



# Research and Commercialization in Universities of Kazakhstan and the U.S.

Thematic Webinar

# Agenda

I. **Opening Remarks** – updates, reminders

II. **Research and Commercialization in the U.S. Universities**

- *Dr. Jason Jolley and Dr. Korie Sell, Ohio University*

**Research and Commercialization in Kazakhstan Universities**

- *Chet Jablonski and Daniya Yekibayeva, Nazarbayev University*
- *Talgat Yelzhassov and Assel Zhexembayeva, Eurasian National University*

III. **Q&A**

IV. **Office hour (optional)**



## KUUC 2024 Founding Members Meeting Week:

- September 30 – Event at Satbayev University, Almaty
- October 1 – Event at Narxoz University, Almaty
- October 2 – University Meetings, departures to Astana
- *October 3 – Eurasian National University tour, Bolashak Center for International Programs (tbc); Astana*
- *October 4 – Nazarbayev University tour, Astana IT University tour; Astana*

### Post-webinar surveys

- Monitoring feedback
- Importance of completing the surveys



# Goals of the Webinar

- To increase understanding of Research and Commercialization in universities of Kazakhstan/the U.S.
- To increase understanding how concepts related to Research and Commercialization might be implemented at your university
- To gain some practical learning that can be implemented at your university in the future
- To increase understanding how to use the knowledge gained to develop discussions and build partnerships





**OHIO**  
UNIVERSITY

**Dr. Jason Jolley**

Interim Associate Vice President for Research and  
Creative Activity

**Dr. Korie Sell**

Technology Commercialization Manager



❑ Innovation and Commercialization Cycle at Ohio University



# Ohio University Research and Commercialization: Primer for Kazakhstan-U.S. University Partnership Program

G. Jason Jolley, Ph.D. Interim Assoc. VP for Research  
[jolleyg1@ohio.edu](mailto:jolleyg1@ohio.edu)

Korie Sell, Ph.D. Technology Commercialization Manager  
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# Ohio University Research Overview

**R1**

'Very high research activity' classification in the Carnegie Classification of Institutions of Higher Education

**30**

Ph.D. programs

**\$62M**

In research funding in 2019. OHIO is committed to producing research that drives national and global solutions.

**27**

Research-focused centers/institutes

**102**

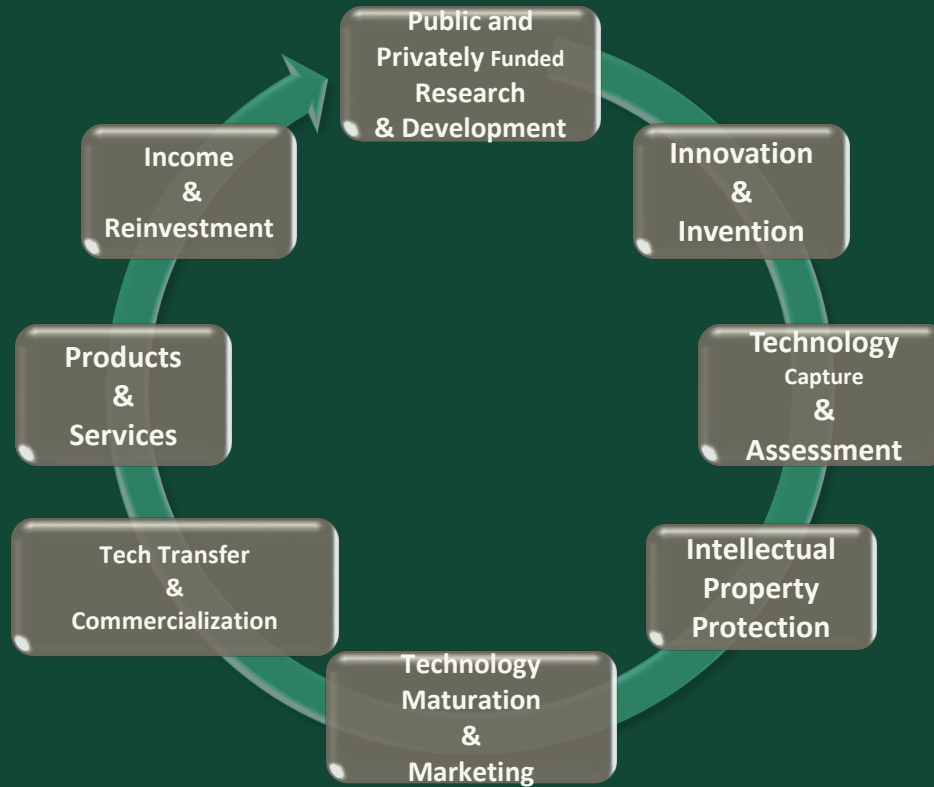
Active U.S. patents held by OHIO researchers, and 158 active issued non-U.S. patents. We have a successful track record of commercializing technologies.

