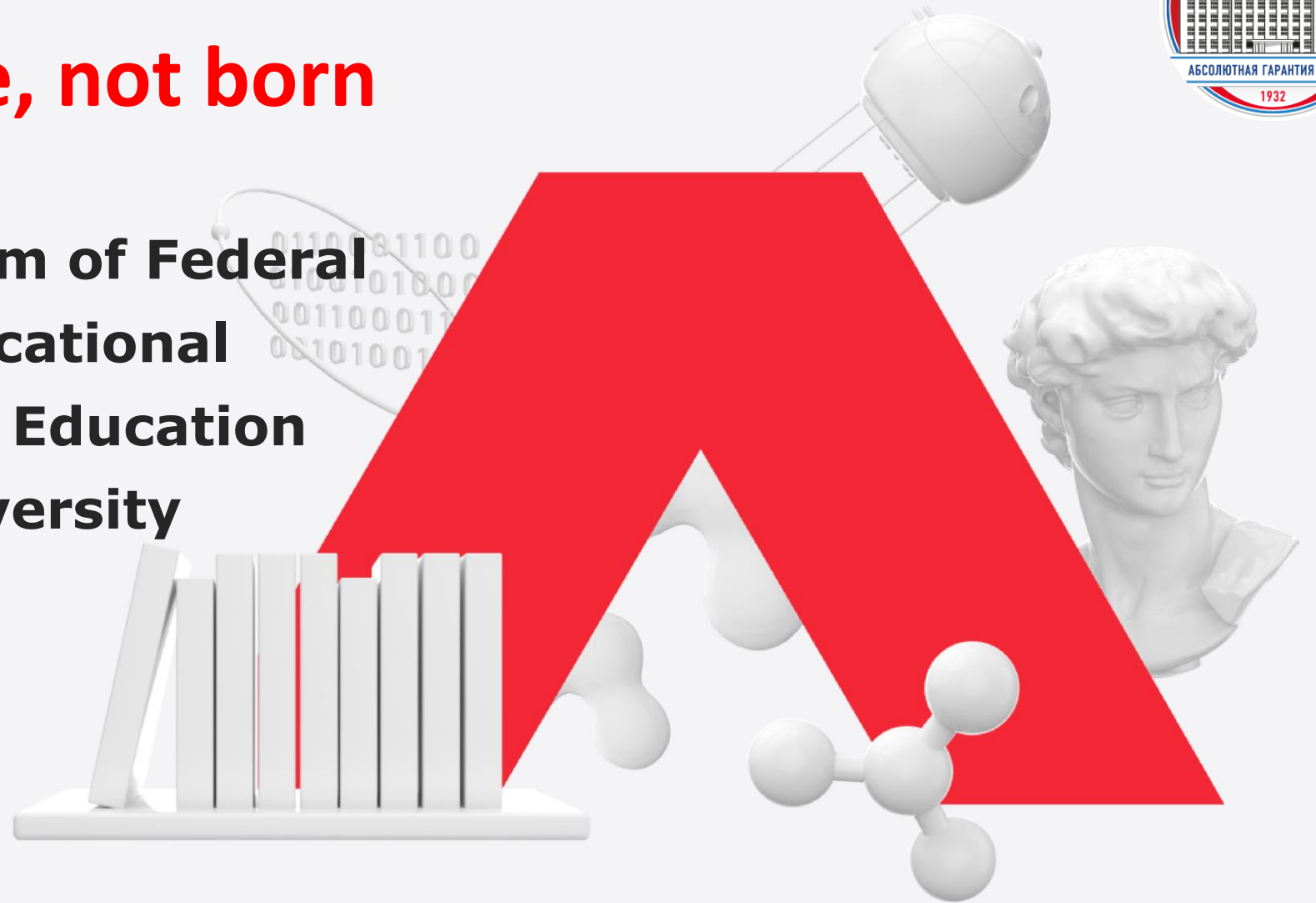


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**Development Program of Federal
State Budgetary Educational
Institution of Higher Education
Astrakhan State University
for 2021-2030**

