

Science, Technology, and Innovation (STI) Gap Assessment of Azerbaijan

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List of Acronyms

ADAIL	ADA University Innovation Lab
AIC	Azerbaijan Investment Company
ANAS	Azerbaijan National Academy of Sciences
ANAS HTP	Azerbaijan National Academy of Sciences High Technologies Park
ASAN	Azerbaijan Service and Assessment Network
AzDATACOM	Infrastructural project for data transmission with coverage of almost all regions of Azerbaijan implemented by MTCHT in partnership with UNDP
AzQF	National Qualifications Framework for Lifelong Learning of the Republic of Azerbaijan
BEU	Baku Engineering University
BBF	Baku Business Factory
BCG	Boston Consulting Group
BP	British Petroleum
CBC	Creative Business Cup
CoE	Council of Europe
CIS	Commonwealth of Independent States
COPAT/COPAG	The Intellectual Property Agency of the Republic of Azerbaijan
EAZİ	Startup Center of the Azerbaijan State Oil and Industry University
EQF	European Qualifications Framework for Lifelong Learning
FDI	Foreign Direct Investment
FinTech	Financial technology
GDP	Gross Domestic Product
ICT	Information and Communication Technology
Inc	Incorporated
IPR	Intellectual Property Rights
IT	Information Technology
ISE Startup Club	International School of Economics Startup Club at UNEC
ICT Fund	State Fund for Development of Information Technologies

KPIs	Key Performance Indicators
LLC	Limited Liability Company
MTCHT	Ministry of Transport, Communications and High Technologies
QF-EHEA	Qualifications Framework of the European Higher Education Area
R & D	Research and Development
RDI	Research Development and Innovation
SIL	Social Innovation Lab
SOCAR	State Oil Company of the Azerbaijan Republic
SMBDA	Small and Medium Business Development Agency of the Republic of Azerbaijan
SME	Small and Medium-sized Enterprises
SMS	Short Message Service
STEAM	Educational Approach (Science, Technology, Engineering, Arts, Mathematics)
STI	Science, Technology and Innovation
SWOT	Strengths, Weaknesses, Opportunities, and Threats
UFAZ	Azerbaijani-French University
UN	United Nations
UNDP	United Nations Development Programme
UNEC	Azerbaijan State University of Economics
VET	Vocational Education and Training

Part A. Overview of some main aspects of STI management in the Republic of Kazakhstan

National STI priorities

At this point in time, the national innovation strategy of Azerbaijan is still pending approval. Since there is no single strategic document that clearly outlines STI priorities at the moment, the policy targets are dispersed through numerous policies.

The major economic strategy in the country is directed towards the diversification of the economy and development of non-oil sectors. For example, the development concept “Azerbaijan 2020: Vision for the Future”, which was adopted in 2012, mentions that “[a]lthough the export of hydrocarbons has been the main driving force of economic growth in the past decade, the main issue facing us at the current stage is to ensure the rapid development of the non-oil sector, increase the effectiveness and competitiveness of the economy and secure its progress based on innovations. In other words, it is necessary to lay the foundations of transition from a traditional economy to a “knowledge-based economy” now and prioritize the appropriate development of human capital, which is a decisive factor for this”¹. To reach this goal, the development concept sets as among its highest priorities extending the application of information and communication technology (ICT) for both state-level and local self-governing bodies, improvement of information security, strengthening the competitiveness of export-oriented ICT businesses, training and employment of highly qualified specialists and scientific personnel.

These general goals were re-confirmed in the “Strategic Roadmap on National Economy and Key Sectors of the Economy of Azerbaijan” approved by the presidential decree dated 6 December 2016. Innovations are recognized as essential requirements to assure the sustainability of economic policies and to develop a globally competitive economy. In accordance with the roadmap it has been said that the “[e]conomy of Azerbaijan will move from an efficiency-based model to an innovation based model... Physical, human, institutional and social capital will be provided in order to develop an innovation based model².”

The decree approved the roadmap’s prioritising of the following areas of the economy:

1. The overall national economic prospects of the country.
2. Development of the oil and gas industry.
3. Manufacturing and processing of agricultural products.
4. Manufacturing of small and medium entrepreneurship-level consumer goods.
5. Development of heavy industry and machinery.
6. Development of specialized tourism industry.
7. Development of logistics and trade.

¹ Development concept “Azerbaijan 2020: Vision for the Future”

²https://ereforms.org/store//media/ekspert_yazilari/islahat%20icmali/mart/strateji%20vol%20x%C9%99rit%C9%99si%20-eng1.pdf, p. 12

8. Development of affordable housing.
9. Development of vocational education and training.
10. Development of financial services.
11. Development of communication and information technologies.
12. Development of utilities (electricity and thermal energy, water and gas supply) in the Republic of Azerbaijan.

Key STI policy documents

As previously mentioned, innovation policy in Azerbaijan remains fragmented with it being spread across various legal and strategic documents and bodies with little coordination and alignment. To address the resultant gaps in innovation policy, the Decree of the President of the Republic of Azerbaijan dated 10 January 2019 mandated the Presidential Administration to develop a national innovation strategy and related action plan³. The Boston Consulting Group (BCG) has been hired to draft a national Innovation Strategy for Azerbaijan, however, the process has not yet been finalized.

The ‘National Strategy for the development of Information society during 2014-2020’, approved by a presidential decree on 2 April 2014 defines the main STI goal as strengthening competitive and export-oriented high-tech industry and establishment of innovation system which will ensure the development and application of knowledge-intensive and high-tech products. Among the various objectives there are also provisions related to the support of innovative entrepreneurship and the development of techno parks, business incubators and innovation structures⁴.

To ensure the implementation of the strategy, on 20 September 2016, the president signed a decree for the approval of the state program on the implementation of the “National Strategy for Information Society Development in Azerbaijan” for the period of 2016-2020. This program defines the concrete targets and designates responsibilities to numerous government bodies tasked with the organization of educational and promotional activities among small and medium-sized enterprises (SMEs), on the enlargement of the application of ICT solutions; development of innovative entrepreneurship in the field of ICT as well as support for the creation and implementation of science-intensive and high-tech products.⁵

Science and Education

The Law on Education (adopted 19 June 2009) establishes the basic principles of state policy in the field of education, ensuring the right to an education for all. It provides general terms for the regulation of educational activities for both public and private actors in the field and defines the pillars of education. This law was often described as a reform law, which was intended to provide the Azerbaijani educational system greater compliance with the education systems of EU countries and making the so-called Bologna principles legally binding for all higher education institutions in Azerbaijan.

³<https://president.az/articles/31491>

⁴<http://ictfund.gov.az/wp-content/uploads/2014/04/Milli-strategiya.pdf>

⁵<http://www.mincom.gov.az/upload/files/527d9c1b595f4eb8144ea81525dae30e.PDF>

The Law on Science (adopted 14 June 2016) establishes the basic principles of state policy in the organization, management and development of scientific activities, outlines the goals, rights and responsibilities of subjects of scientific activity as well as the mechanisms of financing scientific activity. The law highlights the importance of the integration of the fields of science and education with the economy while also encouraging the entrepreneurship and innovation of scientists to contribute towards competitive scientific-technological development in the country⁶. For the first time in Azerbaijan it introduced the concept of a “research university”, which is defined as a higher educational institution or scientific education center that carries out scientific and educational activities effective in terms of the real integration of scientific and educational processes while conducting advanced scientific research and providing a quality teaching environment. On 29 December 2017 the Cabinet of Ministers approved the criteria for the assignment of this status to a number of universities⁷, although currently, none of the universities have qualified as such yet.

The Law on Vocational Education and Training (VET) (adopted 24 April 2018) defines the principles of state policy in the field of vocational education and provides the legal, organizational and economic basis for the VET system. It aims to increase the effectiveness of vocational training in ensuring a qualified workforce for Azerbaijan’s economy and labour market.

The National Strategy for the Development of Education (2013)⁸ and the Action Plan on the Implementation of the National Strategy for the Development of Education (2015). Both of these documents formulate the State’s policy toward achieving higher levels of human capital development and increasing the quality of the educational system thus strengthening the competitiveness of knowledge-based industries in Azerbaijan. The National Strategy outlines that “[m]odernization is primarily associated with the successful application of advanced technologies, management methods and innovations based on scientific achievements in the socio-economic life of the country.” The strategy also envisions the development of new higher education standards that support the transformation of tertiary education institutions into educational-research-innovative centers to provide training to globally competitive specialists.

National Qualifications Framework for Lifelong Learning in the Republic of Azerbaijan (AzQF) was approved by the Cabinet of Ministers on 18 July 2018. The AzQF is a tool for systematizing national qualifications and facilitating the comparability between national and international qualifications. The AzQF has been conceptually developed in compliance with the criteria of the Qualifications Framework of the European Higher Education Area (QF-EHEA) and the European Qualifications Framework for Lifelong Learning (EQF). The action plan for AzQF implementation is currently still undergoing elaboration.

