

Temur Maisuradze

Professor, Doctor of Business Administration
East European University

Abstract

The aim of this paper is to search for the inventive and innovative/creative potential of Georgia, to identify the hindering factors of its realization, and taking into account the circumstances, to develop the specific recommendations that will create the preferred innovation ecosystem to increase its efficiency.

The Global Competitiveness Report 2017, 2018 and 2019 highlight the weakening of links between research institutions and businesses. Studies of the causes have shown that the situation is much worse in this regard, as it is accompanied by a kind of specificity of the local environment. The carried out research is not based on the Global Innovation Capabilities Index and its calculation method. The aim of the study was to focus only on the main resource, intellectual (creativity) resource, and to investigate the reasons that influence the parameters of the Global Innovation Index.

Based on the identified problems, recommendations have been developed, by which it is possible significantly to improve the situation.

Keywords: *Innovative ecosystem, Innovative potential*

Temur Maisuradze

Professor, Doctor of Business Administration

East European University

Introduction

The activities of scientific and research organizations in the reality of Georgia are weakly focused on solving the needs and problems in the public and private sectors. On the one hand, there are many scientific challenges and existing scientific advances, the adaptation or transformation of the needs and requirements of the purely scientific and applied fields. On the other hand, there is the rapid growth of new challenges in all directions of industry and science. In such a situation, it is unthinkable to ensure significant achievements and competitiveness in a locked sector or departmental space. For example, under the cooperation of industry and scientific research institutes, the number of inventions in Georgia reached 730 units by 1989 data.¹ According to 2021, 49 units.²

From this situation, it is necessary to create multi-disciplinary collaborative links/rings that would be able to provide customers (who needed some research to study existing problems) and unifying platforms for these orders. Such rings/platforms have created the possibilities of close collaboration and extensive involvement, both at the stage of creation of scientific products, as well as in the stages of its implementation and commercialization, including timely response to the challenges arising. The paper presents a basic study to study the innovation ecosystem and develops a specific platform that can create some kind of innovative ecosystem.

The study of existing innovative potential

First of all, it is noteworthy that in the 21st century, there is a special demand for intellectual property/patents worldwide.³ Some decrease was observed in 2009 due to the world financial crisis, in 2019, mainly due to the reduction of applications from China,⁴ Russia and the UK, and in 2020 it is explained by the restrictions on Covid 19 (see Graph 1).⁵