<https://www.ohio.edu/ohio-facts>

August 12, 2024



# Innovation & Commercialization Cycle







# NAZARBAYEV UNIVERSITY

Chet Jablonski

Vice Provost for Research

Daniya Yekibayeva

Senior Manager, Office of Industry  
Engagement and Commercialization



- Research and Commercialization at Nazarbayev University

# Nazarbayev University

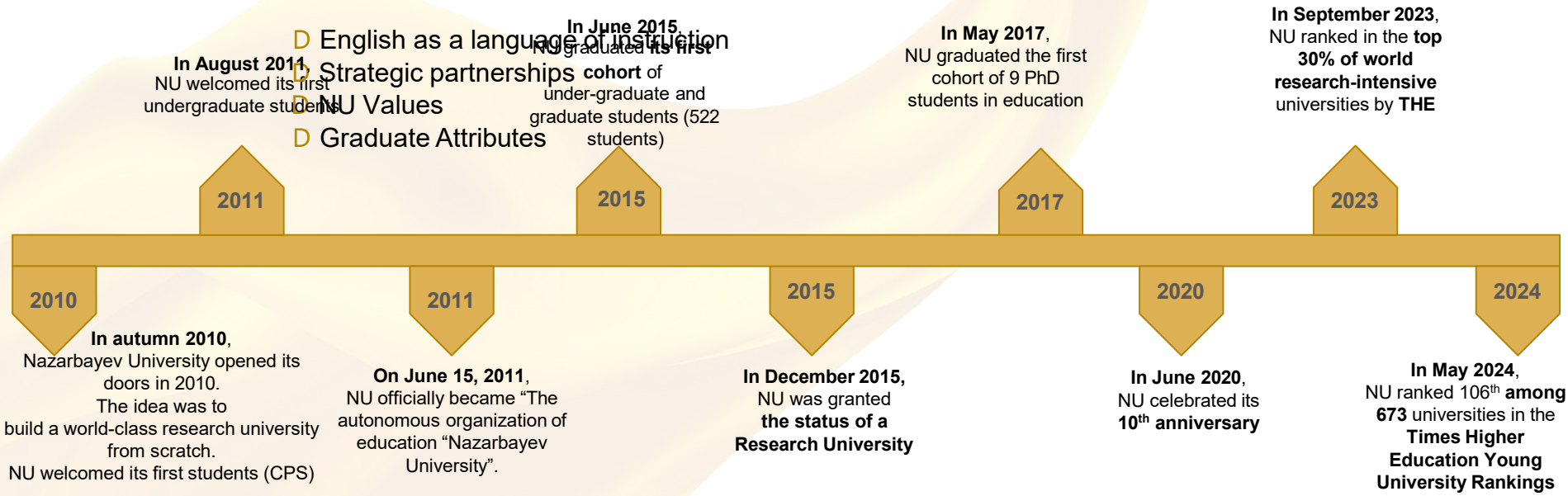
Chet Jablonski, Vice Provost Research  
Daniya Yekibayeva, Office of Commercialization



## Key Enabling Factors & Milestones

- D NU Law
- D Meritocracy
- D Academic integrity and transparency
- D Integration of teaching and research

- D English as a language of instruction
- D Strategic partnerships
- D NU Values
- D Graduate Attributes





## NU - Five Mandates



**EDUCATIONAL  
REFORM LEADERSHIP**



**ACADEMIC EXCELLENCE**



**RESEARCH EXCELLENCE**



**CREATING A MODEL  
FOR HEALTHCARE  
SERVICES**



**INNOVATION AND  
TRANSLATING RESEARCH  
INTO PRODUCTION**

# NU Schools and Key Numbers

 <p><b>PREPARATORY SCHOOL</b></p> <p>UCL, University of Warwick</p>	 <p><b>SCHOOL OF MINING AND GEOSCIENCES</b></p> <p>Colorado School of Mines</p>	 <p><b>SCHOOL OF SCIENCES AND HUMANITIES</b></p> <p>University of Wisconsin-Madison</p>	 <p><b>SCHOOL OF ENGINEERING AND DIGITAL SCIENCES</b></p>	 <p><b>GRADUATE SCHOOL OF EDUCATION</b></p> <p>University of Cambridge, University of Pennsylvania</p>	 <p><b>GRADUATE SCHOOL OF BUSINESS</b></p> <p>Duke University, Fuqua School of Business</p>	 <p><b>GRADUATE SCHOOL OF PUBLIC POLICY</b></p> <p>National University of Singapore, Lee Kuan Yew School of Public Policy</p>	 <p><b>SCHOOL OF MEDICINE</b></p> <p>University of Pittsburgh</p>
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## 83 ACADEMIC PROGRAMS

- Undergraduate – 22
- Masters including MD – 30
- PhD – 18
- Preparatory programs – 2
- Residency - 11

## 7,700 about STUDENTS

- Undergraduate – 4790
- Masters – 1086
- MD – 96
- PhD – 407
- Preparatory programs – 647
- Residency – 63

## 292 INTERNATIONAL STUDENTS

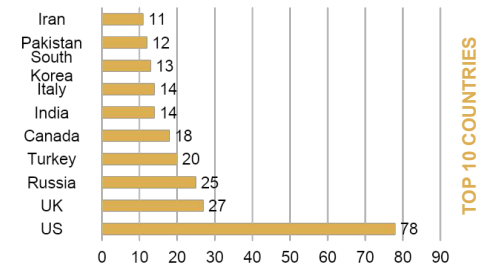
from 32 countries

## 10,292 ALUMNI

## 543 FACULTY

68.3% - international from 58 countries

June 2024 data





# World University Rankings



NU has been ranked in the top 30% of international research universities and 106th among young universities in the Times Higher Education (THE) World University Rankings 2024.

