

Approved by the Decree of the President  
of the Republic of Azerbaijan  
dated December 6, 2016



**Strategic Roadmap for  
Development of Heavy Industry and  
Machinery Manufacturing in the  
Republic of Azerbaijan**

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# 1. EXECUTIVE SUMMARY

As the result of implementing the socio-economic development policy, the major provisions of which were specified by Heydar Aliyev, national leader of Azerbaijani people, the country economy has achieved a rapid development in the past ten years, reduced its oil dependency through successful diversification policy and increased the share of non-oil industry in the economic growth. Since 2008, global economic developments have called for further deepening countrywide reforms towards increasing the competitiveness of local businesses, reducing reliance on import, and ensuring the development of export-oriented non-oil economy and efficient use of human capital.

In this respect, as the result of a comprehensive analysis of the economy's priority sectors with the involvement of international consultants, consistent actions have been undertaken in order to implement a sectorial approach and develop specific proposals for respective sectors. "Strategic Roadmap for the development of heavy industry and machinery manufacturing in the Republic of Azerbaijan" (hereinafter referred to as the Strategic Roadmap) has been developed with the aim of implementing the tasks set by the Decree of the President of the Republic of Azerbaijan "On approval of "the main directions of the strategic roadmap for national economy and the key sectors of the economy" and issue arising there from" No 1897 dated March 16, 2016.

When developing the Strategic Roadmap, the goals and objectives specified by the following documents were taken into account: "Azerbaijan 2020: "A vision of the Future" Development Concept approved by the Decree of the President of the Republic of Azerbaijan No 800 dated December 29, 2012; "State Program on Regional Socio-Economic Development in the Republic of Azerbaijan for 2014- 2018" approved by the Decree of the President of the Republic of Azerbaijan No 118, dated February 27, 2014; "State Program on Industrial Development in the Republic of Azerbaijan for 2015- 2020" approved by the Executive Order of the President of the Republic of Azerbaijan No 964, dated December 26, 2014.

The key purpose of the Strategic Road Map is to achieve the diversification of the country's economy, increase of value add and employment in the sector of heavy industry and machinery manufacturing, environment protection and sustainable development, and to ensure improved living standards of people through a dynamic development of the non-oil sector by considering the existing resources and successfully introducing up-to-date regulatory and incentivizing policies in the heavy industry and machinery manufacturing sector.

Guided by the key directions of the strategic roadmap for the national economy to achieve the above goals, the following strategic target shave been set for the sector of heavy industry and machinery manufacturing of Azerbaijan for 2016-2020:

- Optimization of existing assets;
- Create a competitive sector;
- Ensure financial support and implement international cooperation.

Within the target of optimizing the existing assets, it is envisaged to take actions to increase efficiency and productivity in the heavy industry and machinery manufacturing sector, ensure optimum efficiency in energy consumption, and create a centralized registry of assets and existing potential. The target to create a competitive sector includes integration in value chain with high regional demand, support of import substitution, activities with regard to the development of mining industry and manufacturing complex as well as the related service sector. Within the last third target, the role of alternative funding as well as priorities associated with compliance with international standards and governance procedures are highlighted.

Achievement of 2020 targets is estimated to bring 1 billion 560 million increase in real GDP in Azerbaijan well as 7,700 additional employment in the sector. Realization of this impact will potentially require a total of AZN 2,9 billion investment, which will be met by public and private resources.

Besides, the Strategic Road Map sets precise implementation and monitoring mechanisms. The Actions Plan of the Strategic Roadmap is designed with the indication of the names of actions, main and other executive entities, result indicators and actual implementation periods. In addition, the actions to be taken within the scope of the Strategic Roadmap sets and expected results are given in the following table.

**Table 1. Required investment for actions to be taken under the Strategic Roadmap and expected results**

No	Name of the Priority	GDP impact (2020), AZN mln	Employment, Full time employees, 2020	Amount of investment, (AZN, mln)
1.1.	Increase productivity and efficiency in the sector	250	-	20
1.3.	Create centralized registry of assets and existing potential	45	2000	280
2.1.	Ensure integration into value chain with high regional demand	15	-	-
2.2.	Support import substitution activities	145	5700	330
2.3.	Develop mining industry and manufacturing complex	1000	-	2000
3.1.	Promote alternative funding mechanisms and transfer of practices	105	-	270

**Note 1:** Only strategic priorities that have GDP impact more than AZN 10 million and employment more than 100 are shown in this table. Other strategic priorities are critical as enablers in order to ensure that the envisioned impact is achieved.

**Note 2.** These figures are forecasted just as directional purposes to give a sense of the impact. During implementation, each priority would need a detailed feasibility assessment and checking of figures.

## 2. GLOBAL TRENDS

In recent years, the role of the industry in global economy has been increasing. This increase is applicable to both developed and developing economies. In general, it is worth noting that the industry differs from other sectors of economy by its complicated structure. According to various international classifications, industrial complexes include more than 300 sectors and subsectors. The share of the industry in global economy is about 30 percent, and this sector comprises 40 percent of global energy consumption. According to estimates of the UN Industrial Development Organization, approximately 12 percent of gainfully occupied population is employed by industrial processing sector. International Labor Organization's estimates show a 200 million increase in the number of people employed in industrial sectors in the past 15 years.

One of the key criteria in the structure of global industry is a division that is made based on the means of production and final consumption components. Heavy industry and machinery manufacturing mainly covers areas that combine the manufacturing of the means of production. In recent decades, interesting trends have been observed both in overall economy and in the heavy industry and manufacturing sector. Currently, the contribution of mining industry to overall industry declines, science-intensive products in value chain play an increasing role due to the introduction of scientific-technological innovations, the significance of developing countries in geographical structure increases while changes are underway in developed countries towards domestic relocation and focused specialization in the production of high technologies.

The diversification of the economic structure in various countries is directly dependent on different aspects, such as availability of high quality workforce, volume of domestic market and level of penetration of scientific-technological innovations. The US, China, Japan, Germany, Russia are among the leading countries in terms of their industrial output. Besides, Asian countries have been strengthening their position in the global industry in the past 20 years. However, in terms of the diversification level of industrial structure, US, Japan and Germany are the countries, which have managed to cover all the range of industrial outputs. Other advanced economies of the Western Europe tend to have relatively narrower specialization to ensure the competitiveness of economy.

Heavy industry and machinery manufacturing has held a dominant position in the industrial structure since the industrial revolution. In the last decades, this trend has further enhanced as the majority of scientific-technological innovations are applied in this sector. On the other hand, machinery manufacturing and chemistry sectors have experienced a growth while the share of mining industry has decreased. A factor, which distinguishes the heavy industry and machinery manufacturing sector, is that the technical range is fully represented in this area (from lower technologies to medium and higher technologies).

Concerning the CIS countries, there is a traditional and historically shaped structure of the heavy industry and machinery manufacturing sector in these countries. Such areas as ferrous and non-ferrous metallurgy, chemical industry, aerospace industry, military industry,

manufacture of home appliances, manufacture of electrical, energy and transport equipment, agriculture machinery could be mentioned. At the same time, the range of machinery and equipment makes up a large part of the import structure of CIS countries which fall behind the global level of science-intensive areas such as the manufacture of electronics and robotic units.

Thus, due to continuously growing significance of machine manufacturing in the world, this sector occupies a central position in the global processing industry. As electronics and electrical equipment is the fastest growing sector, the products manufactured by that equipment are in the front rank in terms of value-adding.

Besides, transport manufacturing, instrument manufacturing and aerospace industry are of special significance. Since machinery manufacturing causes a multiplier effect in the economy, growth of this sector is accompanied by a harmonious development of other adjacent sectors.

Machinery manufacturing is also differentiated by its skilled labor intensiveness among other sectors. Instrument engineering, manufacture of electrical devices, aerospace industry and machinery for nuclear industry are particularly labor-intensive areas. Therefore, several factors such as availability of skilled labor force, industrial culture and scientific research centers should be carefully studied when manufacturing centers are created. Proximity to raw materials is less important in international practices and is taken as a guideline only in some subsectors of heavy machinery manufacturing. At the same time, another trend is a reduced share of ferrous metallurgy in the structure of raw materials and growth of non-ferrous metallurgy and petrochemical production.

As far as key products are concerned, Japan, Germany, US, Italy and China are considered the main manufacturers of various machine tools, whereas US, Japan, Germany, France, England and South Korea are distinguished by their developed automotive industry. Countries such as Russia, Japan, India, US, Belarus are specialized in the manufacture of agricultural machinery. Home appliances, including the manufacture of television sets are mainly concentrated in countries such as China, South Korea, US, Brazil, Malaysia, Singapore and Turkey. The biggest shipbuilding centers are located in South Korea, Japan, Germany, Brazil, Taiwan and China. The manufacturers of electronics and electrical equipment distinguished by its high added value are more represented in US, Japan, Germany, China, South Korea, Taiwan, the Netherlands, Russia and England. The aerospace industry is concentrated in US, France, Germany, Russia, England and the Netherlands—countries with high development of science and technology.

Obviously, despite the limited number of countries producing key products, the above mentioned countries are represented in different activity groups. In addition, it is worth mentioning that the manufacturers in shipbuilding sector are relatively diversified and the share of emerging economies in this sector is growing.

According to opinions of prominent experts and analysts, heavy industry and machinery manufacturing is on the eve of a new industrial revolution. Germany has named this new stage as “Industry 4.0”. This process is a logical continuation of the mechatronics phenomenon founded in Japan in 70s of the past century. Smart plants and factories are established as a result of the systemized operation of computing software, electronic appliances, communication

technologies, physical equipment and machine-tools, as well as human factor, and sophisticated products are produced on the basis of 3Da printing and module technologies. The funding of research projects in countries such as US, Germany, China, Japan and South Korea has also experienced a growth in the last 15 years. A great portion of added value chain in advanced economies is concentrated in scientific research and science-intensive product segments, whereas the impact of cheap energy, natural resources and labor force are much bigger in emerging economies.

Global best practices shows that government support measures for heavy industry and machinery manufacturing sector are taken in the following forms: as a regulator using instruments such as tariffs, fiscal privileges and subsidies; as a financing party with a power to influence credit market; as a direct producer or promoter; as a consumer using public procurements in strategic subsectors.

Typically, the key purpose of support measures is to enhance the competitiveness of industrial entities and provide access to sales markets, including international markets. Specific support measures such as the incentivizing of investments and international trade, development of human resources, establishment of infrastructure, creation of special economic zones, industrial parks and clusters, introduction of sectorial approaches, transfer of state-of-art technologies are applied in different ways depending on local conditions. As the specialization-cooperation relationship gets more complicated in metallurgy, automotive industry and machine manufacturing in export-oriented countries, human capital encouragement measures becomes a necessity.

### **3. ANALYSIS OF CURRENT SITUATION**

#### **3.1. Current situation of heavy industry and machinery manufacturing sector**

##### **Historical traditions**

Azerbaijan's economy and its integral part, heavy industry and machinery manufacturing, have rich traditions. Baku pioneered industrial oil production in 1848, and the world's first oil refinery was established in Baku in 1859. Other milestones include the world's first use of an oil production well pump in 1871, the first use of a tanker to transport oil products in 1877, the first use of a compressor in oil production in 1905, the world's first oil well drilled by a drilling machine in 1924, and the world's first offshore oil production field in 1949.

In 1911–1913, 12 manufacturing plants as well as multiple mechanical and metal processing enterprises were operating in Baku. In the first stage, imported machineries were repaired in workshops owned by Rothschild, Taghiyev and Mukhtarov, which later laid foundation of the future manufacturing complex. During the Second World War, weapons and spare parts for military machinery were produced in manufacturing plants moved to Baku from industrial cities of the former Soviet Union. The oil production and oil processing facilities of Baku met 70 percent of military demand of the USSR.<sup>1</sup> A great part of the machinery needs of the oil production industry in the former Soviet Union was met by the petroleum machinery manufacturing enterprises of Azerbaijan.

As a result of developing the methods of extracting iodine from well waters in 1926 – 1930 for the first time in the former USSR, the foundation of iodine-bromine industry was laid in the country by putting into operation a iodine-bromide plant in Neftchala (1931), Iodine factories in Surakhany (1931) and Ramana (1932). From 1945 onwards, heavy industry enterprises such as chemical, pipe-rolling, synthetic rubber, aluminum and superphosphate factories were placed into service in Sumgait. The Chemical Complex, which was commissioned in 1966, was the biggest petro-chemical facility in Europe of that time.

The industrialization policy in Azerbaijan in the last decades of 20<sup>th</sup> century was implemented under the leadership of national leader Heydar Aliyev. During these years, Azerbaijan saw increased investment in country economy. Besides, large industrial centers were placed into service, and continuous measures were taken to educate industry professionals. The products of industrial enterprises, which manufactured oil-field equipment, electrical engines, power transformers, luminescent electric lamps, electro-thermal and electro-welding equipment, home appliances, refrigerators, air conditioners, bus and trucks, low and high voltage devices, other different devices, were exported to 35 countries.<sup>2</sup> Azerbaijan played a great role in offshore oil production industry, and, subsequently being actively involved in all oil projects under the "Contract of Century, Baku Deep Water Jacket Factory named after Heydar Aliyev was also commissioned at those times.

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<sup>1</sup> Source: "SOCAR Plus" web page([www.socarplus.az](http://www.socarplus.az))

<sup>2</sup> Source: Azerbaijan Industry Portal ([www.senaye.gov.az](http://www.senaye.gov.az))

In 1981, the construction of EP-300 complex was launched in Sumgait to produce ethylene and polyethylene, which are valuable products of petro-chemical industry - based on up-to-date, high-tonnage, high-capacity and non-waste technology. Thanks to the EP-300 plant, currently high-quality polyethylene, which is in great demand globally, is produced in the factory. Today, this plant serves as the main input supplier for the development of the country's chemical industry as a whole.

In 1995, the country's economy entered an era of revival. In these years, as a result of well-considered oil and gas strategy, 26 agreements were signed with more than 30 companies from 20 countries to jointly operate Azerbaijan's oil and gas fields. Baku- Tbilisi- Ceyhan Oil Pipeline and Baku-Tbilisi – Erzurum Gas Pipelines are of global significance. Investments in oil and gas industries enabled the revitalization of other sectors of industry along with developing the petroleum machinery manufacturing sector.