¹ Database of Patents of the USSR (1989), p. 1 – 1700; <https://patents.su/1989>

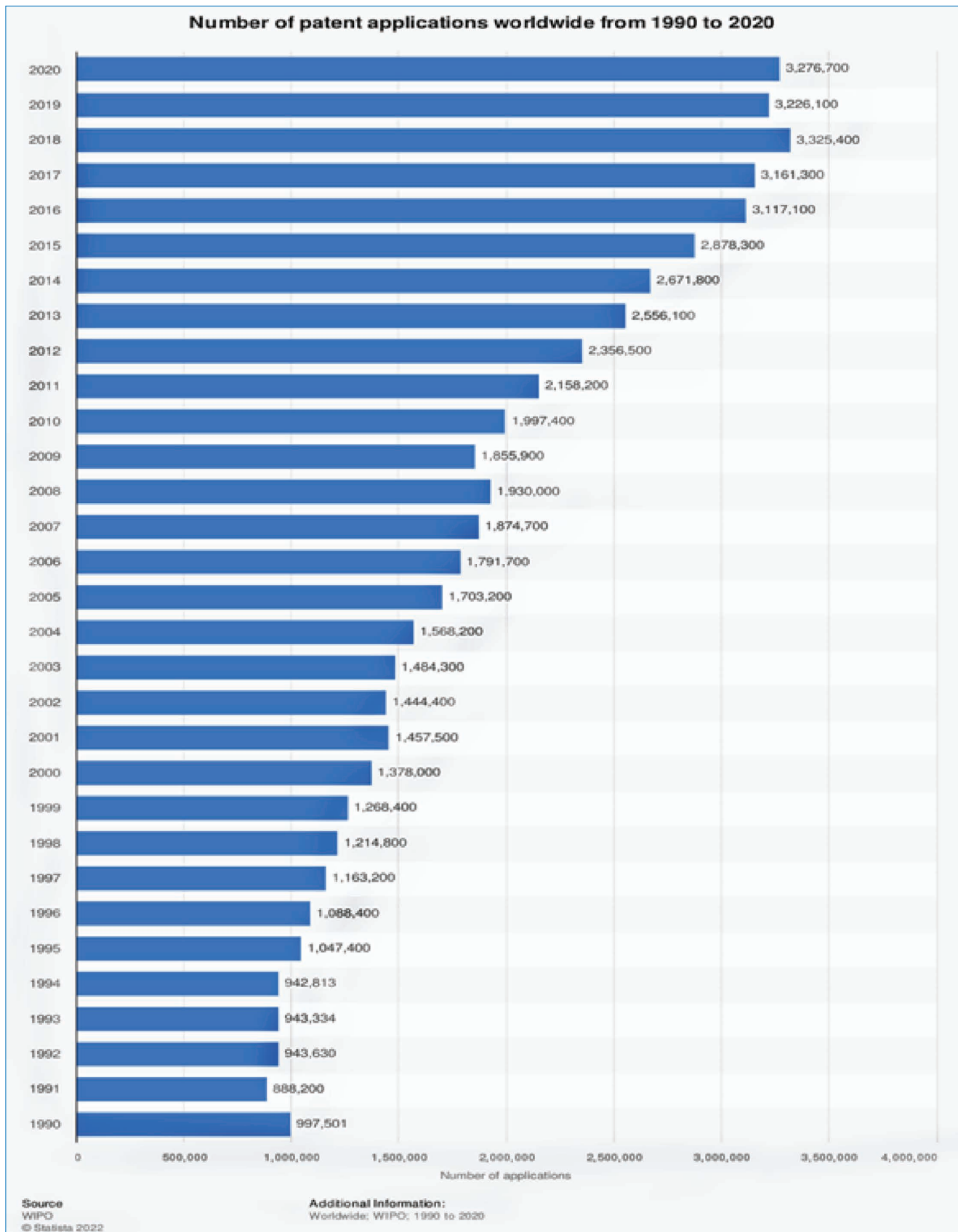
² Sakpatent annual reports, (2020), p. 17; <https://www.sakpatenti.gov.ge/ka/publications/>

³ Szmigiera, M. (2021), Number of patent applications worldwide 1990-2020, Statista, <https://www.statista.com/statistics/257610/number-of-patent-applications-worldwide/#statisticContainer>

⁴ WIPO, (2020), World Intellectual Property indicators, p. 12; https://www.wipo.int/edocs/pubdocs/en/wipo_pub_941_2020.pdf

⁵ Statista 2021, <https://www.statista.com/statistics/257610/number-of-patent-applications>

Graph 1



Such a rapid growth trend for intellectual property is conditioned by:

- A) with the globalization of the economy;
- B) powerful competition generated on the international market;
- C) rapid development of new technologies (information, biological and nano technologies).

The presented study was conducted to study these trends in Georgia, which includes two parts:

