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Recommendations on how to prevent and revert brain drain from Ukraine

1.Introduction

The **EURIZON project** was established to promote European scientific and technical collaboration in the field of Research Infrastructures (RIs), with a particular focus on supporting Ukrainian scientists and strengthening the capacity of the Ukrainian RI landscape**.**
The project operated along two complementary directions:

1. **European scientific-technical collaboration on RIs**: Six technical Work Packages focused on the development of cutting-edge instruments and advanced technologies for selected European research infrastructures in the physical and analytical sciences. This work contributed directly to ESFRI landmarks and other strategic RI upgrade projects.
2. **Support for Ukrainian scientists and for Ukrainian RIs:** A targeted set of coordination and support actions aimed to **sustain scientists and research in Ukraine**, enhance **capacity building**, and promote the long-term resilience of **Ukrainian RIs.** Key measures included a broad **fellowship programme for scientists in Ukraine**, along with **staff exchanges** and **training programme** for RI managers. In this context **brain drain** was identified as one of the main critical components of the sustainability of research infrastructures.

Why addressing brain drain is crucial

1. **Human capital is the core of research infrastructures**
Research infrastructures are not just physical assets like laboratories or equipment—they are ecosystems that rely on highly skilled scientists, engineers, and technical staff. When talented individuals leave the country or leave science:

- The operational capacity of RIs is strongly weakened.
- Scientific output and innovation decline.
- Institutions lose their ability to attract funding, lead international collaborations, or train the next generation of researchers.

Without people, even the best-equipped RIs cannot function. Reversing brain drain is therefore fundamental to making Ukrainian RIs sustainable (Batrymenko et al., 2023[1]; NBER, 2023[2]; Nature, 2023[3]).

2. Recovery and reconstruction require knowledge and innovation
Ukraine's post-war reconstruction will depend heavily on science, technology, and innovation. This includes:

- Rebuilding infrastructure using modern technologies.
- Supporting energy transition, digitalization, and environmental restoration.
- Driving economic modernization through applied research and innovation.

[1] Batrymenko, I. et al. (2023). *"Brain Drain": Dynamics and State Management Mechanisms in Ukraine*.
[2] NBER (2023). *War and Science in Ukraine*. National Bureau of Economic Research.
[3] Nature (2023). *The Effects of War on Ukrainian Research*. Nature News Feature. https://doi.org/10.1057/s41599-023-02346-x

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- All of this requires a strong national R&I base. If scientific talent continues to leave the country, Ukraine risks becoming dependent on foreign expertise and losing control over key aspects of its recovery (UNESCO, 2024[4], NBER, 2023[5];).

3. **Integration into the European Research Area (ERA) depends also on human capacity**
Full integration into the ERA requires Ukraine to:

- Actively participate in Horizon Europe and other EU programmes.
- Meet EU standards for research governance, ethics, and excellence.
- Contribute to and benefit from joint research and cross-border knowledge exchange.

This is only possible if Ukraine retains and develops a critical mass of internationally competitive researchers and institutions. Without this, ERA integration becomes symbolic rather than substantive (European Commission, 2023[6]).

4. Reversing brain drain unlocks diaspora potential and brain circulation
By addressing brain drain, Ukraine can shift from permanent loss of talent to brain circulation, including:

- Temporary or virtual return of diaspora researchers.
- Joint projects and mentorships.
- Reintegration pathways for returning scientists who, in some cases, have already developed strong links with European RIs and researcher communities, contributing to a enhanced integration of Ukraine in the ERA.

This not only recovers lost capacity but strengthens international connections, accelerates technology transfer, and fosters a global Ukrainian scientific network (Migrant Scholars Study, 2024[7]).

In summary, brain drain undermines the core human capacity needed for Ukraine's R&I system to function, recover, and grow. Addressing it is not optional—it is a strategic imperative for ensuring the sustainability of research infrastructures, the success of national recovery, and meaningful integration into the European Research Area.

IMPORTANT PREMISE:

Before any meaningful discussion on reversing brain drain can take place, it is essential to acknowledge that ensuring the **safety, security, and well-being of Ukrainian scientists** and their families remains the fundamental precondition. This document offers recommendations from two interconnected perspectives.

First, it addresses the **urgent need to support those Ukrainian scientists who, despite the war, have remained in the country.** These scientists require targeted assistance to continue their research, continue operate RIs, maintain academic engagement, and remain part of the global scientific community under extremely challenging conditions.

Second, it **considers the longer-term perspective: how to sustain and reinforce the scientific ecosystem in Ukraine once the war has ended and conditions of safety and stability have returned.** This includes identifying strategies to continue supporting those who stayed, and designing effective measures to encourage and facilitate the return of scientists who were forced to leave but are willing to contribute to the reconstruction and renewal of Ukrainian science.

[4] UNESCO (2024). *Analysis of war damage to the Ukrainian science sector and its consequences*. UNESCO Open Access Repository https://www.unesco.org/en/open-access/cc-sa.
[5] NBER (2023). *War and Science in Ukraine*. National Bureau of Economic Research.
[6] European Commission (2023). *ERA Policy Agenda: Ukraine's integration and support measures*.
[7] Migrant Scholars Study (2024). *Migration Trajectories of Ukrainian Scholars Abroad*.

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2. Scope and methodology

In recent years, a growing body of scientific literature has explored the phenomenon of **brain drain from Ukraine**, particularly in the context of the full-scale Russian invasion that began in February 2022. These studies have provided valuable insights into the scale, drivers, and consequences of academic and professional emigration. However, the present report adopts a **different, experience-based approach**, grounded in the activities and findings of the **EURIZON project**.

Rather than providing a general review of the literature, this report focuses on **first-hand evidence, informal and structured consultations** conducted within the framework of EURIZON's targeted support actions for Ukrainian scientists and research infrastructures. Specifically, the analysis draws on three primary sources:

1. Information and findings collected over the official **events, visits and informal meetings** held between EURIZON Coordination and WP Leaders with the representatives of the Ukrainian scientific community within the framework of **WP10 "Sustainability of Ukrainian Research infrastructures"**
2. **Responses collected through the EURIZON survey: "Mapping Ukrainian Research Infrastructures (RIs), their current status, and identifying training and sustainability needs"**, addressed to a selection of RI managers across Ukraine in collaboration with the National Research Foundation of Ukraine.
3. **Consultations with the participants of the 2 EURIZON fellowship programmes — and the relative final survey** involving the participants of both the "Fellowship Programme to EMMRI" and the "EURIZON Fellowship Programme: Remote Research Grants for Ukrainian Researchers". These programmes supported the training and research activities of 333 Ukrainian scientists and RIs professionals across a wide range of scientific fields. The fellows provided direct insights into the personal and professional challenges they face, including the conditions that would enable them to remain in — or return to — the Ukrainian research system.

Together, these three consultation streams offered **a qualitative and contextualised understanding** of how the Russian invasion is affecting the personal and professional lives of Ukrainian scientists, RIs managers and operators, and how these impacts threaten the sustainability of Ukraine's research infrastructure system. The consultations also highlighted the types of support that are most urgently needed to help scientists remain in the country and stay in science.

This approach ensures that this report remains **relevant, grounded, and actionable**, offering testimonies, information and insights that are directly tied to the EURIZON activities, events and informal meetings.

3. Outreach activities organized in the framework of WP10

As part of **EURIZON Work Package 10 (WP10) "Sustainability for Research Infrastructures in Ukraine"**, the EURIZON consortium led by DESY implemented a series of targeted measures addressing two key objectives:

- **Raising awareness across Europe** and exploring opportunities for **networking and collaboration** to support capacity building for Ukrainian research infrastructures (*Task 10.1*);

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- **Establishing and facilitating a platform for science diplomacy dialogue** between policymakers and scientists, aimed at strengthening the **strategic development and long-term resilience** of Ukraine's RIs (*Task 10.2*).

In the framework of these objectives, **a series of informal meetings, high-level events and consultations** were organised throughout the EURIZON project. These events directly contributed to the **formulation of the two EURIZON surveys** mentioned in this document and to the development of **evidence-based recommendations** on how to **prevent and reverse brain drain** from Ukraine's research system. They created critical spaces for formal and informal dialogue between Ukrainian and European stakeholders—including scientists, policymakers, and RI managers—where **brain drain** consistently emerged as a central challenge and strategic concern.

Among the key events were:

1. **The "Science in Ukraine" Round Table at the Transatlantic Big Science Conference (TTBSC) 2022 in Washington, D.C.**
   This session focused explicitly on the functioning of Ukrainian science under wartime conditions and addressed urgent needs, including on-site and remote programmes to **avoid brain drain**, maintain excellence, and sustain connections to international research.
2. **The TTBSC 2024 edition in Berlin**, featuring a plenary conversation with the President of the National Academy of Sciences of Ukraine (NASU) and a dedicated round table co-hosted by DESY and NASU.
   This round table highlighted **brain drain as one of the most pressing threats** and called for sustained support for scientists remaining in Ukraine and for the reintegration of those abroad.
3. **The DESY delegation visit to Kyiv (October 2024)**, which included meetings with young Ukrainian scientists, a selection of EURIZON fellows, university faculty, and national science leadership. These discussions addressed the practical challenges faced by Ukrainian researchers, in particular young researchers, including the **conditions needed to stay in science and avoid emigration**.
4. **EURIZON Annual Meeting – Prague, January 2024 & EURIZON Final Event – Brussels, March 2025**.
   The 2024 Annual Meeting featured a dedicated parallel session on the *" Sustainability of Ukrainian Research infrastructures",* with discussions among EURIZON fellows, Work Package Leaders and Advisory Boards members, and representatives from Ukrainian research infrastructures and research organizations.
   The project´s final event in Brussels showcased the achievements of the EURIZON Ukrainian fellows and included two policy-oriented panels:
   - *"How to revert brain drain?"* (March 27)
   - *"How can Europe support the strengthening of science infrastructures and institutions in Ukraine?"* (March 28)

   Brain drain was a central theme across all panels, highlighted as a major barrier to long-term sustainability. The event concluded with the public presentation of the EURIZON policy recommendations, which were shaped by input from these events, the experiences and lessons learned throughout EURIZON's Work Packages, and the preliminary results of the two surveys (the one dedicated to RIs managers and the one dedicated to the fellowships participants). These findings are presented in detail in the following sections of this document.

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In all of the above-mentioned events, the issue of brain drain emerged as a recurring theme, clearly recognized by both Ukrainian and European participants as one of the **core challenges to securing the long-term sustainability of research infrastructures in Ukraine**. The strategic discussions held during these meetings laid the foundation for evidence-based recommendations offered in this document. They also underscored the need for coordinated, long-term support measures to help Ukrainian scientists remain in science, stay active in research, and reconnect with the European Research Area.

Figure1: Picture- Courtesy of DESY. A. Zagorodny, President of the NASU, at the TTBSC 2024, on June 2nd, 2024.

Figure 2: Picture courtesy of Olena Pastoven. DESY Delegation and Ukrainian students at Kyiv T.S. University in October 2024.

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Figure 3: Group picture at day 2 of EURIZON final event in Brussels, in March 2025. Photo credit: Eric Berghen

4. Feedback from the EURIZON survey for RIs managers: "Mapping Ukrainian Research Infrastructures (RIs) needs"

The survey

The *EURIZON survey: "Mapping Ukrainian Research Infrastructures (RIs), their current status, and identifying training and sustainability needs"* was designed **to assess a representative cross-section of Ukrainian RIs across various scientific domains and the impact that the full scale invasion had on their infrastructures, operations, and especially staff.**
The aim was to gather detailed information on their scientific focus areas, operational status before and after the onset of the full-scale Russian invasion, and **the types of support required** to ensure their continuity, training, and long-term development.

Conducted in collaboration with the National Research Foundation of Ukraine (NRFU), the survey collected vital data on the impact of the war—specifically on human resources as well as on infrastructure, such as buildings and equipment. A particular focus was placed on understanding how the conflict has **affected the availability, safety, and retention of qualified personnel.**

Beyond documenting the immediate impact of the invasion, the survey aimed to offer a broader understanding of the structure and management of scientific research in Ukraine. It examined the research priorities, the technologies and tools currently in use, and the evolving needs of institutions coping with wartime disruptions—particularly in the **areas of training and capacity building**. Key objectives included identifying **urgent measures** required to restore operations and defining **long-term priorities** for the reconstruction and sustainable development of Ukraine's research infrastructure landscape.
The survey was conducted online (via Google Forms) between **21 January and 14 February 2025**. It was made available in Ukrainian, translated from an English original, to ensure accessibility and clarity for respondents.
The target group consisted of **research infrastructure managers who have remained and continued working in Ukraine RIs despite the ongoing Russian military aggression**. Their

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input provides a grounded, first-hand perspective on the challenges facing Ukraine's scientific infrastructure and helps inform practical support strategies beyond the EURIZON project .

The survey consisted of **41 questions**, combining multiple-choice and open-ended formats, and was structured into **four thematic sections**:

1. **Status of research infrastructures before the full-scale invasion**
   This section gathered baseline information on the selected research infrastructures, including their main scientific focus areas, key instruments and technologies, and governance structures prior to the outbreak of the war.
2. **Current status and impact of the full-scale invasion**
   This part assessed the present condition of the research infrastructures, evaluating the effects of the war on physical assets, research activities, and human resources. Special attention was given to the possible differentiated impact on male and female staff, highlighting the gendered dimensions of displacement and disruption.
3. **Immediate challenges and long-term sustainability**
   Respondents were asked to identify the most pressing operational challenges, immediate support needs to ensure continued functioning under wartime conditions, and the broader requirements for long-term recovery and sustainability in the post-conflict period, including addressing brain drain.
4. **Training and capacity-building needs**
   This section focused on the professional development needs of RI managers, researchers, and technical-administrative staff. It aimed to define priority areas for training and capacity building that would help restore research capabilities and support Ukraine's future integration into the **European Research Area (ERA)**.

A total of 97 research infrastructure (RI) managers across Ukraine were contacted to participate in the survey, of whom **53 completed it**. The respondents represented a diverse range of institutions, including **26 research institutes**, **25 universities**, **1 museum**, and **1 astronomical observatory**.

The geographic distribution of responses was broad, reflecting a wide cross-section of Ukraine's scientific landscape. The regional breakdown is as follows:

- **Kyiv** – 23 responses
- **Kharkiv** – 12 responses
- **Lviv** – 7 responses
- **Dnipro** – 3 responses
- **Uzhhorod** – 3 responses
- **Sumy** – 2 responses
- **Mykolayiv**, **Vinnytsya**, and **Chernivtsi** – 1 response each

This broad institutional and regional representation strengthens the validity of the findings and provides a grounded view of the challenges and needs faced by Ukrainian RIs during the ongoing war.

It is important to note that, despite recent reforms, the **Ukrainian classification system for research infrastructures** still currently differs significantly from the **European framework**, both in how RIs are defined and in how scientific disciplines are categorized. As a result, direct comparisons between the two systems are not fully possible at this stage. For example, in the Ukrainian system, broad categories such as Natural Sciences may include subfields like physics and chemistry, which are often treated as separate domains in European classifications. This

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distinction must be kept in mind when analysing the Ukrainian RI landscape and interpreting the survey results.

