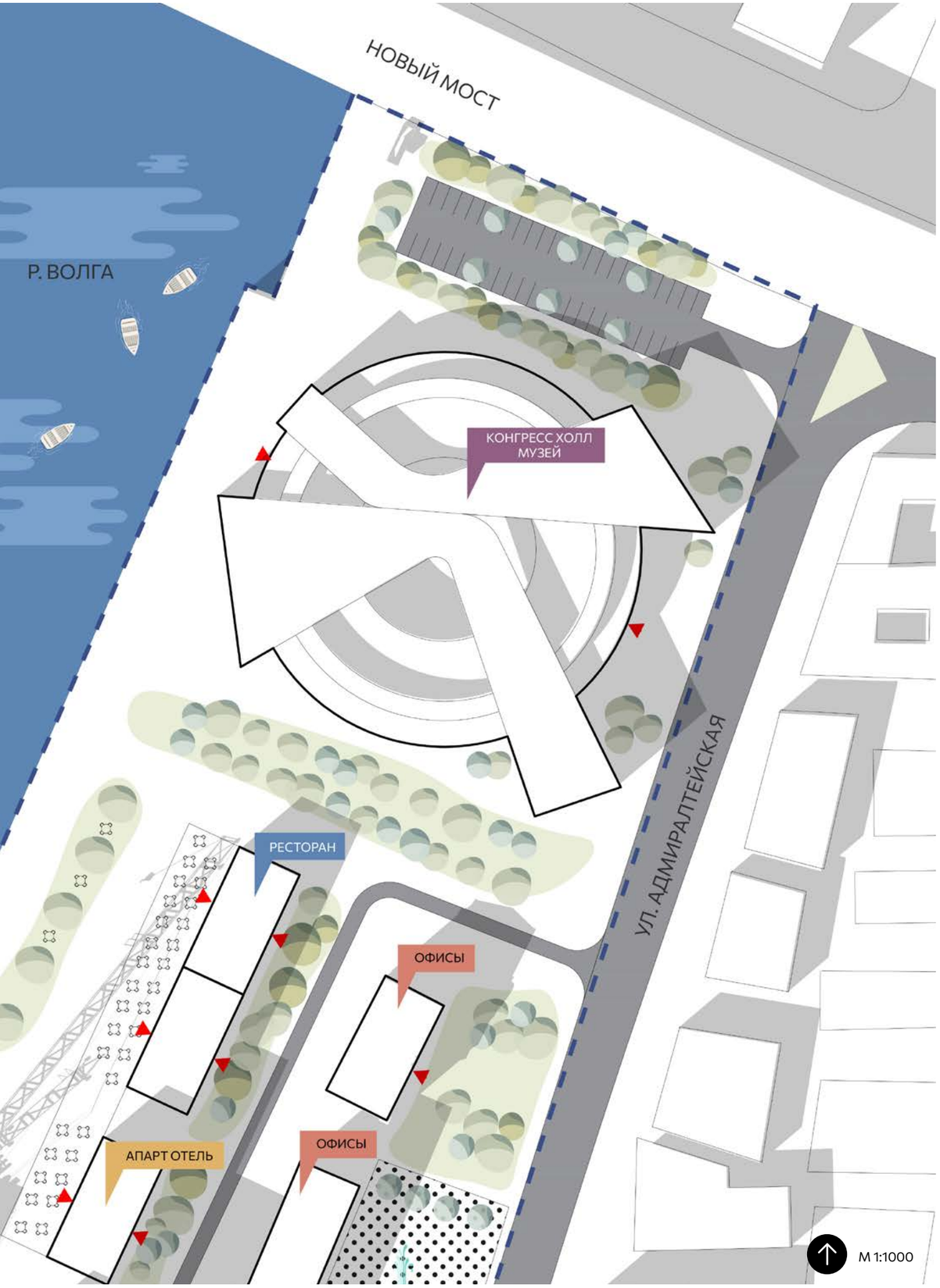
At the first stage, the strategy envisages the creation of a public space along the embankment, as well as the construction of a hotel, offices and a restaurant. It is planned to carry out the reconstruction of the port buildings with their adaptation to the functions of an exhibition and event site and a restaurant. All development objects will be connected by public space on the embankment.

The implementation of the project is expected

2 PHASE **60 400 M²**

At the second stage, a project is being implemented for the anchor object of the tourist quarter - the Caspian Delta Museum, which will launch research activities in the quarter. Business centers with offices, hotels and a residential complex on the Volga embankment will also open next to the museum.





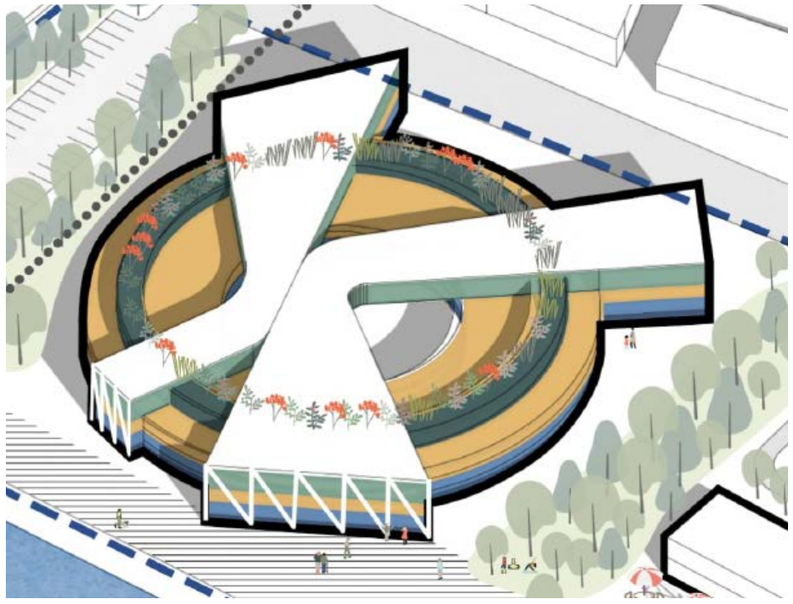
SITE MASTER PLAN SCHEME

MUSEUM CASPIAN DELTA

The Research Museum for the Study of Climate, Nature, Geography and History of the Caspian Delta will become the largest museum and exhibition space in the region and a leading center for research in the field of natural sciences.

The mission of the museum is to collect, preserve and pass on to the next generations materials and knowledge on the study of the Caspian Delta.

The building of the Caspian Delta Museum should become a landmark architectural object. The exposition space of the museum's activities - the department of history and local history, the department of geography and tourism, the department of biology, flora and fauna, the department of ecology and nature protection, the department of renewable energy sources, the «Museum of Water», lecture halls, open scientifically -research laboratories and conference rooms.



5000 M²
total area of the Delta Museum, including:

1500 M²
exhibition space

900 M²
lecture halls

700 M²
library

700 M²
obshchestvennyye prostranstva

500 M²
resurannt

700 M²
repositories

SCHEME OF TRANSPORT AND LOGISTICS SOLUTIONS

PRESERVATION OF HISTORIC QUARTERS

The tourist quarter of the Caspian Delta is located in the historical center of the city and should be included in its structure. Formation of new «green ties» between the development center of Astrakhan (Tourist quarter of the Caspian Delta) and the Opera and Ballet Theater on the territory of a historical settlement nearby will improve the quality of the historical environment. Improvement of pedestrian connections, as well as the inclusion of some of the cultural heritage sites in the «Astrakhan courtyards» Program (see section 5 «Historical center of Astrakhan»)

the territory of the tourist quarter

pedestrian connections
Green links
City Park
residential development (existing project)
boundaries of protection Culture heritage
Culture heritage
medium priority courtyards
low priority thieves

DEVELOPMENT CENTER OF ASTRAKHAN # 2

TOURIST QUARTER OF THE CASPIAN DELTA

EVELOPMENT CENTER OF ASTRAKHAN

#1 TOURIST DISTRICT OF THE DELTA

DEVELOPMENT CENTER OF ASTRAKHAN # 3

BAKU QUARTERS

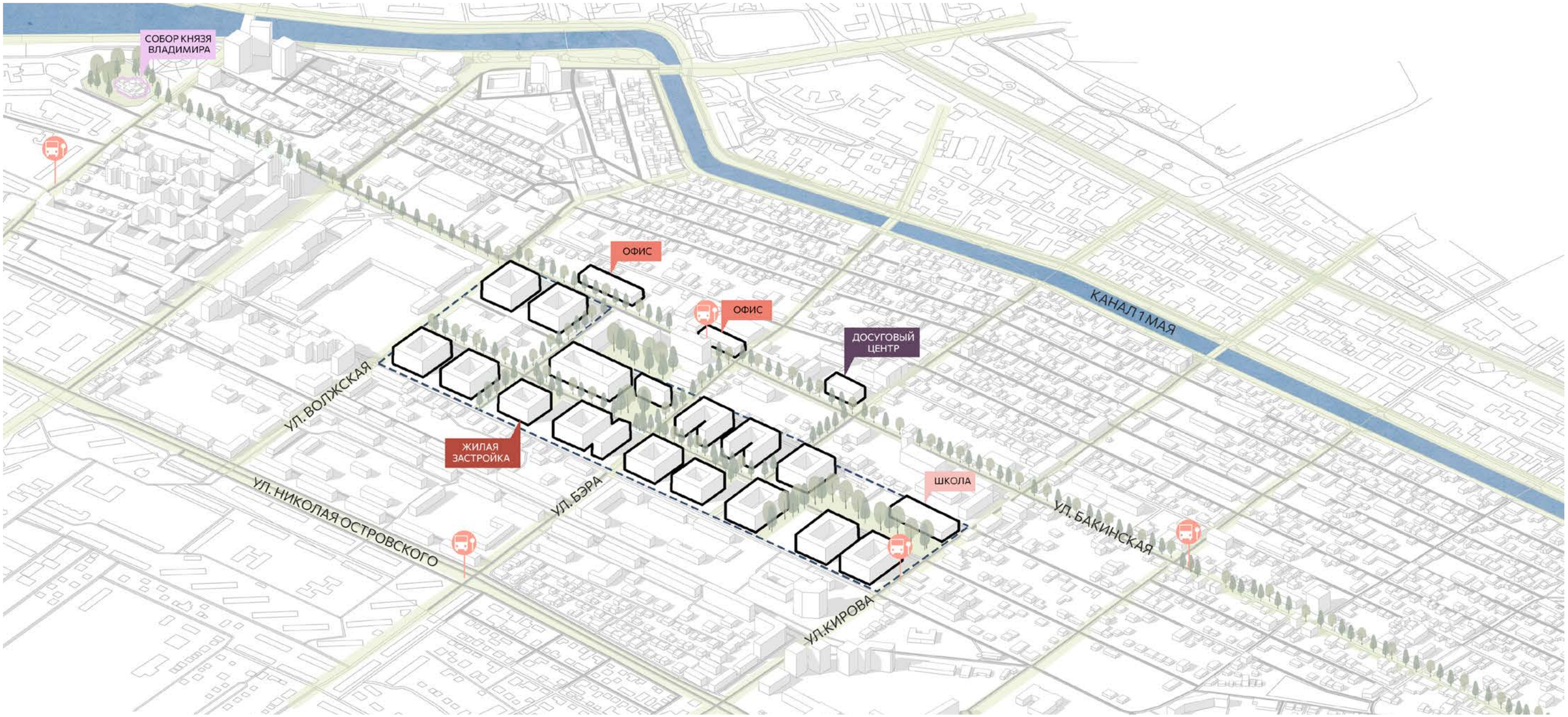
The new large residential area has an advantageous strategic location along Baku Street, which in the future will be transformed into a green boulevard with public transport stops and bicycle paths. We propose to create a central green street between the two main development areas. Green perpendicular streets will connect the development area with the Green Canal within walking distance.

462 500 M²

total area of the development area

78,2 HA

Площадь общественных пространств



FUNCTIONAL PLANNING ORGANIZATION DIAGRAM

BAKU QUARTERS

The functional organization of the Baku quarters is based on the prevalence of residential function in medium and high-rise buildings. Commercial premises for trade will be located on the ground floors of residential buildings, and the quarter will be provided with a school with an area of 8300 m

Most of the residential complex will be equipped with educational and medical facilities. The first floors of buildings on Bakinskaya Street will be presented with retail premises. Further multifunctional redevelopment is also connected with Baku Street.

103 300 м²
Development area

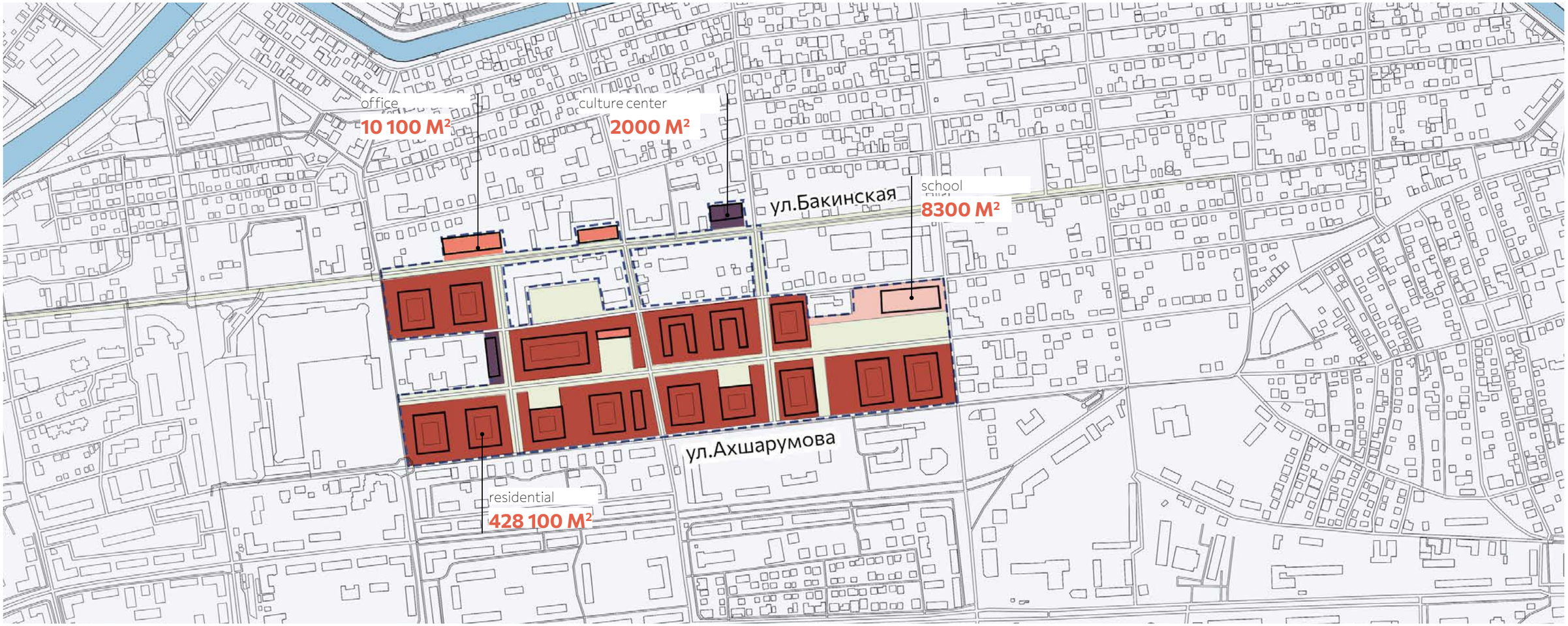
91%
RESIDENTIAL
- Mixed-use Residential

2%
TRADE
retail space on the ground floors of residential buildings

5%
CULTURE AND EDUCATIONAL
- leisure center
- Ecole

2%
OFFICES
- technopark

project territory



SCHEME OF TRANSPORT AND LOGISTICS SOLUTIONS

BAKU QUARTERS

Baku districts are located in close proximity to the city center and are surrounded by highways and regional roads with established public transport routes.

Also, as part of the creation of the «green infrastructure» of the city, the territory of the Quarters will be connected with the «green» canals and the natural center through dedicated bike lanes and new landscaping along the streets

