

KAZAKHSTAN

SUMMARY REPORT

Navigating
Kazakhstan's
Science and
Technology
Diplomacy
Ecosystem





Country Focused Workshop Series 2025

“Navigating Kazakhstan’s Science & Technology Diplomacy Ecosystem”

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Note

The information presented in this Summary Report is based on the webinars of the Country Focused Workshop Series on Kazakhstan for the Asia-Europe Science and Technology Diplomacy Initiative for Young Professionals. The views and information presented in the Summary Report are based on what was shared by the speakers in the webinars as part of the series, and do not necessarily reflect the official position of the Asia-Europe Foundation (ASEF) or its partners for the project. The author bears full responsibility for the content and contextualisation of information and any potential inaccuracies in the webinar series.



List of Abbreviations

ASEF	Asia-Europe Foundation
CAE	Centres of Academic Excellence
EU	European Union
EU DG RTD	EU Directorate-General for Research and Innovation
GDP	Gross Domestic Product
ISTC	International Science and Technology Centre
NCP	National Contact Points
NU	Nazarbayev University
NURIS	Nazarbayev University Research and Innovation System
R&D	Research and Development
REM	Rare Earth Mineral
S&T	Science and Technology
SCO	Shanghai Cooperation Organisation
SDG	Sustainable Development Goal
SME	Small and Medium-sized Enterprise
UN	United Nations

Country Focused Workshop Series on “Navigating Science & Technology Diplomacy Ecosystems”

Introduction

The [Asia-Europe Foundation \(ASEF\)](#) launched the [Asia-Europe Science & Technology Diplomacy Initiative for Young Professionals](#) in 2024 to serve as a platform for dialogue, knowledge sharing, and collaboration among young academics, diplomats, and professionals involved in the international science, technology and innovation sectors in Asia and Europe – using Science and Technology Diplomacy as a tool to come together to address global challenges.

In 2024, young leaders from 40+ countries contributed to the research titled [Asia-Europe Science & Technology Diplomacy Report](#), which mapped Science and Technology Diplomacy strategies and actions in the two regions.

Based on the report, this [Country Focused Workshop](#) series titled “Navigating Science and Technology Diplomacy Ecosystems” in 2025 highlighted four (4) selected Asian countries’ diverse Science and Technology Diplomacy approaches, their objectives, and how international partners can engage and collaborate with them.

Each country was introduced in a three (3) session-long workshop series as follows:

Session 1: The role of **Government Strategy and Actions** in the science and technology diplomacy ecosystem;

Session 2: The role of **Academia and Research Institutions** in the science and technology diplomacy ecosystem and how to work with them; and

Session 3: The role of **Businesses** in the science and technology diplomacy ecosystem and how to work with them.

This report is a summary of the three webinars conducted as part of the Country Focused Workshop Series on ‘**Navigating Kazakhstan’s Science and Technology Diplomacy Ecosystem**’ which took place between 3-17 June 2025 and organised in partnership with the [National Center for Higher Education Development of the Ministry of Science and Higher Education of the Republic of Kazakhstan](#) and [Nazarbayev University](#).

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Navigating **Kazakhstan's** Science and Technology Diplomacy Ecosystem

1. The Role of Government Strategy and Actions

The first session of the Country-Focused Workshop Series on Kazakhstan took place on 3 June 2025. The session was opened by Ambassador Beata Stoczyńska, Executive Director of the Asia-Europe Foundation (ASEF), and Ambassador Askar Kuttykadam, ASEF Governor for Kazakhstan and Ambassador of the Republic of Kazakhstan to the Republic of Singapore, the Commonwealth of Australia and New Zealand. In their welcome remarks, they underscored Kazakhstan's growing role in science and technology diplomacy. Ambassador Stoczyńska highlighted the country's bold strides through innovative policies, international collaboration, and a clear vision for economic modernisation, positioning Kazakhstan as an emerging innovation hub in Central Asia. Ambassador Kuttykadam described science and technology diplomacy as a vital instrument of public diplomacy and soft power, advancing Kazakhstan's political and economic interests abroad.

Following the welcome remarks, **Dr Aliya Sembayeva**, Deputy Chair of the Science Fund of the Ministry of Science and Higher Education and National Coordinator of EU Framework Programmes for Science and Innovation in Kazakhstan, delivered the keynote presentation. She underscored Kazakhstan's ambitious reforms in science and technology diplomacy, positioning the new national law on Science and Technology Policy as both a domestic transformation and a foundation for international cooperation (Ministry of Justice of the Republic of Kazakhstan, 2024a).

The session transitioned to a panel discussion featuring experts from diverse sectors:

- **Dr Aliya Sembayeva**, Deputy Chair of the Science Fund of the Ministry of Science and Higher Education and National Coordinator of EU Framework Programmes for Science and Innovation in Kazakhstan
- **Mr Farhad SH. Kuanganov**, Director at the National Centre for Higher Education Development
- **Dr Kairat Moldashev**, Associate Professor at Suleyman Demirel University and Member of the National Council for Science and Technology under the President of Kazakhstan
- **Dr Zhanibek Arynov**, Assistant Professor at Nazarbayev University (NU) (Chair).

1.1 Overview of Kazakhstan's role in Science & Technology (S&T) Diplomacy

Kazakhstan adopted the new Law on Science and Technological Development in July 2024 under a presidential mandate, which serves not only as a domestic reform but also as a foundation for strategic international cooperation (Ministry of Justice of the Republic of Kazakhstan, 2024a). Dr Sembayeva highlighted that, unlike the previous reform in 2011, the new law represents a comprehensive shift (Table 1) in Kazakhstan's science policy, aimed at overcoming fragmentation, underfunding, and the weak link between research and economic application. As a result, it established a National Council for Science and Technology under the President to ensure strategic alignment and high-level coordination (Ministry of Justice of the Republic of Kazakhstan, 2024b). In support of Dr Sembayeva's remarks, Mr Kuanganov provided historical and conceptual context for Kazakhstan's science reform,

highlighting the country's deliberate transition from the traditional Soviet-era "mobilisation model" of science to a more modern, market-oriented "open model." Drawing inspiration from Vannevar Bush's 1945 report *Science, the Endless Frontier*, Mr Kuanganov emphasised three pillars of this open model now being implemented in all countries with advanced and innovation-driven science systems, including Kazakhstan: (1) economic incentives for private sector research and development (R&D) investment, (2) strong support for university-based science as a more agile and idea-generating environment, and (3) the replacement of centralised academies with a national scientific council reporting directly to the President.

