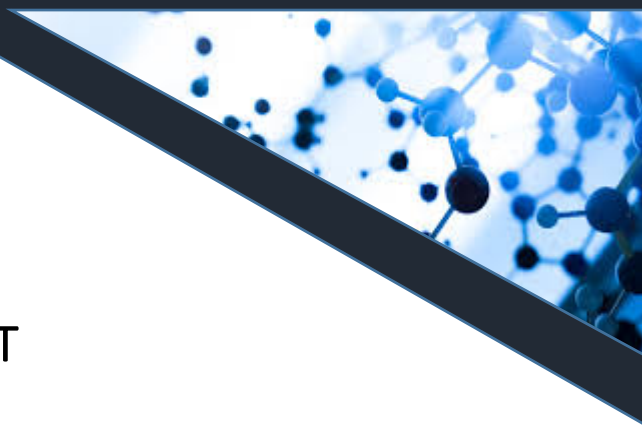
STOCKTAKING REPORT



UNIVERSITY RESEARCH MANAGEMENT IN GEORGIA:

Institutional needs assessment and good practice review

June 2019

Higher Education and Research Development Project (HERD)

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HERD

HERD consortium:

- Ivane Javakhishvili Tbilisi State University [TSU]
- Ilia State University (ISU)
- Georgian Technical University, (GTU)
- Tbilisi State Medical University (TSMU)
- Akaki Tsereteli State University [ATSU]
- Batumi Shota Rustaveli State University (BSU)
- Iakob Gogebashvili Telavi State University (TESAU)
- V.Sarajishvili Tbilisi State Conservatoire (TSC)
- Caucasus University (CU)
- David Tvildiani Medical University (DTMU)
- International Black Sea University, LLC (IBSU)
- Georgian Institute of Public Affairs (GIPA)
- Technische Universitaet Dresden (TUD)
- Université Clermont Auvergne (UCA)
- University of Nice Sophia Antipolis (UNS)

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SUMMARY

"Raising research capacity of Georgian higher education institutions through developing R&D units" (HERD) is a nationwide capacity building project initiated by a consortium of higher education institutions in Georgia.

By bringing together a broad spectrum of local higher education institutions (HEI), national agencies for research development and management and European partner universities, the project aims at contributing to enhance the growth, the productivity and the visibility of research in Georgia through building capacity of local universities and their R&D units for better research management.

Goals of the report

This report provides an overview of the main challenges related to research management in higher education institutions in Georgia. It is expected to inform the process of devising subsequent activities in the frame of the project.

While serving specific project-related goals, the findings of the report also outline general challenges in the area of research management in higher education and provide insights for policy planning and evaluation.

It is no exaggerated to say that a new "research management profession" emerges, along with its professional organizations, means of communication, and guidelines, and this implies a new allocation of tasks and responsibilities among individual researchers, departments, and institutions.

Process

This report incorporated the views expressed by the HERD consortium members - 12 local higher education institutions. Together, the members of the consortium represent up to 82% of Georgian research capacity in all major fields of science, and the ideas and concerns they express reflect the diversity of profiles, sizes, and locations that are found in Georgian higher education.

Another source of information that was used for this report is the review of recent policy documents, studies, and evaluation reports on higher education and research in Georgia.

Finally, this report also incorporates good practices from European partner universities.

Main findings and conclusions

Optimizing scarce human and material resources and creating effective inter-organizational linkages is an important task to increase productivity, efficiency, and visibility of research in Georgia. Accomplishing this task requires a stronger capacity for research coordination and management within and across higher education institutions.

The ultimate goal of HEIs is to integrate themselves in the research ecosystem better: participating in reshaping demand and provision, ensuring timely and adequate response to external stimuli, and forming a critical mass around important priorities for better positioning and proactive management of change.

The report underlines the importance of synchronizing and consolidating HEI efforts in three main directions:

- Creating adaptive networks of formal and informal units involved in research, in order to improve communication within academia and with external stakeholders for better planning and coordination;
- Strengthening support processes to university-based research by introducing need-based capacity building programs for researchers;
- Building a strong information base on research performance and resources for informed decision making.

To achieve these goals, five areas for improvement have been identified by Georgian HEIs and their European partners:

1. Diversify the forms of academic cooperation within and across HEIs:
   ⇨ contribute to the creation of clusters, facilitate interdisciplinary research and internationalization.
2. Strengthen links with external partners:
   ⇨ support researchers in knowledge transfer and commercialization through technical assistance, guidance, and training;
3. Contribute to setting national and institutional research priorities:
   ⇨ improve internal mechanisms for strategic planning and evaluation, create shared space for the participatory decision between partners and other stakeholders;
4. Improve human resources management in research:
   ⇨ help researchers to develop research management skills, strengthen functional linkages across administrative and research units within the university for more efficient management of research activities;
5. Introduce a result-based management system and a shared information portal:

- ⇨ Develop an information system with common procedure of gathering data and a clear database structure. The database should be linked to external international databases of research output to validate the results and reflect the national goals of research performance evaluation.

All Higher Education Institutions involved in the HERD project stresses the importance of cooperation and information exchange among HEIs for achieving progress in the mentioned five directions.

While contributing to the organizational development of particular universities and their R&D units, consolidated efforts of all actors in the priority mentioned above directions are expected to contribute to the broader goal of raising the visibility of research in the country, optimizing resources, identifying shared priorities and building effective partnerships within the wider research community.

I - INTRODUCTION

Context

Higher education institutions and their research activity play a vital role in socio-economic development. This role bears double importance in the context of a developing economy such as Georgia, where universities are perceived as a source of institutional stability and the main drivers for producing, transmitting and accumulating knowledge.

Georgian higher education institutions (HEIs) share the global challenges of higher education in a rapidly changing ecosystem. Namely, universities struggle to:

- Find exclusive research niche in a context of the growing demand for diversified products;
- Increase the return on public investment while ensuring their financial independence;
- Compete with private actors while creating effective cooperation models with them;
- Develop a long-term vision while dealing with fluctuant demand ;
- Find a balance between local and national research needs while following international trends.

