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INNOVATIVE DEVELOPMENT AND ECONOMIC REFORMS: THE ROLE OF COMMERCIALIZATION OF INTELLECTUAL PROPERTY AND TECHNOLOGIES

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Innovative development and economic reforms: the role of commercialization of intellectual property and technologies. Baku, 2019

This book has been prepared on the base of introduction and presentation on “Innovative development and economic reforms: the role of commercialization of intellectual property and technologies” of Kamran Imanov, Chairman of Board of the Intellectual Property Agency of the Republic of Azerbaijan presented at the conference devoted to signing of Memorandum on cooperation between Intellectual Property Agency and Communication Center held in February 11, 2019.

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Introduction speech

Dear participants of the meeting!

Azerbaijan, leading to innovative development, ranks 25th out of 190 countries, according to the “Global Doing Business 2019” rating. Our country is included in the rank of 10 reformer states and takes the first rank for the number of reforms. So, Azerbaijan is recognized as a reformer country by the countries of the world. In my introduction speech, I would like to analyze the challenges from the expected reform position facing the Intellectual Property Agency.

As a result of the measures implemented within the framework of structural and economic reforms carried out in our country in 2018, significant organizational and functional changes took rank in the system of intellectual property (IP). In the result of the efforts of the President of the Republic of Azerbaijan Mr. Ilham Aliyev, Azerbaijan has been an active participant of the next fourth industrial revolution of innovation and the implementation of socio-economic reforms. Within the framework of the institutional reforms aimed at the development of the IP field as a part of innovative development way, the Intellectual Property Agency of the Republic of Azerbaijan was established by the order of the President of the Republic of Azerbaijan "On measures to improve management in the sphere of consumer market supervision, standardization, metrology and protection of the objects of intellectual property rights" by reorganizing the Copyright Agency of the Republic of Azerbaijan and the Patent and Trademark Center.

Authorities of the abolished State Committee for Standardization, Metrology and Patent, in the field of industrial property and the Republican Scientific and

Technical Library have been subordinated to the Intellectual Property Agency and Patent and Trademarks Examination Center and Centre of Intellectual Property Rights Enforcement have been established under its subordination, and new Regulations have been approved. So, it has been established the specialized compact unified state body that ensures development of IP field, carries out only regulation and control in this field, and coordinates the activity, and its employees are considered civil servants and it equals to the central executive bodies on payment of labor. Except Republican Scientific and Technical Library, the Intellectual Property Agency and its constituent parts act as public entity in law in order to increase effectiveness, according to the challenges of time.

Under the leadership of the head of state, in the result of institutional reforms on the field, the number of civil servants have been reduced 43 persons and it gives the opportunity to save more than 1 million 100 thousand manats a year. Only the employees of the Intellectual Property Agency who equal to civil servants are finances by the state budget. The maintenance costs of the agency and the activity of the two centers are carried out on base of self-financing principle.

Managing of the fields through more flexible, more compact and more targeted structures, providing the transparency, efficiency and accountability have substantially changed duties of newly created Intellectual Property Agency as its main aims. Today, the main duties of the Intellectual Property Agency are protecting and maintaining copyright and related rights, protection of digital rights management and struggle against counterfeiting and piracy, as well as the management of industrial property objects and to organize this

management according to the modern requirements of time, ensuring transparency, openness, and clearness for those who apply for patent, and trademark. At the same time, it is reestablishment of the Republican Scientific and Technical Library, which has lost its users and reputation, its area has been diminished, scattered in various disadvantage areas, has lost some parts of the funds and has become ineffective.

The key principle of carrying out these duties and increasing the importance and benefit of intellectual property is the successful implementation of the President's economic reforms, supporting the courageously held measures and selecting technologies from the scientific-research results that have the potential for commercialization and their applying. Thus, being an active factor in attracting of IP investments and in implementation of innovations to take rank in the leading factors of socio-economic success in self-extracting tools. In short, we need to achieve the effectiveness of IP and the innovative development.

It is no coincidence that innovative development in the period of technology leaping and in the "digital imperative" time of innovation is the human capital ecosystem created by IP, and the knowledge, technologies and investments obtained through research. Thus, according to well-known experts, "it is inevitable that the international architecture and form of intellectual property will be dictated and managed by technology more and more in the future". So, it should be emphasized that technologies cardinally impact to the existing IP landscape and, in its turn, IP is not against it, but rather is adapting.

Therefore, the patenting organization, (PO) in short, which is engaged with industrial property should not be

content with its own interests, should not establish analyze of its activity on the basis of its own, should not measure the activeness of invention and patent on impact to the innovation processes. In accordance with the challenges of the time, we must approach the industrial property area from the new paradigm position, and must go from the cage out which is measured by the internal indices. Invention activity in the same style should not be closed with the application to the Patent organization. With the advancement of the Intellectual Property Agency's activities, our efforts are to encourage autonomous, independent motion-pragmatic forces that are not necessarily depend on state aid in the real economy, as those forces can turn the real economy into an innovation type of economy. Therefore, inventive activities should be encouraged so that the created knowledge is converted to the real sold products.

As a key factor of production in innovative economy, the innovation is based on the main economic resource - intellectual capital and the source of wealth, richness comes from the technological, intellectual and informational rent. The Intellectual Property Agency should contribute to these factors and organizes its activity in this direction.

It is true that according to the Competitiveness Index of Davos Economic Forum 2018, Azerbaijan is ranked 36th rank on “Protection of Intellectual Property Rights” in sub index “Institutions” and is leader in CIS. But we must look forward and need to inspect our resources.

As you know, Azerbaijan's "Innovation" rating is on the 71st rank in Competitiveness Rating of Davos Economic Forum's. Measures aimed at increasing the activity in the field of patent and trademarks included in

this position should help to improve the position of Azerbaijan. According to the "Patent Applications" and "Applications for Trademarks" indicators, Azerbaijan holds the 87th and 101st ranks, respectively.

According to the relevant decrees of the President of the Republic of Azerbaijan, the newly established Intellectual Property Agency of Republic of Azerbaijan is currently working in this direction as well as in the direction of H-index of scientific publications.

The analysis shows that the current situation in the sphere of industrial property has revealed a number of shortcomings and problems in this area. It was determined that the policy directed to the innovations in this field of the structure which implements the invention, utility models, industrial designs and trademarks, determines the intellectual property rights for industrial property objects - previous Patent and Trademarks Center (PTC) has not been formulated. The organization has acted as a business entity only within its own interests in recent years.

However, over the last eight years, patent applications on inventions, patent granting, and other absolute indicators have been analyzed and reduction on most indicators was found. The decline in the number of valid patents reveals that inventors have no interest in patenting and weak market requirements for existing patents and damage the stimulus factor because of the lack of commercialization of industrial property objects. Even under such circumstances, applications for a number of industrial property objects have not been considered and implemented. In this regard, the effectiveness of the field has been measured through the most up-to-date international indicators and the urgent action plan has been developed and implemented. In a

word, as President Ilham Aliyev stressed in Davos Economic Forum, "our future is in innovation, technology, good governance, transparency and state support for entrepreneurs". The Intellectual Property Agency should, as a public agency, properly carry out this directive.

Realizing the responsibilities, the Intellectual Property Agency continues with its current opportunities starting from the time it acts as the Copyright Agency. “The National Project for Intellectual Property Policies at Universities and Research Institutes” jointly prepared by the Copyright Agency, the Ministry of Education and the World Intellectual Property Organization (WIPO) may be shown. In connection with the implementation of the Project, in 2017 a Joint Declaration was signed between the Ministry of Education and the WIPO with the participation of the Agency. Several international conferences and seminars were held in this direction.

Also, the international conference on "Intellectual Property Support for Economics and Innovation" and the regional seminar on "Intangible Assets and Global Value Chain: How does economics benefit from innovations?", exhibition on demonstration of the achievements of the startups created at universities and research institutes held within the framework of the official visit of Mr. Francis Garry-Director General of WIPO to the Republic of Azerbaijan on June 4-6, 2018.21 startup projects were demonstrated at this exhibition, 16 of them represented the local universities, 2 of them presented the private companies and 3 of them presented the representatives of ANAS (High Tech Park).

Azerbaijan demonstrated its modern geographical indications included in UNESCO's intangible cultural heritage at the exhibition held in September-October, at WIPO General Assembly.

The international conference on "Intellectual Property Development in Azerbaijan and its Impact on the region: Innovative and High-Tech Startup Presentation" and the exhibition dedicated to Azerbaijan's innovative and high-tech startups jointly held by the Intellectual Property Agency, the Ministry of Transport, Communication and High Technologies, the WIPO and the International Telecommunication Union on December 18, 2018 at the WIPO Headquarter in Geneva on the occasion of the 100th anniversary of the Azerbaijan Democratic Republic are one of the important measures. The special significance of this international event was to demonstrate the modern world of Azerbaijan - the renewed reformist country to the world, to the international expert community.

It should be noted that, new horizons for startups, micro and small entrepreneurship subjects are opened within the framework the tax reforms of the head of the state. Physical persons who are the subjects of micro or small business are exempt from income tax for a period of three years from the date they received the startup certificate, and those subjects acting as legal persons are exempt from benefit tax for a period of three years. Certainly, these changes will help us to fulfill our mission.

How do we see the functional responsibilities of the Intellectual Property Agency? The upcoming tasks are forming by the policy of economic reform carried out by the head of the state on innovative development, and are in adequately serving the impact of IP to this field and the innovative development. The implementation of these tasks is carried out taking into account three factors:

- Establishing of Universities 3.0 (education, research and commercialization of knowledge) as a result of radical transformation in the higher education and

science system, where commercialization and transfer technology are prioritized;

- Increasing KOS's economic role and innovation capabilities, promoting SME policies, stimulating technological innovation;
- Taking into account the changed role of the IP in new context of activity, directing the creation of the wealth center from material assets to intangible assets, intellectual capital, and directing investment flows to IP.

A number of measures are being taken connected with mentioned, including:

- Preparation of the Long-term Intellectual Property Strategy of Azerbaijan;
- The promotion of the international patent registration PCT system to support the inventors and the payment of a portion of the state's costs, as well as joining to the Patent Law Treaty (PLT) which simplifies our country's patent acquisition, the establishment of the Technology and Innovation Support Center and soon starting the activity;
- Establishing of IP offices at universities, research institutes and SMEs, and the transformation of existing offices into Commercialization and Transfer Technology Centers (CTTCs).
- Establishing of Commercialization of Technology and Technology and Innovation Support Centers (TISCs) at the Intellectual Property Agency for connecting science with industry, qualitative increasing and application of invention activity
- Promotion of the brand “Made in Azerbaijan”, partial payment on state-funded expense of local trademarks protected under the “Madrid Agreement on the International Registration of Trademarks”,

supporting and registering the weaving of logo on the mass-produced and individually woven carpets belonging to Azerbaijan

- Starting the issues on establishing of a digital information system "PANAH" ASAN typed "Open Target to Patents, Trademark" for the purpose of providing the transparency, connecting with applicants of patents, trademarks and examination and other service providers without contact;
- Implementation of the management system for the use of objects protected by IP in digital networks.

These works are already being implemented, business projects of created structures have been prepared, necessary measures have been taken and we hope that it will benefit.

Dear participants of the meeting!

It is planned to sign the Memorandum of Cooperation between the Intellectual Property Agency and the Economic Reform Analysis and the Communications Center at the end of today's event. This is to support economic reform, to co-ordinate intellectual property owners and investors, to commercialize start-ups of economic significance, to use our bodies' information, software and human resources for future joint goals within the competence of both organizations.

Thank you for your attention!

I. Innovative economy

1. Identification of the concept of "Innovative Economy" and its comparison with the concepts of "creative economy", "informational economy" and "economy of knowledge" (synonyms or distinctive terms?).

2. Analysis: the genesis of the concepts, the basis of production factors, the main source of economic resources and the source of wealth (presence).

2.1. **Creative economy** is based on intellectual activity and is characterized by increasing creative values through the development of creativity and conditions that create opportunities for it in society.

The key factor of the creative economy is the **creative potential of the production**. The key economic resource is creative capital and the source of wealth - **intellectual rent** (intellectual additional gain).

Here we are talking about the use of intellectual factors of production, which are recurred and not related with natural resources.

2.2. **Informational economy** is economy of information benefit and ICT (M.Porat, American economist).

It is characterized by increasing of information role in production factors and is acknowledged as a resource for economic activity of information.

The source of wealth is **information rent**, i.e. the rent obtained by the owner of information capital in the result of acquisition and realization of information benefits. Another source of wealth is intellectual rent (the use of information capital requires knowledge and habits).

2.3. **Knowledge economy** is characterized by the development of high-tech goods and services, the establishing and development of new employment sectors, and wide availability of ICT and higher education.

The term (Austrian-American scientist A.Max, 1962) is created due to the increasing of the socio-economic role of science, being commodity and the source of economic increasing of knowledge production.

It is transformation of knowledge into one of the key factors of production.

Knowledge as informational product does not lose its value during exchange, remains to belong to both sellers and consumers.

The source of wealth is intellectual rent created from intellectual capital.