Dr Sembayeva further mentioned that the new law on science and technological development is an enabling framework designed to empower institutions, support researchers, and link science more closely with the economy and society. **The anticipated outcome** of the law is the development of science and implementation of technological policy for the integration of scientific achievements to ensure the competitiveness of the country, and cross-sectoral coordination of scientific, scientific-technical, and innovation activities.

Table 1. New Law on Science and Technological Policy	
Why it matters	• First major reform since the 2011 law • Responds to systemic fragmentation, underfunding, and misalignment between science and the economy
What changed	• Governance: ◦ Created National Council for Science and Technology under the President • Policy Instruments: ◦ Unified mechanisms for grant funding, programme-targeted financing, and commercialisation • Integration: ◦ Connects science with education, business, and foreign policy through a whole-of-government approach
Strategic objectives	• Increase science intensity of GDP • Reach 50% commercialisation rate of applied projects by 2029 • Build national innovation platforms and attract international partnerships

The law is supported by the Law on Science and Technological Policy (Ministry of Justice of the Republic of Kazakhstan, 2024a), the National Science Development Concept until 2029 (Ministry of Justice of the Republic of Kazakhstan, 2023), and the country's Foreign Policy Concept for 2020–2030 (President of the Republic of Kazakhstan, 2020). Dr Sembayeva emphasised that these national strategies act as instruments for implementing international commitments (Table 2) which positions science diplomacy as a core element of Kazakhstan's soft power and global engagement.

Table 2. Kazakhstan's International Commitments	
Pillar	Instruments & Programmes
Paris Agreement on Climate	A basis for climate science and green technology development

Sustainable Development Goals (SDGs)	Kazakhstan aligns its national innovation and science policy with three key SDGs: SDG 9 (Innovation). Supports investment in resilient infrastructure, promotion of inclusive and sustainable industrialisation, and fostering innovation. SDG 13 (Climate). Calls for urgent action to combat climate change and its impacts. Kazakhstan's commitments include reducing carbon emissions, expanding renewable energy capacity, and integrating climate resilience into national planning and international cooperation frameworks. SDG 17 (Partnerships for the Goals). Emphasises the importance of global partnerships, technology transfer, and capacity building to achieve sustainable development.
UNESCO, OECD STI Policy Dialogues	Regular consultations and Kazakhstan's commitment to international standards
International Cooperation	Horizon Europe, bilateral programmes with Germany, China, and others

During the panel discussion, Dr Moldashev situated science and technology diplomacy within the broader context of Kazakhstan's foreign policy. He emphasised three defining features: 1) the country's multi-vector diplomacy, which is a pragmatic approach allowing it to work with a wide range of international partners, 2) Kazakhstan's longstanding commitment to nuclear non-proliferation, and 3) its focus on internationalisation in higher education and science.

However, Dr Sembayeva stressed that structural change is not sufficient by itself. Hence, the government is investing heavily in human capital, expanding international exposure for researchers, offering thousands of research grants for young scientists, and introducing new forms of social protection, including competitive salaries and achievement-based bonuses. **These efforts are fostering a modern research culture that emphasises collaboration between academia, industry, and society.** At the institutional level, science and technology parks are being established at leading universities, while endowment mechanisms are being promoted to ensure long-term financial sustainability. Table 3 outlines the multifaceted measures introduced to ensure the structural transformation of Kazakhstan's science system is implemented holistically.

Table 3. Concept of Development of Higher Education and Science in Kazakhstan for Science	
	Key actions
New Science and Administration Model	• Development of the new Law on "S&T Policy" • Establishment of the National Council for S&T • Improvement of the role of the Higher Scientific and Technical Commission and National Research Councils • Introduction of foresight mechanisms for science and technology development
Intellectual Capacity	• Implementation of 500 international internships • Allocation of 1,000 grants for young researchers

	• Improved social protection for scientists, including higher salaries and additional payments for scientific degrees and titles • Adjusted scientist-to-engineer working in experimental production (from 25:4:1 to 1:2:4)¹
Infrastructure and Digitalisation	• Development of scientific infrastructure in research institutes and universities • Introduction of a new grant financing model for R&D • Implementation of the Unified Information System of Science of Kazakhstan • Development of a National Index for Scientific Citations in Kazakhstan
Academic Science	• Training of academic personnel and implementation of research-based learning methodologies • Creation of science and technology parks at universities • Formation of endowment funds

1.2 Science Diplomacy in Practice

Kazakhstan's strategic location at the crossroads of Eurasia was presented as a key asset in fostering scientific exchange between East and West, North and South. This creates a natural gateway for international partners seeking to expand cooperation across both Europe and Asia. Dr Sembayeva summarised in her keynote presentation that Kazakhstan is building a globally connected science system, underpinned by political stability and a solid legal framework. Although the government plays a central role in S&T diplomacy, each stakeholder group has a vital role, with business and academia driving project implementation. This specifically can be seen within the **cooperation between industry and academia** through initiatives like industrial hackathons, where over 500 researchers from 10 cities co-develop technical solutions with major industry players such as Kazakhmys, Kazatomprom, Eurasian Resource Group, and KazMunaiGas, whereas Science Fund accelerates winning prototypes into implementation. These hackathons serve as practical models for aligning local innovation with global ESG standards and the SDGs. Mr Kuanganov added during the panel that to stimulate private investment in R&D, **the government introduced a 300% "super deduction" tax incentive**, inspired by the Singaporean government, to encourage both national and foreign investors. This measure opens avenues for international businesses and innovation-driven enterprises to co-invest with Kazakhstani stakeholders, benefit from favourable tax conditions, and jointly scale up applied research and technological development. Currently, approximately 70% of Kazakhstan's science budget is publicly financed, with the remaining 30% contributed by private companies.

