



Azerbaijan Republic  
Ministry of Health

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# CHILDREN'S ENVIRONMENTAL HEALTH **ASSESSMENT** 2023 IN AZERBAIJAN



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2023



## ACKNOWLEDGEMENTS

In collaboration with the Ministry of Health of the Republic of Azerbaijan, UNICEF Azerbaijan Country Office conducted an analysis of the current state of children's environmental health through a comprehensive assessment. The primary objective of the assessment is to identify health problems in children arising from environmental factors and to support the government's corrective actions in this direction.

The methodology of the report is based on technical recommendations provided by UNICEF New York Headquarters Health Division. We express our gratitude to the staff of UNICEF Health Division at Headquarters: Abheet Solomon, Sr. Program Manager; Desiree Raquel Narvaez, Health Specialist; Swathi Manchikanti, Climate Change Adaptation Consultant; Lindsay Marie Dennie, Environmentally Sustainable Healthcare Consultant; and Lyn Greer, Communication and Advocacy Specialist for Healthy Environments for Healthy Children.

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## LIST OF ACRONYMS

AFSI	Azerbaijan Food Safety Institute
AMU	Azerbaijan Medical University
AR	Autonomous Republic
ASAA	Azerbaijan State Aerospace Agency
AST	Azerbaijan Society of Toxicologists
CoM	Cabinet of Ministers
CoIS	Commonwealth of Independent States
DDT	Dichloro-Diphenyl-Trichloroethane
EAPC	Euro-Atlantic Partnership Council
GBOD	Global Burden of Disease
GDP	Gross Domestic Product
GHG	Greenhouse Gases
IMF	International Monetary Fund
ISD	Informatics and Statistics Department
MCL	Maximum Contaminant Level
MoENR	Ministry of Ecology and Natural Resources
MoES	Ministry of Emergency Situations
MoIA	Ministry of Internal Affairs
MoD	Ministry of Defense
MoE	Ministry of Energy
MoJ	Ministry of Justice
NEMD	National Environmental Monitoring Department
NGO	Non-Governmental Organizations
NCDs	Non-Communicable Diseases
NHS	National Hydrometeorological Service
OIC	Organization of Islamic Conference
OSCE	Organization for Security and Cooperation in Europe
PfP	Partnership for Peace
RA	Republic of Azerbaijan
SC	South Caucasus
SCCMSA	State Customs Committee Medical Service Administration
SEEA	State Environmental Examination Agency
SESS	State Environmental Security Service
SMS	State Migration Service
SRC	Scientific Research Center
SSC	State Statistical Committee
TABIB	Management Union of Medical Territorial Units
UN	United Nations
UNICEF	United Nations Children's Fund
UNIDO	United Nations Industrial Development Organization
USA	United States of America
WEEE	Waste Electrical and Electronic Equipment
WHO	World Health Organization

## EXECUTIVE SUMMARY

The Republic of Azerbaijan (RA) is the largest country in the South Caucasus (SC) in terms of its territory and population and is strategically located at the crossroads of Europe and Asia, offering a highly favorable economic-geographical and geopolitical position through which major international transport routes pass. Azerbaijan's Caspian coast forms the country's Caspian sector. The Republic's industry is primarily based on oil and gas extraction and processing, chemistry and petrochemistry, metallurgy, mechanical engineering, textiles, food production, while agriculture is primarily based on grain production, cotton production, viticulture, fruit production, tobacco production, tea production, vegetable production, and livestock farming.

As of July 2022, the country's population is 10,185,784.

RA declared its independence on October 18, 1991, and has since been recognized as an independent state by the global community.

The analysis of the national healthcare system revealed that key indicators of children's health include birth rates, natural increase, mortality, incidence of diseases, and the structure of diseases. Over the past five years, there have been significant changes in natural increase and birth rates. Specifically, there has been a 60% decrease in natural increase and a 3% decrease in birth rates from 2017 to 2021. Among children aged 0-13, the most prevalent diseases are related to the respiratory and digestive systems, eye and adnexa, certain infectious and parasitic diseases, and nervous system diseases. Although the overall incidence rates among children aged 0-13 have decreased over the past five years, there has been an increase in the incidence rates of neoplasms, mental and behavioral disorders, eye and adnexa diseases, skin and subcutaneous tissue, and circulatory system diseases. Among adolescents aged 14-17, the most prevalent diseases are related to the respiratory and digestive systems, eye and adnexa diseases, and certain infectious and parasitic diseases. Both the overall morbidity rates and the incidence rates for diseases across all systems have been increasing since 2019 among adolescents aged 14-17. Morbidity rates vary across different economic regions of RA. The highest overall morbidity rates for children under 18 years are observed in the Absheron-Khizi economic region and the city of Baku.

Regrettably, no research has been conducted in Azerbaijan on the impact of environmental factors on the occurrence of diseases and mortality rates among children.

Adverse changes in the environment can affect the development and physiological functions of all living beings, particularly the growing children, in pathological ways. Lead, considered an environmental factor, damages multiple systems of the body and especially harms children because it affects brain development. There is no available information on the levels of lead in paints sold in the country or in the blood of children.

A regulatory document titled "Regulating the Amount of Lead in Paints," prepared in 2022 within the framework of collaboration among various international organizations, Non-Governmental Organizations (NGOs), and relevant state institutions in Azerbaijan, has not been approved to date.



Besides, there are serious issues in Azerbaijan related to the unavailability of primary antidotes for the treatment of acute and chronic poisoning in children by lead, mercury, cadmium, arsenic, and other heavy metals. Additionally, acute pesticide poisoning can be extremely dangerous for children's lives.

Extensive areas contaminated with obsolete and banned pesticides that could be hazardous to children's health exist in Azerbaijan. Every year, dozens of cases of acute, including fatal, poisonings from toxic pesticides belonging to various chemical groups are recorded among children in the country. The absence of primary antidotes (oximes) in the country creates difficulties in treating patients in this category.

Another dangerous chemical substance causing numerous fatal poisonings among children in Azerbaijan is 70% acetic acid.

Every year, both indoor and outdoor air pollution claims the lives of 600,000 children under the age of 15 worldwide. In Azerbaijan's capital, alongside industrial facilities, private and public transportation also play a significant role in air pollution. The levels of nitrogen oxide, sulfur dioxide, carbon monoxide, hydrogen sulfide, dispersed dust particles, benzene, ethylbenzene, toluene, and xylene in Baku's air exceed the norms.

In modern times, apart from domestic and industrial waste, medical, electrical, and electronic waste, forest fires and hazardous waste resulting from conflicts contribute to global environmental pollution. Literature notes that currently, nearly 7 million chemical substances and compounds are used in military industry and production.

Azerbaijan has not been spared from the effects of global climate change. Over the last 100 years, the average annual temperatures in Azerbaijan have increased by 0.4-1.3°C.

According to the latest assessment report from the Intergovernmental Panel on Climate Change (IPCC), the Earth's average temperature has increased by 0.8 degrees Celsius over the past 100 years. This increase is primarily due to anthropogenic factors. In 2020, in Azerbaijan, 160,000 children (6%) were exposed to increased frequency of heatwaves, and 2,800,000 children (100%) were exposed to prolonged heatwaves. It is estimated that these figures will be 100% by 2050.

Based on the report "Climate Landscape Analysis for Children in Azerbaijan" prepared by UNICEF, RA has ratified more than 30 international conventions and adapted numerous draft laws. The country collaborates closely with many international institutions, including UNICEF. However, neither the "Law on Child Rights" nor the "Family Code of the Republic of Azerbaijan"—the two main legal documents regulating child rights in the country—mention the impact of the environment on children.

On the other hand, although RA has numerous laws and regulations on environmental protection, there is no specific article or clause that addresses the impact of the environment on children. In general, issues related to the impact of the environment on children are not touched upon in RA's legislation, state policies, or programs.

## 1. COUNTRY BACKGROUND INFORMATION (GENERAL)

### 1.1 Geographic and demographics

The RA is the largest country in the SC in terms of land area and population. Administratively, Azerbaijan consists of one autonomous republic—the Nakhchivan Autonomous Republic (AR)—and 63 regions. The country has 79 cities, with the capital Baku being the largest. In addition, there are 14 urban districts, 262 settlements, 68 urban administrative districts, 1,724 rural administrative divisions, and 4,246 rural settlements<sup>1</sup>.

#### Geographic location

The area of the RA is 86,600 km<sup>2</sup>. The area of Nakhchivan AR is 5,200 km<sup>2</sup>. The territory of RA extends approximately 400 km from north to south and 500 km from west to east, situated between 38°25' - 41°55' north latitudes and 44°50' - 50°51' east longitudes<sup>1</sup>. The most distant points are located in the Gutan mountain in the north, Astarachay river in the south, Sadarak district in the west, and the Absheron peninsula and islands (*Neft dashlari*) in the east.

The area of the capital Baku is 2,140 km<sup>2</sup>. Baku is the largest port on the Caspian Sea and a major industrial, scientific, and cultural center in the Caucasus. Baku includes 12 administrative districts and 59 residential areas. The Coastal part of Baku is situated approximately 28 m below sea level<sup>2</sup>.

Azerbaijan occupies a unique geographical and geopolitical position at the crossroads of Europe and Asia, offering a highly favorable economic-geographical position through which major international transport routes pass<sup>3</sup>.

Azerbaijan shares borders with five countries. The length of its borders is approximately 2,850 km. Azerbaijan is bordered by Russia in the north with 289 km, Georgia in the northwest with 340 km, Armenia in the west with 766 km, Turkey in the southwest with 11 km, and Iran in the south with 618 km. The eastern part of Azerbaijan shares borders with the Caspian Sea over a distance of 825 km. Azerbaijan shares a maritime border with Iran, Kazakhstan, Russia, and Turkmenistan through the Caspian Sea<sup>2</sup>.

#### Physical-geographical zoning and relief

The territory of the Republic features various landscape complexes corresponding to different relief forms. As a result, distinct physical-geographical regions are identified: Greater Caucasus, Lesser Caucasus, Kura-Aras (Kura depression), Lankaran, and Middle Aras (Nakhchivan).

Various landscape zones are distinguished in Azerbaijan's territory: semi-desert, lowland meadow-forest, mountain steppes, mountain semi-deserts, forest, forest-shrub, mountain meadows, rocky-stony landscape zones.

There are two main forms of relief in Azerbaijan: mountains and plains. The largest geomorphological units—Greater Caucasus, Lesser Caucasus, and Talysh Mountains—encircle

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<sup>1</sup> The official website of the Ministry of Ecology and Natural Resources of the Republic of Azerbaijan. Surface water © 2005-2023 <http://eco.gov.az/az/tebii-servetlerimiz/yerustu-sular>

<sup>2</sup> Ministry of Ecology and Natural Resources. Republic of Azerbaijan. FOURTH NATIONAL COMMUNICATION TO THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE REPUBLIC OF AZERBAIJAN, BAKU – 2021,16

<sup>3</sup> The Second Biennial Updated Report of the Republic of Azerbaijan to the UN Framework Convention on Climate Change, 2018(9)

the Kura-Aras lowland from the north, west, and south-southeast<sup>4</sup>. The southeastern part of the Greater Caucasus Mountain system falls within the territory of RA. The elevation in many parts of the range exceeds 3,000 meters, and in the central part, it is over 4,000 meters. The average elevation of Azerbaijan's territory is 657 meters. The highest peak above sea level is Bazarduzu at 4,466 meters, and the lowest point is the Caspian coastal lowland at -28 meters. The amplitude of elevation reaches 4,494 meters<sup>4</sup>. Due to the weakening of mountain formation in Azerbaijan, the mountains gradually decline towards the south-southeast. The Kura-Aras lowland, located between the Greater and Lesser Caucasus, expands eastward. Forty percent of the lowland extending to the Caspian Sea is situated below sea level<sup>4</sup>.

### **Land cover and land resources**

On the territory of the republic the soils are located mainly by vertical belts. There are 25 types and 60 subtypes of soils in the country.

The total land fund in the country exceeds 8.641 million hectares. Of this, 4.78 million hectares, or 55%, are agricultural lands, including 1.45 million hectares of irrigated land<sup>2</sup>. Approximately 2.06 million hectares are sowed. The country has 3.88 million hectares of land that are not agricultural lands<sup>2</sup>.

Azerbaijan is one of the countries with limited land reserves. Per capita, there is 1.08 hectares of land fund, 0.2 hectares of cropland, and 0.47 hectares of arable land. The pasture area per capita is also limited<sup>2</sup>.

Climate change is projected to affect the quality of soils in Azerbaijan. The country's soils are already significantly impacted by soil erosion, salinization, waterlogging, and chemical pollution<sup>2</sup>. 36.4% of the soils in the Republic are subject to various degrees of erosion. Of this, 14.1% are mildly eroded, 10.7% are moderately eroded, and 11.6% are severely eroded<sup>5</sup>. These factors contribute to low productivity in Azerbaijan's agricultural sector. The projected temperature increase will likely intensify soil salinization. Higher temperatures and drought will increase evaporation. As a result, farmers are expected to increase the use of water for irrigation. If drainage systems are not properly established, additional irrigation water's evaporation may accelerate the salinization process, affecting agricultural productivity.

Azerbaijan is vulnerable to desertification, which has worsened over the past decades due to the excessive increase in grazing lands and deforestation. As climate change accelerates drought conditions in the country, without adequate mitigation measures, the desertification process could speed up<sup>5</sup>.

In conflict-affected areas, 180,000-200,000 hectares of cropland have been abandoned or subjected to degradation and erosion<sup>6</sup>. Additionally, a large portion of the croplands along the Garabagh plain and the Aras lowlands was directly along the front lines. As a result, significant damage has been caused to important agricultural areas due to the construction of trenches, tunnels, defenses, and fortifications. This has also had a significant impact on vegetation and

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<sup>4</sup> Physical geographic zoning © 2011 - 2021. [https://www.azerbaijans.com/content\\_455\\_az.html](https://www.azerbaijans.com/content_455_az.html)

<sup>5</sup> Ministry of Ecology and Natural Resources of the Republic of Azerbaijan. Monitoring of soil pollution. <https://eco.gov.az/index.php?ln=az&pg=297>

<sup>6</sup> Report of the UNEP Environmental Scoping Mission to the Conflict-Affected Territories of Azerbaijan. April 2022,9 [http://eco.gov.az/frqcontent/plugins/pages\\_v1/entry/20221223145000\\_59496900.pdf](http://eco.gov.az/frqcontent/plugins/pages_v1/entry/20221223145000_59496900.pdf).

relief. Large areas of valuable croplands have become inaccessible due to mines and other unexploded ordnance<sup>6</sup>.

Since the country is one of the major countries in terms of oil production and refining, pollution from oil and oil products is a significant environmental issue. The pollution is most noticeable in the Absheron Peninsula. Oil extraction, with a history spanning over 150 years, has had a serious impact on the landscape of the peninsula. It has been discovered that in many oil fields of Absheron, the levels of certain heavy metals, especially arsenic, barium, chromium, copper, lead, and zinc, exceed the permissible limits<sup>7</sup>.

In some rural areas, soil pollution due to pesticides is observed. During the Soviet era, Azerbaijan was one of the main producers and consumers of pesticides. Every year, nearly 25,000 tons of Dichloro-Diphenyl-Trichloroethane (DDT) pesticide were used<sup>7</sup>. According to cadastres organized by various organizations, despite the large volumes, more than 70 sites (where pesticides were buried) have been identified that are in close proximity to residential areas and pose immediate threats to human health, especially that of children, necessitating immediate ecological intervention<sup>7</sup>.

### **Caspian Sea**

The Caspian Sea is the largest enclosed water body on our planet, accounting for 44% of the total volume of all lakes and inland seas<sup>8</sup>.

Azerbaijan's Caspian coast forms the country's Caspian sector, which is currently rich in actively exploited oil and gas reserves.

The water level in the Caspian Sea is variable and is currently about 28 meters below ocean level<sup>9</sup>. The primary reason for the fluctuation in the sea level is changes in climate parameters, which subsequently alter the water balance of the sea. It is expected that the sea level will decrease by the mid-21st century<sup>10</sup>.

In 2010, floods in the Kura River caused significant damage to the country, prompting the initiation of riverbed cleaning operations in the Kura delta. However, these operations were not carried out according to norms; the riverbed was lowered by 4-5 meters, eliminating the long-standing interface and siphon between the Kura River and the Caspian Sea. In other words, the area of the Caspian Sea seems to have been expanded towards the Kura River<sup>11</sup>.

From 1996 to 2015, the level of the Caspian Sea dropped approximately 7 cm each year, totaling a decrease of 1.4 meters<sup>11</sup>. Currently, the movement of the Caspian waters towards the Kura River occurs during a period when the sea level is low. When the level rises, the sea water will advance along the Kura River.

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<sup>7</sup> Climate, Landscape Analysis for Children in Azerbaijan, UNICEF, BAKU 2018,18

<sup>8</sup> Official website of the Ministry of Ecology and Natural Resources of the Republic of Azerbaijan. Caspian Sea, © 2005-2023 Caspian Sea. Copyright© 2011 - 2021.

<sup>9</sup> Caspian Sea. Copyright© 2011 - 2021. [https://www.azerbaijans.com/content\\_452\\_az.html](https://www.azerbaijans.com/content_452_az.html)

<sup>10</sup> A.S. Aliyev, R.H. Gardashov, D.H. Suleymanli. NATURE OF CHANGES IN THE LEVEL OF THE CASPIAN SEA OVER THE LAST 180 YEARS. Geography and natural resources, 2022, No. 1 (16)

<sup>11</sup> Some problems related to water supply in Azerbaijan and their solutions. <https://science.gov.az/az/news/open/17743> 16.08.2021© Azerbaijan National Academy of Sciences 1995 - 2023

Research has shown that water with a mineral content of 4-5 g/l flows into the Caspian Sea from the Mil-Mugan collector at a rate of 78 m<sup>3</sup>/sec and from the Shirvan collector at a rate of 58 m<sup>3</sup>/sec. Ideally, the mineralization of the water in these collectors should have been between 12-15 g/l. This indicates that freshwater irrigation enters the collectors. Analysis of water samples taken every 5 km along the Kura River revealed that the water in the river 25 km away was sea water. When the pumps used in the Kura River were stopped, a decrease in water mineralization was observed. This occurs as a result of 60-70 m<sup>3</sup> of water quickly pushing back sea water<sup>11</sup>.