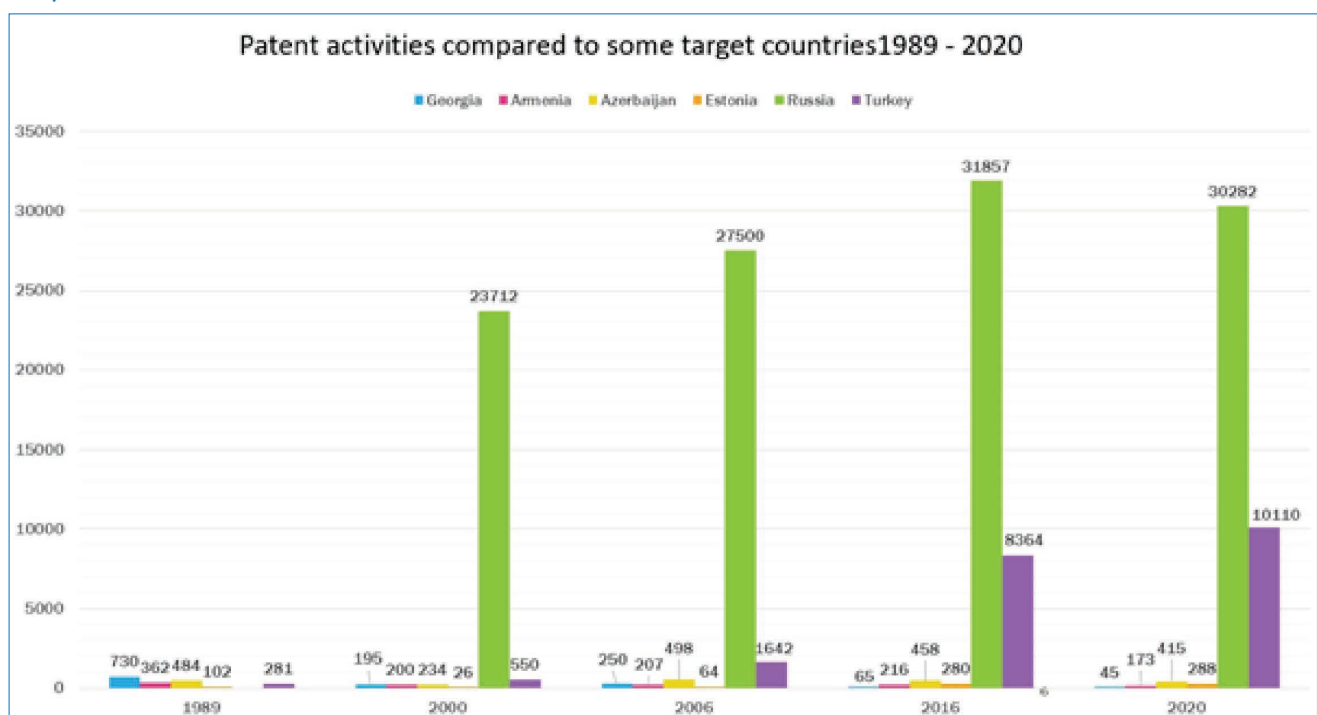
1. Study of Georgia's inventive potential;
2. Industrial and consumer requirements for innovation.

The study was commissioned by East European University and GITA („Georgian Innovation and Technology Agency). The 1989 - 2020 period is taken as marks with summary characteristics. In particular, before the change of economic formation 1989 and 2020 as the last year for the results evaluation.

Neighboring Armenia, Azerbaijan, Estonia, Russia and Turkey are selected as observation objects. Estonia has been regarded as a less proportionate, in recent political-economic space in recent years and now a member of the EU.

Countries' activities are shown in registered inventions before changing the political landscape in Georgia and after these changes (see graph. 2).⁶

Graph 2



During this period, despite the high migration of the Georgian population, a sharp decline in the number of inventions is evident, which was caused by the economic stagnation of the civil war, and later, the complete destruction of industrial means, the unjust and unreasonable distribution of state property, so-called privatization.⁷ It is clear that in Armenia, Azerbaijan and Estonia, almost the same geopolitical processes were taking place in Georgia, but only with us there is a catastrophic drop, which is caused by the civil war and the complete destruction of the industrial sector. The Armenian War of Azerbaijan also affected their economy and inventive levels, though with a slight drop, as it was locally located on the territory of Karabakhi and, like Georgia, did not cover the whole state.

The actual data confirms that Georgia continues to decline in the number of registered patents. Table 1 presents the historical minimum and maximum trends of target countries.