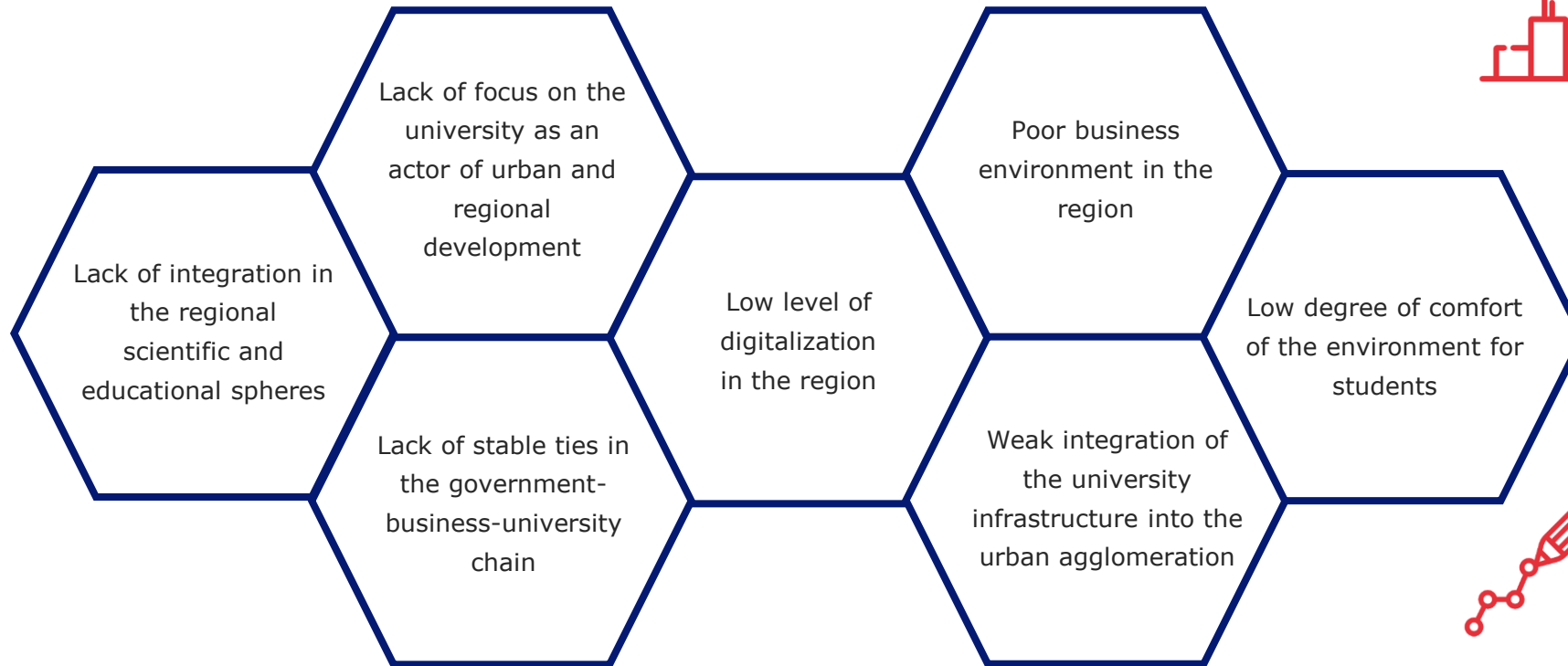
Konstantin Markelov
Rector of Astrakhan State University



Problem Statement



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ASU mission

Facilitation in building up the economic power and international influence of Russia in the Caspian Sea region, **development of the human, scientific and engineering potential of the Astrakhan Region as a geostrategic area of the Russian part of the Caspian Sea region**, generation and transfer of scientific knowledge and technologies, preservation and augmentation of spiritual values and traditions through integration of the processes of reproduction of new scientific knowledge, elite HR and innovation.



Strategic Development Goal

University is the core of an innovative scientific and educational cluster; resource, expert and analytical center of the Caspian macroregion.