From a disciplinary perspective, the survey responses covered **24 out of 29 scientific domains** as defined by the **Ukrainian national classification system**.
Among the responses received, **Natural Sciences** were the most represented, accounting for **61.1%** of responses[8]. This was followed, at a considerable distance, by:

- **Biology** (18.5%)
- **Mechanical Engineering** (16.7%)
- **Chemical and Bioengineering** (14.8%)
- **Healthcare (Medicine)** (14.8%)
- **Education/Pedagogy** (11.1%)
- **Information Technologies** (11.1%)

All other scientific domains were represented in **less than 10%** of the total responses[9].

The impact of the full-scale invasion

Before analysing the phenomenon of brain drain and exploring strategies to reverse it—specifically, how to attract and retain scientists within the Ukrainian research infrastructure system—it is essential to first understand the **scale and nature of the impact that the full-scale Russian invasion has had on Ukraine's research infrastructures**, particularly those covered in this survey.

The responses gathered through the questionnaire provide concrete evidence of how the war has affected the functioning of RIs across the country. These include **damage to physical infrastructure**, **disruption of research activities**, **loss or displacement of qualified personnel**, and severe challenges to the **continuity of operations**. Many institutions reported interruptions in electricity and access to equipment and laboratories, loss of research data, and significant strain on administrative and managerial capacities. These disruptions have directly weakened the institutional foundations necessary for sustaining scientific activity and have created an environment where the risk of talent loss is particularly acute.

Understanding these impacts is a crucial step toward designing realistic and effective measures to mitigate brain drain and to support the long-term sustainability and recovery of Ukrainian research infrastructures.

While a majority of the 53 respondent RIs managers (74%) reported either minor or no damage to the Real Estate, a **significant portion (26%) experienced considerable to severe destruction**, underscoring the **uneven but tangible physical impact** of the war on Ukraine's research infrastructure. The majority of RIs facing severe damage and destruction are located in the geographical areas of the country most impacted by the war. These findings highlight the urgent need for targeted reconstruction and support strategies.

8 Each respondent RI can have expertise and tools in more than one scientific field.
9 No responses were received in the fields of Theology, Management and Administration, Service Industry, Civilian Security, and Public Management and Administration.

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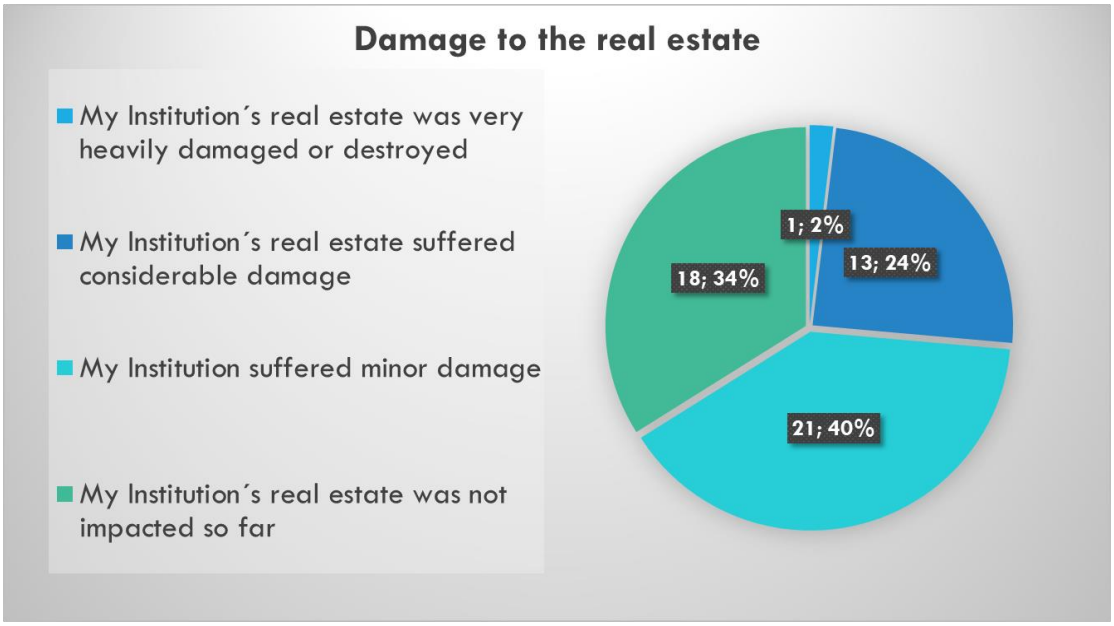

Figure 4: The pie chart titled "Damage to the real estate" illustrates the self-reported extent of physical damage sustained by the respondent Ukrainian research institutions as a result of the war, based on the answers from the RIs managers surveyed.

When asked about the main challenges currently hindering the operations of their research infrastructures, the 53 survey respondents identified a series of critical obstacles that have emerged or intensified since the start of the full-scale Russian invasion. These challenges not only threaten the functioning of the institutions themselves but also contribute directly to the ongoing risk of **brain drain** by undermining the professional and economic stability of scientific personnel.

Key issues reported include:

- **Disrupted working conditions**, with some institutions operating only partially or in hybrid formats. In several cases, researchers have been forced to carry out their work using the facilities of partner institutions, particularly in Kyiv. This fragmentation of the research environment can lead to the split of research teams, professional isolation and reduced motivation—factors that increase the likelihood of emigration.
- **Insufficient salary support**, with some centers unable to provide regular or full remuneration to their staff. **Low and unstable income is one of the strongest push factors for brain drain**, especially among younger researchers and early-career scientists.
- **Erosion of purchasing power**, as funding—wether stable or decreased in nominal terms—has been significantly devalued by inflation and currency fluctuations. This economic instability limits the ability of institutions to retain qualified personnel and offer competitive working conditions.
- **Severe shortages in operational resources**, including the need for additional funding to cover staff salaries, facility maintenance, consumables, and capacity-building activities. In particular, the lack of investment in professional development and advanced training leaves scientists without meaningful opportunities for career growth, increasing the appeal of research opportunities abroad.
- **Systemic disruptions caused by the war**, affecting every aspect of scientific infrastructure—from declining public research budgets to unstable energy supply, internet connection and damaged logistics. These unpredictable conditions contribute to

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a climate of uncertainty that discourages long-term professional commitment to the Ukrainian research system.

- **Escalating operational costs**, particularly for repairs, energy, utilities, materials, etc. These cost increases strain already limited budgets and reduce the overall functionality and appeal of research institutions—again, feeding into the push factors that drive scientific emigration.

Overall, the convergence of economic, institutional, and infrastructural challenges is creating a highly fragile environment for Ukrainian researchers. Without targeted interventions to stabilize and support these institutions, **brain drain is likely to intensify**, further weakening the country's scientific capacity and long-term development prospects.

The survey included **gender-specific questions** aimed at assessing whether the impact of the full-scale invasion on research infrastructure (RI) personnel differed by gender. In most categories, the responses revealed **no significant gender disparities**, suggesting that both **male and female staff have been affected in roughly equal measure** across a wide range of war-related disruptions. This includes:

- Staff lost due to war-related death or injury
- Staff displaced internally (within Ukraine)
- Staff who moved abroad but remained institutionally affiliated
- Staff who moved abroad and are no longer affiliated
- Staff resignations due to economic hardship
- Staff resignations due to caregiving responsibilities (e.g. childcare, elder care)
- Staff resignations without stated reasons
- Staff laid off due to lack of institutional resources (e.g. salary constraints)

These findings underscore that **brain drain affects both women and men**, even if in different manners, driven by a combination of personal safety concerns, deteriorating working conditions, family concerns and insufficient institutional support.

However, notable gender-specific impacts have emerged in the current context: the loss of male staff due to **conscription and military service**, and the **reduced mobility of male scientists**.

Conscription has predominantly affected men, significantly depleting the pool of experienced researchers, technicians, and institutional leaders. This loss has placed additional pressure on the remaining staff, who are often required to take on expanded responsibilities despite already-limited resources. Moreover, conscription indirectly affects women scientists as well: when male family members are called to military service, the full burden of caregiving duties often falls on women, further constraining their ability to engage in professional activities and advance their careers.

The second issue involves unequal access to international mobility. Due to current travel restrictions affecting men, women are generally the ones permitted to travel abroad. When funding and opportunities are available, women are enabled to maintain their international research networks. In contrast, many male scientists aged 18–60 are subject to travel bans, severely limiting their opportunities for international collaboration.

Although the primary drivers of brain drain may not appear explicitly gendered, the consequences clearly are. These developments highlight the need for more nuanced and inclusive support strategies—such as targeted retention efforts, flexible career pathways for

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those facing disproportionate caregiving responsibilities, and reintegration programmes for scientists returning from military service or time abroad.

Immediate needs, long-term strategies, and capacity-building priorities

This chapter of the survey presents a consolidated analysis of responses to four key sections:

1. *Short-term needs for equipment, funding, and operational support*
2. *Long-term strategies for rebuilding and sustaining research infrastructures*
3. *International support priorities*
4. *Training and capacity-building needs*

The findings offer insights into the concrete forms of support that institutions consider most urgent and impactful. Crucially, many of the priorities identified by respondents are closely linked to the broader issue of **brain drain**, reflecting how unmet institutional needs contribute to the loss of scientific talent and hinder the reintegration of researchers into the Ukrainian system.

*1. **Short-term** needs*

In response to Q27 "What are the most urgent short-term needs for your RI to resume or sustain operations?", the three **most frequently marked as 'very important'** needs were:

- **Immediate funding for staff salaries (20 responses):** The most critical short-term need cited was securing financial support to maintain salary payments, including through fellowship programmes and short-term research grants. Without a reliable income, many researchers are forced to consider opportunities abroad or to leave the scientific field entirely. **This economic instability is one of the most direct drivers of brain drain**, particularly among early-career scientists.
- **Funding and assistance for urgent repair/stabilization of damaged equipment (16 responses):** The damage or loss of key scientific instruments has severely impacted the ability of RIs to function. Without essential tools, research teams cannot continue their work, which increases frustration and professional stagnation. **The lack of a functional research environment accelerates the decision to emigrate** in search of well-equipped institutions.
- **Funding for the urgent repair of physical infrastructure (13 responses):** Even relatively minor structural damage (e.g. broken windows, heating failures) has hampered institutional operations and working conditions. Ensuring the physical safety and usability of facilities is essential to retain staff and avoid the erosion of morale and institutional identity.

These short-term needs underline the importance of **rapid, targeted financial and technical interventions** to stabilise institutions, resume operability and reduce the immediate pressures that are driving scientists away.

***2. Long-term** strategies for sustainability and recovery*

Responses to Q30 "What are the most important long-term needs for rebuilding and sustaining your RI?" reflected strategic concerns and showed strong alignment with broader efforts to **rebuild Ukraine's scientific ecosystem** and **stem the outflow of talent**. The three top-rated long-term needs were:

- **Securing stable long-term funding for repair or replacement of scientific equipment (32 responses):**
  Sustainable institutional capacity depends on the availability of reliable and modern equipment. Long-term underinvestment in infrastructure creates an uneven playing field with international counterparts and reduces the competitiveness of Ukrainian RIs. This

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technical deficit **fuels brain drain by pushing scientists toward institutions where modern tools and long-term research continuity are guaranteed**.

- **Actions to reverse brain drain and facilitate the return of scientists (31 responses):** This result clearly signals that RI managers view **brain drain not as a side effect, but as a central challenge** to institutional survival. Respondents called for structured policies and incentives to encourage the return of researchers currently abroad—through fellowships, infrastructure investment, collaborative projects, and meaningful career pathways.
- **Establishing partnerships with international institutions (24 responses):** Deeper international collaboration was seen as a key to maintaining scientific relevance and creating new opportunities for Ukrainian researchers. Such partnerships can **serve as a bridge for reintegrating diaspora scientists** and fostering brain circulation, rather than permanent talent loss.

*3. **International support** priorities*

Respondents were also asked about the most valuable forms of **international collaboration** that European research infrastructures could offer. The top three answers highlight the importance of direct, practical support:

- **Donation of scientific equipment (32 responses):** Replacing destroyed or outdated equipment is not only critical to resuming operations but also a necessary step toward **making institutions attractive again for researchers at home and abroad**.
- **Joint research collaborations (29 responses):** Collaborative projects offer career continuity, visibility, and access to broader scientific networks. These are vital elements for **retaining early-career scientists** who might otherwise seek such opportunities abroad.
- **Remote access to scientific tools and facilities (24 responses):** Virtual collaboration is a pragmatic interim solution that allows scientists to continue working despite local constraints. It also helps keep them connected to the international community, **which may encourage them to remain affiliated with Ukrainian institutions**.

*4. **Training** and capacity-building needs*

Finally, in Q33 “In your role as a leader of a research infrastructure, what specific skills or knowledge areas do you feel are most critical to effectively manage your institution and support its recovery and post-war development?”, the following three areas were identified as top priorities:

- **Strategic planning (31 responses):** Effective leadership under crisis conditions requires forward-looking strategies that balance emergency needs with long-term sustainability. Strengthening institutional planning capacity can **help reduce vulnerability to staff loss and improve retention**.
- **Knowledge of European research funding and the ERA (27 responses):** Familiarity with Horizon Europe, COST, and other European mechanisms is essential for securing funding and establishing partnerships. Better integration into the European Research Area can provide a **pathway for scientists to engage internationally without permanently leaving Ukraine**, mitigating brain drain through mobility rather than migration.
- **Financial management (25 responses):** Given the economic volatility and reliance on international aid, strengthening administrative and financial competencies for economic sustainability is crucial.

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Transparent and efficient fund management **builds institutional credibility**, which is key to attracting both talent and funding.

4.1 Summary of the findings from the RIs managers' survey

To address the acute and long-term challenges facing Ukrainian research infrastructures, the EURIZON survey identified a range of essential support measures—each of which plays a critical role in either **preventing further brain drain** or **creating the conditions for the return and reintegration of scientific talent**.

1. **First and foremost, immediate funding to support staff salaries** was identified as the most urgent short-term need. Ensuring that researchers and technical personnel receive stable, adequate income is vital for retaining them in the country. Without this financial security, many scientists are compelled to seek employment abroad or leave academia altogether.
2. **Funding for urgent repair and stabilization of damaged equipment** is equally critical. The inability to carry out scientific work due to broken or missing tools contributes to professional stagnation, reducing job satisfaction and prompting talented individuals to seek better-equipped institutions outside Ukraine.
3. **Funding for urgent repairs of physical infrastructure**, even at a basic level—such as fixing windows, heating systems, and access to safe workspaces—is essential for creating an environment in which researchers feel safe, respected, and motivated to continue their work. Poor working conditions can erode morale, mental health and encourage emigration.
4. From a *long-term perspective*, **securing stable, multi-year funding for the replacement and modernization of scientific equipment** is vital to ensure research continuity and institutional competitiveness. Without access to state-of-the-art tools, Ukrainian RIs risk falling behind, which in turn limits opportunities for their staff and makes it harder to attract or retain talent.
5. A particularly telling finding was the prioritisation of **policies aimed at reversing brain drain and facilitating the return of scientists currently working abroad**. Respondents viewed brain drain not as a secondary effect of the war, but as a central structural threat. Measures such as return fellowships, joint research collaborations, infrastructure investments, and meaningful long-term career pathways were seen as necessary to encourage skilled professionals to come back and rebuild the national research system.
6. **Forging and deepening partnerships with international institutions** was also rated highly. These collaborations provide Ukrainian researchers with access to global scientific networks and funding streams while allowing them to remain anchored in their home institutions. Such links can also foster "brain circulation"—an alternative to permanent migration—where researchers maintain professional mobility without fully severing ties with Ukraine.
7. Additional measures seen as particularly valuable included the **donation of scientific equipment**, **joint research collaborations**, and **remote access to international research tools**. These forms of support enable Ukrainian scientists to remain active and visible in the global scientific community, despite the limitations imposed by war. They also help maintain continuity of work and preserve morale, thereby reducing the appeal of leaving the country permanently.
8. Finally, several high-priority **training needs** were identified as essential to both institutional resilience and talent retention. **Strategic planning skills**, **understanding of European research funding mechanisms (including Horizon Europe and the European Research Area)**, and **financial management capabilities** were all viewed

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as critical. Enhancing these competencies at the leadership level strengthens institutional governance and creates an environment where researchers feel supported and able to grow professionally—key factors in preventing long-term talent loss.