During the panel discussion, a follow-up question raised the issue of **centralisation in Kazakhstan's science and policy landscape**, asking whether the government's strong leadership role reflects a

¹ The ratio represents the proportion of scientists: technicians: engineers within experimental production settings. The previous ratio of 25:4:1 reflects a structure heavily weighted toward theoretical research. The adjusted ratio of 1:2:4 places engineers at the centre, supporting a shift toward applied, industrially-oriented innovation.

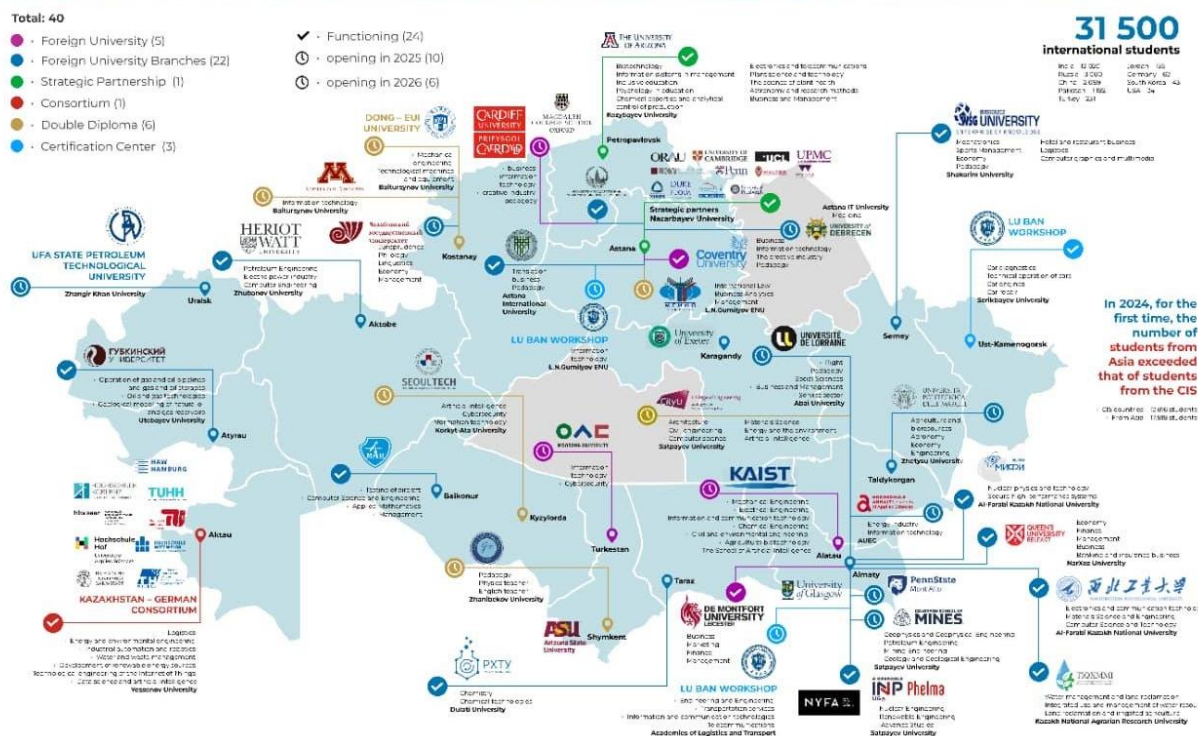
deliberate structural choice. In response, Mr Kuanganov affirmed that centralised governance is a common feature among countries with successful R&D systems, including Singapore, Malaysia, South Korea, and Japan. These countries share several elements such as a strong national council for science and technology, targeted economic incentives for private sector R&D, and robust support for university-based research. Centralisation, he argued, is not a limitation but a strategic tool, especially when paired with policies that promote liberalisation, private initiative, and internationalisation.

In alignment with the UK Royal Society Framework, Science Diplomacy Framework in 2010, **Kazakhstan's integration of science and global relations is exemplified through three frameworks:** Science in Diplomacy (using scientific knowledge to inform foreign policy decisions), Diplomacy for Science (advancing research via global cooperation), and Science for Diplomacy (using science to foster alliances and goodwill) (Royal Society, 2010). Dr Sembayeva and Dr Moldashev illustrated how Kazakhstan is actively engaged in all three dimensions, as detailed in Table 4.

Table 4. Three dimensions of science diplomacy in Kazakhstan	
Dimension	Description
1. Science in Diplomacy	Using science to improve international relations
2. Diplomacy for Science	Promoting international cooperation to support scientific projects
3. Science for Diplomacy	Using science as soft power to achieve diplomatic goals and build goodwill

A key issue raised during the session concerned the disparity in capacity between central institutions in Astana (capital city) and Almaty (financial centre) and regional universities and local administrations. In response, Mr Kuanganov underscored that the new law mandates the creation of regional scientific and technological councils, which are now operational across all regions and are empowered to review and support initiatives from local research and higher education institutions. To further **strengthen regional capacity**, the government is investing in the establishment of Centres of Academic Excellence (CAE) at 20 regional universities, aligned with local economic specialisations. Each centre will receive dedicated funding. Mr Kuanganov also emphasised that international university branches in regional towns of Kazakhstan have an important role in strengthening the capacity of local universities, including those designated as Centres of Academic Excellence. There is a growing interest from international institutions. For example, seven UK universities have already opened or are opening branches, six from Russia, three from South Korea, three from Germany, with more expected from Japan, China, the U.S., and Canada, as showcased in Figure 1.