project territory

greeneng

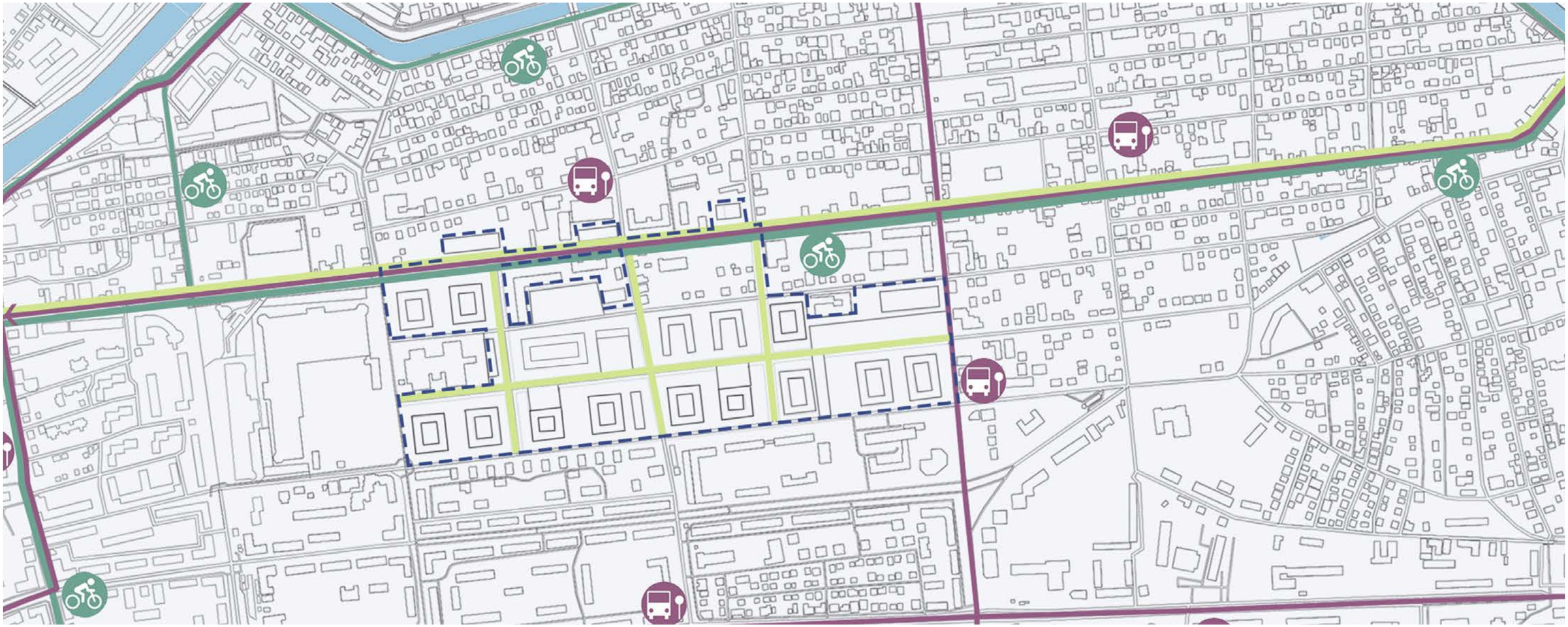
public transport stops

route public transport

railway stops

railway

bike lane

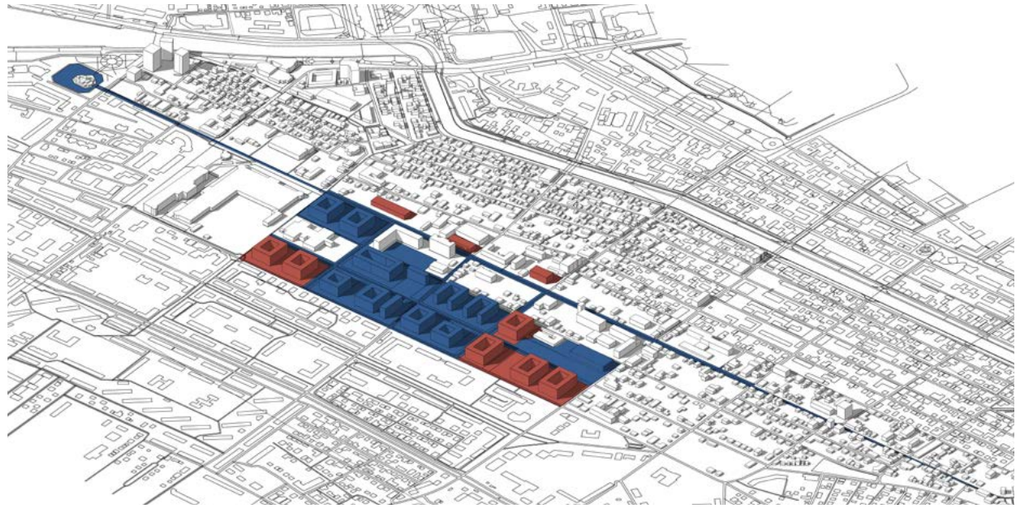


PHASEЫ РЕАЛИЗАЦИИ МЕРОПРИЯТИЙ МАСТЕР-ПЛАНА

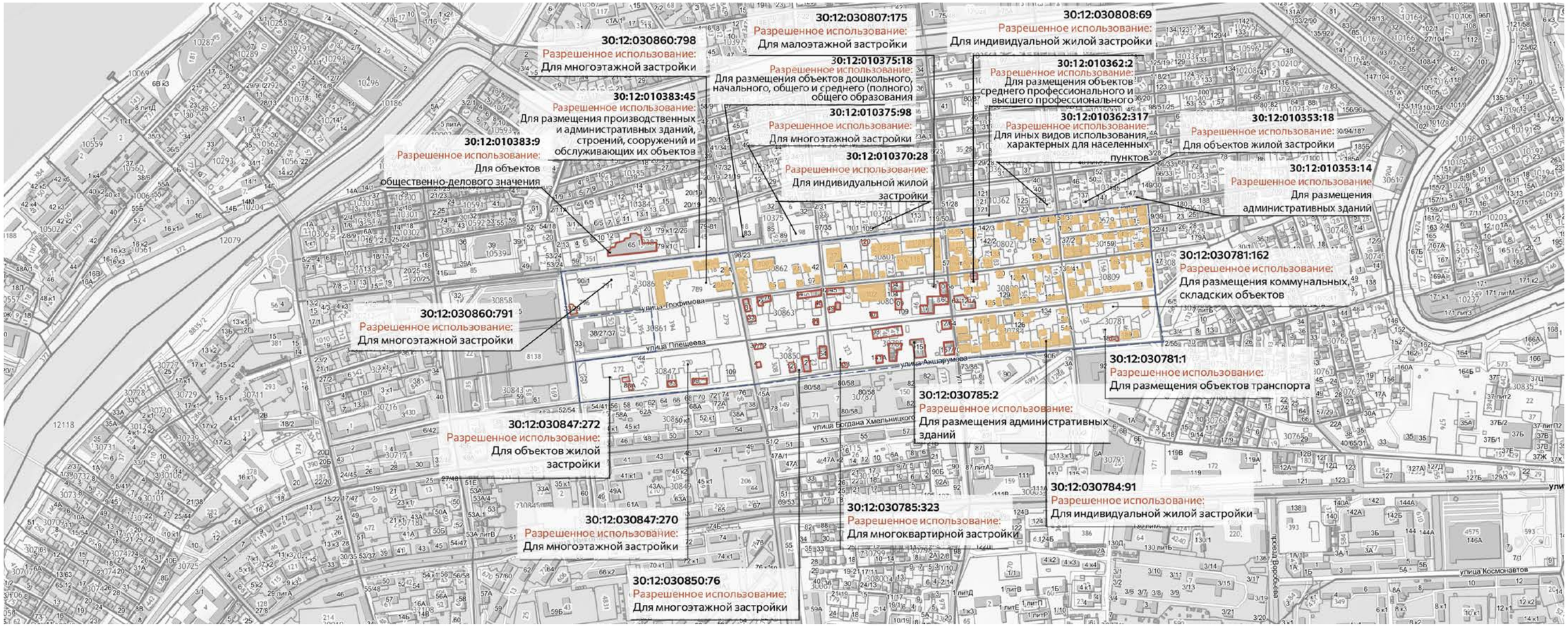
БАКИНСКИЕ КВАРТАЛЫ

1 PHASE **324 400 М²**

2 PHASE **138 100 М²**

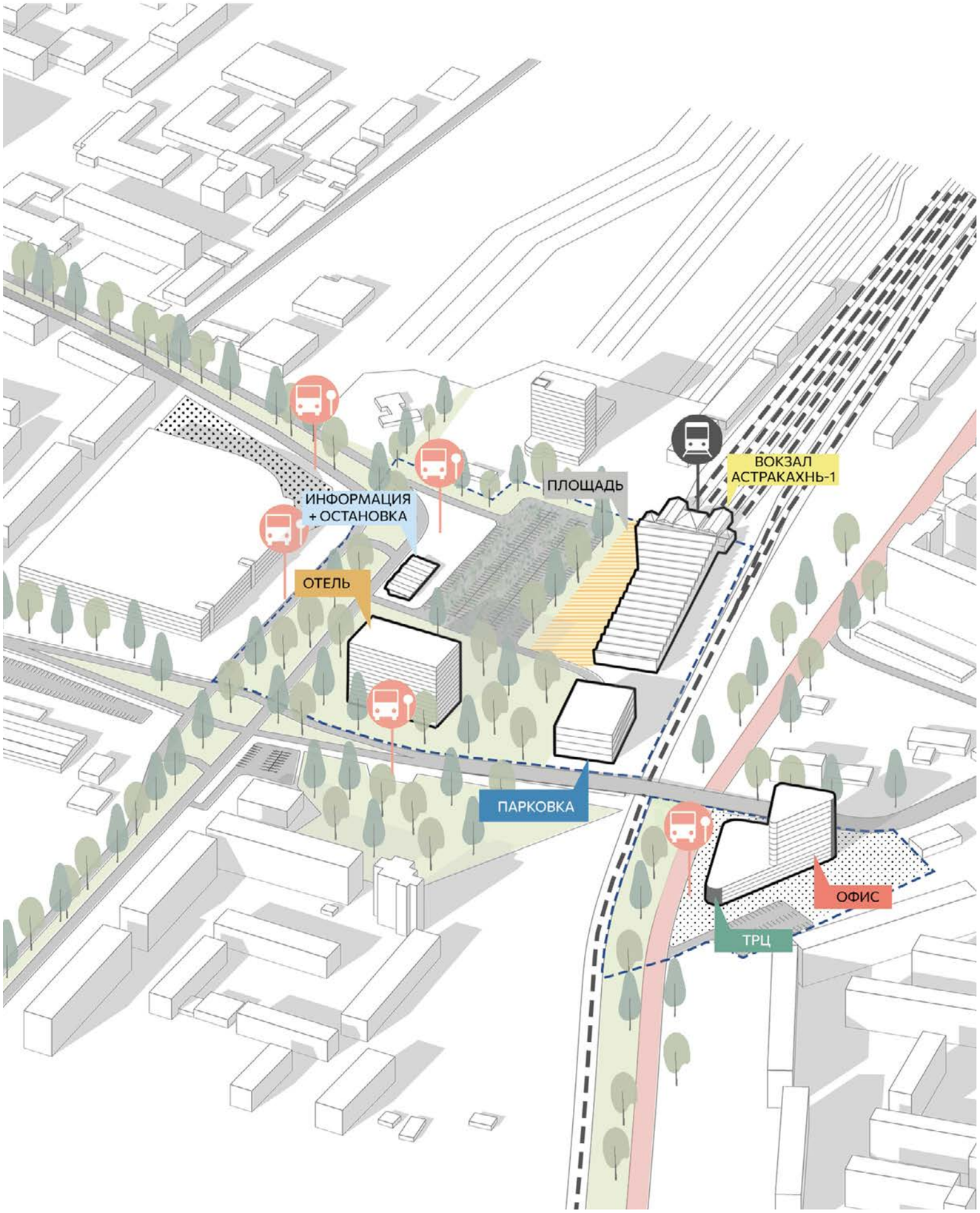


территория проектирования



DEVELOPMENT CENTER OF ASTRAKHAN # 3

BAKU QUARTERS



DEVELOPMENT CENTER OF ASTRAKHAN # 4

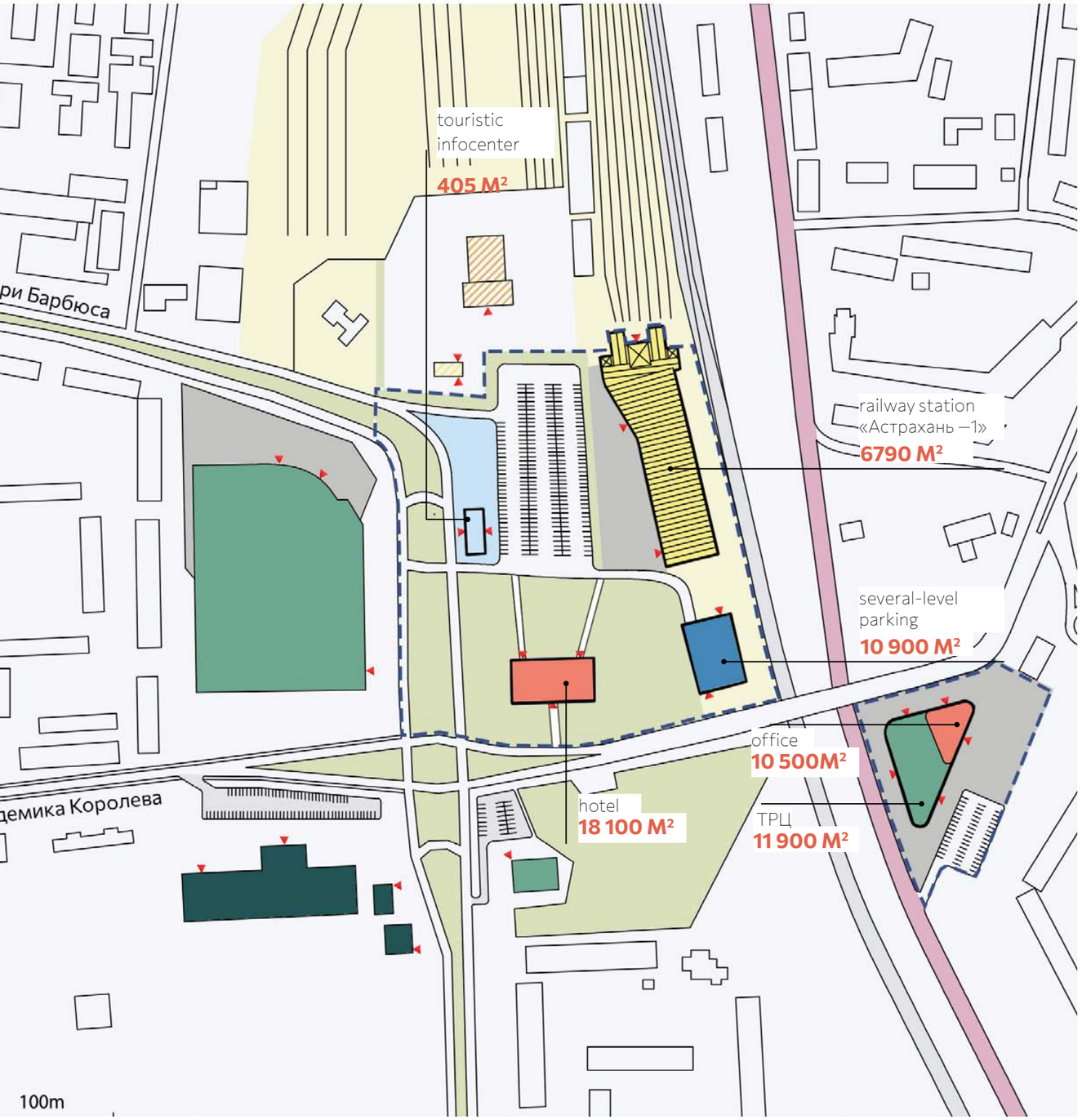
AREA OF THE RAILWAY STATION «ASTRAKHAN-1»

The train station hub is an opportunity to strengthen the area as a multimodal transport hub by creating a bus station for regional Delta routes and seasonal tourist shuttles. The creation of a special multi-level parking lot will increase the current transport capacity. In parallel with this, the new square in front of the station will create a comfortable space for visitors arriving by train to Astrakhan. A new hotel, office space and shops may be located here. The future trunk line along the railway will strengthen the importance of this transport hub thanks to its fast connection to the airport.

51 400 M²
total area of the development area

6790 M²
reconstruction area of the station «Astrakhan-1»

34,6 HA
Area public spaces



project territory
plaza
recreational zone
central ringroad

FUNCTIONAL PLANNING ORGANIZATION DIAGRAM

AREA OF THE RAILWAY STATION «ASTRAKHAN-1»

The area of the Astrakhan-1 railway station is a city logistics center with a large flow of people, so it is important to saturate the surrounding area with functions that complement the existing functional zoning. In addition to the existing Yarmarka shopping center, a business center appears on Yablochkova street with trading functions on the ground floors.

It is planned to build a hotel near the station.

To maintain the functional balance of the territory, 30% of the total area is allocated for public spaces, of which 20% - for recreational areas.

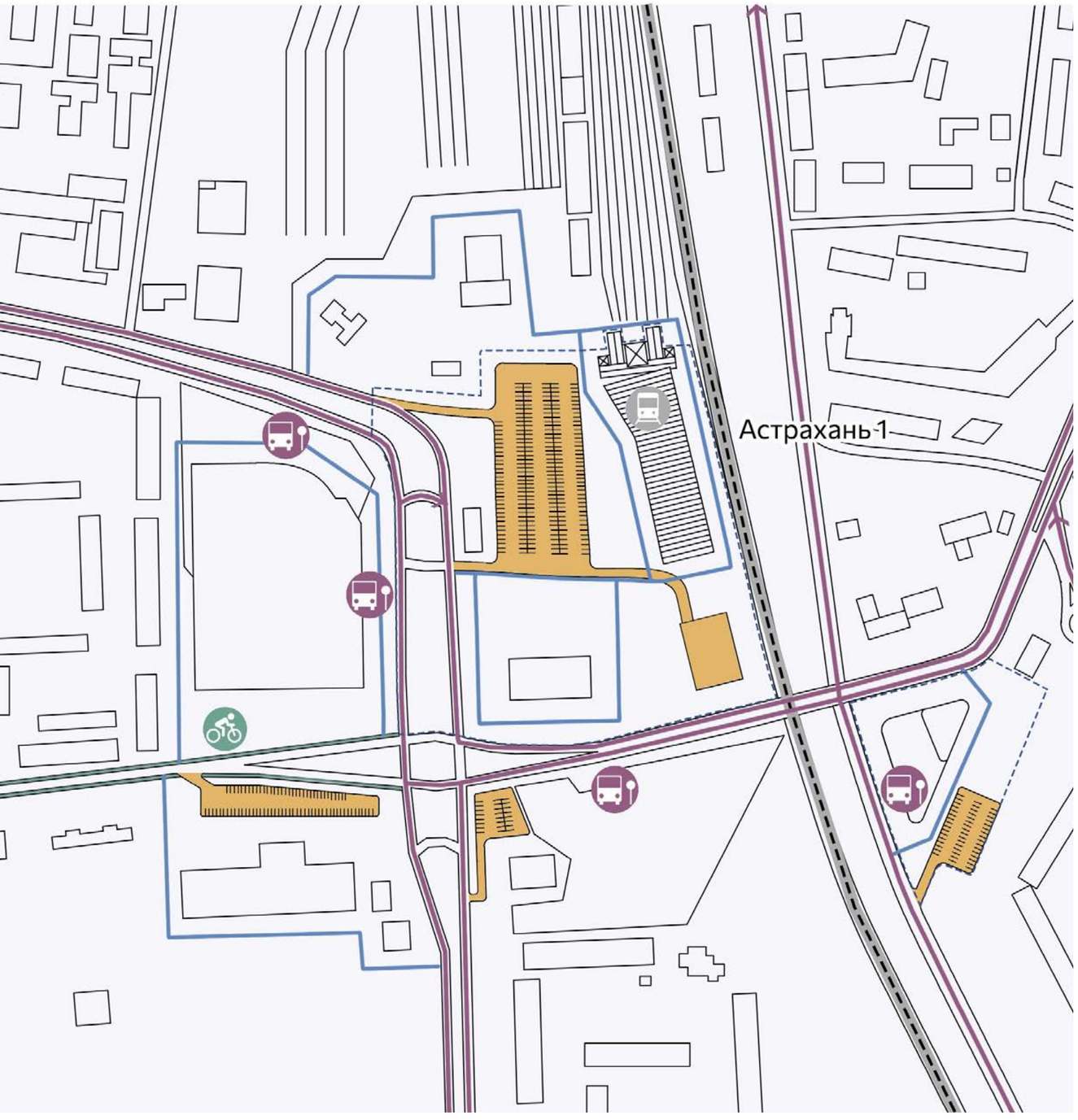
51 400 м²
total area of development
on the territory of
the railway station
«Astrakhan - 1»

35%
HOTEL
hotel

21%
INFRASTRUCTURE
several-level parking

23%
RETAIL
restaurant

9%
OFFICES
office ный center



route public transport

железная дорога

project territory

parking

bike lane

SCHEME OF TRANSPORT AND LOGISTICS SOLUTIONS

RAILWAY STATION AREA «ASTRAKHAN - 1»

The station square will become a key transport hub. It will be possible to make transfers between long-distance trains, suburban trains, city trains, city main bus routes, suburban and intercity buses.

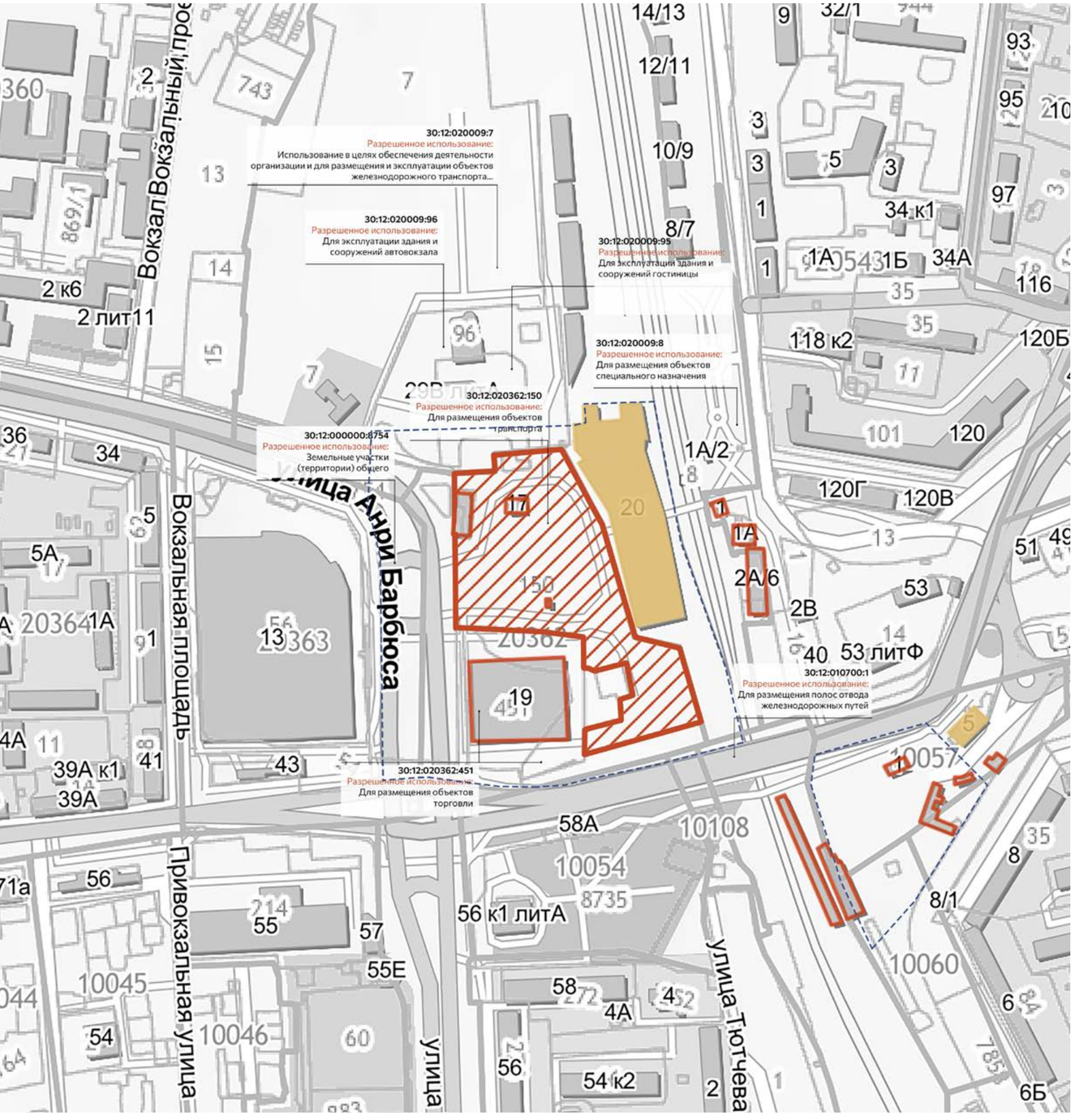
Anywhere in the city center can be reached by bike in 20 minutes along the cycle network. Traveling by public transport to most residential areas and places of employment will take no more than 45 minutes, taking into account the waiting time for transport, and will require no more than one change.

Railway station and station square in Ivanovo

230
number of cars in the open parking lot of the Astrakhan-1 railway station

▶ **600**
number of parking spaces

- **230** m / places in the open parking near the railway station «Astrakhan - 1»
- **320** m / places in a covered multi-level parking
- **50** m / places in the open parking near the mall and office



территория проектирования

reconstruction of objects

objects to be demolished

project territory

STAGES OF IMPLEMENTATION OF THE ACTIVITIES OF THE MASTER PLAN

RAILWAY STATION AREA «ASTRAKHAN - 1»

Implementation of the improvement of the forecourt area is supposed to be on the territory of land in municipal ownership.

1 PHASE **10 900 M²**

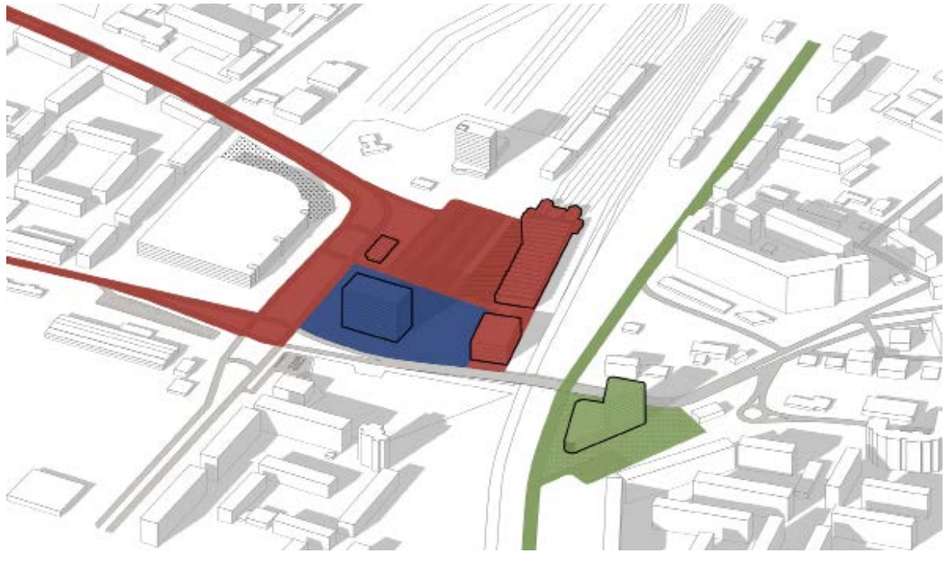
At the first stage, it is planned to reconstruct the building of the railway station «Astrakhan - 1», reorganize the station square, as well as create recreational zones and linear landscaping along the streets

2 PHASE **21 100 M²**

At the second stage, the shopping center at Vokzalnaya Square 19 is dismantled for the construction of the hotel, including the improvement of the adjacent territory

3 PHASE **19 400 M²**

The next step is to create additional retail and office space through the construction of a business center. To carry out the construction, it is necessary to dismantle the garages located in the design area§v



DEVELOPMENT CENTER OF ASTRAKHAN # 6

AREA OF THE RAILWAY STATION «ASTRAKHAN-1»

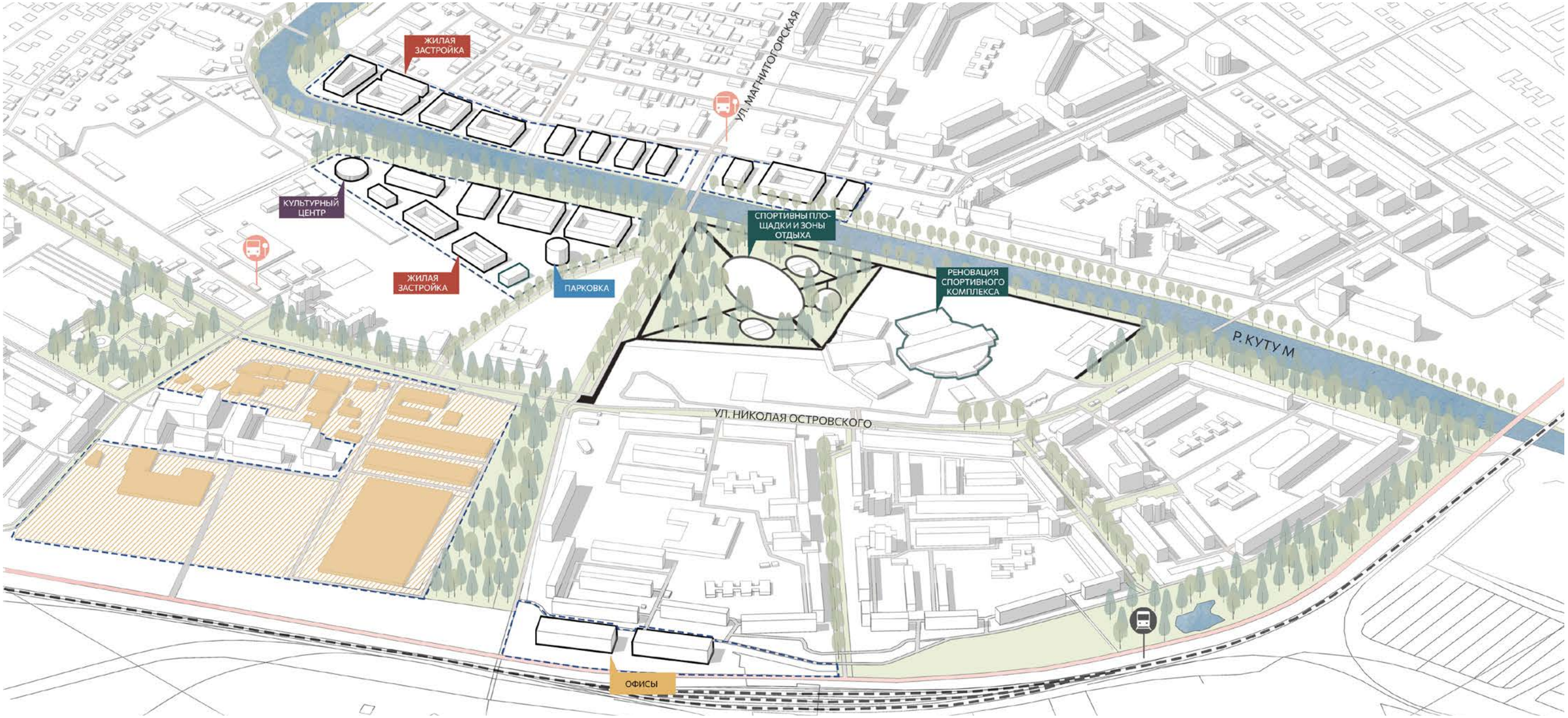
DEVELOPMENT CENTER OF ASTRAKHAN # 5

SPORTS AND ENTERTAINMENT CENTER

The new large residential area has an advantageous strategic location along Baku Street, which in the future will be transformed into a green boulevard with public transport stops and bicycle paths. We propose to create a central green street between the two main development areas. Green perpendicular streets will connect the development area with the Green Canal within walking distance.