### **Framework of new industrial policy**

The new development era of the industry started in 2004 under the leadership of Ilham Aliyev, President of the Republic of Azerbaijan. In this period, a part of revenues generated from oil and gas sector was directed to different areas of industry, a state program to optimize the structure of the industry in the regions was designed, significant works were taken to ensure energy supply, and multiple projects were implemented to improve overall infrastructure and open up new manufacturing facilities. Favorable business environment, which was created in the country as well as decisions taken to regulate entrepreneurship activity, played a great role in the development of the industry. As a result of government support programs to develop entrepreneurship in recent years, GDP impact of private sector reached 81.2 percent. The number of businesses exceeded 677,000, whereas the number of legal entities was more than 100,000.<sup>3</sup>

As a logical continuation of these works, 2014 was announced as “The year of Industry” by the Executive Order of the President of the Republic of Azerbaijan No 212, dated January 10, 2014 and an action plan was implemented to develop the industry. In addition, “The State Program on the Development of Industry in the Republic of Azerbaijan in 2015 – 2020” was approved by the Executive Order of the President of the Republic of Azerbaijan No 964, dated December 26, 2014.

The realization of well-considered state policies has enabled the country to form sustainable financial resources and thereby develop other subsectors of the industry. In the last ten years, the total volume of the industry has doubled, primarily due to the development in non-oil industry. In recent years, the growth rate of non-oil sector has exceeded the growth rate in overall industry of the country. In 2015, during the global economic crisis, non-oil industry demonstrated a 8.4 percent increase.<sup>4</sup>In the last decade, significant development has also been observed in the metallurgy and machinery manufacturing industries that are included in the non-oil industry. In this period, the machinery manufacturing has increased by 15 times, while the

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<sup>3</sup>Source: Ministry of Economy of the Republic of Azerbaijan

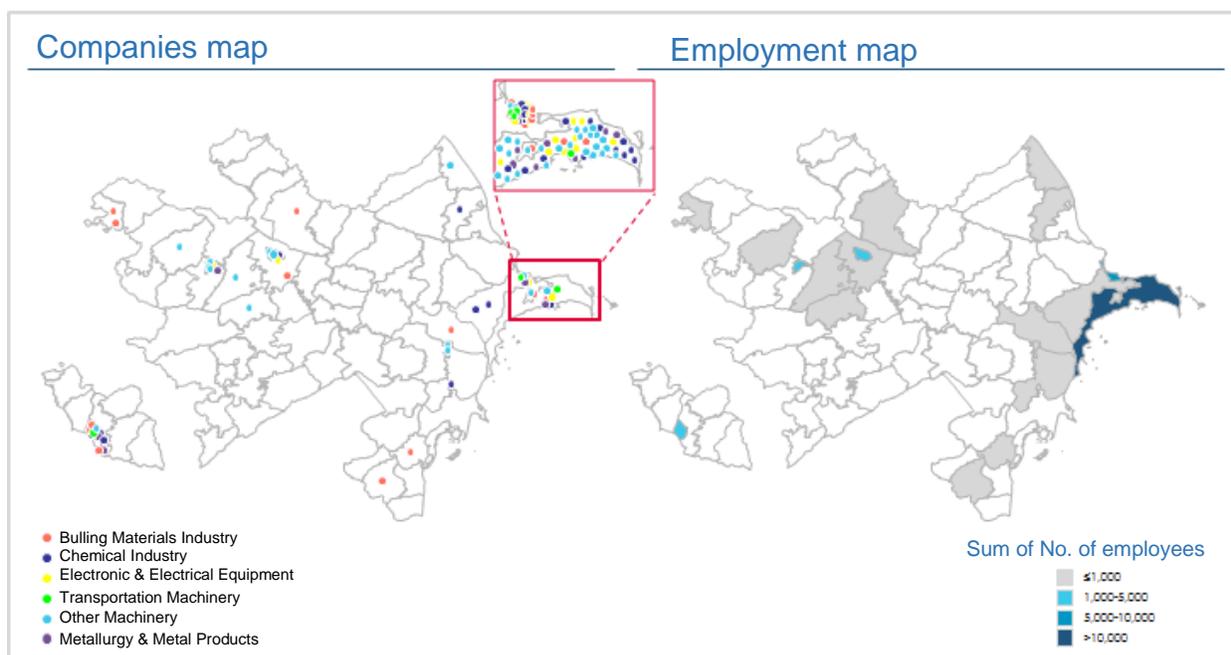
<sup>4</sup> Source: State Statistical Committee of the Republic of Azerbaijan

share of this sector in non-oil processing industry has reached 21.4 percent.<sup>5</sup> Just in 2015, goods and services in machinery manufacturing sectors doubled. The installation and maintenance of machinery and equipment as well as production of electrical equipment, which is an important sector of the machinery manufacturing complex, contributed a lot to this growth.

In recent years, gradual optimization processes have taken place in the industry, the share of mining sector decreased, while the processing sector demonstrated an increase. Funds invested in equity capital in 2015 reached 16 billion AZN, 53 percent of which were invested in industrial sector. As the result of above measures, employment in industry went beyond 187,1 thousand, while the average monthly salary exceeded the country average twice reaching AZN 809,3 thousand.<sup>6</sup>

Heavy industry and machinery manufacturing enterprises in Azerbaijan are primarily concentrated in Baku and Sumgait cities and surrounding regions (Exhibit 1). Moreover, other areas of Azerbaijan have recently specialized in certain types of heavy industry and machinery manufacturing.

**Exhibit 1. Geographical location and level of employment in heavy industry and machinery manufacturing companies in Azerbaijan**



Source: Ministry of Economy of the Republic of Azerbaijan

### ***Metallurgy and machinery manufacturing***

Proven iron ore fields located in the Republic of Azerbaijan are concentrated within the boundaries of Dashkesen region. Commercial reserves of Dashkesen iron ore fields are about 250 million tones. Azerbaijan Mining Complex, with a designed capacity of 3.0 million tons of

<sup>5</sup> Source: Ministry of Economy of the Republic of Azerbaijan

<sup>6</sup> Source: State Statistical Committee of the Republic of Azerbaijan

crude ore, operated on the base of these fields. In the past, concentrate with 60.5 percent iron content was delivered to Rustavi Metal Plant, “Georgian Coal” Manufacturing Unit and Baku Weighting Agents Factory.<sup>7</sup>

“Dashkesen Ore Beneficiation” Open Joint Stock Company, which operated jointly with “Azerbaijan Steel Production Complex” Closed Joint Stock Company was announced open for privatization by the Executive Order of the President of Republic of Azerbaijan No 2198, dated July 13, 2016. Governance and production processes are expected to improve following the privatization and attract strategic investors (including foreign investors).

Meanwhile, "Azerbaijan Steel Production Complex" Closed Joint-Stock Company, whose shares were owned by the state, was established by the Executive Order of the President of the Republic of Azerbaijan No. 2875 dated April 23, 2013. The Order envisages the designing, construction and governance of a steel production complex covering all stages from the extraction of iron ore to the production of steel as well as the introduction of up-to-date technologies and improvement of technical and material base in this sector.

Being one of the significant sectors of Azerbaijan’s economy, heavy industry and machinery manufacturing sector is comprised of more than 258 entities with a production volume of AZN 1 billion 160 million according to 2015 data and more than 21.1 thousand people are employed in this sector. A large portion of petroleum machinery manufacturing products are manufactured by enterprises included into the structure of "Azneftkimyamash" Open Joint Stock Company. This company was established by the Executive Order of the President of the Republic of Azerbaijan No 649, dated March 22, 2001. It manufactures machinery and equipment, devices and spare parts with more than 100 varieties, 600 species and sizes. The complex includes 9 plants and 4 scientific research institutes.<sup>8</sup>

### ***New industrial facilities and future prospects***

In terms of the industry’s structure and regional coverage diversification, significant work has been done in recent years in the sector of heavy industry and machinery manufacturing to commission new production facilities. The construction of Sumgait Technologies Park, Sumgait Aluminum Factory, including Ganja Aluminum Semi-finished Products Factory, Gold-Copper Processing Plants in Sumgait, Tovuz and Dashkesen, Garadagh cement plant, Sumgait Carbamide plant, Ganja Agricultural machinery and automobile plants, Nakhchivan Automobile Plant, Large Transformers Factory of ATEF Group of Companies, "Norm" Cement Plant, Sumgait Plastics Processing Plant, Mingachevir Electronic Equipment Factory, steel pipe, solar panels and steel structure factories are important milestones for the country’s economy.

In order to build external and internal infrastructure, provide office, consulting, laboratory testing, business incubation, training and professional development services and implement efficient entrepreneurship activities, all necessary infrastructure development works have been continued in Sumgait Chemical Industry Park. Realization of “Polymer” project by State Oil

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<sup>7</sup>Source: Ministry of Economy of the Republic of Azerbaijan

<sup>8</sup> Source: Ministry of Economy of the Republic of Azerbaijan

Company of the Republic of Azerbaijan in the territory of the park is the biggest project in the petrochemical industry of Azerbaijan by its type and scale implemented in the last 40 years. In addition, the production of large diameter polyethylene pipes of special application, steel pipes, mechanical and hydro technical equipment, glass panels based on “Float” technology, as well as the production of plant protection agents (pesticides) was launched in the territory of the park.

Recycling enterprises were registered in Balakhany Industrial Park and an up-to-date shipbuilding complex was placed into service in Garadagh Industrial Park. Works are underway to attract science-intensive and innovative productions in High Technologies Park. Necessary actions have also been taken to launch a joint automobile production together with the “Iran Khodro” company of Islamic Republic of Iran in Neftchala Industrial Site. It is planned to build manufacturing plants for pharmaceutical industry – a new sector for the country - in Pirallahi Industrial Park. Preparatory works are also underway in Mingachevir Industrial Park and Masally Industrial Site to create necessary conditions and infrastructure for local companies involved in light industry business.

In addition, in order to build a strong defense industry in the country, up to 50 new manufacturing facilities have been created by using the country’s manufacturing potential.<sup>9</sup>

There are also favorable conditions for future development of heavy industry and machinery manufacturing sector in Azerbaijan. Skilled labor potential, renovated infrastructure, functioning institutions and improved business environment are key enablers of future development. The approved documents and actions taken in 2016 to further encourage entrepreneurship in Azerbaijan are important to attract investments in industrial sector. The physical and legal entities that will build new production facilities by investing in metallurgy, machinery manufacturing and chemical industry can benefit from comprehensive tax and customs privileges. The above-mentioned actions will have a considerable impact on the development of the heavy industry and machinery manufacturing in the country. In order to ensure sustainable development of heavy industry and machinery manufacturing, the country will focus on metallurgy and petrochemical sectors as suppliers of basic products, and take additional measures towards the absorption of new products with high added value in the machinery manufacturing complex and improvement of quality standards.

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<sup>9</sup> Source: “State Program for Development of Industry in the Republic of Azerbaijan for 2015 – 2020”

### 3.2. SWOT Analysis of heavy industry and machinery manufacturing sector

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• Availability of industrial base and traditions;</li> <li>• Workforce with necessary technical skills;</li> <li>• Availability of raw material base for mining industry and metallurgy;</li> <li>• A salary level that is sufficient to ensure average cost-effectiveness.</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of junior technical staff;</li> <li>• Low level of labor productivity;</li> <li>• Shortage of finance, obsolete equipment;</li> <li>• Low level of marketing, sales and distribution services;</li> <li>• Lack of modern business models in enterprises;</li> <li>• Non-conformity of product quality with international standards;</li> <li>• Insufficient innovative activity.</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• public support of heavy industry and machinery manufacturing sector;</li> <li>• high number of young people;</li> <li>• proximity to big regional markets;</li> <li>• Availability of overall infrastructure for businesses;</li> <li>• Availability of privileges for business activity.</li> </ul>	<ul style="list-style-type: none"> <li>• Difficulties in access to foreign financial markets;</li> <li>• The country trails global processes and recent demands;</li> <li>• Increased requirement for environment protection;</li> <li>• Strong competition with imported goods;</li> <li>• Reliance on imported raw materials and imposing import duties on raw materials not available in the country.</li> </ul>

## **4. STRATEGIC VISION**

### **4.1. Strategic vision for 2020**

*Strategic vision in the heavy industry and machinery manufacturing sector for 2020 is to enable heavy industry and machinery manufacturing enterprises to meet a large portion of demand of domestic consumers in low and medium -value product segments and increase the share of Azerbaijani products in the regional market.*

#### **Interpretation of the strategic vision**

For the purpose of this Strategic Roadmap, the following areas will be considered as priority in the heavy industry and machinery manufacturing sectors: mining (excluding oil and gas sectors), metallurgy, production of some construction materials (for example, cement), oil-gas and agricultural machinery complex, production of electrical equipment, development of service enterprises in the machinery sector.

As the result of implementation of this strategic road map, the structure of the industry will be improved, non-oil industry will become one of the driving forces of economic growth, contribution of heavy industry and machinery manufacturing to both the industry and employment will increase, general economic potential will be made ready to realize the objectives envisaged for post 2020 period, and optimal use of the existing resources and introduction of effective methods in enterprises will be launched. Robust progress in the factors (for example, standards, technical regulation, workforce, promotion of innovations, intellectual property), which affect the competitiveness of enterprises, will be achieved and they will match the needs of local large customers in traditional product markets.

Achievement of 2020 targets is estimated to bring 1 billion 560 million increase in the country's GDP. This will translate into 7,700 additional employments in the sector.

### **4.2. Long-term vision for 2025**

*Long-term vision for 2025 is to form value chain in most low and medium-value product segments by using domestic resources, to ensure full competitiveness of the country's enterprises at regional level and to turn the Republic of Azerbaijan into a heavy industry and machinery manufacturing hub of the region.*

#### **Interpretation of long term vision**

By 2025, Azerbaijan will ensure complete utilization of its assets and natural resources in the industry sector, implement efficient practices to achieve the intended progress in heavy industry and machinery manufacturing sectors in the medium perspective. Closing the production gaps along all the value chain will also trigger efficient use of the existing natural resources in the country. The enterprises operating in Azerbaijan will serve as benchmark enterprises for the neighboring countries in terms of efficiency.

By achieving the targets for 2025 through the application of efficient work practices and skills, Azerbaijan will ensure coordinated operation of training facilities and vocational education institutions with industrial enterprises in the mid-term.

