

# Support to strengthening the higher education system in Azerbaijan



Twinning project AZ/14/ENI/OT/01/17 (AZ/49)

### **Mission Report**

Short-Term Mission on Activity 1.2. Identify three priority areas for the improvement of competence-based education standards on the basis of economic and social relevance, which includes an assessment of the contribution of sectors to the GDP and an analysis of the employability of graduates

(July 2 - 6, 2018)

#### 1. Name and Function of the Expert:

Full name of expert

Mr Gintautas Jakštas, Lithuania

Signature



#### 2. Objective and Tasks of the Mission:

The mission is carried out within the framework of:

## COMPONENT 1: SELECTED NATIONAL EDUCATION STANDARDS ARE ALIGNED TO INCLUDE A COMPETENCE-BASED FOCUS

Activity 1.2. Identify three priority areas for the improvement of competence-based education standards on the basis of economic and social relevance, which includes an assessment of the contribution of sectors to the GDP and an analysis of the employability of graduates

Benchmarks for this activity are:

- Report on analysis of current and future economic and social stakes;
- Feedback of BC stakeholders on proposed priority sectors for the development of competencebased education standards;
- Three priority areas for the improvement of competence-based education standards are identified

### 3. <u>Time schedule of mission:</u>

Date and Time	Activity
Monday 2 July 2018	09:30
	Meeting with the Twinning team to discuss the agenda of the mission
Tuesday 3 July 2018	10:00-13:00
	WORKSHOP of MS expert and local stakeholders to raise awareness regarding the priority sectors for the development of competence-based education standards based on economic and social relevance
	Stakeholders:
	Mr. Shahin Bayramov, BC PL
	Ms. Vusala Gurbanova, CL I
	Mr. Azad Akhunov, CL II
	STEs, RTA team
	13:00 – 14:00
	LUNCH
	14:00-17:00
	The STE reviews documents relevant for the mission
Wednesday 4 July 2018	10:00 – 12:30
	Meeting at the National Confederation Of Entrepreneurs (Employers') Organisations of Azerbaijan Republic (ASK)
	Stakeholders:
	Ms. Kristina Mammadova, Acting Secretary General of ASK
	13:00 – 14:00
	LUNCH
	14:30 – 16:30
	Meeting at the Education Institute of the Ministry of Education

	Stakeholders:
	Mr. Emin Amrullayev, Acting Director of Education Institute
	Mr. Anar Naghiyev, Head of Higher Education Development Unit at the Education Institute
Thursday 5 July 2018	10:00 – 12:30
	Meeting at the State Employment Service at the Ministry of Labour And Social Protection of Azerbaijan
	Stakeholders:
	Mr. Fuad Mehdizade, Head of Division of Vocational Training of Jobseekers and Unemployed, State Employment Service
	13:00 – 14:00
	LUNCH
	15:00 – 16:30
	Meeting in the Baku State University
	Stakeholders:
	Ms. Gulheyran Rahimova, Dean for International Students, Baku State University
	Mr. Adil Khasayev, Head of the Center for Career, Internship and Links with Graduates, Baku State University
Friday 6 July 2018	10:00-12:00
	Debriefing with the Ministry team regarding the mission results
	Location: Museum meeting room, 3rd floor
	Stakeholders:
	Mr. Shahin Bayramov, BC PL
	Mr. Yashar Omarov, RTA Counterpart
	13:00 – 14:00
	LUNCH
	14:00-17:00
	The STE drafts the mission report.



#### 4. Mission report:

#### 4.1 Diagnostic of current situation in Azerbaijan

#### 4.1.1 National priorities

Strategic Road Map on National Economy and Key Sectors of The Economy of Azerbaijan (hereafter – Strategic Road Map) is designed to ensure economy's competitiveness, inclusion and increased social welfare based on sustainable economic development in Azerbaijan. Mobilization of investments meeting global challenges, free competition environment, market access and human capital development will strengthen position of Azerbaijan in global economy. Strategic Road Map covering national economic perspectives and strategic road maps on 11 economic sectors consists of 12 documents and was approved by the President of the Republic of Azerbaijan Mr. Ilham Aliyev on December 06, 2016.

Priorities defined in the Strategic Road Maps have similarities to Smart Specialisation in Europe. Smart specialisation is an innovative approach that aims to boost growth and jobs in Europe, by enabling each region to identify and develop its own competitive advantages. Through its partnership and bottom-up approach, smart specialisation brings together local authorities, academia, business spheres and the civil society, working for the implementation of long-term growth strategies.