188 000 M²
total area of the development area

54,9 HA
Area public spaces



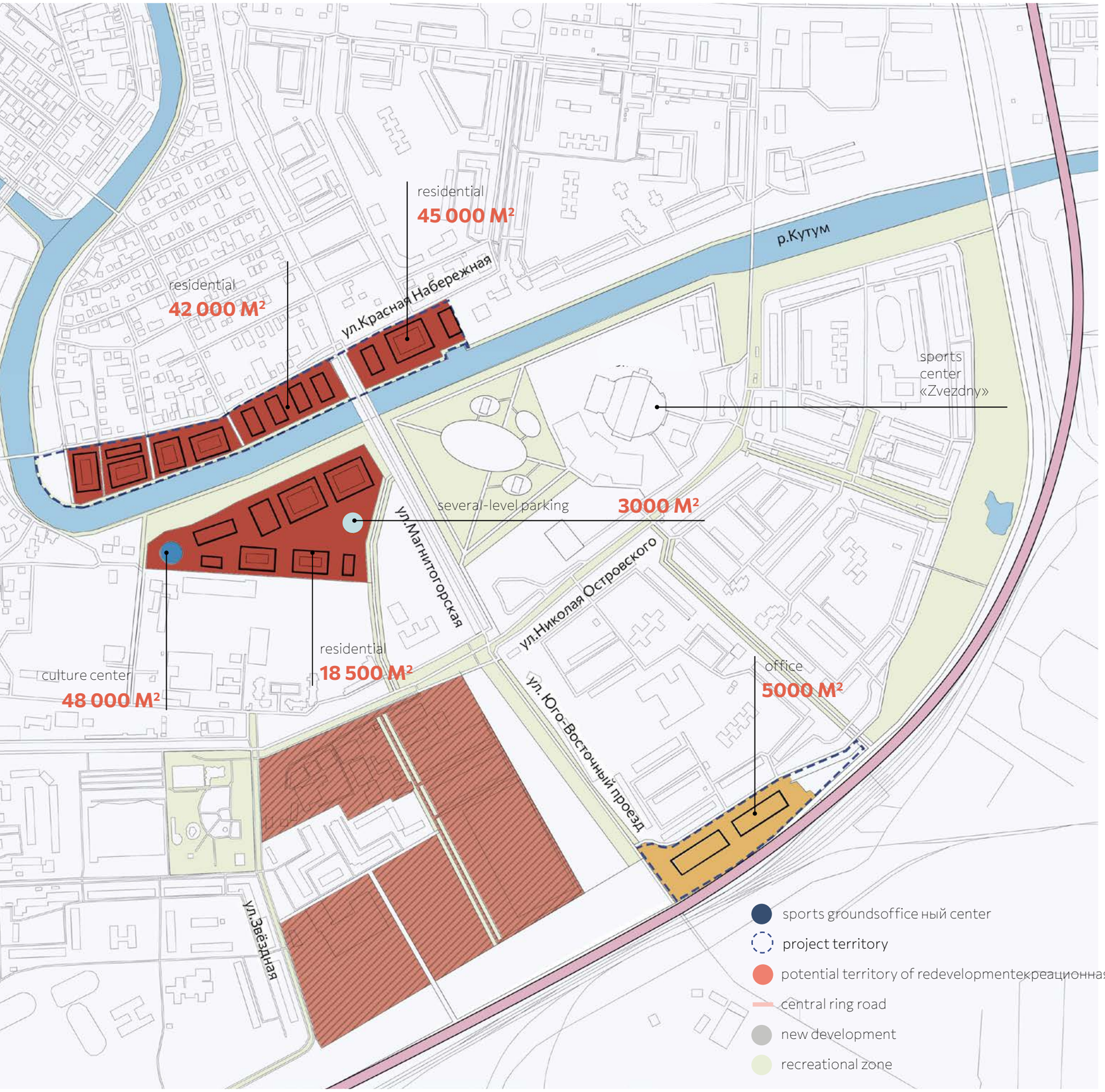
FUNCTIONAL PLANNING ORGANIZATION DIAGRAM

SPORTS AND ENTERTAINMENT CENTER

On the site of the industrial territory («Astrakhan net knitting factory») and the territory of warehouses, it is proposed to create residential quarters of mid-rise buildings with multi-level parking lots.

A park with sports grounds is being organized near the Zvyozdny sports complex.

On the potential territory of redevelopment, functions may appear that will support the functional balance of the territory.



103 300 м²
Development area

71%
RESIDENTIA
residential quarter

8%
RETAIL
retail space in the ground floors of residential buildings

11%
CULTURE-EDUCATION
culture center

11%
OFFICES
technopark

2%
INFRASTRUCTURE
several-level parking

SCHEME OF TRANSPORT AND LOGISTICS SOLUTIONS

SPORTS AND ENTERTAINMENT CENTER

Good transport availability of the district is achieved due to public transport routes that connect the sports complex «Zvezdny» with all districts of the city, the laying of new bike paths along the roadways, as well as the development of railway communications.

The new central road ring will also improve the accessibility of the area, which can now be reached without traffic jams in the city center.

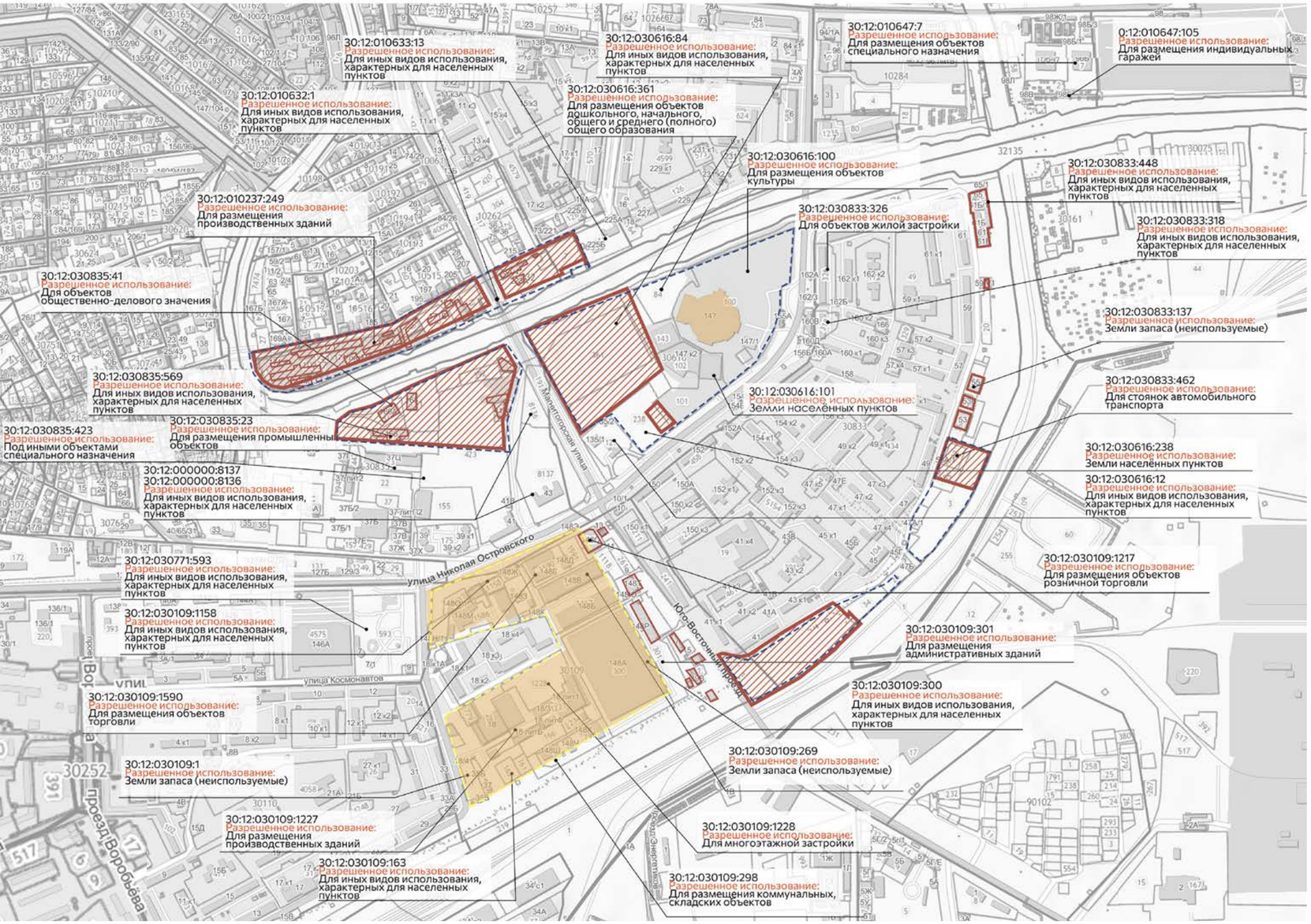
project territory

parking

bike lane

route public transport

railway



project territory

territories for the creation of public spaces

objects to be demolished

project territory

STAGES OF IMPLEMENTATION OF THE ACTIVITIES OF THE MASTER PLAN

SPORTS AND ENTERTAINMENT CENTER

The implementation of the strategy is divided into three stages:

1 PHASE **45 000 M²**

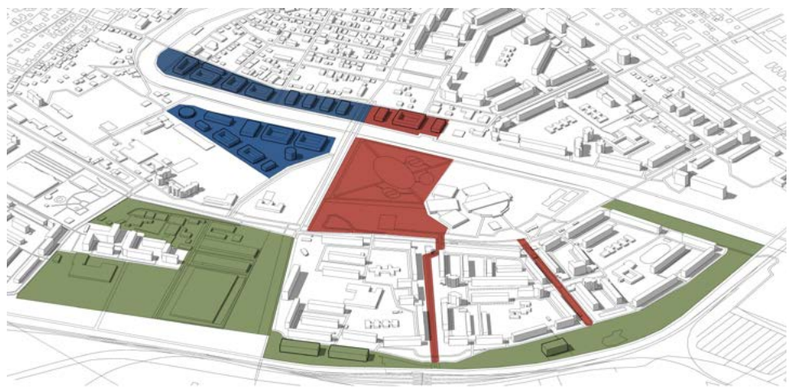
The first stage includes the renovation of the building of the sports complex «Zvezdny» and the adjacent territory of the park with the creation there of a public space with sports grounds, as well as the construction of a residential area on the Red Embankment

2 PHASE **120 000 M²**

At the second stage, redevelopment of industrial and warehouse territories is carried out with their adaptation to residential function.

3 PHASE **23 000 M²**

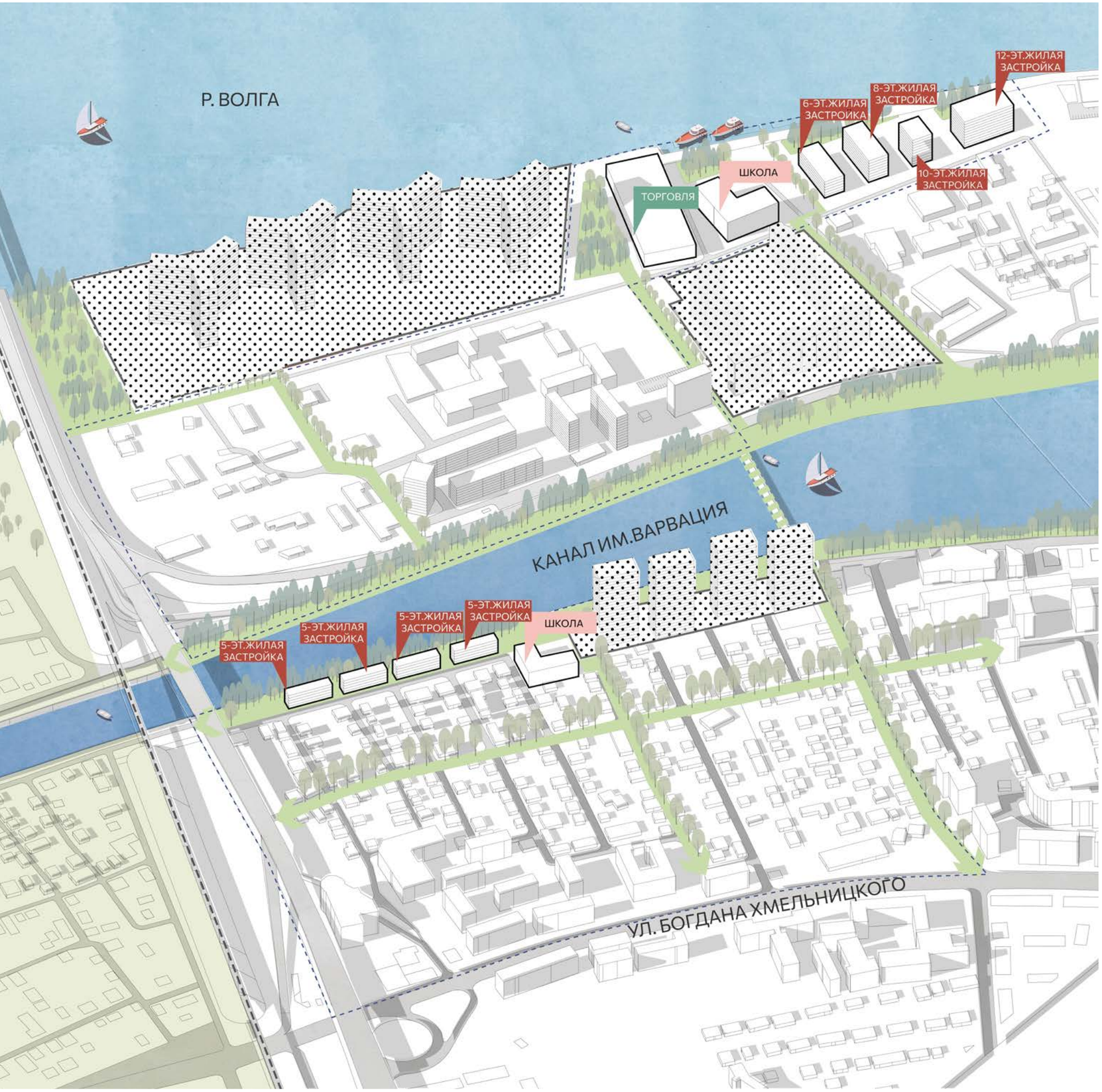
At the third stage, a «green» ring of public spaces is created, encircling the area, along the central ring road, with the creation of a business center there. A promising site for redevelopment can be developed for medium-rise residential areas



DEVELOPMENT CENTER OF ASTRAKHAN # 6

SHIPBUILDING QUARTER

Most of the development is located on the territory of «Shipbuilding Plant-2», which is proposed to be relocated to a new southern logistics hub next to the future southern bridge over the Volga and the airport territory. This will allow to continue to extend the promenade area of the embankment and place educational and cultural centers next to the new residential buildings, from where a beautiful view of the Volga opens. Some of the former shipyards and new ships will be renovated with the addition of cultural and gastronomic services to attract additional tourists to the waterfront, as well as for the convenience of the residents of the area.



93 000 M²
total area of the development area

5,4 HA
Area public spaces

FUNCTIONAL PLANNING ORGANIZATION DIAGRAM

SHIPBUILDING QUARTER

Astrakhan Development Center # 6 is located at the Privolzhsky Zaton on the territory of the «Shipbuilding Plant - 2» and the embankment of the Privolzhsky Zaton, next to the current projects for the construction of residential complexes Astmosfera and Heritage.

The strategy proposes to complement the area with mid-rise residential buildings, social infrastructure and commercial functions.

93 000 м²
Development area

71%
RESIDENTIAL
- residential quarter

8%
RETAIL
- retail space in the ground floors of residential buildings

16%
CULTURAL - EDUCATION
- school

5%
OFFICES
- office

- project territory
- territories where current projects are being implemented residential development
- recreational zone

SCHEME OF TRANSPORT AND LOGISTICS SOLUTIONS

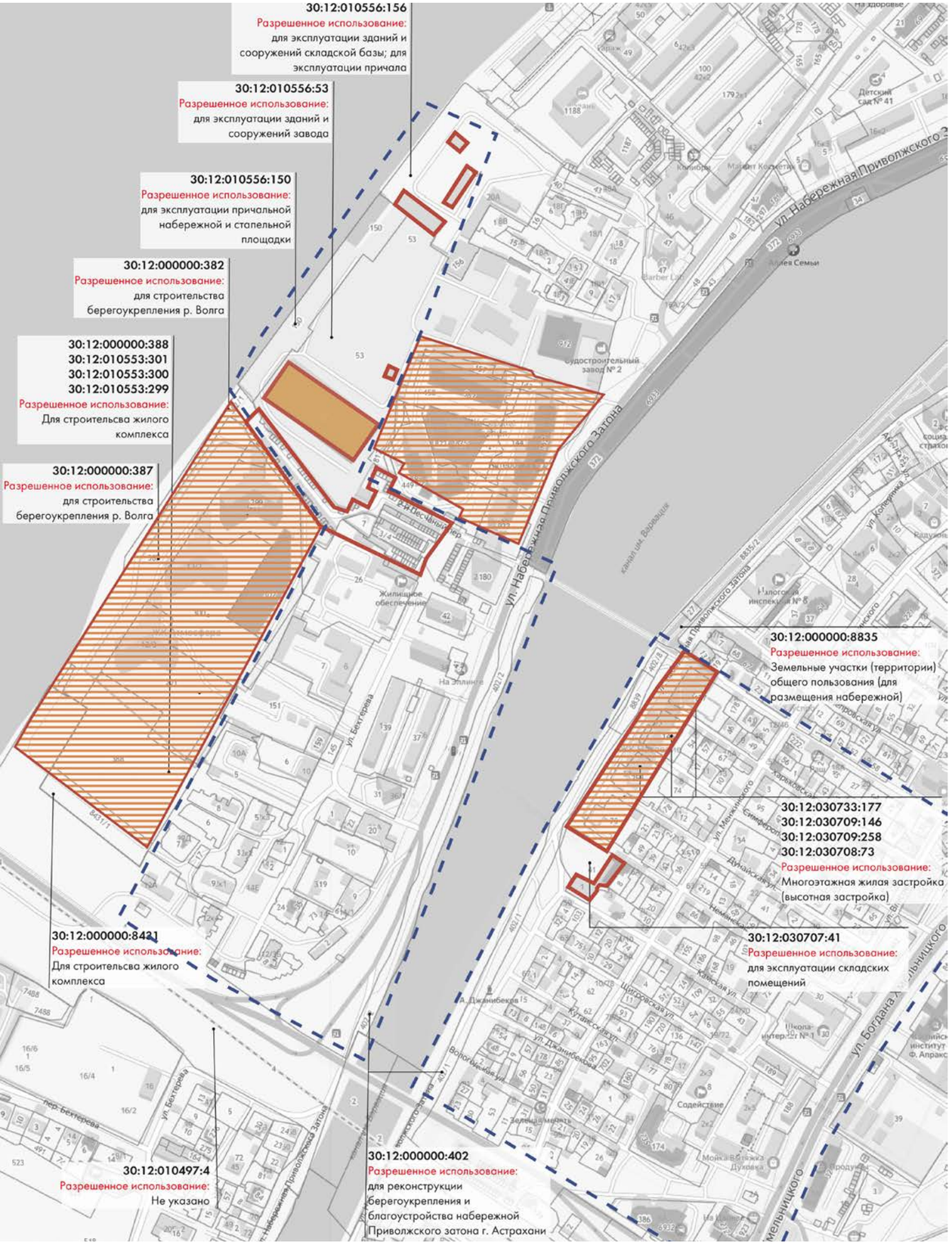
SHIPBUILDING QUARTER

Astrakhan Development Center # 6 is located near the historical center of the city on the banks of the Volga River and is connected with other parts of the city via main roads. The strategy proposes the development of a system of bike paths that will pass along the «green» canals and the Volga embankment, providing the territory of the Astrakhan development center with good accessibility.

New central ring road. which connects with the existing site at the Old Bridge, will increase the connectivity of the Volga backwater with all areas of the city.

The railway will connect the development center of Astrakhan by passenger traffic between the stations Astrakhan-2 and Trusovo. The existing passenger platform «422 km» will be relocated to the intersection of ul. Bohdan Khmelnitsky and the Tsarev River Embankment. Electric trains will run along the railway line with an interval of 20-30 minutes during peak hours. The trains will be integrated into the city's passenger transport system.