The Charter of the National Academy of Sciences was approved by Azerbaijan’s president on 11 December 2014⁹ and then subsequently amended on 20 May 2016, 21 July 2017

⁶http://science.gov.az/uploads/PDF/Elm_haqqinda_Azərbaycan_Respublikasının_Qanunu.pdf

⁷ <http://www.e-qanun.az/framework/37540>

⁸ <https://president.az/articles/9779>

⁹ <http://www.science.gov.az/uploads/pdf/p1b43oh6ng6di1cuc134em51jf74.pdf>

and again on 10 April 2020.¹⁰ The charter regulates the activities of the Azerbaijan National Academy of Sciences (ANAS) and outlines its governance structure and divisions of responsibilities. The amendments introduced in 2017 and 2020 provide the specific provisions about the economic activities and commercialization of the scientific and educational bodies included into the structure of the academy. On 8 November 2016, the President of the Republic of Azerbaijan signed a decree establishing the High Technologies Park under the Azerbaijan National Academy of Sciences¹¹.

Industrial Development

The “State Program on the development of industry in the Republic of Azerbaijan in 2015-2020” was approved on 24 December 2014¹². This program focuses on strengthening the existing industrial and technological parks, establishing new industrial parks and industrial sites (estates), starting up special economic zones and increasing the overall industrial capacity of the country regions.

The main aims of this particular state program are as follows:

1. Modernization of industry and improvement of its structure.
2. Increase the export potential of non-oil industries.
3. Expansion of competitive industrial production with efficient use of energy that provides for high added value.
4. Expansion of high-tech and innovative production.
5. Preparation of a skilled workforce for the new manufacturing fields.

The program places special emphasis on innovation promotion because “[a]s is known, innovations play a critical role for increase of competitiveness of the industry. From this point, supporting the research and development activities performed by the private sector is of great importance. This process should be accompanied by the improvement of personnel capacity and scientific advancement of industry”.

In the Action Plan for the implementation of the “State Program on the development of industry in the Republic of Azerbaijan in 2015-2020” under its target 4 “Strengthening human potential and scientific support of industry”, charges the Ministry of Economy and Industry with the “organization of study and experience-sharing tours for senior management of local industrial enterprises to foreign innovative industrial enterprises in 2015-2020” while the Ministry of Education is charged with the “creation of innovation centers at universities with the involvement of the private sector in 2016-2017”. Simultaneously to this, the Ministry of Economy and Industry, the Ministry of Foreign Affairs, the Azerbaijan National Academy of Sciences as well as the Ministry of Communications and High Technologies were all designated to be involved in “the strengthening of cooperation with international organizations in the field of science, technology and innovations in 2015-2017”.

¹⁰ <http://www.e-qanun.az/framework/28882>

¹¹ <https://www.ameaytp.az/en/index.php/legislation/decrees>

¹² <http://extwprlegs1.fao.org/docs/pdf/aze175121.pdf>

The Strategic Roadmap for the Development of Heavy Industry and Engineering in the Republic of Azerbaijan (adopted on 6 December 2016¹³)

The strategic goals of the roadmap are the following:

1. Improvement of industrial infrastructure, capacity building for heavy industry and the mechanical engineering sectors.
2. Improving the economic well-being of the population through increased employment in non-oil industries.
3. Making better use of existing natural and economic resources to increase gross domestic product (GDP).
4. Improving the country's balance of payments by reducing imports of mechanical engineering products and increasing exports.
5. Creation of new and higher value-added industries including in the existing areas of heavy industry and mechanical engineering.
6. Increasing the share of locally produced components in the value chains of products produced.
7. Attraction of local and foreign investments in heavy industry and mechanical engineering, the introduction of new financing mechanisms.
8. Strengthening of international cooperation, greater application of international standards and procedures throughout the nation's industries.
9. Implementing the widespread transfer and mastering of advanced technologies, support of innovative activities in local enterprises.

In SWOT analysis the limited number of innovating activities is identified as one of the country's principal economic weaknesses. The roadmap puts forward the following targets and attaches to them the corresponding priorities:

Target 1 Optimization of the existing actives.

Target 2 Creation of competitive ([commercially viable](#)) heavy industry and machinery manufacturing sectors.

Target 3 Ensuring financial support for businesses and enhanced international cooperation.

The Strategic Vision embraces both short- and long-term targets:

1. The short-term vision of the heavy industry and machine-building sectors was to achieve a greater coverage of domestic consumer needs by 2020 through the promotion of relevant enterprises in the low- and middle-value productions segment while increasing the share of Azerbaijani products in the regional market.
2. The long-term vision for the period up to 2025 is to reconfigure value chains using local opportunities primarily in the low- and middle-value production sectors and simultaneously make the country's enterprises more competitive from a regional

¹³ <https://monitoring.az/assets/upload/files/c535e2fe55135f3e0a46ac435b0b000d.pdf>

perspective and turning the Republic of Azerbaijan into a regional center of heavy industry and machine building.

3. The strategic vision for the post-2025 period involves Azerbaijani heavy industry and machine-building companies becoming a part of global value chains and contributing to the production of well-known brands in the high-value products market segment. There is also a focus on advancing to the position where technical knowledge, know-how, efficient production and management techniques are exported from Azerbaijan to neighboring countries.

Entrepreneurship and SME policy

Law of the Azerbaijan Republic on State Support for Small Business was adopted on 4 June 1999¹⁴ and specifies the following areas for support for small business:

- Supplying infrastructure that supports the development of small business.
- Developing support programs for small business and coordinating the implementation of such programs.
- Ensuring preferential treatment for small business entities to obtain the financial, material, information, scientific and technical resources they require.
- Supporting small business entities in the training, retraining and professional development of their employees.
- Supporting the external business activities of small business entities, including the establishment of production, financial, trading, scientific, technical and informational contacts with foreign partners.
- The introduction of simplified systems for official registration processes (accounting), presentation of statistical and accounting reports, licensing, and certification of manufactured products for small business entities.
- Conducting research into the development of small business.

The State Program On Socio-Economic Development of Regions for 2014-2018, which was approved on 27 February 2014,¹⁵ has as its main objective the “continuation of activities aimed at the development of non-oil sectors, the diversification of the economy and the rapid development of regions with a particular focus on the further improvement of infrastructure and social services related to rural development”. To this end, the main priority directions of state investment policy for the years 2014-2018 included, among others, investment into non-oil sectors and the development of regions as well as further strengthening the social orientation of investment activities in the country.

The State Policy on Social and Economic Development of the Regions of the Republic of Azerbaijan for 2019-2023.¹⁶ This policy was approved on 29 January 2019 and provides greater emphasis on the development of innovative SMEs in the regions. For example, local governments act jointly with the Ministry of Transport, Communications and High Technologies to promote the

¹⁴ <https://ereforms.org/store//media/documents/kic-sah-dd-en.pdf>

¹⁵ <https://www.economy.gov.az/article/azerbaycan-respublikasi-regionlarinin-2014-2018-ci-illerde-sosial-iqtisadi-inkishafi-dovlet-proqrami/28080>

¹⁶ <http://e-qanun.az/framework/41320>

activities of young entrepreneurs and startups by honing their knowledge and skills. This cooperation is designed to specifically promote and support startups and innovative initiatives in rural and non-rural production facilities.

The Strategic Roadmap for the Production of Consumer Goods in Azerbaijan at the Level of Small and Medium Entrepreneurship¹⁷ elucidates 5 strategic targets with relevant priorities for each as has been classified below:

Target 1: Create a more favorable business environment and regulatory framework for the operation of the SMEs, create SME industrial zones, establish a centralized SME agency, simplify procedures for startups, improve inspection and licensing mechanisms for the operation of the SMEs, introduce a more favorable taxation policy and conditions so as to promote SME competitiveness.

Target 2: Expand and improve access to financing for entrepreneurs, undertake reforms in relation to businesses' insolvency and liquidation.

Target 3: Create export associations covering different entrepreneurial sectors and increase the value share of SMEs in exports.

Target 4: Increase the knowledge and skills of SME operators and staff as well as accelerate the introduction of best practices.

Target 5: Expand the promotion of investments, research and development activities for SMEs and improve the national innovation system.

There are measurable and time-bound targets attached to the strategy and the following results are expected from the implementation of priorities in the SME sector:

- Increase SMEs contribution to GDP by 15%.
- Increase SME contribution to employment by 20%.
- Increase the SME contribution to non-oil exports by 10%.
- Increase GDP by AZN 1.26 billion (USD 741.6 mln¹⁸) in 2020 in real terms.
- Create an additional 34,240 employment places in SMEs in 2020.

The following key performance indicators (KPIs) have been identified as measures that contribute towards the development of SMEs:

- Increase the SME contribution to products produced within industrial clusters by 40%.
- Double the rate of dispute settlements among SMEs in court procedures.
- Increase the rate of SMEs recovering from insolvency by 4%.
- Double the indicators of admission of immovable property as collateral by banks.
- Increase SMEs share of leasing transactions in GDP by 2%.
- Achieve a 5% increase in the value of non-oil exports.

¹⁷ https://www.iqtisadiislahat.org/store//media/documents/islahatlar_icmali/SME_eng.pdf

¹⁸ Currency rate in Azerbaijan for December 10, 2020: 1 USD = 1.7 AZN

- Establish 3-5 new model entities.
- Establish 5 new business incubators.

The decree of the President of the Republic of Azerbaijan entitled “On the establishment and functioning of the industrial estates¹⁹”, adopted on 8 October 2014, regulates the establishment of industrial estates which are designed to provide favorable conditions for the development of SMEs operating in both industry and service provision as well as increase total employment in both areas.