Relevant tasks on preparation of the Strategic Roadmap based on analysis of the existing condition of the economy has been investigated systematically and thoroughly with the participation of relevant state bodies, research centers and independent experts, series of debates have been conducted and relevant evaluations have been made. Major targets have been determined in the sectors of the country in order to achieve long-term perspective. Strategic Road Maps include primary objectives, analysis of current situation (global trends, potential in Azerbaijan, primary market opportunities and SWOT analysis of sector), strategic vision (medium term – 2020 and long-term vision for 2025), target Indicators, strategic objectives and strategic targets, financial mechanisms, implementation, monitoring and evaluation.

National level priorities should be considered when defining institutional priorities, including identification of priority areas for the improvement of competence-based education standards. Moreover, identification of priority areas must be based on economic and social relevance, and national priorities have implicated that.

#### 4.1.2 Statistics of the economic sectors

To understand importance of different sectors in Azerbaijan, share of economic sectors in the gross domestic product (GDP) from 2006 to 2016 is analyzed. In 2016, the share of agriculture in Azerbaijan's gross domestic product was 6.04 percent (5.92 percent in 2010), industry contributed approximately 51.68 percent (64.07 percent in 2010) and the services sector contributed about 42.28 percent (30.01 percent in 2010). As the share of industry is decreasing and agriculture is remaining stable, share of services is increasing. Another important statistics



describing importance of the sector to Azerbaijan economics is distribution of employment by economic sector. The statistic shows that in 2017 37.4 percent of the employees in Azerbaijan were active in the agricultural sector, 14.13 percent in industry and 48.47 percent in the services sector. Proportions remain stable throughout a period from 2007 to 2017.

Combining statistics described above, rough evaluation of sectors efficiency can be derived. In the *Figure 1*, is showed that in agriculture sector work 37 percent of all workers and this sector generates only 6 percent of GDP, while in industry work only 14 percent of workers and this sector generates 52 percent of GDP. In Services work 49 percent workers and the share of this sector in GDP is 42 percent.

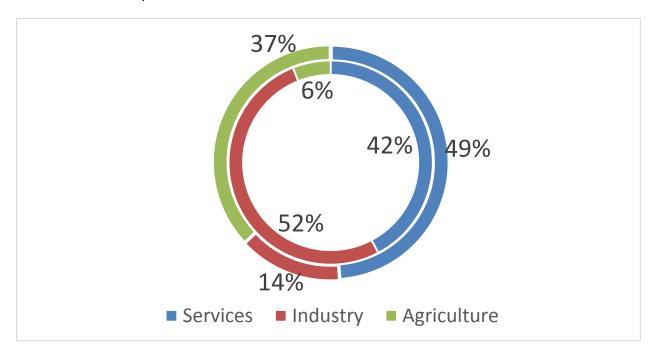


Figure 1 Share of sector in GDP and employment in Azerbaijan, 2016 (Inner Circle - share of economic sectors in the GDP; Outer Circe - distribution of employment by economic sector)

In the Figure 2 relative change of employers and GDP in the industry subsectors are shown. Subsectors where both share of employers and share of GDP are increasing (but share of employers is increasing slower than share of GDP), are becoming more and more important as they are efficiently growing. Sectors importance in Azerbaijan economy is one of the criteria to identify priority sectors for developing competency-based education standards.

Sectoral of industry	GDP relative to gross total, in percentage, 2016	Number of employees relative to total, in percentage, 2016	Percentage difference in share of GDP from 2010 to 2016	Percentage difference in share of employees from 2010 to 2016	Ratio between share of employees and share of GDP, 2010	Ratio between share of employees and share of GDP, 2016	
Industry-total	100	100					
Mining industry	69,8	18,3	-12%	-9%	3,92	3,81	
Extraction of crude petroleum and natural gas	62,1	11,7	-19%	-19% -14%		5,30	
Mining of metal ores	0,4	0,6	100%	79%	0,61	0,68	
Mining of stone, sand gravel, salt and other products mining industry production	0,1	1,3	-50%	-33%	0,10	0,08	
Mining support service activities	7,2	4,7	243%	10%	0,49	1,52	
Manufacturing industry	22,9	51,2	44%	-2%	0,31	0,45	
Manufacture of food products	4,3	10,1	187%	22%	0,18	0,43	
Manufacture of beverage	0,7	3,2	17%	13%	0,21	0,22	
Manufacture of tobacco products	0,14	0,2	75%	-51%	0,24	0,87	
Textile industry	0,3	2,4	200%	-17%	0,03	0,13	
Manufacture of wearing apparel	0,2	1,4	100%	-12%	0,06	0,14	
Manufacture of leather, leather products and footwear	0,05	0,4	-38%	12%	0,21	0,12	