Internal Constraints to Development

- Poor personalization of the educational process and training modules
- A gap between the labour market and educational programs
- Low rate of involvement of external experts, scientists and professors and leading Russian and international universities
- Low level of networking
- Lack of integration of acceleration mechanisms in the university
- Deficiency in digital, linguistic, and entrepreneurial competencies
- Lack of synchronization of the team work of like-minded people

Target Model

Territorial leader –
a region-shaping university

Special impact
on regional
development

Concentrating the
resource potential
on the scientific
frontier

Focus on creating
new "points of
growth" of
technological
industries

ASU –
Caspian Open Network University

University of entrepreneurial type

- Formation of a single integration environment
- Shift to a practice-oriented learning model, individual educational trajectories
- Update of the model and pedagogical design of the main educational programs
- Implementation of the flexible architecture of organization of the professional education programs
- Establishing of the Caspian Network University
- Development of competitive scientific schools
- Development of scientific services
- Creation of a motivating environment and individualization of development trajectories for the personnel
- Formation of an efficient system for working with the youth
- Setting up an efficient digital university
- Changes in the structure of admission of prospective students



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Key Characteristics

2020

50,000 RUB

1,956 people

12,6 %

6,047 people

85 million RUB

40 %

0,18

65,2 %

2030

225,000 RUB

4,200 people

20,4 %

15,000 people

203,76 million RUB

70 %

0,6

95 %

Volume of research and
development work per
one scientific and
pedagogical worker

International students

Share of Master's degree
and PhD students

Students of additional
professional education programs

Income from the implementation of
additional professional programs

Share of student volunteers

Number of scientific publications
(Scopus, WoS) per one scientific
and pedagogical worker

Employment rate of the
university's graduates



Unique Resources and Competitive Advantages

- Multilingualism: teaching 5 European and 10 Eastern languages (member of SCO University)
- ASU is Russian strategic platform for cooperation of the Association of State Universities of Caspian Region Countries
- ASU is the leader in training specialists for region-shaping clusters
- ASU is the leader of the region and the Southern Federal District in innovative technologies and project-oriented approach to CDIO training
- 6 effective scientific schools and competence centers (6 joint laboratories with RAS institutes)
- The formed team of highly qualified specialists of the scientific pedagogical school
- The combination of Western and Asian vectors in international activity (exclusive cooperation programs with universities in Japan, China, South Korea, Iran, Kazakhstan, Uzbekistan)

Institutional Transformation of the University. Part I



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Education



Updating the Pedagogical Design of Educational Programs in the Context of CDIO Standards

- Interdisciplinary project-based training
- Individual educational trajectories
- Changing the training model and implementing a new constructor of educational programs



Development of additional education and vocational training

- Seamless transition to professional activity
- Programs for the real sector of the economy
- From general development programs for children to adapted programs for the "third age" students



Development of the network educational space

- Distributed Network University (interdisciplinary educational programs)
- Network industry-specific educational programs



Forming digital competencies

- Digital profilisation of educational programs
- "My digital environment"
- Development of digital literacy of teaching staff