Research suggests that an increase in surface air temperature will lead to an increase in the temperature and evaporation of the Caspian Sea water<sup>7</sup>.

### **Azerbaijan's water resources**

The sources of Azerbaijan's surface water resources consist of rivers, lakes, water reservoirs, and glaciers<sup>1</sup>.

#### **Rivers**

Most of the surface water is concentrated in rivers. Azerbaijan's river network consists of more than 8,350 rivers, two of which are longer than 500 km, 22 are between 101-500 km in length, 324 are between 11-100 km, and the majority are less than 10 km long<sup>12</sup>.

Azerbaijan's rivers generally belong to the Caspian Sea basin and are divided into three basins:

1. Rivers of the Kura River basin (left and right tributaries of the Kura).
2. Rivers of the Aras basin (left tributaries of the Aras).
3. Rivers that flow directly into the Caspian Sea.

The Kura River basin, which includes the countries of the SC (Azerbaijan, Georgia, Armenia), as well as Iran and Turkey, is one of the international river basins. Of this basin, the biggest portion, 28.4% (52,900 km<sup>2</sup>) is in Azerbaijan, 21.28% (40,000 km<sup>2</sup>) in Iran, 19.36% (36,400 km<sup>2</sup>) in Georgia, 15.85% (29,800 km<sup>2</sup>) in Armenia, and 15.37% (28,900 km<sup>2</sup>) in Turkey. If we also include Azerbaijan's Mugan-Salyan plain and the Eastern Shirvan lowland area of 16,000 km<sup>2</sup>, 79.6% (68,900 km<sup>2</sup>) of the country's territory is part of the Kura River basin. 72.73% of its total water resources are formed in neighboring countries, while 27.27% is formed within Azerbaijan<sup>11</sup>.

The existing artificial water reservoirs in the country can store up to 21.5 billion m<sup>3</sup> of water<sup>2</sup>. Most of these are used for hydropower production and irrigation purposes. Overall, 11-12 billion m<sup>3</sup> of water is used annually in the country, of which 67% is for agriculture, 20-25% for industrial needs, and the remainder is for drinking water supply. Of the 3,200,000 hectares that can be irrigated in the country, 1,405,000 hectares are actually irrigated. These lands are equipped with permanent irrigation and collector-drainage networks<sup>2</sup>.

#### **Groundwater resources in Azerbaijan**

The usable fresh and low-mineralized groundwater in the republic is unevenly distributed across mountainous and foothill areas. Currently, the water supply for more than 35 cities and towns in

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<sup>12</sup> Rivers. [https://www.azerbaijans.com/content\\_455\\_az.html](https://www.azerbaijans.com/content_455_az.html) © 2011 - 2021. Copyright© 2011 - 2021.



the republic, including Baku, Sumgait, Ganja, Agdash, Agstafa, Barda, Terter, Nakhchivan, Ordubad, etc., is fully or partially provided by groundwater.

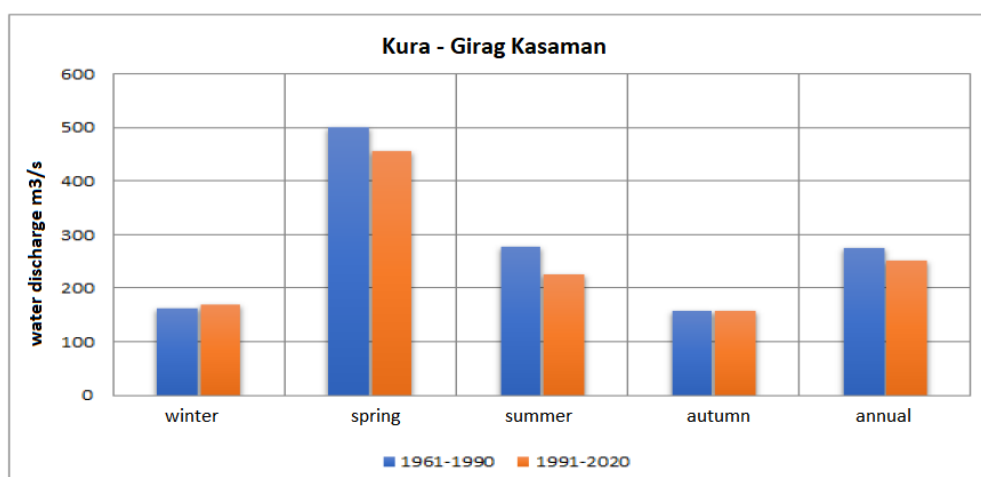
Azerbaijan's water resources are limited compared to other countries in the SC, amounting to only 15% of the total water resources in the region<sup>13</sup>. The estimated reserves of groundwater in mountainous areas amount to 1,806.9 thousand m<sup>3</sup>/day. The regional usable reserves of groundwater amount to 23,764.28 thousand m<sup>3</sup>/day (or 9 billion m<sup>3</sup>/year)<sup>14</sup>.

While Georgia and Armenia rely on their internal water reserves for 85% and 82% of their water supply, respectively, Azerbaijan is only able to supply 28% of its water needs from internal resources. About 67-70% of river water resources form in neighboring countries, and the rest form in Azerbaijan's internal rivers<sup>13</sup>. Transit rivers experience significant fluctuations in water levels throughout the year, often decreasing sharply and having high pollution levels<sup>11</sup>. The total natural reserves of river water are 28.5-30.5 km<sup>3</sup>, with transboundary rivers contributing 19.0-20.5 km<sup>3</sup> and local flow contributing 9.5-10.0 km<sup>3</sup>. During drought years, water reserves can decrease to 22.6-27.0 km<sup>3</sup><sup>13</sup>.

Over the past 30 years, water discharge in local rivers has decreased by 4% to 20% compared to the period from 1961-1990, while transit rivers have seen a decrease of 6% to 22%<sup>13</sup>. This is causing increased water scarcity in the country (approximately 4-5 km<sup>3</sup> annually) and making it difficult to meet water demand in Azerbaijan<sup>13</sup>.

The impact of climate change in Azerbaijan has also led to a decrease in water reserves over the past decades and is likely to continue to do so. At the same time, the increasing population, economic development in various sectors, and expansion of irrigated agricultural areas are increasing the demand for water<sup>13</sup>.

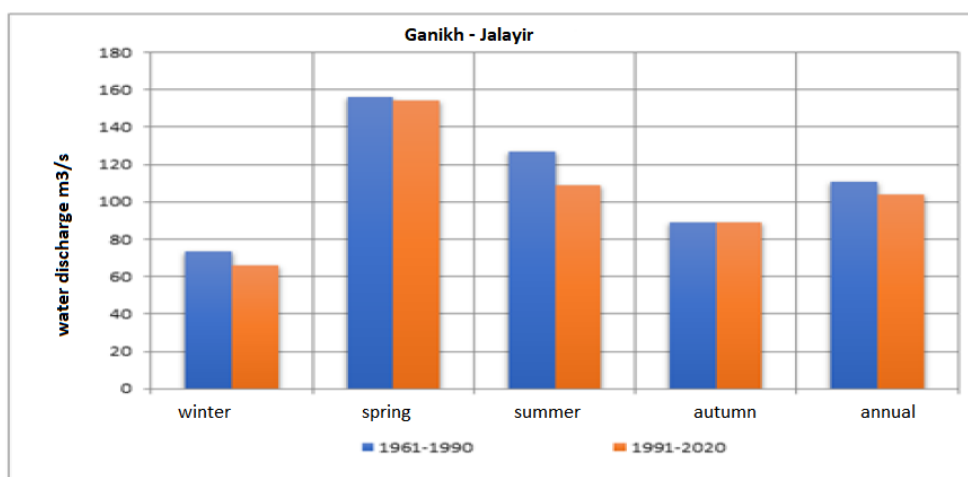
The following chart depicts the change in water discharge in transit rivers from 1991-2020 compared to 1961-1990<sup>13</sup>.



**Figure 1. Changes in water flow in transit rivers over the years (Kura and Girag Kasaman rivers)**

<sup>13</sup> The official website of the Ministry of Ecology and Natural Resources of the Republic of Azerbaijan. Hydrometeorology © 2005-2023 <http://eco.gov.az/az/fealiyyet-istigametleri/hidrometeorologiya/yerustu-su-ehtiyatlari>

<sup>14</sup> Azərbaycan Respublikası Ekologiya və Təbii Sərvətlər Nazirliyinin rəsmi veb saytı. Hidrometeorologiya © 2005-2023 <http://eco.gov.az/az/tebii-servetlerimiz/yeralti-sular> The official website of the Ministry of Ecology and Natural Resources of the Republic of Azerbaijan. Hydrometeorology © 2005-2023 <http://eco.gov.az/az/fealiyyet-istigametleri/hidrometeorologiya/yerustu-su-ehtiyatlari>



**Figure 2. Changes in water flow in transit rivers over the years (Ganikh-Jalayir)**

Approximately 90% of the country's agricultural crops are produced mainly in the Kur-Araz lowland, which has an arid climate. In these areas, the potential for evaporation is significantly higher than precipitation, making it impossible to produce agricultural products without irrigation<sup>11</sup>. Except for the mountainous and southeastern parts of the country, irrigation water is a very important means for agricultural production in most areas. This is related to the characteristics of the dry and semi-arid climate<sup>5</sup>.

Recently, under the influence of global climate changes, significant differences have emerged in the distribution of precipitation, and the humidity coefficient has decreased in most regions. The intensive growth of the population, the development of the country's economy, including agriculture, the expansion of cultivated areas, and irrigation and drinking water supply networks have led to a constant increase in water demand. All these factors, as well as the inefficient use of water reserves, are causing problems in the supply of drinking and irrigation water in the country<sup>11</sup>.

In the Kura and Araz river basins, 11 million people use polluted (by wastewater release) water that is either poorly treated or untreated, and the levels of pollutants often exceed the limits by 4-5 times<sup>7</sup>. For example, the phenol levels in the Araz river range from 11.8 to 151.3 mg/l, which is twice the national average<sup>7</sup>. High levels of heavy metals, specifically copper, molybdenum, manganese, iron, zinc, and chromium, have been detected in the water of the transboundary Okhchuchay river. On average, in Okhchuchay, water hardness is 1.1-2.4 times, ammonium 1.2-4.6 times, sulfate 1.1-1.4 times, and heavy metals like Mo are 1.1-2 times, Fe 1.1-14 times, and Mn 1.1-4 times higher than the standard<sup>15</sup>.

## Lakes

There are 450 lakes in Azerbaijan with a total area of 395 km<sup>2</sup>, of which 10 have an area larger than 10 km<sup>2</sup><sup>7</sup>.

Lakes are unevenly distributed throughout the country. The Absheron Peninsula alone has over 200 lakes, most of which are small and dry up during the hot months<sup>7</sup>. The lakes on the peninsula have a significant impact on the climate and water balance and ecological conditions. For a long

<sup>15</sup> The official website of the Ministry of Ecology and Natural Resources of the Republic of Azerbaijan. Implemented work. "Implemented work in 2022. Report". ETSN\_hesabat\_2022 (2) BAKI - 2023 <http://eco.gov.az/index.php?ln=az&pg=762>

time, the reserves of Absheron lakes have been used to meet various economic and socio-economic needs. The recent intensive development of industry, especially oil production, and agriculture has led to an increase in the discharge of untreated effluents into the lakes, causing severe pollution, expansion of their areas, and the formation of new lakes. The levels of oil products, phenols, heavy metals, and other harmful substances in the water have exceeded the Maximum Contaminant Level (MCL) by many times<sup>7</sup>.

Changes in the level of the Caspian Sea also affect the ecological conditions and hydrological regimes of the lakes. As the sea level rises, groundwater levels also rise, resulting in an increase in the volume of water in the lakes. Conversely, a drop in the sea level triggers the opposite process.

One of the reasons for the problem is the increase in the population of Absheron, leading to the construction of new residential areas. The lack of unified sewage systems in these new areas results in the discharge of communal and household wastewater into nearby lakes and surrounding areas<sup>16</sup>.

### **Forests**

The area of Azerbaijan's forest fund (forest areas, as well as forest and non-forest land areas not covered with forest plants) covers 1,213,700 hectares, accounting for 14% of the total area. The forest-covered areas amount to 1,021,000 hectares, which make up 11.8% of the Republic's territory<sup>17</sup>. Of the total forest areas, 49% are in the Greater Caucasus, 34% in the Lesser Caucasus, 15% in the Talysh Mountains, and 2% in the Aran zone. Azerbaijan's forests include 450 species of trees and shrubs belonging to 48 families and 135 genera<sup>17</sup>.

Mid-sized and small rivers originating mainly from mountainous and forested areas contribute to up to 30% of Azerbaijan's water reserves<sup>11</sup>. These rivers are especially important for economic activities in areas that are relatively poorly endowed with water resources and have an arid climate. The anthropogenic impact on forest areas in modern times leads to the drying up of these small rivers and springs<sup>11</sup>.

Deliberate deforestation is one of the factors posing a danger to the soils of Azerbaijan's mountainous regions. If illegal deforestation is not prevented in time, the Republic may face severe ecological disasters, including increased erosion, expansion of barren lands, floods and landslides in mountainous areas, snow avalanches, and the drying up of springs and rivers<sup>18</sup>.

The area of forest land was 1,039,000 hectares in 1990 and 1,038,000 hectares in 1995. This indicator decreased to 989,000 hectares in 2001<sup>2</sup>. Additionally, as a result of Armenia's aggression, 246,000 hectares of forest area were brutally destroyed and looted, and valuable tree species were cut down and removed<sup>17</sup>. In the territory of the Lachin city, a total of 13.8 hectares of green area was burned, destroying 7,692 trees of acacia, juniper, willow, poplar, and

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<sup>16</sup> F.E.Imanov, R.A.Ismayilov, A.A.Nuriyev "Restoration of rivers and ecological flow" Ministry of Education of the Republic of Azerbaijan, Baku State University 2019 (34)

<sup>17</sup> The official website of the Ministry of Ecology and Natural Resources of the Republic of Azerbaijan. Forests © 2005-2023 <http://eco.gov.az/az/meseler/olkenin-meseleri>

<sup>18</sup> Azerbaijan Geography Society. Forests of the Republic of Azerbaijan © 2013,ACC <https://gsaz.az/articles/view/149/Azarbaycan-Respublikasinin-meshektarlari>

walnut species. In the Lachin corridor part of the city, 448.8 hectares of forest area were burned<sup>15</sup>.

In recent years, large-scale greening projects based on modern methods have been implemented after the cleaning of arid areas and areas with poor-quality soils<sup>3</sup>. As part of urgent measures within the framework of the Paris Climate Agreement, thousands of hectares of forest masses have been planted in Azerbaijan. Thanks to the intensity of afforestation, the forest area of the country has increased from 11.4% to 12% over the last 15 years<sup>2</sup>.

## **Climate**

Despite being primarily subtropical, Azerbaijan has a diverse climate and encompasses eight out of the eleven climate zones<sup>19</sup>.

Under the influence of global climate change, the average annual temperature in Azerbaijan has increased by 0.4-1.3°C over the last 100 years. This temperature increase is unevenly distributed across regions<sup>13</sup>.

In Azerbaijan, the average annual temperature is 14-15°C in the Kura-Araz lowland, the coastal zone south of the Absheron Peninsula, and in the Lankaran lowland. As you move towards the mountains, the temperature decreases, reaching 4-5°C at an altitude of 2000 meters and 1-2°C at 3000 meters. The hottest month of the year (July) has an average temperature of mostly 26-27°C in the Kura-Araz lowland, and it does not go below 24°C in other plains and mountainous areas. The coldest month (January) sees average temperatures that do not go below 0°C in both plains and mountainous areas. The absolute maximum (+46°C) and minimum (-32°C) temperatures have been observed in the plains of the Nakhchivan AR across Araz river, which have a sharply continental climate<sup>13</sup>.

In Baku, the climate is dry subtropical. The average temperature is 3-4°C in January and 25-26°C in July. Strong north winds, known as "Khazri," and south winds, known as "Gilavar," are typical for Baku<sup>2</sup>.

According to forecasts, the potential warming in Azerbaijan will increase faster than the global average temperature<sup>7</sup>. The HadCM3-A1 (Hadley Centre Coupled Model, version 3) scenario predicts that from 2011 to 2040, the temperature in all regions of Azerbaijan will increase by 1.5°C compared to the averages from 1961-1990<sup>19</sup>. It is also forecasted that between 2041-2070, precipitation will decrease by 10% in the Nakhchivan and Zangezur regions compared to the averages from 1961-1990<sup>19</sup>.

At the highest level of greenhouse gas Greenhouse Gases (GHG) concentrations (RCP8.5), average temperatures could increase by 4.7°C in the 2090s compared to the 1986-2005 reference period<sup>7</sup>. It is predicted that both maximum and minimum temperatures will rise faster than the global average. This could negatively affect human health and the ecosystem. For instance, the rise in temperature could deteriorate air quality, increasing respiratory diseases and potentially causing premature deaths. The increase in temperature could also reduce the productivity of agriculture, exacerbating existing problems. Due to the combined impact of political,

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<sup>19</sup> United Nations Climate Change. Azerbaijan. National Communication (NC). NC 4. <https://unfccc.int/documents/299472>

geographical, and social factors, Azerbaijan is considered vulnerable to the effects of climate change, ranking 73rd out of 181 countries in the ND-GAIN index in 2020<sup>7</sup>.

Even without considering climate changes, the air quality in major cities like Baku, Ganja, and Sumqayit is inadequate. Air pollution primarily originates from mobile and industrial pollution sources. For example, transport emissions make up 80% of air pollution<sup>7</sup>.

The table below shows the total number of automobiles and the number of automobiles per 1,000 people in the Republic for the years 2017-2021<sup>20</sup>.

Number of vehicles	2017	2018	2019	2020	2021
<b>Total</b>	1 370 574	1 370 574	1 418 404	1 473 563	1 566 743
<b>Vehicles per 1000 people</b>	138	140	143	148	156

*Table 1. Number of vehicles in the country in 2017-2021*

Two main types of droughts can affect Azerbaijan: meteorological (usually related to precipitation deficiencies) and hydrological (generally associated with surface and groundwater flow deficiencies). Currently, the average annual probability of severe meteorological drought in Azerbaijan is approximately 2% according to the Standardized Precipitation-Evapotranspiration Index (SPEI)<sup>5</sup>.