In addition, as in many other post-Soviet countries, Georgian HEIs face specific context-related obstacles in the field of research:

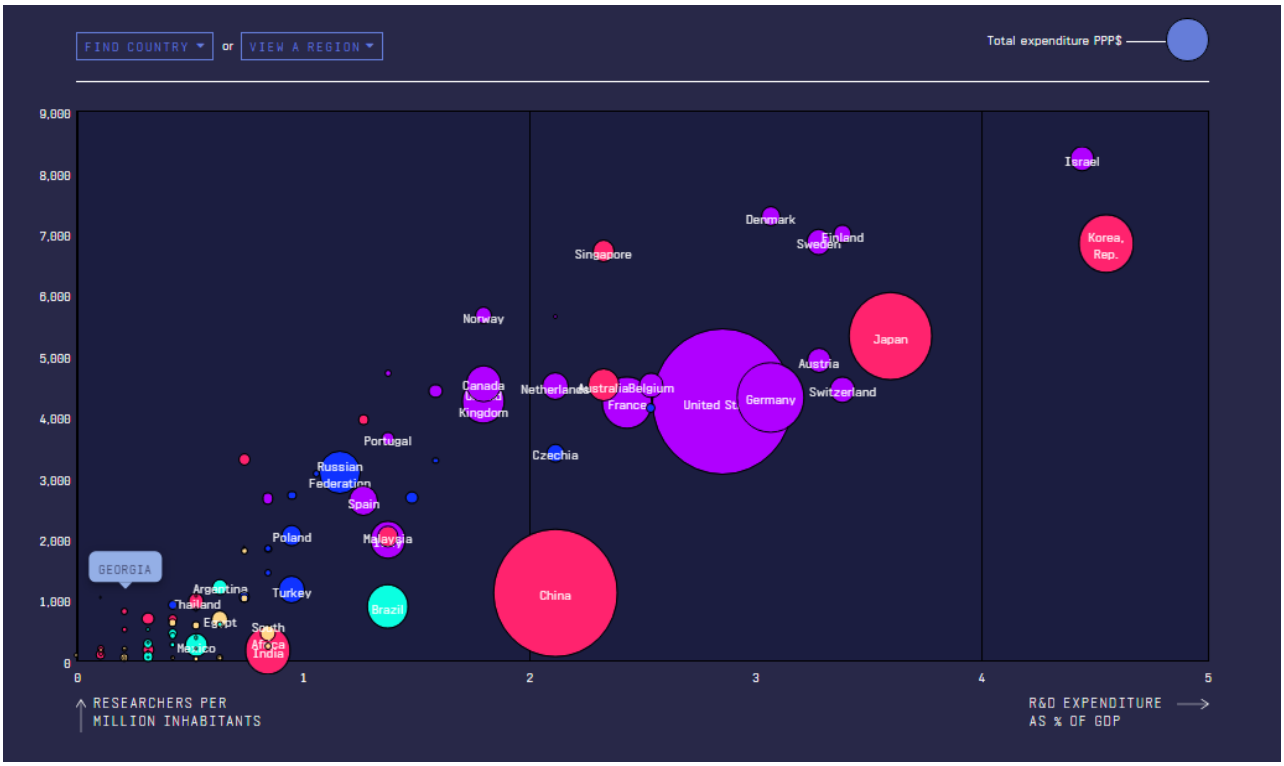
- Their recent merger with the research institutes (former members of the Academy of Sciences) brought new administrative and structural problems to the institutional agenda. Universities and former research institutes are still in the process of optimizing and synchronizing their resources, mitigating post-merger tensions and finding synergies;

- Structural changes in universities are accompanied by specific challenges in each field of science:
    - In hard sciences, the major problems are obsolete infrastructure, poorly equipped laboratories and the lack of material resources for research;
    - In social sciences, researchers have to cope with the consequences of long-term isolation from the wider scientific community in their respective fields.

All these changes are taking place in Georgia, with very little funding for higher education and research. The percentage of GDP devoted to research and development is only 0.03%, which is ten times less than the European benchmark for 2020 (UIS, 2018).

According to the UIS data, the number of researchers per million inhabitants (FTE) is also low, thus explicitly illustrating limited research capacity in the country.

Figure 1: R&D spending by country and number of researchers per million inhabitants



Source: UIS, 2018 (Visualization portal)

A comparative analysis of research output and impact shows that Georgia ranks lower than most of the other countries from the reference group (Eastern Europe).

Figure 2: SCIMAGO country rankings (Eastern Europe 1996-2018)

Rank	Country	Documents	Citable documents	Citations	Self-citations	Citations per document	H index
1	Russian Federation	1076966	1051744	7801977	2543017	7.24	540
2	Poland	655485	627632	6683506	1685997	10.2	519
3	Czech Republic	326336	313365	3681392	798131	11.28	427
4	Romania	198390	190878	1411797	317095	7.12	271
5	Hungary	192565	181716	2952020	438879	15.33	419
6	Ukraine	189265	185052	1197463	323584	6.33	252
7	Slovakia	111356	107531	1084641	205831	9.74	263
8	Croatia	104865	99806	956729	171765	9.12	259
9	Slovenia	93894	89008	1244205	196354	13.25	278
10	Serbia	91280	86176	781607	152621	8.56	220
11	Bulgaria	77335	74199	837820	118827	10.83	240

Rank	Country	Documents	Citable documents	Citations	Self-citations	Citations per document	H index
12	Lithuania	51464	49688	500606	94305	9.73	203
13	Estonia	39907	37365	699333	102564	17.52	255
14	Belarus	38483	37616	338103	63255	8.79	172
15	Latvia	24398	23525	221194	31940	9.07	151
16	Georgia	19510	17724	276915	31720	14.19	172
17	Armenia	16995	16433	246462	45259	14.5	177
18	Azerbaijan	13693	13325	97159	18057	7.1	103
19	Bosnia and Herzegovina	12226	11504	70210	7965	5.74	91
20	Macedonia	11949	11312	109734	10501	9.18	108
21	Moldova	7794	7495	85362	12207	10.95	106
22	Albania	4727	4445	30255	2590	6.4	62
23	Montenegro	3920	3687	21019	4227	5.36	51

Source: SJR, 2019

The same trend is visible in various international rankings of innovation and research capacity where Georgia typically holds a middle position in the list of countries.