However, unlike intellectual capital, only the capital belonged to the company (intangible assets – intellectual property, goodwill, etc.) generates additional intellectual rentals. Moreover, the knowledge suggests **information rent** as an information product.

2.4. **Innovative economy** is closely linked with changed concept of innovation – innovation is characterized by not only the production of new products and services, but also the application of innovation to its consumers.

Knowledge plays an important role in the innovation economy, but this concept cannot be conformed to the concept of "knowledge economy". Because knowledge is the basis of any development, but the availability and dissemination of knowledge is not enough for development, new products, technologies and services created on knowledge should be conveyed to the consumer and marketed.

The main source of wealth in innovative economy is the **technological rent**.

This rent has firstly appreciated the highly effective inventions and technologies, has implemented basis or more renewed innovations. Knowledge on putting the new product or service to the market on the basis of them is generated for their owners.

Naturally, **intellectual rent** generated by economical realization of different types of property for intellectual resources and innovative products also plays an important role.

At the same time, growth of value of information resources use derived from the creation of an innovative product in the intensification of production also creates **information rent**.

2.5. The table below summarizes the results of the study:

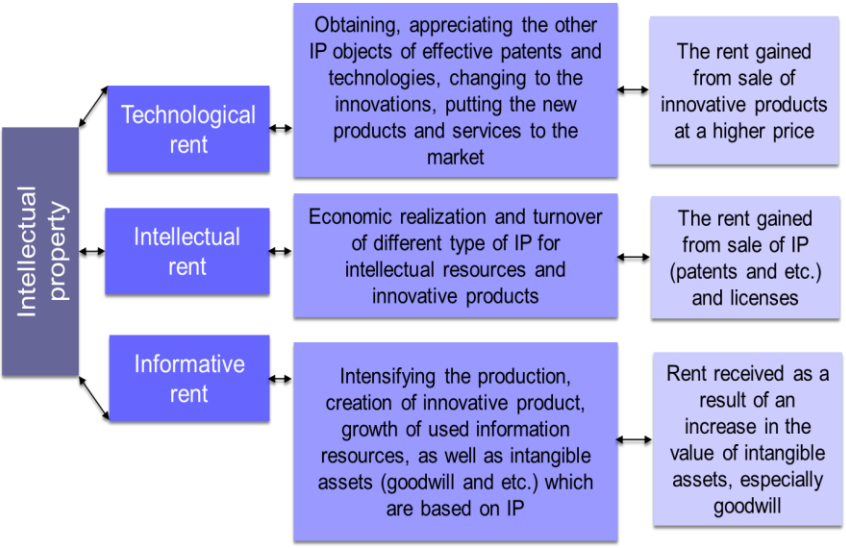
Factors / "species"	Creative economy (Florida)	Informative economy	Knowledge economy	Innovative economy
Basic factor of production	Creative potential	Information	Knowledge	Innovations
Basic economic resource	Creative capital	Informative capital	Intellectual capital, structure capital	Intellectual capital
The source of wealth	Intellectual rent	Informative, intellectual rent	Informative, intellectual rent	Technological, intellectual, informative rent

2.6. **Results:**

- as it is seen, the priority for commonality, development and use of all "types" of economy is human capital;

- at the same time, each "type" of the listed economies is based on different economic resources;
- although the genesis of the listed economies differs, the development of technologies, markets, specialties and etc. brings of these economies to intersection each other and enrichment, and it shows the impossibility of separately development of innovations, knowledge, information and creative potential.

The interaction between rents and IP in this innovation economy is described in the following diagram:



II. Evaluating innovative development by involving the patent system

1. Evaluation of innovative development and inter-country comparisons in this context and identifying reasons of hindering the innovation are one of the actual issues.

As can be seen from the analysis in the first part, it is the acquisition of technological, intellectual and informational rentals, which generate additional profits in the innovative economy that sets and determines the economic growth. Thus, the indicators that we have mentioned in some way are used in the competitiveness or innovation ratings of well-known international organizations, but the evaluation is more aggregate.

In this section, it is intended to investigate the situation on the basis of internationally accepted indicators in the field by involving inventions and patentability.

By using some of the information released at the presentation held on October 30, 2018 within the framework of the "Innovation Week" (the booklet "Innovative Development and Intellectual Property"), the main direction of my speech will be dedicated to carrying out upcoming tasks for Agency by holding relevant measures.

2. As I mentioned above, the position of Azerbaijan "Innovation" at the Davos Economic Forum's Competitiveness Rating is on the 71st rank indicators on the "Patent Application" and "Trademark Applications" included in the "Innovation Indicator" are relevantly on the 87th and 101st rank.

GCI – 2018 İndicator	Indicators	Rank
Innovations (innovation potential) the 71st rank	joint international inventions	99th rank
	quality of research institutes	86th rank
	expenses for ETTK (% GDP)	90th rank
	scientific publications (H-index)	108th rank
	patent application	87th rank
	trademark application	101st rank

The above mentioned indicators identify the "Innovation potential". It is the last three that are especially interested us.

According to the 2018 scientific publications (H-index), Azerbaijan is in the 108th rank. This tells us about the available resources of our scientific publications. For comparison, the indicator is reflected in the "Knowledge Acquisition 6.1 Indicator" in the Global Innovation Index ("REE-2018") the "Scientific Publications (H-index) and

- 6.1.4. – "scientific-technical publications" – 97th rank;
- 6.1.5. – "citation index H-index" – 107th rank.

That is, **we have the potential to improve**.

According to the CPI-2017 Report, "Information Results" is on the 89th rank, while "Innovation Resources (Opportunities)" is on the 78th rank. This is **a manifestation of certain resources**.

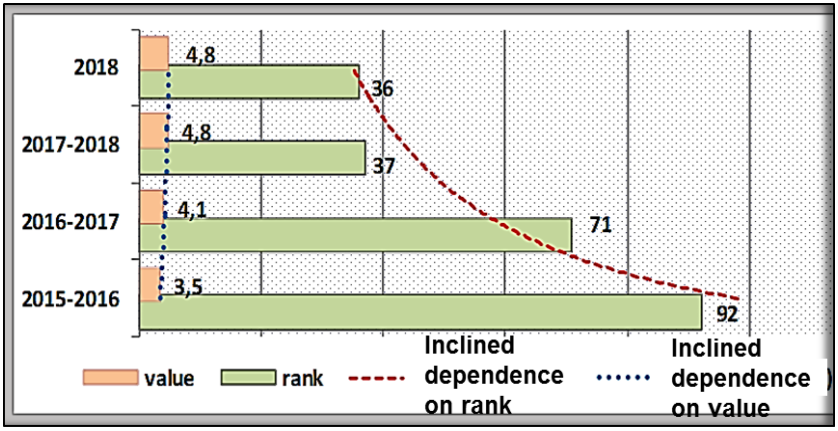
GII – 2017	Rank
GII (Global Innovation Index)	**82nd rank**
innovation opportunities (resources)	**78th rank**
innovation results	**89th rank**

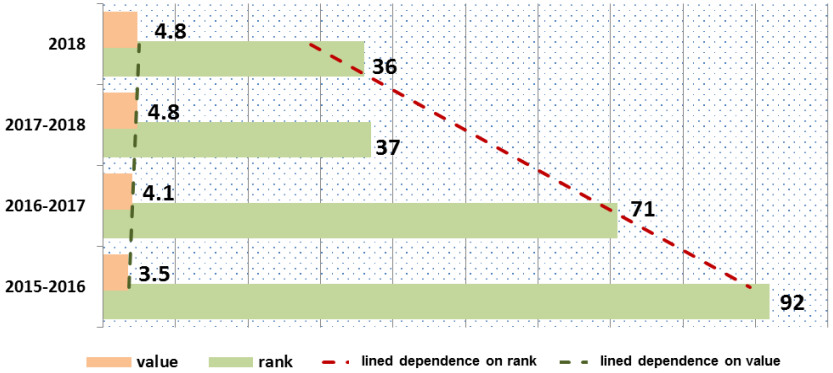
At the same time, while analyzing the "Innovation opportunities (resources)", we can see that the indicator “Results in the field of knowledge and technologies” in "Results of Innovations" index is in the 104th rank, while it was in the 74th rank in 2017 and the "university researches" indicator was in the 70th rank.

This brings to the fact that there is a difference between the innovation opportunities of the state and the innovation results obtained by us, and on the other hand, the ultimate innovation results are not satisfactory due to the lack of inventions and patent activeness and the lack of technology commercialization, whereas the universities have fair scientific results.

This situation occurs in the country's GII Report, under the protection of the "Intellectual Property Protection" indicator under the "Corporations". As it is seen, the indicator of "Intellectual Property Protection" has moved from the 92nd rank in 2015-2016 to the 36th rank in 2018.

Dynamics of the "Intellectual Property Protection" Indicator in Global Competitiveness Index for Azerbaijan over the years





Thus, it is necessary to take relevant measures in order to activate innovative activities, while there are opportunities generated by the state, scientific potentials and scientific results, and the protection of intellectual property. In this regard, inventions and patent activities are analyzed on the basis of the initial indicators, not aggregative in the next section.

3. Indicators characterizing patent activity are absolute and relative indicators.

Indicators are defined by the number of application documents industrial property objects (patent, utility model, industrial designs and goods) and protection documents (patent, certificate) issued by Patent Office (PO). These indicators include factors such as local and foreign allegations (resident, non-resident), the number of valid protection documents until the end of the year, the number of licenses on IP, property rights management.

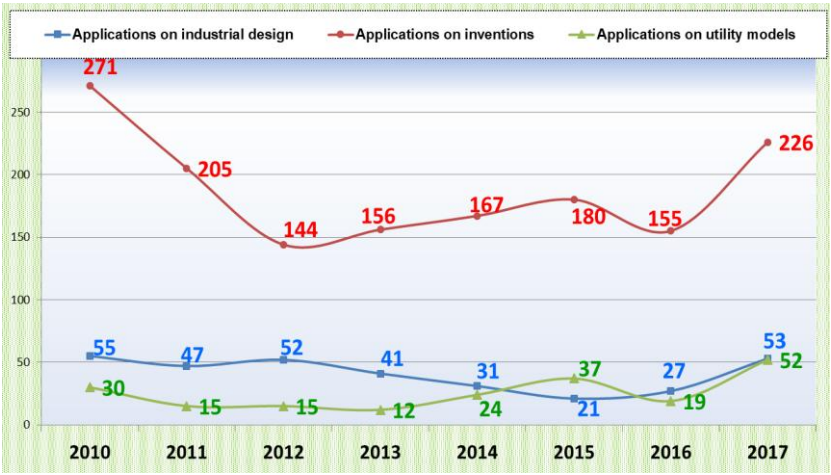
The essence of absolute indicators is that they do not even come up with the criteria for the performance of the PO: these indicators, on the one hand, evaluate the performance of the research and innovation sector, on the other hand, take into account the level of production and the needs of the market.

The PO can implement its impact to absolute indicators through the following ways:

- modernization of digital infrastructure and electronic creation of customers' relationships with the PO, application of reimbursement service through introduction of new digital services or to shorten the initial patent search (these impact the duration of consideration of the filed applications which are direct indicators of PO and the increase the number of expertise in the result);
- use of patent analytics, i.e. use of patent landscapes and benchmarking (they define the country's technology profile, clarify from which markets the patent is obtained, where the license is favorable, what product is released, the information about competitors and partners etc.). In the result, the absolute indicators are positively impacted;

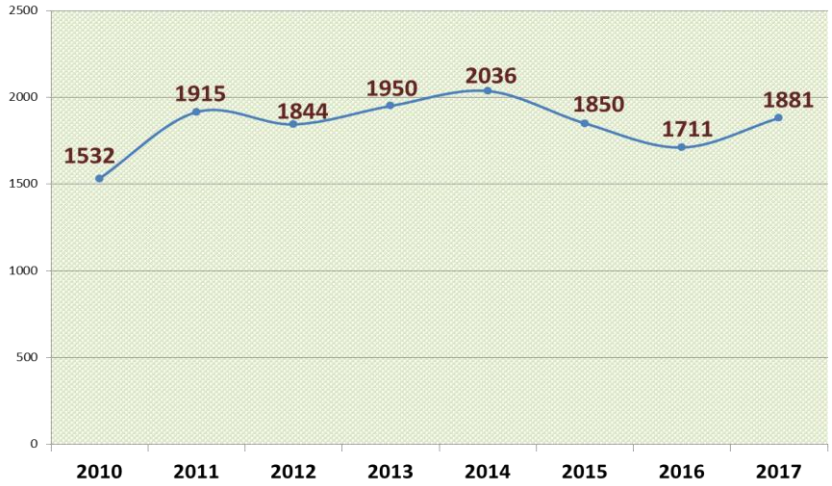
- regulation of patent fees and expansion of favorable claimant categories;
- promotion of the innovation sector, reducing profit tax for the use of IP, encouraging authors, encouraging measures for commercialization (latest measures affect the amount of patent fees and the funds directed to the state budget which are the indicators of the PO).