⁶ WIPO, Statistical Country Profiles, http://www.wipo.int/ipstats/en/statistics/country_profile/

⁷ Jokhadze, Kh – (2008), Contradictory nature of nationalization of state property in Georgia, dissertation work TSU 2008, p. https://www.tsu.ge/data/file_db/disertaciebi/Jokhadze.pdf

Table 1

Inventive potential for average						
	State	Population (mln.)	Historic (Max-Min) 1989 - 2020		Tendency	Relatively residents. Towards
			Maximum	Minimum		Average
1	Georgia	3 719	730	45	▼ 8.4	7 800/1 (9 609/1)
2	Armenia	2 931	362	200	▼ 1.8	10 430/1
3	Azerbaijan	9 827	498	234	▼ 2.1	19 320/1
4	Estonia	1 309	240	26	▲ 9.2	6 254/1
5	Turkey	80 745	10 156	281	▲ 29.7	287 348/1 (7 950/1)
6	USA	324 465	520 877	291 806	▲ 1.78	623/1
7	Russia	144 100	31 857	23 712	▲ 1.34	5 187/1
8	Japan	127 484	530 003	473 141	▲ 1.12	240/1

P.S. - We were 33 times ahead of Turkey in 1 per resident by the 1989 data, and now, we are dropped behind on average 1,2 times, by 2020 -10, 4 times, and 39 times dropped behind Japan.

We were 33 times ahead of Turkey in 1 per resident by the 1989 data, and now, we are dropped behind on average 1,2 times, by 2020 -10, 4 times, and 39 times dropped behind Japan.

During this 30-year period, important political and social-economic changes took place in Georgia, which clearly reflected on the country's inventive potential. For example, if we consider the number of inventions weighted in per resident with neighboring Turkey, according to the data of 1989, Georgia had 1 invention for every 7,800 inhabitants, while according to the data of Turkey in the same year, one invention came for 287,348 citizens, which is 33 times worse in per resident. According to today's data, we have 1 invention per 9609 inhabitants compared to 7950 inhabitants of Turkey. If we compare the historical minimum and maximum average rate, according to the average data, we are 1.2 times behind, and if we judge by the data of 2020, we are already 10.4 times behind it.

The object of research was the inventions already registered by local and international procedures. The study of other copyright and related rights was not the aim of the research. The focus was only on the measurement of inventive potential and the comparison was made against the background of socio-political changes of the last 30 years. Table 2 presents the dynamics of changes in the inventive potential relevant to Z. Gamsakhurdia, E. Shevardnadze and M. Saakashvili periods of transformations, changes and administrations of the political-economic system implemented by Saakashvili.

Table 2

Registered inventions by years 1989-2012

inventions			Registered announcements		
			1989	2002 – 2006*	2007 – 2012*
By National procedure	local	legal (a)	–	8	5
		phys.(b)	–	137	129
	all:		770	145	134

*- Data are averaged from 2002 to 2006 and similarly from 2007 to 2012.

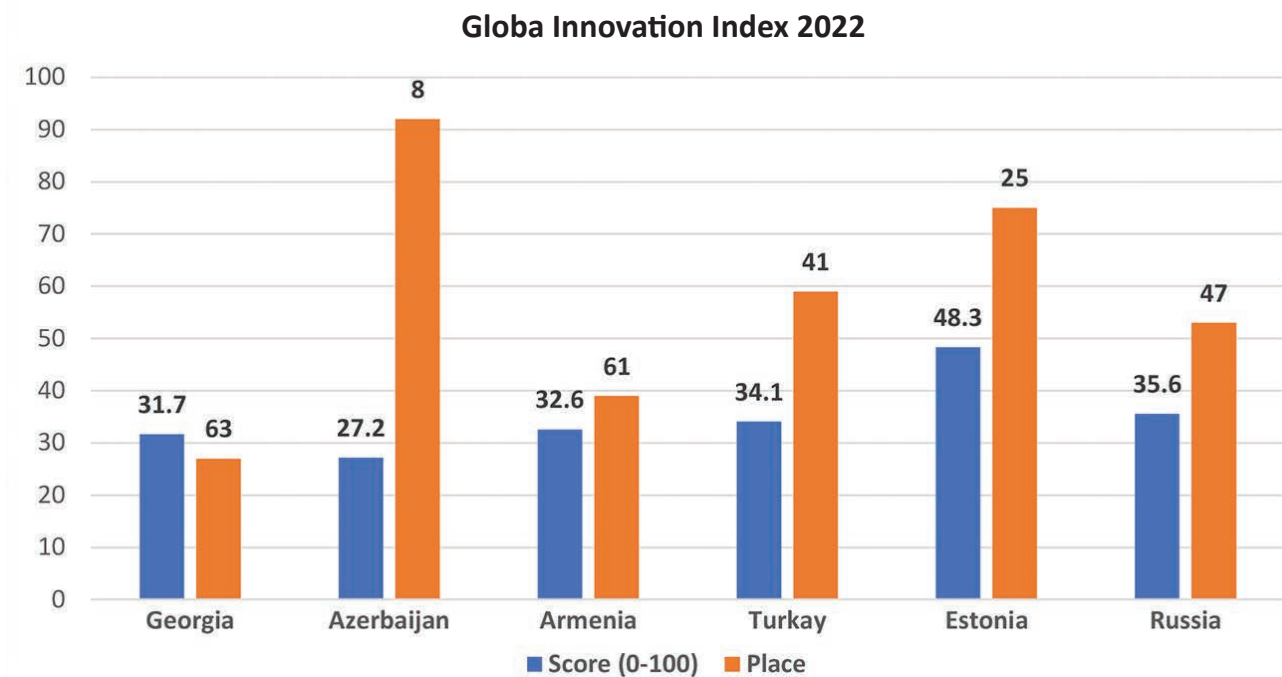
Table 3 presents the political-economic changes and governance period of 2012-2020.