## The WUR 2024: NU ranking among the CIS universities

Top 14 CIS Institutions	2024 Rank	Country
1. Lomonosov Moscow State University	95	Russia
2. Moscow Institute of Physics and Technology (MIPT)	201-250	Russia
3. Peter the Great St.Petersburg Polytechnic University	351-400	Russia
4. HSE University	401-500	Russia
5. National Research Nuclear University MEPhI	401-500	Russia
6. Bauman Moscow State Technical University	401-500	Russia
<b>7. Nazarbayev University</b>	<b>501-600</b>	<b>Kazakhstan</b>
8. Tomsk State University	501-600	Russia
9. ITMO University	601-800	Russia
10. National University of Science and Technology (MISIS)	601-800	Russia
11. Novosibirsk State University	601-800	Russia
12. RUDN University	601-800	Russia
13. Saint-Petersburg Mining University	601-800	Russia
14. South Ural State University	601-800	Russia

## NU rank among AUA Universities

AUA Universities	WUR 2024 Rank	Country
Tsinghua University	12	China
Peking University	14	China
National University of Singapore	19	Singapore
The University of Tokyo	29	Japan
Seoul National University	62	South Korea
The Hong Kong University of Science and Technology	64	Hong Kong
University of Malaya	251-300	Malaysia
United Arab Emirates University	301-350	UAE
King Saud University	401-500	Saudi Arabia
<b>Nazarbayev University*</b>	<b>501-600</b>	<b>Kazakhstan</b>
Chulalongkorn University	601-800	Thailand
University of Indonesia	801-1000	Indonesia
University of Colombo	1001-1200	Sri Lanka
Indian Institute of Technology Bombay	n/r	India
University of Yangon	n/r	Myanmar

## External Evaluation & International Accreditation



**Graduate School of Public Policy** received accreditation from the European Association for Public Administration Accreditation (EAPAA) and the Network of Schools of Public Policy, Affairs, and Administration (NASPAA).



NU has successfully passed an external institutional evaluation by the European University Association (EUA) Institutional Evaluation Programm (IEP).



**Graduate School of Business** earned Prestigious AMBA & Business Graduates Association (BGA) Accreditation.



**School of Medicine** received full international accreditation for its Doctor of Medicine (MD) program from the Eurasian Centre for Accreditation and Quality Assurance in Higher Education and Health Care (ECAQA), recognized by the World Federation for Medical Education (WFME).



**Center for Preparatory Studies** received accreditation from the British Association of Lecturers in English for Academic Purposes (BALEAP).



NU is **participating** in the International Quality Review (IQR) by the Quality Assurance Agency for Higher Education (QAA, UK).

# Student Mobility

## SUMMER SCHOOLS (online)

- ✓ Renmin University of China NU Youth Leadership (2022)
- ✓ Shanghai Jiao Tong University (2021-2022)
- ✓ Summer School in Russian and Eurasian Studies (2021-2022)
- ✓ Tsinghua Global Eurasian Culture Immersion Series (2021)
- ✓ UFMG: Federal University of Minas Gerais (2021-2022)

## 2013-2023

<b>1591</b>	NU students have had study abroad experience since 2013
<b>496</b>	International students visited NU for cultural summer schools since 2015
<b>115</b>	NU students have attended cultural summer schools abroad since 2016

## MOBILITY PARTNER INSTITUTIONS

### Modules

The University of Cambridge  
The University of Pennsylvania  
Fuqua School of Business, Duke University  
Lee Kuan Yew School of Public Policy, National University of Singapore  
The University of Pittsburgh  
Colorado School of Mines

### Exchange/Erasmus+

Humboldt University of Berlin  
Renmin University of China  
KDI School of Public Policy and Management  
Lee Kuan Yew School of Public Policy, National University of Singapore  
Tsukuba University  
Dortmund University of Applied Sciences and Arts  
Lodz University of Technology  
Freie University of Berlin  
Eberhard Karls University of Tübingen  
Pavia University  
Tsinghua University  
University of Hong Kong  
University of Stavanger  
Ulsan National Institute of Science and Technology  
ADA University  
Koç University  
Sabancı University  
University of Toronto  
Friedrich Schiller University Jena  
Lorraine University  
Grenoble INP – UGA  
Universiti Malaya



# NU International MoU Geography 2024

## 10 New Countries in 2023:

- Azerbaijan
- Canada
- France
- Malaysia
- Morocco
- Netherlands
- South Korea
- Turkey
- UAE
- Uzbekistan

## 2 New Countries in 2024:

- Switzerland
- Brazil



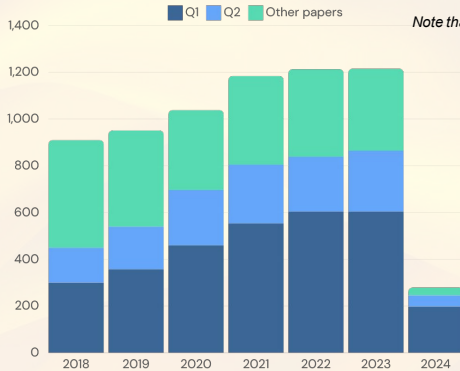
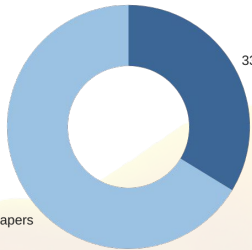
# Research: NU on its Way to Become a World-Class Research University

Since 2011:

- **8400+** publications
- **360+** research projects
- **270** world-class laboratories

## Publications in Q1 over years

As of today, NU has published a remarkable total of **3,671 papers in Q1 journals** (recognized as the top 25% of prestigious journals according to Scopus), accounting for nearly **one-third** of all Q1 research papers produced by all Kazakhstani institutions during the period 2011-2023 which is 10,896 publications. This highlights the significant role played by NU in advancing scholarly endeavors in Kazakhstan.