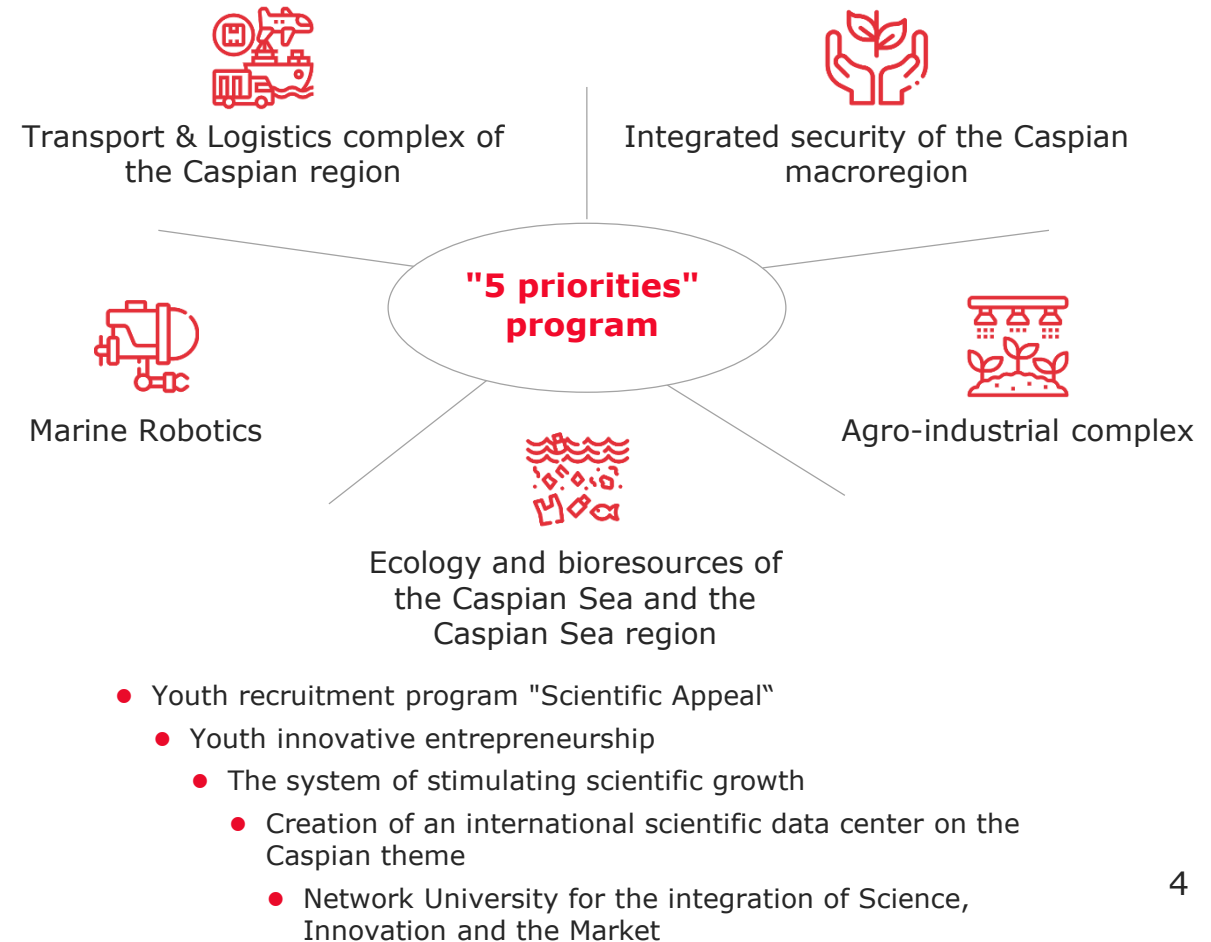
Internationalization of education

- Academic mobility and a two-degree program
- Online education
- Educational programs in foreign languages



Science & Innovation

Strategic priorities for the Development of Scientific & Innovation Research Activities



The Institutional Transformation of the University. Part II



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Campus Policy

- Comfortable, modern, smart and eco-friendly environment
- Additional scientific and educational infrastructure
- The inclusion of the campus in the urban environment
- Project "Creation of a New Modern Campus in Astrakhan Region, a Geostrategic Border Area of Russia"



Human Resources Policy

- Talent Management Program
- Effective Motivation System
- ASU Code of Corporate Culture
- Wellbeing Program
- Doctoral Training Program



Digital Transformation

- Digital services that enable the formation of a digital profile
- Individual educational trajectories, based on the use of digital tools, including artificial intelligence technologies
- Expanding the range of educational content through the introduction of AR/VR technologies
- High level of digital economy competencies among university students and professors
- Single data exchange bus between information systems of the university, operational control in the rector's situation center