Table 3Registered inventions by years 2013-2020⁸

inventions			Registered announcements							
			2013	2014	2015	2016	2017	2018	2019	2020
By National procedure	Local	Llegal	5	5	3	19	9	1	8	10
		Phys.	99	53	58	39	28	35	3	6
	Foreign		9	11	14	7	6	0	20	29
By international procedure			173	139	131	112	163	97	80	103
All			286	208	206	177	206	133	115	152

Among them, it is worth noting that from the inventions registered in Georgia in 2002-2013,⁹ on average 81.5% came from physical persons, and all legal entities and scientific research institutions took 4.4 times less, that is, only 18.5%. In the total indicators, from 2013 to 2020, there is a 250% drop, although registrations through international procedures have increased and reached 29 units in 2020, which is 3.2 times more than in 2013 and 1.45 times more than in 2019, which is probably explained by the creation of GITA (Georgian Innovation and Technology Agency) and the establishment of Georgian patent representation on its base. Such a sharp decline in the last 30 years requires very serious analysis. It is difficult to imagine how it is possible to be in such a difficult situation against the background of unprecedented technical and technological development in the rest of the world.

The target countries, according to the Global Innovation Index, are presented in Figure 3. Judging by the mentioned index, which includes a combination of many dimensions, Georgia does not look too bad and occupies 63rd place, behind neighboring Armenia at 61, but ahead of Azerbaijan¹⁰ at 82nd place, although very bad. We have a picture compared to the historical maximum (national intellectual potential).

Graph. 3

⁸ Sakpatent annual reports, (2013-2020), <https://www.sakpatenti.gov.ge/ka/publications/>

⁹ Sakpatent annual reports, <https://www.sakpatenti.gov.ge/ka/publications/>

¹⁰ WIPO, Global Innovation Index 2020, p.33, https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2020.pdf

As a result of the research, some obvious reasons for the low demand for patents in Georgia were revealed:

1. The inventive level is low;
2. In the university space and at the industrial level, there is almost no possibility of conducting practical research;
3. Lack of funds allocated to science.¹¹
4. Disruption of the industrial system and absence of competition between producers (competition works only between imported products);
5. The possibility of obtaining financing and guarantees for patent costs is very limited;
6. There are no conditions and opportunities for manufacturing industrial samples;
7. For market-oriented research, funding sources are scarce, which complicates relations with potential investors;
8. The possibility of participating in international exhibitions is limited;

Within the framework of the mentioned research, a survey of the population, small and medium-sized businesses, as well as focus groups in universities was conducted.

The population survey was intended to find out the motivation for purchasing innovative products, and from the side of business representatives, to what extent production is focused on creating their own original and competitive products, protecting copyrights on these products and gaining a market advantage with such an approach?

The survey of the university sector aimed to find out the extent to which university research is oriented toward the demands of the business. Is there such an interest from their side (demand-supply trends). Also, the attractiveness of innovations in the consumer, educational and industrial sectors of Georgia was highlighted.