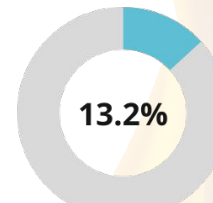


*Note that data for 2023 and 2024 year is incomplete and is subject to change.*

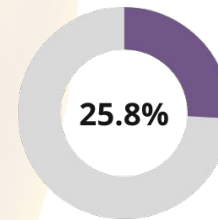
## NU publications in Q1-Q2 journal quartiles (top 50%)

In 2018, the proportion of research papers published in high-impact journals—categorized as Quartile 1 (Q1) and Quartile 2 (Q2)—stood at 49% (Q1 – 33%, and Q2 – 16%). By the end of 2023, the share of papers published in Q1 and Q2 journals increased to 72% (Q1 – 50%, and Q2 – 22%), demonstrating a substantial enhancement in the quality and impact of the research outputs.

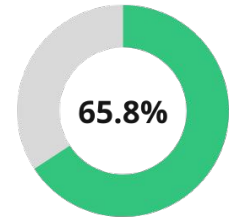
## RESEARCH PUBLICATIONS PERFORMANCE INDICATORS 2018-2024



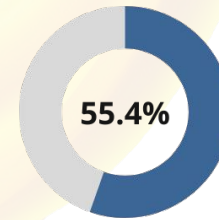
Publications in top 10% most cited Worldwide (field-weighted, %)



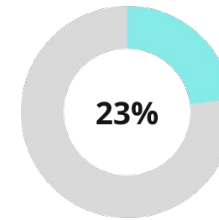
Publications in top 10% journals by CiteScore Percentile



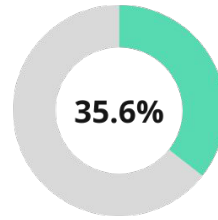
Publications co-authored with Institutions in other countries/regions



Share of publications in Q1 Journals by CiteScore Percentile



Publications co-authored with NU students



Publications addressing UN Sustainable Development Goals

# RESEARCH COMMERCIALIZATION

# RESEARCH COMMERCIALIZATION

## Innovation cluster of Nazarbayev University: OIEC and NURIS

NU established the Innovation cluster where professors and students have an opportunity to commercialize their research findings and cooperate with business. In support of innovation and commercialization agenda NU has also developed an Innovation and Commercialization Cluster including a Office of Industry Engagement and NURIS PI a subsidiary organization with the goal is to organize startup support programs.

## OIEC: Office of Industry Engagement and Commercialization

**The Office helps** projects with high commercial potential to reach the next stages of development, prototype creation, patenting, or pilot production, as well as management of intellectual property rights and entering the market.

In Kazakhstan, the Office has unique expertise in Intellectual Property (IP) management and provides relevant services such as patent search, trademark registration, and more.

# RESEARCH COMMERCIALIZATION

## Office of Industry Engagement and Commercialization

Since 2014, NU has funded **34 scientific projects with commercial potential**, and as a result of the projects, **30 patents have** been received and **6 license** agreements with companies have been concluded and **income** of companies from the use of **intellectual property** created on the basis of the university amounted to **85.3 million** tenge.

During the period of operation of the Office, 203 patent applications were filed, 135 patents were received, including 21 international and 114 Kazakh patents.

Nazarbayev University has gained solid experience in building cooperation with industry. More than 15 projects (2015-2023) accomplished in different areas as power generation, oil and gas, robotics, geology, and other with total budget about 1.9 billion tenge with companies such ERG, ArcelorMittal Temirtau, Karachaganak Petroleum, Samruk-Energy, VIST Asia and KAMAZ, Petrofac LTD and other.

# RESEARCH COMMERCIALIZATION

## Commercialization projects: examples of licensing agreements

**EGISTIC** – project which developed of an information and analytical system for monitoring crop areas using remote sensing technologies and precision farming. Currently successful company operating in the market. Website of the company - <https://egistic.kz/>. Started as a commercialization project at the Office, after joined incubation and acceleration programs of NURIS, raised several state and private grants.

**NAR** - a domestic food product that strengthens the immune system with unique strains of microorganisms isolated from national medicinal drinks (kumys, shubat, ayran), which have a complex of antigenotoxic, probiotic, and antioxidant properties. In collaboration with local food company “Rodina” this product has been produced and presented at the local shops.

**Saumal** - sublimated mare's milk, dietary supplement made from dried mare's milk (saumal), vegetable and metabiotic ingredients. The product is produced and to be distributed through local pharmaceutical companies.



# RESEARCH COMMERCIALIZATION

## Commercialization projects: examples of contract research

**Vist Asia/Kamaz** – a project to create a robotic vehicle based on a KAMAZ chassis with its further demonstration at the test site and further adaptation for use in various industries. As a result of the project a machine vision module with the functionality of recognizing objects: humans, cars and road signs has been developed as well as a trajectory planning module for autonomous movement of a car to a given target position with a certain orientation with the functionality of avoiding obstacles.

**ArcelorMittal Temirtau (currently QARMET)** – a project for conducting analysis of waste (slag) of converter production dumps for the development of new materials and development of 4 application protocols to use stabilized BOF (basic oxygen furnace) slags (snow barrier, roadway abrasion, asphalt concrete, and railway ballast).