Youth Policy

- Ethnological Platform for Students "Dialogue of Cultures of the Caspian Sea"
- Single Student Centre "Multipurpose Center Standard"
- Inclusive Education Resource Centre
- Project "My Achievement Profile: Trajectory for Development"
- Online Navigator "Buddy Helper" for Foreign Students
- SkillsLAB Laboratory – Youth Competence Centre
- Innovation Exchange Centre "Your Start"

**Changing the
university
management
system**



University's Financial Model

To increase the ASU total budget income from **1.5** billion RUB to **3.3** billion RUB and ensure the achievement of the financial autonomy, increasing the income share from extra-budgetary sources in the total income from **37%** to **70%**

To reduce the share of labor costs to **63%**, the share of property maintenance costs to **9%**

To ensure that the share of R&D revenues from the its commercialization is increased from **2%** to **6%** of total revenues

To ensure the average salary of the academic staff at the level of more than **200%** of the region's average salary

To allocate no less than **20%** of extra-budgetary revenues to co-finance the Development Program

Strategic Project No. 1

“Development of Marine Robotic Technologies in the Caspian Region” (“Marine Robot”)



Challenges

- To develop the Caspian Sea resources using marine robotic systems
- To achieve parity in fostering new areas in the development of resources of the world ocean, innovative shipping and e-Navigation



Integration with National Goals

Instruction No. Пр-2177 of President of the Russian Federation Vladimir Putin to the Government of the Russian Federation dated 13.11.2020

- Strategy of socioeconomic development of the Astrakhan Region for the period up to 2035



Market Analysis

- Rapidly growing b2b market (the growth rate is over 10% per year)



Groundwork Done for the Project

- Approval received at a meeting of the Scientific Coordination Council of State program “Development of Shipbuilding and Offshore Equipment for 2013–2030”
- Positive evaluation at the NTI Competence Center
- Umbrella patents (6 patents)
- Spin-off company – a resident of the Skolkovo Foundation
- The project entered top-100 national ideas of the Strong Ideas for New Times competition in 2020



Project Goal

- To design universal marine robots (various modifications) capable of autonomous navigation and addressing tasks of the development of the resources of the world ocean for the purpose of commercialization and technology transfer



Objectives

- To design prototypes of marine robots
- To develop innovative production of marine robots
- To transform marine research in a consistent manner using marine robotic technologies



Impact on University Transformation and Achievement of the Target Model

Education

Developing joint academic programs, ensuring academic mobility of students, implementing additional vocational programs, designing educational laboratories and specialized classrooms

Science and Innovation

Conducting research, attracting end customers, bringing the project to the international market, and holding international competitions in marine robotics

Engineering

Designing digital twins of marine robots and conducting virtual tests



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Marine Robot Functionality

- Oceanology and hydrography
- Underwater archeology
- Analysis of fish stock
- Environmental monitoring
- Marine Internet



Stakeholders



Strategic Project No. 2

“Digital Platform of the North-South Transport Corridor”



Challenges

- Existence of territorial and structural imbalances in the development of advanced logistics infrastructure in the transport complex and ports
- Low level of development of logistics services (Russia's LPI-Rating is 95)
- Low attractiveness and competitiveness of the North-South transport corridor



Integration with National Goals

- Decree of the President of the Russian Federation of May 7, 2018 No. 204 “On National Goals and Strategic Objectives of the Russian Federation for the Period up to 2024”
- Strategy of Russian Seaport Infrastructure Development till 2030
- Decree of the Government of the Russian Federation “On Establishment of a Port Special Economic Zone and Caspian Cluster in the Astrakhan Region”
- Socio-economic development strategy



Market Analysis



amazon



Groundwork Done for the Project

Mirror Engineering Centre, which is part of the ecosystem of the “New Technologies” NTI Competence Centre at SPbPU



Project Goal

Implementation of digital technologies for managing the transport and logistics ecosystem of the International North-South Transport Corridor using end-to-end technologies to create a high-level logistics system integrated into the international transportation system



Objectives

- Data systematization based on Big Data technology and development of a digital twin model of the transport corridor
- Development and implementation of the North-South ITC digital logistics platform, creation of a world-class logistics market network infrastructure in cyberspace