In 2016, GHG emissions in Azerbaijan were estimated to be 61.257 million tons of carbon dioxide (CO<sub>2</sub>) equivalent, and the net emissions considering absorption were estimated to be 54.033 million tons of CO<sub>2</sub> equivalent<sup>2</sup>. This accounted for only 0.15% of estimated global emissions in 2016. Per capita emissions in Azerbaijan were 6.3 tons of CO<sub>2</sub> equivalent, and the net emissions considering absorption were 5.6 tons of CO<sub>2</sub> equivalent<sup>2</sup>.

From 1990 to 2016, based on the GHG inventory, GHG reduction in Azerbaijan reached 31.6% compared to the reference year (1990)<sup>2</sup>.

The shift from mazut to gas in thermal power stations, along with the application of more modern technologies in this sector between 2006 and 2016, led to a reduction of nearly 10,000 tons in GHG emission levels<sup>3</sup>. The development of this sector is one of the priority directions for Azerbaijan, which is rich in alternative and renewable energy potential<sup>3</sup>.

The intended achievement of "Azerbaijan 2030: National Priorities for socio-economic development" approved by the decree of the President of the RA, Mr. Ilham Aliyev dated February 2, 2021, also emphasizes the issue of "green economy" in Azerbaijan. The target has been set to increase the share of renewable energy in the total energy production capacity from 17.3% in 2021 to 24% by 2025, and 30% by 2030.

In this context, at the Climate Conference (COP26) held in Glasgow, Scotland in 2021, Azerbaijan put forward a new initiative to mitigate the effects of global climate change. The country intends to reduce emissions by up to 40% by 2050 as an additional voluntary commitment and aims to create a "net-zero emission" zone in the territories liberated from occupation by 2050<sup>21</sup>.

<sup>20</sup> State Statistics Committee of the Republic of Azerbaijan. Transport in Azerbaijan <https://www.stat.gov.az/source/transport/> © 2002-2023

<sup>21</sup> The official website of the Ministry of Ecology and Natural Resources of the Republic of Azerbaijan. Biodiversity © 2005-2023 <http://eco.gov.az/az/azerbaycanin-faunasi>



## Biodiversity

Azerbaijan is richest country in terms of the total number of plant species in the Caucasus region. The plant species found here constitute 66% of the total number of plant species in the Caucasus. Among the 4,500 higher plant species spread across Azerbaijan, 240 species are unique to Azerbaijan (making up 6% of the total flora), and 920 species are endemic to the Caucasus<sup>22</sup>. The country's nature is also rich in relict (ancient) species. These species are found in all zones, especially in the Talysh zone<sup>22</sup>.

In Azerbaijan's fauna, 14,000 insect species, 104 fish species, 11 amphibious species, 63 reptile species, 405 bird species, and 115 mammal species have been recorded. Up to 90 fish species live in the Azerbaijani sector of the Caspian Sea. The most valuable asset of the Caspian Sea is the sturgeon. The sturgeon reserves in the Caspian Sea have sharply declined in the last 15-20 years and have decreased by 30 times compared to the 1980s, losing their economic importance<sup>23</sup>.

## Demographic and social statistics

As of the beginning of 2022, the population of the country has increased by 29,418 people or 0.3%, reaching 10,185,784 people as of July 1, 2022. Urban residents make up 52.9% of the population, while rural residents make up 47.1%. Currently, there are 1001 women per 1000 men<sup>24</sup>.

Azerbaijan is among the countries with a high population density. The country's population density is 117 people per square kilometer, which is higher in Baku city, Absheron, and Lankaran-Astara economic regions<sup>24</sup>.

The birth rate in Azerbaijan has historically been high. There have been periods when the number of births per thousand people was 40-50. However, this figure has declined from 1991 until 2003. Since 2003, there has been an increase in this figure, reaching 16.5 in 2016<sup>24</sup>. Higher levels of education, increased economic independence of women, and other factors are reasons for the decline in the birth rate. One of the factors affecting the decline is the preference among families to have fewer children rather than many<sup>2</sup>.

In 2021, 112,284 babies were born in the country, and during the period of January-June 2022, 61,234 babies were born. Per 1000 people, this figure stood at 12.3. Of the newborns, 52.7% were boys and 47.3% were girls<sup>24</sup>.

In the first six months of 2022, 32,589 deaths were recorded in the country. Compared to the same period last year, the death rate per 1000 people has decreased from 7.5 to 6.5<sup>24</sup>.

In the first half of 2022, 28,785 marriages and 7,531 divorces were recorded. Compared to the same period last year, the number of marriages per 1000 people has increased from 4.7 to 5.8, while the number of divorces has slightly decreased from 1.6 to 1.5<sup>24</sup>.

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<sup>22</sup> The official website of the Ministry of Ecology and Natural Resources of the Republic of Azerbaijan. Biodiversity © 2005-2023 <http://eco.gov.az/az/azerbaycanin-florasi>

<sup>23</sup> The official website of the State Statistics Committee of the Republic of Azerbaijan. Population © 2002-2023. <https://www.stat.gov.az/source/demografi/>

<sup>24</sup> V.Qasımlı, R.Hüseynov, R. Hüseynov, R.Həsənov, C. Cəfərov, A. Bayramova. Azərbaycan Respublikası İqtisadi İslahatların Təhlili və Kommunikasiya Mərkəzi "Yaşıl iqtisadiyyat" (*Green Economy*) Bakı, 2022, "Azprint" nəşriyyatı, 280 (18) səh.

In the first half of this year, the relevant agencies of the Ministry of Internal Affairs (MoIA) and the State Migration Service (SMS) recorded 1,215 people who came to Azerbaijan for permanent residence, and 442 people who left the country. The net migration for the country stands at a positive 773 people<sup>24</sup>.

Although 95% of the population of Azerbaijan is Muslim, the country is considered one of the most advanced in the world in terms of religious tolerance and acceptance. In Azerbaijan, tolerance has rich traditions, historical, and cultural roots. Tolerance is also implemented as state policy<sup>2</sup>.

To date, 793 religious institutions have been registered in the country. Of these, 765 are Islamic, and 28 are of non-Islamic orientation (Christian – 17; Jewish – 8; Krishna – 1; Bahai – 2). There are 2,250 mosques, 14 churches, and 7 synagogues operating in the country<sup>2</sup>.

## **1.2 Socio-economic status: gross domestic product and level of development**

The territory of Azerbaijan has favorable natural and climatic conditions and is rich in natural resources. The country's industry primarily focuses on oil and gas extraction and processing, chemical and petrochemicals, metallurgy, machine building, textile, and food production. In agriculture, the main activities are grain production, cotton production, viticulture, fruit production, tobacco production, tea growing, vegetable production, and livestock production.

In the early 1990s, the collapse of the socialist socio-political system led to economic stagnation and social decline in Azerbaijan, similar to other post-Soviet countries. Significant economic changes and developments have been taking place in Azerbaijan since 1991<sup>7</sup>. During that period, the military invasion and occupation of 20% of the country's territory and the displacement of one million Azerbaijanis from their homeland exacerbated the situation<sup>3</sup>.

Since 1995, Azerbaijan has been implementing a market-oriented free-market economy policy. The "The Contract of the Century" signed with influential international oil companies in 1995, as well as economic reforms carried out in partnership with local and international organizations, led to the first signs of economic development in Azerbaijan. In the following years, economic stability was observed, and in 2005, economic growth more than doubled compared to previous years<sup>2</sup>.

In 2006, Azerbaijan observed its highest Gross Domestic Product (GDP), with a growth rate of 34.5%. Currently, the oil and gas sector constitute the backbone of the country's economy<sup>3</sup>. In 2016, 41 million tons of oil and 18.7 billion m<sup>3</sup> of commercial gas were produced<sup>3</sup>.

Between 2005 and 2015, the Azerbaijani economy grew dynamically. However, the drop in oil prices in the world market since late 2014 has had a negative impact on the Azerbaijani economy. As a result, in 2016, the GDP decreased by 3.1%, amounting to 60.4 billion manats<sup>2</sup>.

Starting from 2016, economic reforms began in order to adapt to new challenges created by global processes and to minimize the impact of the existing global economic crisis. By the decree of the President of the RA dated March 16, 2016, the strategic road map of the national economy and the main sectors of the economy were approved to ensure the sustainability of the economic policy and reforms implemented in the country<sup>2</sup>.

In January 2023, the country produced a GDP of 9,690.2 million manats, which is 1.5% less compared to the same period of the previous year. The added value in the oil and gas sector of the economy decreased by 4.6%, while it increased by 1.7% in the non-oil and gas sector.

The distribution of GDP production is as follows: 52.8% comes from the industry, 9.5% from trade and vehicle repair, 5.3% from transportation and storage, 3.2% from construction, 2.6% from agriculture, forestry, and fishing, 1.6% from information and communication, 1.4% from hospitality, and 15.5% from other sectors. Net taxes on products and imports accounted for 8.1% of the GDP. The per capita GDP amounted to 956.6 manats<sup>23</sup>.

By 2030, it is planned that 20% of the electricity produced within the country will come from renewable energy sources, and by 2050, this figure is expected to reach 38%<sup>19</sup>.

The Strategic Roadmap envisages an average annual real growth of more than 3% in GDP by 2025, along with the creation of more than 450,000 new jobs<sup>3</sup>. Efforts will be made to make Azerbaijan one of the top 20 leading tourism destinations in the world in the post-2025 period. It is projected that approximately 27 billion manats of investment will be required for the fulfillment of priorities set until 2020<sup>3</sup>.

### **1.3 Political and governance structure**

Azerbaijan declared its independence on October 18, 1991, and has been recognized as an independent state by the international community. It is a member of several international organizations, including the United Nations (UN), the Organization for Security and Co-operation in Europe (OSCE), NATO's Partnership for Peace (PfP), the Euro-Atlantic Partnership Council (EAPC), the World Health Organization (WHO), GUAM (Organization for Democracy and Economic Development), the Council of Europe, the International Monetary Fund (IMF), the Organization of Islamic Cooperation (OIC), and the Non-Aligned Movement. In 2011, Azerbaijan was elected as a non-permanent member of the Security Council and represented the Eastern European Group in 2012-2013.

As is the case in all contemporary political systems, Azerbaijan's political system is characterized by pluralism<sup>3</sup>. The structuring of Azerbaijan's political system was essentially completed with the adoption of the new Constitution on November 12, 1995. According to the Constitution, Azerbaijan is defined as a democratic, legal, secular, and unitary republic.

In Azerbaijan's political system, the form of government is a presidential system consistent with republican parliaments. Adhering to the principle of separation of powers, there are three independent branches of government in Azerbaijan: the legislative, executive, and judicial branches. The activities of each of these branches are regulated by the Constitution and legislative acts.

The body that exercises legislative power in Azerbaijan is the Milli Majlis; the executive power is vested in the President, and the judicial power is carried out by the courts of the RA.

The unitarism defined by the Constitution of the RA has specific characteristics. This is due to the presence of the Nakhchivan AR within its composition, which has its own state governance status.<sup>25</sup>

The executive authority in Azerbaijan is vested in the President of Azerbaijan. To enable implementation of executive powers, the President establishes the Cabinet of Ministers (CoM). The CoM serves as the President's supreme executive body, accountable and subordinate to the President. The CoM comprises the Prime Minister, his deputies, ministers, and other heads of central executive authorities. The President appoints the Prime Minister and the CoM, and they are approved by the Milli Majlis. The CoM is responsible for matters related to the state budget, finance, credit and monetary policy, as well as the implementation of state social programs<sup>26</sup>.

## 2. ANALYSIS OF HEALTH SYSTEMS

### 2.1 Status of children

#### Demographic indicators

According to the State Statistics Committee (SSC) data for 2022, the number of children and adolescents aged 0-17 in Azerbaijan is 2,613,000 (of which: girls - 1,216,300; boys - 1,396,700), constituting 25.7% of the total population of Azerbaijan (of which girls make up 46.5% and boys 53.5%). Of these, 1,292,800 live in urban areas (including 605,800 girls and 687,000 boys), and 1,320,200 live in rural areas (including 610,500 girls and 709,700 boys)<sup>27</sup>.

The analysis of the health status of children and adolescents was conducted for two age groups: 0-13 and 14-17.

The table below presents the distribution of children by age and gender.

Age group	0-13		14-17		0-17	
Years	2017	2022	2017	2022	2017	2022
<b>Total</b>	2092.8	2126.0	514.9	487.0	2607.7	2613.0
<b>Girls</b>	972.8	988.9	241.0	227.4	1213.8	1216.3
<b>Boys</b>	1120.0	1137.1	273.9	259.6	1393.6	1396.7

*Table 2. Distribution of children by age and gender*

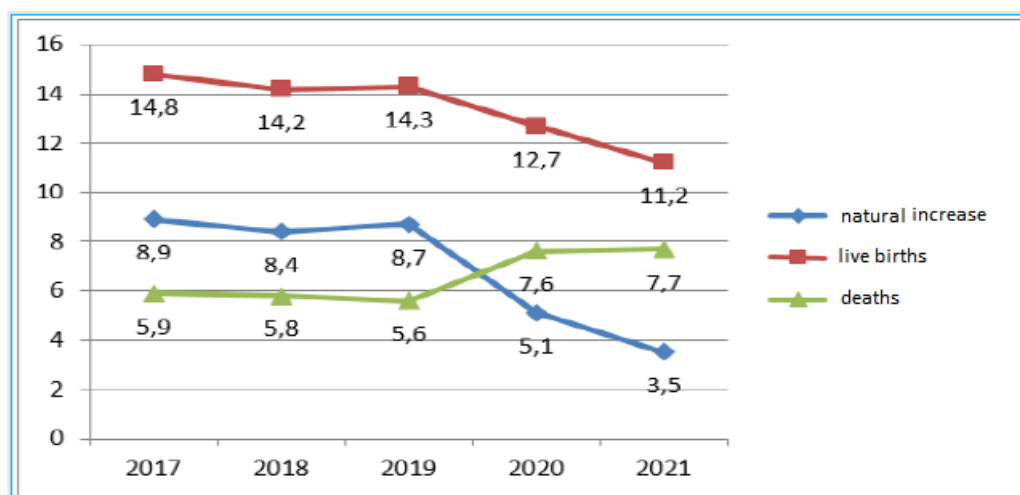
In 2022, the number of children aged 0-13 is 2,126,000 (girls - 988,900, boys - 1,137,100), and those aged 14-17 is 487,000 (girls - 227,400, boys - 259,600). The number of children aged 0-17 has increased by 0.2% over the last five years.

The following figure presents the natural increase, birth, and death rates (per 1,000 population) for the years 2017-2021.

<sup>25</sup> The official website of the Supreme Court of the Republic of Azerbaijan. General Information About the Political System of the Republic of Azerbaijan © 2007-2023 <https://supremecourt.gov.az/static/view/1>

<sup>26</sup> The official website of the Cabinet of Ministers of the Republic of Azerbaijan. Status © Cabinet of Ministers 2022 <https://nk.gov.az/az/nazirler-kabineti/status>

<sup>27</sup> Children in Azerbaijan 2022. Statistical yearbook. State Statistics Committee of the Republic of Azerbaijan. Baku - 2022



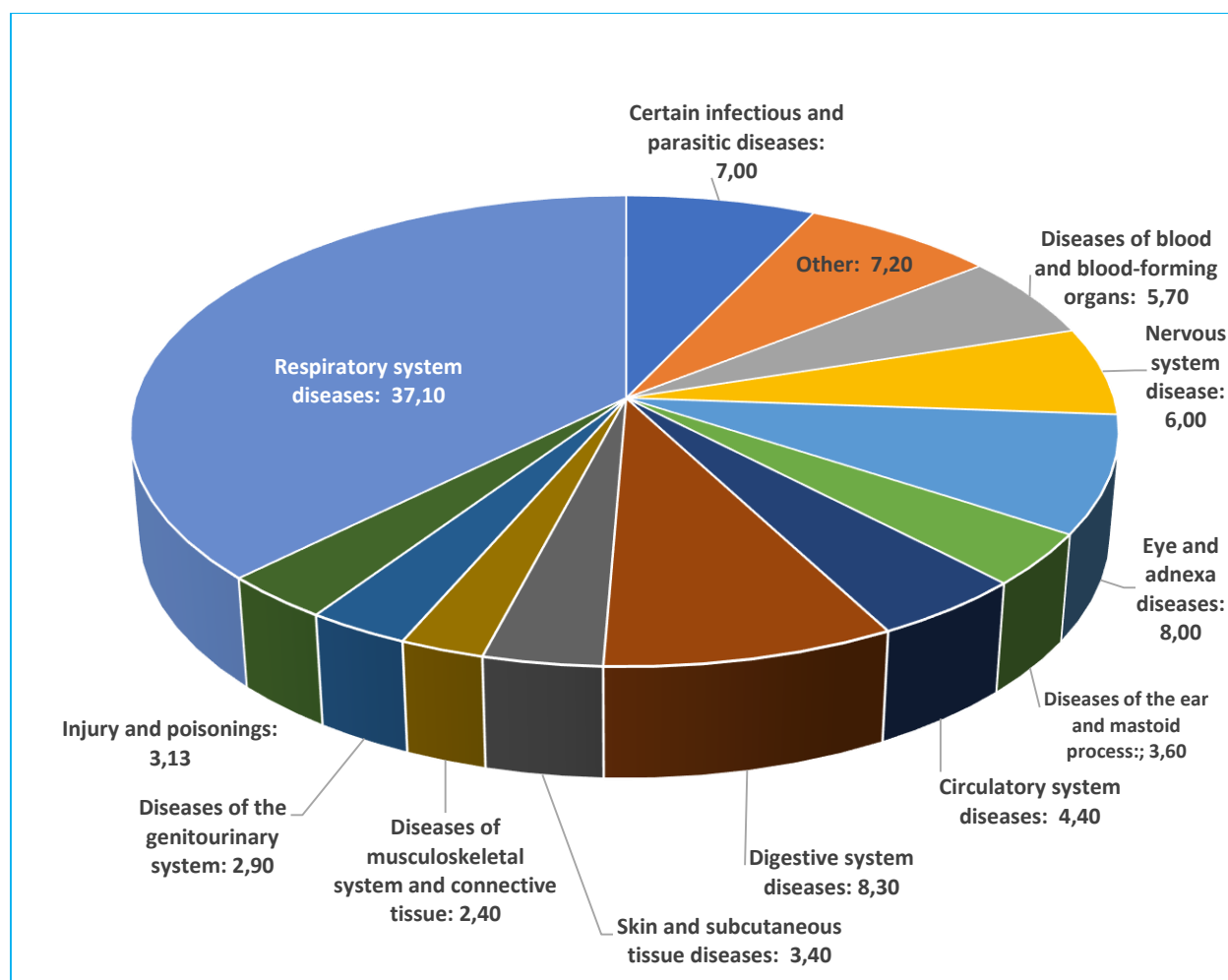
**Figure 3. Natural increase, birth, and death rates for 2017-2021**

From 2017 to 2021, the natural increase has diminished from 8.9 to 3.5 (60.7% reduction), and the birth rate has dropped from 14.8 to 11.2 (24.3% reduction).