Figure 1. Map of International University Branches in Kazakhstan (Ministry of Science and Higher Education of the Republic of Kazakhstan, 2025)



Note. Map of international university branches in Kazakhstan. From "Kazakhstan cements status as regional academic hub," by Ministry of Science and Higher Education of the Republic of Kazakhstan, 2025, *Astana Times*. <https://astanatimes.com/2025/09/exclusive-kazakhstan-cements-status-as-regional-academic-hub/>

Dr Sembayeva, in her keynote presentation, shared that since the establishment of the National Coordination Centre for Horizon Europe in Kazakhstan by ministerial decree in April 2023, Kazakhstan has made notable **progress in integrating into the EU's research and innovation framework**. By 2024, cooperation deepened through high-level visits, including a mission from the EU Directorate-General for Research and Innovation (EU DG RTD) to Astana. Kazakhstan actively built EU partnerships for National Contact Points (NCPs), initiated proposal preparation for Horizon Europe calls, and facilitated capacity-building workshops for local research institutions. A key milestone was the formal establishment of a regional NCP network, fostering expertise exchange across Central Asia. In 2025, Kazakhstan continued to expand its presence within the Horizon Europe framework. Priority areas include rare earth mineral (REM) mining and processing, agriculture, and sustainable energy.

1.3 Areas for Potential Improvement and Recommendations

While Kazakhstan has made significant progress in reforming its S&T landscape, several structural and systemic challenges continue to limit the pace and depth of transformation. One of the major challenges is the low level of private sector engagement in research and development. Currently, over 70% of Kazakhstan's science budget is financed by the government, while only 30% comes from private sources. In more mature innovation systems, this ratio is typically reversed. Mr Kuanganov

stressed that the low private sector demand for R&D not only limits co-investment and commercialisation but also contributes to issues like low researcher salaries and weak institutional incentives for innovation, which was raised by Dr Moldashev.

Human capital is another critical constraint. Dr Sembayeva urged that Kazakhstan faces a shortage of skilled scientists, engineers, and research managers, with only around 18,000 active researchers in the country. This limited workforce affects not only research output, but also the implementation of collaborative initiatives between academia and industry. In addition, language remains a barrier to full global integration. **Many researchers lack English language proficiency required to apply for international grants or effectively collaborate with foreign peers.** Mr Kuanganov added that Kazakhstan must invest in human resources by expanding training opportunities, increasing participation in international programmes, and attracting global partners to universities and policy-making bodies, thereby strengthening the overall capacity of the national science system.

Dr Moldashev underscored that the Ministry of Science and Higher Education cannot advance Kazakhstan's science diplomacy agenda alone. A more coordinated, cross-ministerial approach is needed, particularly to engage the academic diaspora, many of whom are now citizens of other countries. He also added that while universities in the capital cities lead in education, regional institutions, particularly in East Kazakhstan and Karaganda, often have stronger ties with local industry. These established relationships offer a valuable foundation for deepening science-industry collaboration at the regional level. He further suggested expanding the scope of "science in diplomacy" to move beyond political science and international relations. This would involve building stronger institutional links between the Ministry of Foreign Affairs and a broader range of scientific institutions, including those in the natural sciences, so that evidence-based research can more directly inform Kazakhstan's international negotiations and global engagement.

However, it is still too early to fully assess the effectiveness of Kazakhstan's science and technology diplomacy, largely due to time constraints and the evolving maturity of the national ecosystem. As Mr Kuanganov observed, the transition to an open, innovation-oriented science model had been discussed for over 15 years but met persistent resistance from entrenched institutional interests. These reforms were only formally adopted under the current presidential administration, marking a significant political shift. Dr Moldashev added that Kazakhstan's current approach reflects the reality of many developing countries. While there may be thematic priorities, the engagement with international science partners remains largely broad and exploratory. *"So this kind of very focused [approach] for Kazakhstan, when now we are just building capacity and trying to engage with partners—I think it's true for many developing countries,"* he remarked. This underscores the importance of flexible, inclusive diplomacy that allows space for experimentation, learning, and gradual specialisation.

1.4 Summary

Kazakhstan is positioning science diplomacy as a tool of soft power, aligning it with national priorities like economic modernisation, sustainable development, and global partnerships. The panellists reflected on Kazakhstan's transition toward an open, globally connected science ecosystem, emphasising strategic reforms, deeper international engagement, and the development of intermediary institutions to bridge research and diplomacy. The dialogue underscored a shared commitment to building long-term partnerships, strengthening regional innovation capacity, and positioning Kazakhstan as a trusted contributor to global scientific collaboration.

Science diplomacy is already being put into practice through industrial hackathons, public-private partnerships, and new international research collaborations. They also provide avenues for external stakeholders to contribute expertise, investment, and policy learning, while benefitting from Kazakhstan's innovation ecosystem and regional networks. Despite this momentum, challenges remain, especially low private R&D investment, limited researcher capacity, and weak global integration. To address these gaps, the government is expanding capacity building and international exposure while building regional CAEs and national mechanisms to link science with diplomacy. While the national system is still maturing, these foundational reforms signal a clear shift towards a more globally connected, innovation-driven model.

2. The Role of Academia and Research Institutions

The second session of the Country-Focused Workshop Series on Kazakhstan took place on 10 June 2025. It explored the role of academia and research institutions in the science and technology diplomacy ecosystem. The session featured a keynote address by **Dr Khanat Kassenov**, Vice-Rector for Academic Affairs at the Academy of Physical Education and Mass Sports in Kazakhstan, who explored the role of academic and research institutions as key platforms for advancing regional and international cooperation.

The session was followed by a panel discussion featuring perspectives from:

- **Dr Khanat Kassenov**, Vice-Rector for Academic Affairs at the Academy of Physical Education and Mass Sports
- **Prof Bulat Kenessov**, Director at the Analytical Centre for Scientific and Scientific-Technical Development, National Academy of Sciences of the Republic of Kazakhstan under the President of the Republic of Kazakhstan
- **Dr Assiya Yermukhambetova**, Postdoctoral Scholar at Nazarbayev University
- **Ms Aitzhan Kulumzhanova**, Head of the Internationalisation of Higher Education Office at the National Centre for Higher Education Development under the Ministry of Science and Higher Education of the Republic of Kazakhstan (Chair).