Dynamics of the absolute indicators – patent applications on inventions, utility models and industrial designs for Azerbaijan (2010-2017)



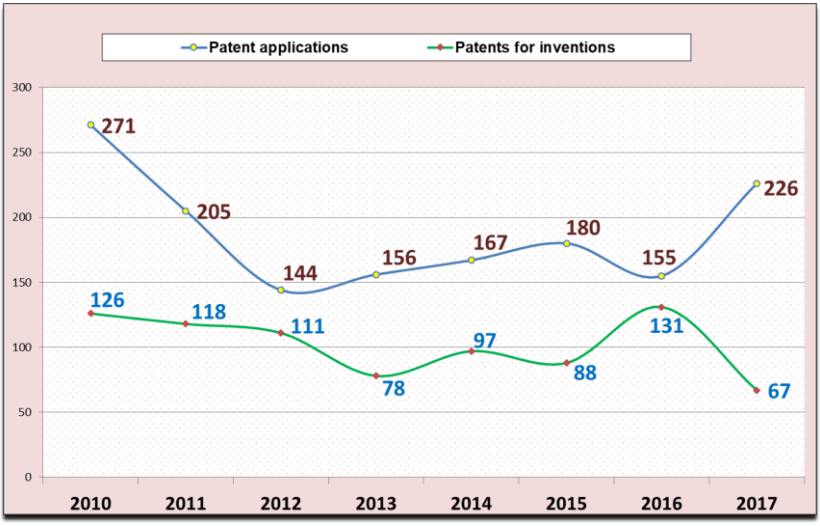
As can be seen from the diagram, the patent applications on inventions tend to decline during the research period.

Dynamics of the absolute indicators – patent applications on trademarks for Azerbaijan (2010-2017)

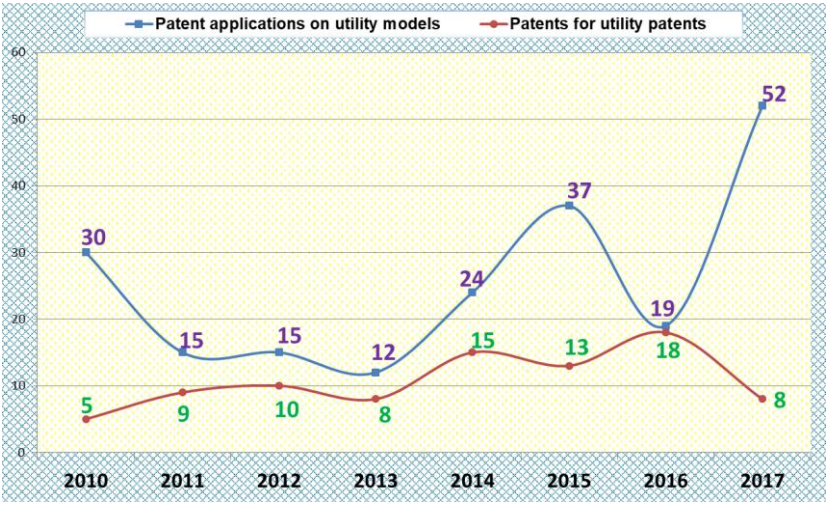


4. It is possible to make new judgments about the situation in the case of the fact that the absolute indications of the patent applications should be examined together with the definitive indications of the protection documents issued by the PO on those applications.

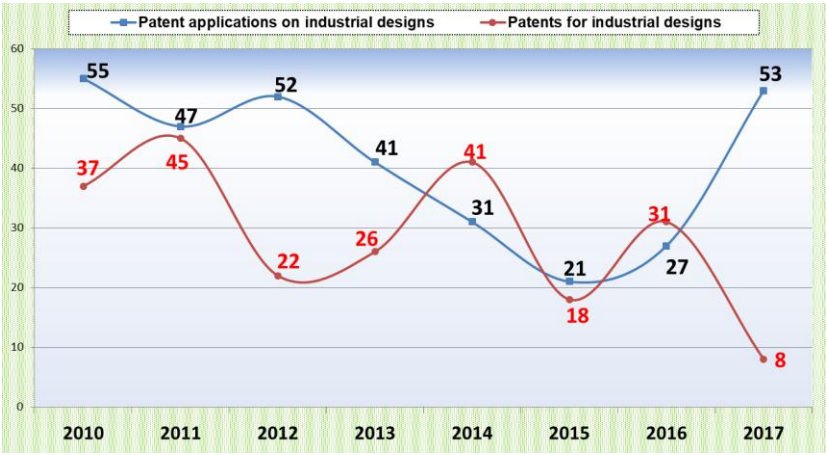
Dynamics of absolute indicators on inventions for Azerbaijan (2010-2017)



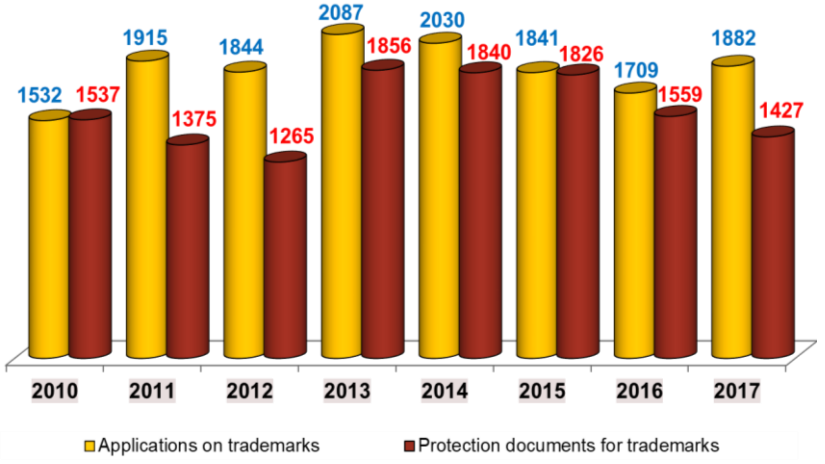
Dynamics of absolute indicators on utility models for Azerbaijan (2010-2017)



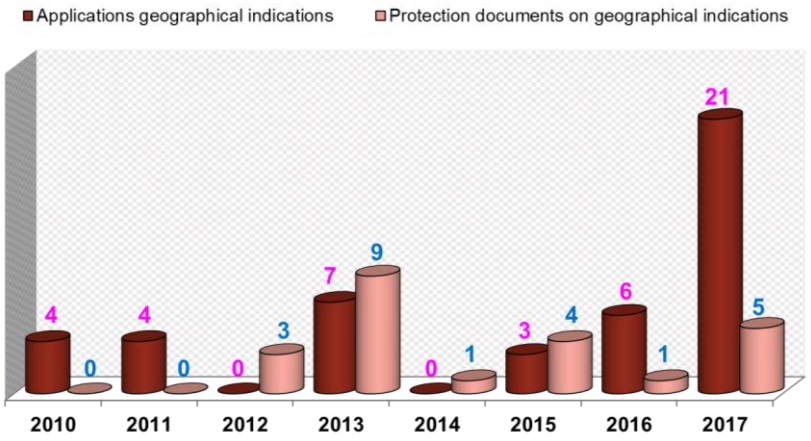
Dynamics of absolute indicators on industrial designs for Azerbaijan (2010-2017)



Dynamics of absolute indicators on trademarks for Azerbaijan (2010-2017)



Dynamics of absolute indicators on geographical indications for Azerbaijan (2010-2017)



The latest five diagrams show the decline **in the number of patents and protection papers that are striking**.

Moreover, when the applications on inventions are diminished, the absolute indicator is less issuance of the patent applications, the difference between the eight years of commitment, including the relatively unchanged industrial property applications, is even more distinctive (for example, applications for inventions and patents received in 271 : 126 = = 2,15, the proportion of 226 : 67 = 3,37 in 2017, and the ratio of "patent application claim-documents" to industrial designs from 1,49 to 6,62 in those years).

If the geographical indications are the maximum number of suitability documents in 2017 exceeds the number of applications 2013, the number of protection documents will diminish nearly 2 times in comparison with 2013.

5. Considering that patent applications and the granted patents play the most important role in the industrial property, it would be expedient to consider them separately and information on them would be presented in a special table:

Dynamics of patent applications, patent granting, and other absolute indicators

Indicators	2010	2011	2012	2013	2014	2015	2016	2017
1. Number of claims (total) including:	271	205	144	156	167	180	155	226
local claimants (resident),	258	196	132	132	143	151	136	206
foreign claimant (non-resident)	13	9	12	24	24	29	19	20
2. Number of granted patents including:	126	118	111	78	97	88	131	67
local (resident),	124	109	105	73	92	86	116	63
foreign (non-resident)	2	9	6	5	5	2	15	4
3. Patents in force (except for the European Patent Organization)	496	451	289	248	288	203	345	236
4. License agreements	1	-	4	-	1	-	-	2

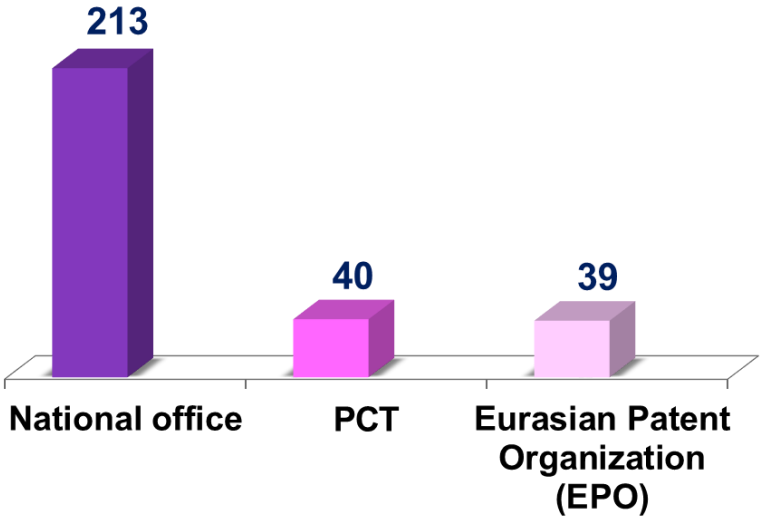
The statistics in the table give you the following results:

- Non-residents often issue a small number of applications (9-29).
- In 2010-2017, a total of 816 patents were issued and 54.3% compared to applications (1504).
- The results of the SWOT analysis show that local inventors prefer patenting in Azerbaijan because the requirements of the Azerbaijani market to new technologies are met by paying foreign specimens.
- There is a decline in the number of valid patents (496 in 2010 and 236 in 2017), which proves the weak

interest of inventors to the validity of patents and market requirements for existing patents.

- It is noteworthy that domestic patent applicants have poor international patent performance (one of the reasons is high costs for obtaining and maintaining a foreign patent).
- There were only 8 licensing agreements in 2010-2017 (4 of them in 2010), which indicate the weak development of the IP market (weakness of technology commercialization). Moreover, after 10 years, authors do not need 50% of the total number of patents (one of the reasons is that financial instruments are weak (IP assessment, collateral, insufficient operation of insurance mechanisms)).
- Spirmen rank correlation (patent applications - patent granted) indicates that 0.82 direct positive correlation exists in 1 year (one year later). The Pirson correlation ratio confirms 1 year (0.63). This means that the issuance of patents takes place one year after filing the claim (corresponds to the world average statistical term).
- Taking into account the PCT international system by 2018, the number of protected patents in Azerbaijan is 253 and patents protected by the Eurasian Patent Organization (EPO) are additionally 39, and thus the total number of protected patents is 292. The distribution of their registration is shown in the following diagram:

Distribution of patents in force in Azerbaijan in 2018



6. As noted, several relative ratios relating to the patent system are used to ensure the inventiveness and efficiency of the invention, as well as the accuracy of the IP potentials. The meaning of these is:

- inventive ratio: the number of applications filed by local applicants on the number of 10,000 inhabitants;
- patentable ratio: the number of patents granted to nationals by national Patent Organization (PO) in proportion to the number of 10,000;
- self-sufficiency ratio: The ratio of patent applications filed by local applicants to patent claims(this indicator measures the comparative scale of local research labor);
- technological dependency ratio: The ratio of the number of applications filed by PO to the number of applications filed by local applicants (this is the opposite of the self- sufficiency factor);

- The ratio of the inventive potential realization: the proportion of the given patents and the presented applications.

These figures are given in the table below:

Dynamics of relative indicators of inventions and patent activity

Indicators	2010	2011	2012	2013	2014	2015	2016	2017
1. Coefficient of invention activity	0,29	0,22	0,14	0,14	0,15	0,16	0,14	0,21
2. Coefficient of patent activity	0,14	0,12	0,11	0,08	0,1	0,09	0,12	0,06
3. Self-sufficiency ratio : invention	0,95	0,96	0,92	0,85	0,86	0,84	0,88	0,91
patent	0,98	0,92	0,95	0,94	0,95	0,98	0,89	0,94
4. The coefficient of technological dependence : invention	0,05	0,05	0,09	0,18	0,17	0,19	0,14	0,10
patent	0,02	0,08	0,06	0,07	0,05	0,02	0,13	0,06
5. Coefficient of realization of the invention potential	0,48	0,56	0,80	0,55	0,64	0,57	0,85	0,31
6. Number of researchers for a patent claim	42,6	56,1	90,2	115,9	110,5	107,9	118,4	75,2
7. The number of national patent claims in the amount of $ 1 million spent on WSRPC	2,5	1,7	1,0	0,9	0,9	0,9	1,1	2,5

The relative indicators in the presented table allow you to reach several conclusions:

- ✓ Discovery and weakening of patent activity are observed.
- ✓ The self-sufficiency ratio for inventions is relatively stable, changing from 0.84 to 0.96, and this ratio of the patent varies from 0.98 to 0.95.
- ✓ The technological dependence ratio on inventions indicates a decline, and the same ratio on the patent is diminished, but the low cost indicator does not mean "technological freedom", but rather indicates that foreign applicants refuse from patented (repetition) risks.