Conclusions from the survey

Reversing brain drain from Ukraine's research sector cannot be meaningfully addressed without first acknowledging a fundamental condition: **safety**. As long as the war continues, most scientists will be unable—or unwilling—to return, especially if it means bringing their families back into an environment of insecurity. **No strategy to retain or attract talent can succeed without a basic sense of physical safety.**

With this in mind, the results of the EURIZON RIs managers' survey clearly demonstrate that the **sustainability of Ukrainian research infrastructures is deeply dependent on the ability to retain and recover scientific talent**. **And vice versa.**
Both immediate operational needs—such as salary support, equipment repair, and facility maintenance—and long-term strategic priorities—such as capacity building, training, and international collaboration—directly shape whether researchers choose to remain within the Ukrainian system or pursue opportunities abroad.
Reversing brain drain requires a holistic and coordinated package of interventions: immediate financial relief, restoration of infrastructure, targeted but flexible training programmes, and robust international engagement. Each of these measures not only supports the physical and operational recovery of research infrastructures, but also helps rebuild the **professional confidence, motivation, and long-term commitment** of the people who make science possible.

Moreover, the **potential to reverse brain drain in the domains served by research infrastructures is closely tied to their operability, working conditions, and overall attractiveness**. When facilities are functional, well-equipped, and offer meaningful professional opportunities, they become anchors that encourage researchers to stay—or to return.
Addressing these needs is not merely a matter of institutional survival—it is a **strategic imperative for rebuilding a resilient, competitive, and internationally integrated Ukrainian research ecosystem** capable of thriving within the European Research Area and contributing meaningfully to global science.

5. Feedback from the EURIZON fellowship programmes and the final survey "Recommendations to revert brain drain"

Introduction

In this chapter, we analyse the feedback of the participants of the two most **relevant support measures for Ukrainian scientists implemented under the EURIZON project**: the ***"EURIZON Fellowship Programme to EMMRI" and the "EURIZON Fellowship Programme Remote Research Grants for Ukrainian Researchers"***.

The initiatives involved directly a total of **333 Ukrainian researchers, RIs staff, and managers**. Their feedback—reflecting on the challenges faced as a result of the full-scale invasion, as well as their perspectives on the conditions needed to **remain in Ukraine, continue their scientific work, and revert brain drain**—forms the core of the analysis presented in this chapter. Their suggestions and recommendations provide **direct, experience-based and**

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bottom-up insights into how international support can most effectively contribute to sustaining researchers and Ukrainian science during and beyond the ongoing war.

Fellowship Programme to EMMRI

The **"EURIZON Fellowship to EMMRI"** was designed to support the training of Ukrainian researchers and Research Infrastructure (RI) managers through their participation in the **Executive Master in Management of Research Infrastructures (EMMRI)**, delivered by the **University of Milano-Bicocca (Italy)**.

This 18-month, part-time international programme is tailored specifically to the managerial needs of professionals working in research infrastructures. Combining **online learning with face-to-face sessions**, the programme is led by a distinguished international faculty and senior managers from leading RIs across Europe. It is designed to equip experienced science professionals with the skills and strategic knowledge required to take on **higher-level management responsibilities**, while accommodating the demands of their ongoing professional roles.

As part of the EURIZON initiative, **the fellowship waived tuition fees for nine Ukrainian awardees** and covered **travel expenses** for those attending the **eight in-person training modules in Milan**. For those 2 awardees unable to leave Ukraine to travel to Milan, **fully remote participation** was made available, ensuring accessibility despite the limitations caused by war conditions.

In addition to acquiring advanced management skills, the programme gave the 9 Ukrainian fellows the **opportunity to gain deep, practical insight into how European research infrastructures are designed, governed, and operated**. Through regular interaction with **other RI managers from across Europe**, who were also enrolled in the master's programme, the Ukrainian participants were able to **build new professional networks**, **launch joint initiatives**, and **explore collaborative opportunities**.

These exchanges not only enhanced the strategic competencies of Ukrainian RI leaders but also actively contributed to the **integration of Ukraine's research community into the broader European Research Area (ERA)**.

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Figure 5: A photograph from the EMMRI graduation ceremony held in Milan, on May 10th 2024, at the University of Milano-Bicocca. All 9 Ukrainian fellows successfully completed the Executive Master in Management of Research Infrastructures. Photo courtesy of the University of Milano-Bicocca.

Remote Research Grants for Ukrainian Researchers

The **"EURIZON Remote Research Grants for Ukrainian researchers"** programme **offered temporary support**, through individual research grants, to teams of vulnerable Ukrainian researchers and relevant staff from Ukrainian research infrastructures and institutes. Its aim was to enable them to **continue their research activities and careers**, build synergies and **collaborations with European research infrastructures**, and maintain and strengthen their **connections with the international scientific community**.

The selected 65 teams worked on projects of common interest—across a vast range of scientific domains—in collaboration with partners from European research institutes. This structure enabled fellows to **bridge the emergency situation caused by the war**, allowing them to **continue their work**, **further develop their qualifications**, expand their **professional networks** and deepen their engagement with the broader **European RI ecosystem.**

The research projects **had durations of either 6 or 12 months** and were carried out from locations within Ukraine where conditions allowed for continued scientific activity between **February 2024 and April 2025.**
With a total budget **of €4.5 million**, the programme provided support **to 324 scientists** and **RIs staff** across a wide range of Ukrainian regions and scientific disciplines, **covering all six ESFRI thematic domains.**

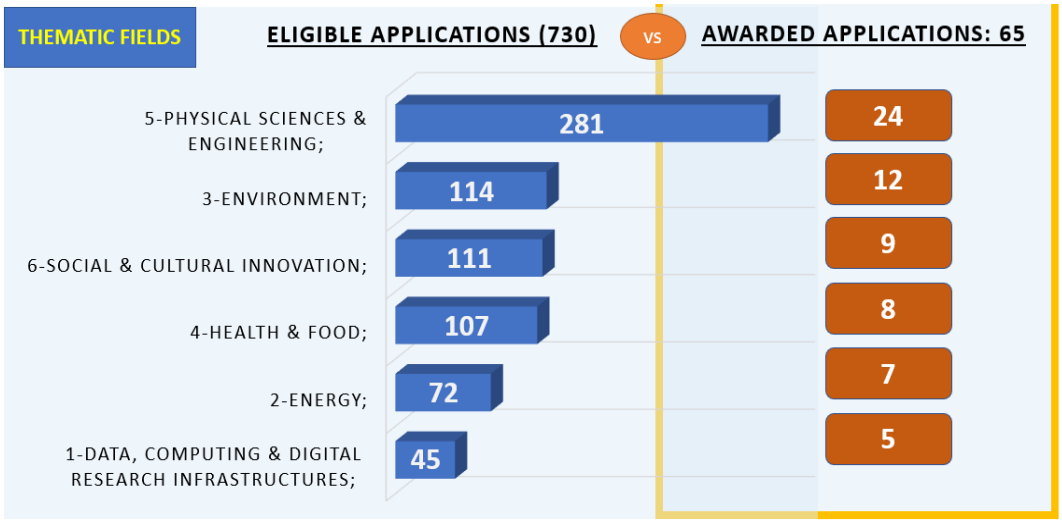

Figure 6: Thematic distribution of the 65 awarded fellowships "Remote Research grants" based on the topic of the research proposal. On the left the total number of eligible proposals received per field and on the right the number of awarded proposals per field.

The survey

The survey *"Recommendations on how to prevent brain drain"* was distributed to the 333 fellows who participated in the EMMRI Fellowship Programme and the Remote Research Grants for Ukrainian Researchers under the EURIZON project.
Responses were collected in English via the Indico platform between March 15 and April 30, 2025. A total **of 259 completed responses** were received and are analyzed in this report.

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The survey was dedicated to exploring the views of the EURIZON Ukrainian fellows on strategies to prevent and reverse brain drain. It aimed to identify the most pressing challenges scientists face in remaining active in the Ukrainian research system, and to gather concrete recommendations for both national and international stakeholders. **The questionnaire covered urgent career obstacles, policy and funding needs, institutional reforms, and support mechanisms for reintegration.** Importantly, the survey investigated **two perspectives: the short-term perspective**—focusing on the current situation during the war—**and the future perspective**—addressing conditions and needs once the war is over.

The questions are the following:

1. What are the (up to 3) most urgent challenges you are currently facing in your career due to the full-scale invasion?
2. In your opinion, what are the 3 most urgent measures needed to prevent further brain drain among Ukrainian scientists?
3. How do you think European funding agencies and international funding organizations can best support Ukrainian researchers and research institutes in the current situation?
4. What financial support mechanism would be most effective in helping Ukrainian scientists stay in science in the current situation?
5. How do you think European funding agencies and international organizations can best support Ukrainian researchers in the future?
6. What role should European research institutes and European scientists play in supporting Ukrainian scientists?
7. How can European funding programmes be better tailored to support Ukrainian researchers and institutions?
8. How important is access to European research infrastructures and data sets (physical or remote) for Ukrainian scientists in the current situation?
9. What are the most significant non-financial barriers preventing skilled Ukrainian researchers from staying in or returning to science in Ukraine?
10. How can European funding organizations help reintegrate Ukrainian scientists who have already left science and/or the country (once safety conditions allow)?

Each question included a **set of predefined multiple-choice options**, allowing respondents to select the answers most relevant to their experience. In addition, **an open comment field** was provided for each question, enabling respondents to offer **additional suggestions, explanations, or perspectives** beyond the fixed options. This structure ensured both **quantitative comparability** and **qualitative depth** in the responses.

Profile of the Respondents

A total of **259 Ukrainian researchers and RI staff** participated in the survey.

Gender Distribution

The gender distribution among respondents shows a balanced representation, with **152 men** and **106 women** participating in the survey, while **1 respondent chose not to disclose their gender**.

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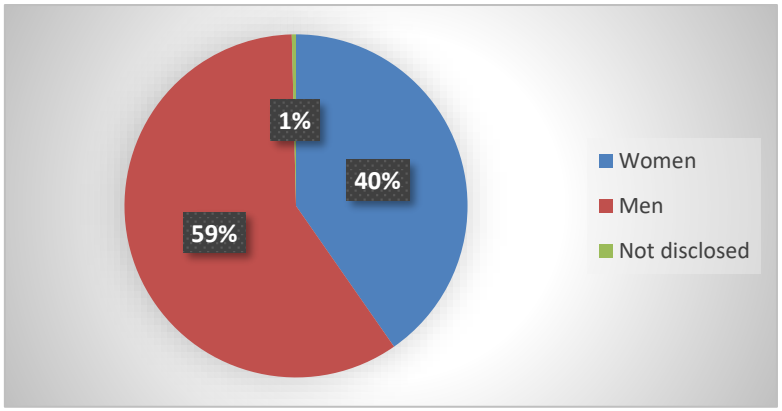

Figure 7: Gender profile of the 259 respondents to the survey

Age Distribution

The age distribution of respondents indicates a predominantly younger to mid-career research community, with **88 participants under 35 years old**, **99 between 36 and 50**, **54 between 51 and 65**, and **18 respondents aged between 66 and 80**.

- **Up to 35 years old**: 87 respondents
- **36–50 years old**: 95 respondents
- **51–65 years old**: 53 respondents
- **66–80 years old**: 18 respondents

The majority of respondents (72%) are under the age of 51, indicating that the survey captured perspectives from a predominantly early-to mid-career scientific population.

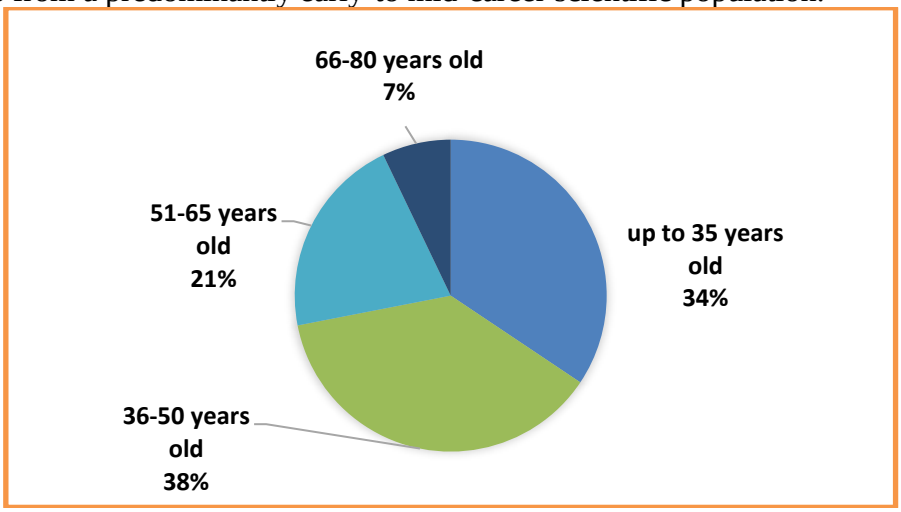

Figure 8: Age profile of the 259 respondents to the survey

Regional Representation

Respondents are affiliated with institutions across a wide geographical spread of Ukraine. The regions with the highest number of participants are:

- **Kyiv region**: 82
- **Kharkiv region**: 73
- **Lviv region**: 44
- **Sumy region**: 17
- **Odesa region**: 16

Smaller numbers are also recorded from other regions, including:
Chernivtsi (10), Ivano-Frankivsk (5), Volynsk (4), Poltava (2), Kherson (2), Dnipropetrovsk (1), Rivne (1), Vinnytsia (1), and Ternopil (1).

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This distribution reflects a **broad national coverage**, with particularly strong input from key academic hubs such as Kyiv, Kharkiv, and Lviv—regions with a high concentration of research institutions and infrastructures.

Feedback from the survey questions

1. CURRENT CONTEXT: Career and personal challenges of Ukrainian scientists

The table below presents the results of Question 1 from the survey, which asked "*What are the (up to 3) most urgent challenges you are currently facing in your career due to the full-scale invasion?"*. Each respondent was allowed to select up to three multiple-choice options and provide a feedback in the relative free comment section.