Dependency on import will be decreased significantly; demand for the low and medium value segments of the value chain will be met by domestically produced products. At the same time, completely meeting the demand for some selected goods in high value segment of the value chain by domestic products by 2025 has been set as an objective. For this purpose, focus groups for high value products will be identified and local production capacities will be created for respective directions. Besides, Azerbaijan will create necessary conditions for the manufacturing of machinery and equipment components with high regional demand. Azerbaijan will become a major regional producer in heavy industry and machinery manufacturing value chain, especially by being involved in the oil and gas sector. As the locally established enterprises producing these commodities get financially stronger in the domestic market, they will be able to export these products to other regional markets beyond 2025. By introducing different stimulatory mechanisms, the country will achieve more enabling environment for investment by 2025. The main priority will be to increase participation of the private sector in the country's industry.

### **4.3. Aspirational vision for post 2025**

The aspiration vision for post-2025 period to transform the heavy industry and machinery manufacturing enterprises of Azerbaijan into an integral part across the global value chain, participate in the production of well-known brands in high-value product segments and export technical knowledge, know-how, efficient production practices and governance methodologies to neighboring countries.

#### **Interpretation of the aspirational vision**

In the long run, large-scale companies in the Caucasus region that operate in the highly profitable segments of the value chain will carry out their activity in Azerbaijan.

In order to achieve this goal, alongside supporting the foreign investments, the policy of providing necessary financial and technological support to businesses operating in the sector will be continued. Azerbaijan will incentivize investments into its heavy industry and machinery manufacturing sector through four channels: it will provide capital and other financial incentives, attract venture investments to the equity capital of industrial companies, provide basic materials to its manufacturing enterprises at competitive prices and implement different tax incentives.

Through all these investments focusing on high-value sectors, Azerbaijan in the long term will ensure the transition of its manufacturing sector from mainly producing resource-intensive commodities into producing innovative high-technology products.

For sustainability of the aforementioned long-term vision items, Azerbaijan will pursue development of a highly-qualified workforce. Azerbaijan would be exporting know-how and expertise to the other countries in its neighborhood, which will develop it into a country with high level vocational education facilities in the region.

## 5. TARGET INDICATORS

The implementation of nine strategic priorities specified in the Strategic Roadmap for the heavy industry and machinery manufacturing sector will result in:

- Increasing Azerbaijan's GDP by AZN 1 billion 560 million in 2020, in real terms;
- Adding 7,700 permanent jobs in the sector.

This will make the heavy industry and machinery manufacturing sector one of the key pillars to build a diversified Azerbaijani economy along the value chain. Preliminary intermediate targets by 2020 that are set to achieve these aspirations are listed below:

- Increase labor productivity by 20 percent in heavy industry sector;
- Decrease faulty goods in production of commodities by 17 percent;
- Ensure that at least 5 idle enterprises are revitalized and the production scope of 10 non-competitive enterprises is repurposed until 2020;
- Establish a new iron ore extraction and steel processing plant;
- Substitute 20 percent of the currently imported products in heavy industry with domestic products providing that their quality is not substantially different from imported products;
- Decrease the number of parts imported for the manufacturing of agricultural equipment by 65 percent;
- Decrease the overall market share of parts imported for the manufacturing of drilling equipment to 45 percent.

## **6. STRATEGIC OBJECTIVES**

- Improve the structure of industry, expand the potential of heavy industry and machinery manufacturing;
- Strengthen the economic welfare of people due to an increase in employment in non-oil industries;
- Involve the existing natural and economic resources in economic turnover;
- Improve the payment balance of the country by reducing the share of imported machinery manufacturing products and increasing the share of export commodities;
- Apart from the existing subsectors, create new production areas with high added value in the heavy industry and machinery manufacturing sectors;
- Increase the share of local components of manufactured products in the value chain;
- Attract local and foreign investments in the heavy industry and machinery manufacturing sector and introduce new financing mechanisms;
- Strengthen international cooperation, achieve wider application of international standards and procedures in the industry;
- Transfer and absorb advanced technologies, support innovative activity in local enterprises.

## **7. STRATEGIC TARGETS**

### **7.1. Strategic target 1. Optimize the existing assets**

To optimize the existing assets, focus will be maintained on the following areas: boosting productivity and efficiency of the sector; achieving optimal efficiencies in energy use; creating a centralized registry of assets and existing potential; and ensuring the best use of this registry.

#### ***7.1.1. Priority 1.1. Boost productivity and efficiency of the sector***

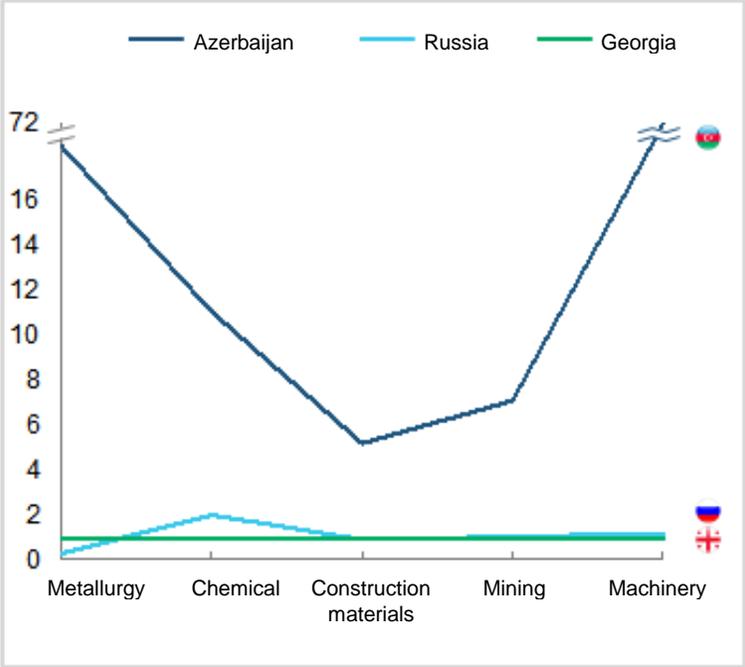
##### **Rationale**

Azerbaijan has a broad potential to significantly improve the productivity of assets in the heavy industry and machinery manufacturing sector. Heavy industry and machinery manufacturing enterprises in most countries around the world give preference to lean practices in order to improve efficiency and other key indicators in the production process. Global experience shows that the implementation of lean practices having a direct impact on productivity enables a 20 percent increase.

Currently, industrial production trails the benchmarks of other peer countries (both within and outside the region) due to the following factors: the high rate of public ownership in industry, the low access to loans to improve operations, and the need for new machinery and equipment and wider use of up-to-date technologies.

Currently, public ownership of heavy industry and machinery manufacturing assets in Azerbaijan is high compared with benchmarks as measured across all subsectors of heavy industry and machinery manufacturing (Exhibit 2). According to international best practices, where public ownership is high, the opportunities to develop talent, invest in new technologies and improve industrial management and processes become limited, which results in lower competitiveness of products manufactured and services provided. Further, low productivity in state-owned companies impedes competition and complicates the implementation of organizational and commercial targets, and, for companies that are downstream in the value chain, this leads to higher costs in the manufacture of finished products and delivery for sales. Furthermore, since private companies typically are less bureaucratic than publicly owned ones, privatization brings flexibility and agility for businesses, which is of special significance in this modern era.

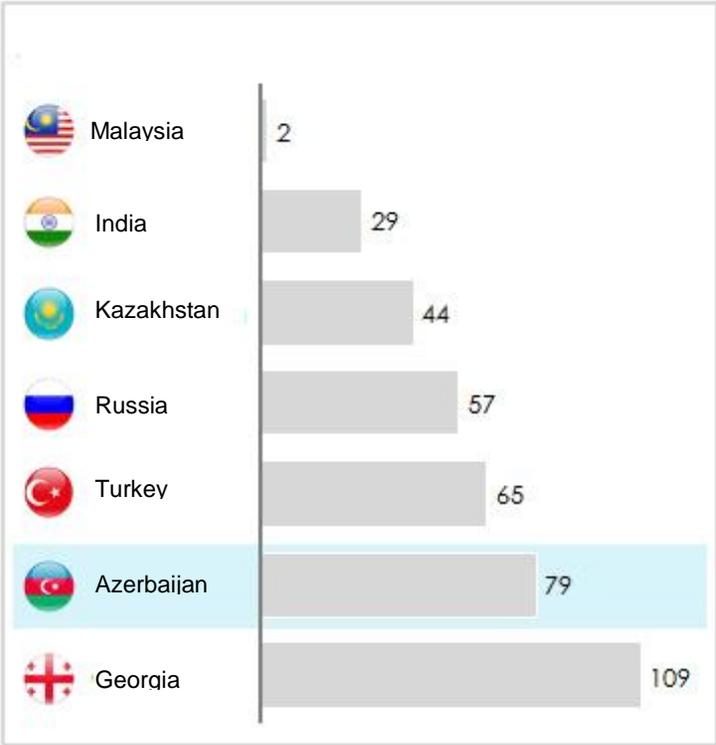
**Exhibit 2. Level of public ownership in certain sectors in Azerbaijan (percentage)**



Source: State Statistical Committee of the Republic of Azerbaijan (2014 data)

According to the World Economic Forum Global Competitiveness Report for 2015-2016 years, Azerbaijan currently ranks 79th out of 131 countries by access to business loans (Exhibit 3). Improving access to loans and financing for Azerbaijan’s heavy industry and machinery manufacturing enterprises could boost productivity by applying the following methods: replacing the infrastructure and technology in the existing production with new ones in order to reduce costs; employing, retaining and developing talents with the relevant skills and capabilities; investing to produce higher-value-added products and acquiring marketing capabilities; ensuring market access, know-how transfer and synergy creation.

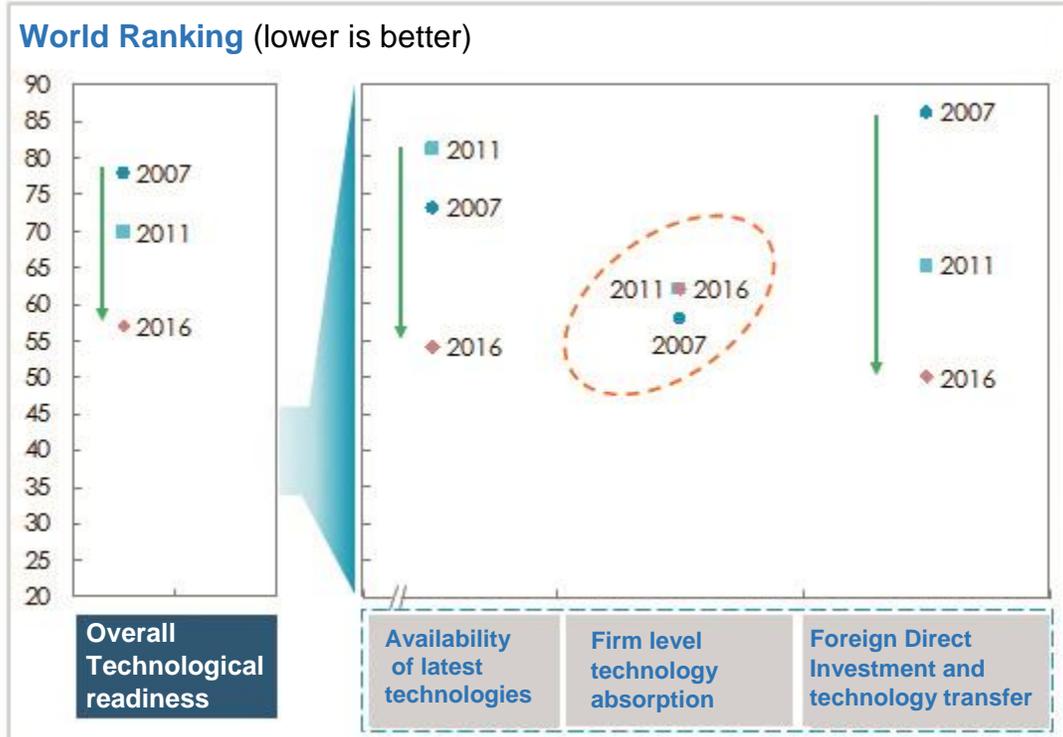
**Exhibit 3. Rating of certain countries by access to business loans (out of 131 countries)**



Source: World Economic Forum, Global Competitiveness Database

Azerbaijan has been steadily increasing its overall technological readiness as measured by the World Economic Forum Global Competitiveness Report (Exhibit 4). Furthermore, measures such as attracting foreign investors and developing business image of the country in global markets should be taken to ensure technological capabilities in future.

**Exhibit 4. Level of technology absorption by companies in Azerbaijan**



Source: World Economic Forum, Global Competitiveness Report

Awareness and deployment of lean techniques have the potential to significantly improve productivity in Azerbaijan's heavy industry and machinery manufacturing sector. As a result of the analyses that have been conducted, wider awareness of implementing lean techniques in the heavy industry and machinery manufacturing is considered expedient. Lean work techniques encourage companies to look for opportunities to make improvements. For example, applying such best practices as mapping process bottlenecks in manufacturing and new technologies for faster equipment changeover (SMED method) is widespread in advanced countries.

At the same time, the analysis of the existing operational practices necessitates wider introduction of transparency in enterprises. It should also be noted that the level of coordination among companies needs to be improved across the country.

Best international practices suggest that measuring equipment performance and key areas of loss, tracking time spent on direct maintenance activities, and reducing idle machinery time are necessary.

The analysis also suggests that Azerbaijan has a potential to improve management systems and ensure continuous development and attract skilled labor in the short period of time.

## **Action items**

### ***Action 1.1.1: Undertake an analysis of lean production methods***

Lean production methods will be analyzed by involving International experts, training visits will be organized to learn the best international practices, mutual business relationship will be built with international partners, seminars will be held to jointly discuss lean production methods with representatives of related governmental bodies and pilot industrial enterprises, analytical articles and promotional documents will be published on a regular basis. The existing regulatory documents and legislation will be reviewed to stimulate the introduction of lean producing methods in the country.

### ***Action 1.1.2: Support the establishment of a model factory based on private investment***

By absorbing international governance and quality control systems in order to explicitly promote lean production methods, the establishment of a model factory in selected pilot industries will be supported. The access to the model factory for enterprises, which operate in the heavy industry and machinery manufacturing sector, as well as coordination in manufacturing processes, will be provided. When establishing the factory, international model factory examples will be taken as reference to decide on the relevant sector where the model factory will operate. After the factory is established and operational, the respective government body will conduct continuous monitoring.