Impact on University Transformation and Achievement of the Target Model

Education

Establishment of network EPs, academic mobility of students and implementation of further vocational education, establishment of logistics simulation laboratories

Science and Innovation

Conducting scientific research by international teams, attracting functional customers, bringing the project to the Russian and international markets, building a research team of young researchers under the age of 39

Infrastructure

Establishment of a Smart Logistic Youth Project Office in the Olya Port Special Economic Zone



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Stakeholders

- ООО “Portovo-Logisticheskaya Kompaniya “Kaspiy” (Kaspiy Port and Logistics Company, ООО)
- Port Special Economic Zone in the Astrakhan Region



Strategic Project No. 3

"Development of a Societal (Integrated) Security System for the Caspian Macroregion (Greater Caspian Region)"



Challenges

- Geopolitical instability
- Inter-ethnic and inter-confessional conflicts
- Environmental and economic risks
- Poorly controlled migration flows



Integration with National Goals

Presidential Decree of 02.07.2021 No. 400 "On the National Security Strategy of the Russian Federation".

- Priority areas of science and technology development in the Russian Federation, approved by the Decree of the President of the Russian Federation of July 7, 2011 No. 899 No. 1 "Security and counter-terrorism".
- Economic development of the Astrakhan region for the period until 2035



Analysis of the Current Situation

- 5% increase in violations of law in the Astrakhan region 40% христианского населения
- 1900+ indigenous population outflow in 2020
- 3500+ are registered with law enforcement agencies in 2021



Groundwork done for the project

- 10+ years of the University Research School "Contemporary Geopolitical and Cultural Processes of Formation and Development of the Greater Caspian Sea as a Central Hub of the Eurasian Space"
- 20+ monographs
- 200+ publications in journals included in the VAK list
- 50+ publications in Scopus and Web of Science (including Q1)
- Electronic bilingual scientific journal "Caspium securitatis: Journal of Caspian Security"



Project goal

The establishment of a center for strategic analysis and mathematical forecasting of possible problematic situations, risks and threats to military, state, national, cultural, confessional, social, geopolitical, economic and environmental security in the Greater Caspian Region.



Objectives

- A model of integrated (societal) security of the Caspian macro-region, taking into account the complex of socio-cultural problems and risks, specific features of the information space covering the interests of southern Russia, first and second line foreign countries
- A multi-lingual and multi-disciplinary online platform for education and research
- A software package for problem area identification and forecasting with data exchange and restricted access for user groups



Impact on University Transformation and Achievement of the Target Model

Education

Creation of networked study programs, academic mobility of students and implementation of professional development programs

Science and Innovation

Development of the Scientific School of Integrated Security Studies of the Caspian macroregion with extrapolation to other multinational regions, building up a research team of young scientists under 39 years old

Infrastructure

The establishment of a Strategic Analysis Centre at ASU and mathematical forecasting of possible security challenges, risks and threats in the Greater Caspian Region



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Stakeholders



ПРАВИТЕЛЬСТВО
РОССИИ



МВД РФ



ФЕДЕРАЛЬНАЯ СЛУЖБА БЕЗОПАСНОСТИ
РОССИЙСКОЙ ФЕДЕРАЦИИ



Правительство
Астраханской области



Правительство
Республики
Дагестан



ПРАВИТЕЛЬСТВО
РЕСПУБЛИКИ КАЛМЫКИЯ

Strategic Project No. 4

Improving Environmental Safety and Conservation of Natural Systems of Caspian Macroregion



Challenges

- Global climate change and desertification in Southern Russia
- Loss of natural reproduction of the unique fish resources in the Volga-Caspian Basin
- Threats to the biodiversity of the protected areas of the Lower Volga
- Disappearance of waterways due to anthropogenic and anthropogenic impacts



Integration with national goals

- Presidential Executive Order No. 204 "On National Goals and Strategic Objectives of the Russian Federation for the period up to 2024" dated May 7, 2018
- Ecological Doctrine of the Russian Federation
- Strategy of socio-economic development of Astrakhan Region until 2035
- National Project "Ecology"