Figure 3: Position of Georgia in International rankings

Indices and rankings	Latest year	Rank of Georgia	Number of participating countries
World Economic Forum – Global Competitiveness Index (GCI)	2018	66	144
WIPO - INSTEAD - Cornell Global Innovation Index (GII)	2018	59	141
World Economic Forum – Networked Readiness Index	2016	58	139

Recent studies implemented in Georgia take a more in-depth view of the structural composition of research in Georgia and illustrate that research activities are highly fragmented and that there are no research priorities, neither for specific fields nor for research units within universities (European Union,2017; National Erasmus + office Georgia, 2017, 2016, 2014; Bregvadze and Medjad,, 2014; Chakhaia and Bregvadze,2018).

In the background of the mentioned obstacles, the biggest challenge in Georgia is to consolidate scarce resources in research through creating adaptive and highly flexible network of research units within and across higher education institutions, to allow regrouping and clustering of formal

and informal groups of researchers for long-term and short-term projects in response to opportunities and changes in a highly complex environment.

A literature review on research management challenges suggests that such flexible, dynamic cooperative networks cannot be established without a strong capacity for research management within higher education institutions. After having long been considered as an individual activity, research is gradually becoming a collective, coordinated business for teams, departments and institutions (Schuetzenmeister, 2010; Taylor, 2006; Kirkland, 2008; Huisman et al., 2015)

The increased interest in institution-led research management systems has been driven by several inter-related factors:

- In large cooperation projects crossing organizational boundaries, a disciplinary and functional division of labor seems to be inevitable. Hence, systematic planning, a higher degree of formalization, and the definition of interfaces for data and technology sharing, theory connection, and stakeholder participation need to be negotiated (Schuetzenmeister, 2010).

- In order to identify their strengths and weaknesses, institutions have to be far more informed about their research activity than they were in the past, and this information is to be collected through a centralized mechanism.

- Centralized mechanisms are also needed for universities to assist their researchers in accessing diverse sources of funding and selecting appropriate approaches. Institutions now assume the responsibility for meeting obligations to a broader range of sponsors, under a variety of terms and conditions.

Taken together, these factors have significantly altered the balance of responsibility between individual researchers, departments, and institutions. It is no exaggerated to say that a new "research management profession" emerges, along with its professional organizations, means of communication and guidelines (Kirkland, 2008).

Goals and main questions

The goal of this report is to provide an overview of the main challenges related to research management in higher education institutions in Georgia.

The report was produced in the frames of the National Capacity Building Project: "Raising research capacity of Georgian higher education institutions through developing R&D units" (HERD). By

uniting efforts of local HEIs, national agencies for research management and partner European universities, the project aims to build the capacity of university-based research.

The findings of the report are expected to inform the planning of subsequent project activities as well as to contribute to the broader process of agenda-setting for strengthening research capacity in the country.

The main questions addressed in the report are the following:

- What are the main contextual and organizational challenges for R&D units of universities (members of HERD consortium) to improve the overall productivity of research?
- What are the main areas for capacity building?
- What are the good practices in European partner universities?
- How can the broader capacity building objectives be broken down into specific tasks?

Steps in writing the report

The stocktaking report represents the result of need assessment of local HEIs and good practice review in partner European higher Education Institutions.

The local need assessment was implemented in two stages:

1. A desk study comprising the review of current literature to identify system-level and institution-level needs in the area of academic research in Georgia as well as to analyze the international experience and best practice in research management;

2. A survey of local universities/RD unit representatives aimed at verifying and prioritizing the capacity building needs to be identified during the desk study component.

Five priority areas for capacity building and relevant subtasks were identified during the desk study component. Georgian universities then ranked them by the level of relevance/importance for inclusion in the best practice description component.

European partner universities in the HERD project were asked to reflect on the five priority themes through structured written interviews, during which they briefly described current the practices in their respective universities and answered the guiding questions listed under each priority theme.

In a final stage, the main findings were discussed with local HEIs and further specified in the course of a series of project coordination meetings.

II - MAIN FINDINGS

Research has always been considered as an inherently personal activity, strongly dependent on the ideas and imagination of individuals or groups of individuals. Academic staff feels personal ownership of their research as it shapes and dictates their career development and their status among their peers. Research is ultimately linked with fundamental beliefs about academic freedom and the opportunity to challenge longstanding orthodoxies. Moreover, research, by its very nature, is unpredictable, moving in unchartered territories with unexpected consequences. Research, therefore, does not lend itself to control and management (Tailor, 2006);

However, in today's higher education, there are constraints that require the application of some management framework. Funding and quality issues require priorities to be agreed upon; adequate resources are needed to be expended optimally; and legal and ethical controls must be applied. Research may also imply risks, and for a modern university, risk-taking is an essential part of institutional vitality, but risk must also be understood and managed (Tailor, 2006).

Therefore, in modern universities, the emphasis is placed on transforming what was once regarded as part of an individual researcher's tasks into a professional, highly complex institutional activity, which entails major strategic responsibilities (OECD, 2005).

As previously stated, creating research support offices is now a common practice in Georgian universities. These units within the university are responsible for professionally managing and facilitating the research function within the university, *i.e.*, coordinating human resources, optimizing spending, making need assessments, proactively settling goals, and strengthening the capacity for raising external funding.

The biggest challenge for these local R&D development offices is to find the most appropriate functional model to ensure timely and flexible support schemes adapted to rapidly evolving network of actors involved in research, both within and outside of the institution to which they are attached.

The process of building R&D units in the functional model of the university is not an easy task, as new units need to establish trust and credibility in the research community, keep the balance between research management and academic freedom and create relationships consistent with the academic culture.

Another essential task is to effectively incorporate R&D units in the existing administrative structure of the university, establish functional links with other support offices (such as International Relations, Public relations, commercialization offices, human resource management, etc.) and create synergies.

Below, the main findings of the need assessment and good practice review are organized around five priority themes for developing the organizational capacity of R&D units for better research management at the university level.

PRIORITY 1: DIVERSIFYING THE FORMS OF ACADEMIC PARTNERSHIP

Task 1.1. Strengthening interdisciplinary, inter-institutional and cross-institutional cooperation in the academic community

A "Collegial network" is defined in the scientific literature as an informal or formal group of productive scientists within a specific field, who are interacting with each other and work on similar or common scientific problems (Chubin, 1985; Lievrouw, 1989; Mullins et al., 1977, (Crane, 1969). These groups often transcend physical or disciplinary boundaries and are reliant on informal channels of communication. They are characterized by changing membership and adaptive structures.