**Petrofac** – a project on investigation interaction of the buried pipeline with soil for the development of a new scientific method for conducting a full-scale testing program for the interaction between soil and buried pipelines. The next stage of the projects was a design of a test facility based at the University Technopark and the results of the full-scale testing were used to design a new underground pipeline network for transporting natural sulphur dioxide



An aerial, top-down view of a modern city at night. The scene is dominated by several large, multi-story buildings with illuminated facades and roofs. The buildings are arranged in a somewhat circular or semi-circular pattern around a central area. The streets are lit up, and there are several parking lots with cars. The overall atmosphere is one of a vibrant, modern urban environment. The text "Thank you for your attention!" is overlaid in the upper right quadrant of the image.

Thank you for  
your attention!





Talgat Yelzhassov

Deputy Director of Innovation Development  
Department

Dr. Assel Jexembayeva

Director of Innovation Development  
Department



- The commercialization of the results of scientific and (or) scientific and technical activities of the L.N. Gumilyov Eurasian National University



# NJC L.N. Gumilyov Eurasian National University



By the Decree of the Government of the Republic of Kazakhstan dated September 21, 2022, the L.N. Gumilyov Eurasian National University (hereinafter – ENU) was awarded the status of a research university and the University Development Program until 2026 was approved. One of the objectives of this transformation is to strengthen the interaction of science, production and business.



## Development of university science



The Law of the Republic of Kazakhstan "On Science and Technology Policy" dated July 01, 2024.



The national project "Technological breakthrough through digitalization, science and innovation" (Resolution of the Government of the Republic of Kazakhstan dated October 12, 2021 No. 727).



The concept of science development of the Republic of Kazakhstan for 2022-2026 (Resolution of the Government of the Republic of Kazakhstan dated May 25, 2022 No. 336).



ENU Development Program for 2022-2026 (Resolution of the Government of the Republic of Kazakhstan dated September 21, 2022 No. 715).



## Regulatory framework for commercialization of RNNTD



**The Company's RSSTA Commercialization Policy has been approved (Decision No. 03-23 of the Company's Board of Directors dated March 28, 2023).**



**The RSSTA Commercialization Regulation has been adopted, which defines the procedure for interaction on commercialization issues, including the relationship between ENU and business, through a survey of enterprises**



**DEPARTMENT OF  
INNOVATION  
DEVELOPMENT**

It was created by order of the Chairman of the Board – Rector of the L.N. Gumilyov ENU in December 2022.

**The main purpose** of the Department is to conduct expertise and analysis of projects, identify the most promising projects, conduct market analysis, commercialize the results of scientific and (or) scientific and technical activities (hereinafter - RSSTA), promote projects, attract income from accredited laboratories, develop and promote startups.

**Purposes of the Department**

1. Assistance in commercialization the results of scientific and (or) scientific and technical activities scientists and students of the University.
2. Interaction with business entities for the purpose of commercialization and promotion the results of scientific and (or) scientific and technical activities of the university.
3. Commercialization project management at the stage of technology introduction into production.





## **The innovative process of creating and commercializing RSSTA at ENU includes 8 stages:**

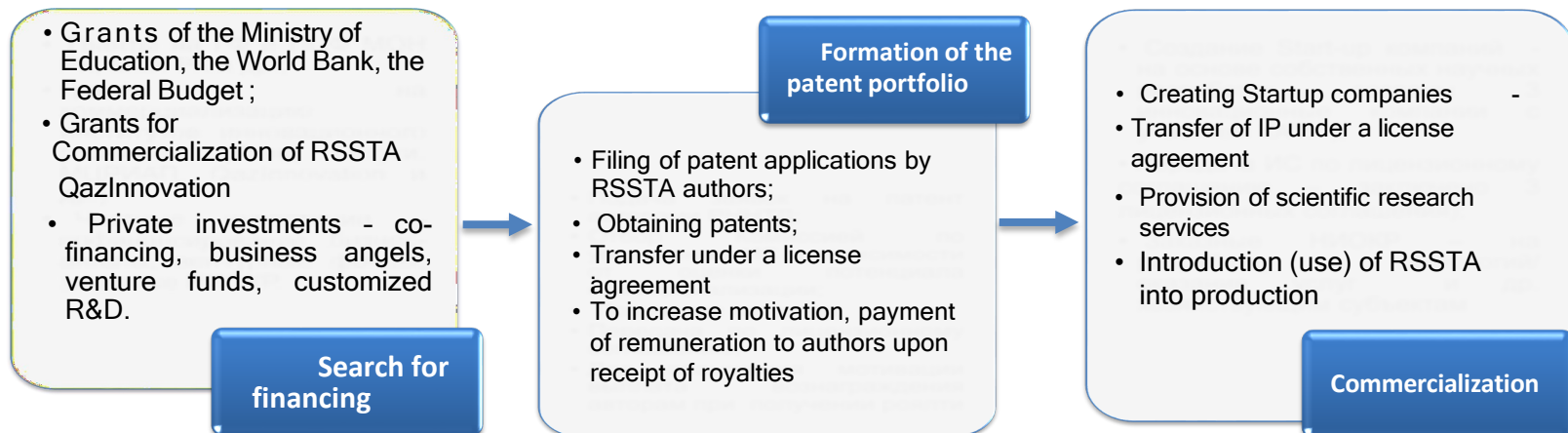
- A scientific discovery within the framework of fundamental science or an invention;;
- Active development of certain aspects of this discovery (invention) within the framework of applied science with a view to its possible subsequent commercialization;
- Registration of intellectual property rights, writing a business plan and forming a team of innovators;
- Creating an experimental model of a new product;
- Search for partners, investors or technology buyers;
- Refinement and creation of an industrial prototype;
- Preparation of an agreement on the terms of the transaction in accordance with the University's policy;
- Bringing technology to the market, generating revenue.