- project territory
- stops public transport
- routes public transport
- bike lane
- parking space
- boat pier
- territories where current projects are being implemented residential development
- recreational zone

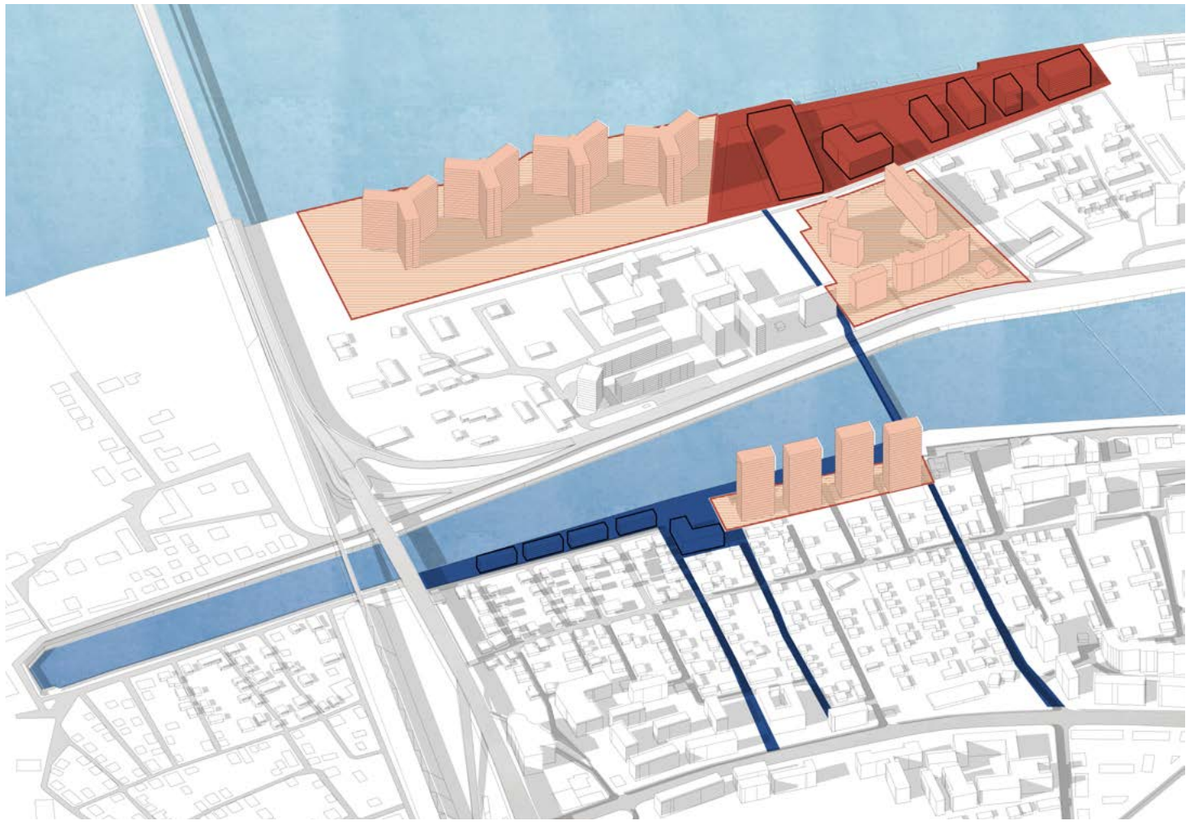


STAGES OF IMPLEMENTATION OF THE ACTIVITIES OF THE MASTER

VOLGA BACKWATER

1 PHASE **37 400 M²**

2 PHASE **54 300 M²**



DEVELOPMENT CENTER OF ASTRAKHAN # 3

TRUSOVSKY QUARTER

The tourist quarter of the Delta will inspire citizens to study the nature and culture of the Volga delta, raise awareness of the region's unique opportunities, attract investment and hold major cultural and business events, and raise the region's recognition at the national and international levels through cooperation.
Trusovskaya water tower
Built in 1910-1911 designed by architect N. N. Milovidov. It was built on the territory of the former Cossack village of Atamanskaya, now the Trusovsky market district. On the territory of the former cargo terminal, the Kremlin will house a passenger terminal, a Caspian-Delta museum, a hotel, a congress hall, retail trade, and a tourist center.

20 400 M²

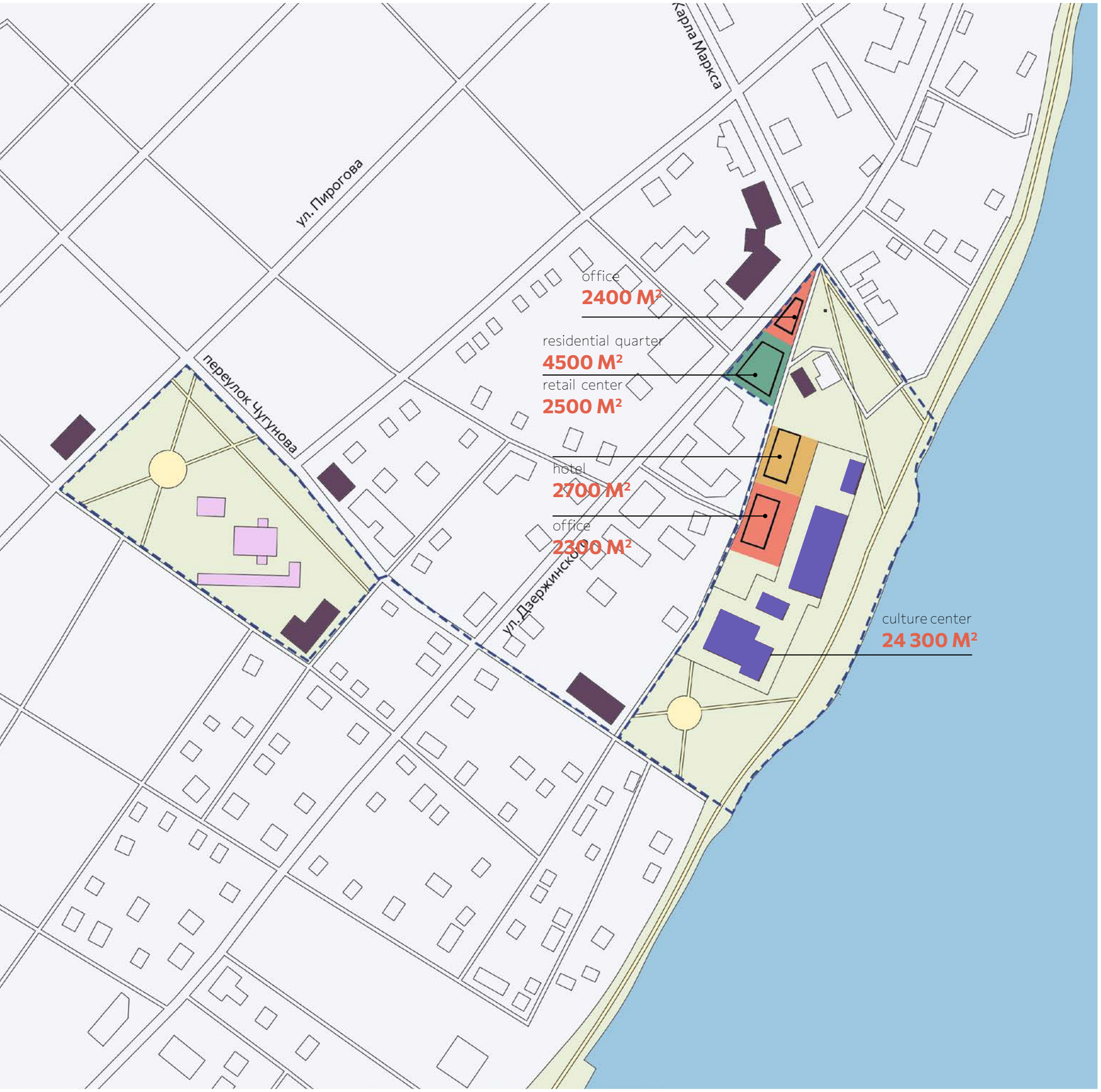
total area of the development area

5000 M²

reconstruction area of the Trusovskaya water tower

5,9 HA

Area public spaces



FUNCTIONAL PLANNING ORGANIZATION DIAGRAM

TRUSOVSKY QUARTER

The new center will be located around the existing water tower and the adjacent territory of Vodokanal. It is assumed that at stage 2/3 the territory can be turned into a cultural cluster around this symbolic monument of architecture. In the future, the center will become a resting place for residents on the right bank of the Volga. A new mixed-use residential complex to become a partner of the cluster for partial financing of the renovation of the territory.

20 400 м²
Development area

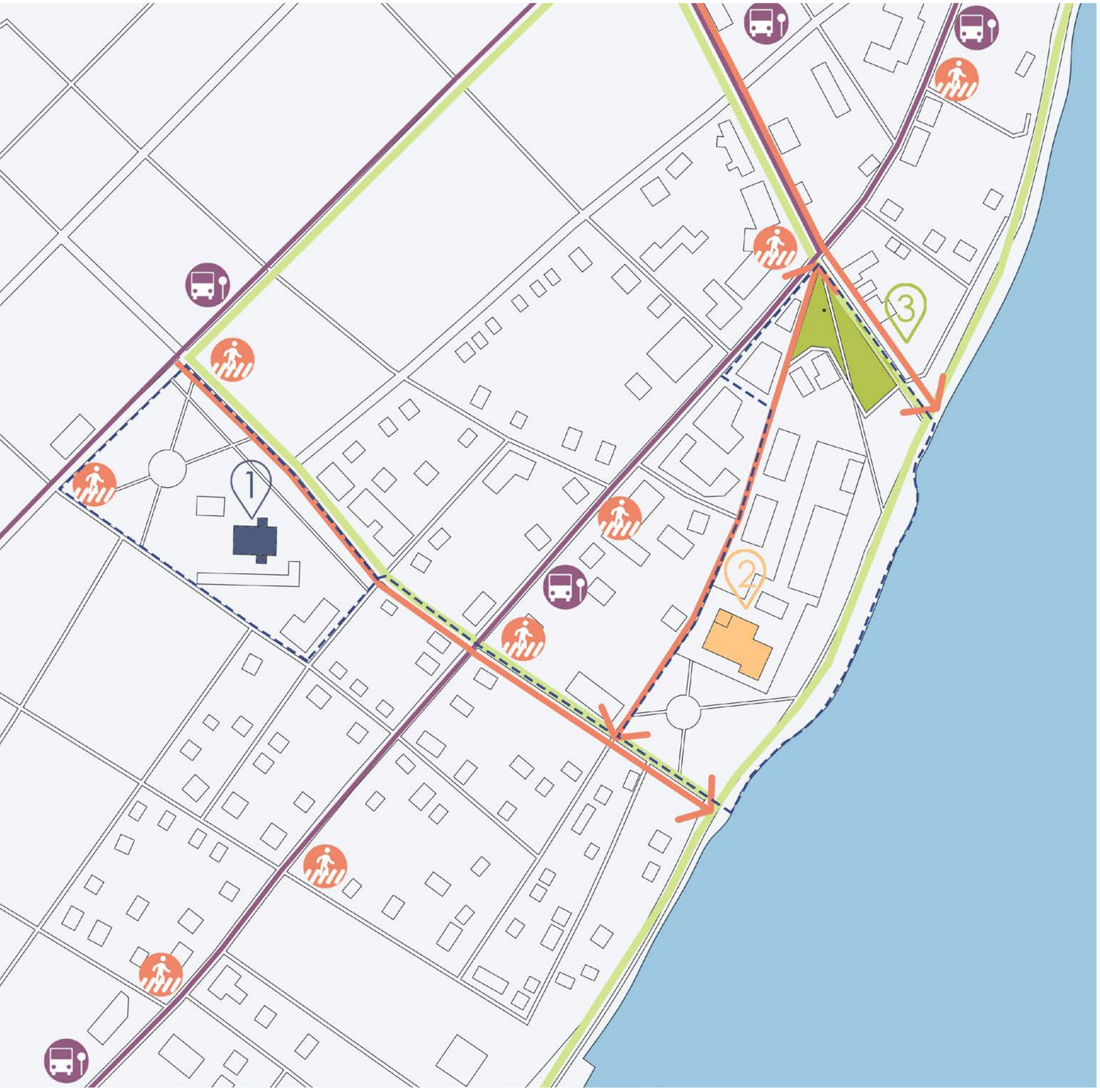
22%
RESIDENTIAL
- residential quarter

8%
RETAIL
- retail center

16%
CULTURE-EDUCATION
- culture center

5%
OFFICES
- office ы

- Culture heritage
- religios buildings
- project territory



SCHEME OF TRANSPORT AND LOGISTICS SOLUTIONS

TRUSOVSKY QUARTER

- 20 minutes to the city center by bike
- 30 minutes to the center by public transport
- no more than 70 minutes to most residential areas and places of applications by public transport

106
open parking spaces
for cars

stops public transport

routes public transport

several-level parking

bike lane

DEVELOPMENT CENTER OF ASTRAKHAN # 3

TRUSOVSKY QUARTER

Astrakhan Vodokanal must change location
permitted use, approval of protection zones
objects of cultural heritage, requirements for town

1 PHASE

At the first stage of the launch of the development center of Astrakhan, an improvement project is being implemented on the territory of parks,

5, 9 HA

Improvement area

2 PHASE

6000 M² + (5000 M²)

Improvement area

3 PHASE

14 400 M²

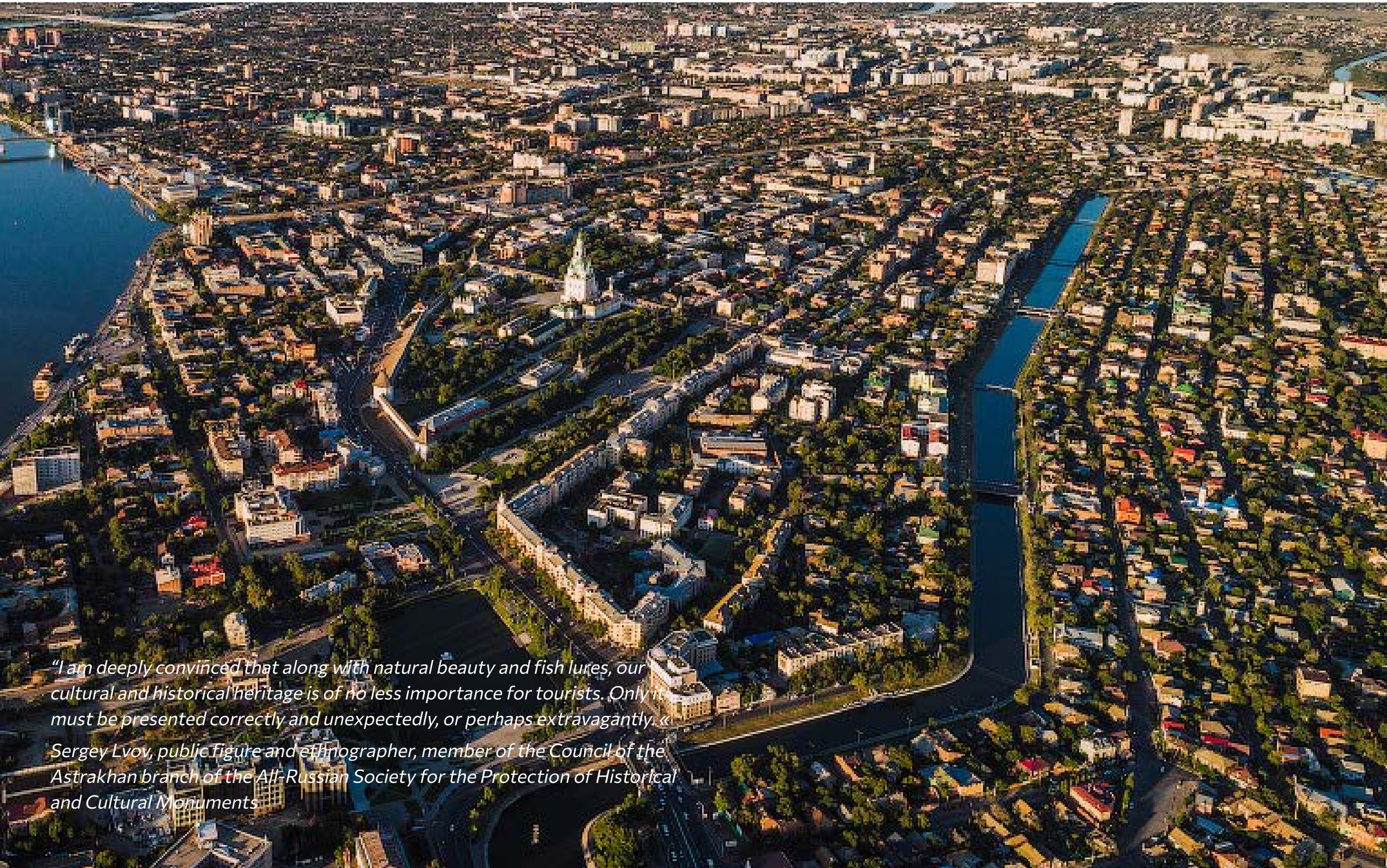
Improvement area

06.

ASTRAKHAN
HISTORICAL CENTER

POTENTIAL OF THE HISTORIC CENTER

ASTRAKHAN IS A CENTER OF CULTURAL TOURISM



“I am deeply convinced that along with natural beauty and fish lures, our cultural and historical heritage is of no less importance for tourists. Only it must be presented correctly and unexpectedly, or perhaps extravagantly. «

Sergey Lvov, public figure and ethnographer, member of the Council of the Astrakhan branch of the All-Russian Society for the Protection of Historical and Cultural Monuments

SIGNIFICANT HISTORICAL LANDSCAPE

The historical center of Astrakhan is one of the largest among the historical centers of other cities in the Volga region. It has the highest ratio of the historical part in relation to the size of the city. This means that Astrakhan is a compact city, and most of the townspeople live in the immediate vicinity of the historical center.

The second strong point is the density of cultural heritage sites and the uniqueness of the architectural landscape, for example, buildings that form special courtyard compositions (Persian, Indian courtyards and others). This density creates a continuous historical landscape that is not so common in Russian cities.

The third strong point is the diverse natural landscape formed due to the special climatic conditions. It makes city walks enjoyable all year round. This potential will be enhanced by tactical greening of the city center (see chapter Green Infrastructure).

Realizing the potential of the historical center will make Astrakhan a popular destination for cultural tourism and will attract Russian and foreign guests.

ASTRAKHAN

YAROSLAV

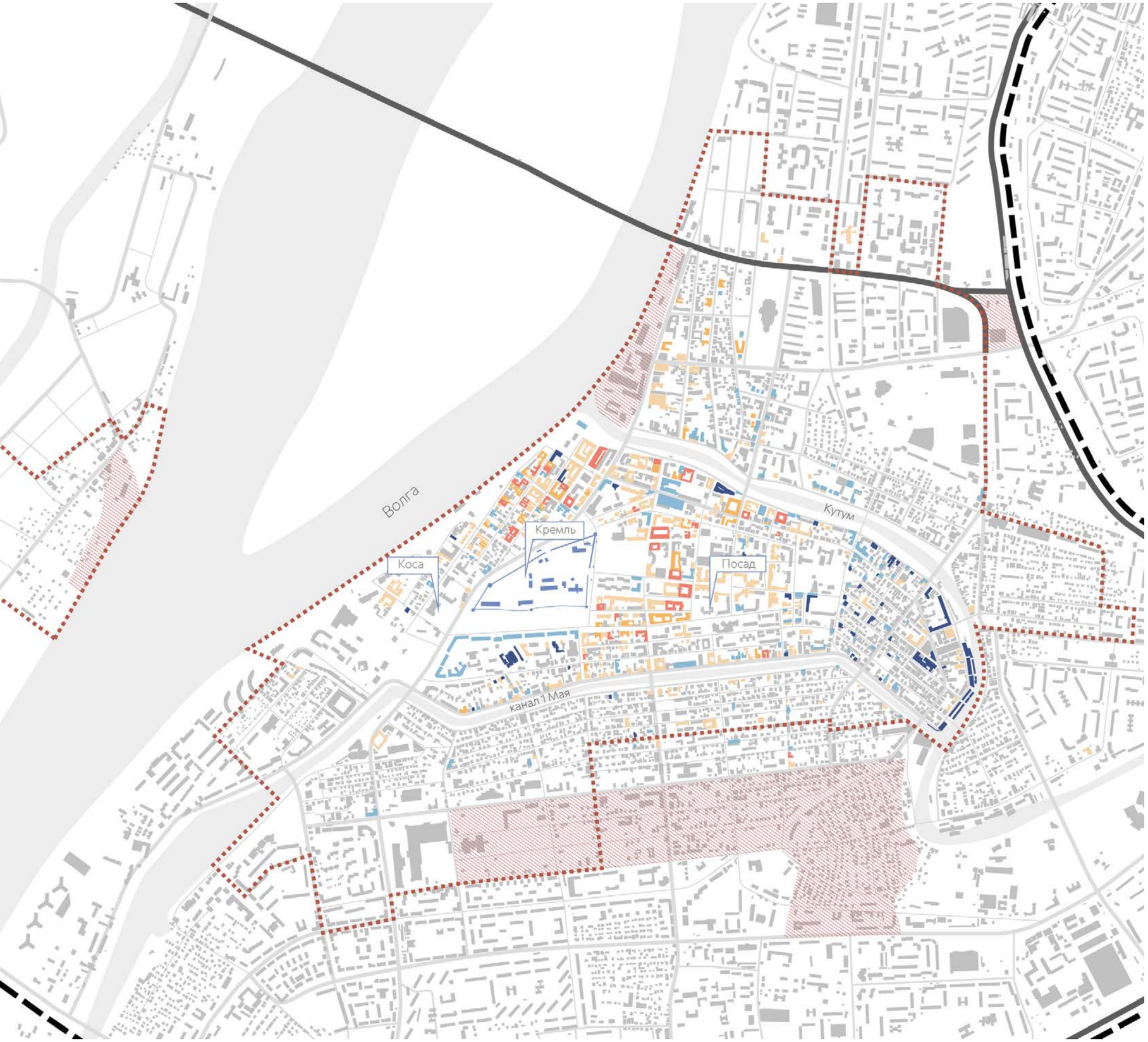
NIZHNY-NOVGOROD

KAZAN

ULIANOSK

SAMARA

SARATOV



GENERAL STRATEGY

STEP-BY-STEP SAVE PLAN

The proposed plan for the preservation of the heritage of the historical center of Astrakhan is aimed at creating recognizability of Astrakhan at the national and international level.

Its task is to strengthen the cultural landscape and connections between individual sites; launch a cultural program and communication that will add value to the heritage in the eyes of residents; to develop models of activation and restoration of cultural heritage with adaptation to anchor cultural and social functions. All this will strengthen the role of Astrakhan as the cultural capital of the Caspian region.

1. Agency of the historical center of Astrakhan

2. Program «Astrakhan courtyards»

3. Tactical redevelopment

4. Participation of residents in heritage preservation

5. Design code of the historic center

68,6thsnd m²
first priority courtyards

71,7 thsnd m²
yards of the second priority

136 thsnd m²
courtyards of the third priority

65 thsnd m²
tactical redevelopment

635 thsnd m²
other objects of cultural heritage

redevelopment zones

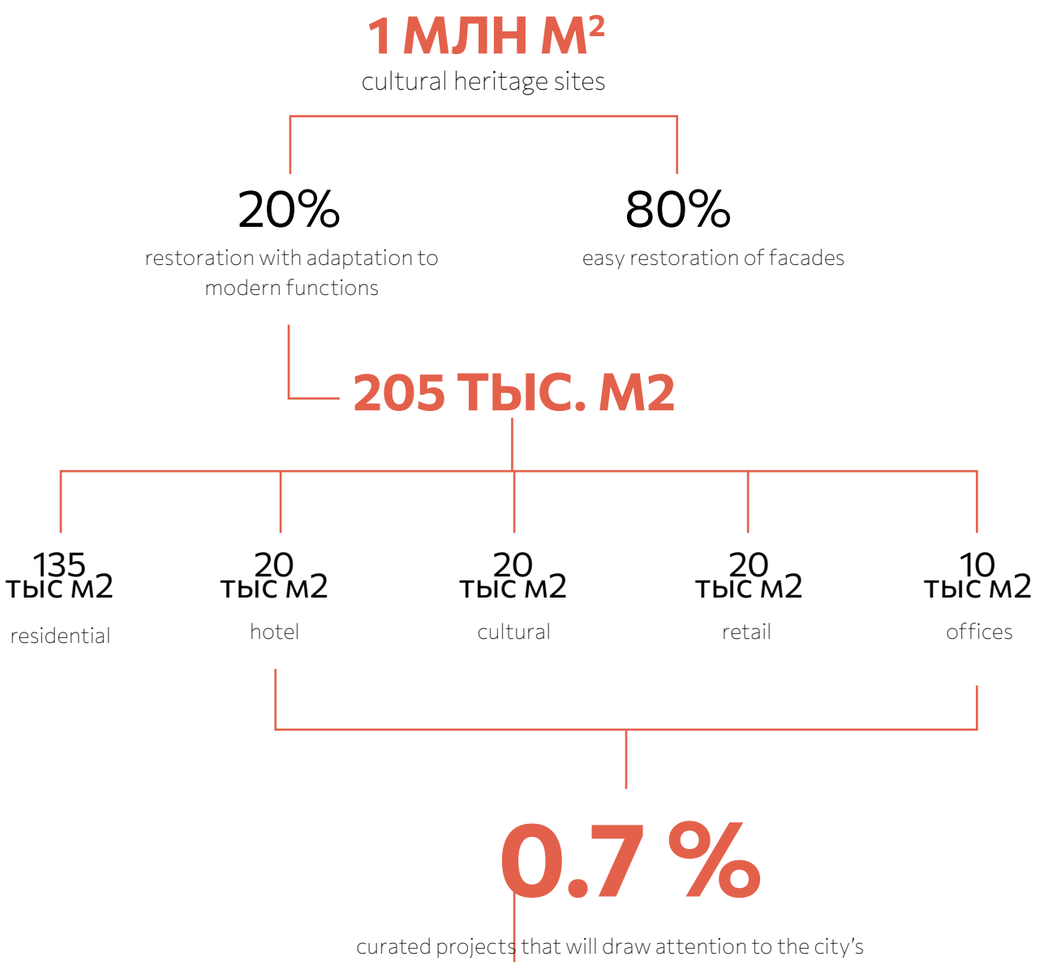
Historical Center

APPROACH

PRIORITY PROJECTS TO INCREASE RECOGNITION OF THE HISTORICAL CENTER OF ASTRAKHAN

In order for the historical center of Astrakhan to become a popular cultural brand, it is enough to implement iconic restoration projects with adaptation for modern use for 0.7% of the historical heritage.