### Morbidity rates

One of the key indicators of the health level of children is the frequency of occurrence of diseases and the structure of these diseases<sup>27</sup>.

The following figure shows the disease structure for children aged 0-13.



**Figure 4. Structure of diseases among children aged 0-13 (2022)**



According to the SSC, the overall morbidity rate (recorded with a disease) for children aged 0-13 in 2022 is 3,679.1 cases per 10,000 people<sup>28</sup>. Compared to 2013, this indicator has decreased by 22.1% (4,720.9 cases in 2013). Among children the most common diseases per 10,000 people are respiratory system diseases (37.1%, 1,365.9 cases), digestive system diseases (8.3%, 306.1 cases), eye and adnexa diseases (8.0%, 294.6 cases), certain infectious and parasitic diseases (7.0%, 259.3 cases), and nervous system diseases (6.0%, 221.1 cases).

In the table below, the dynamics of morbidity among children aged 0-13 over the last 5 years are presented.

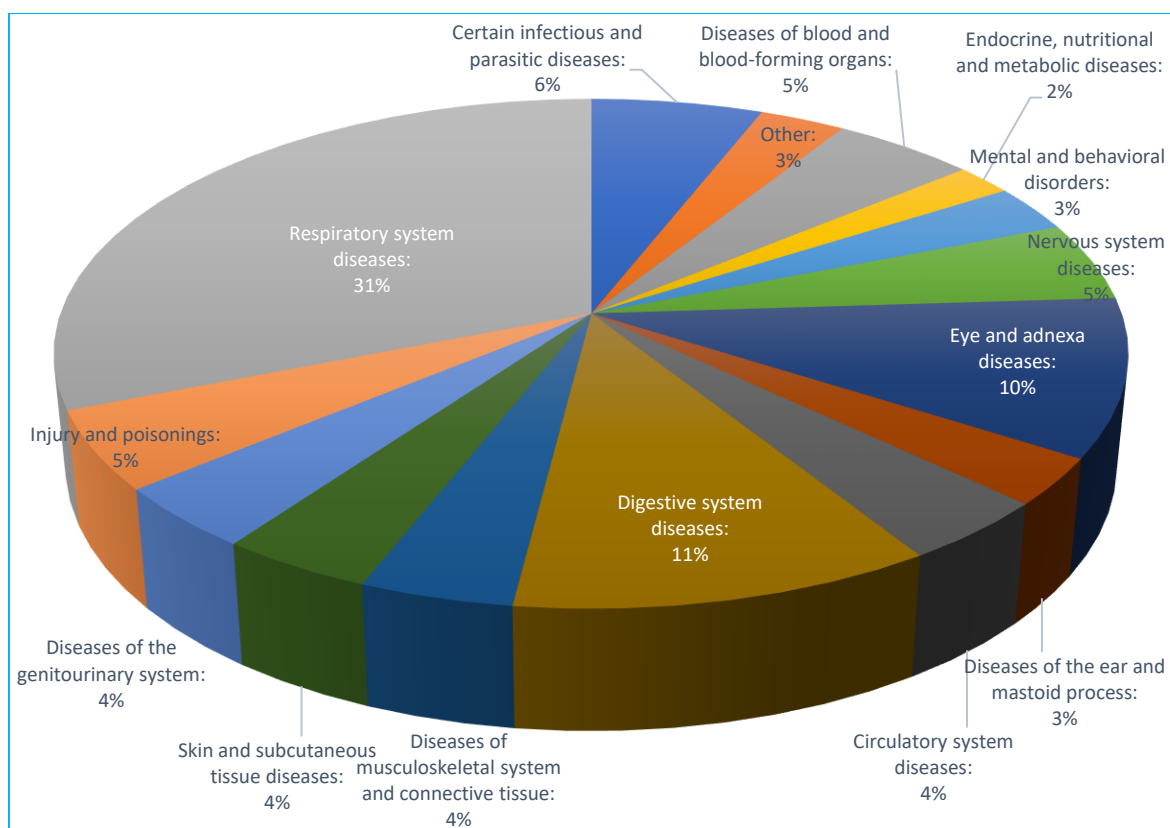
ICD 10 No.	Recorded diseases	Total		Including women	
		2017	2022	2017	2022
	Total	4354,53	3679,1	3790,2	3728,5
1	Certain infectious and parasitic diseases	369,92	259,3	260,3	256,1
2	Neoplasms	4,04	5,6	5,3	5,2
3	Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	267,75	210,1	225,2	221,5
4	Endocrine, nutritional and metabolic diseases	116,92	70,9	76,2	75,0
5	Mental and behavioral disorders	39,27	52,7	38,5	37,8
6	Nervous system diseases	301,86	221,1	226,1	222,4
7	Eye and adnexa diseases	240,27	294,6	302,1	297,2
8	Diseases of ear and mastoid process	131,30	130,8	141,6	139,3
9	Circulatory system diseases	121,75	161,7	168,3	165,6
10	Respiratory system diseases	1819,29	1365,9	1416,0	1392,9
11	Digestive system diseases	335,43	306,1	326,4	321,1
12	Skin and subcutaneous tissue diseases	102,03	126,7	140,4	138,1
13	Diseases of musculoskeletal system and connective tissue	78,32	86,6	88,0	86,6
14	Diseases of the genitourinary system	134,86	105,4	115,9	114,0
16	Certain conditions originating in the perinatal period	60,75	51,4	52,5	51,7
17	Congenital anomalies (developmental malformations, deformations, and chromosomal abnormalities)	42,39	43,2	39,4	38,7
18	Symptoms, signs, and abnormalities	35,24	41,6	41,8	41,1
19	Injury, poisoning and certain other consequences of external causes	153,15	145,5	126,3	124,2

**Table 3. Dynamics of morbidity among children aged 0-13 over the last 5 years (per 10,000)**

Over the last 5 years, although the overall morbidity rate among children aged 0-13 has decreased, the incidence rate of certain diseases has increased. The highest rates are observed in neoplasms (37.5%), mental and behavioral disorders (34.2%), eye and adnexa diseases (22.6%), skin and subcutaneous tissue diseases (24.1%), and circulatory system diseases (32.8%). Among girls aged 0-13, a decrease is observed in all nosological categories.

The following picture presents the structure of diseases of children aged 14-17.

<sup>28</sup> Form No. 12 of the Ministry of Health of the Republic of Azerbaijan. About diseases of the population living in the area served by the treatment facility.



**Figure 5. Structure of diseases among children aged 14-17 (2022)**

In 2022, the overall morbidity rate (recorded with a disease) among adolescents aged 14-17 was 5,291.5 cases per 10,000 people. Compared to 2017, this indicator has increased by 36.3% (3,882.4 cases in 2017). The most widespread diseases among adolescents are respiratory system diseases (31.1%, 1,648.2 cases), digestive system diseases (10.6%, 558.5 cases), eye and adnexa diseases (10.3%, 545.8 cases), and certain infectious and parasitic diseases (6.3%, 334.6 cases).

The table below presents the dynamics of morbidity among adolescents aged 14-17 over the last 5 years:

ICD 10	Total			Including women		
	2017	2022	Growth %	2017	2022	Growth %
<b>Total</b>	3882,40	5291,48	36,3	3900,9	5409,9	38,7
<b>1.0 Certain infectious and parasitic diseases</b>	293,38	334,62	14,1	296,2	352,5	19,0
<b>2.0 Neoplasms</b>	6,49	13,49	108,0	6,8	11,3	65,7
<b>3.0 Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism</b>	225,58	268,42	19,0	255,1	301,8	18,3
<b>4.0 Endocrine, nutritional, and metabolic diseases</b>	106,43	124,58	17,1	110,2	135,8	23,2
<b>5.0 Mental and behavioral disorders</b>	118,29	138,05	16,7	82,1	99,2	20,9
<b>6.0 Nervous system diseases</b>	160,92	251,33	56,2	154,5	244,0	57,9
<b>7.0 Eye and adnexa diseases</b>	302,70	545,81	80,3	304,6	575,4	88,9
<b>8.0 Diseases of ear and mastoid process</b>	107,87	174,05	61,4	110,5	176,0	59,4
<b>9.0 Circulatory system diseases</b>	160,17	199,32	24,4	157,6	203,6	29,3
<b>10.0 Respiratory system diseases</b>	1325,89	1648,15	24,3	1325,7	1699,7	28,2
<b>11.0 Digestive system diseases</b>	437,33	558,50	27,7	471,2	584,6	24,1
<b>12.0 Skin and subcutaneous tissue diseases</b>	92,19	211,40	129,3	95,1	222,0	133,5
<b>13.0 Diseases of musculoskeletal system and connective tissue</b>	116,43	222,53	91,1	106,6	215,7	102,3
<b>14.0 Diseases of the genitourinary system</b>	177,10	223,14	26,0	222,9	278,6	25,0
<b>15.0 Pregnancy, childbirth, and the puerperium</b>	1,42	1,75	23,1	3,0	3,7	23,4
<b>17.0 Congenital anomalies (developmental malformations, deformations, and chromosomal abnormalities)</b>	35,23	42,30	20,1	26,0	29,6	13,9
<b>18.0 Symptoms, signs, and abnormalities</b>	26,90	70,27	161,2	28,6	75,6	164,6
<b>19.0 Injury, poisoning and certain other consequences of external causes</b>	188,09	263,78	40,2	144,2	200,6	39,1

**Table 4. Dynamics of morbidity among adolescents aged 14-17 over the last 5 years**

Over the last five years, there has been an increase in both the overall morbidity rates and the prevalence of diseases across all systems among adolescents aged 14-17. The highest increases have been observed in diseases of the skin and subcutaneous tissue at 129.3% (133.5% in girls), neoplasms at 108.0% (65.7% in girls), diseases of the eye and adnexa at 80.3% (88.9% in girls), symptoms, signs, and abnormal clinical findings at 161.2% (164.6% in girls), and musculoskeletal diseases at 91.1% (102.3% in girls). There has also been a 1.5- to 2.5-fold increase in other nosological categories. Analysis of morbidity rates in girls indicates that the growth dynamics is higher both for overall diseases and for diseases in certain systems.

In the table below, the morbidity rates by disease categories for children under 18 are presented by economic regions and administrative territorial units, for 2021 (per 10,000 children under 18)<sup>27</sup>.

Economic regions and administrative territorial units	All diseases	Diseases									
		Certain infectious and parasitic diseases	Neoplasms	Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	Endocrine, nutritional and metabolic diseases	Diseases of nervous system and sensory organs	Circulatory system diseases	Respiratory system diseases	Digestive system diseases	Skin and subcutaneous tissue diseases	Diseases of musculoskeletal system and connective tissue
Republic of Azerbaijan – total	2430,9	196,5	1,6	114,3	26,4	318,3	53,5	1080,6	228,2	86,1	49,1
Baku – total	4164,5	312,7	3,3	152,5	52,7	892,5	65,0	1557,2	470,5	262,6	144,4
Nakhchivan AR– total	1441,8	30,7	0,9	43,2	2,7	140,8	13,7	788,0	112,2	21,3	29,6
Absheron – Khizi economic region - total	5482,7	577,1	1,0	283,2	22,8	651,4	82,8	2356,4	469,6	19,7	16,1
Mountainous Shirvan economic region – total	2524,9	165,2	1,6	76,2	9,0	222,9	97,3	1449,5	177,0	42,4	50,7
Ganja-Dashkasan economic region – total	1588,0	186,3	0,6	121,9	27,2	173,0	76,2	737,0	54,9	15,7	14,4
Garabagh economic region – total	1058,8	141,8	0,4	72,8	10,7	68,7	23,3	487,8	149,9	14,9	4,6
Gazakh – Tovuz economic region – total	1690,7	81,4	0,4	66,3	14,3	97,4	50,8	957,7	165,3	18,0	18,3
Guba – Xachmaz economic region – total	2390,1	183,6	1,7	172,5	28,0	205,3	52,3	1158,9	150,0	125,2	24,8
Lankaran - Astara economic region – total	1364,3	89,7	0,5	56,6	15,0	65,5	36,5	792,3	114,7	20,3	15,0
Central Aran economic region – total	2236,8	223,9	0,3	140,5	39,9	166,4	68,6	1049,4	147,3	127,5	57,2
Mil-Mugan economic region – total	1216,3	57,7	2,5	35,1	10,9	89,2	40,6	739,3	62,6	23,3	16,2
Shaki - Zagatala economic region – total	2550,1	255,7	3,1	147,4	31,3	270,6	45,9	910,5	306,3	41,2	46,1
East Zangazur economic region – total	728,0	85,7	-	45,2	28,7	50,0	22,8	330,5	65,4	28,9	7,3
Shirvan – Salyan economic region – total	2221,4	115,1	3,1	106,7	13,5	165,3	65,3	1003,9	190,6	13,9	25,1

**Table 5. Morbidity rates by disease categories for children under 18 by economic regions and administrative territorial units for 2021 (per 10,000 people)**

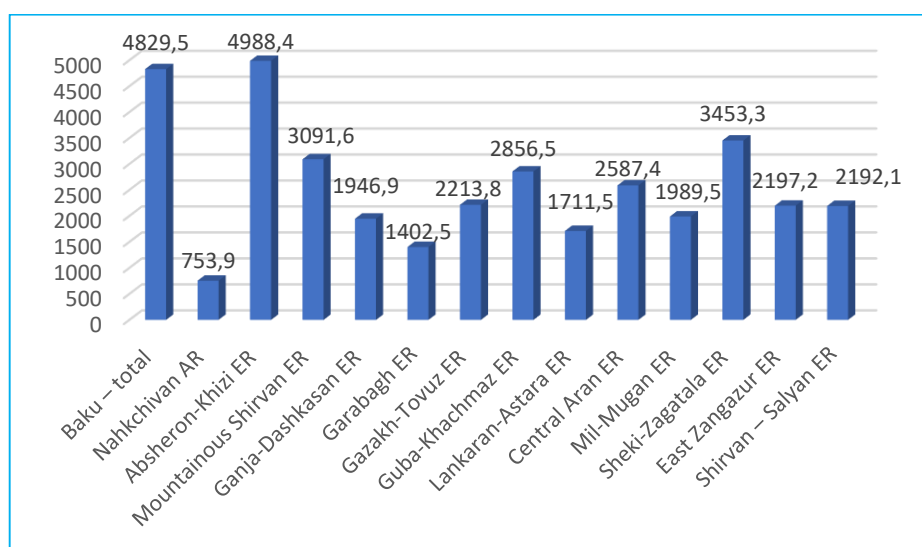
As seen in the table, the highest overall morbidity rates for children under 18 are observed in the Absheron-Khizi economic region (5482.7) and in Baku (4164.5). The highest incidence rates for neoplasms are found in Baku (3.3), Sheki-Zagatala economic region (3.1), Shirvan-Salyan economic region (3.1), and Mil-Mugan economic region (2.5). In terms of the incidence of various conditions related to blood, blood-forming organs, and separate disorders involving the immune mechanism, the top five are Absheron-Khizi economic region (283.2), Guba-Khachmaz economic region (172.5), Baku city (152.5), Sheki-Zagatala economic region (147.4), and Central Aran economic region (140.5); for diseases of the nervous system and sensory organs, the top five includes Baku city (892.5), Absheron-Khizi economic region (651.4), Sheki-Zagatala economic region (270.6), Mountainous Shirvan economic region (222.9), and Guba-Khachmaz economic region (205.3).

### ***Trends in Newly Diagnosed Diseases by Category for Ages 14-17***

Although the age range of 14-17 is considered an adolescent period and is often thought to be a healthier phase, recently, WHO experts emphasize that this stage of adolescence is extremely important for the future health of young people, and they call for greater attention to be paid to them. The WHO reports that it is precisely at this age that many chronic diseases and poor habits emerge, which will impact an individual's safety and health later in life<sup>29</sup>.

In this context, a comparative analysis of morbidity rates by regions for those aged 14-17 and the dynamics of new cases of diseases over the last 5 years (2017-2022) that are highly attributable to external environmental factors have been analyzed.

The following figure presents the overall morbidity rates for children aged 14-17 by economic regions and administrative territorial units for 2021 (per 10,000 children aged 14-17)<sup>27</sup>.



**Figure 6. Overall morbidity rates for children aged 14-17 by economic regions and administrative territorial units in 2021.**

The top five regions with the highest overall morbidity rates for children aged 14-17 are Absheron-Khizi economic region (4988.4), Baku city (4829.6), Sheki-Zagatala (3453.3), Mountainous Shirvan (3091.6), and Guba-Khachmaz economic region (2856.5).

According to WHO data, 20% of the disease burden associated with neoplasms is attributed to air pollution and gaps in the management of chemical substances<sup>30</sup>. In Azerbaijan, there has been a 44% increase in cases of neoplasms among children aged 0-13 over the past 10 years (per 10,000 children, 3.9 in 2013 and 5.6 in 2022). Among those aged 14-17, the increase has been 276.2% (per 10,000 children, 3.6 in 2013 and 13.5 in 2022). The rate of increase in girls aged 14-17 has been lower compared to the overall rate over the last 10 years (251%<sup>28</sup>). Over the past 5 years, the increase for ages 0-13 and 14-17 has been 37.5% and 108%, respectively. The dynamics of neoplasms among children are presented in the table below.