Sectoral of industry	GDP relative to gross total, in percentage, 2016	tal, in employees relative difference in share difference in share		difference in share of employees from	Ratio between share of employees and share of GDP, 2010	Ratio between share of employees and share of GDP, 2016
Manufacture of wood and woodwork	0,04	0,6	-20%	-27%	0,06	0,06
Manufacture of paper and paper products	0,2	0,6	400%	79%	0,12	0,34
Printing production	0,2	1,0	100%	3%	0,11	0,21
Manufacture of refined petroleum products	8,1	2,1	-1%	-26%	2,81	3,77
Chemical industry	1,2	3,2	167%	-33%	0,09	0,37
Manufacture of basic pharmaceutical products	0	0,1		95%	0,00	0,00
Manufacture of rubber and plastics products	0,6	3,0	200%	34%	0,09	0,20
Manufacture of construction materials	1,3	6,1	-24%	20%	0,34	0,21
Metallurgy industry	1	2,1	100%	-54%	0,11	0,48
Manufacture of fabricated metal products	0,4	1,9	-20%	-26%	0,20	0,21
Manufacture of computer and other electronic equipment	0,3	0,8	50%	-33%	0,17	0,37
Manufacture of electrical equipment	0,3	2,0	0%	101%	0,30	0,15
Manufacture of machinery and equipment	0,5	2,1	-17%	-21%	0,23	0,24



Sectoral of industry	GDP relative to gross total, in percentage, 2016	Number of employees relative to total, in percentage, 2016	Percentage difference in share of GDP from 2010 to 2016	Percentage difference in share of employees from 2010 to 2016	Ratio between share of employees and share of GDP, 2010	Ratio between share of employees and share of GDP, 2016
Manufacture of motor vehicles and trailers	0,5	0,3	4900%	-2%	0,03	1,55
Manufacture of other transport equipment	0,04	1,1	0%	-52%	0,02	0,04
Manufacture of furniture	0,2	2,1	0%	35%	0,13	0,09
Manufacture of jewelry, musical instruments, sports goods and medical equipment	0,03	0,4	-40%	-32%	0,09	0,08
Repair and installation of machinery and equipment	2,3	3,9	667%	116%	0,17	0,59
Electricity, gas and steam production, distribution of supply	6,4	14,3	39%	-8%	0,29	0,45
Water supply; wastes treatment and disposal	0,9	16,2	50%	34%	0,05	0,06

Figure 2 GDP and employment indicators in industry subsectors



#### 4.1.3 Important information which have not been received yet and is in process to be collected

- Employment of the graduates by program;
- Information about self-employed graduates (Note added on 11.07.2018: according to MoE, almost all graduates (more than 90%) in Azerbaijan are self-employed);
- Classification of Master programs (Note added on 11.07.2018: according to MoE, 1) Master programs in Azerbaijan are drafted in 8 fields (Education, Humanitarian, Art, Economy, Natural Science, Technology, Agriculture, Service);
   Azerbaijani HEIs provide students with Master degrees (which ends with the defence process) and MBA programs (ends without any attestation).
- Number of students in the Master programs (Note added on 11.07.2018: according to MoE, currently, 18 817 students study at master level in Azerbaijan. Further details are to be collected from Dept. of Statistics of MoE).

# 4.2 Feedback of BC stakeholders on proposed priority sectors for the development of competence-based education standards

During the mission, experts from The Ministry of Education (MoE), National Confederation of Entrepreneurs (Employers') Organizations of Azerbaijan Republic (Ask), The State Employment Service at The Ministry of Labour and Social Protection of Azerbaijan, The Education Institute of The Ministry of Education and Baku State University were interviewed. In the semi-structured interviews their role and activities were discussed, and data regarding employment of the graduates were asked. Current situation and future perspectives of the groups of study fields were discussed with all experts in terms of quantitative and qualitative mismatch with the labour market and sectors importance to Azerbaijan economy and society.