### ***Action 1.1.3: Improve the staffing level of enterprises***

Curriculums with input from industries and respective government bodies as well as educational programs by professions will be developed to meet local market demand. To ensure that vocational training schools and specialized training centers are able to fully meet the needs of industrial enterprises, efforts will be continued towards the improvement of their material and technical base and coordination among market players, and introduction of internships known as dual study in international best practices (particularly widely spread in Germany) will be reviewed.

### ***Action 1.1.4: Strengthen relationship between scientific research organizations and enterprises***

The government will continue actions towards establishing a national innovation system and practically applying national research outcomes to support scientific-technical research and innovative activities in enterprises, and will review the issuance of innovation grants to enterprises distinguished by their achievements.

### ***Action 1.1.5: Support the establishment of sectorial associations and ensure their continuous operation***

Establishment of sectorial associations will be supported in an effort to strengthen coordination among enterprises in heavy industry and machinery manufacturing sector, ensure more efficient identification and solution of common problems and carry out general activities such as efficient use of resources, mutual assistance in global markets, joint actions, etc.

## **Expected results and indicators**

Through a dedicated focus on establishing lean practices, optimal production practices will be widely applied and the labor productivity will become one of the key performance indicators. Besides, international cooperation in this area will be strengthened and the best practices will be used

As a result of the implementation of this priority, AZN 250 million GDP impact will be generated by 2020.

### **Key performance indicators:**

- Increase labor productivity by 20 percent in relevant areas of heavy industry and machinery manufacturing;
- Decrease faulty products by 17 percent in commodity production.

## **The required investment**

Introduction of lean practices will require solid exposure to international best-practice cases, extensive training programs and involvement of international consultants. The actions to be implemented within the scope of this priority (for example, organizing of training and visits to other countries, involvement of international consulting companies) are estimated to require AZN 20 million investment.

## **Expected risks**

The major risks associated with this strategic priority might be the lack of necessary interest by enterprises to introduce the above-mentioned lean practices in operational process and shortage of funds for training and consulting services.

### **7.1.2. *Priority 1.2. Achieve optimal efficiency in energy use***

#### **Rationale**

Azerbaijan has the most competitive energy prices in the region, which opens up broad opportunities for its heavy industry and machine manufacturing sector. To manage Azerbaijan's energy sector so as not to invest excessively, the most suitable method is to ensure correct peak energy management and forecasting. Analysis of the existing situation suggests that the use of energy at peak and non-peak hours is not at an optimal level.

In 2015, the industry electricity price in Azerbaijan was USD 3.1 kopek per kilowatt hour (in chemical and aluminum industry enterprises, iron-ore based steel factories which have energy supply through 35 and 110 kilowatt electrical cables, with stable daily energy demand and average monthly energy consumption not less than 5 million kilowatt per hour). This indicator is 2-3 times higher in other regional countries. There are multiple considerations related to Azerbaijan's energy price structure for the energy-intensive industries of the heavy industry and machinery manufacturing sector. Tariffs that are fixed based on the capacity allocation of the enterprise enable equitable pricing. The reason is that the price is determined based on total capacity needed to operate. It is worth noting that the goal of tariff review should not be to

increase prices but to ensure that energy producers and consumers can use non-peak time options more efficiently and to investigate the opportunities of applying flexible and differentiated pricing at peak and non-peak times.

In this respect, factories could apply a peak time management method. Based on this method, for example, they could shift production from peak times to non-peak ones in exchange for additional discounts. Such arrangements could be mutually beneficial as they might significantly reduce capital expenditure on electricity infrastructure.

According to international best practices, joint capacity planning between industrial enterprises and electricity providers enables a reduction in expenditures. Furthermore, capacity-allocation based tariffs are usually used during joint capacity planning, which leads to a low rise of electricity usage tariffs.

### **Action items**

#### ***Action 1.2.1: Optimize energy balance, match demand and supply***

In joint discussions with representatives of producers and consumers, consumption forecasts and planning will be improved in this area by using international best practices, potential development areas for the existing tariff policy will be defined, and the introduction of differential approach to peak load management will be reviewed. Besides, relevant support measures will be taken to strengthen coordination among energy producers and consumers and to ensure joint planning production and consumption potential. Coordination of activities between energy producers and consumers will be organized for this purpose.

#### ***Action 1.2.2: Stimulate energy use at non-peak times***

In order to direct industries to use of energy at non-peak times, proposals on different incentives and privileges will be developed.

#### ***Action 1.2.3: Define privileged tariffs that will be applied to strategically important enterprises***

A list of entities that are of special importance for the country's economy will be defined to prepare proposals on privileged tariffs for such entities.

#### ***Action 1.2.4: Encourage energy consumers to use energy efficiently***

Lean consumption practices in industrial facilities will be promoted, printed materials reflecting the best international examples will be prepared, regular meetings and trainings on these topics will be provided for different sector representatives.

#### ***Action 1.2.5: Ensure energy supply at differentiated and lower tariffs for heavy industry, particularly metallurgy enterprises***

Relevant measures will be taken to ensure energy supply at differentiated and lower tariffs for heavy industry, particularly metallurgy enterprises.

## **Expected results and indicators**

Actions under this priority are expected to impact energy consumption patterns of industrial enterprises and enable the expansion of efficient consumption habits. However, the implementation of these actions is not expected to change the total electricity consumption level at the initial stage.

### **Key performance indicators:**

- Develop a new energy balance;
- Prepare a list of strategically important enterprises;
- Ensure equitable energy allocation during peak and non-peak times;
- Establish a coordination group comprised of energy producing and consuming entities.

## **The required investment**

No major investment is needed to realize this priority.

## **Expected risks**

Under this priority, major risks include varying prices of key raw materials in global energy markets, technical difficulties in the introduction of lean energy consumption practices, low level of coordination among key producers and consumers.

### ***7.1.3. Priority 1.3. Create a centralized registry of assets and existing potential***

#### **Rationale**

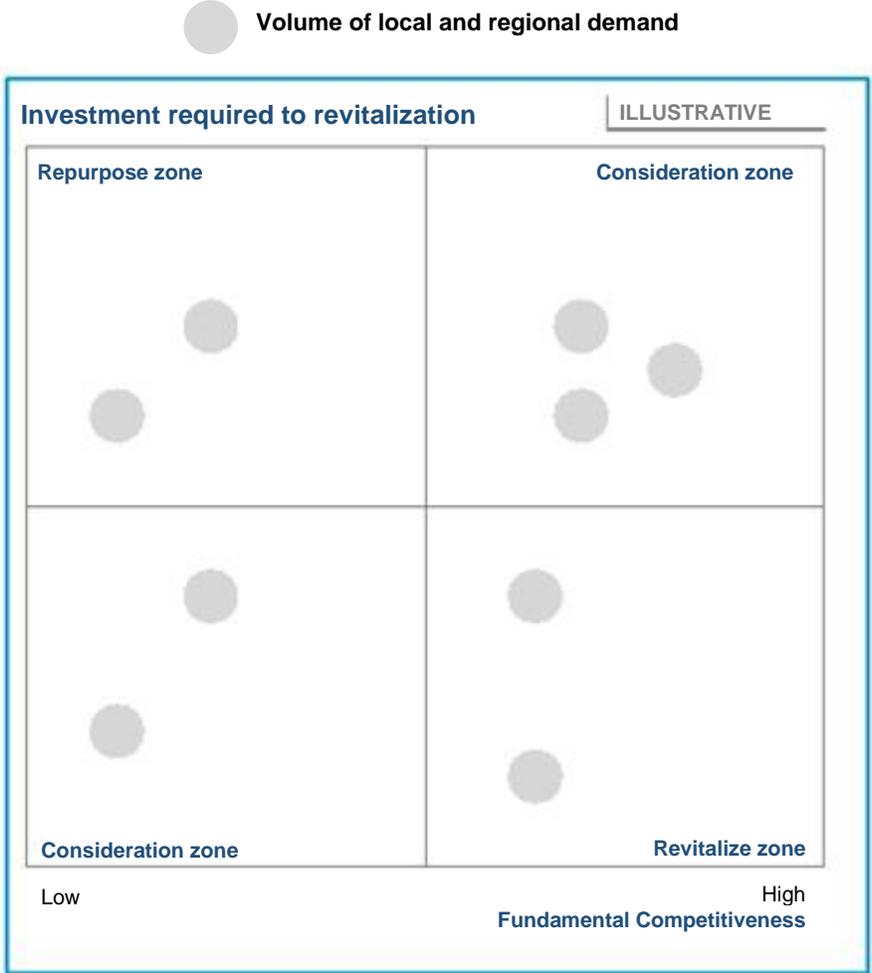
The primary enabling factor of best utilizing the assets (enterprises) that are not fully involved in economic activities in Azerbaijan's heavy industry and machinery manufacturing sector is a centralized registry. Currently, information on some assets is available but overall data system is not existent.

The majority of enterprises in the heavy industry and machinery manufacturing sector do not meet international standards due to obsolete equipment and lack of timely updating of production processes. Limited level of investments in technology and materials in these enterprises has weakened their capabilities to compete with imported products. Thus, currently available data on capacity, existing assets, product portfolio, output, and technology applied at enterprises should be improved. While giving a clear idea about potential and idle assets available in the country, the main advantage of centralized registry consists in enhancing the efficiency of economic regulatory decisions and creating the conditions to consider all factors during the identification of development plans for the country's economy.

According to international best practices, decision-making on the systemization and further usage of assets should be carried out by considering competitiveness and required investment intensity criteria(Exhibit 5). In the first place, revitalization activity will be mainly applied to the enterprises that are highly competitive and require less investment. The opportunities to repurpose the assets that have low competitive advantage and require large investments will be taken into consideration.

Potential evaluation areas include the availability of resources, local production volume, labor costs, energy costs, funding costs, and tariffs and agreements applied to target markets (for example, free trade zones vs. import protection) compared to other sourcing countries. In addition, potential criteria comprise the result delivery timing of the revitalization action, size and scale of local production as well as import and economy growth in the regional countries.

**Exhibit 5. Assessment of idle assets in terms of competitiveness, demand and investment**



**Action items**

***Action 1.3.1: Create a centralized registry of idle assets and natural resources***

A centralized registry of idle assets and natural resources will be created following the analysis and integration of multiple databases of different public bodies, spot check of facilities, surveys and interviews and cross-checks. The responsible body will ensure the maintenance and regular update of the registry.

### ***Action 1.3.2: Evaluate assets and natural resources included into the centralized registry***

The assets, which are not sufficiently used locally, will be analyzed based on their competitiveness and investment needs. The volume of domestic market, availability of domestic raw materials, local and regional prices of target goods, tariff and customs duties will be taken into consideration. At the initial stage, assets with high competitiveness opportunities in local and regional markets will be identified, required investment will be estimated for restructuring actions, and the natural resources base of the country will be analyzed (excluding the oil-gas sector).

### ***Action 1.3.3: Carry out revitalization activity***

Feasibility studies and financial analysis of assets (enterprises) with high potential competitiveness will be carried out to estimate impacts on the sector and overall economy; different tactics such as privatization, debt restructuring, reorganization, attracting strategic investors, public-private partnership, establishment of joint ventures by using foreign capital, delegation to experienced international operators for management, etc. will be considered.

### ***Action 1.3.4: Repurposing assets***

Relevant proposals will be prepared to repurpose some idle assets (enterprises) that have low potential competitiveness and require high investment, improve the existing legislation to simplify the repurposing mechanisms for idle assets and to make them more flexible.

### **Expected results and indicators**

The major impact of creating the centralized registry will consist in enabling the full use of idle assets. Revitalization and repurposing of idle assets is estimated to generate AZN 45 million GDP impact by 2020 in real terms and create more than 2,000 jobs.

### **Key performance indicators:**

- Centralized registry and coordinated database are operationalized;
- Revitalization of 5 idle enterprises into fully operational mode until 2020;
- Repurposing of 10 enterprises with weak competitiveness.

### **The required investment**

AZN 280 million investment is expected to be needed until 2020 for revitalization and repurposing.

### **The expected risks**

Key risk factors include inadequate technical condition of data bases in different government bodies and incomplete state of databases and shortage of financial resources to undertake revitalization and repurposing measures.

## **7.2. Strategic target 2. Create a competitive sector**

The application of vertical integration approach in the heavy industry and machinery manufacturing sector will result in many economic benefits, from increasing revenues to decreasing import dependence. Focus will be maintained on both meeting domestic demand and producing products and services with regional potential.

### ***7.2.1. Priority 2.1 Integrate along the value chain from regional demand perspectives***

#### **Rationale**

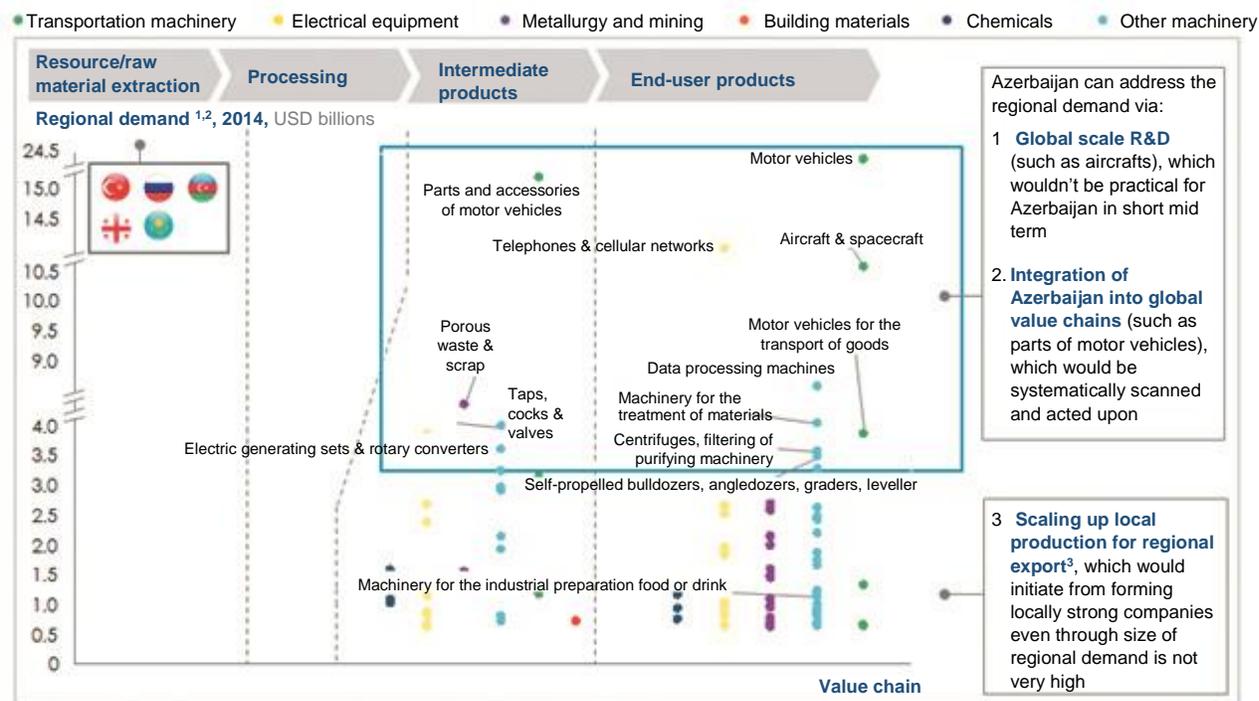
At present, compared to international trends, it is considered purposeful to implement more intense actions in order to realize the existing opportunities in Azerbaijan's heavy industry and machinery manufacturing sector. It should be taken into account that advanced economies have already entered the "Industry 4.0" stage. It is vital to further increase investment in this area, update technological equipment and production processes, enhance labor productivity and increase the share of innovative products in overall sales volume up to international standards.