Analysis of the current situation

- 300+ thousand ha of degraded pastures and open sands
- Reduction of species biodiversity by half
- Class 3 water (very polluted) in the Volga River in 2020
- 20+ endangered plants



Groundwork done for the project

- 40+ years of environmental research
- 40+ monographs
- 600+ publications in journals VAK
- 50+ publications in journals indexed in Scopus and Web of Science (including Q1)
- Scientific Journal "Geology, Geography and Global Energy" (VAK), Electronic Scientific Journal "Natural Sciences"



Project goal

To improve the level of environmental safety and conservation of natural systems in the Caspian region



Objectives

- To develop the technologies that will contribute to the improvement of the level of environmental safety and the preservation of the region's natural systems
- To create "Ecology and climate" and "High-performance computer systems and distributed data processing" research and development complexes
- To adapt technologies to other areas of arid zones or deltaic territories



Impact on University Transformation and Achievement of the Target Model

Education

to create network educational programs, to ensure academic mobility of students, and to implement further vocational education as part of the project

Science and Innovation

to conduct scientific research in collaboration with international teams, to develop scientific schools in the field of ecology, to form a scientific team of young scientists under the age of 39

Engineering

to create the Caspian Space Monitoring Center on the basis of the ASU



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Stakeholders



Правительство
Астраханской области



ПРАВИТЕЛЬСТВО
РЕСПУБЛИКИ КАЛМЫКИЯ



ООО "ЛУКОЙЛ-НИЖНЕВОЛЖСКНЕФТЬ"

Strategic project No 5

"Caspian Incubator of Agro-Bio- Technologies"



Challenges

- The strategic importance of the Astrakhan "All-Russian vegetable garden" in the context of import substitution and counteraction to GMO technologies
- A high growing percentage of unused areas of potential agricultural purpose
- Unique types of animal husbandry (camel breeding, horse breeding, sheep breeding) and the need for their scientific support



Integration with National Goals

- Strategy for Scientific and Technological Development of the Russian Federation (STD), approved by the Decree of the President of the Russian Federation dated 01.12.2016 No. 642
- Decree of the President of the Russian Federation dated 02.07.2021 no. 400 "On the National Security Strategy of the Russian Federation"
- Federal scientific-technical program for the development of genetic technologies for 2019-2027, approved by the Decree of the Government of the Russian Federation of 22.04.2019 No. 479
- Strategy of socio-economic development of the Astrakhan Region for the period up to 2035



Analysis of the Current Situation

- 2nd place among the regions of the Southern Federal District in terms of growth rate of gross agricultural production in 2020
- + 3 billion RUB - growth in gross agricultural production by 2019
- + 10% - the share of the agro-industrial complex in the total GRP of the region



Groundwork Done for the Project

- 10+ years of the Scientific School "Agro-biotechnology of the Russian Caspian region"
- Mirror laboratory of the fishery cluster
- 18+ monographs
- 200+ publications in journals included in the list of the Higher Attestation Commission
- 40+ publications in publications indexed in systems
- Scopus and Web of Science (including Q1)



Project Goal

Ensuring food and technological security of the Russian Caspian region with the preservation and mobilization of the world's genetic resources in the field of crop production, animal husbandry and aquaculture in an arid climate



Objectives

- To create high-yielding varieties of agricultural crops with given technological parameters
- To obtain highly productive farm animals adapted to arid climatic conditions
- To develop and implement modern technological approaches to the creation of innovative agricultural food products
- To develop alternative and low-cost sources of protein components for the feedstuff in aquaculture, taking into account the regional raw material base
- To create and implement digital solutions



Impact on University Transformation and Achievement of the Target Model

Education

Creation of network EP, ensuring academic mobility of students and implementation of advanced professional education

Science and Innovation

Conducting scientific research, attracting functional customers, bringing the project to the international market, expansion of the patent umbrella in crop farming, livestock and aquaculture