- ✓ The invention and patent potential performance ratios vary considerably from year to year and eventually diminish in 2017, and the reason for this is that patentability is weak.

As for the last two indicators (the number of researchers in a patent case and the number of national patent applications amounting to $ 1 million spent on WSRPC (work of scientific-research and practical-construction)), these indicators are of great importance in cross-country comparisons and are essentially the following:

- ✓ Number of researchers for a patent applications (calculated for 1 year), i.e. the ratio of researchers in the past year to the number of patent applications in the next year;
- ✓ $ 1 million spent on WSRPC the number of national patent applications (1 year) and the number of patent applications for the current year in the amount of $ 1 million per year spent on WSRPC dollar rate.

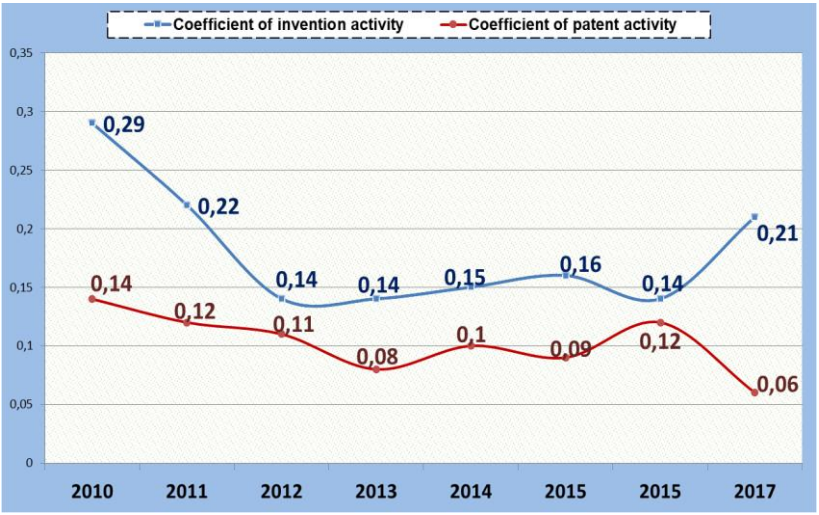
As can be seen from the table, the first indicator has significantly increased since 2010, and then relatively low, reaching the figure in 2010 by approximately 1.8 times in 2017. The second indicator is variable, but repeats the outcome of 2010, which is equal to 2.5 in 2017 (additional clarifications should be made on this indicator).

In the inter-country comparisons, the lower the first indicator, the lower the second, the higher the benchmark.

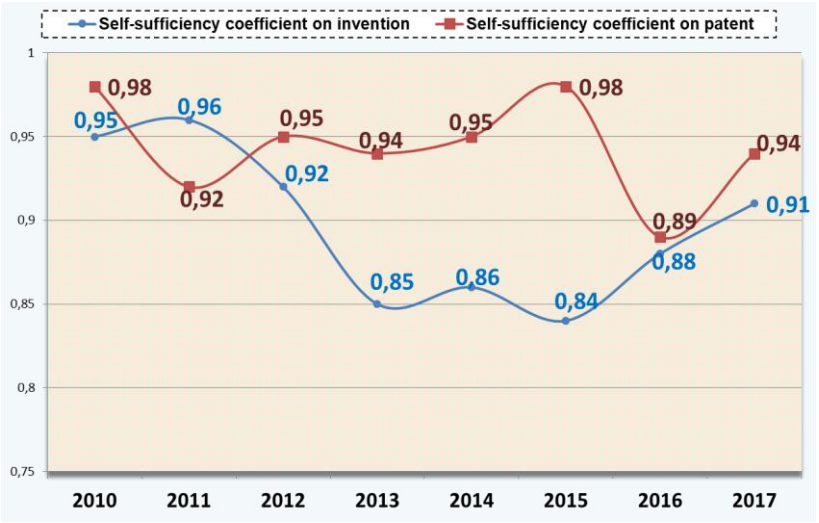
It should be noted that in Azerbaijan the number of researchers who filed for one application and for one patent for 2010-2017 year is growing.

The following diagrams illustrate the above notes:

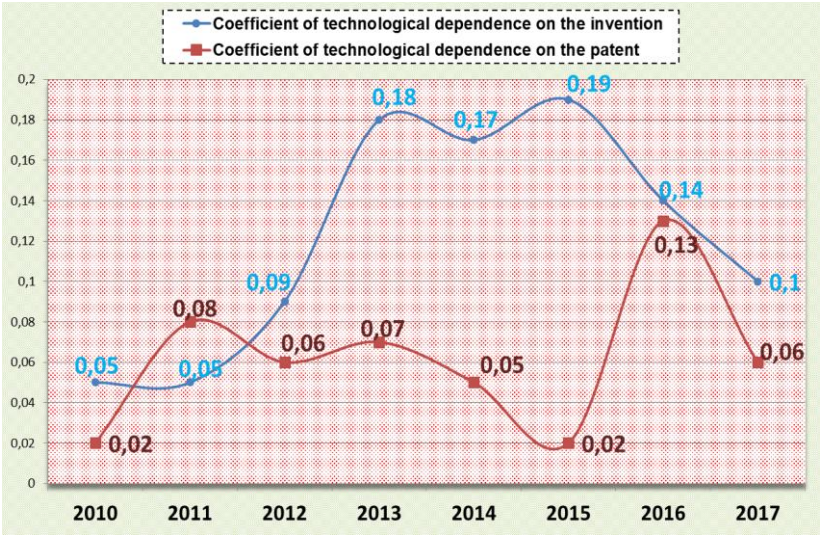
Invention and patent activity ratios in Azerbaijan (2010-2017 years)



Dynamics of invention and patent self-sufficiency ratios for Azerbaijan (2010-2017 years)

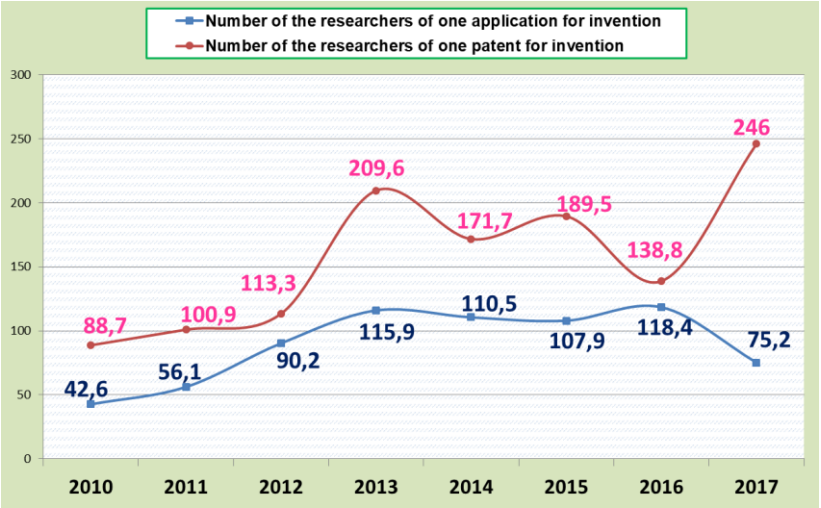


Dynamics of ratios of invention and patent technological dependence on Azerbaijan (2010-2017 years)

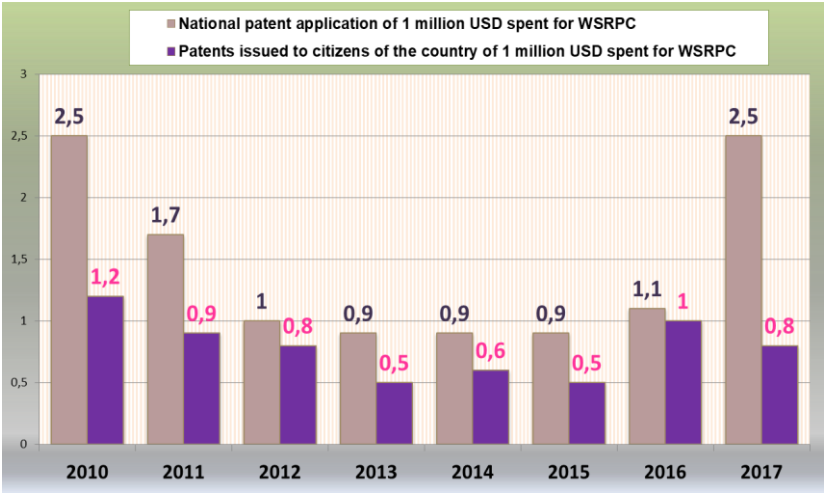


Dynamics of ratio of realization of the invention potential for Azerbaijan (2010-2017 years)

Number of researchers per one invention in Azerbaijan (2010-2017 years) and one patent



National patent application and granted patents in the amount of 1 million USD spent for WSRPC during in Azerbaijan (2010-2017 years)



7. In this section, in addition to patents, we will look at the nature of the applications and the protection documents for other industrial property objects, including useful models, industrial designs and trademarks, in short.

As can be seen from the previous diagrams, applications for utility models in 2010-2017 have changed by 30 units and increased to 52 in 2017. In the same period, issuance of protection documents has increased from 5 units to 8, but in 2016 it demonstrates a tendency to diminish from the maximum value of the protection documents, equivalent to 18 units. In the same period, the number of applications for industrial designs decreased by 55 units in 2010 and approximately the same number in the year 2017 (58 units). However, if in 2010, 37 protection documents were issued, in 2017 their number was equal to only 8 units, and thus the ratio between questionnaires and protection documents increased to 6.6:1.

Nevertheless, in 2016, the number of inquiries was 27 units, while 31 single protection documents were issued (most likely to be collected for the past years or for other reasons).

In 2010-2017, the number of applications for trademarks and the number of protection documents (respectively 1532 and 1537 units), in 2017, the number of applications (1881 units) increased, the number, on the contrary, decreases (1427 units), indicating an increase in the gap between them.

In the same period, the number of applications for geographical indications increased 5 times and in 2017 it was equal to 20 units, however, the issuance of protection documents had reached 5 levels in 2017.

III. National patent information in international space and technological profile of the country

1. The impact of global technological trends on national competitiveness forms new challenges for science and technology. A rapid transition to a series of advanced and emerging economies of the Fourth Industrial Revolution triggers the cardinal change in global chains, the emergence of new clues in the change and renewal of traditional markets.

Changed climate, along with enhancing the benefits of scientific research in countries that give priority to innovative development, is the trap of choice of priority areas that have been supported. As a result, **efforts are being made to address the "Big Challenges" Concept, is the more obvious world problems, to address the economic growth of the countries and to direct the national scientific systems to a number of areas, in particular, the work on strategic road maps, is done**.

2. An efficient and balanced system of priorities, primarily evaluating the current state of the technology, defining the country's technological profile, comparing the technological achievements of the world's leading states and relying on the obtained statistics, it is possible to drive.

Indicators based on patent statistics play an important role in maintaining this work. The table below illustrates both inventions and patentability in two of the most important rankings of Azerbaijan - GCI and GII.

Global Competitiveness Index by Azerbaijan

	2015-2016	2016-2017	2017-2018	2018
Global Competitiveness Index	40	37	35	69
12.06 Patent applications*				
- *rank*				87
- *value*				0,21
12.10 Trademark applications*				
- *rank*				101
- *value*				128,58
12.07 PCT patent applications**				
- *rank*	75	80	79	
- *value*	0,7	0,5	0,5	
Global Innovation Index	93	85	82	82
5.2.5 Patent family (applications of residents for triple patents, GDP / SGB, billion dollars)				
- *rank*	91	78	74	76
- *value*	0,0	0,0	0,1	0,0
6.1.1 Applications by local residents to the national PO (GDP / SGB, billion dollars)				
- *rank*	61	60	59	60
- *value*	1,0	1,2	1,3	1,1
6.1.2 Applications by residents under the PCT system (GDP / SGB, billion dollars)				
- *rank*	99	94	99	72
- *value*	0,0	0,0	0,0	0,1
6.1.3. Applications of local residents to the national PO for utility models (GDP / SGB, billion dollars)				
- *rank*	57	46	46	53
- *value*	0,1	0,1	0,1	0,1
7.1.1 Protective documents for trademarks on applications to the national PO (GDP / SGB, billion dollars)				
- *rank*	77	76	91	91
- *value*	22,4	22,2	16,5	17,0
7.1.2 Madrid system trademark applications by local owners (GDP / SGB, billion dollars)				
- *rank*	49	87	107	110
- *value*	0,2	0,3	0,1	0,1

* - 2018

** - 2015-2016; 2016-2017; 2017-2018

As mentioned earlier, according to the preceding 2018, the GCI Patent Applications 87, "Applications to Trademarks" were issued in 101 places ("PCT Patent Applications" used until 2018 respectively, in 2015-2016 - 75th, 2016-2017 – 80th and 79th in 2017-2018).