Since the heavy industry and machinery manufacturing sector of Azerbaijan has partially integrated into regional value chains, the volume of export to regional markets is not high. Primarily, in determining the segments of the value chain where the country could be integrated, such factors as market attractiveness, competitiveness, and feasibility requirements should be taken as a guideline. On the other side, the existing industrial potential of the country and the possibility of producing the above mentioned goods in a short period of time should be taken into account.

Focusing on the regional demand and highly competitive sectors in order to participate in the value chain is considered as a more suitable strategy. From the viewpoint of the region where the country is located, specialized types of steel, motor vehicles, spare parts, semi-products, transport equipment, compressors, pumps, cranes and valve parts could be related to premium products that are considered to have high added value. The current potential of the country's industry will be evaluated to launch large-scale production of these products and appropriate actions will be taken into consideration.

The sectors in Azerbaijan, where the level of regional demand and competitiveness are high, can participate in the global value chain by focusing on the region. To produce competitive products, emphasis should be placed primarily on the participation of specialized high-demand products (for example, special type of steel) and specialized semi-finished products (for example, machinery and motor car parts) in the value chain. Products of transportation machinery and other machinery subsectors are in high demand in the region (for example, Russia, Turkey, Georgia, Kazakhstan etc.).

**Exhibit 6: Based on a regional demand approach, participation in global R&D products' value chain (with billion US Dollar)**



1. Total import of Turkey, Russia, Georgia, Azerbaijan, Kazakhstan in heavy industry and machinery manufacturing sectors (2014)
2. 100 products that constitute +80% of total heavy industry and machinery manufacturing import in the region
3. This topic is further covered in "the Strategic Roadmap for the production of consumer products at the level of small and medium enterprises in the Republic of Azerbaijan".

Source: UN Comtrade Database

Indeed, there are also opportunities for participating in the value chain of global R&D products (Exhibit 6). The main priority will be to ensure the integration of Azerbaijan into the global value chain and to maintain focus on the production of semi-finished and finished products as well as means of transport and their spare parts. Azerbaijan could also scale up local production for regional export, which will be initiated by forming strong local companies. In the long term, the production of global-scale R&D products could be implemented.

Regionally-focused global value chain participation could be achieved through constant scanning of markets for the highest value potential products, targeting and attracting FDI that can create hubs. This process could be supported by incentivizing companies that are already integrated into the global value chain in the heavy industry and machinery manufacturing sector (Exhibit 6).

## **Action items**

### ***Action 2.1.1: Prepare a list of products with regional export potential and conduct analyses***

As a result of analyzing domestic opportunities and regional markets, a general list of goods (including the above-mentioned goods) that could be produced locally, hold relatively higher position in the value chain and are competitive in the region will be prepared within the feasibility study. Based on this list, products that can be manufactured in a competitive manner will be determined (for example, products that can be manufactured by using local raw materials and without high technologies). To exemplify, these goods could be pipes, valves, pumps and compressors. Besides, by considering potential big wholesalers in the region and their requirements (e.g., transportation, quality requirements, pricing etc.), better identification of the domestic manufacturing potential for products will be ensured.

In the next stage, following the feasibility and financial profitability tests, product items that require shorter production timing and relatively less investment items will be selected from the list, and tables of profitability and investment needs will be prepared.

### ***Action 2.1.2: Attract investments to the selected areas***

The relevant body will coordinate the provision of investments and financing by domestic and foreign investors that are necessary for the manufacturing of local products and will review Incentive conditions and other state support mechanisms that will be offered to investors, including participation in credit and statutory capital.

## **Expected results and indicators**

As part of this priority, it is estimated that AZN 15 million GDP impact by 2020 in real terms will be generated.

### **Key performance indicators:**

- Substitute 20 percent of the current heavy industry import with local products where local quality is not significantly different from imported products.

## **The required investment**

No investment will be required for the implementation of this strategic priority.

## **The expected risks**

Changes in regional market demands as well as in regional prices for selected goods.

### ***7.2.2. Priority 2.2. Support import substitution activities***

## **Rationale**

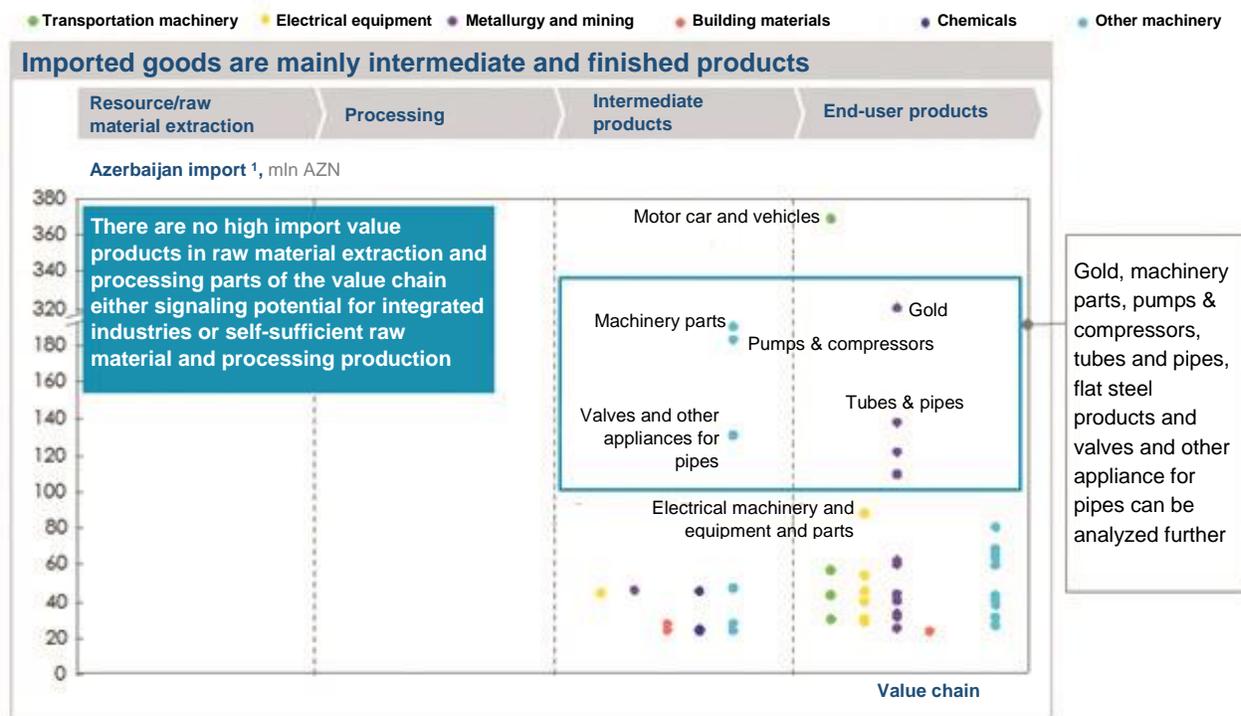
Azerbaijan will focus on semi-finished (intermediate) and end-user products, formulating an approach based on domestic demand. According to statistical data, AZN 4.3 billion of domestic demand for heavy industry and machinery manufacturing products in Azerbaijan was met by imports in 2014. Products that will be analyzed further include gold, machinery parts, pumps

and compressors, valves and other appliances for pipes, tubes and pipes, flat-rolled steel products, electrical machinery and equipment and their parts (Exhibit 7).

The substitution of import with domestic products will be ensured through extending credits to competitive local companies so that they can invest in vertical integration with the value chain, increasing the depth of product portfolios, providing funding for involving experts in selected vertical integration sectors, and attracting foreign direct investment to local production.

Other activities that could support Azerbaijan’s value chain integration include conducting detailed assessments of products and sectors, identifying initial pilot sectors and projects, deferring debt payments or offering other financial incentive mechanisms, and taking actions to attract qualified talents (such as mitigating work visa requirements).

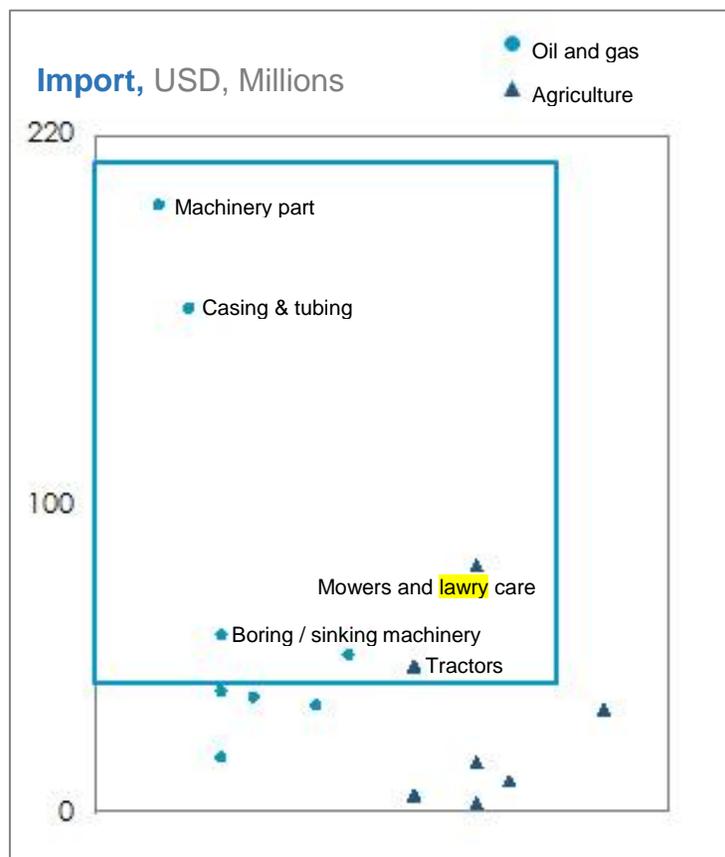
**Exhibit 7. Production of intermediate and end-user products in heavy industry and machinery manufacturing and import substitution (million AZN)**



1. Products that constitute 80% of heavy manufacturing and machinery imports (total import being ~ 4.3 bn AZN) in Azerbaijan. The actual numbers are provided in US Dollars and Central Bank exchange rate (1 USD = 0.78 AZN) for 2014 is used for exchange purposes.  
Source: UN Comtrade Database

Azerbaijan imported approximately USD 800 million worth of core industry machinery and equipment in 2014 (Exhibit 8). To address demand for machinery and equipment in areas such as oil and gas and agriculture, Azerbaijan will take several targeted actions towards enhancing the quality of domestically manufactured products, applying new industrial technologies and scientific research.

**Exhibit 8. Structure and volume of machinery and equipment imported to Azerbaijan in 2014 (million US Dollar)**



Source: UN Comtrade Database

Heavy industry and machinery manufacturing enterprises have strong potential to support import substitution. In this regard, the Decree of the President of the Republic of Azerbaijan No 1046 dated September 15, 2016 “On additional measures to increase the efficiency of procurements in executive power authorities and institutions financed from public budget” will have a significant impact on the increase of demand for local machinery manufacturing products.

Moreover, ferrous metals and products manufactured from them, machineries, mechanisms, electric appliances, equipment and their parts, motor vehicles and their parts constituted about 57 percent of goods and products imported to the country in 2015.<sup>10</sup>At the same time, the majority of equipment, modules and components for oil industry are imported.

Construction materials, construction machinery and equipment, mining machinery and equipment, synthetic materials and rubber processing equipment, pumps and compressors, metal processing equipment, textile production equipment, printing machinery, food and packing equipment, wood processing equipment, goods and products loading equipment dominate in the country’s import of machinery and equipment. Within the above-mentioned group, at the

<sup>10</sup>Source: State Customs Committee of the Republic of Azerbaijan

initial stage it looks more promising to substitute with local production the import of construction materials, construction machinery and equipment, mining industry machinery, pumps and compressors, goods and materials loading equipment or their components.