The goal of these projects is to create new user experiences and to strengthen an emotional connection with heritage sites.



GASTRONOMY

Named woodchips projects, new food concepts, local products

CULTURE

Public art, temporary exhibitions, small museums related to heritage

CREATIVE TRADE

Showrooms of Astrakhan designers, concept stores, bookstores

HOSPITALITY

Personal approach, additional services (spa, coworking),

EVENT PROGRAM

The ability to spontaneously participate in interesting events,

PROJECT #1

AGENCY OF THE HISTORICAL CENTER OF ASTRAKHAN

To implement the plan for the preservation of the historical heritage, it is proposed to launch the Agency for the Historical Center of Astrakhan. This is a dedicated team for the implementation of pilot projects and support of investors until 2032 with annual performance indicators.

Agency goals

- to investigate the current situation, analyze the legal status of land, historical values of buildings, use potentials and risks in the implementation of the project

- promote heritage values and opportunities for investors, organize meetings and events, share best practices

-to facilitate discussions between investors and the city, provide legal advice

- supervise, assist in determining the content of future objects, residents, opinion leaders for the implementation of individual projects, the general concept of space development

- to ensure the quality of restoration and respect for the historical heritage.

The agency's project office can be located on the ground floor of a historic building (about 100 sq. M) to communicate the heritage conservation plan and its pilot projects

Example: Paris Rive Gauche, Paris, piloted by SEMAPA, the specialist site renovation agency. Project office to introduce residents to the project

EXAMPLE FROM FRANCE: GOVERNING STRUCTURE: EPL

EPL (Local Public Organization) is the most commonly used type of organization for managing territorial development projects in France as well as in other European countries (Germany, Italy, ...).

They are intermediaries between public and private participants in the project. Such organizations have financial results and their effectiveness is assessed simultaneously by their profit and the implementation of public interests. The public sector owns 34% to 100% of the company, and its president is always an elected official.

The main principles of work are:

- The ultimate goal is public interest
- The spirit of commercial entrepreneurship as a mode of action
- Long-term perspective
- Transparency of management and decisions
- The project area as a focus of attention

PROJECT #2

PROGRAM “ASTRAKHAN COURTYARDS”

The center of Astrakhan is characterized by the formation of residential and commercial buildings around courtyards. Astrakhan courtyards have already become a local brand. They were formed at different times and with different functions, retain their character and atmosphere.

To preserve the tangible and intangible heritage of the courtyards, the program «Astrakhan courtyards» is proposed

Persian commercial courtyard

It is a stone two-storey living house with mezzanines and a layout typical for the east in the form of a square with wide gates from the street.

Courtyard on Uritskogo street

There are many cultural heritage sites on Uritskogo Street, most of which are residential buildings with cozy landscaped courtyards.

Courtyard with a carved balcony near the Kremlin

A distinctive feature of the Astrakhan courtyards is carved balconies that create shade in hot weather.

Yard with a vineyard on Maxim Gorky street

Due to the climatic conditions, many plants grow in the city. The vineyard not only bears fruit but also creates shade.

PROJECT #2

PROGRAM “ASTRAKHAN COURTYARDS”

Historic complexes around the courtyards have been prioritized for projects of various sizes, ranging from restoration with adaptation to easy activation and manifestation of cultural value.

Criterias of choice

1. Uniqueness of architecture
2. Location of the object
3. Condition

High Priority

Persian commercial courtyard

Armenian commercial courtyard

City pawnshop building

Soldier Barracks

House of Teletova

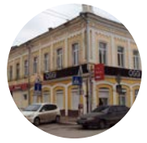
Emelyanov’s house with shops

Factory of chocolate and sweets trading house Scharlau-sons

House of profitable butler A.I.

Medum Priority

Indian commercial courtyard



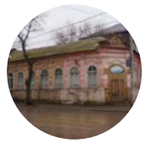
House with rooms and a tavern Mochalov

Estate of Sundukov

Estate of Sundukov

Third Priority

House Zhmloy, Fioletova, 15



The estate of the merchant

The estate of M.A. Kononov

Residential building XIX century st. Gorky 53

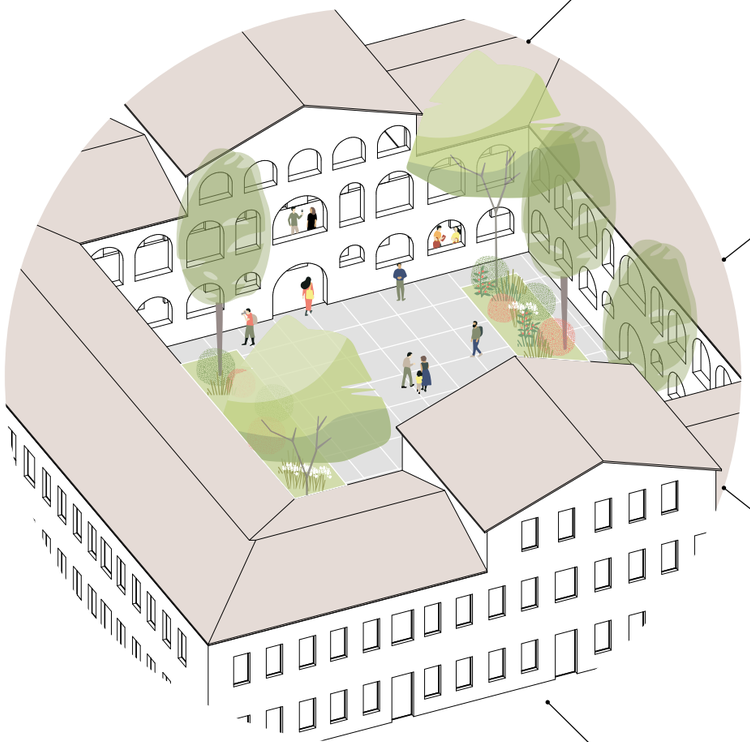
historical Center

PROJECT #2

DEVELOPMENT MODELS OF HIGH PRIORITY COURTYARDS

Proyekty poetapnogo redevelopmenta mogut razvivat'sya vokrug raznoy funktsional'nosti. V kazhdom iz variantov dvor stanovitsya glavnym ob»yedinyayushchim prostranstvom i sozdayet mestu dopolnennuyu tsennost'.

1. Restaurants and trade
2. Hotel with restaurant / bar
3. A cultural center with a commercial function
4. Creative cluster with a cultural program (offices, trade, restaurants)



1. Restaurant «House 12», Moscow

House 12 restaurant is located in the historical part of the city. The courtyard of the historic buildings has been converted into a cozy place to relax and eat.

2. Hotel RIAD MELHOUN AND SPA, Marrakech

The riad is a traditional historic Moroccan hotel. The riads are currently being renovated into expensive private hotels with a swimming pool and tea rooms.

3. Metamatic TAF, Athens

The cultural center, which opened with temporary exhibitions and a courtyard bar, then developed into a project for a neighborhood with creative studio offices, music and bookstores, and an art residency program. The quarter consists of preserved historic buildings and one new one built as part of the project.

4. Bertholz Center, St. Petersburg

A multifunctional space aimed at popularizing creative business and developing the cultural component of city life. Complementing the life of the center with an event program, the project seeks to unite various areas of the creative industries.

Third place, St. Petersburg. Yard activation project with an active cultural program

The project of creating a cultural center in Annekirch in St. Petersburg

PROJECT #2

STEP-BY-STEP METHOD CREATIVE CENTERS IN HERITAGE FACILITIES

To communicate the atmosphere of the Astrakhan courtyards and their historical value, it is enough to implement several iconic projects of creative centers. They will attract opinion leaders from the creative industries of other major cities and will increase the number of tourists visiting the historic center, as well as increase the heritage value among the citizens.

STEP 1. Activation

The emergence of the first cultural function, attractive to townspeople and tourists. Format testing and project communication. The first commercial features appear to support the implementation of this phase. The first stage of activation can only be in the yard, then gradually activate parts of the building.

STEP 2. Restoration and phased launch of permanent functions

Phased restoration of buildings around the courtyard for multifunctional commercial and cultural use. Continuation of the cultural program in the courtyard to strengthen the brand of the project and attract financial partners.

STEP 3. Project evaluation and experience scaling

After the implementation of the first project, an assessment is required in order to transfer experience to the next projects that can be implemented within the framework of such a model.

PROJECT #2

ACTIVATION OF “ASTRAKHAN YARD”

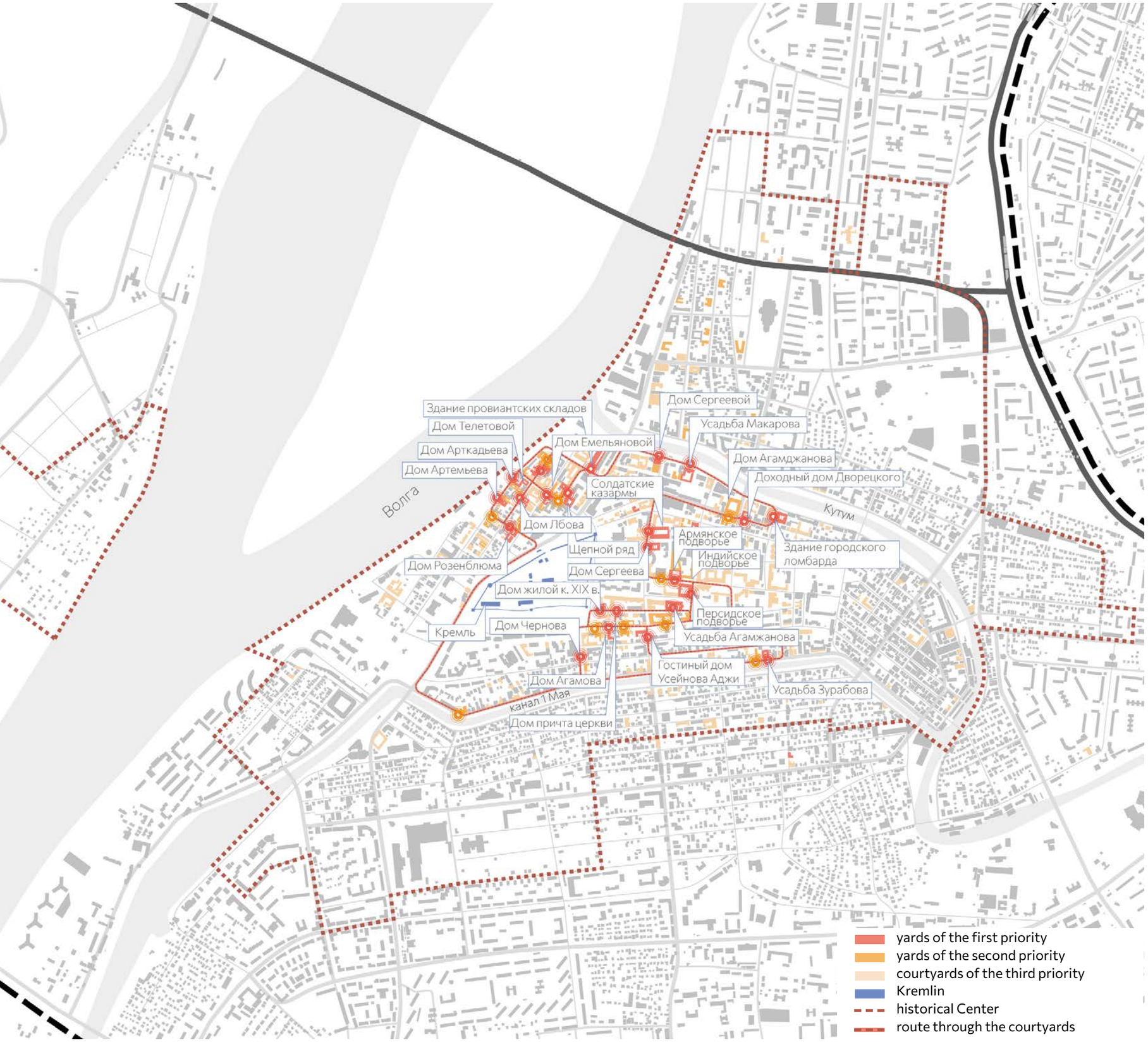
The courtyards of the historical center of Astrakhan have already become places of tourist routes. New formats of cultural activation can support this trend and fully reveal the atmosphere and history of courtyards, buildings and people.

It is important that the program is created not only for tourists, but also responds to requests or creates an opportunity for the implementation of projects for residents of the historical center.

Options for residents’ participation in the program

1. Residents are co-authors of cultural projects

2. Residents are entrepreneurs



Thematic audio guides

Performances about the history of

Temporary exhibitions with historical artifacts

Dinner parties for residents and guests

PROJECT #3

TACTICAL REDEVELOPMENT

For tactical redevelopment, objects of cultural heritage in disrepair were identified, as well as unused industrial, public / administrative buildings and vacant lots in the city center. Each of these objects must be considered individually. For some of the objects, it is possible to restore historical buildings and build new ones. Such projects will require active participation from the Agency of the Historical Center of Astrakhan. Their task will include negotiations with the current owners, if necessary, the organization of the sale process, the implementation of regulations for working with the territory.

1. OKN in emergency condition

House with shops Babina

The building is a stone two-storey house with a basement. The facades of the house are designed in the early forms of architectural eclecticism. The object has the potential to become a hotel or hostel.

2. Unused industrial buildings

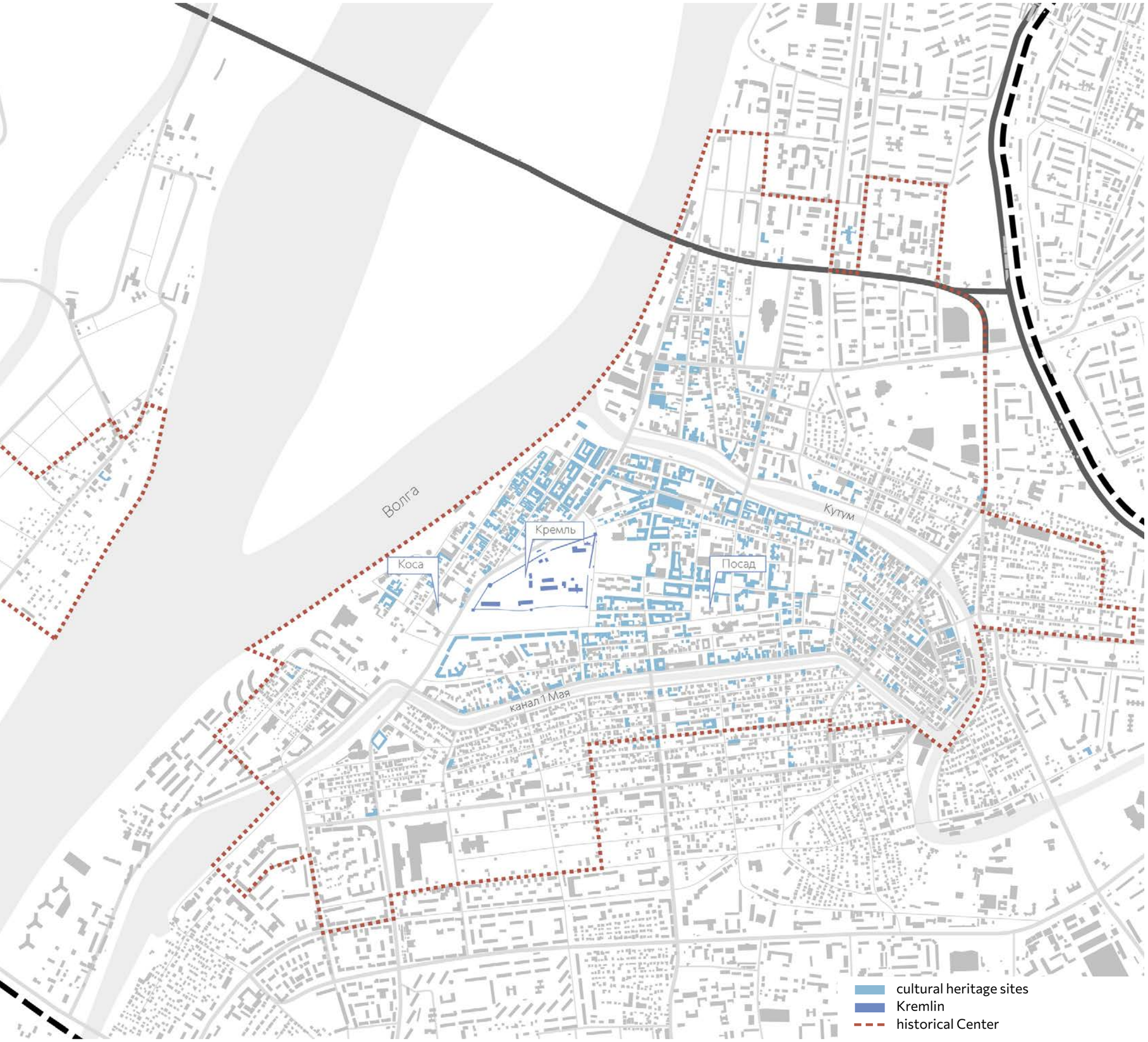
Electric station

The building of the power plant has great potential and may include objects of culture, trade and business, as well as a hotel.

3 unused public buildings

Prison castle

Around the world, there is a trend towards converting prisons into cultural clusters. The building of the Astrakhan Prison Castle can become a museum and a tourist center.



PROJECT #4

PARTICIPATION OF RESIDENTS IN HERITAGE

To preserve the entire historical center of Astrakhan, it is not enough to attract investors willing to finance the restoration and federal funds. It is necessary to motivate residents to preserve the valuable historical buildings where they live; create support tools to help citizens clean up and maintain heritage sites themselves.

The programs for the participation of residents in the preservation of heritage are a priority for UNESCO and the Council of Europe and receive grant support.

Heritage festivals

Popularization of heritage, story of the history of houses, acquaintance with methods of conservation

Restoration schools

Volunteer programs teaching architecture students from different cities how to preserve heritage in practice

Grant programs and consultations

Support and co-financing of residents' initiatives for the restoration of facades and repair of the Windows

Home stories

Cultural programs that increase interest in heritage, including those aimed at children and adolescents

PROJECT #4

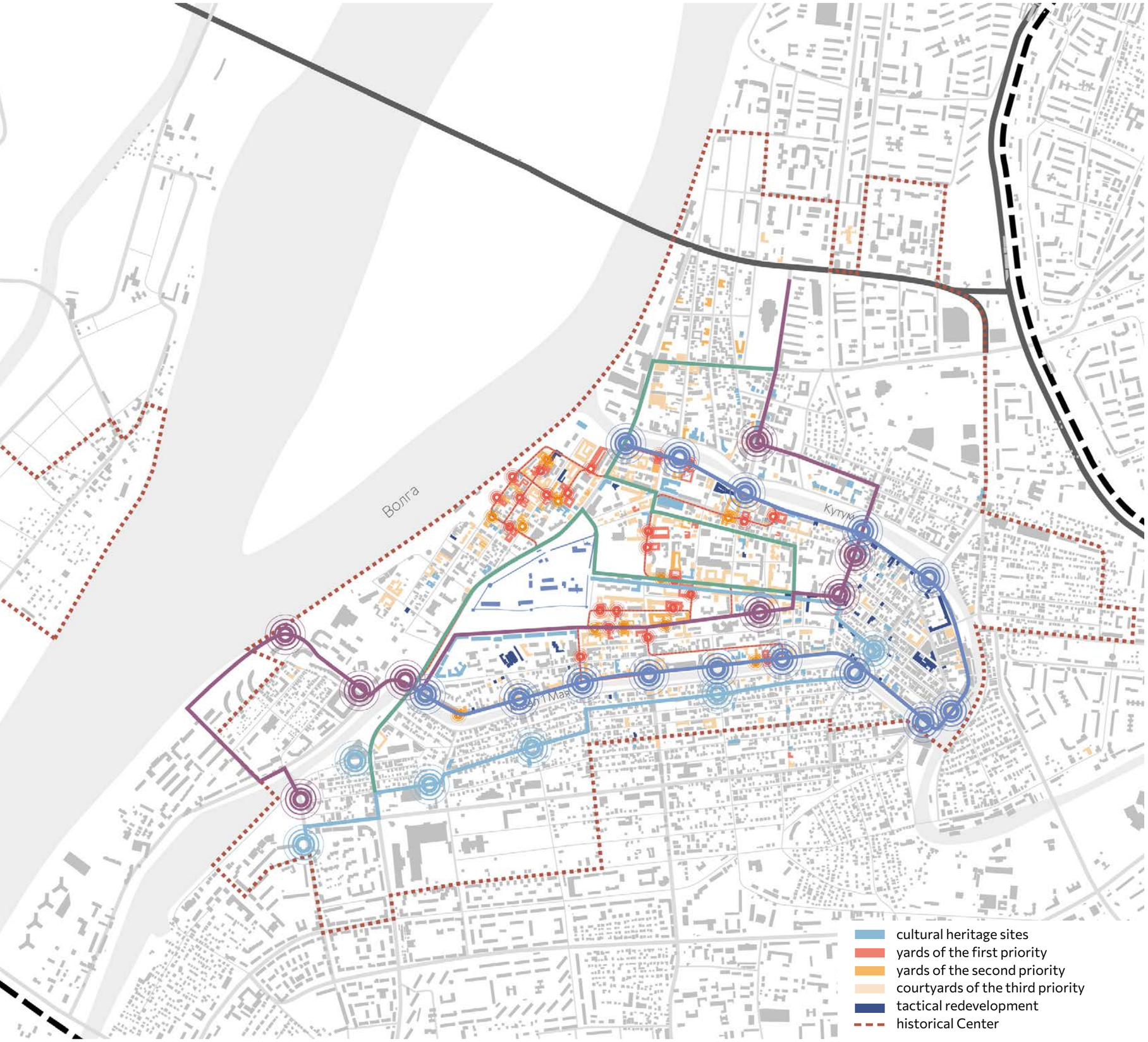
PARTICIPATION OF RESIDENTS IN HERITAGE

New excursion formats around the historical center are actively developing in Astrakhan. The project will support the creation of new author's routes and create opportunities to make excursions popular not only among tourists, but also among citizens.