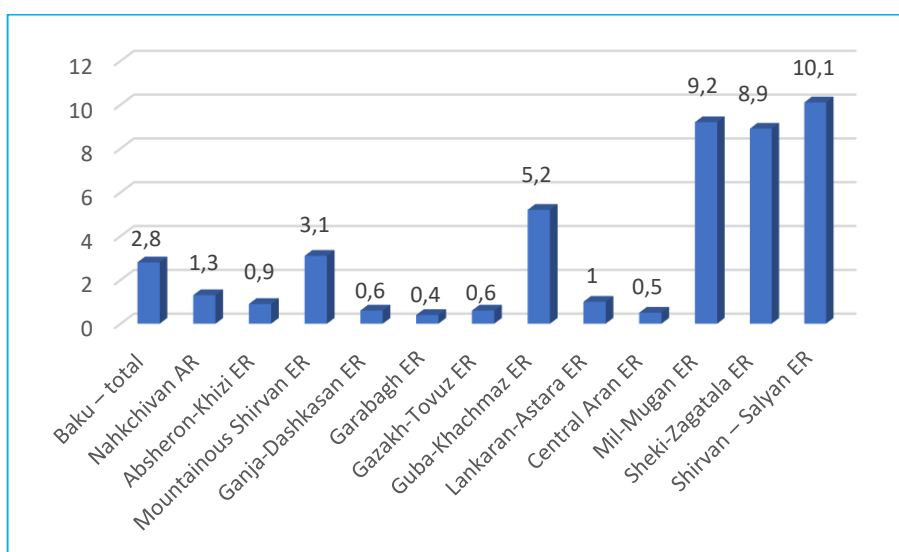
<sup>29</sup> WHO: adolescent and youth health is the Key to the future well-being of Countries, 2018

<sup>30</sup> WHO, 2016. Preventing disease through healthy environments: a global assessment of the burden of disease from environmental risks <https://www.who.int/publications/i/item/9789211565196>

Year	2017		2018		2019		2021		2022	
Per 10,000 people, total	Patients recorded with this disease		Patients recorded with this disease		Patients recorded with this disease		Patients recorded with this disease		Patients recorded with this disease	
Age	Total	Including those with first-time diagnosis	Total	Including those with first-time diagnosis	Total	Including those with first-time diagnosis	Total	Including those with first-time diagnosis	Total	Including those with first-time diagnosis
0-13	4.04	1.08	4.54	1.55	4.41	1.23	4.94	1.32	5.6	1.25
14-17	6.49	1.81	6.34	1.89	8.31	2.84	9.72	2.79	13.49	2.87

**Table 6. Prevalence of neoplasms among children (per 10,000 people)**

The following figure presents prevalence rates of neoplasms for children aged 14-17 by economic regions for 2021.

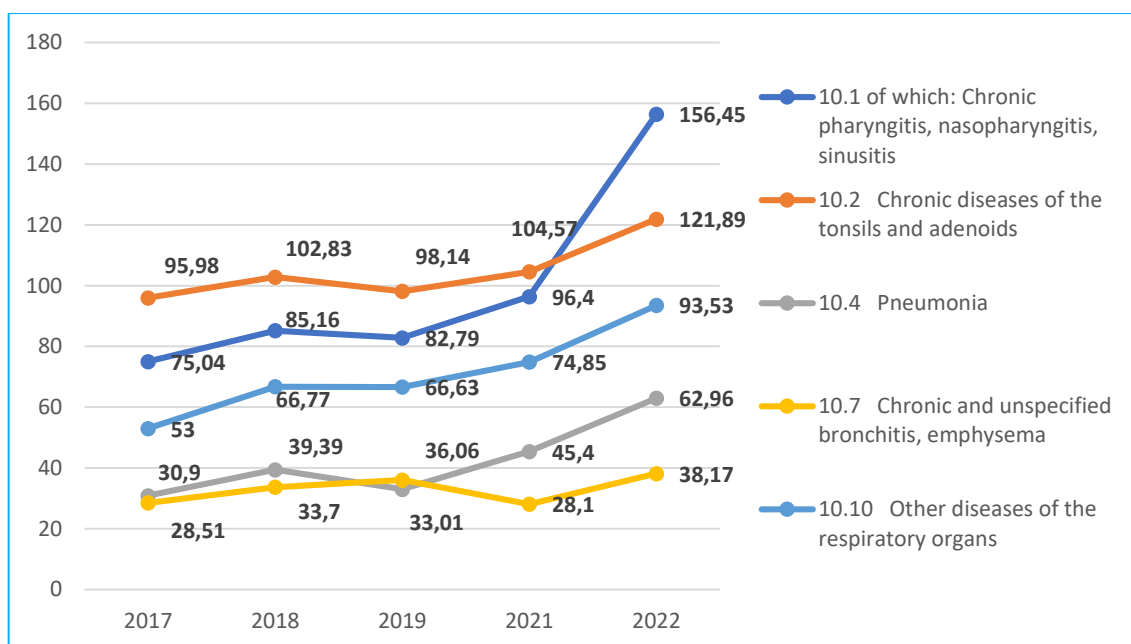


**Figure 7. Prevalence of neoplasms for children aged 14-17 in 2021**

The highest prevalence of neoplasms among adolescents aged 14-17 are recorded in Shirvan-Salyan (10.1), Mil-Mugan (9.2), Sheki-Zagatala (8.9), and Guba-Khachmaz (5.2) economic regions.

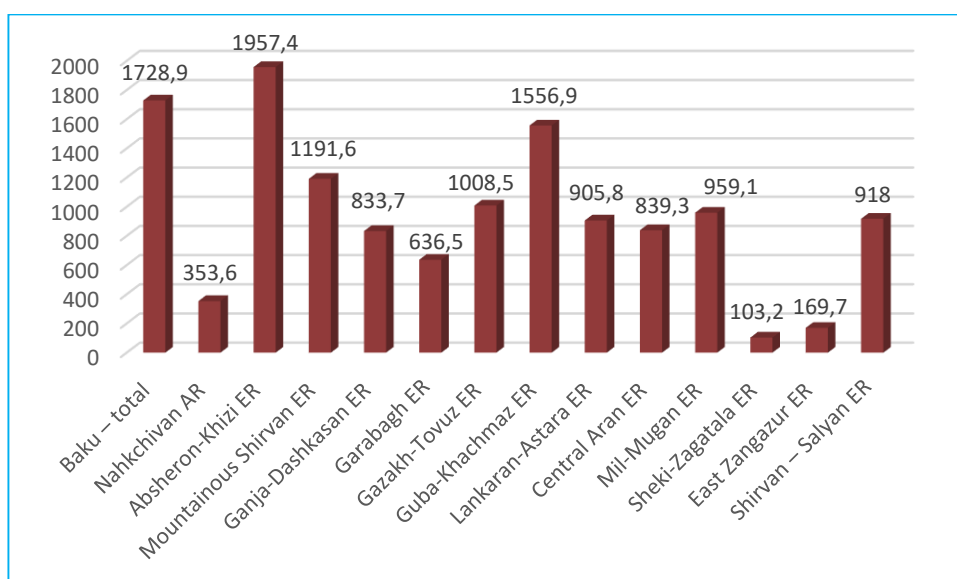
35% of the burden of respiratory diseases is attributed to domestic and ambient air pollution and tobacco<sup>30</sup>. As shown in the presented figure, the incidence of new cases of respiratory diseases among children aged 14-17 in Azerbaijan has increased over the last 5 years, both overall and for individual nosological categories.

The following figure presents the dynamics of new cases of respiratory system diseases among adolescents aged 14-17.



**Figure 8. Dynamics of new cases of respiratory system diseases among adolescents aged 14-17**

The following figure presents the prevalence of respiratory system diseases among children aged 14-17 in various economic regions for 2021.



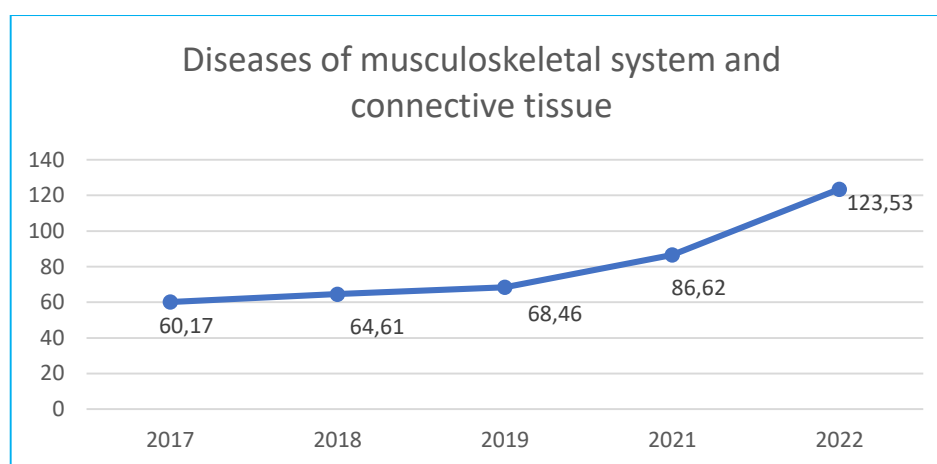
**Figure 9. Prevalence of respiratory system diseases among children aged 14-17 by various economic regions (2021; per 10,000 people)**

As seen in the figure, the highest morbidity rates among those aged 14-17 are found in the Absheron-Khizi economic region, Baku city, and the Guba-Khachmaz economic region.

22% of the burden of musculoskeletal system diseases (12-33%) is attributed to occupational and household risks, such as improper sitting for long periods, lack of movement during the learning process, and heavy bags<sup>30</sup>. In Azerbaijan, the incidence of new cases of such diseases among children aged 14-17 has increased 2.1 times over the last 5 years (60.2 in 2017; 123.5 in 2022).

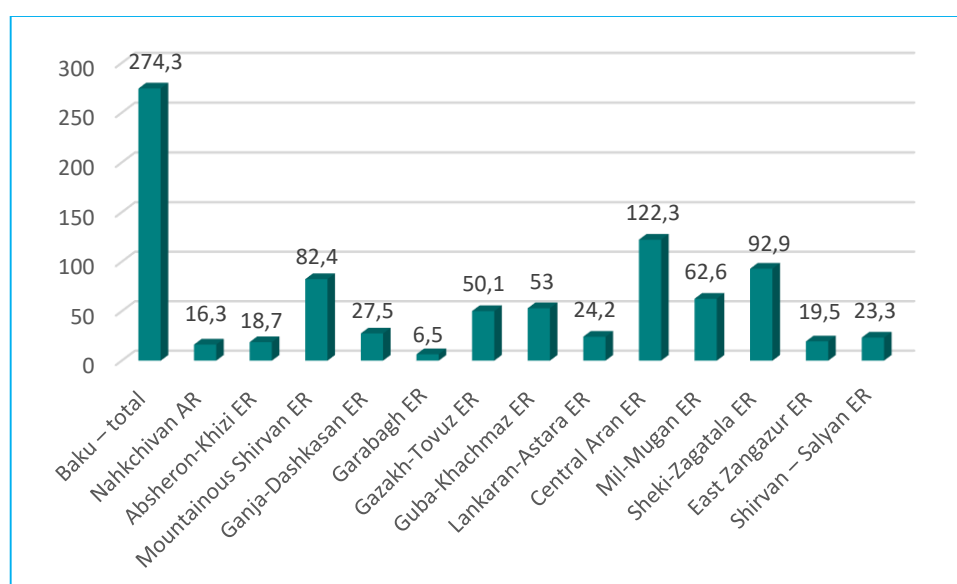
The following figure presents the dynamics of new cases of musculoskeletal diseases among adolescents aged 14-17.





**Figure 10. Dynamics of incidence of new cases of musculoskeletal system diseases among adolescents aged 14-17**

The following figure presents the prevalence of musculoskeletal diseases among adolescents aged 14-17 by economic regions.

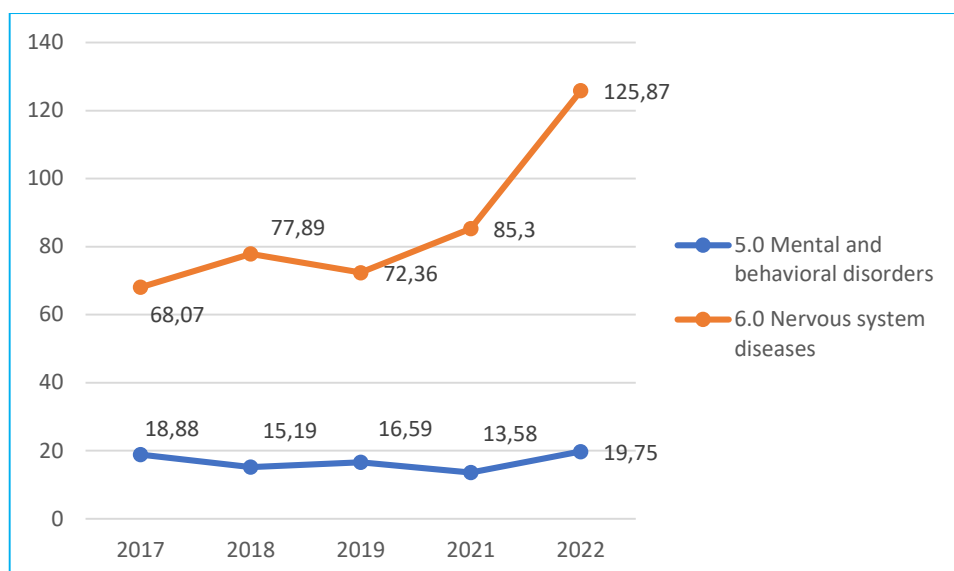


**Figure 11. Prevalence of musculoskeletal system diseases among children aged 14-17 by economic regions (2021; per 10,000 people)**

The highest prevalence rates of musculoskeletal diseases among those aged 14-17 are found in Baku city (274.3), Central Aran (122.3), Sheki-Zagatala (92.9), and Mountainous Shirvan (82.4) economic regions.

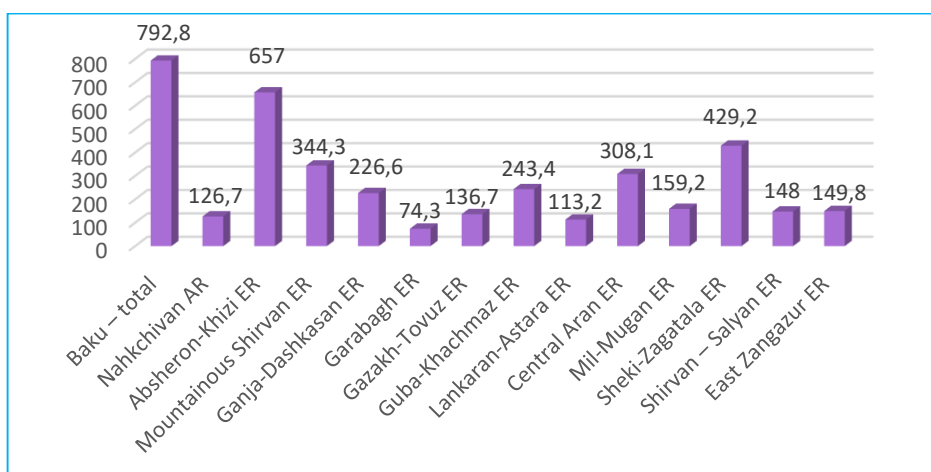
Mental, behavioral, and neurological disorders account for 3% of deaths worldwide but 10% of the global disease burden. 12% of this disease burden is attributed to chemical substances, occupational risks, environmental factors, and climate change. In Azerbaijan, there has been a 1.8-fold increase in new cases of nervous system diseases among children aged 14-17.

The figure below shows the dynamics of newly diagnosed cases of mental, behavioral and neurological disorders in adolescents aged 14-17 years<sup>27</sup>.



**Figure 12. Dynamics of new cases of mental, behavioral, and neurological disorders among adolescents aged 14-17**

The figure below shows the prevalence of nervous system diseases in adolescents aged 14-17 years (2021).



**Figure 13. Prevalence of nervous system diseases among children aged 14-17 by economic regions (2021)**

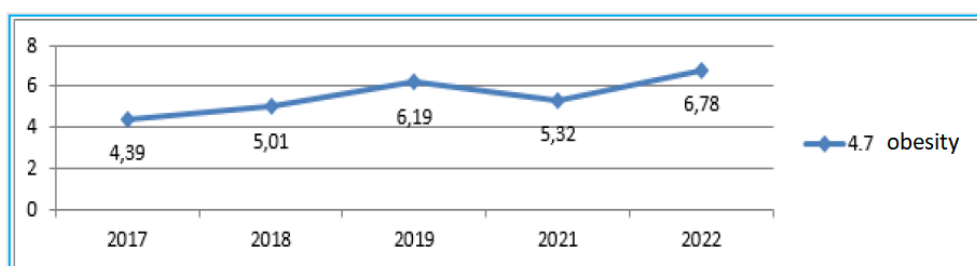
The highest rates of nervous system diseases among those aged 14-17 are found in Baku city (792.8), the Absheron-Khizi economic region (657.0), and the Sheki-Zagatala economic region (429.2).

The increase in the consumption of energy-rich foods, lack of physical activity, and a sedentary lifestyle are contributing to overweight and obesity<sup>31</sup>. Obesity and overweight are significant risk factors for non-communicable diseases (NCDs) such as cardiovascular diseases, diabetes, musculoskeletal diseases, and certain types of cancer<sup>32</sup>. In Azerbaijan, the incidence of newly diagnosed cases of obesity among children aged 14-17 has increased from 4.4 to 6.78 per 10,000 people over the last 5 years.

The following figure presents the dynamics of the new cases of obesity among adolescents aged 14-17.