Supporters of clustering in the research think that the development of such formal or informal groups would be necessary for:

- Optimizing resources for research (*e.g.,* creation of shared laboratories);
- Quick and effective exchange of information; and
- The development of complex, interdisciplinary networks, which would increase creativity and efficiency in the process of research.

Recent studies suggest that nowadays, research in Georgia is fragmented. Scientists working in the same field are aware of the work of each other, but they rarely cooperate. Also, the size of the research laboratories working on the same research subject does not usually exceed three people (Ilia State University, 2015).

Structural analysis of the current formal and informal groups in research shows that presently, there is no established scientific "cluster" in the country. Inter-institution cooperation takes place at individual, pair or triad levels and even these are quite rare (European Union, 2018).

According to some scientists, this is due to a lack of "external demand." There is no governmental or regional priority for research that would encourage the creation of interdisciplinary groups or active institutional clusters within disciplines.

Other scientists add that this "external demand" cannot be formed without the participation of the universities. Universities should not only respond to the demand; they have to be active in initiating and channeling this demand.

Based on these challenges, an essential goal of the research offices is to perform the role of liaison within and outside organizations.

Task 1.2. Fostering Internationalization

There are several external encouraging factors to foster the internationalization of higher education in Georgia:

- Internationalization is one of the formal evaluation criteria for HEI performance – one of the standards of HEI authorization is devoted to this particular aspect.
- Internationalization is key for mobilizing new financial resources for research. For example, Georgia has recently joined the Horizon 2020 instrument.

Universities are also aware that internationalization is an effective tool for organizational development, notably:

- For better absorbing new experience and knowledge;
- For better positioning themselves in more extensive networks.

Despite these well-known benefits, our research findings show that the specific instruments for internalization are not yet used effectively in Georgia:

- There is a limited number of joint Ph.D. programs;
- Long-term institutional research projects with foreign partners are rare;
- Universities rarely use exchange programs for strengthening their research capacity. Exchange programs are more connected to the learning component.
- There is no proactive search for foreign partners to incorporate internationalization benefits in long term research goals.

Effective use of internationalization instruments requires a shift from the researcher's responsibility to the collective mission of the university. This function in complex organizations requires centralized management and therefore sets an important challenge for research development offices.

Some benchmarks from EU HEIs (for details, see case studies attached)	• *A multi-layered, highly coordinated system under government-funded schemes: the breakdown is both geographic (territory-based, national, European) and thematic;* • *Dedicated resources to attract HR from abroad (proactive planning of exchange, internationalization at home…);* • *English language support;*

	• *Integration/support activities (young scholars, Ph.D. students, new faculty)* • *Cooperation based on the idea of excellence: Multiple offices and initiatives to support grouping of research units around common priorities;* • *Income generation: Separate units devoted to building contacts with partners outside academia.*

PRIORITY 2: STRENGTHENING EXTERNAL CONNECTIONS – KNOWLEDGE TRANSFER AND COMMERCIALIZATION OF RESEARCH

The attitude of researchers towards research commercialization and knowledge transfer is contradictory. A recent study of Ilia State University (2015) provides an overview of benefits, risks and main obstacles in the process of fostering research commercialization and knowledge transfer, as seen by the research community.

The main arguments of the researchers to support the claim that technology transfer is important are:

- Economic and social benefits: In their opinion, knowledge transfer has a value in terms of communication with society, in the sense that it shows the economic benefits it brings to universities and research institutions. As a result, they are in a better position to gain support from alumni, businesses, private funding organizations, government, and local government;
- External pressure: The new requirements of evaluation and quality control place a special accent on this aspect, which has become an integral part of the state authorization/accreditation system;
- Multiple effects on organizational performance: Partnership in research facilitates cooperation at large with external actors, including in non-research initiatives (e.g., student internships, employment, other initiatives…).

The first group of obstacles, according to the researchers, is related to the differences in terms of organizational culture between academic institutions and their partners. Researchers think that the interests and expectations of external actors are not aligned with their academic culture:

- Focus/areas of research and timeframes are different: External partners are usually interested in particular, narrow studies with rigid timeframes.
- Their respective organizational management processes do not match: Bureaucratic management, according to external actors, is a constraint for cooperation.

- A different aversion to risk: Scientists are less inclined to take risks and less interested in the commercial value of their scientific achievements.
- Conflicting objectives of confidentiality and publicity: The career of researchers in universities is dependent on publications and hence, on an extensive disclosure of information that often contradicts the commercial interests of potential business partners.

The second group of obstacles is associated with the perceived complexity of the commercialization and knowledge transfer processes:

- Researchers describe the intellectual property filing process as "long," "risky," and "unclear." Researchers say that obtaining and maintaining a patent is "taking away nerves and resources," which "is not worth it." This opinion stems from perceived adverse environmental factors (low absorbing capacity of businesses, financial obstacles, unclear regulations, insufficient guarantee that the intellectual property rights will be adequately protected…).
- Scientists also consider that in many cases filing and especially maintaining patents is so expensive that most of them cannot afford it.

The third group of obstacles is related to lack of specific expertise and knowledge among researchers:

Successful commercialization and external relationships are based on the management abilities of the individuals involved. Researchers think that the agreements universities make with external actors are very different from those with donors. Therefore, scientists need "specific skills" to effectively negotiate with external actors.

> *"On a basic level, we need to know the specific language, terms such as venture capital, spin-off, etc."*
>
> *Researcher*
>
> *"Researchers are not good managers. A person can have an idea or invention, but not know how to implement it".*
>
> *Researcher, Director of an institute*
>
> *"I attended training, but I am not a businessman. "Money, profit, risk" is alien to me, and what I have to do is hire a lawyer and a business manager."*
>
> *Researcher*

Researchers consider that the commercialization of research results is a task that has nothing to do with research, and that requires specific knowledge and expertise. Scientists need this service not only when they decide to commercialize an idea but before that as well, in order to evaluate

the commercial potential of an idea. They find it difficult "to evaluate the business value of their idea and establish a business plan when funding organizations require a business project and not a research project."