This part of the research involved clarifying the issue of attractiveness to innovation in Georgia's consumer, educational and industrial/business sectors. It is about studying the reality of what the real demand for innovations is, that is, what is the subject's motivation to purchase or introduce innovations.

Based on the research, it was revealed that the user has three types of requests/needs for the purpose (function) of innovative products:

1. Request motivated by need;
2. General/vague request, and
3. Mandatory/forced request.

100 organizations and 1150 citizens took part in the survey. The study included interviews in three age groups:

- I. 18 to 32 years inclusive;
- II. 33 to 47 years inclusive;
- III. From 48 to 63 years by random sampling.

The answer given to the first question, „Do you like to buy new and innovative products?“), determined the sequence of the second and subsequent questions.

After that, the second order task was to determine the cause of the request/need, and what caused such a need.

As a result of the final analysis, three main groups of requests were identified:

Demand caused by the need, which is motivated only by the need of the consumer (as it is known, this need is of different types, characterized by other and other diversity and motivated by functional or emotional factors);

A general/vague demand is triggered by a possible need for a product/service, and such a customer finds it difficult to make a decision. Consequently, he makes a positive or negative decision after some hesitation,

¹¹ Machavariani, Sh. (2019). The main factors contributing to the improvement of the innovative potential of the country, East European University Collection of Scientific Papers #1, p. 10-11, Saga - Academic Publishing House of Georgia;

although in case of purchase, he does not have a clear answer as to why he purchased this product;

Mandatory/compulsory demand that is driven by a compelling need. Such a decision is mostly made for safety or other mandatory needs.

According to the respondents, the innovative products purchased in recent years and the reason for purchase were grouped according to the described criteria. The results obtained as a result of averaging the data of the research groups were distributed in the following proportions:

In 45.4% of cases, the desire to purchase an innovative product was determined by need, general/unclear demand - 19.93%, and innovative products purchased due to mandatory/forced demand included 34.66%, of which 75% of innovative products were purchased for health protection, 18% for safety protection and Only 15% to save energy resources or protect the environment (see Table 4).

Table 4

Research results by age groups

№	Requirements for innovation	age groups		
		I	II	III
1	demand driven by need	41.3	59,6	35.3
2	General/vague request	52,5	5.1	2,2
3	Mandatory/mandatory requirement	6,2	35,3	62,5

In the responses of 100 organizations surveyed on what was driving the demand for innovation, it was revealed that 82% of the responses were dominated by the interest in creating competitive prices, and 18% by a compelling need. As for the general/vague demand, it was not revealed at all in this segment.

The answers to the additional questions revealed the following circumstance: a mandatory/compulsory request, which is due to a special need and a decision made accordingly, may be caused by, for example, the need to comply with environmental pollution norms. The vast majority of organizations perceive this as a punishment rather than a manifestation of their will or a contribution to global environmental values.

What was revealed in the first part of the research, in particular, was a sharp drop in the level of the invention according to the results of the last 30 years, which on the one hand is the result of the loss of interest in goals and results from the population, which was caused by the disruption of the industrial industry in the 1990s. As a result, the country's industrial economic orientation was changed in favor of service areas (the mentioned area required much less capital investment and relatively fewer qualifications).

In the background of such a radical transformation, the scientific research institutes left without the industrial sector were perceived as a heavy burden by the ruling power in 2003-2012, and on the advice of the Western partners, they turned their backs on the research institutes.¹²

As a result, almost all traditional research directions were lost, there was an outflow of personnel or transfer to non-professional fields, alienation/sale of buildings, laboratory equipment and facilities. The road was taken only in the direction of tourism development and activities integrated with it. The newly created university sphere, the state as a whole and the small industrial sector have not yet managed to move from a closed system to a broad cooperation.