Representatives from The Ministry of Education stated that fields like industry, energy and engineering (especially computer engineering, chemical engineering) become more and more important in the country. Azerbaijani HEIs have good engineering traditions, but it does not meet current international standards. BC Project leader also noted that teacher training is also of utmost importance. Azerbaijan is experienced in natural sciences, like biology, physics, and chemistry and may have a competitive advantage in this field, however, it had less interest among applicants in Azerbaijan lately, so there is a risk to face lack of skilled workers in this field in the future.

Ms. Kristina Mammadova, Acting Secretary General (ASK) noted that graduates are lack soft skills like computer, communication and social skills so it would be important to invest in teachers training so high school graduates had better basic skills. Expert from ASK also stated that agriculture and industry (especially heavy industry) can be listed as priority areas.

Mr. Emin Amrullayev, Acting Head of Education Institute noted agriculture, educational sciences, ICT and engineering as considerable priority areas where study programs should be



developed. Around 30,000 qualified teachers are needed in Azerbaijan now. So, this once again shows the importance of educational sciences in the local context.

Experts from the Baku State University listed ICT, Ecology, Biology and Sociology as the most demanded fields in Azerbaijan. Journalism, International Relations, Political Sciences are very popular among students and language skills are very demanded among employers. Representative from National Employment Agency listed finances, ICT/engineering and agriculture as most lack of qualified staff.

#### 4.3 Recommendations

Selection of priority study groups is based on available quantitative data, relevance to the strategic Road Maps and feedback of the stakeholders. Based on these criteria, study fields were divided in to three groups:

- Must be a priority sector for the development of competence-based education standards (marked green);
- May be a priority sector for the development of competence-based education standards (marked yellow);
- **Should not be a priority** sector for the development of competence-based education standards (marked red).

**Education** specialties and **technical and technological** specialties were selected as two priority sectors, as it is very relevant to several Strategic Road Maps and most of the stakeholders see these sectors as a priority (see Figure 3). Ministry of Education noted that natural sciences have competitive advantage in the research field and as it is relevant to the road map and important to the stakeholders, my recommendation is to select natural sciences as the third priority and consider choosing pilot programs in **natural sciences** field both at bachelor and master levels.

Based on the feedback of stakeholders, programs provided in the pilot universities, number of students and relevance to the Strategic Road Maps, 5 programs in each of the specialty groups are proposed (see Figure 4):

#### **Education specialties**

- In the discussions with the stakeholders a lack of basic informatics skills by high school
  graduates were highlighted and a lack of digital skills is noted as a weakness in the
  Strategic Road Maps, informatics teacher program is suggested as one of the priority
  programs.
- Development of analytical thinking in schools is crucial to be prepared for today's economy. Math teacher program is proposed as one of the priority programs to be improved by competence-based education standards.
- Having good primary education has more impact on children's academic progress than their gender or family background, researchers found that the quality of teaching children receive is more important than their socioeconomic status or family income. A



- high quality and academically effective primary school gives children's development a significant boost, the researchers found. In order to have well prepared children for high schools it is important to start with primary education, so **primary school teacher** is suggested as a priority.
- Relatively less foreign language speakers in regions is an obstacle to effective development of the country. A good command of a foreign language was indicated as one of the most important skills for employers. Foreign language teacher is identified as a program which could be a priority for implementing competence-based education standards.
- According to the stakeholders, Azerbaijan is experienced and have competitive
  advantage chemistry research, also chemistry plays a huge role in Azerbaijan economy.
  In order to avoid lack of skilled workers in chemistry industry, it is important to have
  good chemistry teachers in the school and chemistry teacher program is proposed as
  one of the priorities.

#### Technical and technological specialties:

- Importance of the ICT is stated in Strategic Road Maps, it was highlighted by all stakeholders and international context is showing that Computer engineering and Information technologies should be in a priority list among other Technical and technological specialties;
- Since the mid 1990's the oil and gas sector has been the engine driving Azerbaijan's
  economy and even if Azerbaijan is investing more and more to non-oil industry, it still
  plays the biggest role. Oil and gas engineering program should be a part of the priorities
  in this list.
- Chemical industry plays a big role in Azerbaijan economy and well-developed competency-based chemical engineering program (possibly both in bachelor and masters level) could make a huge positive impact in the chemical industry together with chemistry teachers program.
- Electrical Engineers are at the forefront of future technologies and is essential to Azerbaijan as it is stated in the Strategic Road Map for the development of utilities since the country. Electrical energy engineering is suggested as the last pilot program in Technical and technological specialties field.