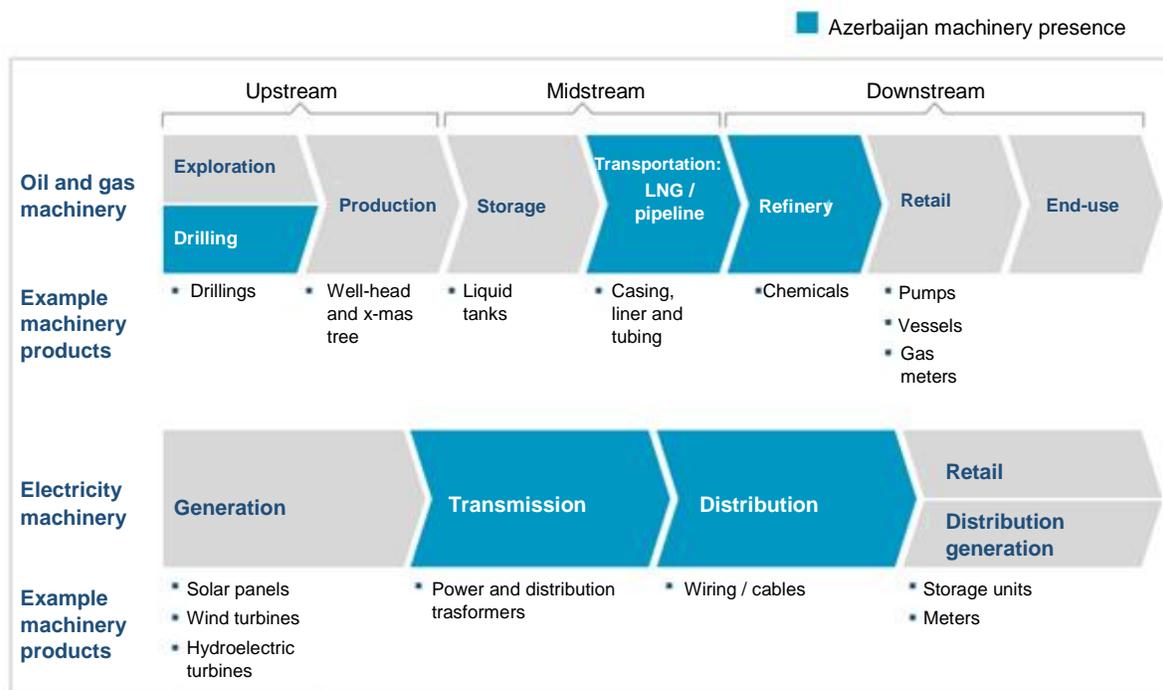
When import and export structures of the country are reviewed jointly, it looks possible to substitute with local production the import of bulldozers, excavators and other road construction machinery and equipment, agricultural machinery and equipment, food industry equipment, electrical equipment, railway locomotives and rail cars in the mid-term perspective.

Local production of automobiles, tractors and trucks is limited by their assembly. However, in the future, the country could continue the import of engines and transmission mechanisms of motor vehicle where the remaining parts could be provided by the local production.

Given their significant contribution to Azerbaijan's economy and dependence on heavy industry and machinery manufacturing, four sectors such as mining (primarily, oil and gas sector), agriculture, state-controlled natural monopolies and defense industry can act as drivers of heavy industry and machinery manufacturing until 2020 for the product categories that have been analyzed .

Currently, multiple heavy industry and machinery manufacturing products are used in the oil and gas value chain (Exhibit 9). While some of them such as derricks, pumps, compressors, machinery and equipment for transportation and refinery are currently manufactured in Azerbaijan, there is a potential for increased presence of local production facilities in all segments of the oil-gas sector value chain. Similar situation exists in the electrical machinery and equipment manufacturing sector. Certain machinery and equipment manufactured in Azerbaijan are present in the transmission and distribution system infrastructure, however, there is a potential for presence in the country's electricity generation and retail sale stages as well.

## Exhibit 9. Usage potential of machinery products in oil and gas value chain in Azerbaijan



Nevertheless, despite large suppliers such as advanced oil and gas sector in the country, there are potential opportunities to further develop the machinery manufacturing sector. Cooperation and coordination between transnational companies operating in the oil and gas sector of Azerbaijan and local machinery manufacturers to improve the quality of products to meet international standards and supply requirements will significantly help to solve the problems existing in this particular area. Perception of domestic products and awareness among customers should also be considered in view of new requirements. At the same time, the majority of local enterprises should also absorb the manufacture of complex equipment requiring high technology solutions.

To achieve progress in agriculture in Azerbaijan, the major enabler is to reduce the share of unprocessed products in the country's export and shift to the export of processed products. In 2015, about 54.5 percent of agricultural import of Azerbaijan consisted of processed products (milk, butter, fat and oils of animal and vegetable origin, sugar, tobacco and tobacco products).<sup>11</sup> According to this indicator, Azerbaijan falls behind several regional countries. With an increased percentage of processed and deeply processed goods in the country's agriculture and agro-industrial segment, domestic machinery manufacturing sector will have more opportunities to get new orders from agricultural sector. Mutual relationship with the machinery manufacturing sector is of great importance in terms of both improving productivity and shifting to the production of processed products in agriculture.

<sup>11</sup>Source: State Customs Committee of the Republic of Azerbaijan

## **Action items**

### ***Action 2.2.1: Identify products that could be substituted by domestic production***

A list of most imported heavy industry and machinery manufacturing products will be analyzed and, based on this list, the products that can be profitably manufactured in Azerbaijan will be determined. Upon necessary analysis of selected products, measures will be taken to attract local and foreign investors to those areas.

### ***Action 2.2.2: Strengthen the regulatory framework for local content***

Considering the group of goods given in the rationale part, the existing legislation will be revisited to increase the usage level of products manufactured by local machinery enterprises and specify more detailed and clearer provisions on local content requirements in the new draft law on procurements. Import duties applied to raw materials that are not available in the country and play a significant part in the creation of end-user products will be reviewed. Application of quotas to the imported share of certain petroleum machinery products will be studied.

### ***Action 2.2.3: Create and operationalize sectorial working groups for machinery and equipment, trailers and semi-trailers, electrical equipment and other motor vehicle manufacturing***

Working groups comprised of large organizations, which are involved in mining industry, natural monopolies, defense industry and agricultural production as well as industrial enterprises and respective government bodies will be created to strengthen coordination between procurement and production plans, determine specific goods and equipment that can be manufactured by local enterprises for purchasing companies, jointly clarify the quality standards of products and relevant regulations and conduct sectorial studies. Representatives of large transnational companies operating in Azerbaijan will be invited to take part in working groups. The governmental coordination body assigned to this Action will take appropriate measures to ensure the organization of working groups, conduct of regular meetings and execution of final decisions. Invitation of international experts with relevant international experience to assist the working groups and creation of expert panels for companies will be reviewed.

### ***Action 2.2.4: Create joint production areas in the petroleum machinery manufacturing sector***

While holding discussions with the key manufacturers of petroleum machinery imported to the country, proposals will be made to create joint ventures with foreign investors for the manufacture of more complex equipment, which is not manufactured domestically, and, subsequently, relevant measures will be taken.

### ***Action 2.2.5: Create joint production capacities in defense industry sector***

While holding discussions with manufacturers of defense industry products imported to the country, proposals will be made to create joint ventures with foreign investors for building a complete production cycle for products, which are manufactured domestically, and, subsequently, relevant measures will be taken.

### **The expected results and outcome indicators**

It is expected that full execution of the above actions will bring AZN 145 million GDP impact by 2020 in real terms and generate 5,700 additional employments.

#### **Key performance indicators are:**

- Decrease the number of imported parts for the manufacture of agriculture equipment by 65 percent;
- Decrease the market share of imported parts for the manufacture of drilling equipment to 45 percent;
- Substitute 20 percent of imported ferrous metal products with local production by 20 percent.

### **The required investment**

Considering the scope of measures planned under this priority, it is expected that AZN 330 million investments will be required until 2020.

### **The expected risks**

Key risk factors include an unexpected fall in the prices of imported goods and equipment, lack of support for new procurement policies by transnational companies operating in the country.

#### ***7.2.3. Priority 2.3. Develop mining industry and metallurgy complex***

#### **Rationale**

Due to objective reasons, oil and gas production comprise a larger part of Azerbaijan's mining industry. The mining industry has seen a constant increase of iron production in recent years. A positive dynamics observed in 2015 points to the availability of unutilized potential of this sector. Furthermore, some stagnancy has been observed in iron ore production since the beginning of 2016. Developments in global economy, instability in regional demand had an impact on the country's economy. The same trend could be applied to metallurgy industry.

At present, the country's metallurgy and end product manufacturing enterprises produce cast iron and steel-casting products (rods), steel pipes, reinforcing steel and cold-shaped sections. The production of oil and gas pipes, special types of steel, flat-rolled and elongated products (rolled steel) looks attractive due to its value added potential. The country has a potential to produce rolled steel that needs to be fully used. In some enterprises, the facilities that produces rolled steel remain idle for most of the year. In addition, the country is considered to have a high potential for the production of aluminum, gold and gold products.

#### **Action items**

##### ***Action 2.3.1: Fully operationalize ferrous metallurgy industry***

In order to make optimal use of the country's natural resources, an intensive cooperation with international mining and metallurgy companies will be built, and the privatization of "Dashkesen Ore Beneficiation" Open Joint Stock Company – a part of Azerbaijan Steel Production Complex

– will be completed. The production volume of iron-ore concentrate will be increased. Creating a network of enterprises to cover the processing stages of ferrous industry will be encouraged: metalized iron production, electric steel casting, steel sheet production, etc.

### ***Action 2.3.2: Develop non-ferrous metallurgy industry***

As a result of detailed assessment of the local raw materials market, the country will consider the possibilities of meeting aluminum demand by local raw materials and production forces while also benefiting from potential of oil industry (anode blocks). Necessary measures will be taken to reconstruct processing enterprises that will produce end products from aluminum.

### **The expected results and indicators**

The implementation of the above action by 2020 will enable full utilization of local raw materials potential in mining and metallurgy industry, meeting the domestic demand for steel and aluminum and receiving multiple orders by the machinery manufacturing sector due to increased production. By 2020, this priority is estimated to have AZN 1 billion GDP impact in real terms (feasibility studies need to be undertaken to estimate impacts exactly). GDP impact of non-ferrous metal industry will be estimated once the technology to generate aluminum from alunite as well the size and quality of natural resources are assessed.

### **Key performance indicators:**

- Ensure full utilization of local raw material base for ferrous industry;
- Construction of new iron ore extraction and steel processing factory;
- Increased orders to machinery sector.

### **The required investment**

Considering the scope of actions under these priorities, it is estimated that by 2020, AZN 2 billion investment will be required for the construction of iron ore complex and processing enterprises. However, this sum could be increased due to plans to achieve additional outcomes (feasibility studies need to be done in order to estimate the investment needs more precisely).

### **The expected risks**

The main risk factors include the failure to create network of enterprises to cover the processing stages of ferrous industry and failure to reconstruct processing enterprises that will generate end products from aluminum as well as the estimation of alunite resources available in Azerbaijan and lack of effective technologies for aluminum production.

## ***7.2.4. Priority 2.4. Develop the service sector***

### **Rationale**

There is plenty of developed servicing enterprises that operate in heavy industry and machinery manufacturing sector in Azerbaijan. These servicing enterprises are concentrated in the segment of the installation and maintenance of machinery and equipment used in mining and machinery manufacturing industries. Services in mining industry comprise about 10 percent of

the total volume of the mining industry production.<sup>12</sup>The majority of the enterprises concentrated here are entities which provide drilling services for oil and gas production. The work volume of enterprises providing auxiliary services to the mining industry and quarry works is at a relatively low level.

On the other side, enterprises dealing with the installation and maintenance of machinery and equipment are of special importance for machinery manufacturing complexes. This sector holds the third position by its output level. Development of servicing enterprises in heavy industry and machinery manufacturing will enable the promotion of future targets and more innovative activities and the start of services export.

### **Action items**

#### ***Action 2.4.1: Promote services in mining industry***

With the aim of increasing service provision by local enterprises during the operation of the country's mining sector, the use of domestic services will be promoted when local forces will be created and joint projects will be implemented together with international mining and metallurgy companies.

#### ***Action 2.4.2: Promote the expansion of export potential of services***

Relevant proposals will be developed to facilitate the access of companies involved in maintenance and installation of machinery and equipment to the regional market, increase their participation in efforts to meet the demand of regional countries, and turn the country into a regional maintenance and installation center.

### **The expected results and indicators**

The implementation of above actions will enable the development of more innovative types of activities in the country's heavy industry and machinery manufacturing sector by 2020. GDP impact of this priority by 2020 in real terms has been reflected as part of the indirect impact of other priorities included in Strategic Target 2.

#### **Key performance indicators:**

- Registration of new servicing enterprises operating in the mining sector.

### **The required investment**

No additional investments other than those reflected in other priorities are necessary for the development of the services industry.

### **The expected risks**

Risk factors for this priority include any changes in demand of regional markets, support of local mining and metallurgy companies in the policy of using the services of companies that operate outside the country.

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<sup>12</sup>Source: State Statistical Committee of the Republic of Azerbaijan

### 7.3. Strategic target 3. Ensure financial support and implement international cooperation

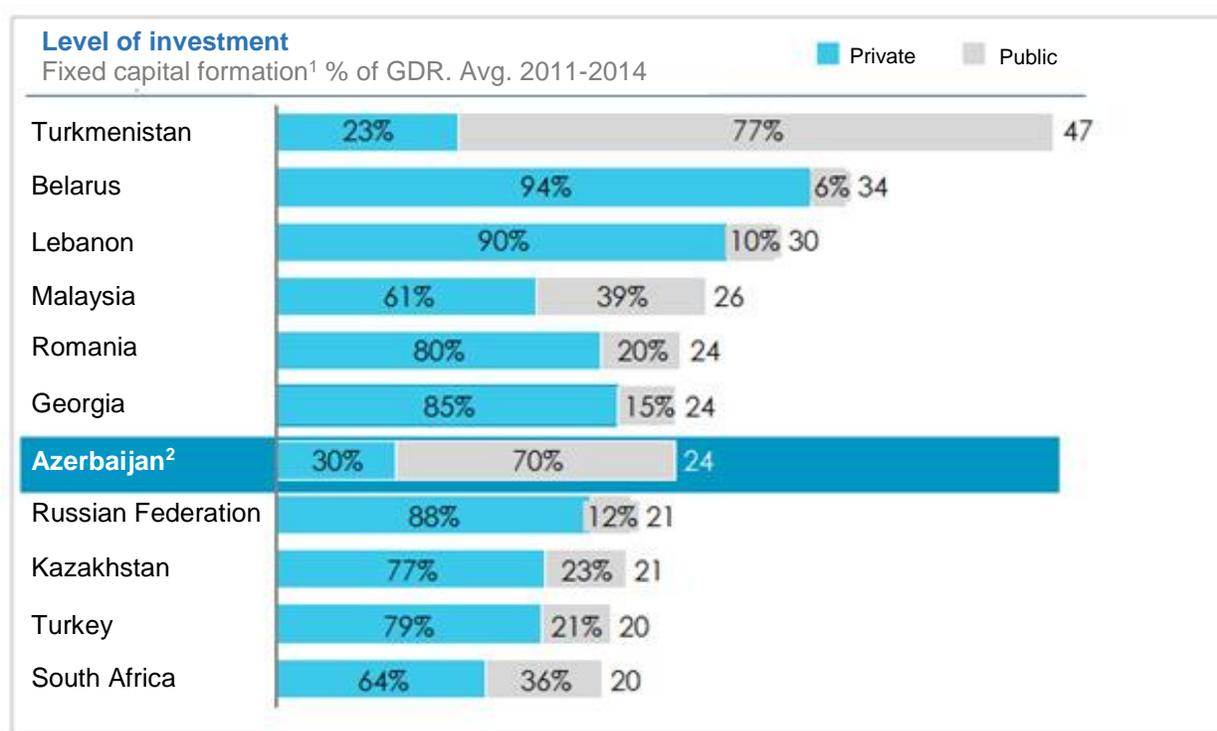
In order to achieve development in the coming years, it is a prerequisite to implement two major conditions: more systematic implementation of alternative funds and knowledge transfer; increase further alignment with international standards and governance procedures.