Possible answers	Number of citations
Disrupted mobility & travel restrictions – difficulty attending conferences, research stays, or international collaborations	**121**
Mental & emotional strain – stress, trauma, or difficulty focusing due to war-related circumstances	**111**
Salary reduction & economic uncertainty – decreased income, reduced purchasing power due to inflation, or financial instability	**110**
Job insecurity & career uncertainty – concerns about long-term employment, tenure, or future opportunities	**109**
Limited access to infrastructures and equipment – damage to laboratories, loss of equipment, or unreliable internet and power supply	**88**
Increased workload & responsibilities – balancing research with additional duties such as teaching, administration, or personal challenges	63
Funding for materials, spare parts & equipment – difficulty obtaining necessary research materials or maintaining laboratory equipment	45
Research continuity issues – disruptions due to power outages, unstable internet, or loss of access to digital resources	36
Other (please specify)	31
Team fragmentation & displacement issues – challenges of me and/or my team working from another location or being internally displaced	28
Limited networking & collaboration opportunities – reduced chances to engage with international research communities	20

Table 1: Feedback to question 1 of the survey distributed to the EURIZON Programmes´ fellows

The responses reflect a wide range of interrelated difficulties—from disrupted mobility and emotional stress to economic uncertainty and infrastructure damage—highlighting the complex environment in which Ukrainian researchers are currently operating.

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The most frequently cited challenge was **disrupted mobility and travel restrictions** (121 responses), reflecting the widespread difficulty in accessing international conferences, research visits, and collaborations. This was followed closely by **mental and emotional strain** (111 responses), as many scientists reported stress, trauma, and difficulties concentrating due to the ongoing war, the continuous safety risks and internet and electricity disruptions.

Other major concerns included **salary reduction and economic uncertainty** (110 responses), **job insecurity and career uncertainty** (109 responses), and **limited access to infrastructure and equipment** (88 responses)—underscoring how both personal well-being and professional stability have been severely affected since the start of the war.

The open comment section of the question offers further insights into the reality faced by respondents**.** Several pointed out that these challenges are not isolated, but deeply interconnected, here are some citations:
"All variants are present in reality simultaneously. And all urgent. The closer to the frontline — the more problems."
"Due to the full-scale invasion, I am facing challenges such as salary reduction, increased workload with additional responsibilities, and unstable power supply, which complicate the completion of work tasks. Despite this, I have continued working in Ukraine since the beginning of the war, traveling abroad exclusively for business trips and training. Since March 2022, I have been leading the city's Humanitarian Hub, which provides food assistance to more than 5,000 refugees from the Kherson and Mykolaiv regions."

"Ukrainian IR cannot be the main investigator or Leader of the consortium because it is complicated to receive money from the EU and send it to beneficiaries."

"Despite these challenges, we remain dedicated to our work. Programmes like EURIZON have provided invaluable support, offering opportunities to continue research through collaborations with European partners. However, additional initiatives focused on mental health support, mobility programmes, and stable research funding would be essential for ensuring that Ukrainian scientists can maintain productivity and contribute to global scientific progress even under these extreme conditions."

"Honestly, all of these points are true and fair for Ukrainian scientists nowadays. As a biologist, I'd add the destruction of nature due to war and severe limitations on access to previously long-term studied or interesting territories. Also, the totally restricted mobility for males and widespread job insecurity—especially among male researchers."

These powerful testimonies offer a human dimension to the data, underscoring that **brain drain prevention must address not just professional continuity but first of all safety, personal resilience, mobility constraints, and broader structural reforms** in the Ukrainian research landscape.

2. CURRENT CONTEXT: Urgent measures needed to prevent further brain drain

The table below presents the responses to the survey question 2 of the EURIZON survey: *" In your opinion, what are the 3 most urgent measures needed to prevent further brain drain among Ukrainian scientists?"* Each respondent could select up to three options.

Possible answers	Number of citations

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Better Salaries – Higher wages, inflation-adjusted stipends, and financial incentives to retain talent	**202**
Investment in research infrastructure – Rebuilding laboratories, ensuring access to equipment, and improving working conditions	**131**
Stronger international collaboration – Expanding joint projects, fellowships, and funding opportunities with European and global institutions	**126**
Job security & career development – Creating long-term career pathways, tenure-track positions, and professional growth opportunities in Ukraine	**83**
Reform & modernization of the research system – Ensuring fair grant distribution, reducing bureaucracy, and improving institutional flexibility	58
Training & better support for young scientists – Targeted programmes to help young researchers integrate into the system and develop their careers	51
Improved mobility & travel support – Facilitating visas, funding conference participation, and supporting short-term research stays	46
Support for internally displaced & returning scientists – Programmes to help researchers reintegrate into Ukrainian institutions after they had to quit the job, their displacement and/or the military service	25
Incentives for industry & private sector collaboration – Encouraging partnerships between academia and businesses to create more job opportunities	24
Other (please specify)	5

Table 2: Feedback to question 2 of the survey distributed to the EURIZON Programmes fellows

The responses reveal that **financial stability is by far the most pressing concern:** *better salaries* were cited by 202 respondents, making it the highest priority. This was followed by calls for **investment in research infrastructure** (131 citations) and **stronger international collaboration** (126 citations), reflecting the critical need for modern working environments and sustained engagement with the global scientific community.

Other frequently cited needs included **job security and career development opportunities** (83 citations) and the **reform and modernization of Ukraine's research system** (58 citations), highlighting a demand for systemic improvements to retain and motivate talent.
Support targeted at young scientists and mobility opportunities also ranked as important, while specialized measures for internally displaced or returning researchers and industry-academia collaboration were mentioned less frequently but still signal areas requiring attention.

Beyond the multiple-choice responses, many respondents provided **insightful written reflections** that deepen and personalize the statistical findings.
Several key and recurrent themes emerge and here are some citations:

"The largest and best scientific institutions in Ukraine are located locally in their city, without branches throughout the country. Thus, any student or postgraduate student after their studies has a huge risk of losing their future job not because of the lack of a vacancy, but because of

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the inability to provide themselves with housing! And if they can still rent a room at the salary level, then having a family and renting housing - definitely not. Personally, I am in a critical condition. The owner of the apartment where I rented a room evicted me because due to military registration I live in another city. Thus, I have a real risk of losing my job after the war due to the lack of housing!"

"In my opinion, the following urgent measures are necessary to prevent the further brain drain among Ukrainian researchers:Understanding development prospects – it is crucial to provide researchers with a clear vision of the future, opportunities for professional growth, and long-term support programs in Ukraine. Adequate funding for science – increasing salaries, expanding grant support, and developing modern research infrastructure will make scientific work more stable and attractive. Expanding international cooperation – creating conditions for knowledge exchange, participation in international research programs without the need for long-term relocation, and active integration into global scientific networks."

"Without financial stability, researchers are forced to seek opportunities abroad. Restoring laboratories and improving access to equipment will enable scientists to continue their work in Ukraine. Additionally, clear career pathways and long-term employment opportunities will provide stability and motivation for researchers to remain and contribute to the country's scientific and technological development."

"Our biggest problem is low wages. The salary of a research fellow is 200-300 euros per month. It is almost impossible to survive on such funds! It is very difficult to obtain national grants: they are opaque, the system of obtaining them is very bureaucratic. Stable financial support for scientists is necessary."

"The brain drain was, of course, amplified by the full-scale invasion, but in fact it had been observed before. It is caused mainly by internal reasons. The main one is the authorities' lack of understanding of the importance of their national science and the expectation that all the necessary knowledge can be obtained from abroad. (This is purely business thinking, when it is believed that it is cheaper to buy a ready-made result than to cultivate your own scientific personnel). Hence the low salaries, the lack of career opportunities for young people, etc. But the main result is the brain drain, which allows Ukrainian scientists to gain recognition and implement their ideas abroad."

"While significant research equipment has been destroyed by Russian aggression, our challenges extend beyond physical infrastructure. We face critical shortages of personnel and widespread demotivation within academia. Though inadequate compensation remains a serious concern, addressing brain drain requires more fundamental solutions. What we truly need is comprehensive reform of our scientific ecosystem, with modernized research systems, reduced bureaucracy, and significantly stronger engagement with the private sector and business community. Creating sustainable career pathways is essential."

These comments illustrate the **urgency and depth of the crisis**. They confirm that brain drain is not merely a symptom of war, but a reflection of long-standing structural issues in Ukraine's research system. While programmes like EURIZON offer critical support, respondents are clear: **preventing brain drain in the long term will require fundamental reform, sustained investment, and a genuine recognition of science as a national priority**.

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3. CURRENT CONTEXT: Support from European and international funding agencies in the present situation

The table below presents the responses to the survey question 3: *"How do you think European funding agencies and international funding organizations can best support Ukrainian researchers and research institutes in the current situation?"* Each respondent could select up to three options.

Possible answers	Number of citations
Expanding dedicated research grants for Ukrainian scientists and research teams (similar to EURIZON fellowship)	**237**
Funding collaborative research programmes (UA-EU**) on specific scientific topics**	**149**
Funding mobility and staff exchange programmes for short- and long-term research stays in Europe	**65**
Strengthening institutional support and research infrastructure (support to Ukrainian research institutes)	**65**
Opening opportunities for joint EU-UA PhD and postdoctoral programmes	44
Offering access opportunities for Ukrainian scientists to European facilities and research institutes	38
Funding for urgent repairs, materials and equipment donations to guarantee research continuity	36
Support for remote work and digital collaborations – Funding access to online tools, cloud storage, and secure digital research environments	29
Other (please specify)	26
Providing grants for travel to conferences and other dissemination opportunities	25
Providing grants for Ukrainian scientists to participate in international scientific conferences and workshops (training and update)	22
Offering ONLINE research training opportunities for scientists	16
Offering training on how to participate in EU-funded research programmes	6

Table 3: Feedback to question 3 of the survey distributed to the EURIZON Programmes fellows

The most frequently cited recommendation—by a significant margin—was **the expansion of dedicated research grants for Ukrainian scientists and research teams** (237 responses), underscoring that direct financial support at the individual or group level remains the top priority. This was followed by strong backing for **joint UA–EU research programmes** (149 responses), highlighting a clear demand not only for external assistance but also for sustained international collaboration and co-creation of research. **These responses reflect a strong**

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desire among Ukrainian scientists to remain active contributors to the global scientific community.

Other frequently cited areas included **mobility and staff exchange programmes** (65), **institutional infrastructure support** (65), and **joint PhD and postdoctoral opportunities** (44), highlighting a need for both individual and institutional reinforcement.

Although less frequently mentioned, additional forms of support—such as access to European facilities, funding for urgent repairs, digital collaboration tools, and training opportunities—still reflect valuable, if more targeted, components of a **comprehensive support strategy**.

These results emphasize that while emergency relief and operational aid are important, Ukrainian researchers also seek **strategic, long-term collaboration and investment** that **strengthens both people and institutions.**

In addition to the multiple-choice selections, many respondents shared **written comments** that add a personal dimension to the quantitative results. These narratives reveal several recurring and critical themes. Here some citations:

"For our team, it would be great to have access to powerful European cloud computing facilities."

"As a young researcher, I cannot fully realize my potential in Ukraine. In order to meet my basic needs, I am forced to work an additional job, as science is more of a calling and a hobby for me, rather than my main source of income."

"This option — 'Funding mobility and staff exchange programmes for short- and long-term research stays in Europe' — is also very important. Unfortunately, we do not have the opportunity to travel abroad for scientific trips."

"Providing targeted financial support, similar to the EURIZON fellowship, will allow Ukrainian researchers to continue their work and maintain their contributions to global science despite current challenges."

"I would like to emphasize that access to online workshops/seminars/conferences is very critical not only from a general point of view, but also because the restriction on travelling abroad only applies to men, not women. This has already led to gender-dependent development! All my female colleagues took part in more than ten different foreign events during the war. Some women travel abroad constantly. Accordingly, they have created many useful individual contacts with scientists. At the same time, male scientists are almost completely isolated from international trips, workshops, or schools (even students!)."

"Providing grants for buying new equipment."

"Opening up opportunities for joint EU–Ukraine doctoral and postdoctoral programs. Funding joint research programs (UA–EU). Strengthening institutional support and research infrastructure. Expanding specialized research grants for Ukrainian scientists and research groups (similar to EURIZON scholarship). Funding urgent repairs, providing materials and equipment to ensure research continuity."

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"All the above events are important. The main thing is to give Ukrainian scientists (especially young ones) the opportunity to feel part of the European scientific community and the importance of their personal contribution."

Many researchers highlighted the struggle to sustain their scientific careers without adequate financial support, calling for expanded grants and institutional investment. At the same time, mobility restrictions—particularly affecting male scientists—were described as a major barrier to international engagement and career development. In short, these voices provide an urgent and nuanced reminder that reversing brain drain and rebuilding Ukraine's science system will require **not only funding but flexibility, inclusivity, and deep structural coordination** across Europe's research landscape.

4. CURRENT SITUATION: Effective financial mechanism to support Ukrainian scientists

The table below presents responses to Question 4 of the EURIZON survey, which asked: *"What financial support mechanism would be most effective in helping Ukrainian scientists stay in science in the current situation?"* Each respondent could select up to three options.

Possible answers	Number of citations
Team research grants (similar to EURIZON Fellowship "Remote Research Grants") **on a competitive base**	**235**
Individual research grants for scientists on a competitive base	**105**
Funding for Ukrainian Research institutes that includes support for lab equipment, materials, and infrastructure urgent repairs	**103**
Funding for equipment & lab maintenance – Support for purchasing research materials, spare parts, and maintaining essential infrastructure	81
Internationally sponsored fellowship programmes – Fellowships allowing scientists to work temporarily abroad while maintaining their affiliation with Ukrainian institutions	79
Funding for institutional salary support (to Ukrainian institutes) – Direct financial aid to help cover all salaries	70
Hybrid work & remote research funding – Support for scientists working remotely due to safety concerns, including access to digital tools and online collaboration platforms	46
Other (please specify)	0

Table 4: Feedback to question 4 of the survey distributed to the EURIZON Programmes fellows

The results clearly indicate **a strong preference for team-based research grants**, such as the **EURIZON Fellowship model "Remote Research Grants"**, which received 235 citations, far outpacing other options. This underscores the importance of supporting collaborative scientific work within Ukraine, rather than only focusing on individual researchers.
Other commonly cited mechanisms included individual research grants (105), and institutional funding for equipment and urgent repairs (103), highlighting the **need for both personal financial stability and institutional functionality.**

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Interestingly, international fellowships, infrastructure maintenance, and institutional salary support all received similar levels of endorsement (between 70–81 citations), suggesting that a **diverse and layered approach—combining personal, institutional, and international support—is considered most effective.**
Lower support for remote research funding (46) and the absence of citations for "Other" options indicate that well-defined, structured funding models are strongly preferred over undefined or improvised alternatives.

In response to the question on which financial support mechanisms would most effectively help Ukrainian scientists remain in science, some participants provided **thoughtful and detailed written comments.** These testimonies reflect the complexity of researchers' financial and institutional realities, highlighting key priorities and limitations. Here after some citations.

"(...) In Ukraine, salaries are very low. A PhD earns about 300 euros per month before tax, but currently, most Ukrainian scientists at NASU work four days a week, earning only 170 euros after tax. This is not enough to meet basic human needs. Most scientists in Ukraine are forced to take on second jobs just to survive."

"I would definitely add here the first point about individual grants on a competitive basis. This is critical, because: Our scientific teams are very small (~10 people is considered large);Our teams often work on shared tasks, but each member may have distinct scientific interests. I would gladly and enthusiastically participate in such a competition!"