Taking into account the current situation and the factors revealed by the research results, we consider it necessary to do two + 1 - environmental protection innovations and innovation policy + a need-oriented innovative and applied scientific ecosystem, and in parallel:

1. Orientation to such innovations and inventions, which simultaneously combine the functions of require-

¹² Khundadze T., Research and Development in Georgia, <http://old.1tv.ge/projects/analytics/?page=detail&id=166261>

ments caused by the need and the functions equipped with mandatory needs at the same time (need + eco-technological (environmentally clean technology by which the product is obtained) and eco-friendliness (operational energy efficiency, viability and the possibility of recycling);

2. In the innovation policy of the state, the simultaneous forcing of three well-known parallel processes:
 - I. „Export“ strategy - use of scientific and technical potential available abroad in one's own economy (import of innovations);
 - II. Utilizing the „borrowing“ strategy - using one's own labor force and one's own scientific-technical potential to produce science-capable products, which are already produced in developed industrial countries and acquire new properties by introducing possible innovations into it (such innovations can be introduced endlessly if the existing and potential intellectual resources are properly invested in the state);
 - III. „Strengthening“ strategy - using one's own scientific and technical potential, the constant growth of innovations and creation of an international scientific image of Georgia (forcing the renovation policy, which means export of improved technologies, i.e. transfer of technologies).

At the initial stage, priority will be given to elements of the „borrowing“ strategy, during which joint ventures will be organized to produce competitive products. In some cases, the partner's trademarks must be used for the sale of products, If, by adding our own intellectual (innovative) potential, it becomes possible to introduce qualitative novelty into the products, it will become possible to act on behalf of Georgia and establish our own international market image, which will allow us to:

- a) start further upgrading the existing production potential;
- b) to start forcing new innovation projects oriented to the need, production of new (competitive) products and expansion of industrial potential;
- c) transform renovation approaches into a superstructure and integral process of lending policy;
- d) In case of the creation of intellectual products, the introduction of which will have a superior potential for any industry or country, it should first become a kind of business card of the industry/country and then the technological transfer should be carried out (otherwise, the innovation created in Georgia will contribute the lion's share to the economy of another country and will have a meager benefit for its own country benefits).

As the conducted studies revealed, the activities of scientific and research organizations in Georgia are not focused on solving the needs and problems in the state and private sectors. On the one hand, there are numerous scientific challenges and existing scientific achievements, whose adaptation or transformation to specific needs and requirements are purely scientific and applied tasks. On the other hand, there is a continuous process of growth of new challenges and needs. Because global environmental changes have dramatically increased the demand for both eco-friendly and eco-technological products. It can be said that everything that has been achieved is subject to improvement in accordance with new requirements and requires a sharp increase in a renewed demand for it. Even in cases where the effect is achieved at the expense of a higher market value, but in accordance with the new requirements, the cost of the products or the energy efficiency of the novelty, environmental friendliness, viability, the possibility of utilization and recycling are at stake, preference is given to ecological features (environmental protection innovations), and the value is transferred to the second on the plane. This is both a great challenge and at the same time an opportunity. This is where the growing need for the realization of knowledge and therefore real demand for it appears.

There should be no doubt that in order to transform such challenges into useful processes, it is necessary to create multidisciplinary collaborative links that will be able to provide responses to existing and new challenges, integration with the relevant institutions of the world, and the step-by-step transformation of the entire system to the required condition.

CONCLUSION

As a result of the conducted studies, it was revealed that the convergence of interests between the educational, scientific and industrial sectors is very weak in Georgia. In the state, there is no visible innovation ecosystem with a desire to cooperate, where it will be possible to have the convergence of own and common interests, any type of platform for mutual strengthening and cooperation.

The mentioned issue becomes even more relevant in the background when there are forced neighborhood or global changes, including the process of global rearrangement of both economic and environmental impacts. These global changes, along with challenges, also create new opportunities with great potential. In such a situation, it is extremely important to be ready and participate in all such processes within the scope of the possibility to get common benefits.

The world's turn towards a greener environment opens up vast opportunities for creativity and innovation, as everything can be improved and advantages gained if the result is more ecologically or energy efficient than others. The proposed ecosystem model of convergence of interests and cooperation can become a serious supporting factor for the self-realization of Georgian entities, for involvement and participation in such processes, for concentrating existing resources on specific needs, for opening the appropriate arena for challenges, and for creating a well-deserved image in the world arena.