According to GII, according to 2018, patent applications to the national office were in the 60th place, while the PCT had 72nd, and the third "patent trio" was 76th. While complaints from residents regarding the "Trademarks" to the national office were in the 91st place, allegations of trademark ownership on the Madrid system were at the 110th place.

Local patent offices and patent applications of international applicants

№	The five leading countries	2010	2011	2012	2013	2014	2015	2016	2017
1.	Russia	42800	41998	44684	45269	40606	45815	41928	37221
2.	Ukraine	5312	5253	4955	5412	4813	4497	4095	4047
3.	Kazakhstan	1984	1774	-	2264	2091	1555	1285	1312
4.	Belarus	2045	1931	1983	1729	886	860	639	652
5.	Uzbekistan	632	556	510	557	568	507	555	553
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
8.	Azerbaijan	292	229	165	189	205	221	205	226*

* - *According to the National Office*
The rankings are based on 2017 results

Local patent offices and issuance of patents to international applicants

№	The five leading countries	2010	2011	2012	2013	2014	2015	2016	2017
1.	Russia	30478	30135	33036	31780	34190	34899	33808	34587
2.	Ukraine	3874	4061	3405	3635	3319	3014	2813	2590
3.	Belarus	1305	1536	-	1158	1978	913	1042	1045
4.	Kazakhstan	1883	1897	-	1516	1523	1521	-	921
5.	Georgia	258	237	346	286	209	206	177	206
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
9.	Azerbaijan	129	126	120		112	101	174	67*

* - *According to the National Office*
The rankings are based on 2017 results

Source: *According to WIPO data*

Invention and patent activity by countries in 2017 year

№	Top three countries	Indicator of inventive activity	Patent activity
1.	Russia	1,60	1,48
2.	Kazakhstan	0,63	0,39
3.	Belarus	0,59	1,0
.....	.....	.....	.....
9.	Azerbaijan	0,21*	0,06*

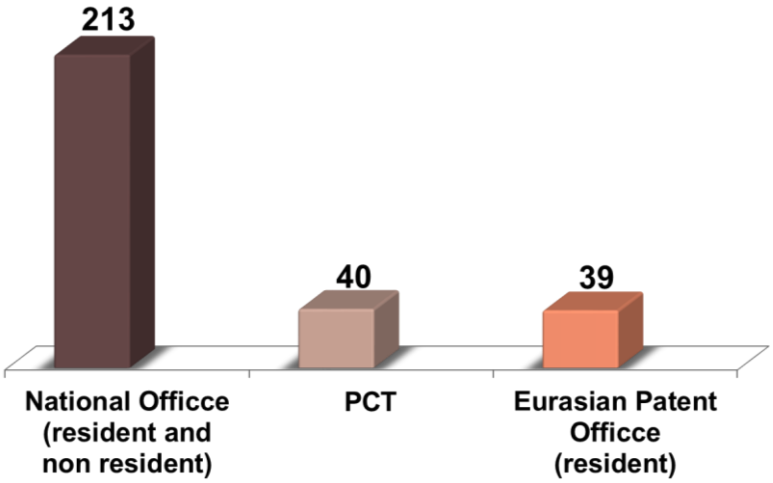
** - According to the National Office*

Source: *According to WIPO data*

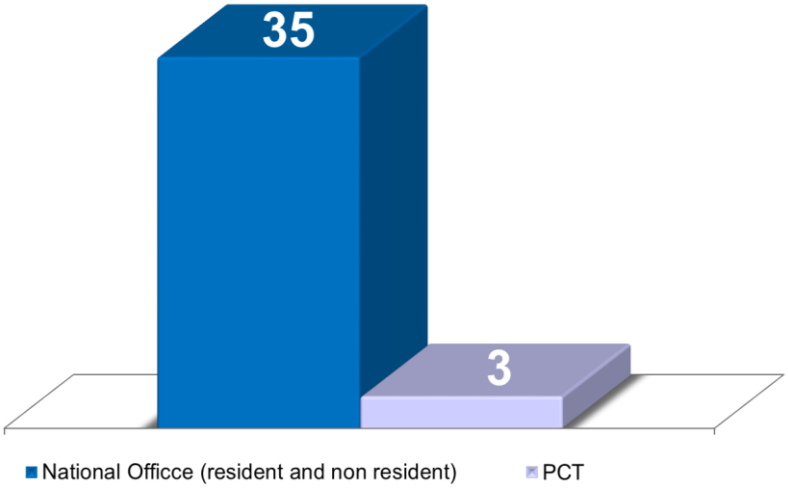
These figures show that our inventors and business men are inclined to be at the national level, while not only diminishing our huge reserves.

The next two diagrams confirm that the inventions and utility models valid for 2018 are marked in 2018.

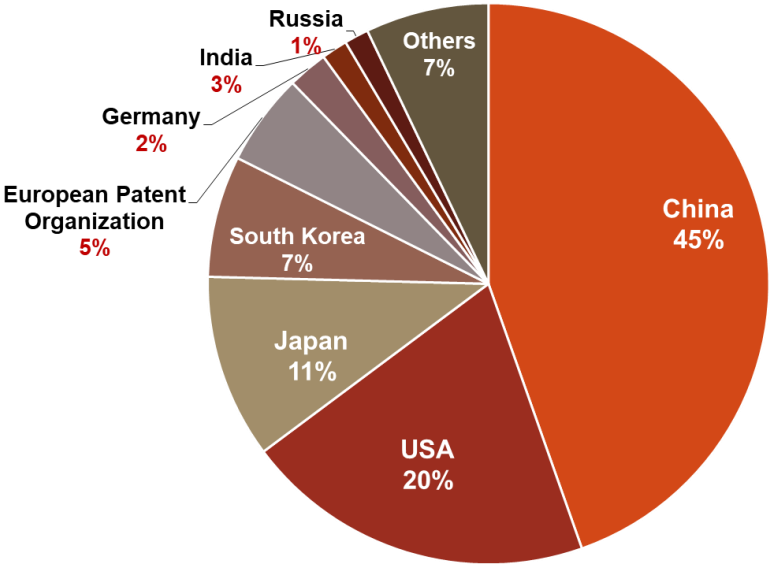
Valid for 2018 in Azerbaijan distribution of patents for inventions



Valid for 2018 in Azerbaijan distribution of patents for utility models



According to WIPO, distribution of allegations among patent offices worldwide is presented in the following diagram.



Distribution of applications of 2016 between the world's leading national Patent organization

Source: *WIPO statistical database*

3. The following diagrams outline the **applications** of international allegations submitted under the PCT international agreement for protection in 2015-2017, applications by residents of Azerbaijan for the protection of PCT and the number of applications filed for the protection of the Eurasian Patent Office.

The table also lists these utility models. In addition, similar information on the Hague Agreement on Industrial designs and the Madrid Agreement on Trademarks have been posted on that type.

Object of industrial property	Movement	2015	2016	2017
Inventions	Received in Azerbaijan as a whole	180	155	226
	PCT entrants in Azerbaijan	29	19	20
	PCT issued from Azerbaijan	3	3	7
	Issued from Azerbaijan to EAPO	35	32	36
Utility Models	Received in Azerbaijan as a whole	37	19	52
	PCT entrants in Azerbaijan	2	1	15
	PCT issued from Azerbaijan	-	-	-
Industrial designs	Received in Azerbaijan under the Hague procedure	271	253	199
	Decision made to refuse	7	-	7
	Issued from Azerbaijan under the Hague procedure	-	-	-
Trade marks	Received in Azerbaijan under the Madrid system	4022	3036	3343
	Decision made to refuse	150	121	236
	Issued from Azerbaijan under the Madrid system	5	12	4

The information provided is clear:

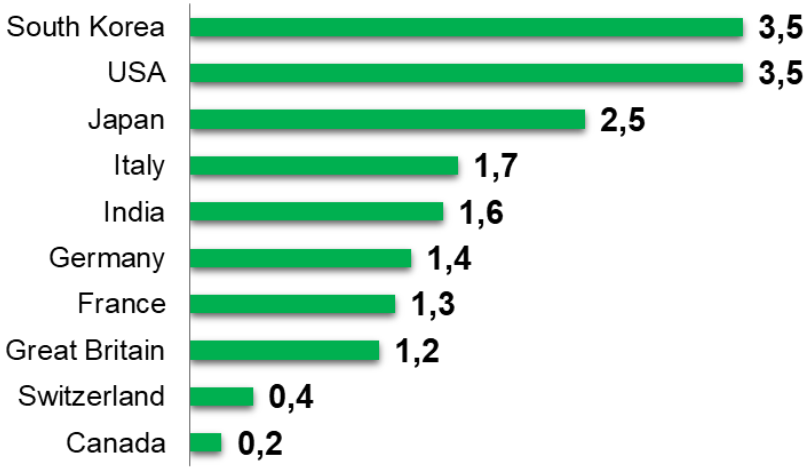
- ✓ Allegations of protection for industrial property in Azerbaijan are substantially higher than relevant applications from Azerbaijan.
- ✓ In the case of registration applications for inventions for inventions in Azerbaijan in 2015-2017, the number of applications relating to industrial designs in PCT and Hague procedures tend to decline.

- ✓ The number of applications concerning the registration of international trademarks through the Madrid procedure indicates a downward trend.
- ✓ Residents from Azerbaijan prefer the Eurasian Patent Organization in conjunction with the PCT system.

The diagrams presented are clearly illustrated by the following:

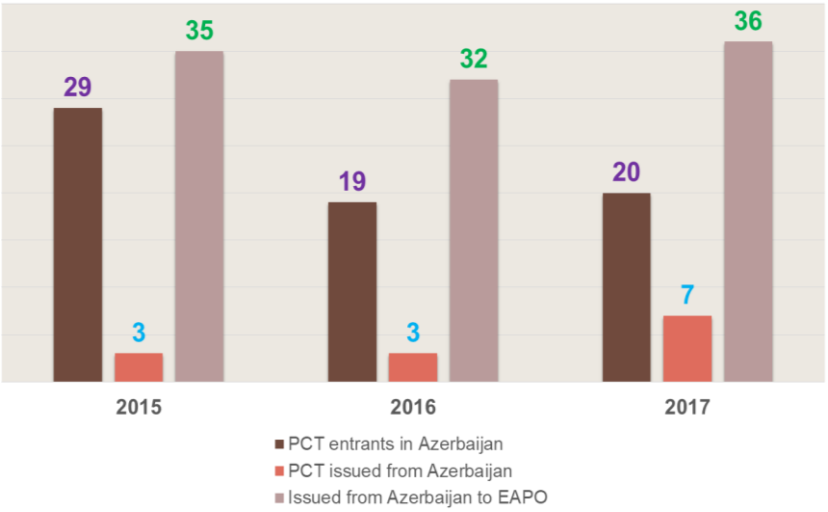
- The applications filed to the National Patent Office exceed 5.2 times the relevant applications submitted to international and regional offices, and this difference is excluded (except for Iran, China, Turkey, Russia) and other countries (although the number of applications in the countries exceeds the number of applications in our country hundreds of times). For example, for the 10 countries this difference is presented in the following diagram:

Proportion of applications received form national or international or foreign Patent Organizations

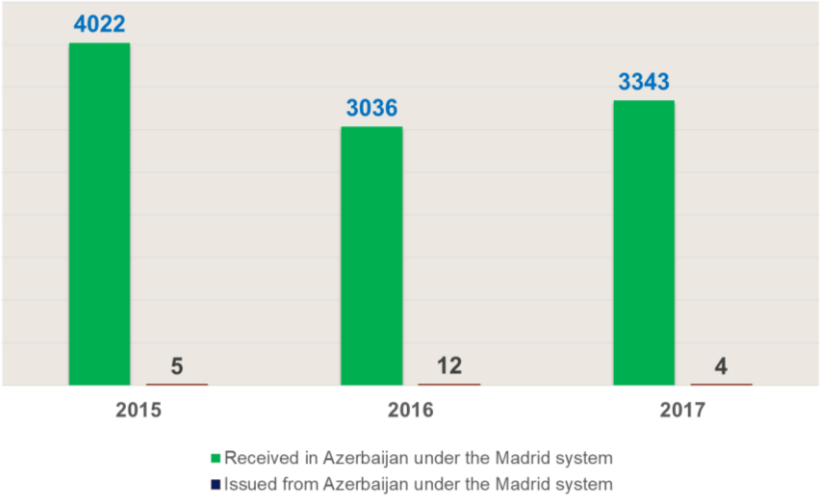


Source: *WIPO statistical database, 2016*

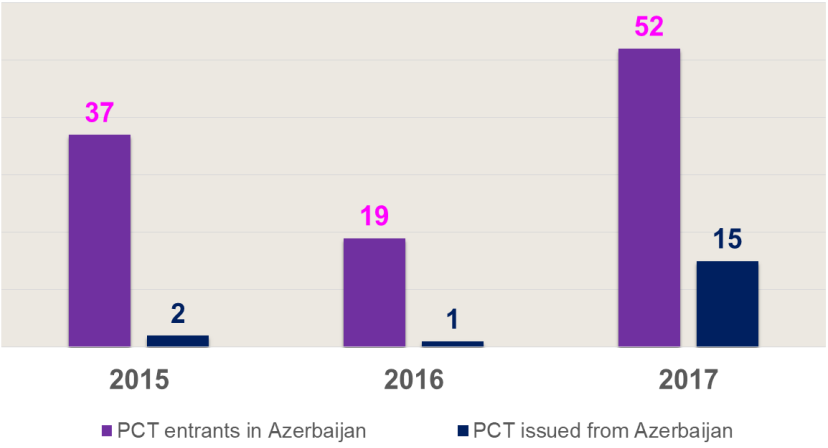
Registration of inventions through PCT and EAPO the number of relevant documents