The difficulties mentioned above provide indications for setting specific objectives to R&D offices - and recruit the adequate staff - to facilitate knowledge transfer and the commercialization of research in their institutions.

Task 2.1: Building awareness among researchers

While several researchers complain about the lack of proper support and expertise, others only have a vague understanding of what commercialization is, *i.e.,* the first steps, the successive stages they have to go through, their duration…

However, regardless of whether they have experience and practice of such activities, all scientists and institution representatives say that technological transfer is connected with complex ethical, legal and financial issues.

The lack of specific and precise procedures or the lack of understanding of such procedures tend to scare and discourage scientists whose research has the potential for commercialization.

> *To talk about legal aspects – there is no experience Georgia – universities, institutions, research units – to have an agreement within units. What will this agreement include? I think that commercialization on the international market is unrealistic because it is hard to find long term investors in Georgia – what will they ask to invest? What can they sell, and how? I do not have answers to these questions.*
>
> *I am not even talking about creating documents for international registration. I do not know any good lawyer in Georgia in the area of intellectual property to protect my rights.*
>
> *Researcher, Director of an Institute*

Task 2.2. Clarifying processes and procedures

Another critical problem mentioned in every interview is the unclear governance of commercialization in organizations.

Scientists have questions while discussing commercialization:

- How are revenues divided between university/research institution, business, different mediating organizations, and an inventor?
- When and according to what criteria a decision of commercialization is made, and who makes such a decision?

- How are revenues split within faculties/units between those whose project yields economic gains and those who have less commercial potential?

Researchers also consider that in applied research projects, not enough attention - and funding - is devoted to the support processes necessary for commercialization. Certain funds are necessary to cover the administrative and legal fees that the organization/researcher has to pay to protect their intellectual property rights and establish adequate commercial contracts.

Moreover, commercialization requires funds for the evaluation and selection of interesting business ideas and for finding partners, which requires additional research.

> *The brain goes in so many directions and everywhere there is a dead end. You are the assistant, manager, specialist of intellectual property here. I am none of this in reality.*
>
> *Researcher*

Task 2.3 Strengthening communication and consultation functions

Creating research commercialization and knowledge transfer offices are considered a very important task by the research community (research institutions, higher education institutions), as well as at the national level.

According to researchers, university administration should assist them in two important directions, namely communication and capacity building.

Universities should help researchers:

- Create informational databases;
- Organize shared space for external actors and higher education institutions, to discuss common problems;

The technical assistance should cover the following aspects:

- Creation of business plans and research projects;
- Legal aspects of intellectual property;
- Intellectual property filing and issuance procedures;
- Evaluation of commercial value/assessment of the commercial potential of research projects;
- Selection of the commercialization mode according to the project specifics.

Some benchmarks from EU HEIs (for details, see case studies attached)	• *Multiple units devoted to providing services in 4 main directions:* - *legal support/ contractual issues,* - *early tracking (assessment of the project value and risk),* - *technical support to ongoing projects* - *awareness-raising, networking, and dissemination of scientific culture and scientific results to a broader audience* • *Particular services include:* - *Strategic, financial and legal advice for application,* - *Assessment of potential research outcomes (Patent Information Center and Transfer Office)* - *IP support (application for national, European and international patents)* - *Support for patent visibility and exploitation (partner search, contract management)* - *Separate/ consecutive funding tracks for innovative projects based on the level of technology readiness (e.g., four levels in France);* • *Clear procedures for income distribution - usually defined by state regulation, (see,* e.g. *"German Invention Act," "French Intellectual Property Code");* • *Mandatory "Invention declaration"- a specific procedure allowing research units to declare the results of their research in a simplified way and to ensure a rapid analysis to define the valorization strategy optimally,* • *Specific centralized tools for easy recording of research work taking place in research units.*

PRIORITY 3: FORMING RESEARCH PRIORITIES

Identifying long-term research priorities in Georgia is a significant challenge. This is important for several reasons, notably:

- Optimization of research funding;
- Mobilization of human and technical resources for research; and
- Forming complex, interdisciplinary groups of researchers around priorities to support idea generation and effective implementation of complex applied research (which are often interdisciplinary).

Such an approach would increase the effectiveness of solving political, economic and social problems and optimize the use of time, material and human resources to improve the quality of research.

Identifying priorities is essential not only within an organization (research institution, university) but also between organizations. In this regard, their respective development offices have an important role to play, as the mediators of this process.

Some benchmarks from EU HEIs (for details, see case studies attached)	• *As for partnerships, the definition of research priorities is organized along with a multi-layered, highly coordinated system under government-funded schemes, also with a geographic breakdown (territory-based, national, European);* • *Decisions on the orientation of research and distribution of funds within the universities are made by large representative bodies (40 persons) consisting of elected members from different disciplines. The advisers are Professors, Doctors, administrative staff (e.g., "Research Commission of the Academic Council").* • *Priorities are renegotiated once every 5-10 years, in connection with the contracts with the state.*

PRIORITY 4: DEVELOPMENT OF HUMAN CAPITAL

Task 4.1. regulating research, teaching and social contribution (third mission) of academic personnel so that universities can develop in harmony in these three directions

In the survey about the effectiveness of Ph.D. research in Georgia (National Erasmus+ office, 2017), respondents (researchers and academic personnel) mentioned that active involvement in research was hampered by teaching workload (course hours). According to authorization requirements and, therefore, their contracts, providing necessary outputs would be difficult for them while also focusing on research (hours for research were not sufficient).

It is also vital to note that academic actors have to proactively plan, identify new strategic directions, conduct talks with public organizations, businesses, investors and funding providers. These activities do not result in contractually specified outputs (for example, scientific publications), but require time and efforts from the researcher.

Likewise, there is no contractual mention of the time academic personnel must spend on the third mission of the university. Thus, there is no incentive to fulfill such tasks, and academic personnel is neither motivated, nor do they feel obligated to devote time and efforts in this specific domain.

The new requirements of authorization, which were implemented in Georgia in 2017, enable universities to create a rule about research load and other obligations of academic personnel tailored explicitly to the university. Nevertheless, universities seldom take advantage of this opportunity, because they have difficulties in deciding how to regulate such workload in order to adapt it to their specific situation.