"Institutional Salary Support Funding (for Ukrainian institutes) – direct financial assistance to cover all salaries. Laboratory Equipment and Maintenance Funding – support for the purchase of research materials, spare parts and maintenance of necessary infrastructure. Team Research Grants (similar to EURIZON Fellowship) on a competitive basis."

"People leave science because of poverty in science (miserable salaries) against a backdrop of unfulfilled ambitions (no funding even for basic research, travel, or even soap in the bathroom), and right now, total insecurity — personal safety due to the war, career safety (especially for males), and financial safety."

"We should also explore the possibility of EU research institutions donating older or surplus equipment to Ukrainian institutions. This could provide valuable resources at minimal cost to donors while helping rebuild our research capacity. However, due to the ongoing Russian aggression, many Ukrainian institutions are understandably hesitant to publicly identify themselves as recipients of such equipment for security concerns. This creates a practical challenge for implementing equipment donation programs that needs careful consideration in program design."

These testimonials strongly reinforce the survey's quantitative findings. Respondents repeatedly emphasize the **need for flexible, competitive grant schemes**—both individual and team-based—to meet the diverse structures of Ukrainian research groups. Equally urgent is **institutional salary support**, as current income levels are widely seen as incompatible with basic living standards.

The comments also highlight the complex interplay of **personal and professional insecurity** that drives brain drain, and the importance of supporting scientists not only with funding, but also through stable career pathways and access to equipment. Proposals like equipment donation programmes from European institutions reflect a desire for creative, low-cost

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solutions—but also underline the sensitive security context in which such support must be carefully implemented.

5. FUTURE PERSPECTIVES: International support in the long term from European funding agencies and international organizations

The table below presents responses to Question 5 of the EURIZON survey, which asked: *"How do you think European funding agencies and international organizations can best support Ukrainian researchers in the future?".*
Each respondent could select up to three options.

Possible answers	Number of citations
Institutional partnerships & joint UA-EU research projects – Strengthening collaborations between Ukrainian and European research institutes, labs, and research centers on specific topics of common interest	**157**
Investing in joint EU-UA research centers based in Ukraine	**124**
Investment in young Ukrainian scientists & career development – Special programmes to support early-career researchers and prevent future brain drain (e.g. joint PhD and postdoctoral programmes)	**113**
Allowing Ukrainian research institutes to join European research consortia and networks	78
Funding mobility and staff exchange programmes for short- and long-term research stays in Europe to boost mutual learning and exchange	72
Improving research system reforms – Supporting transparency, better governance, and modernization of Ukraine's research system	63
Offering access opportunities for Ukrainian scientists to European facilities and research institutes	38
Reintegration programmes for displaced scientists – Creating pathways for Ukrainian researchers abroad or internally displaced to return to Ukrainian research centers	32
Organizing workshops and networking events to connect Ukrainian and European scientists from the same fields	25
Strengthening public-private partnerships – Encouraging collaboration between academia, industry, and innovation hubs to create more career opportunities	19
Other (please specify)	0

Table 5: Feedback to question 5 of the survey distributed to the EURIZON Programmes´ fellows

The most frequently cited response—**Institutional partnerships & joint UA-EU research projects (157 citations)**—shows a clear demand for deep, sustained collaboration between Ukrainian and European research institutions. This is reinforced by strong support for **investing in joint EU-UA research centers based in Ukraine (124)** and **career development programmes for young scientists (113),** emphasizing the importance of shared infrastructure and generational renewal in science.

Mid-level priorities included integration into European consortia (78), mobility and exchange programmes (72), and reform of Ukraine's research system (63). These responses point to a

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broad consensus that Ukrainian science must be both internationally connected and internally modernized to thrive.

Overall, the data reflect a forward-looking vision: Ukrainian scientists seek not only support to recover from crisis, **but strategic integration into the European Research Area**—built on partnership, institutional trust, and long-term investment in people and systems.

In response to the question on how European funding agencies and international organizations can best support Ukrainian researchers in the future, some participants provided detailed comments. These insights reflect priorities such as international mobility, practical support mechanisms, systemic reform, and the urgent need for rebuilding Ukraine's scientific infrastructure. Here some citations.

"Because I can check only 3 items, I want to mention funding mobility and staff exchange programmes for short- and long-term research stays."

"Funding mobility and staff exchange programmes for short- and long-term research stays in Europe to boost mutual learning and exchange."

"As in the 3rd question, the option – 'Funding mobility and staff exchange programmes for short- and long-term research stays in Europe to boost mutual learning and exchange' – is also very important, but at the moment, Ukrainian scientists do not have such an opportunity."

"(...) Investing in EU-Ukraine Joint Research Centres in Ukraine. Improving science system reforms – supporting transparency, better governance and modernisation of Ukraine's science system."

"EMMRI is a great example; I think it is better to share knowledge (it gives the longest effect) than money."

"In order for Ukraine to rebuild its destroyed infrastructure (including universities and its equipment), businesses and houses, it will definitely need support from European partners." (repeated by several respondents, emphasizing urgency and consensus)

"Investment in Young Ukrainian Scientists is very important, because they often go abroad to study and never return to Ukraine."

"More attention should be paid to adapting the Ukrainian scientific system to European standards. This direction should become an important component of the government's European integration program."

These reflections reinforce key themes from the survey data: respondents value **mobility opportunities** and **international research collaboration**, but emphasize that support must be **practical, visible, and directly beneficial** to individuals and small teams. Respondents also stress that **aligning Ukraine's research system with European governance and standards** is essential for successful integration into the European Research Area.

6. FUTURE PERSPECTIVES: Possible role of European research institutes and scientists

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The table below presents responses to Question 6 of the EURIZON survey, which asked: *"What role should EUROPEAN RESEARCH INSTITUTES and EUROPEAN SCIENTISTS play in supporting Ukrainian scientists?"* Each respondent could select up to three options.

Possible answers	Number of citations
Offering joint research funding & co-hosting projects for individual scientists or teams – Creating dedicated funding programmes for collaborative research between European and Ukrainian scientists	**173**
Providing long-term research collaboration between institutes – Establishing partnerships between EU-UA Institutes on topics of mutual interest to ensure sustained scientific cooperation	**162**
Facilitating access to European research facilities & infrastructure – Granting Ukrainian researchers access to laboratories, equipment, and specialized research centers	**99**
Creating visiting researcher positions with flexible affiliation – Allowing Ukrainian scientists to work in European institutions while maintaining ties with Ukraine	85
Developing structured support for institutional recovery & modernization – Assisting Ukrainian universities and research institutes in rebuilding, reforming, and upgrading their infrastructure	75
Establishing mentorship & training programmes for young researchers – Supporting early-career scientists through mentorship, training, and skills development programmes	63
Promoting policy advocacy & institutional support – Helping Ukrainian institutions integrate into the European research landscape and align with international research standards	25
Establishing mentorship & training programmes for Ukrainian research managers & directors – Providing training and mentorship to help Ukrainian research leaders integrate their institutions into the EU research area	24
Other (please specify)	0

Table 6: Feedback to question 6 of the survey distributed to the EURIZON Programmes´ fellows

The responses show a **strong emphasis on active scientific collaboration and sustained institutional ties**. The top two priorities were:

- Offering joint research funding and co-hosting projects (173 citations)
- Providing long-term collaboration between institutes (162 citations)

These figures highlight a strong preference for **structured, equitable partnerships that enable sustained, meaningful scientific collaboration between Ukrainian and European researchers**. Ukrainian scientists express a clear desire to be actively involved in the co-creation of research and emphasize their **commitment to contributing as equal partners to the international scientific community.**

Next, respondents highlighted the importance of **access to European research facilities and infrastructure (99) and creating visiting researcher positions with flexible affiliation** (85), suggesting that researchers seek both physical and institutional bridges to remain active and integrated within the broader European scientific community.

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Support for institutional recovery and modernization (75) and mentorship and training for young researchers (63) further point to a desire for capacity-building that is not only reactive but forward-looking.

The feedback reveals a strong consensus that **European research institutions should serve as long-term partners**—not only donors or hosts—**working alongside Ukrainian institutions to co-create scientific projects, exchange knowledge, and rebuild capacity**. Respondents place highest value on collaboration that is inclusive, sustained, and practically grounded in shared research objectives and infrastructure access. The data suggest that Ukrainian scientists are not merely looking for support—they are calling for **integration and co-leadership** in shaping the future of European science.

4 respondents offered an additional comment to the question:

"Offering Joint Research Funding & Co-Hosting Projects for individual scientists or teams – Creating dedicated funding programs for collaborative research between European and Ukrainian scientists."

"Every scientist who works abroad for a long time will never return to Ukraine. To preserve science in Ukraine, we need to finance those who remain in Ukraine now."

"Ensuring long-term research collaboration between institutes. Proposing joint funding and joint research projects for individual scientists or teams. Creating mentoring and training programs for Ukrainian research leaders and managers is important to me personally."

"EU IR made a lot of for UA IR, but I think UA IR should study EU IR, be self-confident, and push to apply for funding like equal partners."

To preserve science in Ukraine and foster long-term resilience, there is a clear call for dedicated joint funding, sustained collaboration between institutions as equals, and continued support for both scientists who remain in the country and those engaged in international partnerships.

7. FUTURE PERSPECTIVES: How to best tailor European funding programmes

The table below presents responses to Question 7 of the EURIZON survey, which asked: *"How can European FUNDING PROGRAMMES be better tailored to support Ukrainian researchers and institutions?"*. Each respondent could select up to **five options.**

Possible answers	Number of citations
Offering multi-year stability grants – Providing long-term funding opportunities to ensure career security for Ukrainian researchers	**165**
Creating dedicated funding schemes for Ukraine's scientific integration – Establishing special programmes to support Ukraine's integration into the European Research Area	**146**
Ensuring flexible grant conditions – Allowing Ukrainian participants for remote, hybrid, and adaptive research collaboration to accommodate war-related constraints	**136**
Adding extra value to existing EU programmes for consortia to involve Ukrainian teams – Encouraging European research consortia to integrate Ukrainian teams into their projects by offering additional funding or incentives	105

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Encouraging more joint research projects & mobility grants – Expanding co-funded projects and mobility programmes to enhance collaboration between Ukrainian and European researchers	78
Reducing bureaucratic barriers & simplifying application processes – Making EU funding more accessible by streamlining eligibility criteria, reporting requirements, and administrative burdens for Ukrainian applicants	63
Providing training & guidance on EU funding applications – Offering targeted workshops and mentoring to help Ukrainian institutes successfully apply for EU grants	62
Providing rapid-response & emergency research grants – Establishing fast-track funding for scientists facing disruptions due to war-related circumstances	47
Expanding access to EU-based training & fellowship programmes – Remote or hybrid participation opportunities for Ukrainian scientists	42
Supporting institutional capacity-building in Ukraine – Strengthening Ukrainian research institutes by funding management training, administrative support, and international partnerships	33
Other (please specify)	0

Table 7: Feedback to question 7 of the survey distributed to the EURIZON Programmes´ fellows

This table summarises responses to which **EU funding mechanisms** would be most effective in supporting Ukrainian researchers and institutions **in the future perspective.**

The responses reveal a clear set of priorities: **Ukrainian scientists are seeking stability, meaningful inclusion, and greater** flexibility to navigate the disruptions caused by the war. **Long-term, secure funding and integration into established EU frameworks** are seen as far more effective than short-term or ad hoc measures. Respondents also emphasize the need for **practical reforms within Ukraine**—such as reducing bureaucratic barriers and enabling more adaptive participation—to ensure that Ukrainian institutions can continue to access EU funding effectively. This is not only crucial during the war but will be equally vital in the post-war reconstruction phase, when the challenges of rebuilding the scientific system will persist.

These findings suggest that **EU support strategies should balance immediate relief with structured, inclusive long-term funding** that helps Ukraine both retain its researchers and modernize its research system in alignment with European standards.

3 participants offered also nuanced comments that address both opportunities and challenges in scientific collaboration and publication.
"Encouraging More Joint Research Projects & Mobility Grants – Expanding co-funded projects and mobility programs to enhance collaboration between Ukrainian and European researchers."

"It is difficult to publish scientific findings supported by EURIZON Project in high ranking scientific journal. It takes more time for obtaining results, their analysis and publication than a year."

"I believe that Ukrainian researchers need to learn how to work with the EU's requirements. There is no need to simplify or create new special conditions. We must work on equal terms with other researchers and learn how to do this."

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There is strong support for expanding joint research and mobility opportunities, paired with a recognition of the need for realistic timelines and greater capacity-building to help Ukrainian researchers engage effectively and equitably within EU research frameworks.

8. The importance of the access to European research infrastructures

The graph below summarizes the responses to the question 8 :"*How important is access to European research infrastructures and data sets (physical or remote) for Ukrainian scientists in the current situation?"*

- A large majority (**161 respondents**) considered such access **essential**, stating that Ukrainian researchers need continued use of European facilities until domestic infrastructures are fully restored and modernized.
- A further **79 respondents** found access **important**, especially for occasional use of advanced infrastructure not available in Ukraine.
- Only **19 respondents** rated access as **moderately important**, suggesting that while helpful, other support forms may currently take precedence.
- Notably, **no respondents** deemed infrastructure access unimportant.

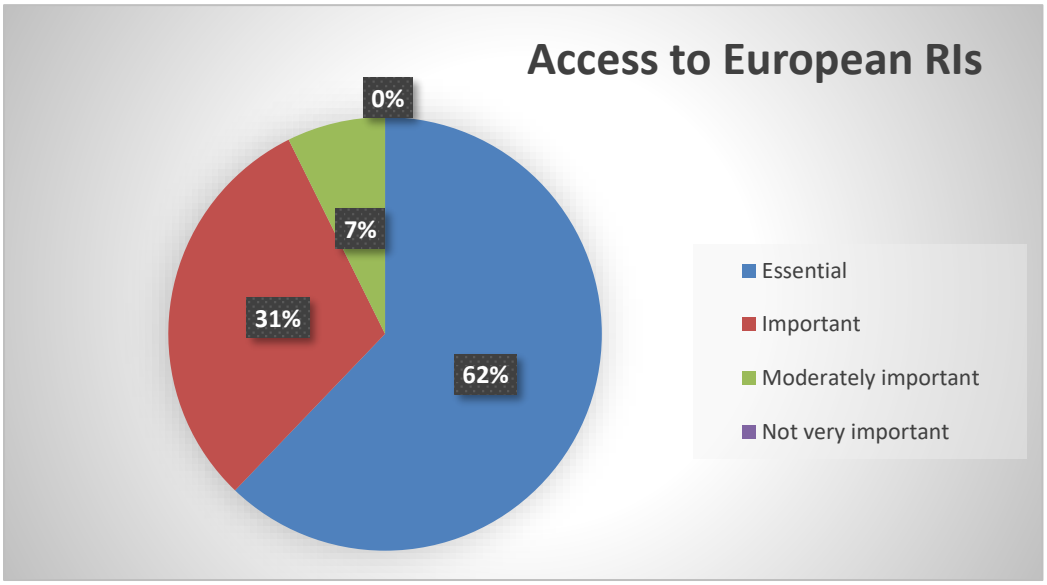

Table 8: Feedback to question 8 of the survey distributed to the EURIZON Programmes´ fellows

These results clearly affirm that **continued and expanded access to European research infrastructures is a top priority** for Ukrainian scientists during the war and recovery period. This access is not only a stopgap measure but a **critical enabler of scientific continuity and international collaboration**, helping researchers remain productive despite damage to facilities at home. The data also suggest that **physical and digital infrastructure access should be central to future support programmes**, particularly in the context of rebuilding and integration into the European Research Area.