## The mechanism of commercialization of RSSTA

According to Article 42 of the Law of the Republic of Kazakhstan «On Science and Technology Policy», the mechanisms of commercialization of RSSTA are: conclusion of a license agreement and (or) an agreement for the assignment of exclusive rights to the RSSTA;

- 1) creating startup companies;
- 2) implementation (use) of the results of scientific and (or) scientific and technical activities in own production;
- 3) other methods provided for by the legislation of the Republic of Kazakhstan.

## The method for commercialization of RSSTA





## GRANT PROJECTS

commercialization of the RSSTA of the Science Committee, the World Bank  
and JSC "Science Foundation"



**4 grant projects  
totaling 4.7 billion  
tenge**

The World Bank grant is "Creation of an advanced technological Research Center "Innovative construction technologies" in the amount of 247 million tenge.

Grant of JSC "Science Foundation" - "Creation of production of nanocomposite material for thermoelectric modules of sodium-ion batteries" in the amount of 200 million tenge.

The grant of JSC "Science Foundation" is "Modification of polymer cable insulation in a protective environment at the electron accelerator ELV-4" (PYAT) in the amount of KZT 318.6 million.

The grant of the Committee of Science is "Creation of a construction and technical engineering center for the provision of a full cycle of accredited services to the construction, road construction sector." The project amount is 4.0 billion tenge.



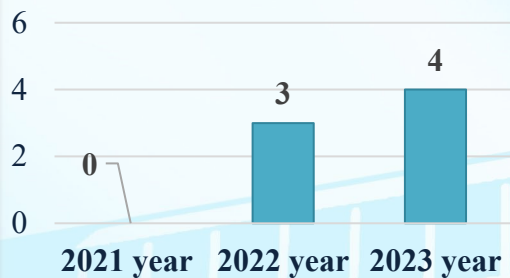


## GRANT PROJECTS On the commercialization of RSSTA



### The «Commercialization» block

*The number of projects on commercialization*

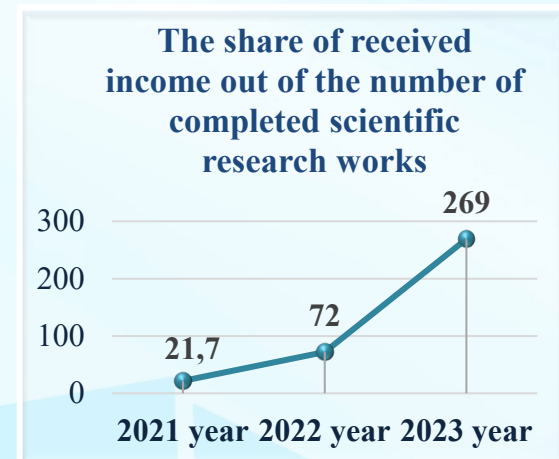
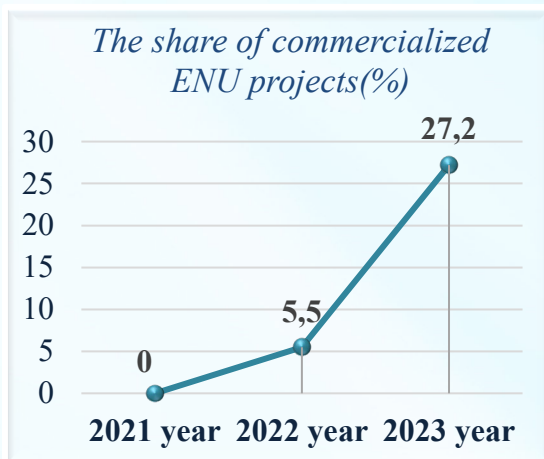


Currently, ENU is implementing 4 projects on the commercialization of RSSTA for a total amount of 4.8 billion tenge. Compared to 2021, the growth was 4 times.

The share of income received from scientific activities, innovative developments and commercialized projects in 2023 amounted to 320.8 million tenge (725,882 thousand US dollars)



## The share of commercialized projects and the amount of revenue received from the total number of completed research projects



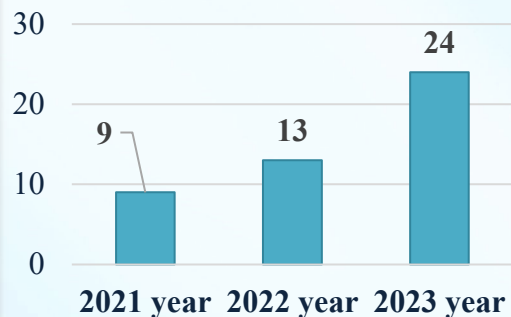
In 2023, the share of commercialized projects from the total number of completed applied research increased **by almost 5 times compared to 2022.**

The growth in revenue in 2023 amounted to 269.5 million tenge (610,000 thousand US dollars), and in comparison with:

- 2022 increased **by almost 4 times;**
- 2021 increased **by almost 12 times.**



### Number of patents



In 2023, 24 patents were received (plan 17 units).  
The patent for a utility model is 15 units.  
The patent for the invention is 9 units.