More generally, this highlights the need for an incentive system: the applicable regulations and the contracts typically concentrate on the sanctions that apply in case of breach than on the benefits one got when guidelines were well followed.

Task 4.2. Identifying and providing services geared towards an efficient development of research and other competencies

Georgian universities' academic personnel need to strengthen or develop competencies in two main directions:

- Research management skills. Current difficulties in this field include financial management of research projects, talks with external actors, administrative issues of participating in funding contests… There cases where academic personnel in Georgian universities receive assistance in this field, but major question marks remain regarding in particular:
    - What constitutes the minimum a researcher needs to know about project management effectiveness;
    - What is the most effective way is to deliver such knowledge to academic personnel.

- Scientific research skills. For universities that are primarily focused on traditional teaching, developing research competencies for their academic personnel is especially tricky. It seems unavoidable, however, for no university seems to be in a position to escape the general trend towards an academic mission that is becoming more and more research-oriented.

A significant problem is a difficulty in achieving an agreement with the academic personnel about the necessity of training programs and in ensuring that participation rates are high. Research conducted in Georgia on this specific subject suggests that it depends on what form such training is delivered to the beneficiaries, the most convenient form is online courses, where confidentiality is guaranteed, and participants can choose when to learn the material (National Erasmus + office Georgia, 2016).

Some possibilities exist in Georgia to broaden knowledge in contemporary research methods and trends in specific fields, but such courses are generally offered in foreign languages, and their beneficiaries are usually master and doctorate level students.

In many cases, academic personnel refrains from participating in such programs because they do not want to be sitting next to students with a similar status.

Finally, it is important to point out that when there is no format to provide technical support to academic personnel, things are not necessarily more natural because, in such cases, they cannot express clearly the specific type of training they want to broaden their knowledge and skills.

Task 4.3. Strengthening internal organizational connections and communication

As already mentioned, the engagement of academic personnel and researchers in research-oriented university processes is low and mainly on an individual level.

Research in Georgia shows that to increase engagement in research, the first challenge is to ensure that academic personnel, researchers, and students are appropriately informed about existing university processes and services.

When sharing and disseminating the information it is crucial to define its forms and challenges correctly. Target groups need to be identified and information needs to be prepared specially for them. Based on the organizational structure of the University, information channels and proper delegations must be determined.

Some benchmarks from EU HEIs (for details, see case studies attached)	• *The context-dependent setting of distribution of workload between teaching and research;* • *Multiple offices devoted to the task of capacity building in the areas of project writing, intellectual property management, project management, establishing networks, ensuring visibility of work of researchers,* • *Incentive systems to foster initial research ideas,* • *In some partner universities it is also possible to choose between different options of intensity of support (e.g. a) all-inclusive option; b) DIY option– Project teams are provided with guidelines, templates and training; and c) so-called "Think ahead" option - in case the call for projects identified does not correspond to the project imagined by the project leader, the support office helps project team to find more relevant calls or partners.*

PRIORITY 5: INTRODUCE A RESULT-BASED MANAGEMENT MODEL

While working on the document and discussing the draft, university representatives said that achieving all the mentioned goals (forming priorities, clusters, commercialization support, and development of researchers' competencies) is not possible in the absence of a precise mechanism for informed decision making.

Georgian universities see two tasks in the overall mission of implementing a result-based management model:

Task 5.1: the creation of effective informational systems which will provide relevant data for decision-making in every necessary direction

Research studies in Georgia show that data is typically gathered with varying frequency and methods, is stored in different formats, and is processed in different ways. There are no standard classifiers, and it is often impossible to aggregate data for decision-making purposes in one university and its unit or a given field or discipline at national levels (European Union, 2018).

According to university representatives, the creation of such databases is essential not only for the decision-making process but also for effective communication between individual and organizational actors involved in the research.

The universities involved in the project agree that it is important to have access to the information within and between universities for effective research management.

According to them, the information database needs to satisfy the following requirements:

- It needs to be continuously updated and based on research monitoring results;
- It needs to be based on classifiers; information needs to be filled in one format based on rules, so that aggregation, transformation, analysis of information is possible;
- It needs to be connected to external databases to validate results (e.g., Scopus, Web of knowledge).

Access to different parameters of the database needs to be diversified (with different restrictions for internal and external actors), but the main principle should be that specific parts of information must be made available to every interested party.

Task 5.2 Ensuring effective use of data analysis and interpretation techniques, development of competencies of R&D offices in this direction.

It is important to note that in the new guideline document for higher education institutional authorization – the main goal of which being to encourage result-oriented management model implementation in universities – the importance of support processes is underlined. In other words, the central idea is that result-oriented management is not possible without the processes, which include strategic and action planning, defining criteria for productive work, provision of monitoring and systematic gathering, storage, and analysis of all necessary information.

Accessibility and comparability principles of information are also important for supporting the cooperation of research organizations and individuals (within and outside of the country); monitoring of effective work of universities; creation and implementation of effective strategies for field and direction development.

Some benchmarks from EU HEIs (for details, see case studies attached)	• *Results based management system linked to :*
	  - *The agreement between universities and the state;*
	  - *The agreements between universities and schools (diversified targets) / individuals.*
	• *The system is also linked to incentives – for individual researchers, schools, clusters…*
	• *State-level external monitoring mechanisms, such as regular surveys / self-reports;*
	• *More accent on the knowledge transfer mission*

III - CONCLUSIONS AND RECOMMENDATIONS

The Higher Education system in Georgia is undergoing important transformation and faces numerous challenges on its development pathway. The global challenge of adaptation to the growing complexity of the HE ecosystem in the world is compounded by local obstacles, in particular, insufficient funding, obsolete infrastructure, and fragmented research.

Optimizing scarce human and material resources and creating effective inter-organizational linkages is, therefore, an important task to increase productivity, efficiency and visibility of research in the country. This task calls for stronger capacity in research coordination and management within and across higher education institutions.

The ultimate goal of HEIs is to integrate their organizations in the research ecosystem better: participate in its reshaping, ensure timely and adequate response to external demand and form a critical mass around important priorities for better positioning and proactive management of change.