<sup>31</sup> WHO (2015i). Obesity and overweight Fact sheet No. 311. Geneva: World Health Organization

<sup>32</sup> WHO (2014i). Global status report on noncommunicable diseases 2014. Geneva: World Health Organization

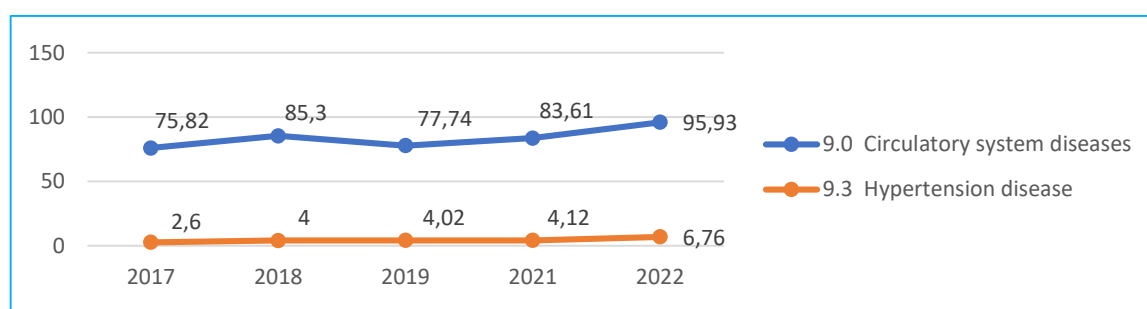


**Figure 14. Dynamics of newly diagnosed cases of obesity among adolescents aged 14-17 (per 10,000 people)**

31% of the burden of circulatory system diseases is attributed to domestic and ambient air pollution, tobacco, and chemical substances<sup>30</sup>. Low physical activity is estimated to account for 9.11% of the global disease burden<sup>33</sup>. A sedentary lifestyle<sup>34</sup> is estimated to increase the risk of circulatory system diseases by 18-33%<sup>35</sup>. High blood pressure is a major risk factor for stroke, contributing to 68% of the risk<sup>33</sup>.

In Azerbaijan, over the last 5 years, the number of the newly diagnosed cases of circulatory system diseases among children aged 14-17 has increased from 75.8 to 95.9 per 10,000 people, including an increase in the number of hypertension diagnoses from 2.6 to 6.8.

The following figure presents the dynamics of the new cases of circulatory system diseases among adolescents aged 14-17.



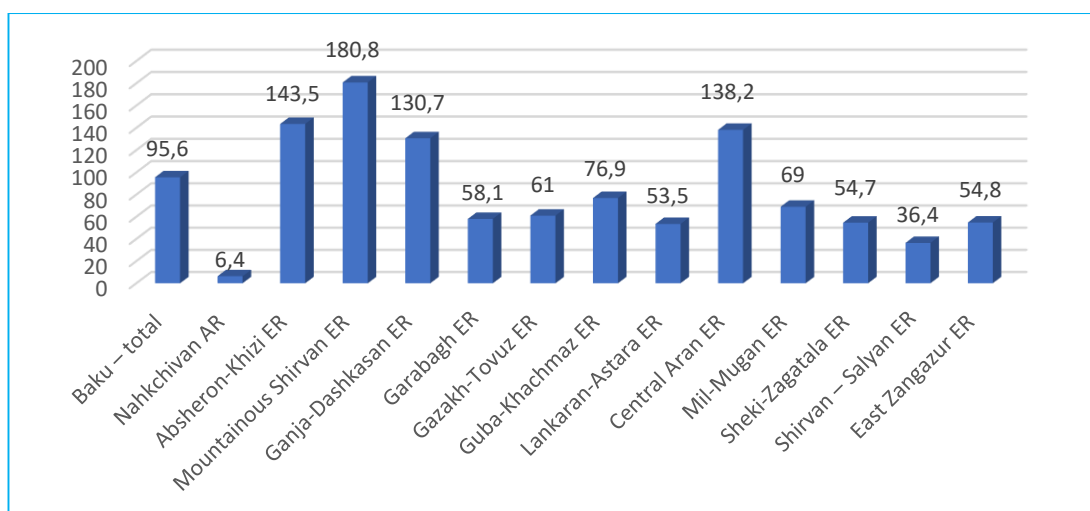
**Figure 15. Dynamics of new cases of circulatory system diseases among adolescents aged 14-17 (per 10,000 people)**

In the following figure, the prevalence of circulatory system diseases among children aged 14-17 by the economic regions are presented for 2021.

<sup>33</sup> IHME (2023). GBD 2019, GBD Compare. Available: <https://vizhub.healthdata.org/gbd-compare/> (accessed 24 May 2023)

<sup>34</sup> Bellettiere J, LaMonte MJ, Evenson KR, Rillamas-Sun E, Kerr J, Lee IM, Di C, Rosenberg DE, Stefanick M, Buchner DM, Hovell MF, LaCroix AZ. Sedentary behavior and cardiovascular disease in older women: The Objective Physical Activity and Cardiovascular Health (OPACH) Study. *Circulation*. 2019 Feb 19;139(8):1036-1046. doi: 10.1161/CIRCULATIONAHA.118.035312. PMID: 31031411; PMCID: PMC6481298.

<sup>35</sup> Peter-Marske KM, Evenson KR, Moore CC, Cuthbertson CC, Howard AG, Shiroma EJ, Buring JE, Lee IM. Association of Accelerometer-Measured Physical Activity and Sedentary Behavior With Incident Cardiovascular Disease, Myocardial Infarction, and Ischemic Stroke: The Women's Health Study. *J Am Heart Assoc*. 2023 Apr 4;12(7):e028180. doi: 10.1161/JAHA.122.028180. Epub 2023 Mar 28. PMID: 36974744; PMCID: PMC10122899.



**Figure 16. Prevalence of circulatory system diseases among children aged 14-17 by economic regions (2021)**

The Mountainous Shirvan economic region ranks first (180.8) in the prevalence of circulatory system diseases among adolescents aged 14-17. It is followed by Absheron-Khizi (143.5), Central Aran (138.2), and Ganja-Dashkasan (130.7) economic regions.

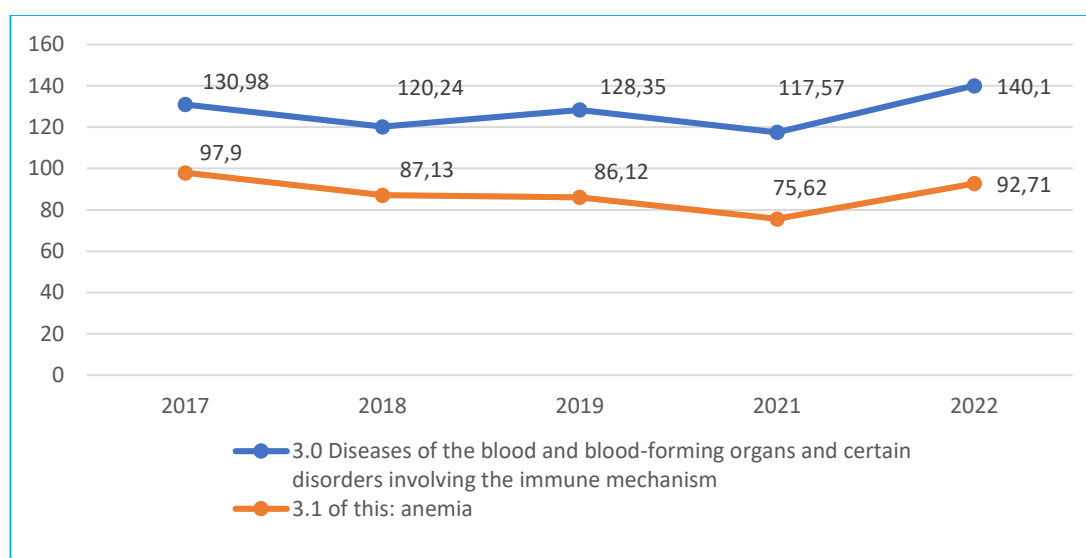
Smith et al. suggest that Azerbaijan could be among the regions at high risk for increasing iron deficiency due to rising CO<sub>2</sub> levels in the coming decades<sup>36</sup>. According to UNICEF data on Azerbaijan, the level of anemia is alarmingly high. More than half of infants aged 6-23 months suffer from anemia, and its prevalence is 24.2% among children aged 6-59 months<sup>37</sup>. According to the SSC, there has been a slight decrease in anemia cases in Azerbaijan over the last 5 years. However, this indicator slightly increased in 2022, affecting 92.7 per 10,000 adolescents aged 14-17. Local experts believe that approximately 80% of anemia in Azerbaijan is due to iron-deficiency anemia.

The following figure presents new cases of diseases of the blood-forming organs among adolescents aged 14-17 for 2021.

<sup>36</sup> Smith MR, Golden CD, Myers SS. Potential rise in iron deficiency due to future anthropogenic carbon dioxide emissions. *Geohealth*. 2017 Aug 2;1(6):248-257. doi: 10.1002/2016GH000018. PMID: 32158990; PMCID: PMC7007116

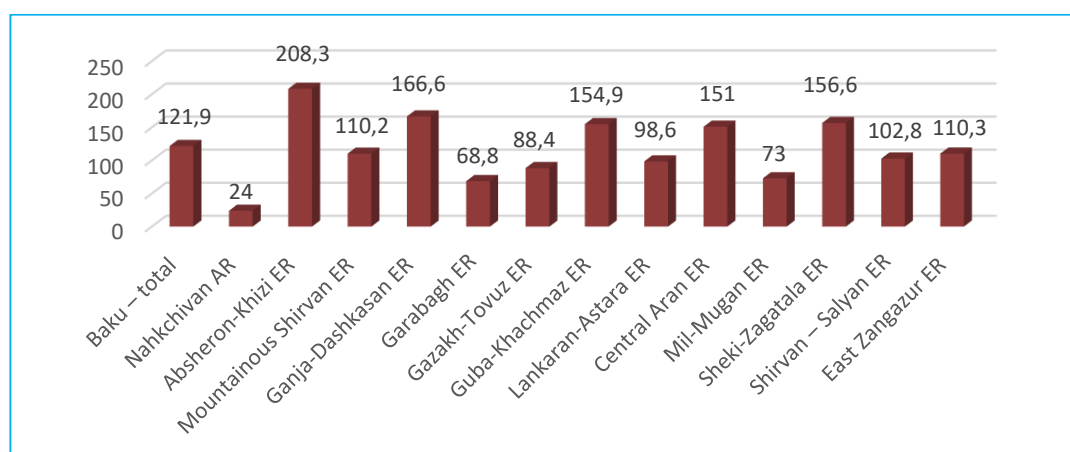
<sup>37</sup> Azerbaijan Nutrition Survey/2013.

<https://www.unicef.org/azerbaijan/media/131/file/UNICEF%25Azerbaijan%20AzNS%202013.pdf>



**Figure 17. Dynamics of new cases of blood and blood-forming organ diseases among adolescents aged 14-17**

In the following figure, prevalence of diseases of the blood-forming organs among children aged 14-17 by economic regions are presented for 2021.



**Figure 18. Prevalence of diseases of the blood-forming organs among children aged 14-17 by economic regions (2021)**

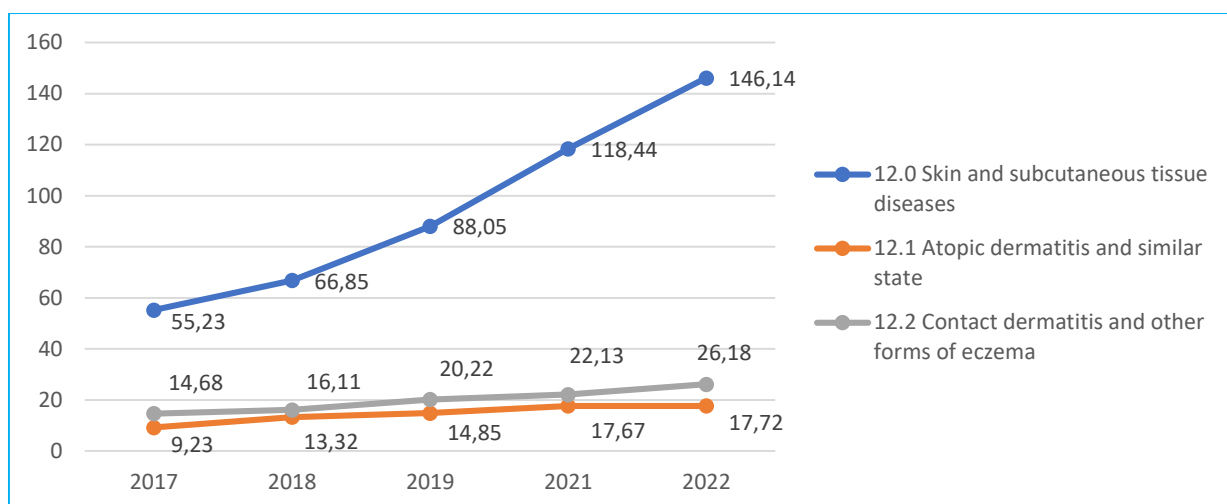
The prevalence of diseases of the blood-forming organs is high across almost all regions among those aged 14-17. The highest rates are observed in Absheron-Khizi (208.3), Ganja-Dashkasan (166.6), Sheki-Zagatala (156.6), Guba-Khachmaz (154.9), and Central Aran (151).

Literature data<sup>38</sup> indicates that skin and subcutaneous tissue diseases are associated with air pollution<sup>39</sup>.

The following figure shows the dynamics of new cases of skin and subcutaneous tissue diseases among adolescents aged 14-17.

<sup>38</sup> Junior VH, Mendes AL, Talhari CC, Miot HA. Impact of environmental changes on Dermatology. An Bras Dermatol. 2021 Mar-Apr;96(2):210-223. doi: 10.1016/j.abd.2020.11.004. Epub 2021 Jan 31. PMID: 33581930; PMCID: PMC8007550

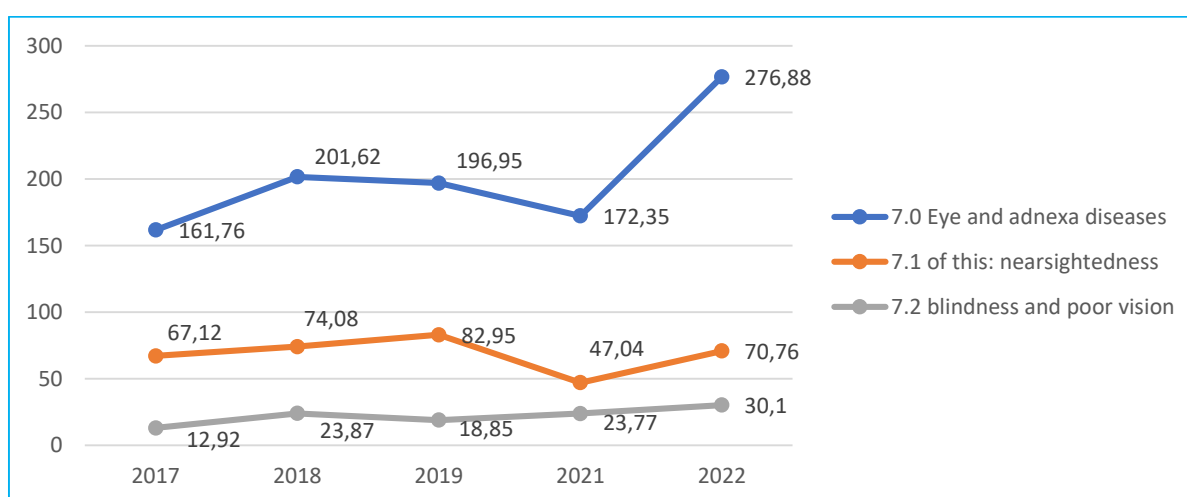
<sup>39</sup> Liu W, Pan X, Vierkötter A, Guo Q, Wang X, Wang Q, Seité S, Moyal D, Schikowski T, Krutmann J. A Time-Series Study of the Effect of Air Pollution on Outpatient Visits for Acne Vulgaris in Beijing. Skin Pharmacol Physiol. 2018;31(2):107-113. doi: 10.1159/000484482. Epub 2018 Feb 7. PMID: 29408821.



**Figure 19. Dynamics of new cases of skin and subcutaneous tissue diseases among adolescents aged 14-17 (2017-2022)**

Research indicates<sup>40</sup> that environmental factors play a significant role in the development of myopia, and the risk of progressive myopia in children is higher in large cities compared to rural areas<sup>41</sup>.

The following figure presents the trends in the new cases of eye and adnexa diseases among adolescents aged 14-17.

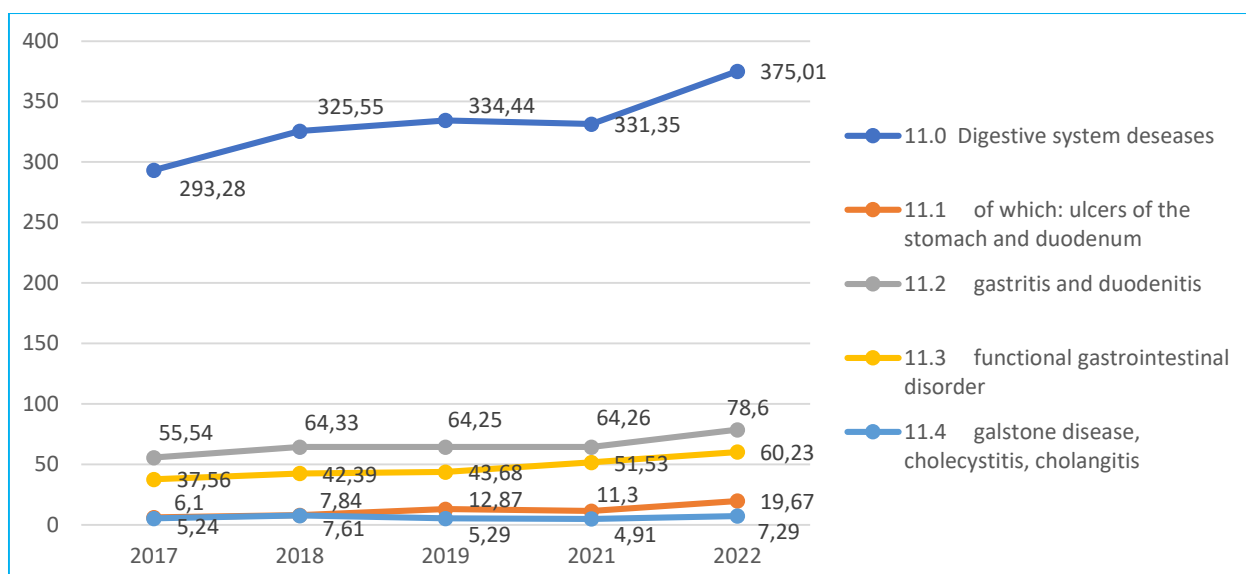


**Figure 20. Dynamics of new cases of eye and adnexa diseases among adolescents aged 14-17**

The following figure presents the dynamics of the new cases of digestive system diseases among adolescents aged 14-17.