### The number of received security documents



In 2023, 178 security documents were received (plan 112 units).  
Patents – 24 units  
Copyright certificates – 154

### The number of acts introduced into production (unit.)



The number of acts introduced into production :  
2023 year – 12 units,  
2022 year – 9 units,  
2021 year – 28 units,  
2020 year – 5 units



## The number of startups being implemented



### The number of startups being implemented



In 2023, 8 startup projects were created

Within the period of 2020 – 2023 33 startups were created

2020 year - 12 units

2021 year – 6 units

2022 year – 7 units

2023 year – 8 units

**Overall – 33 units**

*In addition, as part of the acceleration carried out on the basis of the Business Incubator, university employees created 6 startups that won the Jean Asu grant.*



## Mini-production for the production of innovative products



7 mini-productions have been created



In 2023 2 mini-productions were launched:

For the production of radiation-modified cable (with Kazelectromash LLP)

For the assembly of 3D printers in the construction, space and information industries (with SpaceLab LLP)

In 2022 5 mini-productions were launched:

Radiation treatment of materials and products

Thermal insulation material (Eco-resin)

Waterproofing material (Bestisol)

Radiation-crosslinked superabsorbents (Betisorb)

Sterile analytical filters





## The work carried out on the commercialization of RNNTD



### The work carried out

### Results

6 laboratories are accredited

A grant from the Science Committee in the amount of 4.0 billion tenge was won, orders for the provision of services in the amount of 33.0 million tenge were received.

The Jean Asu grant was introduced for the first time In total, 12 grants were allocated in the amount of 62.0 million tenge (2022-2023).

A grant from the World Bank (Amangeldy N.) was won. in the amount of 70.0 million tenge.

Funds have been allocated for the purchase of scientific equipment of 703.0 million tenge (FTF, FEN, NPC ENU-lab, INHT).

The number of publications of the Q1-2 article has been increased by 1.5 times, a scientific and technical base has been created for submitting 5 applications for GW and 1 PCF grant has been received.





## The work carried out on commercialization RNTD of the Company



### The work carried out

### Results

Cooperation with 6 large organizations has been established.

A mini-production has been opened in cooperation with Space Lab LLP for the assembly of 3D printers in the construction, space and information industries.

A number of significant events and exhibitions were held (PechaKucha, "Science and Business" (Al-Farabi Kazakh National University), an exhibition with the participation of Deputy PM and Minister of Internal Affairs of the Republic of Kazakhstan in the Shabyt Palace, a press tour, etc.).

As part of the events, a search was carried out for partners to co-finance the submitted RSSTA commercialization projects.

A new mini-production facility for the production of radiation-modified cable has been opened on the basis of PYAT JSC.

The first batch of products was shipped to the Republic of Uzbekistan, in the amount of \$ 28,000 thousand, and an agreement was signed with ProfLand RT LLP in the amount of 50.0 million tenge.



# Construction of the ENU Technopark



The building of the technopark of road construction materials and technologies «**ENU-QURYLYS**»

Implementation of the "Creation of a construction and technical engineering center for the provision of a full cycle of accredited services to the construction, road construction sector of the Republic of Kazakhstan" in the amount of 4 billion tenge.

The total area is 2000 m2

The year of implementation is 2024.



## A Consortium has been created



JSC Kazakh Scientific Research and Design Institute of Construction and Architecture



Tokyo University (Japan)



JSC D. Serikbayev East Kazakhstan Technical University

## Our partners



Warwick University (UK)



University of West England (UK)



Warsaw University of Technology (Poland)

The idea of the Engineering Center is a production and cooperation function, one of its main tasks of which is to stimulate innovation activity, where small and medium-sized businesses (residents) will be located a business incubator, a technology commercialization (transfer) center, an office with equipment for prototyping and providing other services (spin-offs, startups).





NJSC "L. N. Gumilyov Eurasian  
National University"

**BR21882278 "ESTABLISHMENT OF THE ENU-  
QURYLYS CONSTRUCTION AND TECHNICAL  
ENGINEERING CENTRE TO PROVIDE A FULL  
CYCLE OF ACCREDITED SERVICES OF  
CONSTRUCTION, ROAD CONSTRUCTION SECTOR  
OF THE REPUBLIC OF KAZAKHSTAN"**



Astana 2024

## ENU ENGINEERING CENTRE - QURYLYS AREAS OF ACTIVITY:



### **CONSTRUCTION INDUSTRY DEVELOPMENT**

Development and launch of new products, innovative of technologies in the business sector on request



### **ACCREDITED SERVICE PROVISION**

On testing of road, building materials.  
Accredited 5 laboratories, more than 150 types of tests



### **ROAD DEVELOPMENT**

Development and implementation of new knowledge-intensive  
Targeted materials and technologies



## SUPERPAVE TECHNOLOGY (SUPERPAVE)

**Idea:** Development of Superpave asphalt pavements resistant to rutting, low-temperature cracking, fatigue stretching, taking into account climatic conditions of a particular region.

**Relevance:** Relevance: Kazakhstan has more than 25 thousand km of republican motorways. destination. The constructed roads do not meet the warranty periods of operation.

Complaints about the poor quality of new highways, road repairs.





## **SUPERPAVE TECHNOLOGY (SUPERPAVE)**

### **- ENSURES IMPROVED PERFORMANCE OF ROAD SURFACES**

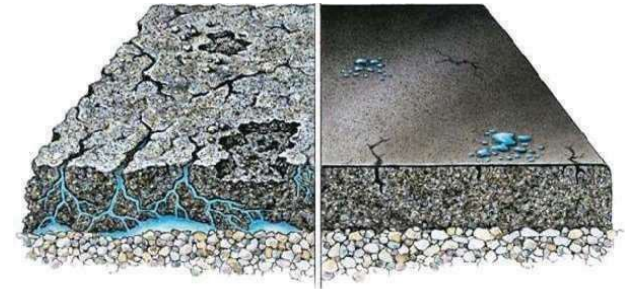
#### **Features and advantages**

- Thanks to the specially developed PG grade scale, an individual, precise laboratory selection of asphalt mixes is ensured
- Climatic conditions of motorway operation, temperature changes are taken into account
- Traffic flow, loads
- Solving the problems of rutting, resistance of asphalt concrete to fatigue and low-temperature cracking.
- Matching price, quality to market requirements according to the newly developed Superpave standards.