2.1 Overview of the Role of Academia in S&T Diplomacy in Kazakhstan

Academic research has become one of Kazakhstan’s most credible instruments of international cooperation and diplomacy. In his keynote presentation, Dr Kassenov highlighted that Kazakhstan’s universities and research institutions are shifting from a primarily domestic focus toward becoming active players in global knowledge ecosystems and critical platforms for policy innovation, foresight and diplomacy. The following table (Table 5), presented by Dr Kassenov, outlines the key ways in which Kazakhstan’s academic institutions are contributing to science diplomacy across multiple dimensions.

Table 5. The key contributions of Kazakhstan’s Academia in Science Diplomacy	
Key Roles	Description and examples
Academic research as a bridge across borders	Institutions: • Nazarbayev University Research and Innovation System (NURIS) is a regional hub for interdisciplinary science entrepreneurship and open innovation. • The future National University of Sport of the Republic of Kazakhstan is launching joint research platforms with European and Asian institutions in areas such as sport medicine, athlete recovery technologies and AI-driven performance analytics. Academic diplomacy:

	- Integration of Kazakhstani researchers into global scientific communities, actively contributing to joint publication and playing key roles in collaborative grant projects. - Informal research networks through bilateral research weeks, thematic workshops, collaborative PhD programs and visiting faculty exchange. Regional relevance: Addressing cross-border challenges. <i>Examples:</i> - Kazakhstan's involvement in regional desertification monitoring, water governance initiatives in the Aral Sea basin. - Joint research programmes with China, Europe, and international agencies help build capacity in climate modelling, biosecurity, and disaster risk reduction.
Capacity Building and Human Capital	Universities serve as neutral and credible arenas for evidence-based policy dialogue, bringing together researchers, policymakers, civil society, and international stakeholders.
Universities as platforms for policy dialogue	- Academic institutions act as Think Tanks and Knowledge Brokers. <i>Example:</i> Many leading institutions have established policy research centres focused on different priority areas. These centres produce policy briefs and impact assessments using scientific data and interdisciplinary analysis to inform decision-makers and strengthen the legitimacy of national policies. - Academic institutions act as catalysts for intersectoral and intergovernmental collaboration. Through these initiatives, universities act as intermediaries between science and policy, ensuring that decisions at the national and regional levels are grounded in empirical research and global best practices. - Academic institutions offer executive education, training labs, and interdisciplinary master's programmes for civil servants and municipal leaders.

Collaboration has gained momentum in priority sectors aligned with national and global development agendas, including renewable energy, green hydrogen, space technology, satellite analytics, biomedicine, and agrigenomics. Based on the live poll results (see *Appendix B. Table 8. Results from Workshop 2, Question 1.*) showcased to all participants during the panel discussion, **60% of workshop participants** agreed that **conducting collaborative research with regional and global partners is the most important role academia in Kazakhstan can play in advancing science diplomacy**. Echoing this view, Prof Kenessov shared examples of successful international research collaborations, including studies on rocket fuel contamination from Baikonur Cosmodrome and soil clean-up projects using phytoremediation. These partnerships not only addressed unique environmental challenges but also resulted in high-impact publications and PhD training. Prof Kenessov noted that international projects significantly improve research quality and are actively supported by government funding mechanisms requiring global collaboration and publication in high-ranking journals. Dr Yermukhambetova also emphasised that science diplomacy often begins with small-scale research collaborations and

personal connections between researchers. Through these human interactions between scientists, they solve common problems that lay the groundwork for lasting international partnerships.

Based on the live poll results (see Appendix B. Table 9. Results from Workshop 2, Question 2.), 42% of workshop participants agreed that addressing climate change and promoting regional sustainability should be prioritised within Kazakhstan's science diplomacy efforts. Dr Kenessov emphasised **sustainability as a key priority for Kazakhstan's science diplomacy efforts**. He highlighted the need to shift focus beyond profit-driven research towards long-term societal impact in areas such as health, education, and the environment. By aligning scientific efforts with the UN Sustainable Development Goals (SDGs), Kazakhstan can ensure more strategic planning, efficient resource use, and greater overall benefit to society. Dr Yermukhambetova reinforced the importance of prioritising the SDGs within Kazakhstan's science diplomacy agenda. She highlighted promising shifts such as the formation of a parliamentary committee on SDGs and **youth involvement in science-to-policy platforms** like the Senate's Expert Club and Taldau School. These initiatives are fostering early-career researchers' direct engagement in science diplomacy, especially on UN-aligned sustainability issues.

2.2 Areas for Potential Improvement and Recommendations

Prof. Kenessov highlighted, investing in **advanced research infrastructure** is a key opportunity for strengthening Kazakhstan's role in global science diplomacy. As basic research increasingly relies on sophisticated and costly equipment, Kazakhstan faces challenges in accessing the necessary tools to fully participate in the international scientific consortia. The lack of domestic research infrastructure hampers the long-term development of its human capital. Expanding government investment in research infrastructure would increase the country's capacity to contribute to global research efforts equally. Dr Yermukhambetova echoed his points, noting that Kazakhstan's vast geography presents additional logistical challenges. Despite having strong research facilities at institutions like Nazarbayev University and East Kazakhstan Technical University, the country's size and regional spread make it difficult to collect and transport samples efficiently. She reinforced the importance of strategic investment in infrastructure and emphasised that enhanced national and international collaboration can help overcome these barriers.