#### 7.3.1. Priority 3.1. Promote alternative financing mechanisms and transfer of experience

##### Rationale

Currently, public sources account for more than half of overall investments in Azerbaijan. Public investments have a greater share in Azerbaijan than in the following countries (Exhibit 10). Foreign direct investments and public-private partnerships play an important part in reducing the investment share of the public sector.

**Exhibit 10. Sources of investments in Azerbaijan compared to other countries**



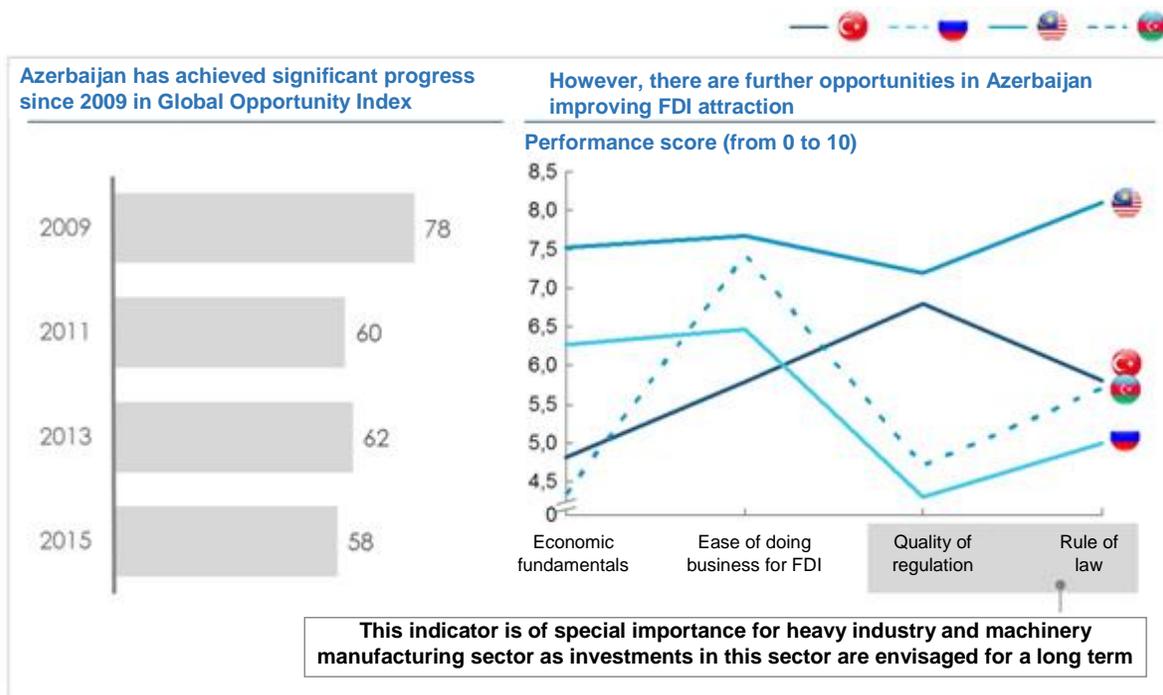
1. Note that Fixed Capital formation does not include all Foreign Direct Investment inflows, some of which do not go towards fixed assets.
2. Private and public investment division of Azerbaijan is assumed at a ratio of %30 - %70 based on the approved budget document for 2014.

Source: World Bank Development Indicators

To attract foreign direct investments (FDI), there are four dimensions for assessing a country's ecosystem for FDI: economic fundamentals, the ease of doing business for FDI, quality of regulation, and rule of law (Exhibit 11).

Azerbaijan has made significant improvement in the Milken Institute's Global Opportunity Index since 2009, moving from 78th place in 2009 to 58th place in 2015.

**Exhibit 11. Improvement of FDI attraction potential in Azerbaijan**



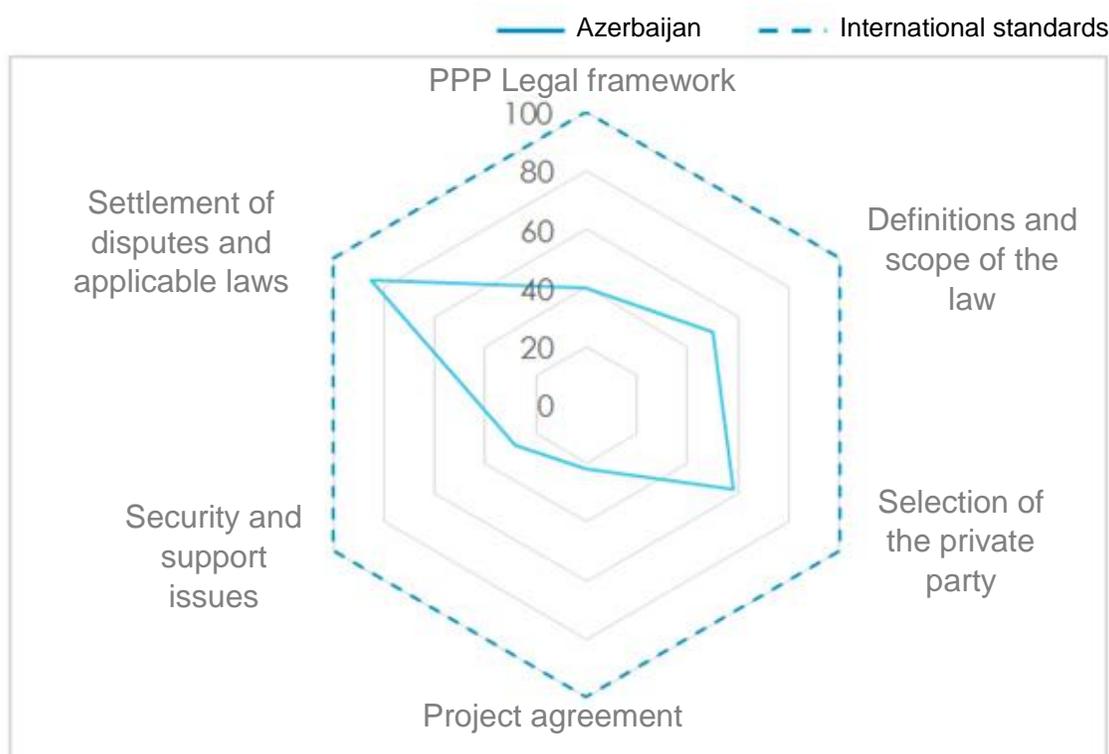
Source: Global Opportunity Index, Milken Institute

Currently, however, FDI in Azerbaijan's heavy industry and machinery manufacturing sector is limited, especially compared with the level of domestic investment. In 2014, stock of FDI represented 25 percent of Azerbaijan's GDP. It should be noted for the purpose of comparison that the indicator makes up 74 percent in Georgia, 61 percent in Kazakhstan, 55 percent in Turkmenistan, and 49 percent in Ukraine. Of Azerbaijan's FDI, more than 95 percent is directed to the oil and gas sector.<sup>13</sup>

The significance of building a strategic partnership is not limited only by an increase in financial revenues but it also includes acquiring necessary management capabilities and business knowledge, determining management targets in the long-term perspective, gaining innovative industry experience and sharing the project risks with the strategic partner. Strategic partnerships tend to involve an investor company with extensive experience in the industry. Nevertheless, success of public-private partnership will depend considerably on the level of absorption of international standards (Exhibit 12).

<sup>13</sup>Source: UN Conference for Trade and Development

**Exhibit 12. Dimensions with respect to improvement of strategic partnership and public-private partnership in Azerbaijan**



Source: European Reconstruction and Development Bank

Besides, factors such as the protection of foreign investment, transparency of regulatory bodies, logistics and provision of general infrastructure by the government will play an important role in attracting alternative funding, knowledge and skills.

The Executive Order of the President of the Republic of Azerbaijan No 2349, dated September 21, 2016 on “Creating a unified database of goods imported to the Republic of Azerbaijan” will be an important program document towards attracting foreign direct investments, coordinating local producers with foreign companies, aligning the existing database with the requirements of international standards, and raising the awareness of local production to a new level.

**Action items**

***Action 3.1.1: Create an investment data bank and update based upon regular analyses***

The existing investment environment and potential opportunities will be analyzed in detail, and the preparation of a platform comprised of industrial projects that are open for alternative financing within the unified database of goods imported to the Republic of Azerbaijan will also be taken into consideration. Projects offered to the market will be prepared in parallel with considering the registry of assets and natural resources specified in previous priorities of this Strategic Roadmap as well as the lists of goods and products for the substitution of regional import and export. Expected size of investments, proposed investment scheme (FDI, public-

private partnership, etc.) and other initial requirements related to investment will be indicated in the project history. Consistent measures will also be taken to present projects to international investors and donors and carry out their continuous promotion.

#### ***Action 3.1.2: Improve the investment environment***

Efforts will be continued towards improving the investment environment, simplifying the procedures that regulate business processes, removing administrative bottlenecks for foreign investors, improving the guarantee system and promoting investments and cooperation within the framework of international ratings will be strengthened. In this regard, particular focus will be maintained on simplifying procedures such as connection of enterprises to the main networks (gas, water, and electricity), issuance of construction permits, allocation of land plots for production purposes, etc.

#### ***Action 3.1.3: Introduce new financing mechanisms***

Proposals on new financing mechanisms, which are used in international practices but are not yet widespread in Azerbaijan, such as startups, venture funds, “angle investors”, trust funds will be prepared towards introducing them **inan** innovation-oriented machinery manufacturing.

#### ***Action 3.1.4: Ensure necessary infrastructure for industrial enterprises***

The government will continue its efforts to create an overall infrastructure in order to promptly meet the infrastructure needs of heavy industry and machinery manufacturing enterprises.

#### **The expected results and indicators**

It is expected that full implementation of the actions to be undertaken under this Priority will generate AZN 105 million GDP impact by 2020 in real terms and will have a positive impact on creating new jobs.

#### **Key performance indicators:**

- Launch of the online operation of investment data bank;
- Growth trend in the dynamics of foreign investments in the country’s economy;
- Creation of first private equity funds.

#### **The required investment**

At the expense of increased access to financial resources, it is estimated that additional AZN 270 million investments will be required for the sector until 2020.

#### **The Expected risks**

The main risk factors include the shortage of liquidity in international financial markets, willingness of investors to direct their funds to more profitable markets other than developing countries.

### **7.3.2. Priority 3.2. Ensure alignment with international standards and governance processes**

#### **Rationale**

The current standards and governance processes in Azerbaijan's heavy industry and machinery manufacturing sector need to be improved. Currently there are as many as 22,000 standards<sup>14</sup> in the country. Current local regulatory framework can be divided into local, international and industry-specific categories of standards. It is necessary to build on existing efforts to simplify standards and compliance, and increase transparency.

Under the State Committee of the Republic of Azerbaijan for Standardization, Metrology and Patents, the standards applied to the heavy industry and machinery manufacturing sector are governed by several state institutions, including the State Inspection Service for Technical Regulation and Standardization, the State Metrology Service, the State Accreditation Service, the Institute of Standardization and Certification, and the Test Experiment Center (AZ test). Investigations conducted in the sector show that Azerbaijan's compliance with international standards has broad opportunities for further improvement.

The works to be carried out will include improving the existing procedures to increase the awareness and transparency of standards. There is an online site related to state standards, but the site's navigation structure (map) and depth of content could be improved. Moreover, of the 22,000 existing standards, only 900 are available on the site.<sup>15</sup> Meanwhile, appropriate actions are underway in order to develop the country's metrology system. The main objective is to support Azerbaijan's access to world markets through the development of the national metrology system in line with that of the European Union and international standards and best practices.

#### **Action items**

##### ***Action 3.2.1: Ensure alignment with international standardization system***

Azerbaijan will also take several measures to increase the alignment of national standards and procedures with modern international practices: procedures on the number, content (technical conditions) and issuance of standards in the industrial sector will be improved; "voluntary participation" principle will be promoted; the list of products subject to mandatory certification will be shortened and updated each year, actions will be taken to align technical regulation, production regulation, quality control systems with modern requirements; the number of legal entities accredited in standardization will be increased; the frequency of mandatory audits will be reduced based on risk management methodology; and transparency will be increased. Free of charge trainings on key aspects of such regulations and standards will be organized in public and private training centers.

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<sup>14</sup> Source: State Committee for Standardization, Metrology and Patents of the Republic of Azerbaijan, Institute of Standardization and Certification

<sup>15</sup> Source: State Committee for Standardization, Metrology and Patents of the Republic of Azerbaijan, Institute of Standardization and Certification

### ***Action 3.2.2: Build a modern management system in industrial enterprises***

Efforts will be strengthened to build up-to-date management system in industrial enterprises, application of corporate management standards will be expanded by sectors. The country will also conduct analysis towards supporting the reorganization of the departments involved in sales, marketing, post-sales servicing and timely response to customer inquiries in line with international best practices.

### ***Action 3.2.3: Increase transparency and strengthen the content of online resources***

The existing online resources and internet web pages of government bodies will be improved and actions will be taken to enrich the contents of databases in open use, improve technical absorption level, ensure that the contents covered are user-friendly for market players and online services related to standardization are widely used.

### ***Action 3.2.4: Promote the creation of national brands in industrial enterprises***

Actions will be undertaken to prepare an industrial brand index by considering criteria such as quality, customer satisfaction and positive emotional image and, on that basis, to identify “the Brand of the Year” and to promote national brands in other countries.

### **The expected results and indicators**

Measures towards aligning with international standards and governance system will contribute to general economic effectiveness, which will facilitate global integration of industrial enterprises and their access to new markets.