Examples of excursion routes in the city center

1. Route "Non-trivial Astrakhan. Excursion to the national courtyards «
2. «Literary Astrakhan»
3. «Art in the city and the city in art»
4. «Merchant Astrakhan».
5. Costumed excursions «Urban Legends»

New opportunities for excursions



Cycling infrastructure for bike excursions

Thematic navigation

Marking the boundaries of the historic center

Objects that reveal the identity of a place

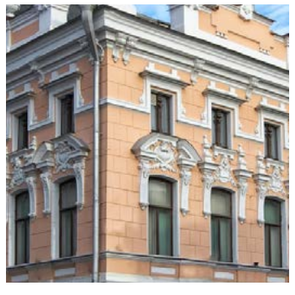
PROJECT #5

DESIGN CODE. ARCHITECTURE

Analysis of historical buildings in Astrakhan according to the following criteria

1. Materials

Red brick



facade plaster with imitation masonry

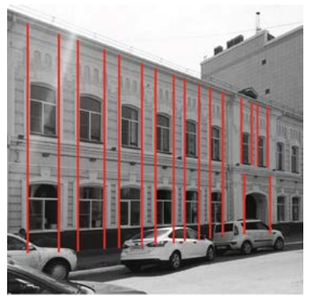
brick combination and wood

2. Window and door openings

openings along Nikolskaya street

- rhythmic row of narrow windows and doors

3. The rhythm of



- regularity of the grid of windows on the floors of the

4. The proportions of the facades

sweep along Nikolskaya street

- multilevel heights of facades + small width of houses

5. Typology of the yard

- courtyard buildings with internal public space

6. Colors

- natural colors of clay, stone, sand

DESIGN CODE. ARCHITECTURE

Project proposal for the design code of facades

1. Materials

2. Window and door openings

3. Rhythm of facades

4. The proportions of the facades

5 . Typology of the yard

6. Colors

DESIGN CODE. PRINCIPLES OF BEAUTIFICATION OF HISTORIC STREETS

1. Bringing historical facades to a single design code

in accordance with the uniform requirements for the placement of advertising and information structures on the facades of buildings: cleaning and restoration of facades, a ban on pillars, creeping lines and banners, the introduction of an integrated approach to advertising and information design.

2. Facade lighting

The lighting strategy is based on the methods of architectural and landscape analysis and the volumetric-planning composition of the city, taking into account its historical development. It is necessary to take into account the dominants and accents of the night image, the focuses of closing perspectives and buildings, use tall buildings that form a silhouette as reference points.

3. Small architectural forms and navigation

Small architectural forms in the form of benches, urns, awnings for creating recreation areas under the crowns of trees, with a single design that fit into the historical environment. Free-standing navigation signs and stands will allow tourists to quickly navigate the city.

4. Tactical greening of streets

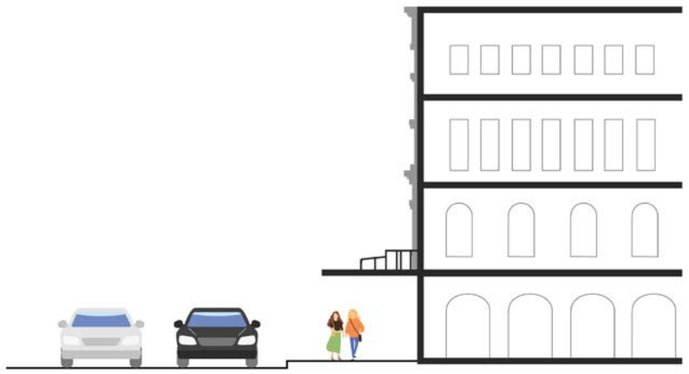
The strategy developed a plan for greening streets in the form of green buffers from the roadway, as well as creating its own microclimate through planting broad-leaved trees and woody shrubs. It is also planned to replace some parking spaces with additional landscaping.

5. Street terraces

To activate the first floors of the street front, an increase in the number of summer terraces is proposed, with the installation of mobile tables, chairs and umbrellas. Installation of awnings on facades is allowed.

DESIGN CODE. PRINCIPAL SECTION ALONG THE STREET

The existing state

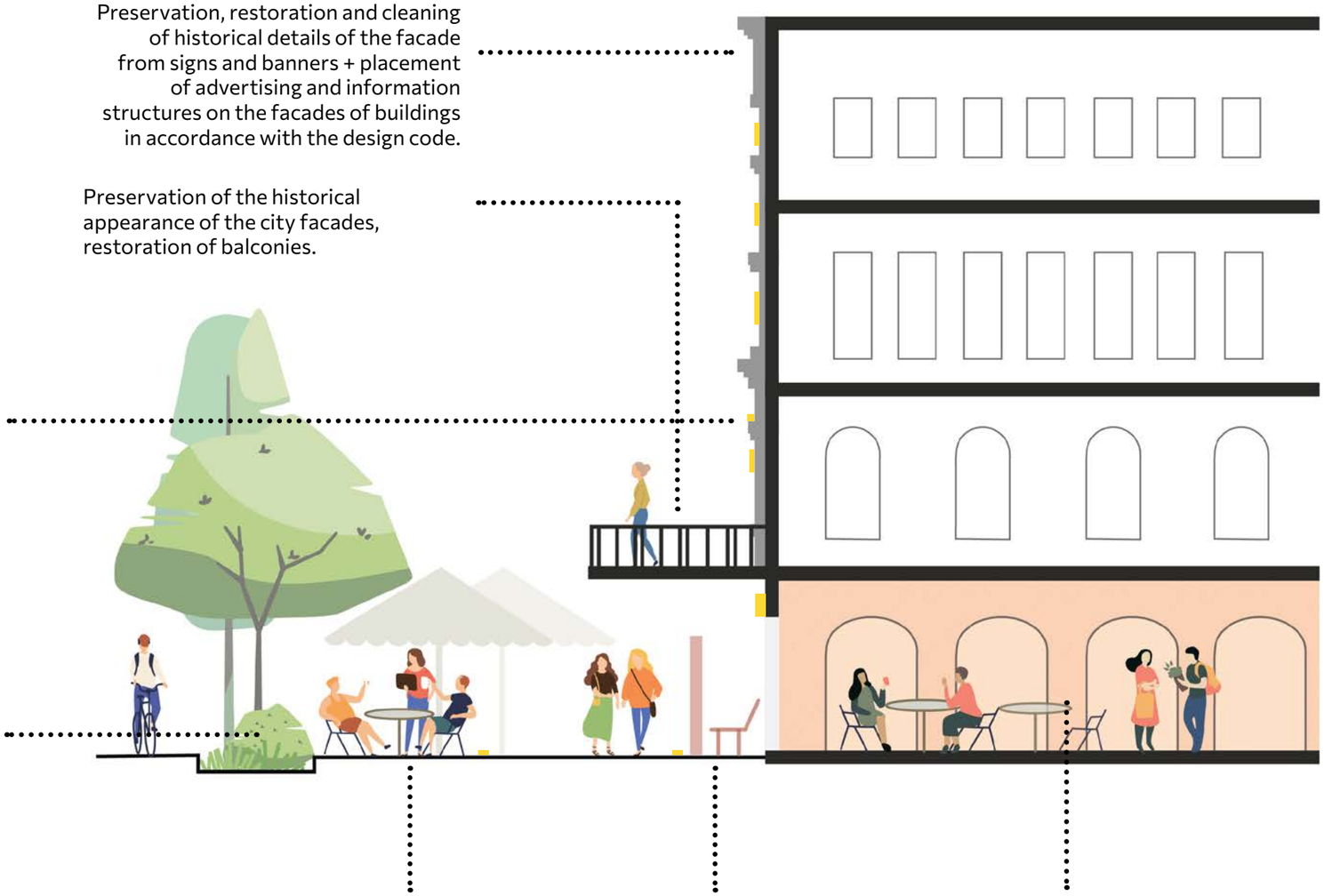


Project proposal

1. Bringing historical facades to a single design code

Preservation, restoration and cleaning of historical details of the facade from signs and banners + placement of advertising and information structures on the facades of buildings in accordance with the design code.

Preservation of the historical appearance of the city facades, restoration of balconies.



2. Facade lighting

Emphasizing the architectural elements of the historical facade: niches, columns, apki, bapels, styles and other forms with the help of point lights, LEDs, ribbons and projectors

4. Tactical greening of streets in the form of creating a green buffer from the road

5. Outdoor terraces

3. Small architectural forms and navigation

5. Activation of the first floors for public functions: restaurants, cafes, bookcrossing, shops, galleries, etc.

Sycamore

Pine black

Cypress

White acacia

Laurel

Photinia

Linden

oak with a columnar roof

Poplar

Apricot

Chestnut

PLANTING RECOMMENDATIONS FOR LANDSCAPING

In hot climates, it is recommended to choose trees with a wide crown. This will create its own microclimate.

Tree placement suggestions:

- wide streets (or streets in new buildings):

plane trees (hybrid cuneiform plane tree London plane)

linden trees

Oak trees

- narrow streets (or streets in existing buildings):

oaks with a columnar roof

no fluff poplars

- in courtyards (squares):

cypress trees

COORDINATION OF PROJECTS FOR IMPLEMENTATION OF THE INTEGRATED STRATEGY FOR REVITALIZATION OF THE HISTORICAL CENTER OF ASTRAKHAN

PARTNER NETWORK MODEL

AGENCY OF THE HISTORICAL CENTER

TEAM FOR PILOT PROJECTS AND INVESTOR SUPPORT

task

- Investigate the current situation, analyze legal status of land, historical values buildings, utilization potentials and risks at project implementation

-Provide heritage values and opportunities for investors, organize meetings and events, share best practices

- Facilitate investor-to-investor discussions and city, provide legal advice

- Supervise, assist in definition filling future facilities, residents, leaders opinions for the implementation of individual projects, general concept of space development

-Insure quality of restoration and careful attitude to historical heritage

DEVELOPMENT CORPORATION OF CASPIAN

EXECUTIVE BODY

task

- Makes decisions to attract investors, including foreign investors
-It is responsible for the formation of a favorable investment climate
-Returns responsibility for strategic projects on the development of the historical settlement of Astrakhan
- Implements and promotes the mechanisms of the State private partnership
-Formates and promotes Delta image among investors (Russian and foreign)
- Responsible for NSR support and business support

GOVERNING COUNCIL OF CASPIAN DELTA

THE HIGHEST COORDINATING BODY

task

- Responsible for the adaptive and sustainable development of the Caspian Sea Delta
- Approves and adopts Caspian development strategy Delta, responsible for its execution
-Coordinates commissions and working groups in the directions
-Unification of private and public entities
- Identification of new sources of funding
- Support of local authorities in issuing permits for construction

HISTORICAL CENTER OF ASTRAKHAN

HISTORICAL CENTER OF ASTRAKHAN

HISTORICAL CENTER OF ASTRAKHAN

07.

FINANCIAL AND ECONOMIC MODEL OF THE DEVELOPMENT OF THE AGGLOMERATION

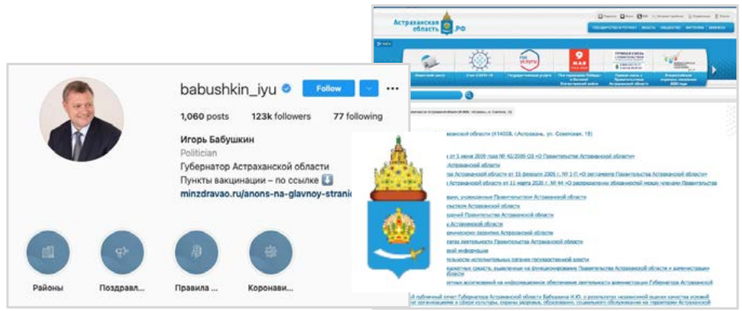
PREPARATION OF THE MASTER PLAN

During the development of the master plan for the Caspian Delta, we took into account all the important inputs and the vision of the region and key stakeholders

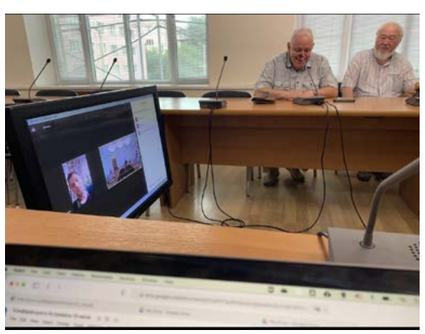
Analytical research

Strategy of socio-economic development of the Astrakhan region until 2035

Speeches by the Governor of the Astrakhan Region Igor Yuryevich Babushkin and seminars with representatives of the Government and Administration



Seminars with experts



Workshops with residents

Seminars

ДОМ РФ

прогресс

ДЕВЕЛОПМЕНТ-ЮГ
строительно-инвестиционная корпорация

AMENDMENTS TO TERRITORIAL PLANNING DOCUMENTS

DEVELOPMENT POTENTIAL OF KEY AREAS

1

- Availability of objects of cultural heritage, unique cultural landscape
- Development potential of various types tourism unique to the Delta - ecological, ethnographic, health-improving, etc.
- Potential for MICE tourism development (for example, for clients in the oil and gas sector)
- Opportunities for exoticisation fishing and hunting, including for foreign tourists

2 GREEN ENERGY

- Climatic conditions create potential for the development of wind and solar energy - quantity sunny days a year is about 300
- Today the Astrakhan region occupies 53rd place in the Russian Federation in providing electricity, gas and steam
- Solar energy is about 6% of consumed by the region
- There is a potential for increasing the capacity not only for your own needs region, but also for sale to other regions, as well as for placement energy-intensive industries aimed to reduce CO2 emissions

3 LOGISTICS

- Availability of objects of cultural heritage, unique cultural landscape;
- Development potential of various types tourism unique to the Delta - ecological, ethnographic, health-improving, etc.
- Potential for MICE tourism development (for example, for clients in the oil and gas sector)
- Opportunities for exoticisation fishing and hunting, including for foreign tourists

4 AGRICULTURE

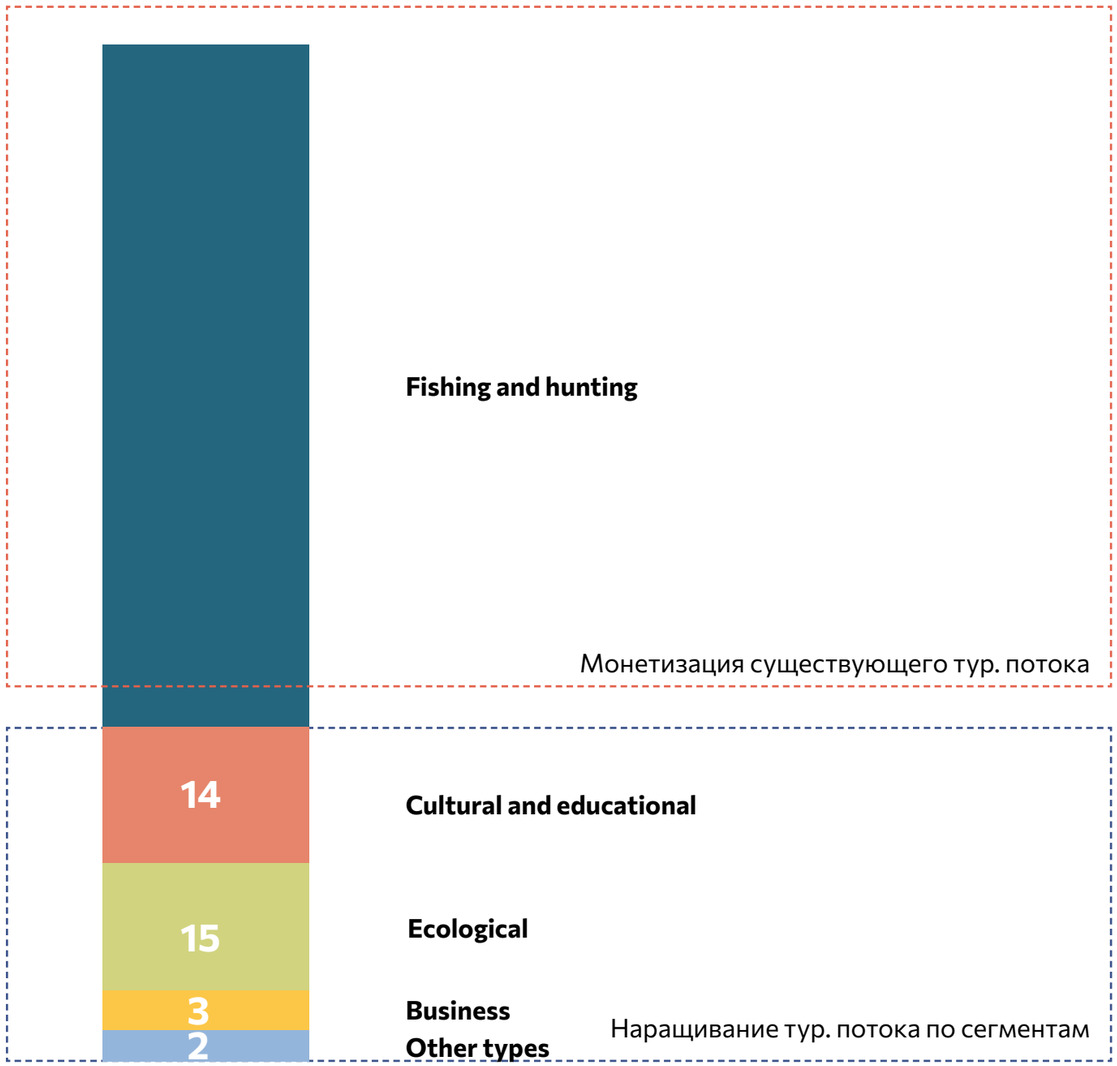
- High potential for product processing agriculture
- Potential for export of meat products
- Potential for increased productivity and production volumes through the use ecosystem approach and modern technologies

5 FISHERIES COMPLEX

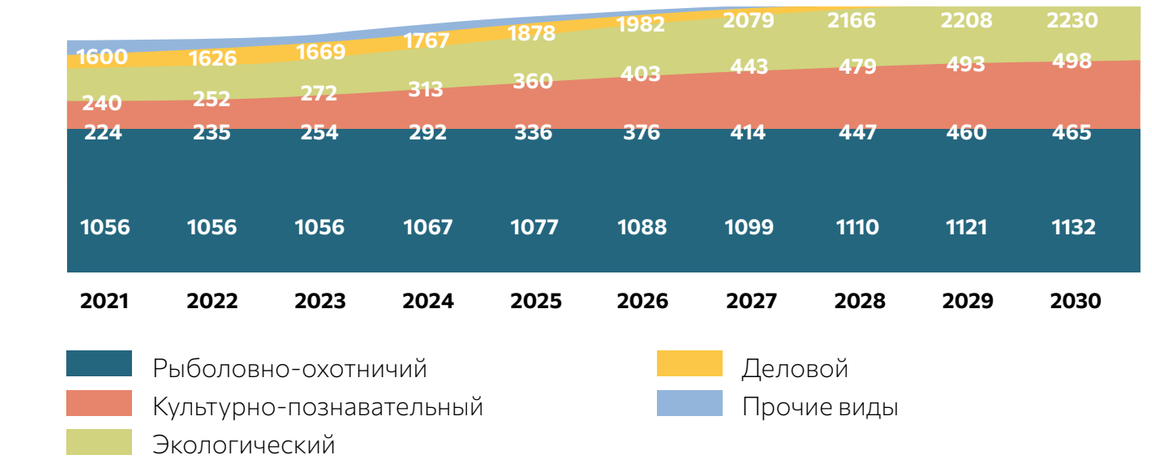
- Unique reserves of aquatic biological Delta resources
- Potential for increasing production volumes through the use of technology and the development of aquaculture

THE IMPLEMENTATION OF MEASURES FOR THE DEVELOPMENT AND SUPPORT OF TOURISM WILL INCREASE THE CONTRIBUTION OF

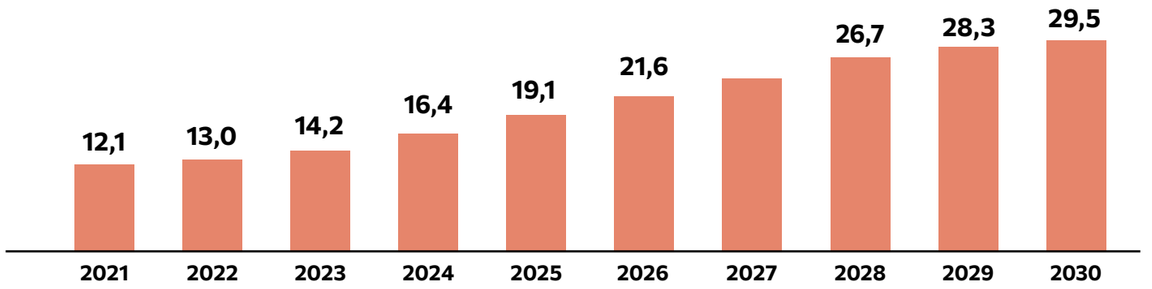
Shares by type of tourism in the Astrakhan region (today)



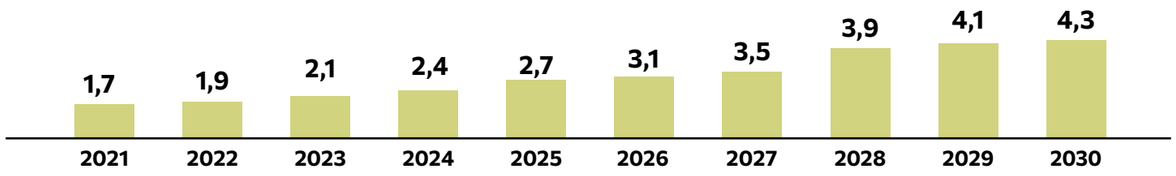
Forecast ter. flow by segment, thousand people



Forecast of the contribution of Tourism to the



Forecast of the contribution of Tourism to the regional



Initiatives: development of an integrated tour. product, marketing direction in the domestic and foreign markets

Key indicators: the number of tourists per year, the contribution of tourism to GRP

Add. jobs by 2025 - 910 people, by 2030 - an additional 1550 people.

Estimation of the minimum necessary costs for the promotion of the region as a tourist directions - from 43 to 110 million rubles per year (without targeting fishing and hunting segment).

ECONOMIC JUSTIFICATION AND ASSESSMENT OF INVESTMENT ATTRACTIVENESS

GREEN ENERGY HAS POTENTIAL FOR GROWTH AND ADDITIONAL BENEFITS

The use of solar energy has both economic and environmental effects:

- Energy supply to settlements

- Electrification of irrigation and water supply systems

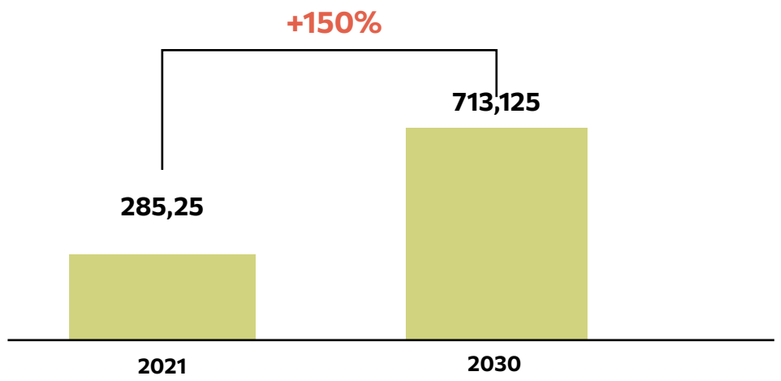
- Various innovative applications in agriculture (electronic shepherd, combination with shade-loving plants, etc.)