Dr Kassenov emphasised the need for Kazakhstani universities to adopt an interdisciplinary and internationalised approach to training future scientists who are equipped to contribute to policy. He proposed **embedding science diplomacy and international science policy into university curricula** from the undergraduate level, with dedicated courses and interdisciplinary modules combining science, international relations, and communication. To foster real-world engagement, he recommended expanding dual degrees, specialisations, and mobility programmes that give students hands-on experience in international projects. Institutional support should also be directed toward enabling participation in global conferences, joint publications, and partnerships with foreign embassies and research attachés. He pointed out the **importance of building soft skills** such as intercultural communication, negotiation, science communication, and multilingual proficiency. Finally, he called for strong mentorship models that pair emerging researchers with diplomats, policymakers, or senior international academics.

Prof. Kenessov underscored the importance of **adapting international best practices to Kazakhstan's local context**. He cautioned against the direct application of external policies without proper contextual understanding. He noted that past efforts, such as the implementation of the Bologna Process, encountered challenges not because of the frameworks themselves, but due to limited comprehension and preparation. Effective localisation requires thorough analysis, public awareness, and phased implementation. Without adequate adaptation and capacity-building, even proven international models may fail to achieve intended outcomes.

Dr Kassenov highlighted that Kazakhstan's research sector is still supported primarily by public funding, presenting an **opportunity for private sector investment in Research and Development (R&D)**. Many institutions operate on short-term project grants, restricting long-term planning and sustainable infrastructure development. Dr Yermukhambetova noted that while the country has identified priority SDGs and developed indicators to track progress, a significant challenge remains in the dominance of commercialisation-focused grant schemes. As a result, many research projects addressing SDG-related issues tend to be driven by international partnerships or supported by external agencies. She stressed **the need for a shift in mindset**, recognising that impactful research requires long-term investment rather than short-term outputs.

2.3 Benefits of Kazakhstan's Participation in Global Academic Collaboration

According to the live poll (see *Appendix B. Table 10. Results from Workshop 2, Question 3.*), 42% of workshop participants identified the **exchange of knowledge and innovative practices with international peers as the main benefit of Kazakhstan's participation in international academic cooperation**. Prof. Kenessov underscored that peer review by independent international experts significantly improves the quality, ethics, and public trust in Kazakhstani research. Dr Yermukhambetova agreed, adding that international collaboration also helps address infrastructure gaps and has influenced for instance policy reforms in clinical research through ongoing dialogue between researchers and government. For international partners, engaging with Kazakhstan's academic sector offers the opportunity to tap into a dynamic and evolving research environment that is aligned with global standards, while contributing to capacity building and long-term systemic improvements.

2.4 Summary

Kazakhstan's academic institutions are emerging as key drivers of science diplomacy by acting as platforms for cross-border collaboration, evidence-based policymaking, and human capital development. Universities are increasingly involved in regional and international research addressing shared challenges such as climate change, biosecurity, and sustainable development. Academic diplomacy is further strengthened through joint publications, faculty exchanges, collaborative PhD programmes, and thematic workshops. For international partners and universities, these initiatives present entry points to engage with Kazakhstan's growing academic ecosystem, whether by co-developing research projects, contributing expertise, or hosting joint training programmes with Kazakhstan's regional universities. However, persistent challenges, such as limited access to advanced research infrastructure, short-term funding cycles, and low private sector investment, are hindering long-term research planning and global competitiveness. To overcome these barriers, panellists stressed the need for greater strategic investment in infrastructure, integration of science diplomacy into university curricula, and the promotion of mentorship and mobility programmes.

Kazakhstan's participation in global academic cooperation not only enhances research quality but also promotes the localisation of international best practices, policy reform, and greater alignment with the SDGs. To solidify its growing role in global science diplomacy, Kazakhstan must institutionalise these efforts through long-term political commitment, increased funding, and inclusive international partnerships that support ethical, socially impactful science.

3. The Role of Businesses

The third session of the Country-Focused Workshop Series on Kazakhstan took place on June 17, 2025. It explored how government strategies, business innovation, and academic engagement intersect to strengthen Kazakhstan's science and technology diplomacy ecosystem. The session featured a keynote address by **Dr Darkhan Akhmed-Zaki**, Rector of Mukhtar Auezov South Kazakhstan University, who highlighted the increasingly growing role of universities and businesses alongside government in driving innovation, enabling technology transfer, and deepening international scientific collaboration.

The session was followed by a panel discussion featuring perspectives from:

- **Dr Darkhan Akhmed-Zaki**, Rector at Mukhtar Auezov South Kazakhstan University
- **Mr Ulysse Ouvrieu**, President at GECAU Education
- **Mr Armanbek Omirgali**, Director of R&D, RM and REM, National Atomic Company Kazatomprom JSC
- **Dr Aliya Sembayeva**, Deputy Chair of the Science Fund of the Ministry of Science and Higher Education and National Coordinator of EU Framework Programmes for Science and Innovation in Kazakhstan (Chair).

3.1 Overview of the Role of Businesses in S&T Diplomacy in Kazakhstan

Dr Akhmed-Zaki highlighted that Kazakhstan's private sector is currently emerging as a key player in science and technology diplomacy, transitioning from commercial roles to becoming international partners in collaborative research, innovation alliances, and cross-border technology ventures. He also underscored that Kazakhstan is proactively creating mechanisms to strengthen international science and technology collaboration. Through involvement in Horizon Europe and other initiatives, the country is contributing to joint efforts in critical raw materials, green and digital technologies, and sustainable innovation. This echoes Dr. Sembayeva's keynote presentation in session 1 about Kazakhstan's integration into programmes such as Horizon Europe plays a critical role for expanding private sector participation in international research consortia. Dr Akhmed-Zaki stressed the development of co-founded innovation platforms that **support technology transfer, research mobility, and pilot-scale commercialisation, positioning Kazakhstan as a strategic global partner**. He emphasised that effective collaboration between business, science, and diplomacy in Kazakhstan is increasingly shaped by an enabling legal framework that allows stakeholders to co-design solutions. One of the examples is project-based funding mechanisms, where business partners and researchers jointly identify technological challenges, formulate problem statements, and secure co-financing from government. This mechanism invites international companies to co-invest with Kazakhstani partners, providing a low-risk model for entering the local innovation ecosystem. The following table (Table 6) highlights other examples shared during the keynote presentation and panel discussion.