Engineering

Creation of the "Caspian Incubator of Agro-Bio-Technologies"



priority2030^

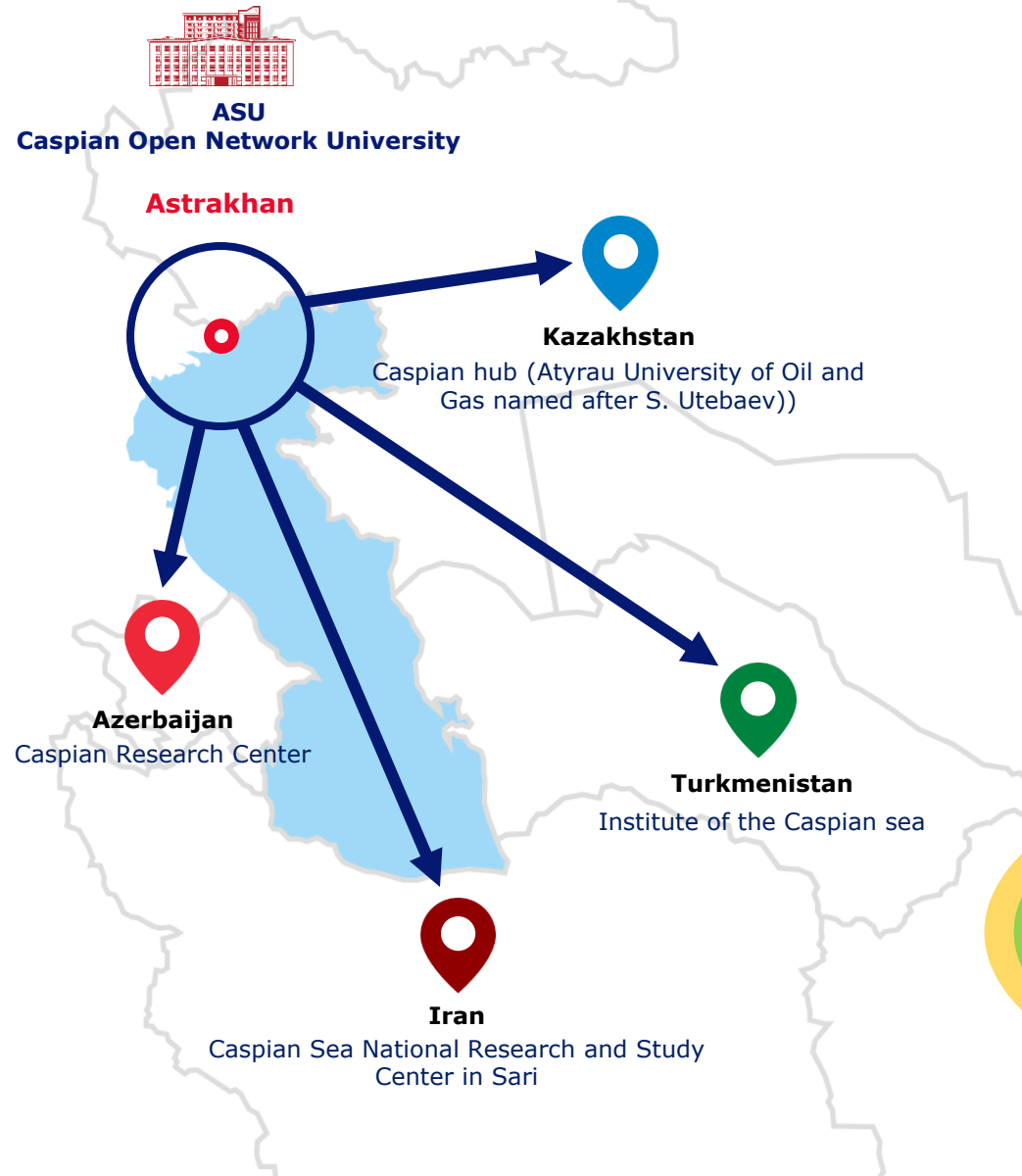
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Stakeholders



ASU – Caspian Open Network University



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