Presidential decree number 1771 “On Further Improvement of Small and Medium Entrepreneurship²⁰” came into force on 28 December 2017 and focuses on improving governance in the field of SMEs and the establishment of the Small and Medium Business Development Agency of the Republic of Azerbaijan (SMBDA).

Regulations related to the provision of state support for micro, small and medium-sized businesses involved in domestic market research to stimulate competitiveness in production were adopted on 29 May 2019.²¹ The enforcement of these regulations is the responsibility of the SMBDA, although it must be noted in this context that the regulations list of beneficiaries exclude occupants of techno and industrial parks as well as those in special economic zones.

Intellectual Property Protection

The main laws regarding Intellectual Property Rights in Azerbaijan are as follows:

1. The Law of the Republic of Azerbaijan on the Legal Protection of Compilations of Data (as amended to Law No. 639-IVQD dated 30 April 2013) (2013)
2. The Law of the Republic of Azerbaijan No. 504-IQ of 12 June 1998 on Trademarks and Geographical Indications (as amended to Law No. 823-IVQD dated 22 November 2013) (2013)
3. The Law of the Republic of Azerbaijan on Copyright and Related Rights (as amended to Law No. 636-IVQD dated 30 April 2013) (2013). This law governs relations arising in the territory of the Republic of Azerbaijan from the creation and use of scientific, literary and art works (copyright) and of performances, phonograms, programs of broadcasting or cable distribution organizations (related rights).
4. The Law of the Republic of Azerbaijan on Enforcement of the Intellectual Property Rights and Fight Against Piracy (2012)
5. The Law of the Republic of Azerbaijan on the Approval of the Decision on the Rules on Customs Control of Transfer of Goods Protected by Intellectual Property Rights (2011)
6. The Law of the Republic of Azerbaijan on Patents (as amended on 20 October 2009) (2009)

¹⁹ <http://www.e-qanun.az/framework/28394>

²⁰

<https://creative.az/files/2/Decree%20of%20the%20President%20of%20the%20Republic%20of%20Azerbaijan%20on%20further%20improvement%20of%20management%20in%20the%20field%20of%20small%20and%20medium%20business.pdf>

²¹ <http://e-qanun.az/framework/42551>

7. The Law of the Republic of Azerbaijan on the Legal Protection of Topographies of Integrated Circuits (2008).

STI governance structure

The Ministry of Transport, Communications and High Technologies of the Republic of Azerbaijan has a broad mandate in STI governance. The ministry was established by merging the ministries of Transport and Communications and High Technologies in February 2013. This move was justified by the need to improve the public administration system in Azerbaijan and bring state policy in the fields of transport, communications and high technologies in line with modern standards while also increasing the effectiveness of public services in these areas. According to the Status of the Ministry, approved in January 2018, the ministry is the central executive body implementing state policy and regulation in the areas of transport, including maritime transport and civil aviation, communications (including both telecommunication and postal services), advanced technologies (information-, nano- and bio-technologies, micro-electronics as well as other innovative science-intensive technologies).

Since 2012 the MTCHT has organized numerous competitions for startups that included grant competitions organized by the State Fund for Development of Information Technologies (ICT Fund) and covering only Information technology (IT) startups and startup tours such as “I2B - From Idea to Business²²” (conducted jointly with the UNDP) which promotes greater diversification and welcomes projects from any sector of the economy.

Under the auspicious of the MTCHT, the Innovation Agency began holding innovation weeks (Innoweeks) from 2018 onwards,²³ these ran in conjunction with innovation festivals (Innofests), innovation awards²⁴ and “I2B - From Idea to Business” startup tours covering all the regions of the country. For more on the competitions that were held, please, see Annex 1.

The Ministry of Education

The Ministry of Education of Azerbaijan is responsible for carrying out state policy related to education, the preparation of the education development concept, implementation of educational programs, protection of citizens’ rights to an education and the monitoring of educational institutions. The ministry is also charged with issuing and cancelling licenses for the nation’s various educational entities. Recently the Ministry of Education launched a number of activities aimed at strengthening the teaching and management of Research Development and Innovation (RDI) in the secondary, vocational and higher education systems.

The Ministry of Economy

It is the central executive body participating in the development and implementation of the country's socio-economic development strategy. In 2019 this ministry underwent significant structural changes after being merged with the Ministry of Taxation. In accordance with new regulations approved in December 2019, the mandate of the ministry was enlarged to include the

²² <http://www.i2b.az/>

²³ <http://innoweek.az/>

²⁴ <http://innoweek.az/award/>

development of state policies targeting various sectors of the economy including the development of entrepreneurship, increasing the level of transparency in the economy and improving the country's business environment. Furthermore, the ministry was assigned responsibility for the promotion and diversification of the national economy and industry, attraction of foreign direct investment (FDI), the elimination of unfair competition and monopolies, consumer rights protection, formulation and implementation of state policy regarding standardization, metrology, conformity assessment, accreditation and quality management together with the relevant administering state entities. The ministry is also charged, "together with the relevant government agencies, to make proposals on the stimulation, support and promotion of competitive end-product production, the creation and operation of new industries, including high value-added production areas, as well as innovation activities in industrial areas with the efficient use of local resources". The Ministry of Economy directly oversees the activities of the five industrial parks.

SMBDA

The Small and Medium Business Development Agency (SMBDA) under the Ministry of the Economy was established on 28 December 2017 as a result of a presidential decree with its charter coming into force on 26 June 2018. The task of the agency is to ensure the consistency of reforms as envisioned in the Strategic Roadmap for the Production of Consumer Goods in Azerbaijan for SMEs as well as the improvement of the business regulation system and the application of effective coordination to enhance the role and competitiveness of SMEs in the economy.

The structure of the agency consists of the substructures in the form of SME Houses, SME Development Centers, SME Development Funds and the PPP Development Center. The agency provides services to both micro businesses and SMEs as defined in the regulations of the Cabinet of Ministers dated from 28 December 2018.

Table 1. Criteria for classification of enterprises in Azerbaijan

Size	Number of workers	Annual Turnover (in AZN/USD)
Micro	1- 10	under 200,000/117,716
Small	11-50	200,000/117,716 to 3,000,000/1,765,760
Medium	51-250	3,000,000/1,765,760 to 30,000,000/17,657,600
Large	251 <	Over 30,000,000/17,657,600

The SMBDA is charged with overseeing the issuance of startup certificates for micro and small enterprises and providing them with an exemption from income tax for three years, a procedure which is still under elaboration.

The Innovation Agency

The Innovation Agency was established under the Ministry of Transport, Communications and High Technologies of the Republic of Azerbaijan following the merge of the State Fund for Development of Information Technologies and the High-Tech Park Limited Liability Company,

in accordance with a presidential decree dated 6 November 2018. To regulate the agency's innovation activities, the Charter of the Agency was approved by presidential decree on 22 February 2019 and the rules for the use of agency funds were approved by another decree dated 14 June 2019. On 12 June 2019, the agency was designated as the managing organization for the High Technology Park and Mingachevir High Technology Park.

The agency is a public legal entity that operates, supervises and regulates innovation activities, innovative projects (including startups), oversees their financing with grants, soft loans and investments in authorized capital, including venture financing. The agency also has a business incubation and acceleration center to support the ideas of young people and to serve as a collation point for innovative ideas while also developing and improving innovative products and advanced technologies. The agency provides training in engineering and programming, data analytics and accounting.

At present, draft internal regulations on the use of the agency's funds have been prepared and are expected to be approved in the near future. As such, the implementation of the mandate set by the agency will be implemented for the following:

- Grants for startups.
- Credit and loans for innovative SMEs.
- Investment, including venture financing, being made available for innovative SMEs.

The Innovation Agency is legislatively bound to play the role of coordinator of innovative activities in the country. However, its role as a regulator and coordinator of innovation activities in Azerbaijan is not quite clear as the agency has some overlapping mandates with other government authorities. Moreover, it currently also functions as a service provider by running acceleration and residence programs which in effect means it competes with the private sector and **introduces some market distortion**.

The Science Development Foundation

The Science Development Foundation under the President of the Republic of Azerbaijan was established on 21 October 2009 with the primary goal of supporting the implementation of scientific projects and events as well as stimulating scientific activities in academic institutions and non-governmental organizations. In the 2010-2017 period, the foundation organized a number of grant competitions with the last round of scientific project competitions being conducted in 2017 and distributing AZN 600 000(USD 353,143) among 19 projects²⁵. Of these projects, 6 were in the field of humanities and social sciences, 3 in physics, 3 in geology, 2 in biology and the final 5 in chemistry.

Following the presidential decree issued on 14 January 2019, the Science Development Foundation will undergo a restructuring and all the activities of the foundation will be based on a self-financing regime.²⁶

²⁵ http://www.sdf.gov.az/development/uploads/neticeler_ve_statistika/gam/gam-4.pdf

²⁶<http://www.sdf.gov.az/az/generic/news/Detail/401>

The Azerbaijan National Academy of Sciences

Established in 1945, ANAS functions under the jurisdiction of the president and reports directly to him. It is the main R&D player in the country, focusing predominantly on fundamental sciences. ANAS is comprised of 6 main departments, including the Department of Physical, Mathematical and Technical Sciences. Each department consists of a number of research institutions, with the total across all departments coming to 30 institutions and having some 360 scientific laboratories. Since 2015, ANAS also offers master's degree studies to students recruited through the central examination system.