The report underlines the importance of synchronizing and consolidating HEI efforts in three main directions:

- Creating adaptive networks of formal and informal units involved in research, strengthening communication within academia and with external stakeholders;
- Strengthening support processes to the university-based research through introducing a diverse package of technical assistance, consultancy and training;
- Building a reliable information base for informed decision making.

Five areas for improvement have been identified by Georgian HEIs and their European partners to achieve these goals:

- Diversify forms of academic cooperation within and across HEIs: the main tasks under this direction is to build the capacity of HEI R&D units for:
  - Coordinating the participatory process of setting action plans and cooperation models around research priorities;
  - Contributing to the creation of collegial networks and research clusters within the institution and outside of it;
  - Proactive search for international partners for research capacity building in priority areas.

- Strengthen links with external partners – facilitate knowledge transfer and commercialization: This complex task requires building a knowledge base and competencies within the institutions to:

- Better coordinate intra-organizational processes related to knowledge transfer and commercialization;
- Improve and diversify HEI support services for academic staff in commercialization activities, ensure availability of technical assistance and specialized expertise to researchers;
- Coordinate interaction and cooperation with other actors and intermediaries in the innovation ecosystem;
- Devise incentives for facilitating cooperation with external partners and elaborate explicit schemes, processes, and procedures for decision making and distribution of income.

- Contribute to setting national and institutional research priorities: This goal implies:
  - Improving internal evaluation and monitoring mechanisms in HEIs for informed decision making;
  - Introduce methodology and procedures for systemic identification of research priorities;
  - Creating a shared space for negotiating with partners and stakeholders.

- Improve human resources management in research: Three main directions have been identified within the priority:
  - Ensuring a balanced contribution of academic personnel to teaching, research and third mission through introducing appropriate distribution of workload and incentives;
  - Building effective mechanisms of centralized support to capacity building of academic personnel in two areas: research management and research skills;
  - Developing effective intra-organizational information exchange systems and strengthen functional linkages across administrative and research units within the university.

- Introduce the result-based management system and shared information portal: Good practice of European partner universities illustrates that the crucial component for the improvements mentioned above is the existence of viable monitoring mechanisms and systematically renewable data for informed decision making. The main tasks under this goal are:
  - Create a nation-wide information exchange portal for research management in cooperation with other universities and actors in the research field;
  - Build capacity within the HEI network for management, analysis, and interpretation of the data.

Higher Education Institutions involved in the HERD project underline the importance of cooperation and information exchange between the HEIs for achieving progress in the mentioned priority areas.

Consolidated effort of higher education institutions to pursue these goals will improve the capacity of individual HEIs for research management as well as contribute to the wider policy agenda of raising the visibility of research in the country, optimizing resources, identifying priorities and building effective partnerships within the broader network of the research community.

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Attachments

Attachment 1: Questionnaire for Georgian universities

HERD project- Georgia

Needs Assessment

Hello!

The goal of this questionnaire is to identify the needs of the universities in Georgia, in support of research activities, within the framework of the HERD project.

The best practices of the partner European universities will be determined by the priorities you name, as well as the contents of the meetings provided by the project.

Please read each question carefully and answer as accurately as possible. The answers are confidential.

You will need about 5-10 minutes to fill out the questionnaire. Ilia State University administers the survey. For questions, please contact us:

Thank you for your help!

HEI full name

Person responsible for the questionnaire:

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1. Priority Issues for the HERD Project Capacity-Building Component:

As you know, the project entails sharing the best practices of European universities with Georgian universities.

Below are the seven priority issues (and relevant sub-themes), which have been identified during the last five years in the field of research conducted by your and other Georgian universities.

Please:

A) Arrange the issues according to the priority - assign the relevant number 1 to 7 alongside all the themes. Numbers should not be repeated. (1 - the most important priority / interesting issue for our university. 7. The less important priority / interesting issue).

B) Below each issue is a set of the sub-themes and scale. You may add other sub-themes that you find interesting.

Sort out the following issues according to priorities (Which is a top priority to include in the best practice sharing component in the HERD project, which is less?

Are you interested in the sub-themes under each issue?

		Please range from 1 to 7 (1- most important priority; 7 – less important priority)			
1.	**Managing Human Resources Necessary for Research**	----------			
		Sub-themes:	Not Interesting	Interesting	Don't Know
1.1	Determining research load of academic staff		☐1	☐2	☐3
1.2	Regulating student/ supervising professor ratio		☐1	☐2	☐3
1.3	Monitoring academic staff research load and reflecting results in the decision-making process		☐1	☐2	☐3
1.4	Other (please indicate)		☐1	☐2	☐3
2.	**Formation of Research Priorities**	----------			
		Sub-themes:	Not Interesting	Interesting	Don't Know
2.1	Forming thematic clusters		☐1	☐2	☐3
2.2	Identifying prospective directions		☐1	☐2	☐3
2.3	Planning long-term research priorities		☐1	☐2	☐3
2.4	Other (please indicate)		☐1	☐2	☐3
3.	**Development of Forms of Academic Collaboration in Research**	----------			

	Sub-themes:	Not Interesting	Interesting	Don't Know
3..1	Promote interdisciplinary approach research	☐1	☐2	☐3
3.2	Strengthening inter-institutional and intra-institutional connections	☐1	☐2	☐3
3.3	Internationalization	☐1	☐2	☐3
3.4	Other (please indicate)	☐1	☐2	☐3
4.	**Management of Intellectual Property Issues** ----------			
	Sub-themes:	Not Interesting	Interesting	Don't Know
4.1	Internal university regulations – patent vs. publishing (how do the universities determine if a specific research project gets published or patented)	☐1	☐2	☐3
4.2	Profits/income management issues at the university (how the intellectual property income is shared between the university, research department and the researcher/group of people)	☐1	☐2	☐3
4.3	Support for researchers by the university in relation to intellectual property issues	☐1	☐2	☐3
4.4	Other (please indicate)	☐1	☐2	☐3
5.	**Capacity-building of Academic / Scientific Personnel in the Field of Research** ----------			
	Sub-themes::	Not Interesting	Interesting	Don't Know
5.1	Identify the needs for the development of academic personnel and other researchers	☐1	☐2	☐3
5.2	Development program format (training and informational programs, online programs, manuals, counseling), assistance offices	☐1	☐2	☐3
5.3	Other (please indicate)	☐1	☐2	☐3
6.	**Implementing Result-Based Management System** ----------			
	Sub-themes::	Not Interesting	Interesting	I Don't Know
6.1	Use of external electronic databases (Web of Science, Scopus, etc.)	☐1	☐2	☐3
6.2	Management of internal electronic databases (data collection and storage)	☐1	☐2	☐3
6.3	Data analyses	☐1	☐2	☐3
6.4	Integrating the results of the analysis in the decision-making process (enhancing the process of considering the performance indicators in the decision-making process)	☐1	☐2	☐3
6.5	Use of classifiers for comparing data comparison (fields, types of publications, etc.)	☐1	☐2	☐3
6.6	Other (please indicate)	☐1	☐2	☐3
7.	**Management of Material Resources Required for Research** ----------			
	Sub-themes::	Not Interesting	Interesting	I Don't Know
7.1	Management of laboratories, libraries and other support structures; management of procurement related to research activities	☐1	☐2	☐3
7.2	Management of internal university financial resources in the field of research	☐1	☐2	☐3
7.3	Other (please indicate)	☐1	☐2	☐3