Table 6. Examples of Cross-Sector Collaboration in Kazakhstan's S&T Diplomacy	
Initiative / Activity	Description
Establishment of a new lab for agriculture	South Kazakhstan University signed a Memorandum of Understanding with Chinese partners to establish a new laboratory focused on agricultural research, aiming to advance technological development and train a new generation of specialists.
Development of industrial Research and Development (R&D) laboratories	South Kazakhstan University is establishing industrial R&D laboratories in partnership with industry to advance technology transfer, support regional startups, and foster international collaboration.
Executive MBA in Sport Management	A new double degree Executive MBA in Sport Management has been developed between the Academy of Physical Education and Mass Sport in Astana and a French institution. This programme aims to train future executive managers in the sports industry, demonstrating how targeted academic-business partnerships can contribute to sector-specific capacity building and economic development.
Industrial PhD programme	Designed to train doctoral candidates capable of addressing applied engineering and technical challenges, while simultaneously preparing scientific personnel to strengthen the integration of science, education, and industry. The programme is expected to grow, with a target to enrol 150 industrial PhD students over the next three years.
R&D collaboration between KATCO JV LLP and Kazatomprom JSC	Kazakhstan's first uranium mine was developed in partnership with French collaborators. KATCO JV LLP was founded in 1996 by the French state-owned company Orano (51%) and Kazakhstani national atomic company Kazatomprom JSC (49%) to develop uranium deposits in the Republic of Kazakhstan. This cross-border scientific cooperation enhanced production efficiency and continues to support joint R&D.

Companies such as Kazatomprom are contributing to global scientific cooperation in areas like low-carbon nuclear technologies. Mr Omirgali underscored the vital role of science and innovation for Kazatomprom in maintaining global leadership in uranium mining, highlighting the company's active collaboration with government bodies, local research institutions, and international universities as a model for effective business–science diplomacy. A notable example of international R&D collaboration is a joint nuclear medicine project involving the University of Nevada, Las Vegas (USA), Sumitomo Corporation (Japan), and Kazakh internal scientific institutions. This initiative aims to develop technology for producing medical radioisotopes, representing a strategic step toward business diversification.

Dr Akhmed-Zaki addressed how Kazakhstan's first nuclear power plant construction can strengthen science and business cooperation. He explained that the initiative is not only a technical project but also a strategic opportunity to prepare a new generation of engineers with specialised nuclear competencies. In recent years, Kazakh universities, in collaboration with international partners, have **redesigned educational programmes to better align with industry needs**, particularly through industrial

PhD programmes. He highlighted ongoing collaborations between Kazakh institutions, such as the Eurasian National University and Kazakh National University and international organisations like the Joint Institute for Nuclear Research in Dubna. These partnerships support training in experimental and theoretical nuclear science. These efforts, Dr Akhmed-Zaki noted, demonstrate the readiness of Kazakhstan's scientific and engineering talent to contribute to the country's nuclear energy ambitions while fostering deeper research-industry linkages.

3.2 Barriers in Advancing Business-Science Diplomacy

Kazakhstan faces several structural, institutional, and capacity-related challenges that limit the effective integration of businesses into science and technology diplomacy efforts. Dr Akhmed-Zaki outlined key challenges in advancing business-science diplomacy in Kazakhstan and highlighted ongoing initiatives aimed at addressing them (Table 7).

Table 7. Key Challenges and Strategic Responses to Strengthen Business-Science Diplomacy in Kazakhstan		
Challenge	Description	Strategic Response
Low level of private sector investment in research and development (R&D). The same challenge was highlighted in Workshop 1.	Only a small share of national research spending comes from industry	Introduction of tax and budget law reforms to incentivise private sector engagement in research activities. Development of trust-based partnerships between businesses and academia.
Weak commercialisation and intellectual property (IP) frameworks	Limited incentives, slow tech transfer, and underdeveloped patent strategies	Strengthening of technology transfer offices, support for academic entrepreneurship, and reform of IP management.
Fragmented coordination among science, diplomacy, and business institutions	Lack of integrated platforms, joint agendas, or liaison mechanisms	Creation of joint governance models, cross-sectoral working groups, and international license structures.

Other barriers to advancing business-science diplomacy in Kazakhstan were identified during the panel discussion. Mr Ouvrieu highlighted the **absence of a formal national science and technology diplomacy strategy**, including the lack of dedicated attachés in embassies, as a fundamental gap. He also pointed to limited financial and infrastructure support for international projects, especially affecting small and medium-sized enterprises (SMEs) and regional universities, as well as an underdeveloped ecosystem for supporting independent scientific NGOs. As highlighted in the first workshop, both Mr Ouvrieu and Dr Akhmed-Zaki underscored **language barriers**, noting that many Kazakhstani teaching staff continue to collaborate primarily with counterparts from former Soviet states due to limited English proficiency. Mr Ouvrieu further stressed the **importance of developing**

robust regulatory frameworks, particularly around IP agreements, to better protect Kazakhstani research in international partnerships. Dr Akhmed-Zaki also pointed out outdated technical infrastructure, particularly in chemical engineering departments, as a constraint on meaningful international collaboration. Strategic partnerships with institutions such as Arizona State University and Chinese universities are beginning to help define the standards required for modernising Kazakhstan's scientific facilities.

3.3 Recommendations and Opportunities for Business-Science Diplomacy

Opportunities for advancing business–science diplomacy in Kazakhstan lie in building trust-based partnerships between academia and industry, strengthening international collaboration, and enhancing **institutional readiness for applied research**. Dr Akhmed-Zaki emphasised that scientific knowledge, particularly in fundamental disciplines, must be effectively translated into technological applications. Businesses are increasingly investing in university-based laboratories, which serve as platforms for applied research and innovation. He also stressed the value of cross-border partnerships, where Kazakhstani scientists collaborate directly with industry and global partners to address shared technological challenges.