The High Technologies Park, which operates under the ANAS, was established by the order of the president on 8 November 2016. The purpose of establishing the ANAS High Technologies Park (ANAS HTP) was the expansion of advanced technology production, development of modern scientific and technological innovations and the expansion of high technology spaces. ANAS HTP is envisioned as “a place where science and business merge” and covers an area of 20 hectares.

Occupants of industrial park are entitled to incentives in the form of exemptions from corporate, land, property and income taxes for 7 years following registration as well as exemptions from VAT for equipment, facilities and goods imported for production purposes for the first 7 years of their operations. The Cabinet of Ministers' resolution number 214 from 10 May 2019 established the rules for the public procurement of the products manufactured in the AMEA HTP.

The Intellectual Property Agency of the Republic of Azerbaijan

The Intellectual Property Agency of the Republic of Azerbaijan (COPAT, formerly COPAG) is the public legal entity established by presidential decree on 20 April 2018 to undertake “measures for improvement of management in the control of consumer markets, standardization, metrology and protection of intellectual property”. It replaced the Copyright Agency, which had been active since 2005 and had the status of being the executive body in this area. COPAT is mandated to control, regulate and coordinate activities in the field of copyrights and related rights, rights to inventions, utility models, industrial designs, trademarks and geographical indications, rights to Azerbaijani folklore expressions (traditional cultural expressions), traditional knowledge and other expressions of cultural heritage.

On 16 October 2018, the Patent and Trademarks Center under COPAT was established by a resolution of the Azerbaijani Cabinet of Ministers.

The State Agency for Public Service and Social Innovations

The State Agency for Public Service and Social Innovations under the President of the Republic of Azerbaijan was established by decree on 13 July 2012. It operates the network of ASAN Services²⁷, based on ‘the one-stop shop’ principle designed to provide citizens and businesses access to various government services in a uniformed and coordinated manner. The initiative was

²⁷ The acronym “ASAN” stands for “Azerbaijan Service and Assessment Network”. The word “asan” means “easy” in Azerbaijani

aimed at limiting petty corruption in routine transactions that were omnipresent in local government environments.

The services of ASAN Xidmet were recognized as ‘best practices’ by UN agencies and the World Bank, indeed, in 2015 the UN Public Service Award was awarded to “ASAN service” in the category of “Improving the Delivery of Public Service”²⁸.

Upon the initiative of the State Agency for Public Service and Social Innovations, the **INNOLAND Incubation and Acceleration Center** was launched on 12 November 2018. INNOLAND is an innovation center established to support the creation of a startup ecosystem as well as to promote innovation and development in Azerbaijan’s private sector for the local and international arena. It consists of the INNOLAND Incubation Center, the Acceleration Center and the Coworking and IT Training Center.

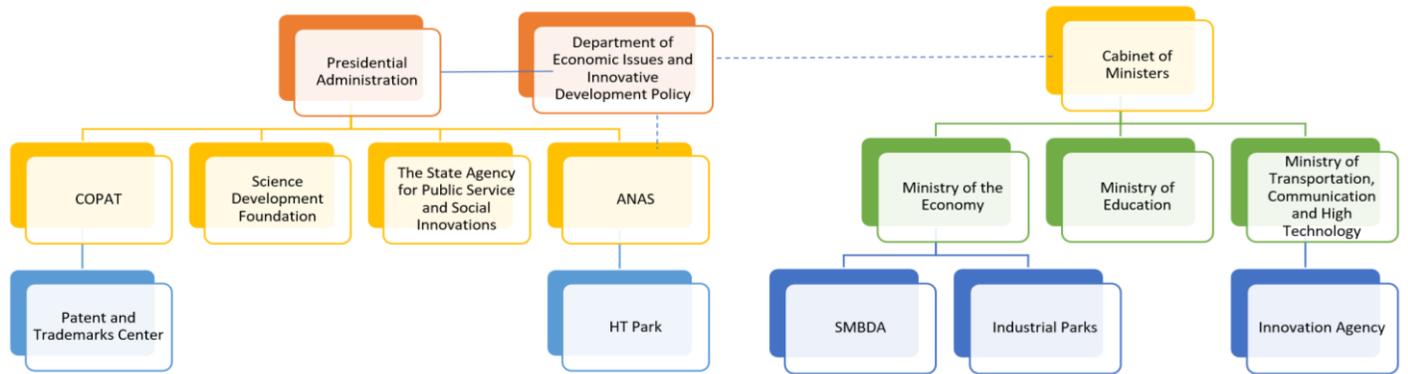
Coordination of Innovative Activities

Coordination in the field of innovations was strengthened following the adoption of decree No. 881 entitled "On Coordination of the field of innovative development in Azerbaijan" on 10 January 2019. Under this decree, the representatives of central executive bodies, such as the Azerbaijan National Academy of Sciences along with various public legal entities²⁹, state-owned legal entities and higher state-run education institutions (hereinafter - coordination subjects) should appoint a responsible coordinating person for issues regarding innovative development. The responsible coordinating person should compile and submit semi-annual reports on innovative developments in their respective state bodies. The Department of Economic Issues and Innovative Development Policy of the Presidential Administration of the Republic of Azerbaijan will be playing a leadership role in compiling and analyzing the resultant country-wide data.

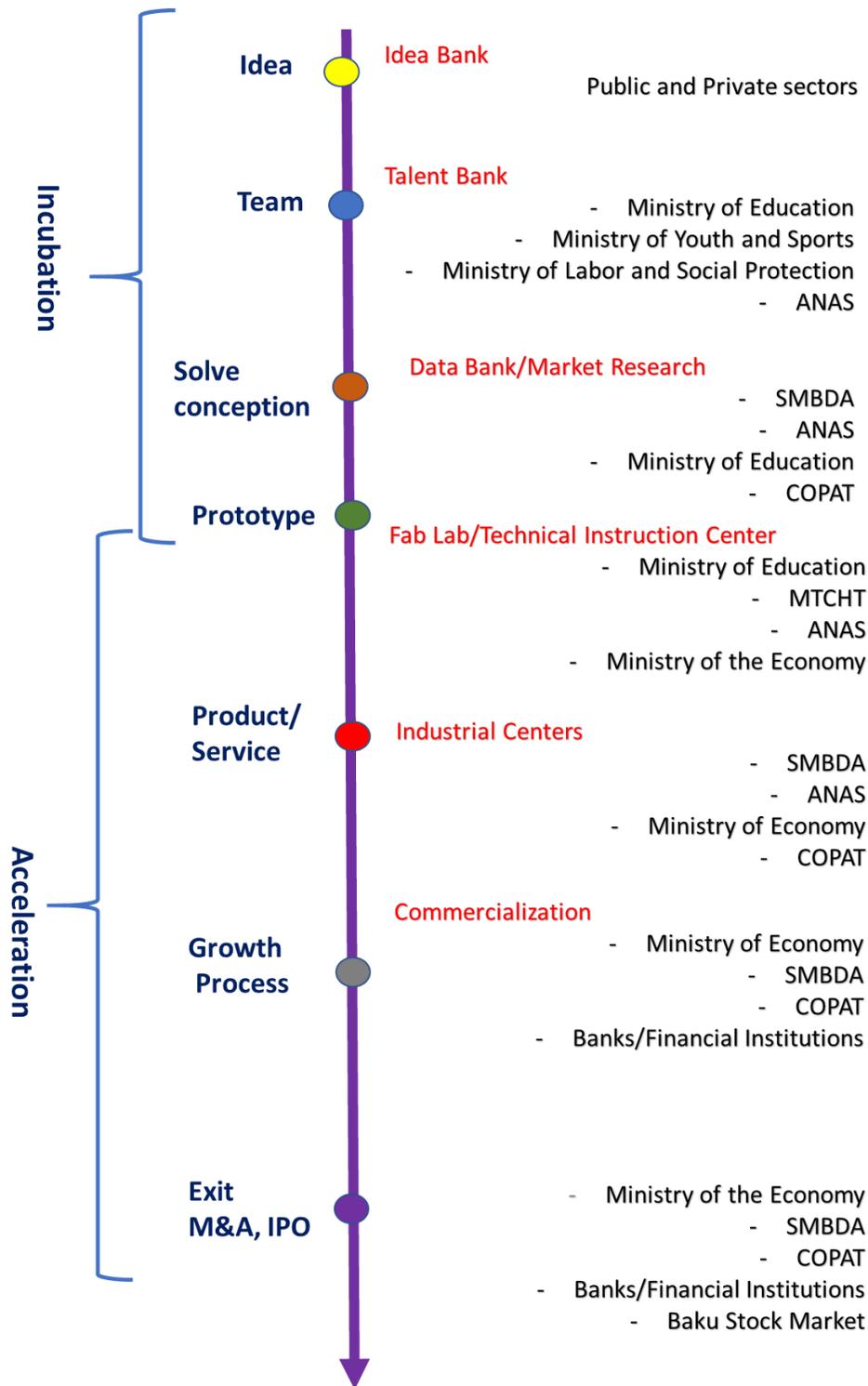
Table 2. STI governance structure of the key state bodies involved.