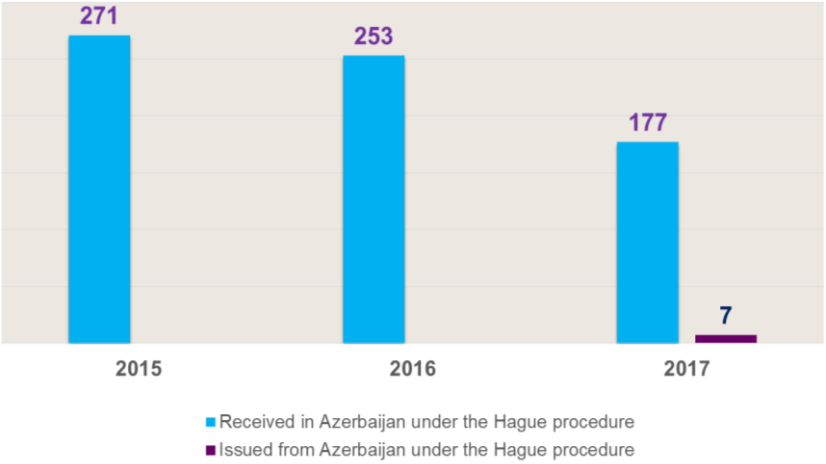
The number of applications for registration of utility models through PCT



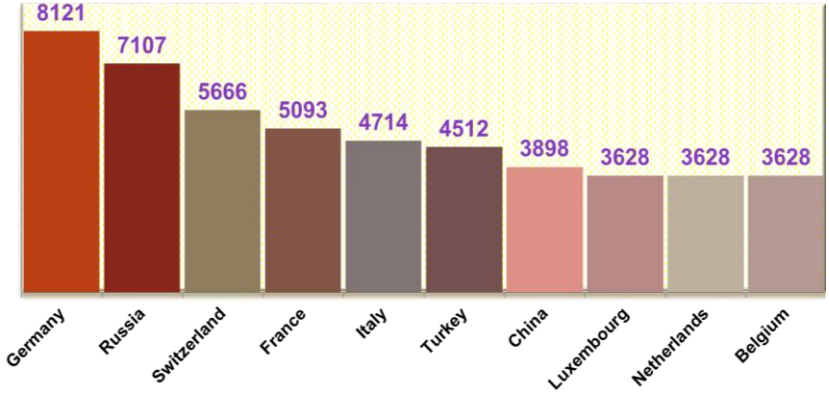
The number of applications relating to the registration of industrial designs through the Hague procedure



The number of applications relating to the registration of international trademarks through the Madrid procedure



The sharing of goods traded in the Azerbaijani market, which is of great economic interest, is presented in the following diagram:



According to the Madrid procedure in Azerbaijan, countries with more than one trademark

(According to WIPO, the number of trademarks valid in 2018 in Azerbaijan is 50892)

4. The problem of selecting the country's technological development is of great importance in the globalization of economy and the rapidly changing competitive environment. The relevance of the selection and ultimately its effectiveness are due to the considerable global and regional trends. The formation of technological trends in turn focuses on the objective developmental processes in the world market and the development and substitution of technological structures.

At the same time, the state's economic regulatory policy influences technological trends, taking into account social, environmental, political and other factors.

Thus, the choice of country's scientific and technological priorities, determining the drivers of technological development, the existing national, scientific and technological potential and competitiveness of the country can be justified through the patent statistics and the structure and directions of the portfolio. These types of investigations begin with the identification of the country's technological profile (based on research patents).

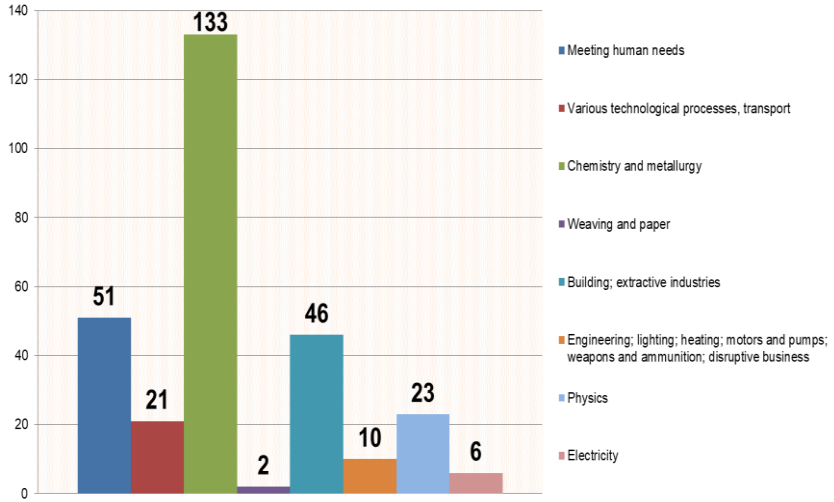
According to the Strasbourg Agreement, the approved International Patent Classification (BPT) consists of 8 sections (from letter A to letter H). They are subdivided into subsections, classes, altsinifs, groups, and subgroups in hierarchy.

The following table shows the patents in force in Azerbaijan (2018) according to the BPT: sections and classes.

Distribution of patents for inventions in Azerbaijan by groups in the "International Patent Classification" for 2018

Section index	Section Name	Number of inventions
A	Meeting human needs	51
B	Various technological processes, transport	21
C	Chemistry and Metallurgy	133
D	Weaving and paper	2
E	Building; extractive industries	46
F	Engineering; lighting; heating; motors and pumps; weapons and ammunition; disruptive business	10
G	Physics	23
H	Electricity	6
Total		**292**

The information in the table is also illustrated by the diagram:



As you can see, the maximum number of patents belongs to C - "Chemical and Metallurgy", and the number of patents in this section exceeds the number of patents of the next A - "Compensation of human life" section and 3 times E - "Construction; mining business "section. Out of 292 existing patents, 238 relate to residents, 54 to non-residents, 40 to PCT and 39 to the Eurasian Patent Organization. The patents belonging to the 8 divisions are provided through 24 classes and most of the classes are classified under the "chemistry" (134), "health, rescue service and entertainment" (41), "drill and mining" (40), devices (30) and "separation, mixing" (29) classes.

Section	Classes	Number of inventions
A. Reimbursement of people's vital needs	Agriculture	10
	Food products; tobacco	7
	Personal and household items	1
	Health care; rescue service; entertainment	41
B. Various technological processes; transport	Separation; mixing	29
	Formation	4
	Polygraphy	-
	Transport	9
	Microstructure technologies; nanotechnologies	7
C. Chemistry and metallurgy	Chemistry	134
	Metallurgy	17
	Combined technology	-
D. Weaving and paper	Weaving or similar elastic materials, not elsewhere classified	2
	Paper	-
E. Construction, mining case	Construction	12
	Excavation of soil or mountain rocks; mining case	40
F. Mechanical engineering, lighting, heating, engines and pumps, weapon and ammunition, explosion works	Engines and pumps	3
	General mechanical engineering	6
	Lighting; heating	6
	Weapon and ammunition; explosion works	-
G. Physics	Devices	30
	Nuclear physics, technical and related fields of science	1
H. Electricity	Electricity	6

Given the above figures, Azerbaijan plays a leading role in the field of inventions in the field of chemistry, health care and drilling: 120 in the field of chemistry, 47 in the field of health care and 22 in the field of drilling, while 189 are patent residents and 41 non-residents. Of these 44 areas, 31 patents are reserved for the EAPO and 33 for the PCT at the regional and international levels.

Based on the country's patent area, we must compare the most technologically advanced and relevant countries in the world in order to assess their technological potential.

The WIPO database includes 35 areas of advanced technology and has 5 broader groups. Each technology field assigned codes in accordance with the IPC.

In addition, IPC high technology codes have been identified by the Tripartite Patent Organization (EPO), the United States Patent and Trademark Office (USPTO) and the Japan Patent Office (JPO). Based on this, 35 technologies are selected from high technologies, as shown in the following table:

Groups of technological fields	Technological fields	High technology area
1. Electrical engineering	Electrical machines, apparatus, energy Audiovisual technologies Telecommunications Digital communications Basic communication processes Computer technologies IT techniques in management Semiconductor manufacturing	Audiovisual technologies Telecommunications Digital communications Basic communication processes Computer technologies IT techniques in management Semiconductor manufacturing
2. Devices	Optics Measurement Analysis of biomaterials Control Medical equipment	Optics Measurement Analysis of biomaterials Control
3. Chemistry	Elegant organic chemistry Biotechnology Pharmacy Macromolecular chemistry Food chemistry Basic materials chemistry Materials, metallurgy Surface and coating technologies Microstructure and nanotechnology Chemical technology Environmental technologies	Biotechnology Pharmacy
4. Mechanical engineering	Loading equipment Machine tools Engines, pumps, turbines Weaving and paper processing equipment Other special equipment Heating processes and equipment Mechanical elements Transport	
5. Other fields	Furniture, games Other consumer goods Construction	

Source: *WIPO, Euro stat*

In Azerbaijan, domestic inventors have 13 high-tech patents and several patents in areas close to high-tech areas, including nanotechnology, electrical engineering, devices and other fields. Thus, the “Semiconductor photoelectric amplifier” of the National Center for Nuclear Research of the Ministry of Transport, Communications and High Technologies of the Republic of Azerbaijan, “Method of creating quantum information carriers in one-dimensional crystals through Majorana fermions”, “Media Service Az” LLC “System and method of lending for use by subscribers communication" and others.

For example, the following tables show the countries that demonstrate the maximum patent activity (in terms of the number of patents) in high-tech industries in 2010-2016:

Direction \ Place in the rating	1	2	3
Audiovisual technology*	Japan	USA	South Korea
	19508	**7974**	**6651**
Telecommunications*	Japan	USA	South Korea
	10233	**9324**	**4712**
Digital communications*	USA	China	Japan
	15338	**11333**	**8214**
Computer technologies*	USA	Japan	China
	33471	**20810**	**9228**
IT methods in management*	USA	Japan	South Korea
	4308	**2404**	**1928**
Semiconductor manufacturing*	Japan	USA	South Korea
	19863	**9018**	**8250**

* - *high technological directions*

Source: *WIPO statistical database and T.A.Sutirina (Journal of "Science, Innovation, Education", №2, 2018)*

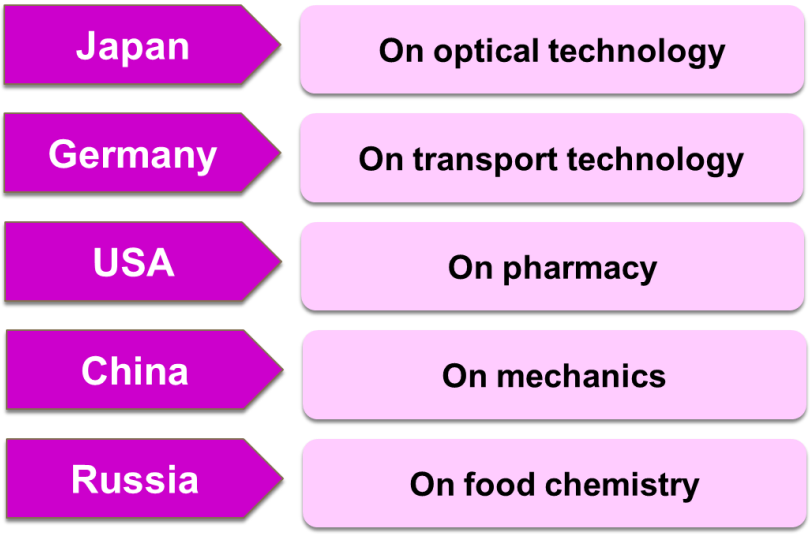
Direction \ Place in the rating	1	2	3	4	5	6	7	8	9	10
Optics*	Japan	South Korea	USA	China	Germany	Netherlands	France	Great Britain	Switzerland	Russia
	22942	4835	4705	3048	1314	748	642	286	223	181
Measuring*	Japan	China	USA	Germany	South Korea	France	Russia	Switzerland	Great Britain	Netherlands
	13241	12271	9320	4296	3976	1847	1759	1366	1043	722
Analysis of biomaterials*	USA	Japan	China	Russia	Germany	South Korea	France	Great Britain	Switzerland	Netherlands
	1828	1013	987	481	467	436	286	238	205	99
Control*	Japan	USA	China	South Korea	Germany	France	Russia	Great Britain	Switzerland	Canada
	5458	4224	3335	1584	1254	523	343	298	217	176
Medical equipment	USA	Japan	Germany	China	South Korea	Switzerland	Russia	France	Great Britain	Switzerland
	18634	8686	3803	3264	2781	1655	1563	1396	1217	838