Comments / Notes:

2. Priority Structure for the University Research Portal (Based on the Structure of Research Portal in Estonia)

Estonian Research Portal is a simple and effective example of sharing information with universities and other stakeholders. Its features are not comprehensive, though we have selected this portal to launch a discussion on the common portal structure in Georgia because:

• Portal blocks have a straightforward structure

• It is possible to evaluate research activities according to all the major indicators used in the world

• Thorough (very detailed) classifiers are used to document a scientific project

The portal contains several blocks that are listed below. Please indicate for each block whether you would like to see this block on the general portal.

To view, the portal go to the following link:
https://www.etis.ee/Portal/News/Index/?IsLandingPage=true&lang=ENG#

Would you like to have the following information on a joint research portal?

	:	Yes	No	Don't Know
	Institution (general information - address, mission, etc.)	⍰1	⍰2	⍰3
	The institution (authorization results)	⍰1	⍰2	⍰3
	Academic staff (biography, as well as information on publications, projects, etc.)	⍰1	⍰2	⍰3
	Projects (title, coordinator, partners, dates, financing)	⍰1	⍰2	⍰3
	Research: publication (title, author, publication type according to the general classification - Estonia has a very extensive and interesting classification of publications)	⍰1	⍰2	⍰3
	Research: supervisor (name of the topic, student, status (current and protected), supervisor, date of, institution)	⍰1	⍰2	⍰3
	Research: patent and utility models (title, author, type, institution)	⍰1	⍰2	⍰3
	Research: third party cooperation - products and services	⍰1	⍰2	⍰3
	Research: scientific research equipment (classification used here as well)	⍰1	⍰2	⍰3
	Cooperation offers with other universities	⍰1	⍰2	⍰3
	News / Announcements	⍰1	⍰2	⍰3

Comments / Notes:

Thank you for your collaboration!

Attachment 2: questionnaire for the EU partners

Questionnaire for the EU partners

Dear colleagues,

Please find below the list of 6 priority themes identified by Georgian partners during the Needs Assessment phase of the HERD project. These themes represent the areas where Georgian universities would like to hear more about the experience of their European counterparts.

You are kindly requested to briefly describe the current practice in your universities related to the six priority themes - answer the guiding questions listed under each priority. Use whatever format you wish. If you think some of the themes are not relevant for your particular case (please mark it as NR).

Please send the completed forms by May 31.

Meanwhile, you can contact us anytime with questions.

We appreciate your time and cooperation.

Sincerely,

Tamar Bregvadze tamar_bregvadze@iliauni.edu.ge

Ano Khundadze

1. Supporting Academic / Scientific Personnel in the Field of Research

1.1. What are the services provided by your university to support research?
- Types of services (for example: project writing, budgeting, communication with donors, etc.).
- Form of their delivery (for example training and information programs, online courses and tutorials, guidebooks, consultancy /(group/individual;

1.2. What are the beneficiaries of such services
- All or part of the academic staff (for example: only the academic staff qualified as publishing researcher)?
- All or part of the students (for example, only Ph.D. and post-doctoral students)

1.3. Which structural unit(s) provide(s) these services?

1.4. How would you evaluate this function at your university?
- Strong points
- Areas for improvement

2. Result-Based Management of research

2.1. Which indicators are currently used at your university to measure research performance of individual researchers/departments (Key Performance Indicators)?

2.2. Do you use internal database in addition to external electronic databases (if yes, please specify the purpose)?

2.3. Please, indicate how research performance results influence the decision-making process in your university in terms of:
- Research strategy
- Individual career advancement
- Resource allocation among researchers

2.4. How would you evaluate this research monitoring function at your university?
- Strong points
- Areas for improvement

3. Intellectual Property management

3.1. Is there a dedicated procedure to determine if a specific research project follows a publishing or patenting path?

3.2. In the case of intellectual property rights, how are the revenues shared among the university, the research department and the individual researchers?

- Is there a standard allocation rule (if yes, please specify)
- Is it determined on a case-by-case basis?

3.3. Is there a dedicated IP support service for researchers?

3.4. How would you evaluate this function at your university?

- Strong points
- Areas for improvement

4. Workload management of researchers

4.1. What are the rules for determining the research load for academic staff?

4.2. What is the maximum number of Ph.D. students that an advisor is allowed to supervise at the same time?

4.3. What are the mechanisms/procedures in place for monitoring the above indicators?

4.4. How would you evaluate this function at your university?

- Strong points
- Areas for improvement

5. Setting research priorities

5.1. Does your university have long-term research priorities?

5.2. If yes:

- Which body determines such priorities?
- Based on what criteria/indicators?
- How often are these priorities revised?

5.3. How would you evaluate this function at your university?

- Strong points
- Areas for improvement

6. Promoting Academic Collaboration in Research

6.1. Which institutional mechanisms/processes are used at the university to facilitate:

- interdisciplinary research,
- inter-institutional and intra-institutional collaboration,
- Internationalization in research

6.2. How would you evaluate this function at your university?

- Strong points
- Areas for improvement

Attachment 3: Case studies from EU partner universities (written interview)

Attached as separate files