²⁸ <https://publicadministration.un.org/unpsa/innovation-hub/Winners/2015-Winners/ASAN-Service>

²⁹ The public legal entity - the organization which is not the state or municipal body, engaged in the activities carrying nation-wide and (or) social significance character, created on behalf of the state and municipality” ([Law of the Azerbaijan Republic "About legal entities of the public law" \(cis-legislation.com\)](#)).



Innovative process and involvement of various government bodies at each step (the scheme shared by the MTCHT)



STI policy formulation

In 2010, the Azerbaijani parliament adopted a constitutional law entitled “On Normative Legal Acts” that regulates the legal status and hierarchy of decisions and regulations by various

authorities. The law distinguishes normative legal acts, acts that have a normative and non-normative character as well as defines the formal procedures for the formulation of the policy documents and the procedures for their adoption. The law introduces the mandatory use of legal expertise into the drafting of normative and non-normative legal acts before their adoption by the authorized bodies and organs of the relevant state authority³⁰.

In accordance with the Constitution of the Republic of Azerbaijan, the right of legislative initiative in the National Parliament (Milli Majlis) belongs to the sitting parliamentary deputies, the President of the Republic of Azerbaijan, the Supreme Court of the Republic of Azerbaijan, 40,000 eligible citizens, the Prosecutor's Office and the Supreme Assembly of the Nakhchivan Autonomous Republic. According to the Law on Normative Acts, the Milli Majlis and the president shall draw up a mutually agreed annual plan for the preparation of draft laws which may place special priorities on the development of concepts for important and complex draft laws³¹. If the approval of a draft normative legal act by the national parliament is mandatory under the legislation of the Azerbaijan Republic, as well as if the normative legal act contains normative instructions related to other state bodies, the draft law must be agreed with the state bodies involved. The draft law submitted by the President of the Republic of Azerbaijan to the Milli Majlis shall be considered as agreed with all interested state bodies.

According to the Decree of the President of the Republic of Azerbaijan dated 22 February 2019 entitled "On ensuring the activities of the Innovation Agency under the Ministry of Transport, Communications and High Technologies of the Republic of Azerbaijan", the central executive authorities, state-owned legal entities and public legal entities must, before submitting drafts of normative legal acts related to innovation activity to the norm-setting body, seek agreement regarding them from the Ministry of Transport, Communications and High Technologies.

Recent practice is to attract international consulting companies for the development of policy proposals, especially regarding state development programs. For example, the strategic roadmaps for the development of the economy and the general plan for the development of the capital of Azerbaijan were developed with the assistance of foreign expertise. In 2019, the Boston Consulting Group was hired to develop the innovation strategy for Azerbaijan under the coordination with the Department of Economic Issues and Innovative Development Policy, Administration of the President of the Republic of Azerbaijan.

Azerbaijan's legislation provides for the basic prerequisites of public participation in STI policy formation and the Law on Normative Acts provides a general framework for publicizing the planning activities in the preparation of draft normative legal acts, mentioning that "plans for the preparation of drafts of state programs and of normative legal acts are approved and published in the manner prescribed for acts of the norm-making bodies that approve them". Furthermore, the same law stipulates that "approved plans for the preparation of draft state programs and normative legal acts are sent to the appropriate authorities for information", however, it does not establish a duty for norm-making bodies to publish drafts of their decisions nor are there requirements as to how detailed the published information should be, including any timeframes settled upon.

³⁰ <http://www.e-qanun.az/framework/21300>

³¹ Ibid.

The Law on Public Participation entered into force in 2014 and provides the legal basis for public councils, hearings and consultations, written consultations via the internet, as well as public consultations on draft legislation to be organized by the parliament. The parliament also makes draft laws and other legislative acts available online and provides an opportunity for feedback on these. The regulations for public participation are further defined by a decision of Cabinet of Ministers entitled “Rules for conducting public discussions and public hearings of draft legal acts prepared by central and local executive bodies and local self-government bodies”.

However, despite these efforts there is still no systematic presentation of information and no centralized website that provides all ongoing and past public-private consultations and their outcomes. In essence, such public-private consultations are still conducted on an ad-hoc basis rather than in any systematic and planned manner. A study by the Eurasia Partnership Foundation concluded that many state bodies manifest a ‘*pro forma*’ approach to public participation, limiting public involvement to a largely ceremonial role by only inviting them to witness events but not having any actual input into the decision-making process³². An assessment by the Council of Europe raised concerns about the level of information available to civil society regarding activities and decision-making by authorities that ‘treat their activities as confidential information and are often secretive about the agenda and decision-making process in government agencies. Overall, decision-making by authorities was characterized as a closed process, with independent NGOs having insufficient access to it. Information provided to civil society was characterized as rudimentary and irregular, with often no information made available at all until authorities had made a final decision’.³³

STI policy instruments, policy implementation and coordination

Tax Regimes

On 1 January 2019, new amendments to Azerbaijan’s tax code entered into force that were intended to introduce fiscal incentives for SMEs. For example, a tax exemption was made available for small innovative startups for a period of three years following their certification date. The certificates will be issued by the inter-ministerial committee formed under the leadership of SMBDA, however, the mechanism for the issuance of these “Startup Certificates” is still in development and no certificates have been issued thus far.

The tax code amendments also introduced two new constructs, namely the SME cluster company, a legal entity which has received a special certificate of eligibility, and SME cluster members, which are legal entities or individuals who received a special certificate and signed a contract with a cluster company. The criteria defining SME Clusters were adopted in May 2019³⁴ with the definition of a cluster in the Azerbaijani legal framework corresponding more to a value-chain model formed by SMEs around one anchor company. The criteria identify an SME cluster

³² Sahib Mammadov, “Public Participation. The legislation and the practice of its application. Monitoring report”, Baku, 2017, <http://ogp.org.az/wp-content/uploads/2017/02/PUBLIC-PARTICIPATION.pdf>

³³ https://rm.coe.int/report-civil-participation-in-decision-making-in-azerbaijan-final-22-0/16808b1daa#_Toc504380276

³⁴ <http://www.e-qanun.az/framework/42728>

company as a commercial legal entity that concludes business deals with mutually unrelated businesses consisting of at least 10 micro, small and medium businesses within the SME cluster project and procures at least 50% of its raw materials from local producers who are cluster participants.

The tax code allows for certain tax privileges for SME Cluster companies and SME Cluster participants. These privileges are applicable to an SME Cluster company for up to 7 years from the date of its registration in the SME Cluster Register and provide exemption from income, land and property tax, depending on the relevant confirming certificate supplied by the SMBDA, while any imported technical/technological manufacturing and/or processing equipment will be exempt from VAT for the same period. On the basis of the individual entrepreneur's contract concluded with the SME cluster company, that portion of business income derived from the goods or services provided by the individual entrepreneur to the SME cluster and used for capital expenditure is exempt from income tax. Along with the above exemptions, starting from 2019, 75% of individual entrepreneurs' income derived from entrepreneurial activities (if classified as a micro-entrepreneur) is also exempt from the cited taxes.

Tax and customs incentives were also implemented for occupants of high technology and industrial parks. From 21 December 2012, the tax code allows occupants of industrial or technology parks established by the State to have exemptions for their income, property and land taxes as well as VAT exemptions on imported machinery, technological equipment. Until 2019, these tax breaks only covered a period of 7 years, however, from 29 November 2019, this was extended to cover a period of 10 years. From 19 January 2016, according to Azerbaijan's law dealing with customs tariffs, occupants of industrial or technology parks established by the State are exempt from customs duties on the import of technological equipment and devices for a period of 7 years. The Ministry of Transport, Communications and High Technologies was closely involved in the preparation of the proposals.

Credits and Subsidies for SMEs

The government offers several funding mechanisms for SMEs through its Entrepreneurship Development Fund while the Innovation Agency and SMBDA are in the process of developing their own financial mechanisms.

The Entrepreneurship Development Fund is a public entity established in 2018 under the Ministry of the Economy (replacing the National Fund for Entrepreneurship Support) in order to improve the support mechanism for entrepreneurship development, create new production and processing enterprises based on innovative technologies in non-oil sectors, ensure the financing of export operations, accelerate investments in the real sectors of the economy and expand access to financial resources for businesses operating in the private sector. The annual interest rate on concessional loans provided by the Entrepreneurship Development Fund was reduced from 6% to 5% to make them more appealing and viable for businesses with these being offered alongside a range of other small, medium and large-sized loan options. The fund offers its services through the local banking system as its predecessor organization was criticized for having unreasonable conditions which restricted access to financing for newly established enterprises by requiring guarantors and high levels of collateral.

In the 2012-2018 period, the State Fund for Development of Information Technologies, acting under the Ministry of Communication and High Technologies of the Republic of Azerbaijan, provided financial support to innovative SMEs with the fund's activities financed entirely from the state budget.