Direction \ Place in the rating	1	2	3	4	5	6	7	8	9	10
Biotechnology*	USA	China	Japan	South Korea	Germany	France	Switzerland	Great Britain	Netherland	Denmark
	6269	4335	2506	1511	1231	761	641	616	486	397
Pharmacy*	USA	China	Japan	Germany	Switzerland	France	South Korea	Great Britain	Russia	Italy
	10082	7526	3329	2350	1788	1661	1654	1180	1095	759
Microstructure and nanotechnologies	China	South Korea	Japan	USA	Russia	Germany	France	Netherland	Great Britain	Switzerland
	613	407	398	390	197	147	92	28	26	24
Chemical technologies	China	Japan	USA	South Korea	Germany	France	Russia	Great Britain	Netherland	Switzerland
	5629	4732	4683	2449	2379	896	816	625	452	452
Environmental technologies	China	Japan	USA	South Korea	Germany	France	Russia	Great Britain	Netherland	Switzerland
	4386	3965	2334	1962	1236	566	481	311	277	214

* - *high technological directions*

Source: *WIPO statistical database and T.A.Sutirina (Journal of "Science, Innovation, Education", №2, 2018)*

IT should be noted that, on the basis of WIPO's global intellectual property indicators, 10 countries demonstrated the highest ingenuity of the inhabitants, and according to its results, the global technology leaders are as follows:



IV. Technology and Innovation Support Centers (TISCs)

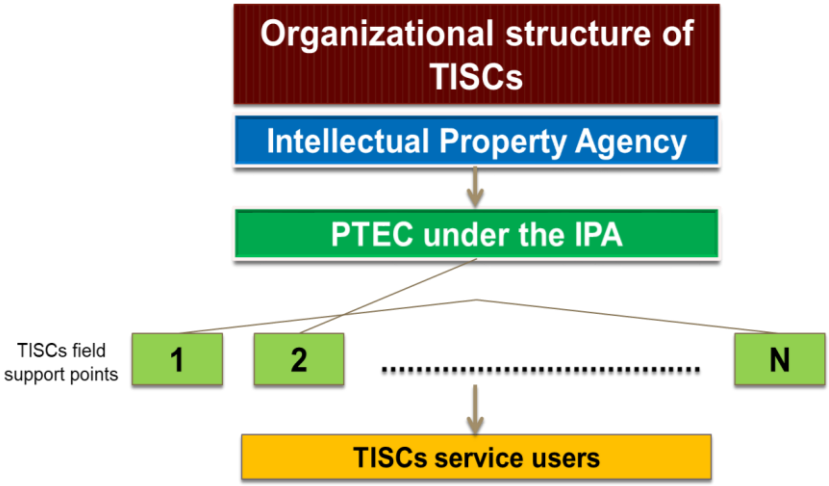
1. Reasons for the formation of centers.

The main reason for the emergence of TİSCs is to provide patent information to participants in the innovation process, thereby increasing the innovation potential. TISCs is usually created in the form of a hierarchical network. In Azerbaijan, TIIM is created and operates with the administrative and methodological support of the Agency for Intellectual Property (Agency), the main subjects of which are the Patent and Trademark Examination Center (PTEC) and various business entities subordinate to the Agency.

The most modern IT system is located in PTEC and carries out its activities and coordination using its information and methodological base.

Downstream TISCs are deployed in selected universities, research institutes, libraries, and SMEs and function as part of their legal status using their logistical, informational, and personnel capabilities. Lower subsystems, usually located in IP offices, require two computers and two specialists.

The users (clients) of services rendered by TISCs are various economic entities and individual inventors of innovation activities.



2. TISCs basic goals – realization of the innovative potential is carried out by the following main goals:

- stimulating the creation and effective use of wider access to specialized information related to IT, and, consequently, to the results of intellectual activity (RIA) for users;
- promotion and popularization of the issues of legal protection and use of the RIA, including the dissemination of scientific and methodological materials related to IP, the organization of training seminars and conferences and symposia;
- develop user skills in patent research and patent analytics for commercialization purposes.

In carrying out these tasks TISCs offers the following services:

Service at the minimum (basic) level.

- ✓ Provide free access to patent and non-patent information resources of PTEC;

- ✓ Assistance in the use of PTEC databases, including the search for technical information in the case of patent research;
- ✓ Provide access to foreign patent and non-patent information resources (Patentscope, Espacenet), which do not require payment;
- ✓ Organization of distance learning on programs of the WIPO.

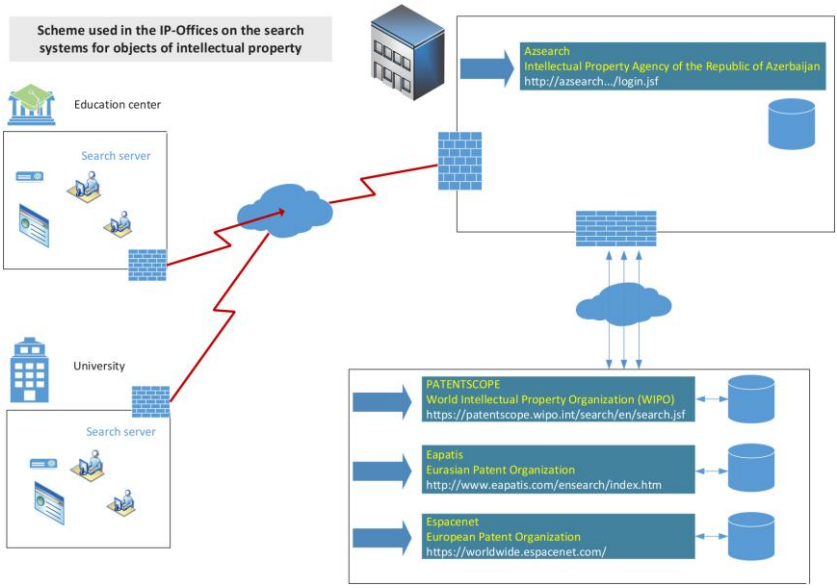
Additional services.

- ♦ Providing information on intellectual property laws, rules for filing applications, obtaining security documents and other regulatory information related to storage;
- ♦ The formation and training of knowledge and skills for search in specialized databases, conduct training seminars;
- ♦ Presentation of the main regulations related to licensing;
- ♦ Conduct of scientific and practical conferences, seminars, round tables on the protection and use of IP rights, patent research and regular consulting support for IP.

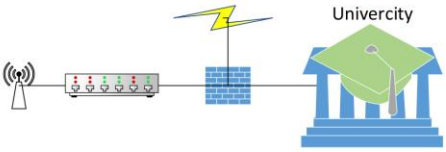
In addition, services may be provided for the organization of paid services, including the search and monitoring of patent and analytical information.

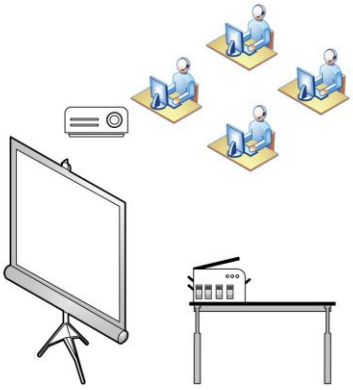
The following diagrams present the approximate information and communication structure of TISCs:

Scheme used in the IP-Offices on the search systems for objects of intellectual property

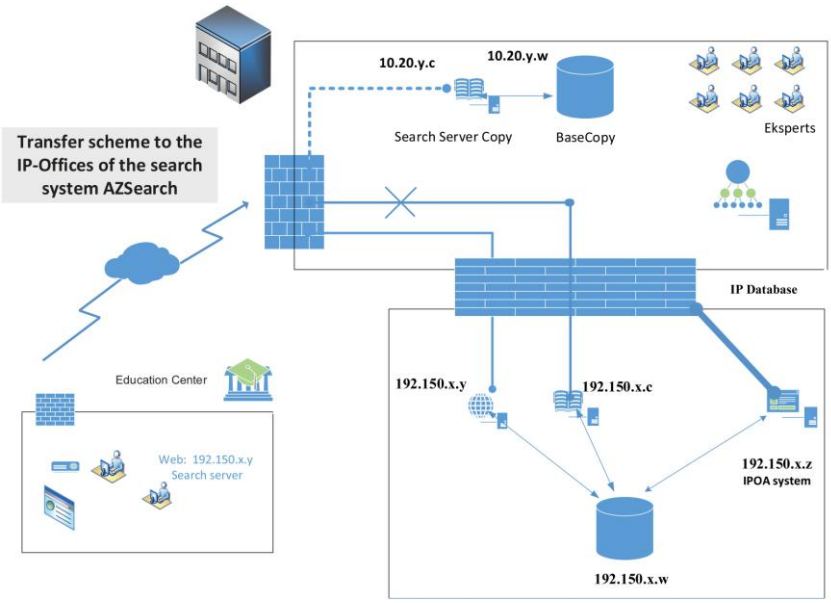


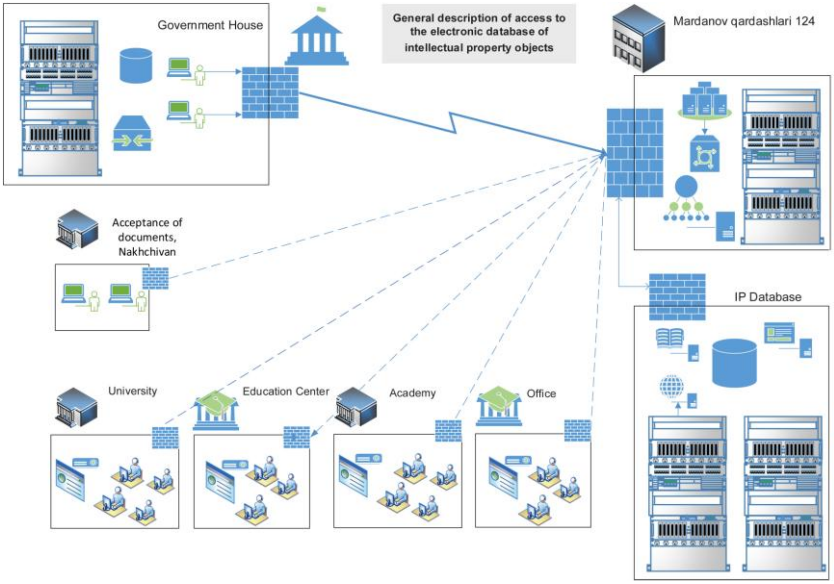
Branches connection scheme and amount of equipment





Equipments		
Symbol	Qty	Name
	1	VPN Router
	1	Wi-Fi Router
	4	PC
	1	Printer
	1	Screen
	1	Projector
	1	Switch


Transfer scheme to the IP-Offices of the search system AZSearch
10.20.y.c
10.20.y.w
Search Server Copy
BaseCopy
Eksperts
IP Database
Education Center
Web: 192.150.x.y
Search server
192.150.x.y
192.150.x.c
192.150.x.z
IPOA system
192.150.x.w


Government House
General description of access to the electronic database of intellectual property objects
Mardanov qardashlari 124
Acceptance of documents, Nakhchivan
IP Database
University
Education Center
Academy
Office

Local and international search system on industrial property objects

Azsearch http://192.1.150.2/login.jsf

Intellectual Property Agency of the Republic of Azerbaijan

PATENTSCOPE https://patentscope.wipo.int/search/en/search.jsf

World Intellectual Property Organization (WIPO)

EAPO **Eapatis** http://www.eapatis.com/ensearch/index.htm

Eurasian Patent Organization

Espacenet https://worldwide.espacenet.com/

European Patent Office

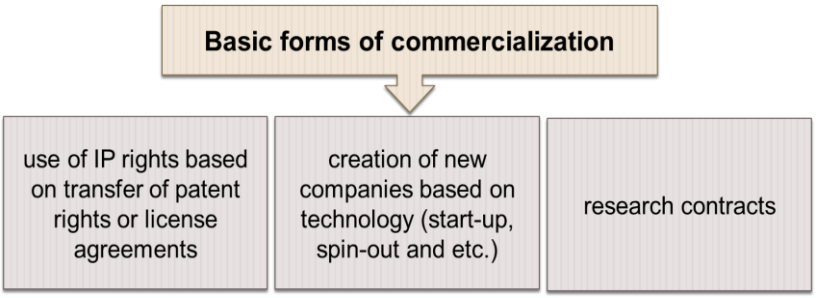
V. Commercialization and Transfer Technology Centers (CTTCs)

1. The Intellectual Property Agency faces the task of creating Commercialization and Transfer Technology Centers (CTTCs).

CTTCs are designed to promote technology commercialization, and international experience shows that these centers act as an effective tool for the commercialization and promotion of research results.

The terms used in the presentation have the following meanings:

Technology commercialization (research and development) – any activity aimed at generating income from research results, scientific competencies.