- Electrification of tourist facilities without

the need to lay power lines to remote places with a small number of consumers

- Reducing CO2 emissions and saving hydrocarbons as a result of replacing traditional energy sources with renewable ones

Установленная мощность СЭС в регионе, МВт

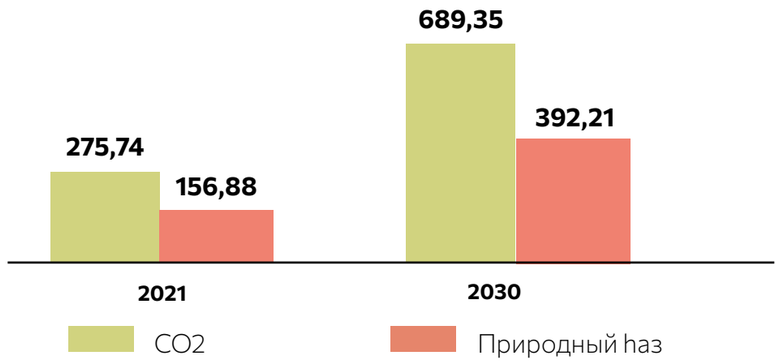


- Growth of the share of «green energy» in the energy consumption of the region from 6% to 15%

- Costs 30-51 billion rubles

- Payback 3-5 years at a rate above 6 rubles. / kW x h

Установленная мощность СЭС в регионе, МВт



- Avoidance of CO2 emissions will be up to 690 thousand tons per year

- With a quota price of € 50 per tonne of CO2, the benefit will be about € 34.5 million per year

Initiatives:

Development and support of alternative ways of generating electricity: solar, wind and bioenergy

Key indicators:

The share of «green energy» in the energy consumption of the region

- Urban agglomerations will be the main sources of growth in electricity consumption

- The growth in energy consumption will be associated with the development of the service sector (growth of the business part of the city) and housing construction (personal consumption will grow as the provision of housing rises)

- The structure of energy consumption in Moscow and St. Petersburg already matches the structure of consumption in the USA and the EU

ECONOMIC JUSTIFICATION AND ASSESSMENT OF INVESTMENT ATTRACTIVENESS

AGRICULTURE IN THE REGION HAS THE POTENTIAL TO INCREASE AND IMPROVE THE PRODUCTIVITY OF EXPORT DEVELOPMENT

Initiatives:

- Increasing the use of technology and the introduction of science-based farming
- Carrying out complex land reclamation for agricultural purposes
- Stimulation of scientific and educational organizations in the form of grants to support research activities for agricultural
- Modernization of existing and creation of new high-tech industries, renewal of production facilities for agricultural and processing industries
- Development of a sales system: creation of a logistics structure for processing, transportation, storage and marketing of agricultural products
- Development of new directions in animal husbandry to enter new markets (new technologies, halal products)

Key indicators:

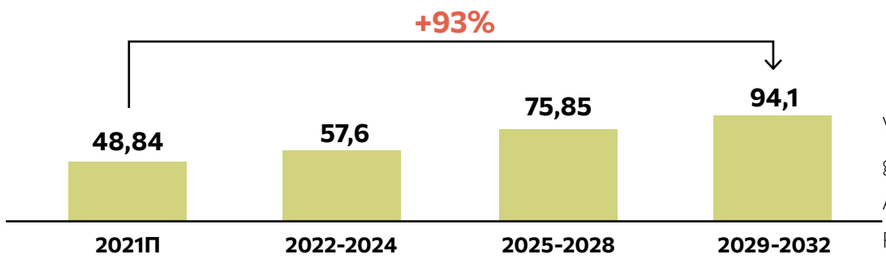
- Gross crop production
- Number of grants for research organizations
- Capacity for processing agricultural products
- The volume of exports of agricultural products
- The number of people employed in agriculture

Assessment of the volume of investments in 2022-2024 - 11.1 billion rubles

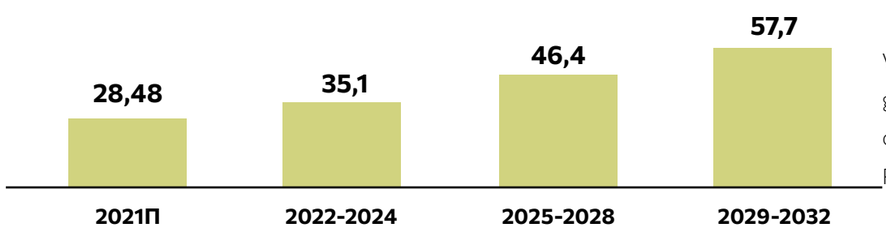
Financing: investor funds and borrowed funds - 61%,

State support, including subsidies and soft loans - 39%

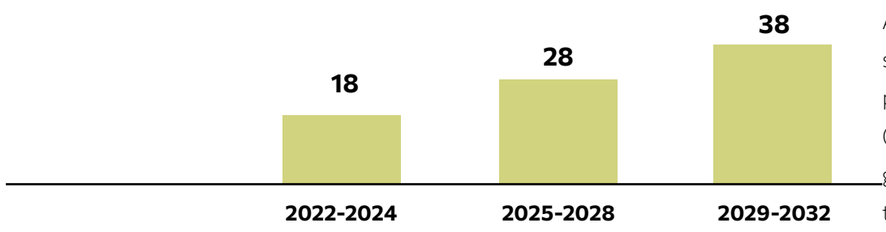
Add. jobs by 2025 - 1500 people



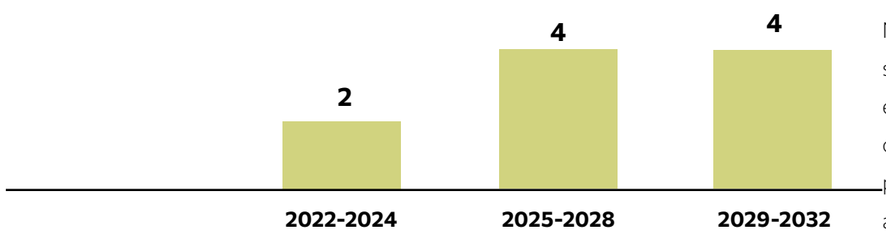
Volume of production gross production Agriculture, RUB bln



Volume of production gross production crop production, RUB bln



Additional storage capacity products (cumulative growth), thousand tons



Number of grants scientific and educational organizations at projects related to agricultural (accumulated the result)

ECONOMIC JUSTIFICATION AND ASSESSMENT OF INVESTMENT ATTRACTIVENESS

DEVELOPMENT OF THE FISHERY COMPLEX IS ONE OF THE KEY AREAS

Initiatives:

- Creation of an effective system for the restoration and conservation of aquatic biological resources
- Renovation of production facilities and fishing fleet of enterprises
- Introduction of modern techniques and technologies into production for innovative development fishery complex
- Development of commercial aquaculture based on innovation and excellence
- Development of a sales system: creation of a logistics structure for processing, transportation, storage and sale of products of the agricultural complex
- Development of human and scientific potential of the fishery complex

Key indicators:

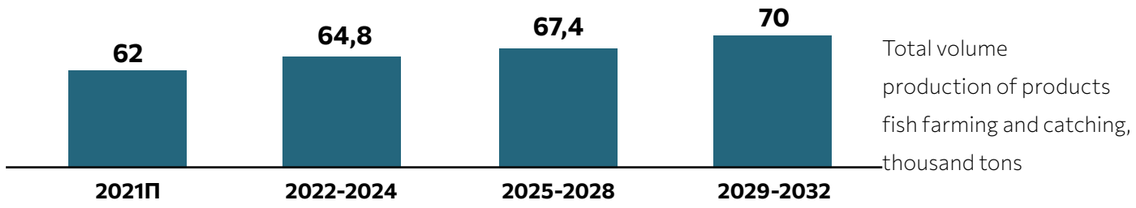
- Gross volume of production of the agricultural complex
- Number of grants for research organizations
- The volume of processing capacity
- The share of processed products in the total volume
- Product export volume
- The number of people employed in the agricultural complex

Assessment of the volume of investments in 2022-2024 - 10.8 billion rubles

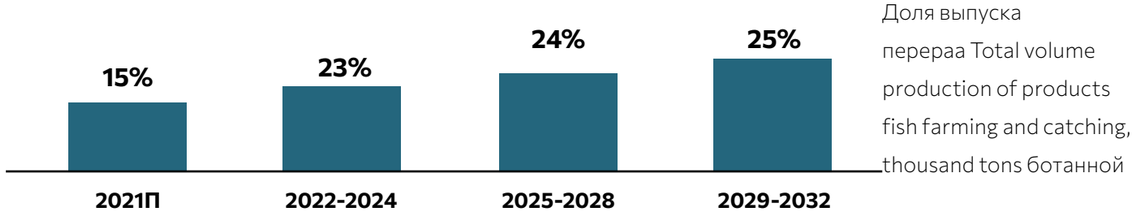
Financing: investor funds and borrowed funds - 10%,

State support, including subsidies and soft loans - 90%

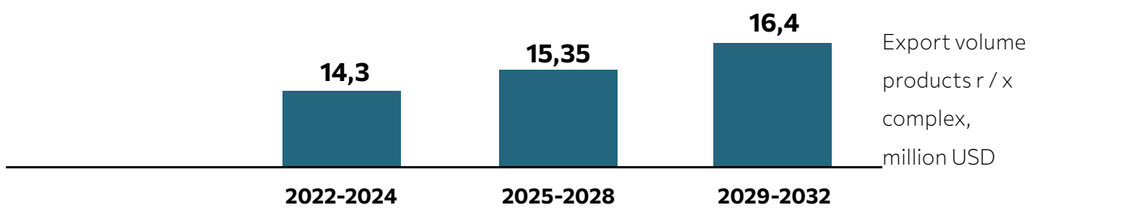
Add. jobs by 2025 - 789 people



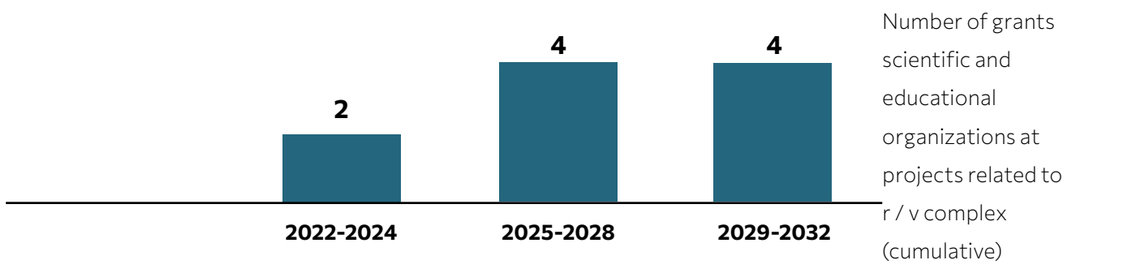
Total volume production of products fish farming and catching, thousand tons



Доля выпуска перераа Total volume production of products fish farming and catching, thousand tons ботанной



Export volume products r / x complex, million USD



Number of grants scientific and educational organizations at projects related to r / v complex (cumulative)

ECONOMIC JUSTIFICATION AND ASSESSMENT OF INVESTMENT ATTRACTIVENESS

THE UNIQUE POSITION ON THE CASPIAN SEA GIVES THE REGION AN ADVANTAGE IN TERMS OF LOGISTICS

Today in the Russian part of the Caspian there is no modern infrastructure of container terminals, while other Caspian states (Kazakhstan, Azerbaijan, Turkmenistan) are improving their infrastructure, integrating into international container transportation.

Initiatives:

- Modernization of transport infrastructure
- Modernization of the port infrastructure and capacities of the region's seaports
- Development of the port area Olya for the further formation of the ITC «North-South»
- Development of railway infrastructure

Indicators:

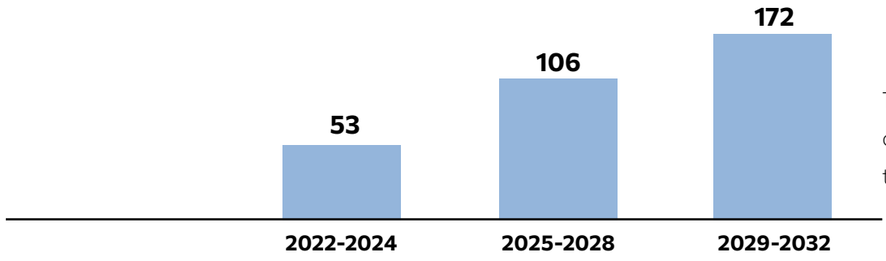
- The volume of traffic on different types of transport
- Foreign trade turnover

Assessment of the volume of investments in 2022-2024 - USD 410 million

Operating expenses 2025-2028 - $ 39 million per year

Income for the period 2025-2028 - 132 million USD per year

Add. jobs by 2025 - 730 people

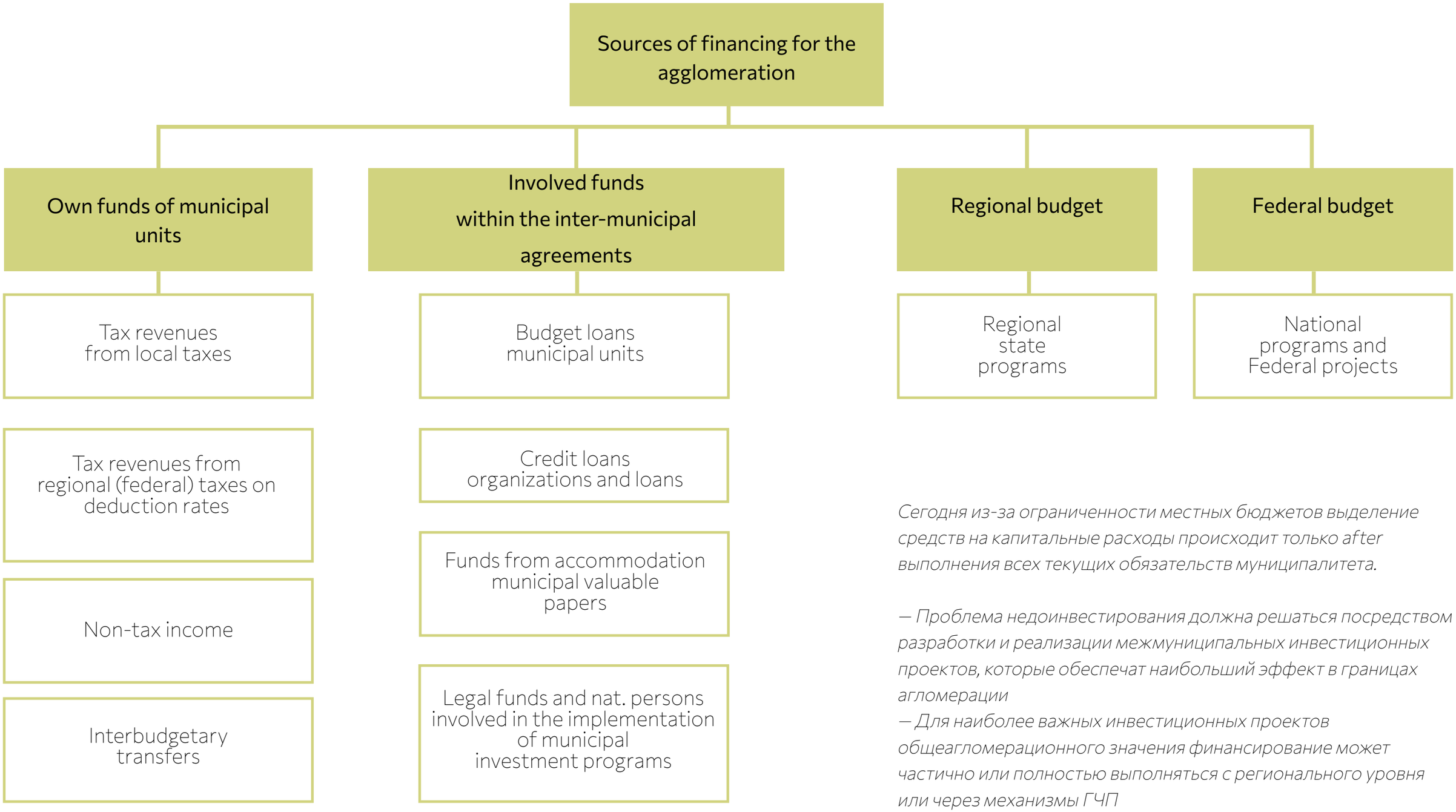


Transportation volume container cargo, thousand TEU

The volume of transportation of non-containerized cargo, thousand

	2023	2027	2036	2046	2050
Project cargo	36	59	44	53	57
Forest	1,181	1,102	2,370	2,749	2,777
Iron and steel	774	774	1,100	1,100	1,100
Sulphur	1,667	1,667	0	0	0
Fertilizers	852	1,339	2,272	3,692	4,260
Corn	1,776	2,132	3,552	4,445	4,514
Vegetable oil	723	820	1,084	1,296	1,317
Offshore delivery	199	298	373	373	373
TOTAL	**7,211**	**8,490**	**10,794**	**13,707**	**14,393**

FUNDING SOURCES FOR THE AGGLOMERATION



Сегодня из-за ограниченности местных бюджетов выделение средств на капитальные расходы происходит только after выполнения всех текущих обязательств муниципалитета.

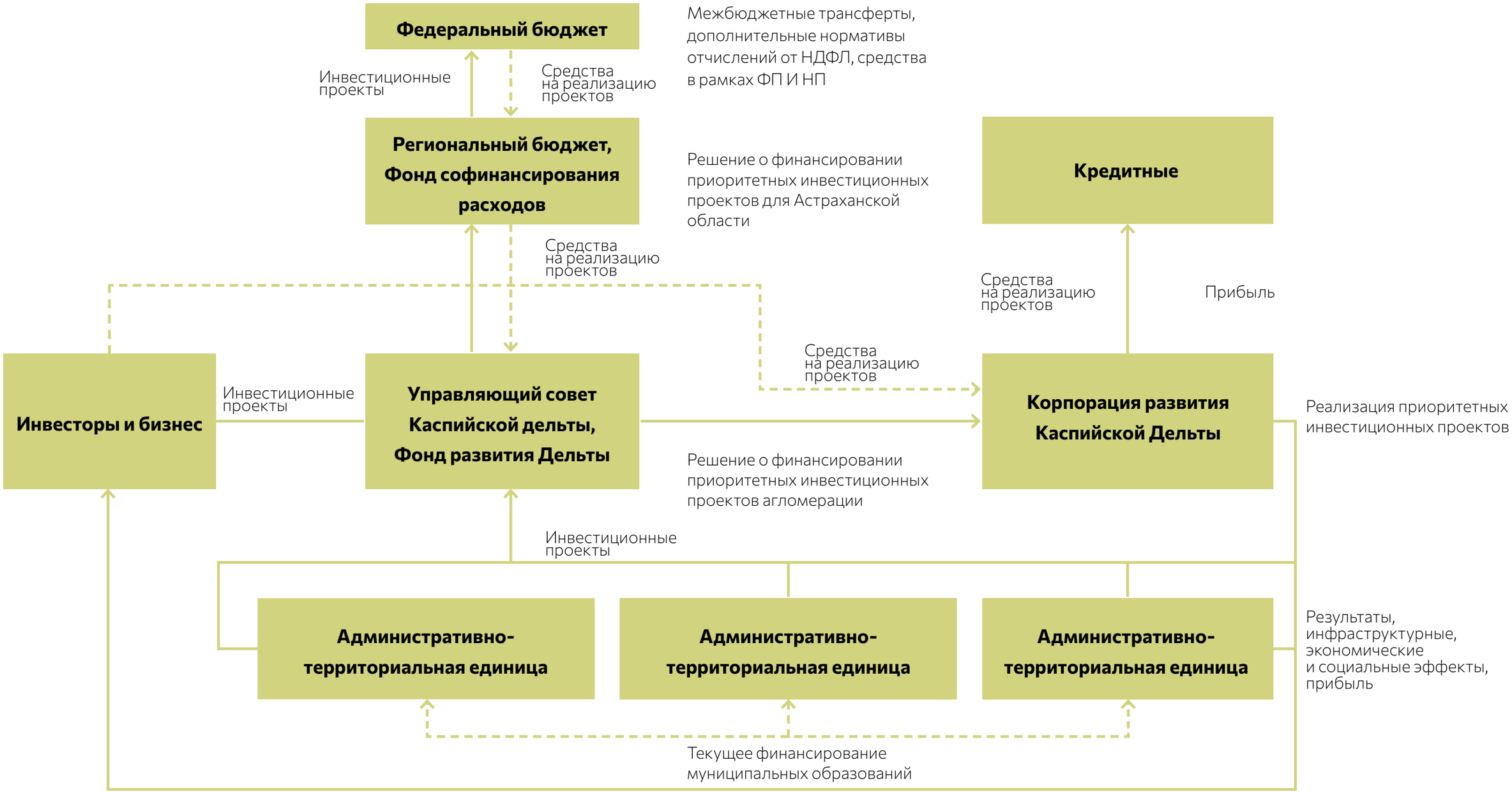
— Проблема недоинвестирования должна решаться посредством разработки и реализации межмуниципальных инвестиционных проектов, которые обеспечат наибольший эффект в границах агломерации
— Для наиболее важных инвестиционных проектов общеагломерационного значения финансирование может частично или полностью выполняться с регионального уровня или через механизмы ГЧП

FINANCIAL AND ECONOMIC MODEL OF THE DEVELOPMENT OF THE AGGLOMERATION TERRITORY

OPTIONS FOR FINANCING THE RECONSTRUCTION OF THE HISTORIC CENTER

	Description	Sources of financing	City support	Поддержка города
RECONSTRUCTION	The investor buys out the housing stock from the owners, receives the ownership of the building, reconstructs and modernizes, and then operates it with the receipt of income	Investor funds or borrowed funds	Preferential long-term land lease	The investor buys out the housing stock from the owners, receives the ownership of the building, reconstructs and modernizes, and then operates it with the receipt of income
	An investor, on behalf of the city, buys housing stock from the owners, reconstructs and modernizes the building, transfers it to the city (and can operate it, earning income)	Borrowed funds and budget places	- Definition of territories for KRT - Provision of subsidies for the purchase of housing - Co-financing of reconstruction through subsidies	New municipal property (offices) or housing
	The investor receives premium building plots with obligations to reconstruct other plots, then sells the constructed housing or office buildings on the premium plots or operates them	Investor funds, borrowed funds, budget funds	- Definition of territories for KRT - Allocation of premium sites for building - Co-financing of the reconstruction of the Resubsidies - Provision of soft loans	Construction of premium housing or offices
REDEVELOPMENT DEMOLITION	The investor provides new housing (or cash equivalent) to the owners of dilapidated housing, demolishes it and builds a new facility, sells it or operates	Investor funds, borrowed funds	- Definition of territories for KRT - Provision of soft loans	Demolition of dilapidated housing in the center with the resettlement of owners in new apartments, construction of new objects on the site of demolished housing
	The investor carries out redevelopment of the industrial area, builds it up with premium housing or office space and sells it (transfer of ownership) or exploits it for income (remains in the ownership of the investor)	Средства инвестора или заемные средства и бюджетные средства	- Provision of land for transfer of industrial territory for city center - Subsidies for the transfer of production - Provision of soft loans	Construction of a residential or office complex on the territory of industrial enterprises