In response to the question on the importance of access to European research infrastructures and data sets, several respondents shared important reflections highlighting not only its urgency but also the need to integrate this access into a broader, structured support strategy. Here some citations.

"For our team, it would be great to have access to powerful European cloud computing facilities."

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"Essential – Ukrainian researchers need continued access until their research infrastructures are fully operational again."

"Vitally necessary."

"Access to European research infrastructures and datasets is very important, but only as part of a broader, more systematic approach. Simply providing access without complementary measures—such as team-building initiatives, project-oriented funding, and salary support—would be ineffective and could even contribute to brain drain. To truly benefit Ukrainian scientists, infrastructure access should be integrated into well-structured collaborations."

"Access to European research infrastructures and datasets (physical or remote) is extremely important for Ukrainian scientists in the current situation. Offline meetings and the opportunity to review materials are the most valuable in the process of studying the topic, as they provide direct contact with experts, experience exchange, and the ability to apply theoretical knowledge in practice."

"Access to European research infrastructures and datasets is critical for Ukrainian scientists, as many laboratories and facilities in Ukraine have been damaged or are operating under severe constraints. The ability to use advanced equipment, analytical tools, and experimental setups in European institutions ensures the continuity of high-quality research. Additionally, remote access to datasets and computational resources allows Ukrainian scientists to maintain international collaborations, analyze data, and contribute to global scientific advancements despite the challenges faced at home."

"Perhaps European colleagues have reagents, equipment that is unnecessary or outdated for them, it would be better to introduce a way to transfer them to us."

"As a result of razing a lot of premises of our universities, and destruction of libraries and publishing houses (in Kharkiv and other cities of eastern Ukraine), we will not be able to rebuild and renew all library stocks relatively soon and that is why access to western databases of books and articles and other facilities (e.g. to different scientific labs) is essential for Ukrainian scientists to keep in touch with present challenges."

These responses underscore a **near-universal agreement: access to European infrastructures, datasets, and facilities is not optional—it is essential**. However, respondents also stress that this access must be **embedded within comprehensive support systems**, including TNA funding, collaboration opportunities, and capacity-building initiatives. Beyond basic continuity, this access is seen as a bridge to integration into the global scientific community, enabling Ukrainian researchers to remain productive, competitive, and connected despite the ongoing war and destruction of local resources.

9. FUTURE PERSPECTIVES: Non-financial barriers for staying and returning Ukrainian scientists

The table below presents responses to Question 9 of the survey, which asked: *"What are the most significant NON-financial barriers preventing skilled Ukrainian researchers from staying in or returning to science in Ukraine?*" Each respondent could select up to **five options.**

Possible answers	Number of citations

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 871072.

Uncertainty about the stability of research careers and the operability of research infrastructures after the full-scale invasion	**184**
Limited access to modern research facilities and equipment	**123**
Unclear national strategy for research and innovation in post-war Ukraine	**112**
Need for modernization and reform of research funding systems	104
Insufficient support for young researchers and slow career advancement	77
Limited career advancement opportunities	68
Difficulties balancing work with personal security and family concerns	60
Lack of transparency, meritocracy, and institutional reforms	56
Limited engagement between academia and industry	53
Weak international research networks and collaboration	45
Limitation and barriers to women's career advancements	14
Other (please specify)	6

Table 9:Feedback to question 9 of the survey distributed to the EURIZON Programmes´ fellows

The most cited barrier—by a large margin—was **uncertainty about the stability of research careers and infrastructure operability** following the full-scale invasion (184 citations). This underscores a profound concern about the future viability of scientific careers and institutions in the country.

Closely following were **limited access to modern research facilities and equipment** (123 citations) and an **unclear national strategy for research and innovation** (112), indicating that researchers are concerned not only about immediate operational challenges but also about the **long-term direction of Ukrainian science**. These concerns reflect a lack of confidence in the future of the research system unless **structural reforms** are implemented.

In addition, **systemic issues such as the need for reforming research funding mechanisms** (104) and **insufficient support for young researchers** (77) underscore the urgent need for **career development pathways, increased transparency, and comprehensive institutional modernization**.

Other barriers include **limited career advancement opportunities** (**68**), **personal security and family concerns** (**60**), and **lack of transparency and meritocracy** (**56**)—all of which affect researchers' confidence in building a future in Ukraine.
Lower, but still notable, were issues such as **weak links between academia and industry** (**53**), **limited international networking** (**45**), and some **gender-specific career barriers** (**14**), reflecting gaps in the systemic integration.

The data clearly reveal that **non-financial challenges are as critical as economic ones** in influencing scientists' decisions to stay or return. The most urgent concerns are uncertainty, lack of infrastructure, and an absent or unclear strategic vision for science in Ukraine. These findings reinforce the need for comprehensive, long-term planning that not only invests in institutions but also **rebuilds trust, transparency, and clear career pathways**.

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To effectively address brain drain, Ukraine—and its international partners—must confront these non-financial barriers by **modernizing governance**, **supporting early-career researchers**, and fostering a **stable, transparent and merit-based research environment** where returning scientists see a future worth investing in.
Some citations in the comment sections include:

"From my observations, the personal security issue is the most significant barrier from returning back to Kharkiv for the moment."

"Weak international research networks and collaboration."

"All of these points are the most significant NON-financial barriers preventing skilled Ukrainian researchers from staying in or returning to science in Ukraine."

"Restriction of same-sex marriage."

"The biggest non-financial barrier is the lack of protection for researchers during military conflict. Most researchers are not soldiers and are not equipped to handle combat situations, making it very difficult to conduct research under such conditions."

"Extremely low salaries, lack of support for scientists from the state, the need to modernize and reform scientific research funding systems."

"I wish to contribute my obtained international experience to the national university and teach Ukrainian students, but there is a huge uncertainty about the next Russian invasion in the nearest future.(...)"

This selection of personal reflections highlights the profound challenges Ukrainian scientists face—challenges that extend far beyond financial hardship. In addition to systemic issues like low salaries and inadequate research support, these **comments reveal deeply human concerns: threats to personal safety, mobilization, war-related trauma, and broader societal and geopolitical instability**.

These voices make it clear that any effective international response should go beyond rebuilding research infrastructure—it must also safeguard the **freedom, security, and dignity** of those striving to continue scientific work under the harshest of conditions.

10. FUTURE PERSPECTIVES: How to reintegrate Ukrainian scientists who have already left science or the country

The table below presents responses to Question 10 of the survey, which asked: *"How can European funding organizations help reintegrate Ukrainian scientists who have already left science (internally displaced or on other jobs) and/or the country (once safety conditions allow)?"* Each respondent could select up to three options.

Possible answers	Number of citations
Providing dedicated funding and fellowships for returning scientists – offering targeted grants, salaries, and research funding to facilitate their transition back to Ukraine	**169**

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Strengthening partnerships between Ukrainian and European institutions to encourage returnees – fostering joint research initiatives and exchange programmes that support long-term reintegration	**143**
Offering incentives for scientists who return to establish research groups in Ukraine – providing start-up funds, lab equipment, and research grants to help them set up their own teams and projects	**143**
Providing training, networking, and reskilling programmes for returnees – helping scientists update their skills, reconnect with Ukrainian research networks, and reintegrate professionally	49
Developing dual-location employment models to allow gradual reintegration	48
Providing psychological and professional reintegration support – offering counseling, career guidance, and community-building initiatives to help returnees adapt both personally and professionally	37
I don't know	19
Other (please specify)	4

Table 10: Feedback to question 10 of the survey distributed to the EURIZON Programmes´ fellows

The most cited response was providing **dedicated funding and fellowships for returning scientists (169 citations).** This underscores that targeted financial support—through salaries, research funding, and reintegration fellowships—is seen as the most **powerful mechanism to attract scientists back to Ukraine.**

Equally important were two tied responses (143 each): **Strengthening partnerships between Ukrainian and European institutions**, emphasizing the value of joint research initiatives and exchange programmes as long-term anchors for returnees;
Offering incentives to scientists who return to establish new research groups, including start-up funding and lab support—signalling the importance of empowering leadership and local capacity-building upon return.

Other relevant but less frequently cited measures included:
Training, networking, and reskilling programmes (49), aimed at helping scientists **reconnect with Ukraine's academic ecosystem and update their skills** after prolonged absence;
Dual-location employment models (48), highlighting the need for flexibility in the reintegration process, especially during periods of transition or insecurity;
Psychological and professional reintegration support (37), pointing to the need for mental health care, career guidance, and community-building for those returning after displacement.

The responses to this question make clear that successful reintegration of Ukrainian scientists will depend on a **combination of direct support, institutional connectivity, and personal reintegration tools**. Financial resources are foundational, but they must be paired with long-term collaboration structures and individualized pathways back into science—including opportunities to lead, retrain, or gradually re-engage.

The data also suggest that reintegration is **not just a logistical process but a psychosocial transition.** Support schemes must therefore be flexible, inclusive, and strategically layered—addressing both the **technical and human aspects of returning to science** in a post-conflict environment.

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The open comment section of the question offered further very interesting perspectives**.** Here are some citations:

"I would like to mention a separate group of scientists, who changed their job during the full-scale invasion, namely, those who are at the military service. It would be great to establish special research opportunities and fellowships for those veterans, who would like to return to science."

"Providing dedicated funding and fellowships for returning scientists – offering targeted grants, salaries, and research funding to facilitate their transition back to Ukraine."

"European funding organizations can help reintegrate Ukrainian scientists by positioning them as ambassadors of new collaborative research projects. Instead of directly funding individuals, they could support projects that revitalize Ukrainian research teams and institutions, fostering long-term networks and resources. This approach helps avoid creating a divide between those who stayed and those who left, enabling returning scientists to contribute to Ukraine's scientific community while strengthening ties with European research."

"Scientists who went abroad and worked abroad are already in a better position than those who stayed. They have no experience of life in war, they do not have psychological pressure, they receive sufficient funding for life and work. Therefore, in my opinion, supporting those who stayed is a more critical issue. Because without this support, scientific centres simply will not survive, and there will be nowhere to return."

"The main factors that will help bring back Ukrainian scientists are funding at the European level, improving the scientific research base and eliminating the bureaucratic system in the management of scientific institutions. But first and foremost is ending the war."

"The best assistance is joint research. Funding organizations could support initiatives that foster collaborative projects between Ukrainian and European scientists. This approach would facilitate resource sharing, knowledge exchange, and long-term partnerships, ultimately helping Ukrainian researchers reintegrate into the scientific community once conditions permit."

"It is necessary to take into account the need for different approaches to scientists who fully realize their abilities abroad (work in their specialty) and those who do not have the opportunity to conduct research (at all or at a level corresponding to their qualifications). In the latter case, we are talking mainly about the need for financial support in the event of a return to Ukraine. But more successful researchers will not be motivated only by financial support: they will pay more attention to the state of institutions, red tapes, etc."

These reflections present a **rich and nuanced perspective** on the challenge of reintegrating Ukrainian scientists who have left the country or the academic field. While financial support and fellowships are clearly essential, respondents also emphasize the need for **tailored approaches** based on scientists' diverse circumstances—distinguishing between those who remained, those who served in the military, and those who had the chance to advance their careers abroad.

A recurring theme is the **importance of restoring institutional quality** and reducing bureaucracy to attract highly skilled researchers back to Ukraine. At the same time, some stress

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that **priority should be given to those who stayed**, as their continued presence is vital to the survival of domestic research institutions.

Ultimately, these voices reinforce the idea that successful reintegration requires **a combination of material support, institutional reform, and inclusive collaboration**—with an approach that is both **flexible and fair** in recognising the contributions and needs of all Ukrainian scientists.

11. OPEN COMMENTS to the survey

At the end of the survey, an **open comment box** invited fellows to supplement their responses with additional or concluding remarks. The selected quotes below reflect the most common themes that emerged: **overwhelming appreciation for the EURIZON Fellowship** as a vital lifeline, alongside a clear call for **strategic, equitable, and long-term measures to ensure the sustainability of Ukrainian science**. Many respondents stressed the **deep value of the human connection**, the opportunity to stay active and engaged, and the emotional reassurance of being seen and supported by the European community during an exceptionally stressful and traumatic period. They emphasized the **need for continued collaboration, flexibility, and inclusivity**, not only as policy principles but as sources of resilience and hope in times of profound uncertainty. Respondents also urged coordinated action from both Ukrainian authorities and European partners to rebuild the **research ecosystem in a way that is equitable, sustainable, inclusive, and future-oriented.**

"In my opinion, the future of science in Ukraine, including the return of scientists currently abroad, will depend on the state's commitment to integrating scientific advancement into economic development. This necessitates the creation of a robust ecosystem that fosters collaboration between research infrastructure and industry. Therefore, European community assistance should prioritize the development of a science-intensive business environment in Ukraine. This can be achieved through the establishment of science and technology parks (science hubs) that focus on the practical application of research to drive business innovation. While funding individual scientists and research groups is crucial for immediate support, such initiatives alone will not cultivate a sustainable scientific infrastructure for the long term. The current model of support (we are deeply appreciated EU for support), primarily serves as a vital lifeline. We must shift our focus towards activities that empower Ukraine to build a thriving, science-driven economy, ensuring its long-term resilience and competitiveness."

"As a researcher who has remained in Ukraine throughout this crisis, I have concerns about potential inequalities in support programs. While I appreciate the importance of attracting qualified scientists back to Ukraine, it would be deeply frustrating if those who left received significantly better compensation than those of us who stayed, maintained our institutions, and continued our work under difficult conditions. I believe any reintegration programs should carefully balance support for returning scientists with recognition and comparable compensation for those who remained. Rather than creating a two-tier system that potentially rewards departure, we need equitable support across our scientific community. I do fully support reintegration initiatives for researchers with exceptional track records and leadership capabilities who can help rebuild our scientific infrastructure. Additionally, I see great value in joint EU-Ukraine projects where Ukrainian researchers can work under European management frameworks while remaining in our country. This approach supports our scientific community while building international connections without incentivizing departure."

"I think that the creation of an education and networking platform where alumni of EMMRI can share knowledge in different directions (Engineering, Medicine, Economy etc)."

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"Preventing the brain drain should, first of all, become a concern of the Ukrainian authorities. European partners (including the EURIZON) can significantly help this process only if it becomes a truly important government goal (included in the European integration program)."

"EURIZON team did the impossible - I appreciate how much was done and how it is not in line with their normal activity, THANK YOU!"

"The EURIZON Research Fellowship was absolutely vital to my research. Without this funding, most of my experimental work would have been impossible. The major advantages were the absence of bureaucracy, the absence of age restrictions for participants, and the timeliness of payments."

"We are infinitely grateful for the support of our work and life!! We hope to receive the scholarship again, we will be grateful to have such an opportunity. We dream of a free and European Ukraine."

"I would like to express our sincere thanks for this wonderful program. It has allowed our team to continue our research and provided a much-needed distraction from the war."

"I say 'Thank you very much' to everyone for the opportunity to do my favourite thing for a year - to develop science! I live in Kharkiv and I'm glad that preparing for conference presentations and writing scientific papers distracted me from the constant rocket and bomb attacks"

"It seems to me that nearly all the ideas discussed in this review, if implemented, will contribute to the advancement of Ukrainian science."