ICT Fund (now merged with the Innovation Agency) had various mechanisms to support innovative ICT projects, the most notable of which are as follows:

- **Concessional loans** distributed through authorized banks (small, medium and large loans with an interest rate not exceeding 5%).
- **Grants** were allocated primarily to SMEs for the development of software products, innovative infrastructure projects and the development of e-services. The grants were divided into the small (from AZN 10 000 to 100 000/USD 5 882 -58 820), medium (from AZN 100 000 to 200 000/USD 58 820 -117 647) and large (from AZN 200 000 to 300 000/ USD 117 647 – 176 470) size categories. The maximum duration of grant project was 36 months and each had to pass through a 3 stage evaluation process that involved: (1) evaluation by the fund's experts; (2) assessment by independent experts; (3) evaluation by the fund's board members.

The Supervisory Board of the ICT Fund was comprised of seven members representing government institutions (4 members) and civil society (3 members). Notably, the private sector is not represented.

In the 2014-2018 period, 6 grant competitions were held and grants were awarded to 117 startups with winning applicants gaining access the incubation area of the High Technology Park of Ministry of Transport, Communications and High Technologies.

Currently, the Innovation Agency is developing a new mechanism for grant and loan distribution and representatives of the innovation ecosystem hope that it will address the gaps and shortfalls in the operability of the ICT Fund, especially the narrow approach of targeting only the IT sector. In this respect, the organization of the startup competitions serves as one of the mechanisms of funding for the prospective innovative projects. Please see Attachment 1 for the list of start-up competitions organized recently in Azerbaijan.

Financing of R&D

Research and development are under-financed in Azerbaijan as R&D expenditures account only for 0.2% of GDP, far below the OECD average of 2.5%. In Azerbaijan only about 0.03% of GDP is used for applied research and the low levels of availability of financial resources to support R&D in Azerbaijan negatively affects any innovation-led economic growth. It is envisioned that the national innovation strategy will address this to some degree by creating new funding programs and policy instruments to support applied research.

Table 3. Financing of Science and R&D³⁵

State budgetary financing of science

	2000	2005	2010	2012	2013	2014	2015	2016	2017	2018	2019
expenditures for science from state budget, million manat	9.3	28.8	92.8	116.7	117.0	124.2	113.2	110.2	109.8	117.8	122.3
in percent to GDP	0.2	0.23	0.22	0.21	0.2	0.21	0.21	0.18	0.16	0.15	0.15
in percent to state budget expenditures	1.22	1.35	0.79	0.67	0.61	0.66	0.64	0.62	0.62	0.52	0.50

Gross expenditures for research and development works

	2000	2005	2010	2012	2013	2014	2015	2016	2017	2018	2019
Gross expenditures for research and development works - total, thsd manat	15 919.2	29 224.8	93 441.2	120 264.0	125 987.8	128 647.4	123 230.4	129 289.8	132 340.0	150 532.1	171 067.6
including:											
domestic expenditures for research and development works	15 852.6	29 042.2	92 778.2	117 347.1	121 968.0	123 804.4	120 943.6	124 721.3	129 871.8	147 468.3	163 890.4
of which:											
current domestic expenditures for research and development works	13 320.8	26 468.1	87 816.1	113 807.4	116 976.3	118 465.9	118 643.3	120 782.3	127 997.0	144 997.9	161 299.9
capital expenses for research and development works	2 2 531.8	4 574.1	4 962.1	4 3 539.7	4 991.7	2 5 338.1	2 300.3	3 939.0	2 1 874.8	2 470.4	2 590.5
external expenditures for research and development works	66.6	182.6	663.0	2 916.9	019.8	4 843.4	286.8	568.5	2 468.2	063.8	177.2

³⁵ <https://www.stat.gov.az/source/education/?lang=en>

Industrial zones and parks in Azerbaijan

The activities of the industrial zones are regulated by the presidential decree entitled “On the establishment and functioning of the industrial estates” (dated October 2014).

Table 4. Industrial zones in Azerbaijan

	Name/ location	Created	Industries present	Operational	Occupants
Industrial parks	Sumgait Chemical Industrial Park	2011	Polymers, construction materials, machinery and equipment	yes	18
	Garadagh	2015	Shipyard and ship repair	yes	1
	Pirallahi	2017	Pharmaceuticals, medicinal product	yes	5
	Balakhani	2011	Recycling (motor oils, plastic, paper and cardboard products)	yes	10
	Mingachevir	2016	Light industry (textiles, leather, cotton products)	yes	1
Industrial estates	Neftchala	2016	Automobiles, fish feed, plastic goods, pipes, paper products, mobile schools	Yes	9
	Masalli	2016	Furniture, construction materials, plastic goods, food products, textiles	yes	9
	Hajigabul	2017	Heavy engineering, special vans, composite materials and car plants	No	several applicants
	Sabirabad	2017	Wool, cotton, wood and plastic products, construction materials, processed foods, logistics	No	several applicants

Industrial parks are sector-specific manufacturing compounds designed for large conglomerates while industrial estates are cross-sectoral special manufacturing compounds that provide preferential terms for SMEs and where applicants are chosen on the basis of how likely they are to engage with other occupants.

Occupants of industrial parks are entitled to the following incentives: exemption from corporate and income taxes for 7 years following registration; exemption from land taxes for 7 years; exemption from real estate taxes for 7 years; exemption from VAT for equipment, facilities and goods imported for production purposes for 7 years. The Industrial Parks are managed by the Ministry of Economy with the development of science and technology being seen as one of the primary goals of the industrial parks.

Occupants of industrial estates are chiefly SMEs and are not entitled to the incentives offered to the occupants of industrial parks but can enjoy benefits applied to SMEs. The industrial estates are managed by the Azerbaijan Investment Company (AIC), which provides co-investment opportunities, and was created under the auspices of the Ministry of the Economy.

There are three parks designated specifically for innovative SMEs, namely the High-Tech Park of ANAS (discussed above) which has been operating since 2017 and reportedly has 8 occupants. The Innovation Agency operates two parks, one in Pirallahi and the other in

Mingechevir, and in July 2020 the agency approved the first four occupants³⁶. The occupants of these three parks are entitled to free business support services, tax exemptions from the 18% VAT on imported infrastructural and technological goods and services as well as tax exemptions on profits for the first 7-years of their park residency.

Business Incubation Centers

The first state-funded business incubator was opened in the Guba-Khachmaz region of Azerbaijan in 2014 by the Baku Business Training Center under oversight from the Ministry of the Economy. This incubator is now a part of SMBDA. Since then the number of both private and public incubation centers has been constantly growing. For example, the SMBDA now operates two business incubators in the regional Azerbaijan and has among its KPIs plans to open 5 more incubators in the near future. The first private Barama Innovation & Entrepreneurship Center was created with the support of Azercell Telecom LLC and PASHA Bank in 2009, however, since 2018 this incubation center has been operated by the Innovation Agency.

Incubator centers are also operated by both public and private universities, for example, the Techno Park of the Baku Engineering University, the Techno Park of the West Caspian University, the Eazi Startup Center at the Azerbaijan State Oil and Industry University, the ISE startup Club at UNEC and finally, the ADA University Innovation Lab (ADAIL). The INNOLAND center is an example of a public-private partnership in the innovative ecosystem of the country which unites various participants of the innovative ecosystem including the Next Step Incubator. Other private business incubator initiatives include the Social Innovation Lab (SIL), BBF, Youth Inc, Idrak Technology, the Innova Startup Factory and the Lotfi Zadeh Technology Center.

These business incubators offer a diverse range of services and often provide industry-specific support. At the moment, there is no specific legislation which governs the operations of the business incubators and they often operate either as business entities or as non-profit organizations. Currently the Innovation Agency is developing the criteria and model legislation for these entities and this will allow for both the accreditation of business incubators and evaluation of their services.

Part B. Key challenges and problems in fostering innovative development in Azerbaijan

Summary of the results of the survey

The questionnaire was distributed to approximately 50 stakeholders by email, however, only 13 out of these were returned. The representatives of most government agencies (for example, the SMBDA and the Innovation Agency) refused to fill in the questionnaire without ministerial level approval. The only government agency representative who filled in the questionnaire was from the Department of Innovations and Digital Development in the Ministry of Transportation, Communications and High Technologies and even then the questionnaire was not filled in by the individual but by a team of people who provided no names. Of the 13 returned questionnaires, 11

³⁶ <https://banker.az/az%C9%99rbaycana-4-startapa-rezidentlik-verilib/>

were filled in by the stakeholders and sent back by email while 2 were filled in by interviewing stakeholders.

Distribution of the representatives according to the sectors they are drawn from:

- 4 representatives from the innovative communities – managers of the innovation or accelerator centers.
- 2 representatives from international organizations – organizers of Hackathon events.
- 3 representatives from innovation centers in universities.
- 1 representative from an IT business.
- 2 representatives from civil society organizations.
- 1 representative from the Department of Innovations and Digital Development in the Ministry of Transportation, Communications and High Technologies

Table 5. Opinions about the various economic sectors/industries with high potential to be technologically upgraded and targeted for innovative development.