FINANCIAL AND ECONOMIC MODEL OF AGGLOMERATION



FINANCIAL AND ECONOMIC MODEL OF THE DEVELOPMENT OF THE AGGLOMERATION TERRITORY

SOURCES OF BUDGET FINANCING

Transport

NP «Safe and high-quality
car roads
- Federal project «Road network»
—Federal project “System-wide
measures for the development of road facilities «
- Federal project «Road safety»

Logistics

- Federal project «Logistics
international trade «
- Federal project «Export of services»
- Federal project «Systemic measures
development of international cooperation and
export «
- Federal project «Transport-
logistics centers «
- Federal project «Communications
between the centers of economic growth «
- Federal project «Development
regional airports and routes «
- Federal project «High-speed
railway communication «
- Federal project «Internal

agricultulture and fishing

- Federal project «Export of products
agro-industrial complex «
- Federal project «Acceleration of the
small and medium
entrepreneurship «
- Federal project «Creation of a system
support to farmers and the development of rural

Urban environment

- Federal project «Housing»
- Federal project «Formation
comfortable urban environment «
- Federal project «Provision
sustainable reduction of unusable
for housing stock «

Экология

- Federal project «Clean Air»
- Federal project «Clean Water»
—Federal project “Health improvement
Volga «
- Federal project «Preservation of the
hot water bodies «
- Federal project «Implementation
best available technologies «

Образование

- Federal project «Development of scientific
and research and production cooperation «
- Federal project «Development
advanced infrastructure for conducting
research and development in Russia
Federation «
- Federal project «Development of personnel
global research potential
and development «

Культура и туризм

- Federal project «Cultural Environment»
- Federal project «Conservation
biodiversity and development
ecological tourism «

RESOURCE ENDOWMENT

			АО	г. Астрахань	Володарский р-н	Икрянинский р-н	Камызякский р-н	Красноярский р-н	Лиманский р-н	Наримановский р-н	Приволжский р-н
Население											
	Всего	**чел**		**529,793**	**46,234**	**46,443**	**46,096**	**36,641**	**29,192**	**47,547**	**52,779**
	Трудоспособный возраст	чел		320,000		24,733	25,076	20,087		26,173	28,431
Земельный фонд											
	Земельный фонд - всего	**га**			**388,000**	**198,914**	**349,293**	**526,048**	**523,800**	**612,545**	**13,400**
	Земли с/х назначения	га			164,000	117,152	160,910	526,048	467,240	541,657	10,947
	Земли поселений	га			3,149	4,270	7,375	4,676	4,117	9,526	1,254
	Земли промышленности и иного спец. назн	га			928	4,978	9,020	121,219	1,905	5,281	96
	Земли ООТ	га			28,426	16,494	23,504	18		204	26
	Земли лесного фонда	га			19,961	11,323	15,927	15,085	3,196	15,409	160
	Земли водного фонда	га			76,678	40,444	107,340	9,658	47,086	30,987	730
	Земли запаса	га			95,532	639	24,599	199	263	9,481	187
Транспорт											
	Протяженность дорог	км		824	422	243	363	258	89	305	185
	Дороги с твердым покрытием	%		50	39	42	29	25	67	22	69
Жилье - обеспеченность...											
	водопроводом	%			53%	58%	53%	38%	39%	60%	45%
	канализацией	%			37%	24%	44%	17%	70%	51%	27%
Полезные ископаемые											
	Нефть	тыс тонн						Да		1,377	
	Газовый конденсат	тыс тонн						Да		16	
	Газ	млн м3						Да		129	
	Кирпичное сырье	тыс м3					3,475	3,900		9,204	
	Сера							Да		-	
	Йод	тыс м3						Да		11	
	Соль	тыс тонн								823	
	Технические воды				да					Да	
	Минеральные воды									Да	
	Лечебная грязь	тыс м3								116	
Сельское хозяйство											
	Мощности хранения плодоовощной продукции и картофеля	тонн				2,000	12,500	2,000	17,800	1,500	4,700
	Поголовье сельскохозяйственных животных (I	голов			42,255	21,443	31,178	30,443	29,532	28,273	16,007
	Поголовье овец и коз	тыс голов			9	15	16	3	242	308	16
	Урожайность с/х культур	тонн/га									
	Овощи				35	35	41	43	52	46	54
	Бахчевые				29	21	33	31	41	40	37
	Картофель				27	32	13	21	32	22	31
	Зерно				0	0	4	0	4	0	4
Добыча и производство рыбы											
	Вылов	тонн			21,090	6,521	9,483	508	3,207	605	173
	Производство в аквакультуре	тонн			446	3,284	7,983	69	4,108	1,874	1,781
Логистика											
	Грузооборот портов	млн тонн		2					8 (Оля - планируемая)		
Научный ресурс											
	Площадь индустриальных парков и ОЭЗ	га	991								
	Количество российских патентов, где заявители - научные организации Астраханской области (начало 2021)	Сфера		Сельское хозяйство, лесное хозяйство, животноводство, охота, рыболовство, рыборазведение	Пищевые продукты и их обработка	Медицина и ветеринария	Способы и устройства общего назначения для осуществления различных физических и химеческих процессов	Строительство, горное дело	Механика, освещение, отопление, двигатели и насосы, оружие и боеприпасы, взрывные работы	Физика	Электричество
		ед		61	57	43	25	46	73	73	19
Полезные ископаемые, запас											
	Нефть и газовый конденсат	млрд. тонн	1.1								
	Газ	трлн. м3	5.3								
	Нефть и газовый конденсат - в акватории Каспия	млрд. тонн	0.35								
	Газ - акватория Каспия	трлн. м3	0.65								
Солнечная энергетика											
	Количество СЭС	ед	12								
	Суммарная мощность	МВт	285								

COSTS OF INITIATIVES

Туризм	Затраты на маркетинг территории (кумулятивно 2022-2030)	*0,41 — 1,04 млрд руб.*
	Вклад туризма в ВРП региона (кумулятивно 2022-2030)	*1— 93,12 млрд руб.*
	Вклад туризма в бюджет региона (кумулятивно 2022-2030)	*27.85 млрд руб.*
	Новые рабочие space до 2030 г.	*2470*
Зеленая энергетика	Затраты на строительство СЭС мощностей	*29,95 — 51,3 млрд руб.*
	Ежегодная выручка от торговли квотами на CO2	*34,47 млн евро*
Сельское хозяйство	Инвестиции в отрасль на период до 2025 года	*11,07 млрд руб.*
	Новые рабочие space до 2025 года	*585 мест*
	Прирост производства валовой продукции сельского хозяйства к 2032 году (дельта)	*45 млрд руб.*
	Прирост мощностей хранения продукции к 2032 году	*38 тыс. тонн*
Рыбохозяственный quarter	Инвестиции в отрасль до 2025 года	*10,8 млрд руб.*
	Суммарный объем производства продукции к 2032 году	*70 тыс. тонн*
	Доля переработанной проукции в общем объеме производства вырастет до	*25%*
	Объем экспорта рыбной продукции достигнет к 2032 году	*16 млн долл. США*
	Новые рабочие space до 2025 года	*789 мест*
Логистика	Инвестиции в современную портовую инфраструктуру	*410 млн долл. США*
	Операционные расходы на период 2025-2028, ежегодно	*39 млн долл. США*
	Доход на период 2025-2028, ежегодно	*132 млн долл. США*
	Новые рабочие space	*730мест*

COSTS OF INITIATIVES

Транспорт	
Outer ring road	*37189 млн руб.*
Northern bypass	*28157 млн руб.*
Eastern bypass	*2332 млн руб.*
South bridge	*6700 млн. руб*
New city bus fleet	*988 млн руб.*
New suburban bus fleet	*338 млн руб.*
New tourist buses	*295 млн руб.*
River shuttles, units	*770 млн руб.*
Railway, km	
- the second way (Kutum - Trusovo)	*940 млн руб.*
- single-track bridge across the Volga	*5078 млн руб.*
Trains, EP2D, 4 cars	*1016 млн руб.*
Inner ring	
- city street 2 + 2	*3208,8 млн руб.*
- bridge over the Volga, 1.8 km + approaches	*16800 млн руб.*
- overpass across the railway, 250 m	*1410 млн руб.*
- overpass through the railway and Kutum, 1 km	*2900 млн руб.*
- bypass road on the right bank, 2 + 2	*938,4 млн руб.*

Инфраструктура дельты	
Green channels	
Trees	*20 млн руб.*
Bike paths	*103 млн руб.*
Eco island	*425 млн. руб*
Tactical landscaping	
Trees	*29 млн руб.*
Bike paths	*400 млн руб.*
Parking places	*34 млн руб.*
Green railway ring	*32 292 млн руб.*
Railway	
- the second way (Kutum - Trusovo)	*940 млн руб.*
- single-track bridge across the Volga	*5078 млн руб.*
Trains, EP2D, 4 carriages	*1016 млн руб.*
Inner ring	
- city street 2 + 2	*3210млн руб.*
- bridge over the Volga, 1.8 km + approaches	*16800 млн руб.*
- overpass across the railway, 250 m	*1410 млн руб.*
- overpass through the railway and Kutum, 1 km	*2900 млн руб.*
- bypass road on the right bank, 2 + 2	*938,4 млн руб.*
Channels TBU RUB mln	*TBU млн руб.*
Green Belt TBU RUB mln	*TBU млн руб.*
University campus	*38909 млн руб.*
Tourist quarter	*16876 млн руб.*
Railroad station	*11824 млн руб.*
Privolzhsky backwater	*16255 млн руб.*
Trusovsky quarter	*11981 млн руб.*

DELTA PROJECT COST ESTIMATE

		Драйвер	Цена за ед.		Стоимость	
Транспорт	**Внешняя кольцевая дорога, km**			**млн руб**	**37,189**	**млн руб**
	Северный обход	1	28157	млн руб	28,157	млн руб
	Восточный обход	1	2332	млн руб	2,332	млн руб
	Южный мост	1	6700	млн руб	6,700	млн руб
	Новый городской автобусный парк	95	10.4	млн руб	988	млн руб
	Новый пригородный автобусный парк	90	3.75	млн руб	338	млн руб
	Новые туристические автобусы	50	5.9	млн руб	295	млн руб
	Речные шаттлы, ед	7	110	млн руб	770	млн.руб
Проекты	Набережная, km	20.2	660.8		13,348	млн. руб
	Зеленые каналы					
	Деревья, шт	400	0.05	млн руб	20	млн руб
	Велодорожки, км	20.5	5	млн руб	103	млн.руб
	Эко-остров, га	85	5	млн руб	425	млн руб
	Тактическое озеленение					
	Деревья, шт	570	0.05	млн руб	29	млн руб
	Велодорожки, км	80	5	млн руб	400	млн.руб
	Парковочные места, ед	2000	0.017	млн руб	34	млн руб
	Зеленое ж/д кольцо				**32,292**	**млн.руб**
	Железная дорога,км					
	второй путь (Кутум - Трусово)	5	188	млн руб	940	млн.руб
	однопутный мост через Волгу	1	5078	млн руб	5,078	млн.руб
	Поезда, ЭП2Д, 4 вагона	4	254	млн руб	1,016	млн.руб
	Внутреннее кольцо					
	городская улица 2+2	11	291.8	млн руб	3,210	млн руб
	мост через Волгу, 1,8 км + подходы	1	16800	млн руб	16,800	млн руб
	путепровод через ЖД, 250 м	1	1410	млн руб	1,410	млн руб
	путепровод через ЖД и Кутум, 1 км	1	2900	млн руб	2,900	млн руб
	объездная дорога на правом берегу, 2+2	6	156.4	млн руб	938	млн руб
	Каналы, km	63.5	0	млн руб	-	млн руб
	Зеленый пояс, km2	0	0	млн руб	-	млн.руб
	Университетский кампус, 000 m2	219.5	0.177264	млн руб	38,909	млн руб
	Туристический квартал, 000 m2	95.2	0.177264	млн руб	16,876	млн.руб
	Железнодорожная станция, 000 m2	66.7	0.177264	млн руб	11,824	млн руб
	Приволжский затон, 000 m2	91.7	0.177264	млн руб	16,255	млн.руб
	Трусовский квартал, 000 m2	67.59	0.177264	млн руб	11,981	млн руб
	Общая стоимость				**182,075**	**млн руб**

DELTA PROJECT COST ESTIMATE

Фитоочистка	Количество населения вне астрахани	479,000	
	Население в поселках < 2000 чел	329,000	
	Количество систем фиоочистки	82	
	Стоимость одной системы	14	млн руб.
	Общая стоимость проекта	1,151.50	млн руб.
	Потенциальный партнер	Ambiente Italia	
Экомониторинг	Количество станций	30	
	Цена за станцию	10.95	млн руб
	Общая стоимость	328.5	млн руб
Водотвод	Средняя обеспеченность канализацией	39%	
	Население в районах агломерации и Астрахани	834,725	чел
	Размер домохозяйства в Астраханской обл	2.84	
	Количество домохозяйств в агломерацйии	293,917	ед
	из них в малоэтажной застройке	70%	
	Количество домохозяйств где нужен новый водоотво	205,742	ед
	Доля канализации в цене квадратного метра	16%	
	Стоимость строительства одного кв. метра в Астраха	0.044316	млн руб
	Удельная стоимость канализации на 1м2 жилья	0.00688136646	
	Норма жилья	18	м2
	Площадь жилья на домохозяйство	51.12	м2
	Стоимость канализации на домохозяйство	0.3517754534	млн руб
	На все домохозяйства (и городские системы)	72,375.01	млн руб

TOURIST FLOW

Структура турпотока	Турпоток в год	1,600,000	до пандемии		Инфляция в год	3%						
					Увеличение трат рыболовно-охотничьего за счет монетизации	5%						
	Рыболовно-охотничий	66%										
	Культурно-познавательный	14%										
	Экологический	15%										
	Деловой	3%										
	Прочие виды	2%										
Темпы роста по сегментам			2018(19, 20)		2022	2023	2024	2025	2026	2027	2028	2029	2030
	Рыболовно-охотничий				0	0	1%	1%	1%	1%	1%	1%	1%
	Культурно-познавательный				5%	8%	15%	15%	12%	10%	8%	3%	1%
	Экологический				5%	8%	15%	15%	12%	10%	8%	3%	1%
	Деловой				5%	8%	15%	15%	12%	10%	8%	3%	1%
	Прочие виды				1%	1%	1%	1%	1%	1%	1%	1%	1%
Траты на одного туриста за день, руб	Рыболовно-охотничий	*200*	200		210.00	220.50	231.53	243.10	255.26	268.02	281.42	295.49	310.27
	Культурно-познавательный	*7000*	7000		7210.00	7426.30	7649.09	7878.56	8114.92	8358.37	8609.12	8867.39	9133.41
	Экологический	*3000*	3000		3090.00	3182.70	3278.18	3376.53	3477.82	3582.16	3689.62	3800.31	3914.32
	Деловой	*11000*	11000		11330.00	11669.90	12020.00	12380.60	12752.01	13134.58	13528.61	13934.47	14352.51
	Прочие виды	*11000*	11000		11330.00	11669.90	12020.00	12380.60	12752.01	13134.58	13528.61	13934.47	14352.51
Количество дней пребывания, дней	Рыболовно-охотничий	5	5		5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
	Культурно-познавательный	3	3		3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
	Экологический	5	5		5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
	Деловой	3	3		3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
	Прочие виды	5	5		5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Траты на туриста за поездку, руб	Рыболовно-охотничий	*1000*	1000		1050	1103	1158	1216	1276	1340	1407	1477	1551
	Культурно-познавательный	*21000*	21000		21630	22279	22947	23636	24345	25075	25827	26602	27400
	Экологический	*15000*	15000		15450	15914	16391	16883	17389	17911	18448	19002	19572
	Деловой	*33000*	33000		33990	35010	36060	37142	38256	39404	40586	41803	43058
	Прочие виды	*55000*	55000		56650	58350	60100	61903	63760	65673	67643	69672	71763
Количество туристов по сегментам, чел	Рыболовно-охотничий			1,056,000	1,056,000	1,056,000	1,066,560	1,077,226	1,087,998	1,098,878	1,109,867	1,120,965	1,132,175
	Культурно-познавательный			224,000	235,200	254,016	292,118	335,936	376,248	413,873	446,983	460,393	464,997
	Экологический			240,000	252,000	272,160	312,984	359,932	403,123	443,436	478,911	493,278	498,211
	Деловой			48,000	50,400	54,432	62,597	71,986	80,625	88,687	95,782	98,656	99,642
	Прочие виды			32,000	32,320	32,643	32,970	33,299	33,632	33,969	34,308	34,651	34,998
Траты всех туристов за поездку, руб	Рыболовно-охотничий		-	1,056,000,000	1,108,800,000	1,164,240,000	1,234,676,520	1,309,374,449	1,388,591,604	1,472,601,396	1,561,693,780	1,656,176,254	1,756,374,917
	Культурно-познавательный		-	4,704,000,000	5,087,376,000	5,659,197,062	6,703,318,920	7,940,081,261	9,159,677,743	10,377,914,883	11,544,392,516	12,247,446,020	12,741,018,094
	Экологический		-	3,600,000,000	3,893,400,000	4,331,018,160	5,130,091,011	6,076,592,802	7,009,957,456	7,942,281,798	8,834,994,272	9,373,045,423	9,750,779,154
	Деловой		-	1,584,000,000	1,713,096,000	1,905,647,990	2,257,240,045	2,673,700,833	3,084,381,281	3,494,603,991	3,887,397,480	4,124,139,986	4,290,342,828
	Прочие виды		-	1,760,000,000	1,830,928,000	1,904,714,398	1,981,474,389	2,061,327,807	2,144,399,317	2,230,818,610	2,320,720,600	2,414,245,640	2,511,539,739
Всего трат туристов, руб			-	12,704,000,000	13,633,600,000	14,964,817,611	17,306,800,884	20,061,077,152	22,787,007,401	25,518,220,677	28,149,198,647	29,815,053,323	31,050,054,732
Прямой вклад в ВРП АО, руб				7,622,400,000	8,180,160,000	8,978,890,567	10,384,080,531	12,036,646,291	13,672,204,441	15,310,932,406	16,889,519,188	17,889,031,994	18,630,032,839
Косвенный вклад в ВРП АО, руб				3,176,000,000	3,408,400,000	3,741,204,403	4,326,700,221	5,015,269,288	5,696,751,850	6,379,555,169	7,037,299,662	7,453,763,331	7,762,513,683
Идуцированный вклад в ВРП АО, руб				1,270,400,000	1,363,360,000	1,496,481,761	1,730,680,088	2,006,107,715	2,278,700,740	2,551,822,068	2,814,919,865	2,981,505,332	3,105,005,473
Вклад туризма в ВРП, руб				12,068,800,000	12,951,920,000	14,216,576,731	16,441,460,840	19,058,023,294	21,647,657,031	24,242,309,643	26,741,738,715	28,324,300,657	29,497,551,996
Поступления в бюджет АО, руб				1,740,448,000	1,867,803,200	2,050,180,013	2,371,031,721	2,748,367,570	3,121,820,014	3,495,996,233	3,856,440,215	4,084,662,305	4,253,857,498
Оценка затрат на продвижение, руб (прокси - процент)		*43,197,966*		25,408,000	27,267,200	29,929,635	34,613,602	40,122,154	45,574,015	51,036,441	56,298,397	59,630,107	62,100,109
Оценка затрат на продвижение, руб (прокси - траты на туриста)		*111,134,041*		72,460,800	75,913,344	81,685,060	93,329,088	106,713,634	119,031,368	130,531,321	140,657,103	144,785,419	146,233,273

GREEN ENERGY

Зеленая энергетика

Текущая установленная мощность СЭС, МВт	***285.25***	***285,250,000***
Прогнозная годовая генерация на 1 кВт установленной мощности, кВтх	***1460***	***416,465,000,000***
Электрогенерация, млн. кВт часов	***4285.9***	***4,285,900,000***

	Сегодня	***к 2030 году***
Доля энергии СЭС в мощностях, потребляемых регионом	***6%***	***15%***
Установленная мощность, МВт	***285.25***	***713.13***
Избегание выброса CO2, тыс тонн	***275.74***	***689.35***
Экономия природного газа, млн м3	***156.89***	***392.22***

Прирост установленной мощности, мВт	***427.88***		
Стоимость строительства за 1 Вт, руб, мин	***70***		
Стоимость строительства за 1 Вт, руб, макс	***120***		
Стоимость строительства дополнительной мощности, мин	***29,951,250,000.00***	***29.95***	***млрд руб.***
Стоимость строительства дополнительной мощности, макс	***51,345,000,000.00***	***51.35***	***млрд руб.***

Окупаемость (при тарифе выше 6 руб./кВт х ч ***3-5 лет***

AGRICULTURE

					2022-2024	2025-2028	2029-2032
Инвестиции	Организация деятельности оптово- распределительного центра по хранению овощной продукции»	субсидии	ГП развития сельского хозяйства	млн руб.	50		
	«Строительство складских помещений ООО «Птицефабрика «Владимировская»	субсидии		млн руб.	331		
	«Производство и реализации молока (на базе ООО «Картубинское»)»	частные инвестиции		млн руб.		100	
	«Организация по производству и переработке риса (на базе ООО «Красноярский район»)»	частные инвестиции + субсидии	ГП развития сельского хозяйства	млн руб.		50	
	«Создание овцеводческого комплекса с закрытым содержанием овец породы Дорпер»	Льготное кредитование и	ГЧП	млн руб.	200		
	«Строительство откормочной площадки и доильного цеха, приобретение оборудования для кормоцеха ИП ГКФХ «Чуланов А.В.»	частные инвестиции	Субсидирование части затрат из бюджета региона	млн руб.	55		
	«Развитие сельскохозяйственного потребительского сбытового кооператива «Мясной»	частные инвестиции		млн руб.	65		
	«Развитие сельскохозяйственного потребительского сбытового кооператива «Мясной»		Программа "Поддержка кооперативов"	млн руб.	39		
	«Создание сельхозпредприятия по выращиванию картофеля и зерновых культур на землях Е ограниченной ответственностью «МАПС»	частные инвестиции и зае	ГП развития сельского хозяйства	млн руб.	151	151	
	«Строительство тепличного комплекса ООО «ТК «КЕДР» для круглогодичного выращивания овощей»	Льготное кредитование		млн руб.	2885		
	«Развитие ООО «СХП- птицефабрика «Харабалинская»	субсидии		млн руб.	454.8		
	«Агропромышленный комплекс по выращиванию и переработке томатов в Енотаевском районе Астраханской области»	частные инвестиции и заемные средства		млн руб.		6200	
	«Создание многоотраслевого сельскохозяйственного предприятия»	частные инвестиции		млн руб.	340		
	Всего				4570.8	6501	
		Субсидии (Гос поддержка)			***4311.8***	***39%***	
		частные инвестиции			***6760***	***61%***	

Показатели	Объем производства валовой продукции сельского хозяйства	млрд руб	48.8	57.6	75.85	94.1
	Объем валовой продукции растениеводства	млрд руб	28.48440146	35.1	46.4	57.7
	Количество грантов научным и образовательным организациям	ед		2	1	1
	Дополнительные мощности по переработке плодоовощной продукции	тыс. тонн		80	140	200
	Объем экспорта продукции АПК	млн USD	21.83804112	21.7	22.35	23
	Дополнительные мощности хранения продукции	тыс. тонн		18	10	10