Transfer of technology – the process of transferring of research results, works and knowledge for any use.

Possible aims of transfer:

- commercial use of these results in the production of goods and services;
- involve additional resources for further research and development;

- non-commercial use; including searching for new areas of research, disseminating information, sharing knowledge and so on.

2. CTTCs – is an organization engaged in the transfer of research results carried out in public and private organizations for commercial and non-commercial purposes, as well as the achievement of these results.

Income can be obtained from the following:

- any commercial agreement, including the use of IP rights (rights transfer, license agreements);
- creation of new companies based on new technologies;
- research contracts;
- on the basis of the share of income received as a result of technology transfer and the terms of the relevant agreement.

Thus, CTTCs is an organizational structure that provides services to clients in the target market of technologies and projects.

General organizational and financial structure of CTTCs:

CTTCs has a flexible structure that can change its status, depending on its financial resources:

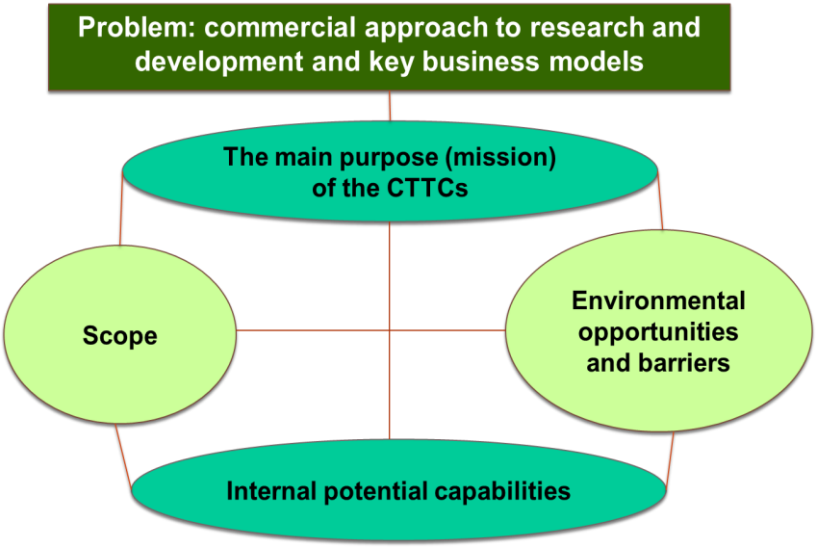
a) in a mixed form, which is financed by the state organization or its subordinate body from the state budget, or it is financed directly or by its subordinate body;

b) an organization that is partly financed from the budget or financed by the supreme governing body to perform certain tasks, providing financial stability and independence through future project management;

c) an organization that is created and funded by a group of founding clients and an organization promoting the technology of the founders to the market;

d) a private business structure, including one established by any legal entity and a commercial agreement, including technology transfer, research contracts, fees for the use of intellectual property rights, and commercial structures gaining value through the creation of start-ups or joint ventures.

3. Systems engineering approach and key business models of CTTCs.



4. Activity directions.

CTTCs activity primarily focus on providing a wide range of services for the commercial use of research results.

In this regard, the following directions can be defined as the activity areas of CTTCs:

The first,

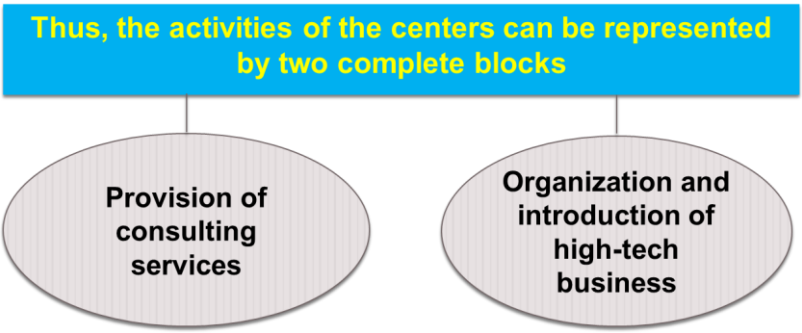
- Assisting to the technology transfer;
- Promote the implementation of joint research activities;
- Providing organizational and legal activities, training and consulting support for the use of technology commercialization projects.

The last two areas combine a portfolio of management technologies and İP, which in turn include the following:

- ❖ Selection and evaluation of commercialization projects with high commercial potential;
- ❖ Creation of portfolio of commercialization technologies, as well as portfolio of orders for market research demand;
- ❖ Providing services for the organization of patent research;
- ❖ Providing services for the provision of different types of IP and know-how protection;
- ❖ Ensuring the preparation of licensing agreements, contracts for the provision of engineering and consulting services, and agreements on scientific, technical and industrial cooperation, etc.;
- ❖ Evaluation of the intellectual share in the creation of innovative enterprises;
- ❖ Providing legal assistance in cases of infringement of rights of patent holders and unfair competition;
- ❖ Promotion of technology commercialization projects;
- ❖ Promotion and advertising of projects on activity of CTTCs and technology commercialization projects.

The second,

- Implementation of the management of forms (startups, spinites, etc.) created for commercialization.



This is usually done by choosing a priority, rather than one of the mentioned directions. At this time, the second direction is in the accompanying part.

Activity Directions	A brief description of the combined directions (blocks)
Provision of consulting services	provision of consulting services in the field of technology commercialization (technological audit, patent support, marketing franchise, business planning, marketing services, project management and etc.). **Incomes of the Center** – income from consulting services, share royalty. Consulting and intermediary services, including the creation of start-up companies, the management of investments in start-up companies and the management of the investment portfolio of start-up companies.
Organization and management of high-tech business	**Purpose of activity** – to find a technology (or several technologies) that can be the key to building and running a business. Thus, the center can actually be considered as a project to create a new business (landing stage). After creating a start-up company, its range of activities can be expanded and nominally can provide consulting services. But the main directions of its activities are business activities related to the production and sales of the company's products.

5. Application of the strategy for creating a CTTCs model in Azerbaijan.

5.1. **The mission of the CTTCs** and the main goal of its creation are associated with the organization of professional activities aimed at the commercialization of research institutes established in research organizations (universities, renewable energy sources, business structures).

5.2. **Fouders**.

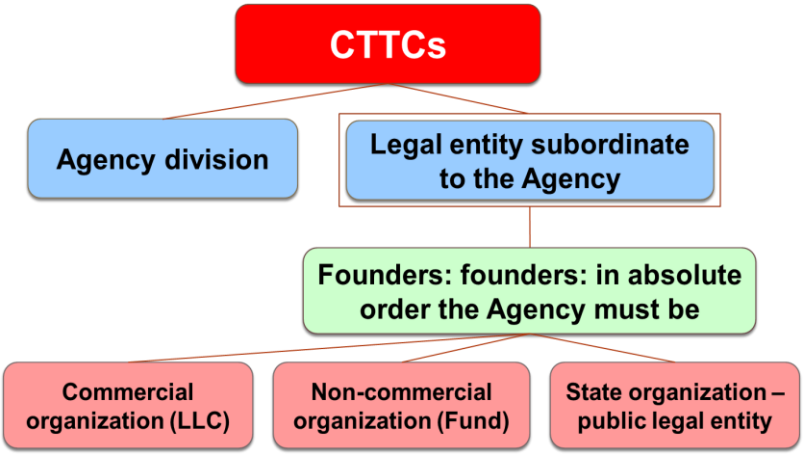
From a legislative point of view, any organization or individual can be the founder of the CTTCs. However, in real terms, the **CTTCs must be established by the Intellectual Property Agency** in accordance with the regulations. This means that the Agency is the absolute founders and it is possible that the Intellectual Property Agency can create it exclusively on a commercial or non-commercial basis. It is also important to consider that other co-founders can be universities, SRI and others.

5.3. **General organizational-legal and financial structure.**

The CTTCs can be both a part of the Intellectual Property Agency and a legal entity.

In turn, CTTCs can be represented as a legal entity in the following forms:

- ✓ **commercial organization (limited liability company - LLC);**
- ✓ **non-commercial organization (fund, etc.);**
- ✓ **public legal entity** (with or without commercial activity).



5.4. In real terms, financing can be implemented as follows:

- In particular, financed from the budget, as well as through subsidies or in a mixed form through the Agency of Intellectual Property - budget investments and subsidies from the Agency of Intellectual Property;
- As in the case of the above, but partially funded, with the condition of a subsequent transition to a form of self-financing (a legal entity that has the ability to carry out commercial activities);
- The establishment and possible financing of CTTCs, which is not necessarily mainly, funded by the Intellectual Property Agency itself or its founders (the Intellectual Property Agency, universities and the SRI) at an early stage.

The creation of the above-mentioned structures is possible, and the choice of any of them is carried out taking into account additional considerations. Although the creation of CTTCs as a legal entity (commercial or

non-commercial organization) is costly, this form is more complete and most flexible than other forms and has no practical limitations in its field of activity.

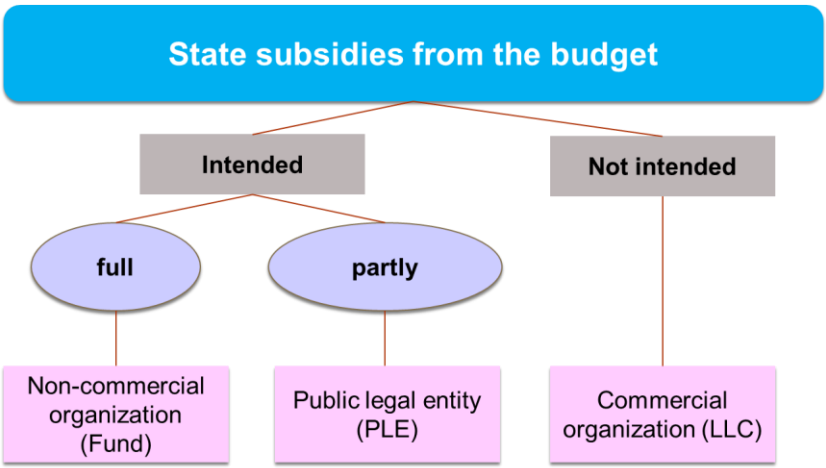
As mentioned above, the choice of form, coverage and environmental opportunities and barriers available from the point of view of financing for legal entities is taken into account.

Including:

1) **A Fund** may be a non-profit organization, such as a more accessible form for the CTTCs, provided that special state funds are allocated directly or through a body created or subordinate. In this case, the "compensation" of state expenditures from the budget will benefit the profits derived from the commercialization of the research results and transferred to the state budget.

2) In the case when the CTTCs, which subsequently became members of their financial management, is partially funded from the state budget, the **public legal entity** is the most suitable form.

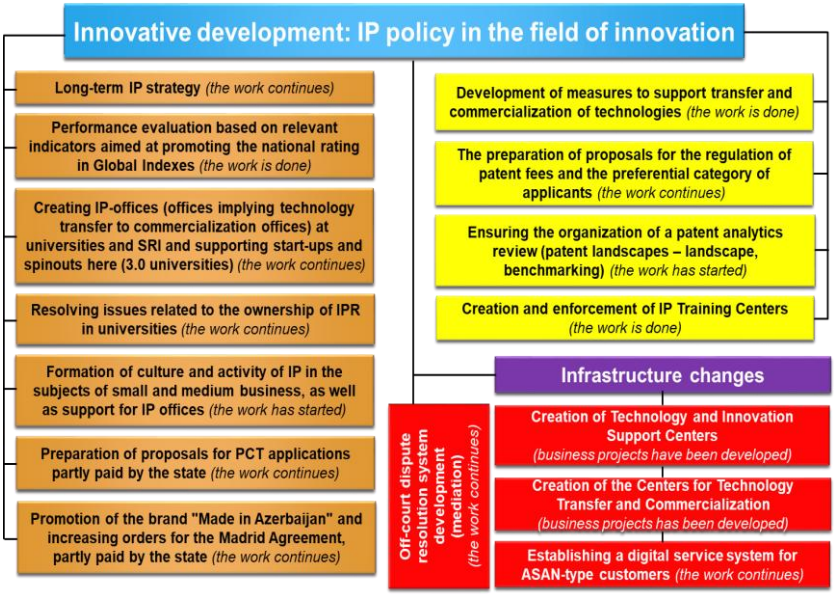
3) In the absence of public funding for the creation and operation of the CTTCs, the most appropriate organizational form may be the Agency or **LLC** established by the Agency together with universities or SRI.



6. In fact, this is the creation of a more focused organization of **consulting** infrastructure in terms of trends. Thus, it is more appropriate to present the proposed CTTCs as a legal entity in the consulting infrastructure organization. The founder of this organization must be the Intellectual Property Agency, and its organizational and legal structure will be in the form of a non-commercial organization (the Fund), a Public Legal Entity (PLE) or a Limited Liability Company (LLC), depending on the form of financing.

VI. Final

Finally, we present the Intellectual Property Policy, which promotes innovative development, as well as the status of the implementation of measures that will be implemented in this regard.



Azərbaycan Respublikasının Əqli Mülkiyyət Agentliyində hazırlanmışdır.

Prepared in the Intellectual Property Agency of the Republic of Azerbaijan.