##	Economic sector/industry	Number of mentions	Percentage of respondents who indicate the challenge
1	Agriculture	9	70
2	Telecommunication and ICT sectors	7	54
3	Energy sector/Oil and Gas	6	46
4	Education	6	46
5	Financial services/banking	5	38
6	Renewable/Alternative energy	5	38
7	Tourism	4	31
8	Healthcare	3	23
9	Transportation	2	15
10	Water supply	2	15
11	E-commerce/ FinTech(banking, payment systems)	2	15
12	StartUps Ecosystem/ SMEs (startups, venture finance, technoparks etc.)	2	15
13	Chemistry (construction materials, chemical products etc.)/ Processing the by-products of oil production	2	15
14	E-government and government services	2	15
15	Eco-friendly production (biodegradable)	1	8
16	Space technology	1	8
17	Construction	1	8
18	Machine & equipment building (cars, ships, autonomous transports and drones, military industry, electrical equipment, household appliances etc.)	1	8

Table 6. Opinions about the effectiveness of science, technology and innovation (STI) policy and of the policy instruments supporting STI development in the country (Question 2 here below) and opinions about the framework conditions and business environment in the country: to what extent they are conducive to innovative development (Question 3 here below).

Question 2		Average rank	Median
1	The national authorities assign high importance to the development of science, technology and innovation (STI)	3.07	3
2	The national STI priorities and strategic directions of STI development are well formulated and widely publicised	3.15	3
3	The officially proclaimed national STI priorities correspond to sectors and businesses with high innovation potential	3.15	4
4	There is clear division of responsibilities between the public bodies tasked with STI governance	4	4
5	There is good coordination in the functioning of the different public bodies tasked with STI governance	3.77	4
6	The functioning of the main R&D institutions in the country is well guided and managed	4.07	5
7	The authorities allocate sufficient public funds to the support of STI activities	3.46	4
8	The policy instruments used to support STI activity are efficient and well managed	3.23	3
Question 3			
1	The authorities make efforts to reduce the administrative hurdles to doing business	2.08	2
2	The authorities assign high priority to SME development and SMEs have access to different forms of public support	2.23	2
3	Entrepreneurship is encouraged and the development of entrepreneurial culture is supported by the authorities	2.38	2
4	It is relatively easy for entrepreneurs to start and develop a new business	2.3	3
5	Businesses cooperate with R&D and academic institutions for the commercialization of their R&D results	4.15	4
6	Universities encourage the establishment of startups and spin-offs for the commercialization of innovative ideas	2.92	3
7	The intellectual property rights of innovative entrepreneurs are well protected by law and regulations	2.77	3
8	Innovative entrepreneurs and SMEs have access to public funds to support the initial stages of commercializing their ideas	3.46	4
9	There exist adequate private funding sources to support innovative entrepreneurs and SMEs in the initial business stages	3.92	4
10	SMEs have relatively easy access to bank credit and other commercial funding for the development of their business	3.77	4

In **question 4** of the survey, respondents were asked to provide their opinion regarding what are the main existing problems, obstacles and bottlenecks that hinder innovative development in your country? The results of their answers have been collated and summarized below:

- The lack of funding for startups, restricted access to capital, early stage startups cannot readily sustain themselves, venture finance is rarely available in the country. All stages of startup development should not be left without support. **9 mentions**
- Competence and talent capacity building is still lacking as are the number of professionals available for various businesses. There are few staff available with the skills necessary to work with new technologies in the local market, a situation exasperated by a "brain drain" the foreign countries, especially in IT. Improvements in the education and training base offered by both the public and private sectors needs further development with a need for increased participation of business specialists in education. **5 mentions**
- There is a lack of support policies and the introduction of a knowledge-based economy is yet to be realized. The necessary legal and regulatory framework is not in place. **4 mentions**
- Coordination between organizations is poor and gaps in regulations still exist. There is a lack of coordination between public sector representatives responsible for innovative development and coordination at the national governmental level need improvement. **4 mentions**
- The traditional business mind-set persists meaning too few entrepreneurs have an innovative mindset. **4 mentions**
- Unfavorable conditions persist for innovative businesses in Azerbaijan ready to export their software products (solution: implement India's approach in support of software exports from India to the global market). The local market remains limited meaning export oriented startups should be better supported. Exports of technology-intensive products are low and the share of high-tech industries in GDP figures must be increased with more effort needed to attract of foreign direct investment to the country's economy as a remedy. **3 mentions**
- The lack of partnership between the private sector, universities and research centers as well as collaboration between the private sector and universities. **3 mentions**
- R&D is neither well-supported nor financed. **3 mentions**
- State funding/support is below what it needs to be. **2 mentions**
- Missing infrastructure (internet, a lack of digital products) and low levels of digitalization in the country. **2 mentions**
- The Government must be the main customer for local startups. Official requests for innovations are never made. **2 mentions**
- Intellectual property rights are not well protected, people frequently do not buy licensed products. **2 mentions**
- There is a lack of institutional trust that most startups will be viable entities. **1 mention**
- Persistent mismanagement of innovation institutions. **1 mention**
- There is an underdeveloped FinTech sector. **1 mention**
- There is a need for the processing industry to replace imports, diversify its products and access foreign markets. **1 mention**
- The implementation of information technologies, including data storage and data processing by businesses is only done at a moderate level, there is a need to upgrade the knowledge base and practical skills in this area. **1 mention**

- There is a lack of and general weakness in entrepreneurial education and the development of enterprising skills among the youth. Investment and support of STEAM education among youth also needs improving. **1 mention**
- Need for more entrepreneurship and startup centers at universities. **1 mention**
- There is an absence of Fablabs. **1 mention**

Question 5 in the survey asked respondents “In your opinion, which are the most important changes (in legislation, in policy making and implementation, in framework conditions, etc.) that need to be introduced in order to invigorate innovative development in the country? The answers supplied to this question have been collated and summarized below:

- ‘Startup’ needs to have a legal definition in the regulatory framework. Work on policies regulating innovative business has to accelerate as does the implementation of existing policies. Innovation ecosystems need to operate in a more legally liberalized environment. **4 mentions**
- The application of a “University to Business” model needs to occur. Investment in R&D at universities needs increasing along with further development of the grant system to support education on innovations and technologies. Targeted grants to universities and private educational centers should provide special training in technology, engineering and construction. **4 mentions**
- Improvements are needed in the capacity of regulator organizations along with the establishment of an officer who will be responsible for innovation in different ministries. An innovation strategy involving coordinated strategic approaches to innovative development must be employed. A more business-oriented approach coupled with greater private sector and civil society centric rules would be pertinent. **4 mentions**
- E-commerce law to promote the development of digital businesses and the liberalization of digital payments regulations. Liberalization of legislation for FinTech. **3 mentions**
- Tax exemptions for businesses that support innovation, research and development need to be accessible. Despite tax law providing for startup exemption from various taxes, the implementation of these provisions is made difficult due to additional procedures on filing for the exemption. **3 mentions**
- Legislation regarding the protection of foreign investment needs strengthening and greater foreign investment needs to be allowed. Transparent and credible markets for international financial institutions and organizations need to be established. **3 mentions**
- Venture capital laws, venture finance and the funds that manage them need overhauling. Venture capital needs to have a clear definition in the regulatory framework. Arbitrary problems with regards to venture capital and startups need to be addressed. **3 mentions**
- More user-friendly funding mechanisms for innovative businesses and loans available for the startups are required. **2 mentions**
- Launch of STEAM and entrepreneurial programs for youth and adults as well as the introduction of entrepreneurship education at both the school and university levels. **2 mentions**
- Reform of the educational system and greater investment in education. **2 mentions**
- IPR framework for startups needs to be developed. **2 mentions**

- Make digital literacy available at schools and introduce courses on digital literacy for all age groups, including those who have previously exited the education system. **1 mention**
- Activities promoting greater private sector participation in STI. **1 mention**
- Modernization of vocational education training. **1 mention**
- Development of pre-acceleration programs. **1 mention**
- Development of partnerships and joint programs with international partners. **1 mention**
- Technology cluster support mechanisms need to be introduced. **1 mention**
- Corruption needs to be urgently addressed and transparency increased in the distribution of funds. **1 mention**
- Opportunities for online education need to be supported. **1 mention**
- A registry of innovative projects and startups needs implementing (draft legislation already prepared). **1 mention**
- Further development of civil society and activities related to this field. **1 mention**
- Improvements to the local stock market and its related culture. **1 mention**

The impact of Covid-19 on Azerbaijan and consequences for the country's innovation activity.

1. Was the economy under a lockdown and what was its duration?

Lockdown in Azerbaijan was gradually introduced in March 2020. On 3 March 2020, all educational institutions (schools, kindergartens, universities) were closed. In mid-March, all land and air borders closed and starting on 14 March “social isolation” measures were introduced that included the closure of cultural facilities, theatres, museums, cinemas, entertainment centers and sports centers. Furthermore, a ban was put in place for mass gatherings and specific guidelines were issued for cafes, restaurants, shops, malls, public transportation that remained open for business.

On 31 March 2020, Azerbaijan declared a nationwide quarantine and people were required to stay inside their places of residence. Government employees were sent on the paid leave and the operations of all public and private facilities were either suspended or moved on-line when possible. The short message notification system via mobile devices was introduced to allow individuals to leave their residences for no longer than 2 hours for doctor’s appointment or to visit pharmacies or supermarkets.