Mr Ouvrieu identified several policy-level recommendations to improve Kazakhstan's integration into EU and French science programmes, including simplifying access to initiatives like Horizon Europe via multilingual guidelines and training, boosting R&D funding for SMEs, and increasing investment in joint academia-industry projects. He further highlighted the need for capacity building in English proficiency, project management, and research infrastructure, alongside the creation of EU-Kazakhstan co-development centres. Mr Omirgali pointed out that not all academic institutions are currently prepared to propose projects with tangible outcomes and called for greater focus on initiatives that align with business needs through clear practical applications, such as pilot testing.

Mr Ouvrieu outlined several promising areas for deeper EU-Kazakhstan collaboration in research and innovation involving the private sector. He emphasised that **agriculture and food security remain key priorities**, noting Kazakhstan's significant potential and the EU's advanced technologies that could be locally adapted. In the area of **critical raw materials**, Kazakhstan's vast mineral resources could be paired with EU expertise in environmentally friendly mining and extraction methods. He also highlighted renewable energy as a promising domain, citing opportunities to jointly develop hydrogen production, storage solutions, and other clean energy technologies. Mr Ouvrieu further pointed to **healthcare and digital health** as mutually beneficial areas for cooperation, particularly in light of Kazakhstan's digitalisation efforts and the EU's leadership in biotech and telemedicine. He underscored the importance of **transport and logistics**, given Kazakhstan's strategic geographical position and the potential to upgrade its infrastructure through EU support, especially in connection with global initiatives like the Belt and Road.

Dr Akhmed-Zaki reinforced the importance of **supporting science-driven enterprises** such as Kazatomprom and ensuring stronger alignment between university research and industry demands to enhance economic impact. Mr Ouvrieu echoed this view, underlining the critical role of education in

bridging talent and business innovation. To strengthen collaboration, Mr Omirgali proposed developing a national open-access database linking industrial challenges with scientific solutions, an instrument that could significantly enhance problem-solving partnerships across sectors. He also advocated for the establishment of shared international rules to ensure science remains focused on peaceful purposes.

3.4 Summary

Kazakhstan's journey in business–science diplomacy is still in its early stages, yet emerging efforts showcase a growing commitment to more structured, impactful collaboration between academia, industry, and international partners. Session 3 highlighted promising initiatives such as industrial PhDs, cross-border R&D ventures and university-based innovation labs, however also revealed persistent structural gaps. These include limited support for SMEs, fragmented funding mechanisms, and the absence of a cohesive national science diplomacy framework. Speakers underscored the importance of trust-building, regulatory reform, and aligning research with real-world business challenges. Strengthening institutional capacity, improving access to global programmes like Horizon Europe, and fostering multilingual talent were highlighted as necessary steps. For Kazakhstan to move beyond isolated projects and position itself as a regional research hub, it must embed science into economic and foreign policy, scale successful pilots, and create platforms for joint problem-solving.

Conclusions

Kazakhstan is emerging as a dynamic player in science and technology diplomacy, with recent reforms creating an increasingly open, innovation-oriented ecosystem that aligns science with national development goals and international commitments. The adoption of the 2024 Law on Science and Technological Development, supported by dedicated strategies and presidential mandates, reflects a strong political commitment to transform the country's science system. Academic institutions, businesses, and government bodies are now working more closely to co-design research initiatives, promote international collaboration, and address cross-sectoral and cross-border challenges.

Kazakhstan aims to position itself as a regional hub for science diplomacy and innovation, leveraging its strategic location and political stability to become a bridge between global scientific communities. Through structural reforms, increased R&D investment, and international partnerships, the country seeks to enhance the science intensity of its GDP, raise the commercialisation rate of applied research, and embed scientific expertise in policymaking. According to the National Science Development Concept until 2029, Kazakhstan aims to build a globally connected, knowledge-based economy underpinned by cross-sectoral collaboration, technological advancement, and sustainable development (Ministry of Justice of the Republic of Kazakhstan, 2023).

For international partners, Kazakhstan offers multiple entry points for engagement such as joint research programmes, regional innovation hubs, industrial PhD schemes, and co-investment opportunities in priority sectors such as sustainable energy, rare earth minerals, agriculture, and climate resilience, as well as tax and investment incentives for businesses. Participation in EU frameworks like Horizon Europe, support from national coordination centres, and the government's co-financing mechanisms provide a robust institutional foundation for collaboration. The establishment of regional Centres of Academic Excellence and a growing number of international university branches further decentralise and diversify the research landscape. Those interested in partnering with Kazakhstan can benefit from access to emerging markets, strong political will for reform, and a strategic Eurasian location that bridges East and West. Ultimately, Kazakhstan's evolving ecosystem presents an opportunity for mutually beneficial partnerships that foster innovation, sustainable development, and regional stability.

APPENDIX A: List of References

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Appendix C: Poll Results

Poll 1. What is the most important role academia in Kazakhstan can play in advancing science diplomacy?

Table 8. Results from Workshop 2, Question 1	
Option	Percentage
Conducting collaborative research with regional and global partners	60%
Promoting cultural and intellectual exchange with other countries	27%
Training scientists equipped to engage on international platforms	7%
Providing expertise to government as science-policy advisors	7%

Poll 2. Which global issue should Kazakhstan prioritise through its science diplomacy efforts?

Table 9. Results from Workshop 2, Question 2	
Option	Percentage
Addressing climate change and promoting regional sustainability	42%
Strengthening public health systems and pandemic readiness	25%
Expanding access to technology and bridging the digital divide	25%
Enhancing food security and agricultural resilience in Central Asia	8%

Poll 3. What is the main benefit for Kazakhstan in participating in international academic cooperation?

Table 10. Results from Webinar 2, Question 3	
Option	Percentage
Sharing knowledge and innovative practices with international peers	42%
Increasing the global visibility and impact of Kazakhstan's research	33%
Gaining access to global research funding and infrastructure	17%
Building long-term trust and partnerships with other nations	8%

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