"First and foremost, I want to sincerely thank you for raising such a critical and urgent question—how to bring our scientists home. This is not just a matter of logistics; it is a challenge deeply tied to the survival and future of scientific progress in our country.

"If I were to give an immediate answer, it would be this: I simply don't know. The reality is extraordinarily complex. Firstly, from a purely geographical perspective, many researchers have no home institutions to return to, as numerous scientific institutes are located in occupied or war-torn areas. Even where infrastructure remains intact, the long-term viability of these institutions is uncertain. Secondly, the financial constraints on science and education have significantly reduced the number of available positions for returning researchers. Limited funding and shrinking budgets have made it difficult to sustain existing scientific projects, let alone reintegrate those who have been displaced. Many brilliant minds have sought opportunities abroad out of necessity, not choice, and without tangible prospects for stable employment and career growth, convincing them to return becomes even more difficult. That is why I deeply appreciate the proposals outlined in your survey. Many of them offer practical and promising pathways forward. However, no single solution will be enough on its own. Instead, a comprehensive, multi-faceted approach must be pursued in parallel. This could include increasing international collaborations, securing long-term funding mechanisms, creating flexible research positions, and rebuilding scientific infrastructure. Only through a coordinated and sustained effort can we hope to reverse the brain drain and restore the strength of our scientific community."

"Dear Greta and Team, Thank you for the Eurizon program and your touching human attitude toward the entire situation. Again, I feel that we are not alone in this war."

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 871072.

"Thank you for your support! Thank you for the opportunity. It is very important for us to know and understand that our work is appreciated in Europe."

"The promising perspective of a deep future collaboration is the establishment of the departments of European sci-tech centers in Ukraine. For example, DESY Department in Ukraine in field of nuclear/ astroparticles physics or DZA Department in Ukraine in field of astrophysics. As the first step, it's possible to organize such projects through the STCU (1.5 - 2 years duration) with the aims to form and train the teams of scientists, engineers, data scientists (preference for young scientists) to prepare facilities; to provide the data access and data streams; to obtain preliminary results, etc. The second point: To support the projects related to the funding of destroyed facilities during the war,for example, in fields of astronomy, infrastructures of the Institute of Radio Astronomy of the NAS of Ukraine, Kharkiv."

"I am extremely grateful to the Eurizon project for the vital support of scientists from my laboratory in this extremely difficult time for Ukraine and Ukrainian science. This allowed me to keep my scientific group alive thanks to the large financial support. And what is especially important is to continue our research on the catalytic conversion of biomass into valuable chemical products and biofuels. In addition, thanks to the support of scientists from the EU partners, we gained access to advanced equipment for the study of catalytic processes, which is absent in Ukraine. This has increased the level of our publications, in particular, two joint manuscripts are under review in journals with high impact factors (IF=8-14, Q1).
We really hope that the project will be extended, because for us it is a matter of the survival of our scientific direction and keeping highly qualified specialists in Science."

5.1 Summary of the findings from the EURIZON fellowships final survey

1. War-induced career and personal challenges:
Ukrainian scientists are working under severe and often dangerous conditions as a result of the full-scale Russian invasion. The most pressing professional challenges reported include restricted mobility, emotional and psychological strain, feeling of isolation, job and salary insecurity, and damage to or loss of access to research infrastructure. These difficulties are especially acute in regions closer to the front lines. Crucially, respondents highlighted how these issues are deeply interconnected and compounded by the overarching concern for personal safety—widely seen as a fundamental prerequisite for continuing or returning to scientific work in Ukraine.

2. Safety and financial stability as a priority:
Safety, improved salaries, competitive grant schemes (especially team-based), and investment in research infrastructure were identified as the top four needs to prevent brain drain. Without safety and economic security, researchers cannot commit to long-term careers in Ukraine, especially younger scientists.

3. Value of international support and European collaboration:
Respondents stressed the importance of expanding EU-funded fellowships, EU-UA joint research programmes, and EU–Ukraine institutional partnerships. Programmes like the EURIZON Fellowships were praised for their relevance and impact. Any future support must be flexible and accessible—particularly in light of ongoing mobility restrictions and security concerns. Importantly, many Ukrainian scientists expressed a strong desire not only to receive

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support but to actively contribute to the European and global scientific community. They seek meaningful integration as equal partners, with opportunities to connect, collaborate, lead, and advance science on a level playing field.

4. Rebuilding institutional confidence:
Uncertainty about the long-term viability of Ukraine's research system—including unclear national strategy, bureaucracy, and lack of career development pathways—was a major deterrent to remaining or returning. Calls for reform of grant systems, funding transparency, and improved governance were strong.

5. Reintegration needs a layered approach:
Returning scientists—whether from abroad or from non-research roles—require tailored reintegration pathways. Respondents emphasized that the diverse circumstances of scientists must be carefully considered: whether they left to serve in the military, became internally displaced, had to pause their scientific work for family or economic reasons, or look for new career opportunities abroad. Each group faces unique challenges and motivations for return. As such, reintegration efforts should include dedicated fellowships, funding for establishing new research groups, and flexible employment models that accommodate different personal and professional trajectories. Additionally, respondents underscored the need for equitable opportunities for those who stayed during the harder times, psychological support, professional retraining, and long-term career planning—especially for veterans and those re-entering science after extended absences.

6. Access to European infrastructures is essential:
A majority of respondents see continued access to European research infrastructures, data platforms, and equipment as critical. This access is not only about maintaining scientific continuity during wartime—it is also a key mechanism for post-war integration into the European Research Area (ERA).

7. Non-financial barriers are equally critical:
Alongside financial concerns, non-financial obstacles—such as safety, legal constraints (e.g., mobilization), increased workloads, life-career balance and mental health—strongly influence decisions to stay or return. Addressing these concerns requires not only policy reform but a broader commitment to security, dignity, and support to the science system as a whole.

Overall conclusions from the fellowships´ final survey

The EURIZON fellowships survey confirms that brain drain from Ukraine is not just a consequence of war, but also the result of long-standing structural weaknesses in the country's research system. However, the war has exacerbated these trends and placed many scientists in precarious situations. To effectively counter brain drain, the response must be multi-layered: it must **combine financial investment with institutional reform, support salary sustainability, ensure physical and psychological safety, and integrate Ukraine's scientific community meaningfully into the European and global research ecosystems. The EURIZON experience shows that with the right support, many Ukrainian scientists are committed to remaining in or returning to Ukraine—provided they are given the tools, recognition, and security they need to do so.**

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6. Conclusions: Recommendations on how to prevent and revert brain drain from Ukraine

The full-scale Russian invasion of Ukraine has dramatically disrupted the country's research and innovation ecosystem, placing thousands of scientists and research infrastructure personnel under immense personal and professional strain.
In this context, **brain drain** has emerged not just as a consequence of war, but as a profound **structural threat to the future of Ukrainian science**.
Addressing this challenge goes beyond encouraging the return of those who have emigrated or temporarily left the scientific field due to survival needs or military service—**it is about ensuring that Ukrainian researchers can advance, thrive, and contribute meaningfully to both national recovery and global scientific progress**.
Drawing on the findings of the EURIZON project—including extensive consultations with Ukrainian scientists, RIs staff, institutional leaders, and policy stakeholders—this document presents a set of **evidence-based, actionable recommendations**.

These efforts are structured around two interconnected timelines:

1. **Immediate interventions** aimed at supporting scientists who continue their work in Ukraine under wartime conditions.
2. **Long-term support strategies** aimed at sustaining those who remained in the country during the post-war recovery, and at attracting back and reintegrating scientists who were forced to leave Ukraine or exit the scientific field due to military service, displacement, or economic hardship.

IMPORTANT PREMISE:

Before any meaningful discussion on reversing brain drain can take place, it is essential to acknowledge that ensuring the **safety, security, and well-being of Ukrainian scientists** and their families remains the fundamental precondition. This document offers recommendations from two interconnected perspectives.

First, it addresses the **urgent need to support those Ukrainian scientists who, despite the war, have remained in the country.** These scientists require targeted assistance to continue their research, maintain academic engagement, operate the RIs and remain part of the global scientific community under extremely challenging conditions.

Second, it **considers the longer-term perspective: how to sustain and reinforce the scientific ecosystem in Ukraine once the war has ended and conditions of safety have returned.** This includes identifying strategies to continue supporting those who stayed, and designing effective measures to encourage and facilitate the return of scientists who were forced to leave but are willing to contribute to the reconstruction and renewal of Ukrainian science.

The following key strategic topics have been identified and are elaborated below:

1. Immediate interventions

1.1 Ensure stable salary support/research grants
1.2 Enhance joint research initiatives and collaborations between the EU RIs and Ukrainian RIs
1.3 Provide equipment and infrastructure repair support
1.4 Expand and facilitate access to European RIs and datasets

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1.5 Promote continuous learning, training, and mentorship opportunities for scientists and RI managers
1.6 Address mental health and personal resilience support

2. Long-term strategies
2.1 Create reintegration fellowships opportunities and structured pathways for returning scientists
2.2 Mobilize and unlock the expertise of the Ukrainian scientific diaspora
2.3 Support to the modernization of RIs and the reform of the Ukrainian research system
2.4 Promote institutional partnerships and brain circulation
2.5 Establish long-term joint research programmes
2.6 Invest in young scientists and early-career pathways

1. Immediate interventions

Supporting scientists who remain active in Ukraine under wartime conditions

1.1 Ensure stable salary support/research grants

Finding: Across all consultations and survey instruments, financial insecurity was identified as the **single most urgent challenge** for Ukrainian scientists and research infrastructure (RI) staff. Many reported being paid irregularly, working part-time due to institutional budget constraints, or earning salaries too low to meet basic living needs. This economic pressure is leading not only to emigration, but to researchers leaving science altogether.

Actionable suggestions:

- **Extend and scale up fellowship models like the EURIZON Remote Research Grants**, which fund research teams inside Ukraine. Future iterations should expand both the number of beneficiaries and duration (e.g. up to 24 months), and ensure that all core staff (including technicians, junior researchers, and administrative support) are covered.
- **Create EU-funded salary bridging schemes** for RI personnel at risk of leaving their posts due to budget cuts. These schemes can be implemented through competitive, institutional-level grants awarded to Ukrainian RIs with clear retention plans and transparent salary allocation mechanisms.
- **Design targeted research mini-grant programmes for early-career scientists**, with low administrative barriers and rapid disbursement. These grants could prioritize researchers with interrupted careers, internal displacement, or family obligations.
- **Embed flexible funding for salaries and research time** into all EU–Ukraine collaborative research projects. This ensures that Ukrainian partners have protected time for research and are treated as equal contributors.

Rationale: Salary insecurity is not only a financial problem — it directly undermines Ukraine's ability to retain scientific talent, maintain research continuity, and protect institutional viability. Stable, adequate income is essential to avoid career exits, preserve morale, and prevent long-term damage to the scientific system. Rapidly deployed and inclusive salary support — especially when structured **around team-based grants** — keeps labs operational, early-career scientists engaged, and scientific leadership intact during crisis and recovery. It is not a stopgap measure; it is a strategic investment in human capital.

1.2 Enhance joint research initiatives and collaborations between the EU and Ukrainian RIs

Finding: Across all surveys and consultations, there was strong and consistent agreement that sustained, structured research collaboration between Ukrainian and EU institutions is essential.

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Joint projects are seen not only as professional lifelines for scientists who remain in Ukraine or plan to return, but also as critical to institutional resilience, capacity building, and the long-term integration of Ukraine into the European Research Area.

Actionable suggestions:

- **Establish dedicated EU–Ukraine calls within Horizon Europe and successor programmes**, explicitly designed for co-led research projects involving Ukrainian institutions as equal partners. These calls should feature simplified procedures and flexible participation rules adapted to conflict-affected settings.
- **Launch EU-funded Research and Innovation Actions (RIAs)** specifically designed to include Ukrainian research infrastructures as consortium partners. These RIAs should target scientific and technical cooperation on topics of mutual strategic interest—such as materials science, digitalization, health technologies, and environmental resilience—between European and Ukrainian RIs.
- **Support the establishment of innovation hubs, and thematic consortia**, co-hosted by EU and Ukrainian partners, with options for physical co-location or hybrid and remote collaboration models.
- **Encourage co-affiliation and dual employment mechanisms** that allow scientists to contribute to EU-led projects while remaining institutionally connected to Ukrainian RIs.
- **Promote hybrid collaboration models**, to accommodate restricted travel, especially for male researchers or caregivers.
- **Develop institutional twinning frameworks** linking Ukrainian and EU research infrastructures, including shared management, co-evaluation, and mutual capacity-building components.
- **Incentivize joint proposals that include reintegration roles for returning scientists**, such as leadership of Work Packages or supervision of junior researchers within Ukrainian institutions.

Rationale:

Well-structured, jointly funded scientific collaboration is a powerful antidote to brain drain and institutional fragmentation. It anchors Ukrainian researchers in long-term, purpose-driven networks; reinforces institutional ties across borders; and promotes sustained alignment with European scientific priorities and standards. Including Ukrainian RIs in EU-funded RIA actions not only boosts their operational capacity but also affirms their role as contributors—not just beneficiaries—of the European Research Area. Co-created research is a foundation for resilience, reintegration, and genuine scientific sovereignty.

1.3 Provide equipment and infrastructure repair support

Finding: Damaged equipment and unsafe or non-functional offices and laboratories have directly disrupted research and demotivated staff.

Actionable suggestions:

- Establishing **targeted funding schemes** for supporting urgent repairs and fast restoration and stabilization of laboratory equipment.
- Facilitating **EU-led donation programmes** for surplus scientific instruments, with logistics and safety considerations for delivery to conflict-affected areas.
- Introducing **small-scale infrastructure micro-grants** to address high-impact facility needs at local institutions.

Rationale: Functional workspaces are a basic condition for meaningful scientific activity. Without access to proper tools, many scientists are left idle or driven abroad.

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1.4 Expand access to European RIs and datasets and provide funding for TNA

Finding: Physical and remote access to EU research tools was ranked as essential by the majority of respondents to enable continued scientific work from within Ukraine until the country´s facilities will be restored and modernized.

Actionable suggestions:

- Develop **facilitated and prioritized TNA channels** for Ukrainian scientists to EU research infrastructures, including computing platforms, datasets, and analytical infrastructure.
- Provide **training for Ukrainian scientists** on how to integrate with European digital research environments, tools and data management plans.
- Facilitate **hybrid project models** that combine remote and in-person collaboration.

Rationale: TNA to European RIs allows Ukrainian scientists to remain globally connected and scientifically active without needing to emigrate—thus preserving affiliation and capacity during wartime.

1.5 Promote continuous learning, training, knowledge exchange and mentorship opportunities for scientists and RI managers

Finding: Beyond financial insecurity, many Ukrainian scientists and research infrastructure (RI) managers face professional stagnation due to disrupted career development and a lack of opportunities for upskilling, strategic planning, or international exposure. The war has severely limited access to training, networking, and managerial support, not only for young scientists and mid-career but also leadership-level professionals responsible for sustaining institutional operations.