#### Natural science specialties:

- Computer sciences as well as Computer engineering and Information technologies should be in a priority list in order to have ICT sector covered.
- Geography and biology programs have the most students (after computer sciences)
  in natural science specialties. Adding tourism as one of the priority sectors in
  Azerbaijan and research potential in biology sector, these programs could make into
  priority list.
- Physics is important science to most of the industry subsectors and is suggested as a priority program for competency-based approach development.



<ul> <li>Azerbaijan being rich in natural resources makes ecology program as one of the most important. Ecology was also named as a priority program by the experts from Baku State university.</li> </ul>
Support to strengthening the higher education system in Azerbaijan This project is funded by the European Union

Sector	Number of universities teaching in this secotor	Number of programs	Number of BA students	GDP and employment	Relevance to Road Map	Intitute of education	Ministry of Education	Employment Agency	Baku State University	Confederation of Enterpreneurs
1. EDUCATION SPECIALTIES	29	22	61489	Highly important	Very relevant. Important to most of the sectors	Highly important	Highly important		Highly important	Highly important
2. HUMANITARIAN AND SOCIAL SPECIALTIES	27	16	32958	Highly important	Weak relevance					
3. CULTURE AND ART SPECIALTIES	15	21	8462		Weak relevance					
4. ECONOMY AND MANEGEMENT SPECIALTIES	31	12	57415	Highly important	Relevant to some extent			Highly important	Highly important	
5. NATURAL SPECIALTIES	21	10	9925	Important	Relevant to some extent	Important	Highly important		Highly important	Important
6. TECHNICAL AND TECHNOLOGICAL SPECIALTIES	24	57	51048	Highly important	Very relevant. Important to most of the sectors	Highly important	Highly important	Highly important	Highly important	Highly important
7. AGRICULTURAL SPECIALTIES	6	9	3128	Highly important	Relevant to some extent	Highly important		Highly important		Highly important
8. HEALTH, WELFARE AND SERVICE SPECIALTIES	27	9	13548	Important	Relevant to some extent					Important

Figure 3 Prioritizing study groups

Row Labels	Azərbaycan Dövlət Neft və Sənaye Universiteti	Azərbaycan Dövlət Pedaqoji Universiteti	Azərbaycan Mühəndislik Universiteti	Azərbaycan Texniki Universiteti	Bakı Dövlət Universiteti	Gəncə Dövlət Universiteti	Naxçıvan Dövlət Universiteti	Total universities	Total number of students in selected programs
1. GROUP of EDUCATION SPECIALTIES									
Chemistry teacher		565	89		482	54	102	5	1292
Foreign language teacher		665				1052	590	3	2307
Informatics teacher		519			859	436		3	1814
Math teacher		721	118		610	622	263	5	2334
Primary school teacher		1892	195			199	6	4	2292
5. GROUP of NATURAL SPECIALTIES									
Biology					858	66		2	924
Computer sciences	603			483	1236	68		4	2390
Ecology					391		9	2	400
Geography					840			1	840
Physics					595			1	595
6. GROUP of TECHNICAL AND TECHNOLOGICAL SPECIALTIES									

Row Labels	Azərbaycan Dövlət Neft və Sənaye Universiteti	Azərbaycan Dövlət Pedaqoji Universiteti	Azərbaycan Mühəndislik Universiteti	Azərbaycan Texniki Universiteti	Bakı Dövlət Universiteti	Gəncə Dövlət Universiteti	Naxçıvan Dövlət Universiteti	Total universities	Total number of students in selected programs
Chemical engineering	1585		207		156			3	1948
Computer engineering	312		423	1057				3	1792
Electrical energy engineering	502		35	357			113	4	1007
Information technologies	224		279	277			73	4	853
Oil and gas engineering	1816							1	1816
Total programs for university	6	5	7	4	9	7	7	45	
Total number of students in selected universities	5042	4362	1346	2174	6027	2497	1156		22604