On 27 April 2020, the restrictions were partially lifted and thus allowing the re-opening of certain businesses. However, there was a further tightened at the beginning of June as the number of cases had drastically increased since the easing of the quarantine. This tightened quarantine, which includes travel restrictions within Azerbaijan, the closure of shopping malls, restaurants and cafes (open only for deliveries), special permission requirements to operate certain types of businesses with minimal staff, three-hour restrictions on leaving homes (this was eased again on 5 August) was still in place at the time of writing and was prolonged until 31 August 2020.

2. Which sectors of economic activity suffered the most?

It is very hard to estimate the damage to the economy or particular sectors at this point but it is obvious that the service sectors, including tourism, hospitality, passenger transportation; entertainment and organizers of events and fairs have suffered the most. Retail businesses, restaurants and catering, advertising and other businesses have experienced disruptions in their operations and significant financial losses due to the reduced demand. Certain production sectors (furniture, plastic goods and so forth) have managed to continue their operations but the volumes of production reduced, especially for those who were exporting their goods.

According to the MTCHT, during the lockdown, there was an increase in e-commerce activities throughout the country while representatives of SMEs noted the importance of the liberalization of the digital payments market in Azerbaijan, especially for foreign transactions. For example, the financial regulations of the country place restrictions on the use of certain payment services (for example PayPal and other foreign transaction services are banned) and most of the companies were conducting their online sales using a “cash on delivery” option.

Currently, because of the restrictions, the necessity to have a physical presence to conclude a transaction is becoming increasingly problematic. For example, if an SME ships a product or provides services and receives money in its bank account from abroad, they need to provide to the bank the original version of the contract to be able to withdraw money from the account. For this reason, many experts (including survey participants) noted the importance of easing the financial regulations and further liberalization of online payment systems.

3. What policy measures, if any, have been taken to support additionally innovation activity in the country?

The Ministry of Transportation, Communication and High Technologies conducted an assessment on IT startups and innovative businesses during the first months after the lockdown. The assessment indicated that (1) there are not that many startups or innovative businesses in Azerbaijan and so the pandemic did not greatly affect their number (statistically) and (2) the COVID-19 crisis had either insignificant impacts or sometimes even positive impacts on their development as many companies (primarily in IT) managed to take advantage of the situation and generate additional profits because the lockdown increased demand for digital solutions. As such, providing additional support to the innovation activities and innovative business is not on the Government’s agenda right now, although if they qualify, impacted companies may apply for government assistance packages envisioned to support SMEs in the country in general.

4. What innovative solutions, if any, were generated by the STI sector as a reaction to the new situation generated by the pandemic? (incl. solutions related to managing the pandemic and complying with the lockdown measures, e.g. mobility, communication, delivering goods and services, etc.).

The MTCHT and the UNDP launched the *www.evdeqal.az* digital platform, a one-stop-shop for all e-services available to citizens in the country during the coronavirus pandemic. Visitors to the *evdeqal.az* site can find links to online stores, e-education, e-health, e-entertainment, e-food and e-delivery services. The platform also provides advice on social distancing, staying at home and

offers numerous e-learning resources including information on ways of setting up and running digital businesses from home.

5. **How has innovation activity been affected by the pandemic thus far?** (e.g. government/business sector spending on R&D, employment of researchers and scientists, roll out of new products/services by innovative firms, imports/exports of innovative technology/services/products, etc.). What will be the likely longer-term effects of the pandemic on innovation activity?

Since innovation activities in the country were in nascent form, primarily dependent on government funding, the impact of the pandemic for the moment is quite insignificant. It did not impact employment in R&D institutions (for example, the National Academy of Sciences) as the majority of the staff members were sent on paid leave rather than dismissed. However, in the long-run, the Government may reconsider its priorities and allocate less funding to support R&D and innovative activities. For example, the revision of the state budget conducted by the national parliament on 1 August 2020 has already cut allocations to education, research and science by approximately 10%.

6. **Do you expect that government support for innovation activity will increase or decrease in the future as a result of the pandemic?** Please explain.

The innovation strategy is being still being finalized and should be adopted in a few months, however, the MTCHT has expressed concerns that fewer funds will be allocated towards its implementation than originally planned. For example, the plans to launch special venture capital schemes with government funds are being reconsidered and the level of any investments may be less than originally planned.

7. **Do you expect that firms' innovation activity will increase or decrease in the future as a result of the pandemic?** Please explain.

Private sector investment into innovation is already infrequent, in effect, only state and big oil companies such as SOCAR are recipients although BP may continue to invest as normal into innovative activities. During the pandemic, the banking sector saw something of a spike in activity and one of the banks even opened its own innovation center to provide FinTech solutions. However, generally one should expect that the innovative activities of firms will decrease as private companies will be investing their funds into their more immediate need to simply survive.

8. **What measures, if any, has the government has taken to support “building back stronger”,** i.e. to not only recover from the effects of the pandemic but to make sure that the economy and society are more sustainable and resilient in case of future major unexpected and harmful events (other crises and/or so-called “black swan” events)?

a. The Government has sought to improve internet access, including improvements to broadband connectivity in the country, providing high-speed internet to all regions. The goal is to equalize the quality of internet access between the capital and the regions.

The recent level of investment in this area by the State has increased. In the regions, the only investor into infrastructure development is the State as private internet providers are not yet willing to invest. The original investment plan was envisioned for two-three years but now the implementation process has sped up.

b. State agencies are digitalizing their services with the Government's services portal already offering more than 400 government services online with plans to move all services online.

c. The continuing implementation of the AzDATACOM network project (part of the "National E-Governance Initiative" project realized by the Ministry of Transport, Communications and High Technologies in partnership with the UNDP) related to building a network of infrastructure for data transmission with coverage of virtually the entire country. One of the important benefits provided now by the project is its supply to government agencies with independent, secure and protected infrastructure for the organization of teleconferences and other government activities required online because of the present pandemic.

9. What role will innovation policy play in your country in addressing the economic and social consequences of the COVID-19 pandemic in the long term? (e.g. state policy on innovation will be revised to ensure effective innovative solutions; activities related to innovation policy will decrease as state support shifts to other priority areas).

The Ministry of the Economy, jointly with the SMBDA, is developing a special program to support 11 sectors of the economy and minimize the economic consequences of the pandemic. It is expected that AZN 1 billion (approx. USD 588 million) will be allocated in the short term for its implementation. The preparation of an innovation policy is still underway and its final version may also incorporate new visions and ideas to address the consequences of the pandemic.

Annex 1. Details of Selected Startup Competitions that have been held.

Competition	Organizer	Sponsor	Number of participants	Frequency	Outcome
I2B	Ministry of Transport, Communications and High Technologies, Regional Development Public Association of the Heydar Aliyev Foundation, Youth Fund of the Republic of Azerbaijan, United Nations Development Program	Azercell and Microsoft	Startup tours were held in Mingachevir, Lankaran, Guba, Sumgayit, Shaki, Nakhchivan, Ganja and Baku	Annual since 2018	Winners of the 1st, 2nd and 3rd places in the national finals are awarded prizes by the organizers and partners.
"New Idea" startup competition	Baku Engineering University (BEU)	BP	148 in 2017	Annually since 2013	842 projects in total of which some 100 were financially supported
National Innovation Challenge	Social Innovation Lab (SIL)	Ministry of Economy and the United Nations Office in Azerbaijan	220 in 2018	Annually since 2017	The top 3 winning startups receive cash prizes, the winner represented Azerbaijan at the "Istanbul Innovation Days 2018"
Climatelaunchpad	Social Innovation Lab (SIL)	"Barama" Innovation and Entrepreneurship Center of "Azercell Telecom" LLC	83 in 2018	Annually since 2017	The top ten competitors in the grand final got direct access to the Climate-KIC Accelerator, a program for cleantech startups and joined an eight-week intensive training course.
Creative Business Cup (CBC)	Social Innovation Lab	Ministry of Culture of the Republic of Azerbaijan	19 projects in 2019	Annually since 2018	Fifteen successful applicants were accepted to a 5 weeks Creative Business Cup training & coaching program in Baku. The winner of the CBC Azerbaijan National Final present their business in the global finals in Copenhagen, Denmark.
New Generation	Youth Inc	Ministry of Youth and Sport of the Republic of Azerbaijan, Coca-Cola Company	25 entrepreneurs in 2019	2018	Top 3 winning startups received cash prizes
Imagine Camp	Microsoft	Ministry of Transport, Communications and High Technologies, the Ministry of Education, the	15 teams in 2018	Annually since 2015	Top 3 winning startups received cash prizes. The winner and silver medalist at the national finals will take part in the CIS Regional Finals

		Ministry of Youth and Sports, the Copyright Agency, the company "Microsoft Azerbaijan", PASHA Bank and the mobile operator "Nar"			
Seedstars World	Barama Innovation and Entrepreneurship Center	"Azercell Telecom" LLC	N/A	Annually since 2013	10 best startups to attend the training and meet face to face with investors
NewSpace Business Accelerator	AzerCosmos and Social Innovation Lab	Azerbaijani-French University (UFAZ)	Forty teams from five countries	2018	Tree winning teams got a seed investment financed by Azercosmos. The startups got an opportunity to present their products to foreign markets, taking part in international techno-innovative exhibitions and conferences together with Azercosmos.
Inclusivity Hackathon	UNDP	Ministry of Education of the Republic of Azerbaijan	16 teams	2019	One winner awarded a cash prize and two others were assisted to meet with investors