Actionable suggestions:

- **Scale mentorship for young scientists and coaching schemes between Ukrainian and European scientists and managers**, pairing peers based on discipline, role, or institutional function, through hybrid or fully virtual formats.
- **Replicate and extend the EURIZON staff exchange programme**, offering tailored temporary placements for Ukrainian scientific, technical and managerial staff in European research infrastructures to gain hands-on experience.
- **Support additional cohorts through executive education initiatives such as the Executive Master in Management of Research Infrastructures (EMMRI)**, which has already proven effective in strengthening strategic capacity and leadership resilience among Ukrainian fellows.
- **Offer micro travel grants for Ukrainian scientists to attend international conferences, workshops, dissemination opportunities and training schools**, enabling them to update skills, present work, and maintain global visibility despite wartime constraints.
- **Embed structured coaching and continuous professional development elements** into research mobility and reintegration schemes, ensuring that short-term support also contributes to long-term institutional capacity-building.

Rationale: Continuous learning and exposure to international best practices are essential not only for maintaining scientific quality during crisis but also for building a new generation of resilient leaders and research managers. Training, mentoring, and targeted mobility opportunities—such as micro travel grants—provide Ukrainian researchers with tangible opportunities to grow professionally, remain visible in their fields, and stay connected to global scientific networks. As shown by the success of EURIZON's training and mobility components, such measures deliver lasting impact with relatively modest investment.

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1.6 Address mental health and personal resilience support

Finding: Mental and emotional strain was reported as one of the most serious career challenges. Scientists described high levels of stress, fatigue, isolation, and difficulty concentrating—conditions worsened by war-related insecurity, restricted mobility, and deteriorating working environments.

Actionable suggestions:

- All interventions suggested above—training, mobility, networking, collaboration, and funding—will directly contribute to scientists' hope, motivation, sense of purpose, and psychological well-being.
- **Establish peer-support and mentorship networks to connect Ukrainian scientists**—particularly early career scientists and those facing isolation, displacement, or disrupted career paths—**with colleagues across Europe**. These networks could be designed to exchange knowledge and updates, foster ongoing academic engagement, emotional resilience, and professional development through structured and informal interactions. Mentorship can be arranged through discipline-specific pairings, career-stage alignment (e.g., early-career with senior researchers), or shared research interests. In addition to one-on-one mentorship, group-based formats—such as peer circles, thematic workshops, and virtual networking events—can promote knowledge exchange and community-building.

Rationale: In a time of uncertainty and disruption, hope and connection are essential. Maintaining a sense of academic purpose and belonging helps researchers stay resilient and engaged. Peer-support and mentorship networks not only counteract professional isolation but also offer a source of motivation, guidance, and solidarity. For Ukrainian scientists, these networks can be a lifeline—preserving scientific identity, nurturing ambition, and reinforcing the belief that they have a place in the future of Ukrainian, European and global science.

2. Long-term strategies

To support post-war retention and reintegration of Ukrainian scientists

2.1 Create flexible reintegration opportunities and structured pathways for returning scientists

Finding: Several scientists who left Ukraine or left science due to the war—whether for safety, displacement, military service, or economic reasons—are willing to return but face limited opportunities, institutional fragility, and uncertain career prospects. As we saw in the surveys´ results, the war has had a **dramatic impact on both women and men researchers, across all career stages**, **affecting them in specific and differentiated ways**. Reintegration requires more than individual support; it demands strong institutional and international frameworks. All measures should consider the diverse impacts of the war on **scientists' specific circumstances and provide targeted support**—for example, addressing the needs of women scientists returning after leaving their careers or Ukraine for family and safety reasons, or men who had to interrupt their careers due to military conscription.

Actionable suggestions:

- **Promote structured cooperation frameworks and joint EU–Ukraine research initiatives** to provide returning scientists with long-term, collaborative environments anchored in both national and European systems.
- **Encourage co-affiliation and dual appointment models**, allowing Ukrainian researchers to maintain institutional ties in Ukraine while participating in EU-based projects, enabling mobility without permanent displacement.

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- **Launch EU-funded reintegration fellowships** that include retraining and update opportunities, salary support and infrastructure access for returning scientists and veterans, with flexible formats tailored to individual needs and circumstances and career stages.
- **Support the inclusion of Ukrainian RIs on future ESFRI Roadmap updates**, reflecting their strategic value and enabling their access to European-level development opportunities.
- Ensure that reintegration and support programmes **address gender balance and inclusivity**, embedding these principles into the design, implementation, and evaluation phases to address the differentiated impacts of the war and promote equitable recovery.

Rationale: Reversing brain drain requires the creation of meaningful, stable, and internationally connected reintegration opportunities that are tailored to the diverse needs of returning scientists—across all career stages and personal circumstances. Scientists returning to Ukraine or re-entering the research system must find professional environments that offer attractive roles, access to funding and infrastructures, and sustained opportunities for collaboration. Reintegration pathways must also flexibly **address the differentiated challenges faced by researchers, including those linked to gender-specific issues**, like for example, increased caregiving responsibilities and military conscription. Respondents underscored as well the need for professional retraining and long-term career planning—especially for veterans and those re-entering science after extended absences. Structured cooperation with European partners, participation in research consortia, and inclusion in ESFRI-level initiatives will help ensure that reintegration is not only possible—but appealing.

2.2 Mobilize and unlock the expertise of the Ukrainian scientific diaspora

Finding: A significant number of Ukrainian scientists now working abroad—particularly within the EU—have acquired valuable experience at European research infrastructures, in science policy, and academic systems. Many remain deeply connected to Ukraine and are willing to contribute to its scientific recovery. Their dual insight into both Ukrainian and European contexts is a critical, underutilized resource.

Actionable suggestions:

- **Develop EU- and nationally funded programmes to engage diaspora scientists** in rebuilding Ukraine's science system, through remote collaboration, short-term return visits, policy advising, mentoring, and joint research initiatives.
- **Create flexible schemes for dual affiliation and hybrid engagement**, enabling diaspora scientists to contribute to Ukrainian institutions while maintaining positions abroad.
- **Establish a coordinated platform or registry of diaspora scientists**, mapping their expertise and affiliations to connect them with Ukrainian institutions and reintegration programmes.
- **Build on the success of programmes like MSCA4Ukraine**, which not only supported displaced researchers, but also fostered lasting connections between Ukrainian scientists and EU research institutions—demonstrating the potential of mobility schemes to strengthen long-term scientific ties.
- **Involve Ukrainian diaspora scientists in advisory Boards, Consulting and mentoring actions.**

Rationale: The Ukrainian scientific diaspora represents a strategic bridge between national recovery and European integration. Mobilizing their skills, networks, and institutional experience can accelerate both the restoration and transformation of Ukraine's research system. Programmes like MSCA4Ukraine show that diaspora support need not be temporary—it can

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serve as the foundation for durable cooperation, brain circulation, and policy alignment with the European Research Area.

2.3 Support to the reconstruction and modernization of RIs

Finding: Research infrastructures (RIs) are foundational to scientific excellence and innovation. In Ukraine, many RIs have been severely affected by war-related damage and long-standing underinvestment. Laboratories and facilities have been damaged, few destroyed, equipment rendered unusable, and working conditions compromised. These disruptions have significantly limited research capacity and discouraged scientists from continuing their work or returning from abroad.

Actionable suggestions:

- **Launch strategic support measures for the co-design, reconstruction, and modernization of key Ukrainian RIs.**
- **Support training and certification programmes** in research infrastructure governance, administration, ethics, and strategic planning, sustainable financing aimed at both RI managers and policy makers. Initiatives like EMMRI and similar endeavours can be useful to boost future integration of the Ukrainian science system in the ERA.
- **Promote pathways for the integration of Ukrainian research infrastructures into European consortia and collaborative platforms**, ensuring their future participation as full partners in ERA-wide projects.
- **Support the establishment of shared research infrastructure hubs in Ukraine**, co-managed with European partners and embedded within broader EU research initiatives, offering long-term access, training, and leadership opportunities.

Rationale: Without safe, functional, and modern research infrastructures, meaningful scientific activity is not possible. Rebuilding and upgrading Ukraine's RIs is essential for restoring research operations, re-engaging displaced scientists, and supporting long-term national recovery. Strategic investments in facilities, equipment, and technical capacity will not only address immediate damage but also accelerate Ukraine's integration into the European research landscape, fostering sustained collaboration and innovation.

2.4 Support the reform of the Ukrainian research system

Finding: Structural barriers—such as overly bureaucratic grant procedures, lack of merit-based career progression, and limited transparency—were frequently cited by Ukrainian scientists as reasons for leaving, not returning, or disengaging from the national research system. These challenges pre-date the war but have been exacerbated by the current crisis.

Actionable suggestions:

- **Provide targeted EU advisory support** for reforming national research funding systems, with a focus on transparency, fairness, and alignment with European research practices.
- **Promote twinning and strategic RIs consortia** between Ukrainian and EU research organizations to foster joint research, capacity building, and mutual visibility within European frameworks.
- **Incentivize collaborative structures that allow returning scientists and diaspora researchers** to play active roles in institutional development and transnational project coordination.
- **Encourage institutional twinning projects** between Ukrainian and EU research organizations to promote mutual learning in research governance, sustainability and performance management.

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- **Embed sustainability and joint governance mechanisms** in all bilateral or multilateral cooperation efforts, to avoid dependency and foster Ukrainian ownership.

Rationale: Modernizing Ukraine's research system is essential for reversing brain drain and creating the foundation for long-term scientific growth. While the EU can play a supporting role—by offering funding instruments, advisory expertise, and collaboration platforms—the drive for reform must come from within. Ukrainian scientists and institutions are best placed to shape a system that meets their national needs while aligning with European standards. External support should empower, not prescribe. The goal is not replication but transformation: to build a research system that is modern, merit-based, and resilient—anchored in Ukraine, but fully connected to the European Research Area.

2.5 Enhance long-term joint research programmes and scientific collaboration between Ukrainian and European research infrastructures

Finding: There is broad consensus among Ukrainian scientists that sustained, equitable collaboration with European partners is essential for strengthening capacity, advancing scientific excellence, and facilitating Ukraine's full integration into the European Research Area (ERA). Long-term joint research initiatives—especially those embedded in institutional partnerships—are viewed as critical for increasing visibility, enhancing resilience, and driving systemic renewal within the Ukrainian research ecosystem.

Actionable suggestions:

- **Establish targeted Horizon Europe calls and dedicated funding streams** for long-term Ukraine–EU cooperation, with a focus on joint technologic and scientific development, joint research schemes, knowledge exchange, joint research infrastructure development and shared research agendas.
- **Prioritize joint initiatives that include capacity-building, mentorship, and leadership development components**, ensuring that collaboration supports institutional transformation, not dependency.
- Develop **staff exchange and secondment schemes** between Ukrainian and European research infrastructures, allowing researchers, technicians, and managers to gain hands-on experience, transfer knowledge, and strengthen institutional ties.

Rationale: Robust long-term institutional collaboration is the cornerstone of a resilient, internationally connected research system. Long-term, co-designed partnerships between Ukrainian and European research infrastructures help retain talent, accelerate recovery, and foster deeper structural integration into the ERA. These partnerships are mutually beneficial: they strengthen scientific excellence on both sides, encourage innovation, and embody a shared commitment to rebuilding Ukraine's science system as part of Europe's collective future.

2.6 Invest in young scientists and early-career pathways

Finding: Early-career researchers in Ukraine face a combination of structural barriers that limit their development—insufficient PhD and postdoctoral opportunities, weak career progression pathways, financial insecurity, and a lack of structured support. These factors are among the most frequently cited drivers of emigration. Unlike in many EU countries, Ukrainian students often begin contributing to laboratory work and research infrastructure operations in the early stages of their undergraduate studies. This early engagement builds strong technical skills and motivation—but without sustained support, hands-on training, many promising young scientists are lost to the system.

Actionable suggestions:

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- **Expand joint EU–Ukraine PhD and postdoctoral programmes**, co-supervised by Ukrainian and European institutions, with embedded mobility, shared training modules, and pathways to academic careers.
- **Develop competitive early-career research grant schemes**, including seed funding for independent projects, with transparent evaluation, mentorship support, and follow-up to track impact and integration into institutional careers.
- **Ensure active roles for young researchers** in major joint research and infrastructure projects, including as co-leads of Work Packages, to build experience, visibility, and confidence.
- **Offer targeted training** in grant writing, project management, and international collaboration, equipping early-career researchers to succeed in the Ukrainian research environment taking also advantage of the opportunities offered through European funding schemes.

Rationale:
Ukraine's future scientific capacity hinges on its ability to retain and empower young researchers. Their early and active involvement in research makes them highly motivated and capable—but without viable long-term pathways, they often leave for better prospects abroad. Investing in structured PhD and postdoc programmes, fair career tracks, and targeted funding will not only reduce brain drain but create a dynamic new generation of scientists ready to rebuild and lead Ukraine's integration into the European Research Area.

Towards a resilient and integrated future for Ukrainian Science

Preventing and reversing brain drain among Ukrainian researchers is not merely a matter of individual mobility—**it is a systemic challenge that demands coordinated, sustained action across institutional, national, and international levels**. The recommendations presented in this document, grounded in both the evidence and lived experiences gathered through the EURIZON project, outline a clear direction for the path forward.
In the short term, stabilizing conditions for those who remain active in Ukraine is critical. Ukrainian scientists—many of whom begin contributing to research as early as their undergraduate years—continue to produce exceptional work despite war-related disruption, financial instability, and damaged infrastructure. To sustain them, immediate efforts must focus on **salary support, equipment repair, operational continuity and opportunities for professional connection and growth. These are not only support measures but strategic investments in human capital and scientific resilience.**

In the long term, reversing brain drain requires transforming it into **brain circulation**—where talent moves, returns, and contributes across borders. This means embedding Ukrainian researchers and institutions into **long-term, equitable collaborations with European partners:** through joint research initiatives, scientific and technical collaborations, shared infrastructures, co-designed programmes. It also calls for systematic investment in early-career researchers, with transparent career pathways, leadership opportunities, and mentorship schemes that nurture both excellence and ambition.

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Importantly, the **Ukrainian scientific diaspora** represents a powerful, yet frequently underutilized, bridge between national recovery and European integration. Many of these researchers remain closely connected to their home institutions and are eager to contribute—provided the structures exist to meaningfully engage them.

While the EU and international partners can provide collaborations, networking opportunities, resources, institutional support, and solidarity, **Ukrainians themselves must lead the reform and renewal of their research system**. The Ukrainian scientific community seeks long-term engagement as **equal and strategic partners**, not as passive recipients of aid. What is needed is an overarching approach in which **ownership is the foundation of sustainability**.

The experience of the EURIZON project has shown that **hope, perspective, and connection are just as important as funding**. Ukrainian scientists have never lost their commitment. On the contrary, they have demonstrated how remarkably **resourceful, resilient, and dedicated** they are—even under the most difficult circumstances.

It is in the interest of Ukraine as a country—and of Europe and the broader research world—that **Ukrainian scientists can thrive, lead, and contribute their exceptional skills and insights.** Their full participation enriches international science and strengthens our collective ability to address global challenges. Just as importantly, a strong, modern, and resilient research and innovation system will be vital for Ukraine's **post-war reconstruction**, **economic revitalization**, and **long-term social and environmental sustainability**.

By strengthening Ukraine's science system, we are investing not only in knowledge and innovation, but in the very foundations of a resilient, sovereign, and forward-looking Ukraine.

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