#### **Key performance indicators:**

- Reduced number of mandatory certification and inspections;
- Increase in international transactions by industrial enterprises, including increased export potential.

### **The required investment**

It is necessary to conduct a feasibility study to clarify investment needs.

### **The expected risks**

The main risk factors include misuse cases with regard to liberalization in the field of standardization, reduction of mandatory certification and inspections.

## **8. FINANCING MECHANISM**

Achieving the specified strategic targets requires AZN 2,9 billion investments. The implementation of the actions envisaged in the Strategic Roadmap will be financed at the expense of the following sources:

- Public budget;
- Non-budgetary funds;
- Funds of National Entrepreneurship Support Fund;
- Funds from Azerbaijan Investment Company;
- Local budgets;
- Funds of local institutions, enterprises and organizations regardless of their type of ownership;
- Foreign direct investments;
- Loans by the country's bank system and grants;
- Loans, technical and financial assistance by international organizations and foreign countries;
- Instruments of international markets ;
- Other sources not prohibited by law.

In order to ensure the effective spending of funds on priority targets, the budgets will be prepared within the framework of performance-based budgeting process. A larger portion of the required funds will be provided at the expense of the restructuring of the existing budgets, joint financing initiatives of private sector and various investors.

## 9. Implementation, monitoring and evaluation

### Implementation of the Strategic Roadmap

**Oversight and governance:** Accelerated decision making, clear accountability and additional execution capacity will ensure appropriate coordination and governance.

- A mechanism for accelerated decision making at the highest political level will be set up for the Strategic Roadmap. This mechanism will enable appropriate leadership from key stakeholders for other decision makers for the implementation of the program. Decisions about implementation priorities and concrete targets will be made using this mechanism.
- The main executive organization will appoint responsible persons for each relevant priority and action in order to implement them in a timely and proper manner. With the involvement of other organizations specified in the action plan, working groups will also be formed for each priority under the leadership of responsible organizations. Reporting meetings of the work groups will be conducted under the leadership of the main executive organization on a quarterly basis. Quarterly work progress and activities to be performed during the next quarter will be discussed in the meetings. The work groups will carry out their activities based on annual work programs. Daily work schedules and task allocation will be determined by the responsible person. Typically, current work group meetings will be held in the offices of the main executive organization as requested by the responsible person. The main executive organization will ensure that appropriate conditions are created for unimpeded activity of the work group and, when necessary, it will involve external experts to make best use of their technical support.
- An appropriate coordination group (delivery unit) will be established to monitor the implementation of the Strategic Roadmap and provide central execution support in areas such as in problem solving or coordination across institutions. The unit's major work will serve to create organization across the institutions, processes, and technology required for implementation. This coordination unit will oversee teamwork across work groups in line with the action plan, summarizing of quarterly reports and preparation of annual reports. Furthermore, it will be responsible for ensuring that the involved institutions arrange for the required financial and human resources, and empowered to inject additional resources when needed.

**Strategic alignment and financing:** To allow for an efficient implementation process that avoids wasted resources and conflicting objectives, the Strategic Roadmap will be fully integrated into other sectorial plans and existing budgets.

- All related strategic documents proposed by relevant governmental institutions will be harmonized with the Strategic Roadmap and the mandates of existing state agencies will be realigned to the objectives wherever necessary. This alignment work will include developing transparent, measurable implementation targets, which will be communicated publicly and used to track progress.

- Detailed implementation plans will be developed for all strategic priorities as governance for their execution, based on provided actions, to provide transparency regarding the resources required and expected impact. While the assigned leading group will bear overall responsibility for fulfilling the implementation plan, it will involve all key institutions and private sector organizations in its application.

**Stakeholder mobilization:** Both domestic and international partners from both public and private sectors will be mobilized to join in the execution of the Strategic Roadmap.

- Appropriate actions will be taken to identify and involve key strategic partners. The involvement of multiple organizations and stakeholders is required for the successful implementation of each strategic priority. To ensure alignment of objectives and proper coordination, advisory councils and working committees will be formed to work with the private sector and state owned enterprises as well as with critical international partners, such as international financial institutions.
- Civil society and think-tank will be mobilized and engaged to generate broad support for the Strategic Roadmap. Furthermore, active communication, transparency and inclusiveness will help to mobilize the public and private sectors, society as a whole, and other relevant stakeholders.

#### Monitoring and evaluation of the Strategic Roadmap

The Strategic Roadmap will be monitored and evaluated to ensure successful implementation through required tools, processes and other resources. During monitoring and evaluation, focus will be placed on the implementation of core actions, expected results and indicators versus priorities, and also compliance with the completion schedule will be checked. The monitoring and evaluation will be carried out in accordance with procedures based on international methodologies.

The annual activity programs of the work groups will be agreed with the coordination unit and approved by the main executive organization. Representatives of the coordination entity will participate in the quarterly meetings of the work groups.

The main executive organization will submit quarterly work progress reports to the coordination unit at least 10 days prior to the work group's quarterly meeting. By taking into account extensive analysis and evaluation of quarterly reports including discussions held in the quarterly meeting of the working group, the coordination unit will submit quarterly monitoring results and its recommendations for the next period to the main executive organization within 10 days following the meeting date. The coordination unit and the main executive organization will take actions to ensure that the monitoring results and recommendations are taken into consideration by the working group in its daily activities.

## 10. ACTION PLAN

N	Action	Main executive entity	Other responsible entities	Result indicators	Execution period
<b>Strategic target 1. Optimize the existing assets</b>					
<b>1.1. Boost productivity and efficiency of the sector</b>					
1.1.1.	Undertake an analysis of lean production methods	Ministry of Economy	Tariff Council , Ministry of Taxes , Ministry of Energy, Ministry of Transport, Ministry of Labor and Social Protection of Population, State Committee for Property Issues, "Azneftkimyamash" OJSC, Azerbaijan Steel Production Complex (ASPC), "Dashkesen Iron Ore Benefication" OJSC	<ul style="list-style-type: none"> <li>• AZN 250 million GDP increase impact by 2020 in real terms;</li> <li>• Increased labor productivity by 20 percent in relevant areas of heavy industry sector;</li> <li>• Decrease faulty products in commodity production by 17 percent.</li> </ul>	2017-2020
1.1.2.	Support the establishment of a model factory based on private investment	Ministry of Economy	State Committee for Property Issues, Ministry of Taxes		2017
1.1.3.	Improve the staffing level of enterprises	Ministry of Education	Ministry of Economy, Ministry of Labor and Social Protection of Population		2017-2020
1.1.4.	Strengthen relationship between scientific research organizations and enterprises	Azerbaijan National Academy of Sciences	Ministry of Economy, Ministry of Communication and High Technologies		2017-2020
1.1.5.	Support the establishment of sectorial associations and ensure their continuous operation	Ministry of Economy			2017-2018

N	Action	Main executive entity	Other responsible entities	Result indicators	Execution period
<b>1.2. Achieve optimal efficiency in energy use</b>					
1.2.1.	Optimize energy balance, match demand and supply	Tariff Council	Ministry of Energy, Ministry of Economy, State Oil Company of Azerbaijan Republic (SOCAR) , “Azerenerji” OJSC, “Azerishig” OJSC	<ul style="list-style-type: none"> <li>• Develop new energy balance;</li> <li>• Prepare a list of strategically important enterprises;</li> <li>• Ensure equitable energy allocation during peak and non-peak times;</li> <li>• Establish a coordination group comprised of energy producing and consuming enterprises.</li> </ul>	2017-2020
1.2.2.	Stimulate energy use at non-peak times	Tariff Council	Ministry of Energy, AzerenerjiOJSC, Ministry of Economy		2017-2020
1.2.3.	Define privileged tariffs that will be applied to strategically important enterprises	Tariff Council	Ministry of Economy, State Committee for Property Issues		2017-2020
1.2.4.	Encourage energy consumers to use energy efficiently	Ministry of Energy	Ministry of Economy, Tariff Council		2017-2020
1.2.5.	Ensure energy supply at differentiated and lower tariffs for heavy industry, particularly metallurgy enterprises	Tariff Council	Ministry of Economy, Ministry of Energy		2017-2020
<b>1.3. Create a centralized registry of assets and existing capacity</b>					
1.3.1.	Create a centralized registry of idle assets and natural resources	State Committee for Property Issues	Ministry of Economy, Ministry of Ecology and Natural Resources , Ministry of Agriculture , Ministry of Taxes	<ul style="list-style-type: none"> <li>• AZN 45 million GDP increase impact by 2020 in real terms;</li> <li>• 2,000 employment increase by 2020;</li> <li>• Centralized registry and coordinated database are operationalized;</li> <li>• Revitalization of 5 idle</li> </ul>	2017
1.3.2.	Evaluate assets and natural resources included into the centralized registry	State Committee for Property Issues	Ministry of Ecology and Natural Resources , Ministry of Economy		2018-2020

N	Action	Main executive entity	Other responsible entities	Result indicators	Execution period
1.3.3.	Carry out revitalization activity	State Committee for Property Issues	Ministry of Taxes , Ministry of Economy	factories into fully operational mode until 2020;	2018-2020
1.3.4.	Repurposing assets	Cabinet of Ministers	State Committee for Property Issues, Ministry of Taxes , Ministry of Justice, Ministry of Economy	<ul style="list-style-type: none"> <li>Repurposing of the production scope of 10 enterprises with weak competitiveness.</li> </ul>	2018-2020
<b>Strategic target 2. Create a competitive sector</b>					
<b><i>2.1. Integrate along the value chain from regional demand perspectives</i></b>					
2.1.1.	Prepare a list of products with regional export potential and conduct analyses	Ministry of Economy	State Customs Committee, AZPROMO	<ul style="list-style-type: none"> <li>AZN 15 million GDP increase impact by 2020 in real terms;</li> <li>Substitute 20 percent of the currently imported products in heavy industry with domestic products providing that their quality is not substantially different from imported products;</li> </ul>	2017
2.1.2.	Attract investments to the selected areas	Ministry of Economy	AZPROMO		2017-2020
<b><i>2.2. Support import substitution activities</i></b>					
2.2.1.	Identify products that could be substituted by local production	Ministry of Economy		<ul style="list-style-type: none"> <li>AZN 145 million GDP increase impact by 2020 real terms;</li> <li>5,700 additional employment by 2020;</li> </ul>	2017
2.2.2.	Strengthen the regulatory framework for local content	Ministry of Economy	Ministry of Justice, State Committee for Standardization, Metrology and Patent , State Customs Committee	<ul style="list-style-type: none"> <li>Decrease the number of parts imported for the manufacturing of agricultural equipment by 65 percent;</li> <li>Decrease the overall</li> </ul>	2017-2020

N	Action	Main executive entity	Other responsible entities	Result indicators	Execution period
2.2.3.	Create and operationalize sectorial working groups for machinery and equipment, trailers and semi –trailers, electrical equipment and other motor vehicle manufacturing	Ministry of Economy		<ul style="list-style-type: none"> <li>market share of parts imported for the manufacturing of drilling equipment to 45 percent;</li> <li>Substitute 20 percent of imported ferrous metal products with local production.</li> </ul>	2017
2.2.4.	Create joint production areas in the petroleum machinery manufacturing sector	Ministry of Economy	State Oil Company of Azerbaijan Republic (SOCAR)		2017-2018
2.2.5.	Create joint production capacities in defense industry sector	Ministry of Defense Industry			2017-2018
<b>2.3. Develop mining industry and metallurgy complex</b>					
2.3.1.	Fully operationalize ferrous metallurgy industry	State Committee for Property Issues	Ministry of Economy	<ul style="list-style-type: none"> <li>AZN 1 billion GDP increase impact by 2020 in real terms;</li> <li>Ensure full utilization of local raw material base of ferrous industry;</li> <li>Construction of new iron ore extraction and steel processing factory;</li> <li>Increased orders to machinery manufacturing sector.</li> </ul>	2017-2020
2.3.2.	Develop non-ferrous metallurgy industry	State Committee for Property Issues	Ministry of Economy		2017-2020
2.3.3.	Announce “Dashkesen Ore Benefication” OJSC (which operates under Azerbaijan Steel Production Complex) open for privatization	State Committee for Property Issues			2016 executed
<b>2.4. Develop service sector</b>					
2.4.1.	Promote services in mining industry	Ministry of Economy	ASPC	<ul style="list-style-type: none"> <li>Registration of new servicing enterprises operation in mining sector</li> </ul>	2017-2020

N	Action	Main executive entity	Other responsible entities	Result indicators	Execution period
2.4.2.	Promote the expansion of export potential of services	Ministry of Economy	State Customs Committee		2017
<b>Strategic target 3. Ensure financial support and implement international cooperation</b>					
<b>3.1. Promote alternative financing mechanisms and transfer of experience</b>					
3.1.1.	Create an investment data bank and update based upon regular analyses	Centre for Analysis of Economic Reforms and Communication	Ministry of Economy, AZPROMO	<ul style="list-style-type: none"> <li>AZN 105 million GDP increase impact by 2020 in real terms;</li> <li>Online operation of investment data bank;</li> <li>Growth trend in dynamics of foreign investments in the country's economy;</li> <li>Creation of first private equity funds.</li> </ul>	2017-2020
3.1.2.	Improve the investment environment	Ministry of Economy	Ministry of Taxes , Ministry of Justice, State Customs Committee, "Azerenerji" OJSC, Azeriqaz PU		2017-2020
3.1.3.	Introduce new financing mechanisms	Ministry of Economy			2017-2020
3.1.4.	Ensure necessary infrastructure for industrial enterprises	Ministry of Economy			2017-2020
<b>3.2. Ensure alignment with international standards and governance processes</b>					
3.2.1.	Ensure alignment with international standardization system	State Committee for Standardization, Metrology and Patents	Ministry of Economy	<ul style="list-style-type: none"> <li>Reduced number of mandatory certification and inspections;</li> <li>Increase in international</li> </ul>	2017
3.2.2.	Build a modern management system in industrial enterprises	Ministry of Economy			2017-2018

N	Action	Main executive entity	Other responsible entities	Result indicators	Execution period
3.2.3.	Increase transparency and strengthen the content of online resources	State Committee for Standardization, Metrology and Patents		transactions of industrial enterprises, including increased export potential	2017-2020
3.2.4.	Promote the creation of national brands in industrial enterprises	Ministry of Economy	Copyrights Agency, State Committee for Standardization, Metrology and Patents		2017-2020