<sup>40</sup> Harb EN, Wildsoet CF. Origins of Refractive Errors: Environmental and Genetic Factors. Annu Rev Vis Sci. 2019 Sep 15;5:47-72. doi: 10.1146/annurev-vision-091718-015027. PMID: 31525141

<sup>41</sup> Abdiyeva Y.C. Dependence of the rate of progression of myopia in children on the place of residence / ATJ, 2020, No. 2, 74-79. DOI: 10.34921/amj.2020.2.011



**Figure 21. Dynamics of new cases of digestive system diseases among adolescents aged 14-17**

Despite observing an increasing trend in various diseases among children and adolescents in the RA, the relationship of these diseases with environmental factors has not been studied over the past 5 years. Neither has the reason for higher rates of disease in various economic regions compared to both Republic-wide indicators and other economic regions.

### Mortality rates

According to WHO data, 23% of global deaths and 26% of deaths among children under 5 are related to modifiable environmental factors. Stroke, ischemic heart disease, diarrhea, and cancer are at the top of this list. Research from 2012 estimates that eliminating environmental risks could prevent up to 26% (95%CI: 16-18%) of all deaths among children under five<sup>30</sup>.

The following table presents the number and overall rate of deaths under the age of one.

Year	Per 1000 live births		
	Total	Urban	Rural
2017	11.1	18.7	4.0
2018	11.1	16.3	6.2
2019	11.0	16.7	5.7
2020	9.8	14.3	5.6
2021	7.5	8.6	6.5

**Table 7. Number and overall rate of deaths among children under the age of one (per 1000 live births)**

In the last 5 years (2017-2021), the number of deaths among children under the age of one in Azerbaijan has decreased from 11.1 to 7.5 per 1000 people. The number is higher in urban areas compared to rural areas<sup>27</sup>.



The following table presents the main causes of death among children under the age of 1 (2021).

Main causes	Total	Urban	Rural
Per 10,000 live births	74.8	85.7	64.8
Number of child deaths under the age of one from all causes			
Including:			
Certain infectious and parasitic diseases	3.7	4.1	3.2
Nervous system diseases	4.5	4.1	4.8
Respiratory system diseases	8.5	8.7	8.4
Digestive system diseases	1.3	1.5	1.2
Certain conditions originating in the perinatal period	31.1	36.3	26.3
Congenital anomalies (developmental malformations, deformations and chromosomal	11.7	12.6	10.8
Injury, poisoning and certain other consequences of external causes	0.5	0.6	0.5
Other causes	13.5	17.8	9.6

**Table 8. Main causes of death among children under the age of 1 (2021, per 10,000 live births)**

It is noted that conditions originating in the perinatal period (31.1), congenital anomalies (11.7), respiratory system diseases (8.5), nervous system diseases (4.5), and certain infectious and parasitic diseases (3.7) are the main causes of death among children under the age of one in Azerbaijan.

The following table presents the gender distribution of deaths among children under five.

Year	Per 1000 live births		
	Total	boys	girls
<b>2017</b>	13.7	15.3	11.9
<b>2018</b>	13.1	14.3	11.7
<b>2019</b>	13.0	14.8	10.9
<b>2020</b>	11.1	12.5	9.6
<b>2021</b>	10.2	10.9	9.4

**Table 9. Distribution of deaths among children under 5 by gender (per 1000 live births)**

Over the last 5 years, a slight decrease has been observed in the number of deaths among children under 5. Death rates are slightly higher among boys compared to girls.

The following table presents the main causes of death among children under 18 (2021).

Main causes	Per 100,000 children under 18		
	Total	Including	
		Urban	Rural
Number of deaths from all causes including	68,3	77,9	59,0
Certain infectious and parasitic diseases	2,5	2,9	2,2
Neoplasms	3,0	3,2	2,7
Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	0,9	1,2	0,4
Endocrine, nutritional, and metabolic diseases	0,7	0,5	0,9
Nervous system diseases	8,7	8,1	9,4
Circulatory system diseases	4,1	4,8	3,5
Respiratory system diseases	6,3	6,7	6,0
Digestive system diseases	1,2	1,2	1,2
Diseases of musculoskeletal system and connective tissue	0,0	0,1	-
Diseases of the genitourinary system	0,6	0,6	0,6
Certain conditions originating in the perinatal period	13,3	15,0	11,6
Congenital anomalies (developmental malformations, deformations, and chromosomal abnormalities)	6,6	7,1	6,1
Symptoms, signs, and abnormal clinical and laboratory findings, not elsewhere classified	11,6	16,7	6,6
Injury, poisoning and certain other consequences of external causes	8,8	9,8	7,8
Other causes	-	-	-

**Table 10. Main Causes of Death Among Children under 18 (per 100,000 people)**

The main causes of death among children under 18 include nervous system diseases (8.7), injury, poisonings, and other consequences of external causes (8.8), respiratory system diseases (6.3), circulatory system diseases (4.1), and neoplasms. Death rates are generally higher in urban areas, except for nervous system diseases (urban – 8.1; rural – 9.4).

## 2.2 Sector capacity and workforce

According to the SSC<sup>42</sup>, as of 2022, there are 3,206 pediatricians, making up 12.3 doctors per 10,000 children under 18<sup>42</sup>. Compared to 2018, there is a slight decrease in the number of doctors (a total of 3,585; 13.7 doctors per 10,000 children).

As of early 2022, the number of beds for children in hospitals is 4,266, amounting to 16.3 beds per 10,000 children under 18. This indicator has decreased over the last five years. The number of beds for pregnant women and women in postpartum period is 3,375, equating to 13.0 beds per 10,000 women aged 15-49. The number of women's clinics and similar institutions was 106, child sanatoriums are 12, and child polyclinics, outpatient clinics, and institutions with pediatric departments number 230. The number of beds in sanatoriums was 860, and the number of children was 2,496. These indicators have slightly decreased in the last five years due to restructuring. The following table presents the sector potential and workforce for 2018-2022.

<sup>42</sup> State Statistics Committee of the Republic of Azerbaijan. Demographic and social statistics. Health care, social protection, sports. Health care development and medical personnel. <https://www.stat.gov.az/source/healthcare/>

	2018	2019	2020	2021	2022
Number of pediatricians	3585	3577	3556	3347	3206
Per 10,000 children under 18	13.7	13.6	13.5	12.7	12.3
Number of beds for children in hospitals	5912	5770	6033	5534	4266
Per 10,000 children under 18	22.6	22.0	22.9	21.0	16.3
Number of beds for pregnant women and women in postpartum period	4413	4421	4411	4193	3375
Per 10,000 women aged 15-49	16.7	16.8	16.8	16.1	13.0
Number of women's clinics and the facilities with a women's clinic	130	130	131	118	106
Child polyclinics, outpatient facilities and institutions with a child department	248	248	248	248	230
Number of nurseries	4	4	4	4	4
In them:					
Number of places	215	215	215	215	215
Number of children	175	147	121	82	74
Number of paramedical staff, total	52807	54048	55650	54786	53311
Number of paramedical staff per 10,000 population, total	54.0	54.8	55.9	54.8	53.1

**Table 11. Information on sector potential and workforce for 2018-2022**

Environmental factors' impact on the human body is taught in higher and secondary medical schools through subjects like "Hygiene and Medical Ecology" and "Child and Adolescent Hygiene." However, no information was found on research conducted regarding the knowledge of medical workers on the impact of external environmental factors on child health.

## 2.3 Monitoring and technologies

In Azerbaijan, the following statistical documents are used to collect information about the burden of disease and deaths among children<sup>43</sup>:

- Form No. 1 - "About the network, activities, and personnel of Health and Preventive Facilities"; annual
- Form No. 1 "About infectious and parasitic diseases"; monthly and annual
- Form No. 6 "About the key indicators of health by regions" – annual
- Form No. 7 "About malignant neoplasms" – annual
- Form No. 12 "About the diseases of the population living in the area served by the medical institution"; annual
- Form No. 14 "About the inpatient activities of medical institutions" – annual
- Form No. 17 "About medical personnel" – annual
- Form No. 18 "About the sanitary condition of the district (city)";
- Form No. 30 "About the activities of the Health and Preventive Facility" – annual
- Form No. 31 "About the provision of medical services to children" – annual

<sup>43</sup> State Statistics Committee of the Republic of Azerbaijan. Electronic services. Submission of official statistical reports. 3. Social statistics. 3.1. Social protection and health statistics [https://www.stat.gov.az/menu/4/e-reports/az/12/012\\_p.php](https://www.stat.gov.az/menu/4/e-reports/az/12/012_p.php)

- Form No. 32 "About medical assistance provided to women during pregnancy, childbirth, and postpartum period, and abortion"; annual
- Form No. 47 "About the network and activities of medical institutions" – annual
- Form 1U-TSEK "About the disability of persons under 18" – annual

These documents are submitted to the Ministry of Health's Department of Informatics and Statistics (DIS) for analysis at the end of the reporting year. Additionally, statistics on births, deaths, and perinatal deaths are submitted to DIS monthly. Data from DIS is sent to the SSC for reports preparation. One-time surveys are primarily conducted in the healthcare field on the following issues by state statistical institutions:

- The state of public health;
- The quality of medical service in maternity hospitals;
- Infant breastfeeding;
- Public opinion on the provision of medical care;
- The state of maternal and child health, etc.

Surveys are conducted either in medical institutions or households. A questionnaire is prepared for conducting the survey. This questionnaire is approved in consultation with the Ministry of Health (MoH) and other relevant ministries and agencies, and, if necessary, with the UNICEF Azerbaijan. Subsequently, based on suggestions and comments, the final version of the questionnaire, guidelines for conducting the survey, methodological instructions for filling out the questionnaire, and the schedule are approved by the decision of the SSC (or its board). The survey results are published in a statistical bulletin. In addition, the results of the survey are also published in the corresponding statistical yearbooks released by the SSC. When analyzing the results of one-time surveys, data from statistical reports on cases of illness among the population are used. In analyzing health indicators, in addition to absolute indicators, relative indicators are also used, which are based on the number of permanent residents at that date or the average annual number of residents.

The current calculation of the population is based on the results of the population census conducted in 2009, and each year the number of births and newcomers for permanent residence is added to the population, while the number of deaths and departures from the territory is subtracted<sup>43</sup>.

Information about births and deaths is obtained based on the monthly statistical analysis of the data in the birth and death certificates issued by the registration offices of the Ministry of Justice (MoJ). Only live births are included in the number of births. The natural increase of the population is equal to the difference between the number of live births and the number of deaths during the calendar year.

The general birth rate is an indicator that determines the intensity of childbirth, measured as the ratio of live births to the average annual population during a certain period. It is calculated per 1,000 population.

Information on the continuous and periodic monitoring of the burden of disease and death among children attributable to environmental hazards is not available.

The report presented by UNICEF in 2018<sup>37</sup> states: *"Regular observations related to indoor air quality are not conducted. In Azerbaijan, no effort is made to monitor the quality of indoor air in schools and kindergartens. A rapid survey conducted in some schools in Baku and Sumgait cities showed that teachers and students are not sufficiently informed about pollutants that contaminate indoor air, their sources, and management. Schools do not have sufficient facilities to determine and monitor the level of indoor air pollutants."*

## 2.4 Health infrastructure and services

### Development of healthcare and medical personnel

The distribution of doctors by main specialties is as follows<sup>44</sup>:

*Total number of doctors: 31,958*

- Therapeutics: 8,127
- Surgeons: 3,261
- Gynecologists: 1,768
- Pediatricians: 3,206
- Ophthalmologists: 499
- Otolaryngologists: 499
- Neuropathologists: 942
- Psychiatrists: 361
- Narcologists: 66
- Phthisiatricians: 226
- Dermatovenerologists: 484
- Radiologists: 1,487
- Sports medicine physicians: 48
- Stomatologists and dentists: 3,295
- Hygiene epidemiologists: 815
- Others: 6,489

The specialized bed capacity is as follows<sup>45</sup>:

- Total hospital beds across the Republic: 39,083
- Therapeutic: 7,404
- Surgical: 7,291
- Oncological: 1,775
- Gynecological: 800
- Tuberculosis: 1,490
- Infectious: 2,944
- Ophthalmological: 399

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<sup>44</sup> Health, sports. Health care development and medical personnel. Distribution of doctors by main specialties. <https://www.stat.gov.az/source/healthcare/>

<sup>45</sup> Health, sports. Health care development and medical personnel. Specialization of bed fund. <https://www.stat.gov.az/source/healthcare/>

- Otolaryngological: 343
- Dermatovenerologic: 303
- Psychiatric: 4,047
- Narcological: 535
- Neurological: 1,108
- Pregnant women and women in postpartum period: 3,375
- General beds: 2,407
- Other beds: 4,862

Of the total number of hospital beds, 4,266 are allocated for sick children in total<sup>45</sup>.

### **Key Healthcare Indicators**

The total number of physicians of all specializations providing medical services in medical institutions across the Republic is 32,000, while the number of paramedical staff is 53,300. The number of active hospital institutions is 342 (the reduction in the number of medical institutions and hospital beds is related to the reforms carried out in the healthcare system as mentioned earlier), and the total number of hospital beds is 39,100. Out of these, the number of beds designated for sick children is 4,300, and for pregnant women and women in postpartum period, the number is 3,400<sup>45</sup>.

The number of medical institutions providing outpatient-polyclinic medical care to the population is 1,663. Among these, the number of antenatal clinics is 106, the number of children's polyclinics, outpatient clinics, and medical institutions with pediatric divisions is 230. The number of nurseries is 4, with 215 places, and the number of children is 74, including 2 children who have lost their parents<sup>46</sup>.

The table below presents the key indicators of healthcare in the Republic for the years 2018-2022<sup>47</sup>.

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<sup>46</sup> Health, sports. Health care development and medical personnel. Key indicators of health care. <https://www.stat.gov.az/source/healthcare/>

<sup>47</sup> Health, sports. Economic regions and administrative territorial units. As of the beginning of 2022, the main indicators of health care by economic regions and administrative territorial units of the country. <https://www.stat.gov.az/source/healthcare/>

Year	Number of doctors, thsd people	Number of doctors per 10,000 population	Number of paramedical staff, thsd people	Number of paramedical staff per 10,000 population	Number of hospitals	Number of hospital beds	Number of hospital beds per 10,000 population	Number of treatment facilities providing outpatient-polyclinic care to population	Capacity of outpatient-polyclinic facilities (number of visits per shift), thsd	Capacity of outpatient-polyclinic facilities per 10,000 population
<b>2018</b>	31.9	32.6	52.8	54	566	44.1	45.1	1737	105.2	107.6
<b>2019</b>	32.5	32.9	54	54.8	563	44	44.7	1741	104.9	106.4
<b>2020</b>	31.8	32	55.7	55.9	570	44.3	44.5	1726	106.5	107
<b>2021</b>	31.8	31.8	54.8	54.8	518	44.5	44.5	1723	105.1	105.1
<b>2022</b>	32	31.8	53.3	53.1	342	39.1	38.9	1663	106.9	106.6

**Table 12. Key indicators of healthcare in the Republic of Azerbaijan for 2018-2022**

The table below describes the key indicators of healthcare as of January 15, 2022, by the economic regions and administrative units of the country<sup>48</sup>.

Year	Number of doctors, thsd people	Number of doctors per 10,000 population	Number of paramedical staff, thsd people	Number of paramedical staff per 10,000 population	Number of hospitals	Number of hospital beds	Number of hospital beds per 10,000 population	Number of treatment facilities providing outpatient-polyclinic care to population	Capacity of outpatient-polyclinic facilities (number of visits per shift), thsd	Capacity of outpatient-polyclinic facilities per 10,000 population
Republic of Azerbaijan	31958	31.8	53311	53.1	342	39083	38.9	1663	106938	106.6
Baku city	21113	91.7	22666	98.4	158	20105	87.3	311	38030	165.1
Nakhchivan AR	788	17	2375	51.3	28	1726	37.3	114	8432	182.1
Absheron-Khizi ER	1746	30.1	2776	47.9	21	2165	37.3	57	3690	63.6
Mountainous Shirvan ER	323	9.9	949	29	5	885	27.1	61	2400	73.4
Ganja-Dashkasan ER	1331	21.7	3265	53.3	19	2802	45.8	84	7018	114.7
Garabagh ER	788	9.9	2797	35.1	15	1917	24	166	7340	92
Gazakh-Tovuz ER	950	13.8	3094	44.8	10	928	13.4	146	5378	77.9
Guba-Khachmaz ER	768	13.7	1956	34.8	11	1066	19	98	5637	100.3
Lankaran-Astara ER	849	8.8	2755	28.7	14	1416	14.8	176	6486	67.6
Central Aran ER	1050	14.1	3112	41.9	12	1395	18.8	91	5478	73.7
Mil-Mugan ER	403	7.7	1419	27	5	726	13.8	94	3205	60.9
Sheki-Zagatala ER	998	15.8	3347	52.9	10	1429	22.6	106	6454	102
East Zangazur ER	163	4.9	605	18.1	25	1325	39.5	80	1871	55.8
Shirvan-Salyan ER	688	13.6	2195	43.5	9	1198	23.8	79	5519	109.4

**Table 13. The number and capacity of Health and Preventive Facilities by economic regions**

<sup>48</sup> Health, sports. Economic regions and administrative territorial units. As of the beginning of 2022, the main indicators of health care by economic regions and administrative territorial units of the country. <https://www.stat.gov.az/source/healthcare/>



To provide high-quality healthcare services across the Republic, medical facilities have been equipped with modern medical equipment that meets contemporary requirements, and specialized personnel have been trained to operate this equipment. The list of public medical institutions in Azerbaijan is provided below<sup>49</sup>:

- Emergency and Urgent Medical Care Stations (EUMCS)
- District and Village Hospitals
- Family Health Centers
- Treatment and Diagnostic Centers
- City and District Polyclinics
- Women's Clinics
- Maternity Hospitals
- Medical Centers
- Medical Rehabilitation Centers
- Anti-Tuberculosis Dispensaries
- Children's Polyclinics
- Children's Hospitals
- Republic Perinatal Center
- Children's Combined Hospital
- Children's Infectious Diseases Hospital
- Clinical Children's Hospital No.2 named after A.Garayev
- Children's Clinical Hospital
- Children's Neurological Hospital
- National Oncology Center's Children's Clinic
- Children's Rehabilitation Treatment Center
- Children's Dental Clinics
- Children's Dental Centers
- Children's Dermatovenerologic Dispensary
- Children's Tuberculosis Hospital
- Scientific Research Cardiology Institute
- Scientific Research Pediatric Institute named after K.Farajova
- Scientific Research Institute of Traumatology and Orthopedics
- Scientific Research Institute of Maternity and Gynecology
- Scientific Research Institute of Lung Diseases
- Scientific Research Institute of Hematology and Transfusion named after B.A.Eyvazov
- Scientific Research Medical Rehabilitation Institute
- Scientific Research Institute of Medical Prevention named after V.Y.Axundov
- Scientific Research Institute of Medical Prevention's Infectious Diseases Clinic named after V.Y.Axundov
- Scientific Research Institute of Medical Prevention's Occupational Diseases Clinic named after V.Y.Axundov
- New Clinic (Yeni Klinika)

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<sup>49</sup> List of state medical institutions under TABIB. <https://its.gov.az/page/baki-seheri-tibbi-erazi-bolmesi>

- Republic Neurosurgery Hospital
- Combined City Hospitals
- Clinical Medical Center
- Central Oilmen Hospital
- Combined City Hospital No.6 named after A.D.Malikov
- "Azersutikinti" Hospital
- Republic Clinical Urology Hospital named after M.Cavadzade
- Angiology and Microsurgery Center
- Scientific Surgery Center named after M.A.Topchubashov
- Thalassemia Center
- Republic Endocrinology Center
- Republic Clinical Hospital named after Academic M.A.Mirgasimov
- Medical Retraining Institute's Surgery Clinic
- Azerbaijan Medical University's (AMU) Educational-Therapeutic Clinic
- AMU's Educational-Surgical Clinic
- AMU's Oncology Clinic

## 2.5 Health budget and expenditure

For healthcare expenses across the Republic, an amount of 1,378.60 million manats was allocated for 2021<sup>50</sup>.