Figure 4 Number of students in proposed priority programs and pilot universities

#### Document reviewed and annexes

- 1. Azerbaijan: Share of economic sectors in the gross domestic product (GDP) from 2006 to 2016 <a href="https://www.statista.com/statistics/457577/share-of-economic-sectors-in-the-gdp-in-azerbaijan/">https://www.statista.com/statistics/457577/share-of-economic-sectors-in-the-gdp-in-azerbaijan/</a>
- 2. Azerbaijan: Distribution of employment by economic sector from 2007 to 2017 <a href="https://www.statista.com/statistics/457598/employment-by-economic-sector-in-azerbaijan/">https://www.statista.com/statistics/457598/employment-by-economic-sector-in-azerbaijan/</a>
- 3. Road maps
  - Strategic Road map for development of logistics and trade in the Republic of Azerbaijan <a href="http://ereforms.org/store/media/ekspert\_yazilari/islahat%20icmali/oktyabr/SYX\_en.">http://ereforms.org/store/media/ekspert\_yazilari/islahat%20icmali/oktyabr/SYX\_en.</a>
  - Strategic Road map on production and processing of agricultural products in the Republic of Azerbaijan <a href="http://iqtisadiislahat.org/store//media/documents/islahatlar\_icmali/avqust/SYX-kend%20teserrufati">http://iqtisadiislahat.org/store//media/documents/islahatlar\_icmali/avqust/SYX-kend%20teserrufati</a> en .pdf

  - Strategic Road map for development of specialized tourism industry in the Republic of Azerbaijan <a href="http://iqtisadiislahat.org/store//media/ekspert\_yazilari/iyul/Turizmin\_%C4%B0nki%">http://iqtisadiislahat.org/store//media/ekspert\_yazilari/iyul/Turizmin\_%C4%B0nki%</a> C5%9Faf%C4%B1 En.pdf
  - Strategic Road map for development of logistics and trade in the Republic of Azerbaijan <a href="http://ereforms.org/store//media/ekspert\_yazilari/islahat%20icmali/oktyabr/SYX\_e">http://ereforms.org/store//media/ekspert\_yazilari/islahat%20icmali/oktyabr/SYX\_e</a>
     n.pdf
  - 6. The strategic Road map for the production of consumer goods in Azerbaijan at the level of small and medium entrepreneurship <a href="http://iqtisadiislahat.org/store//media/documents/islahatlar\_icmali/SME\_eng.pdf">http://iqtisadiislahat.org/store//media/documents/islahatlar\_icmali/SME\_eng.pdf</a>
  - Strategic Road Map on Vocational Education And Training of Azerbaijan Republic for 2017-2020 <a href="https://www.etf.europa.eu/eventsmgmt.nsf/(getAttachment)/58EA9B2F89D32381C">https://www.etf.europa.eu/eventsmgmt.nsf/(getAttachment)/58EA9B2F89D32381C</a> 12581D0003095E7/\$File/Presentation%20Strategic%20RoadMap%20EN.pdf
  - 8. The strategic Road map for development of financial services in the Republic of Azerbaijan

    <a href="http://ereforms.org/store//media/ekspert\_yazilari/islahat%20icmali/%C4%B0yun/SY">http://ereforms.org/store//media/ekspert\_yazilari/islahat%20icmali/%C4%B0yun/SY</a>

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  - 9. Strategic Road Map for the development of communication and information technologies in the Republic of Azerbaijan
  - 10. Strategic Road Map for the development of utilities (electricity and thermal energy, water and gas supply) in the Republic of Azerbaijan
- 4. Quality Framework for Competency Based Education Programs http://www.cbenetwork.org/sites/457/uploaded/files/CBE\_Quality\_Framework.pdf
- 5. Gintautas Jakštas slides presented in the second day of the mission (attached file)
- 6. Interactive map of Innovation Priorities in Europe http://s3platform.jrc.ec.europa.eu/map
- 7. Azerbaijan industry statistics https://www.stat.gov.az/source/industry/?lang=en
- 8. Classification of the bachelor programs. (attached file)



- 9. Number of students by programs (attached file)
- 10. EU business climate report, Azerbaijan 2018 (attached file)
- 11. The Economy of Azerbaijan in 2017 Brief Overview, by CESD (attached file)
- 12. Descent work country programme of the Republic of Azerbaijan for 2016-2020 (attached file)
- 13. "Azerbaijan 2020: look into the future" concept of development (attached file)
- 14. Azerbaijan ICT environment, innovation policies & international cooperation (attached file)