**ORDINARY ASPHALT**

**SUPERASPHALT**



#### **CO-OPERATION FORMAT:**

- Technology realisation - assignment of the right to sell production
- Co-production
- Unique distributor
- Consortium for full statewide technology adoption.

## SUPER ASPHALT TECHNOLOGY. DEVELOPMENT OF MINERAL POWDER FOR ASPHALT CONCRETE ON THE BASIS OF BASALT INSULATION WASTES

**Idea:** Development of mineral powder for asphalt concrete "ECO-ROAD PRODUCT" on the basis of wastes from basalt mineral insulation production

**Application:** Road construction

**Relevance:** High consumption of imported mineral additives to improve the properties of asphalt concrete mixes, lack of new Kazakhstani road additives new Kazakhstani road additives affordably priced



Ordinary mineral powder

Developed mineral powder



Improved adhesion and interaction with asphalt concrete mix





## MINERAL POWDER "ECO ROAD PRODUCT" FOR ASPHALT CONCRETE BASED ON BASALT INSULATION WASTE

### Advantages of technology:

- Improved technical characteristics of asphalt concrete
- Eco-efficient product from basalt insulation waste
- Product patent
- No analogues, Kazakhstan production

### Collaboration Format:

- Technology realisation - assignment of the right to sell production
- Co-production
- Unique distributor



## DEVELOPMENT OF POLYMER- MODIFIED TECHNOLOGY BINDER MATERIAL (POLYMER-BITUMEN)

The purpose of this study is to develop technologies for polymer bitumen production using domestic materials to improve the performance characteristics of bitumen



Polymer producers in the role of raw materials

Company Neftekhim LTD LLP (Pavlodar)KPI

LLP (Atyrau)

### ADVANTAGES OF POLYMER BITUMEN:

- Improved mechanical properties (strength, fatigue resistance)
- Increased temperature resistance (stability at high temperatures, flexibility at low temperatures)
- Improved adhesion and bonding
- Improved resistance to water and chemical attack





## ECO-PANELS - AN INNOVATIVE SOLUTION FOR THE CONSTRUCTION INDUSTRY

**Idea:** Production of eco-panels for construction and furniture production

**Application:** Construction industry; cladding works; flooring, OSB insulation

**Relevance:** Continuous and significant price increases for chipboard. High demand in construction, furniture production. The need for import substitution of products.



### Market demand

World market - 135 million m<sup>3</sup> per year (14.4 billion m<sup>2</sup>)

Kazakhstan market - 173 thousand m<sup>3</sup> per year (17.8 million m<sup>2</sup>)

Uzbekistan and Kyrgyzstan market - 195 thousand m<sup>3</sup> per year (20.06 mln m<sup>2</sup>)



# ECO-PANELS FOR CONSTRUCTION AND FURNITURE PRODUCTION

## Collaboration Format:

- Increased durability
- Resistant to moisture, to burning
- Affordable pricing
- Eco-efficient product.
- Alternative
- Imported chipboard
- Product patent
- Wide sales market

## Cost of production

Eco-panels MDF/OSB 15 mm - 673 tenge per m2  
Import price in RK - 1500 tenge per m2



Utilisation of agricultural waste



Experimental plates

◇  ◇

"CREATION OF AN ENGINEERING  
ENU-QURYLVS CONSTRUCTION-TECHNICAL CENTRE TO  
PROVIDE A FULL CYCLE OF ACCREDITED SERVICES TO THE  
CONSTRUCTION, ROAD BUILDING AND CONSTRUCTION  
SECTOR OF THE REPUBLIC OF KAZAKHSTAN"

AUTHORS OF THE PROJECT:  
A SCIENTIFIC TEAM OF 70 SCIENTISTS

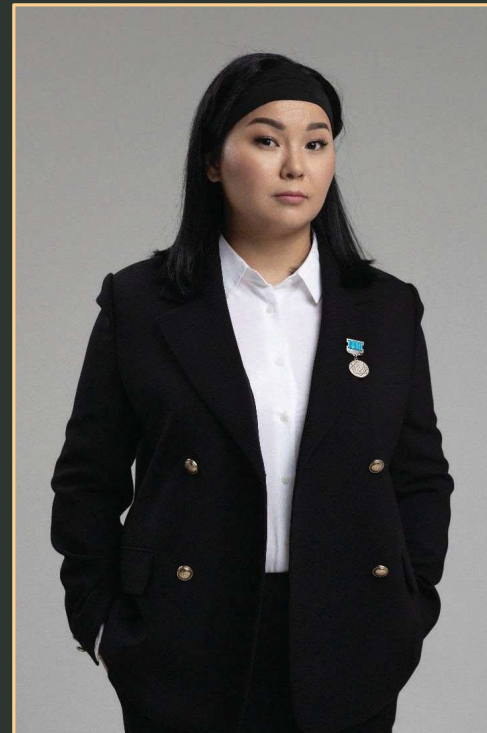
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Q & A





# Office Hour