## 3. EXPOSURE OF CHILDREN TO ENVIRONMENTAL HAZARDS

### 3.1 Heavy Metals: lead, mercury, cadmium, arsenic

Lead negatively affects multiple systems of the body, primarily impacting brain development in children. Paints containing lead are released to the market and their use poses a health risk, especially for children, the most vulnerable group. Even at low levels of lead in the blood (below 5 µg/dL), irreversible lifelong effects such as reduced intellectual development (IQ), behavioral disorders, impaired hearing, and increased risk of hypertension in adulthood can be observed<sup>51</sup>.

Unfortunately, there is no information available in Azerbaijan regarding the amount of lead in paints sold, as well as the level of lead in children's blood.

A study conducted in neighboring Georgia found that the level of lead in children's blood was significantly higher than safe levels. According to preliminary results, 41% of children had a lead concentration in their blood of  $\geq 5$  µg/dL, prompting government agencies to create an initial public health action plan for assessing environmental samples (paint, dust, water, soil, selected food)<sup>52</sup>.

<sup>50</sup> Health, sports. Health care development and medical personnel. Basic indicators of health care. Health care, social protection and social security expenses of the state budget in 2021. <https://www.stat.gov.az/source/healthcare/>

<sup>51</sup> Глобальная кампания по ликвидации свинецсодержащих красок: цель и методы принятия мер государствами. Технический бюллетень. Всемирная организация здравоохранения 2020. ISBN 978-92-4-001126-7. <https://saicmknowledge.org/sites/default/files/publications/9789240011250-rus.pdf>

<sup>52</sup> E Ruadze, I Khonelidze, L Sturua, P Lauriola, H Crabbe, T Marczylo, G S Leonardi, A Gamkrelidze. Addressing lead exposure in children in Georgia: challenges and successes of a multi-agency response. European Journal of Public Health, Volume 30, Issue Supplement\_5, September 2020, ckaa166.145, <https://doi.org/10.1093/eurpub/ckaa166.145>

In 2022, with the technical support of WHO, the "Regulatory Document on the Amount of Lead in Paints"<sup>53</sup> was prepared within the framework of the joint cooperation between the State Customs Committee's Medical Service Administration and the Azerbaijan Society of Toxicologists (AST). Although it has been submitted to the relevant state agencies, it has not been approved yet<sup>54</sup>.

In Azerbaijan, no acute cases of poisoning from mercury, lead, and cadmium in children have been recorded<sup>55</sup>. Although oral intake of metallic mercury from medical thermometers and other sources usually does not cause poisoning, exposure through inhalation is extremely dangerous for children. Therefore, the prohibition of sale of fluorescent lamps and medical devices containing mercury is on the agenda in Azerbaijan.

At the same time, toxic substances like lead, cadmium, mercury, and arsenic can enter a child's body through food, water, and food additives. These substances can accumulate in the body, weaken the immune system, hinder development, and in some cases, even cause death. This is associated with chronic exposure to xenobiotics causing cardiovascular, renal, neurological, and bone diseases due to the continuous intake of food with high levels of heavy metals. This necessitates keeping the level of contamination by heavy metals in food products under constant scrutiny.

In 2020-2021, the Azerbaijan Food Safety Institute (AFSI) assessed the test results of heavy metal residues (lead, cadmium, mercury, arsenic, silicon, strontium-90, cesium-137) in various samples (food, non-food, and biologically active food additives) received by the laboratories operating within the Institute. The samples were categorized into three groups: 859 for food supplements, 374 for food products (various types of grains, dairy products, chicken meat, various oils, spices, etc.), and 11 for non-food products (glass bottles, cork stoppers, cardboard boxes, and other materials in contact with food). Based on the results of 1244 parameters, the amount of heavy metal residue in all tested samples was within the norm, and in some samples, metal residues were not detected at all<sup>56</sup>. However, according to another research, there are production facilities contaminated with cadmium and contaminated lakes in Azerbaijan<sup>57</sup>.

In Azerbaijan, arsenic poisoning among children mainly occurs as a result of accidental ingestion of rodenticides (pest control products against rodents)<sup>58</sup>.

At the same time, there is a serious problem in Azerbaijan related to the unavailability of essential antidotes for the treatment of acute and chronic poisoning from lead, mercury, cadmium, arsenic, and other heavy metals in children<sup>59</sup>.

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<sup>53</sup> <https://az.trend.az/azerbaijan/society/3633929.html>

<sup>54</sup> UN environment, Global Alliance to Eliminate Lead Paint, Model law and guiding document on the regulation of lead-containing paints, [https://saicmknowledge.org/sites/default/files/publications/Model\\_Law\\_Guidance\\_%20Lead\\_Paint\\_AZ.pdf](https://saicmknowledge.org/sites/default/files/publications/Model_Law_Guidance_%20Lead_Paint_AZ.pdf)

<sup>55</sup> Afandiyev IN. Acute Poisonings in Children in Azerbaijan. 10th Congress of Toxicology in Developing Countries (CNDC 10). 18-21 April 2018, Belgrade, Serbia. Book of Abstracts

<sup>56</sup> [http://afsa.gov.az/az/media/news\\_details/2620](http://afsa.gov.az/az/media/news_details/2620)

<sup>57</sup> Abbasov R, Cervantes de Blois C, Sharov P, Temnikova A, Karimov R, Karimova G. Toxic Site Identification Program in Azerbaijan. Environ Manage. 2019 Dec;64(6):794-808. doi: 10.1007/s00267-019-01215-1.

<sup>58</sup> Эфендиев И. Н., Гусейнова Н. А. Острые отравления у детей и возможные пути их профилактики. Педиатрия. 2018; 97 (5): 189–193 DOI: 10.24110/0031-403X-2018-97-5-189-193.

<sup>59</sup> Afandiyev I., Mirzazade M. Prehospital antidote administration in patients with acute poisoning in Baku, Azerbaijan. Clinical Toxicology. 2019, Vol 56, No. 6, p. 38 DOI: 10.1080/15563650.2019.1598646. 39th International Congress of the European Association of Poisons Centres and Clinical Toxicologists (EAPCCT), 21-24 May 2019, Naples, Italy

### 3.2 Toxic Chemicals: highly hazardous pesticides, asbestos

Acute poisoning from pesticides is very dangerous for children's lives. Therefore, the packaging, usage, and storage of pesticides are considered one of the essential issues to protect children from their effects<sup>60</sup>.

In Azerbaijan, there are vast areas contaminated with obsolete and prohibited pesticides that could be dangerous for children's health<sup>61</sup>.

Improper usage, storage, and disposal of pesticides could lead to acute poisoning. The chronic effects of pesticides at low concentrations can cause neurological, reproductive, and other disorders in children, as well as negatively impact their development. Such adverse effects can occur when pesticides are used in kindergartens, homes, and schools, when pesticides are used unsafely in agriculture, or when food products and drinking water are contaminated with pesticides<sup>62</sup>.

A special area (landfill) for storing persistent organic pollutants is located 53 km away from the capital city of Baku. The area stores approximately 8,500 tons of prohibited and obsolete pesticides, including DDT, hexachlorane, calcium cyanamide, calcium arsenide, etc. Funds have been allocated by the government for the reconstruction of the landfill<sup>63,64</sup>.

Additionally, in Azerbaijan, dozens of fatal cases, including acute poisoning from toxic pesticides belonging to various chemical groups, are recorded among children every year<sup>65</sup>. In recent years, mass poisoning incidents have also been observed in Azerbaijan, particularly related to the development of agriculture, especially cotton farming<sup>66</sup>.

The main risk related to asbestos, comes from the inhalation of asbestos fibers. Azerbaijan imports asbestos fibers produced in the United States. According to the UN's COMTRADE international trade database, the import of asbestos products in 2022 amounted to \$1,95 mln<sup>67</sup>.

Despite asbestos being an extremely hazardous substance for children's health, capable of causing severe diseases like asbestosis and mesothelioma, it has not been possible to find any scientific or statistical information on this subject in Azerbaijan.

Another dangerous chemical substance in Azerbaijan that has caused numerous fatal poisonings among children is 70% acetic acid (vinegar essence). For a child, the lethal dose of vinegar essence

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<sup>60</sup> Эфендиев И. Н. Отравления веществами антихолинэстеразного действия. Евразийский Журнал Клинических Наук. 2021. Том 3, № 1. <http://www.ejcs.org/index.php/main/article/view/98>

<sup>61</sup> Ukalska-Jaruga A, Lewińska K, Mammadov E, Karczewska A, Smreczak B, Medyńska-Juraszek A. Residues of Persistent Organic Pollutants (POPs) in Agricultural Soils Adjacent to Historical Sources of Their Storage and Distribution—The Case Study of Azerbaijan. *Molecules*. 2020 Apr 15;25(8):1815. doi: 10.3390/molecules25081815

<sup>62</sup> <https://saglamliq.isim.az/news/2015/etraf-muhit-ve-usaqqlar>

<sup>63</sup> Abbasov R, Cervantes de Blois C, Sharov P, Temnikova A, Karimov R, Karimova G. Toxic Site Identification Program in Azerbaijan. *Environ Manage*. 2019 Dec;64(6):794-808. doi: 10.1007/s00267-019-01215-1

<sup>64</sup> <https://report.az/ask/qobustanda-tullantilar-ucun-yeni-poligonun-insasi-7-mln-manata-basa-gelecek/>

<sup>65</sup> Afandiyev I. N., Huseynova N. A. Acute poisoning in children: epidemiology, risk factors and possible ways of prevention. *Azerbaijan Journal of Perinatology and Pediatrics*. 2018, Volume 4, No. 1, p. 30-36

<sup>66</sup> Afandiyev IN. Four incidents of mass occupational herbicide poisoning in Azerbaijan. *Clinical Toxicology*. 2019, Vol 56, No. 6, p. 96. DOI: 10.1080/15563650.2019.1598646. 39th International Congress of the European Association of Poisons Centres and Clinical Toxicologists (EAPCCT), 21-24 May 2019, Naples, Italy

<sup>67</sup> <https://tradingeconomics.com/azerbaijan/imports/united-states/fabricated-asbestos-fibers-items-mixtures>

could be less than a teaspoon. A ban on the sale of concentrated acetic acid in stores in neighboring Georgia has eliminated deaths from this type of toxicant<sup>68,69,70</sup>.

### 3.3 Hazardous Waste: medical waste, electrical and electronic waste, conflict related contamination

**Healthcare Waste (HCW):** One of the factors that could affect environmental health is waste.

The rapid development of technology, along with increasing population and urbanization, leads to increased demand for healthcare services. This, in turn, results in an increase in the variety and quantity of HCW. Single-use medical supplies made of plastic material, which have been in use since the 1960s, may ensure the comfort and safety of patients but pose a problem for harmless disposal without affecting the environment and human health<sup>71</sup>. The key factor in proper HCW management is its proper segregation, including infectious, pharmaceutical, chemical, radioactive etc. For this, sorting containers with appropriate colors and codes are used.

In Azerbaijan, the specific legislative act on the management of hazardous waste is the law "On Industrial and Domestic Waste." To ensure the implementation of Article 1.5 of the Presidential Decree No. 609 dated July 31, 2007, the CoM of RA adopted a decision on making amendments and additions to this law have been adopted by the Parliament of Azerbaijan<sup>72</sup>.

All HCW generated by health and preventive facilities (HPFs) is divided into four groups, according to its degree of epidemiological and toxicological hazard<sup>72</sup>:

- o Class A – HPF's safe waste;
- o Class B – HPF's hazardous waste;
- o Class C – HPF's special hazardous waste;
- o Class D – HPF's waste close to industrial one

The mix up of different classes of waste at all stages, during collection, storage and transport, is not allowed. Disinfection should be carried out within the medical division where the waste originates and at the place where it is initially stored, using appropriate disinfecting solutions as per the guidelines.

In Azerbaijan, according to healthcare waste management assessment carried out by UNICEF and the Administration of Regional Medical Divisions (TABIB), containers storing Class C waste cannot be stored together with containers for Class A, B, and D waste. Waste in classes B and C must be thermally neutralized. The table below reflects the classification of waste in HPFs<sup>73</sup>.

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<sup>68</sup> Эфендиев И. Н., Гусейнова Н. А. Острые отравления у детей в Азербайджанской Республике. Eurasian Journal of Clinical Science 2018. Vol 1, No 4. <https://doi.org/10.28942/ejcs.v1i4.32>

<sup>69</sup> Кобидзе Т.С., Герзмава О. Х., Кереселидзе М. Т., Эфендиев И. Н. Сравнительная характеристика структуры острых отравлений населения Грузии и Азербайджана. Experimental & Clinical Medicine (Tbilisi, Georgia). №4, 2019, s. 37-44

<sup>70</sup> Эфендиев И. Н. Hospital Mortality Due to Acute Poisoning in Azerbaijan. Middle East and North Africa Clinical Toxicology Annual Conference in Istanbul, Turkey February 19-22, 2020. [https://108c6799-6eb9-462a-a820-afe4c2297424.filesusr.com/ugd/727845\\_a1104dd9c44e482ca01c7e2fe18e4cae.pdf](https://108c6799-6eb9-462a-a820-afe4c2297424.filesusr.com/ugd/727845_a1104dd9c44e482ca01c7e2fe18e4cae.pdf)

<sup>71</sup> Kleber J, Cohen B. Reducing Waste and Increasing Sustainability in Health Care Settings. Am J Nurs. 2020 Apr;120(4):45-48. doi: 10.1097/01.NAJ.0000660032.02514.ec. PMID: 32218047.

<sup>72</sup> Decision of the Cabinet of Ministers of the Republic of Azerbaijan on approval of "Requirements for medical waste management" <https://e-ganun.az/framework/14433>

<sup>73</sup> Azerbaijan Situational Analysis on Healthcare Waste Management. UNICEF, 2022.

Hazard Category	Class A (safe)	Class B (hazardous)	Class C (specially hazardous)	Class D (similar to industrial waste in content)
<b>Characterization according to morphological composition</b>	Non-toxic waste not in contact with infectious diseases clinics or patients' biological fluids; food waste from all HPFs except for infectious diseases clinics and tuberculosis institutions (wards); furniture, inventory, non-functioning diagnostic equipment that does not contain toxic elements; non-contaminated paper, sweepings, construction, etc. waste	Waste in contact with potentially infectious patients, secretions, including blood-contaminated materials and instruments; pathological-anatomical waste, surgical waste from patients (body parts, tissues, etc.); all waste from infectious diseases departments (including food residues); waste from microbiological laboratories working with 3rd and 4th group pathogenic microorganisms; waste from vivariums	Materials in contact with specially hazardous infectious patients; waste from laboratories working with 1st to 4th group pathogenic microorganisms; waste from anti-tuberculosis and dermatovenereological hospitals (wards).	Expired drug preparations, waste of pharmaceutical and diagnostic preparations, expired disinfectants, cytostatics, and other chemical preparations; items, devices, and equipment containing mercury.

**Table 14. Classification of Waste in HPFs**

In our country, the transportation of medical waste from the majority of public medical institutions is carried out by the company "LV Logistics Pvt Ltd". While this company carries out the daily transportation of waste in Baku, transportation in the regions occurs twice a week. The collected waste is handed over to the National Center for Hazardous Waste Management located in Sumgait. According to the assessment report on HCW management, the primary method of neutralization in Azerbaijan is incineration in primary healthcare institutions, while other healthcare institutions use municipal waste landfills. It has been found that the medical institutions visited do not meet minimum requirements, so immediate action needs to be taken by the government in this direction. A plan to improve service quality and the environmental safety situation needs to be developed<sup>73</sup>.

Based on an analysis conducted by UNICEF and TABIB, in Azerbaijan, the segregation of this type of waste in secondary and tertiary healthcare institutions is carried out in two main categories: domestic waste and Class B waste. The collection of Class C waste is only observed in some secondary healthcare facilities. Since none of the evaluated institutions generated radioactive waste, no separation and storage of such waste were observed; anatomical waste was seen to have been mixed with infectious waste. 43% of primary healthcare institutions reported a lack of waste containers, plastic bags, and similar equipment. In addition, no work has been observed in the direction of using yellow or red bags appropriate for Class B or Class C and minimizing waste in healthcare institutions<sup>73</sup>.

**Hazardous waste, electrical and electronic waste:** Hazardous waste includes waste with hazardous characteristics such as being explosive, flammable, oxidizing, toxic, infectious, corrosive, and ecotoxic, which pose immediate or potential risks to public health and the environment.

In Azerbaijan, the existing specific legislative acts for hazardous waste management are as follows<sup>74</sup>:

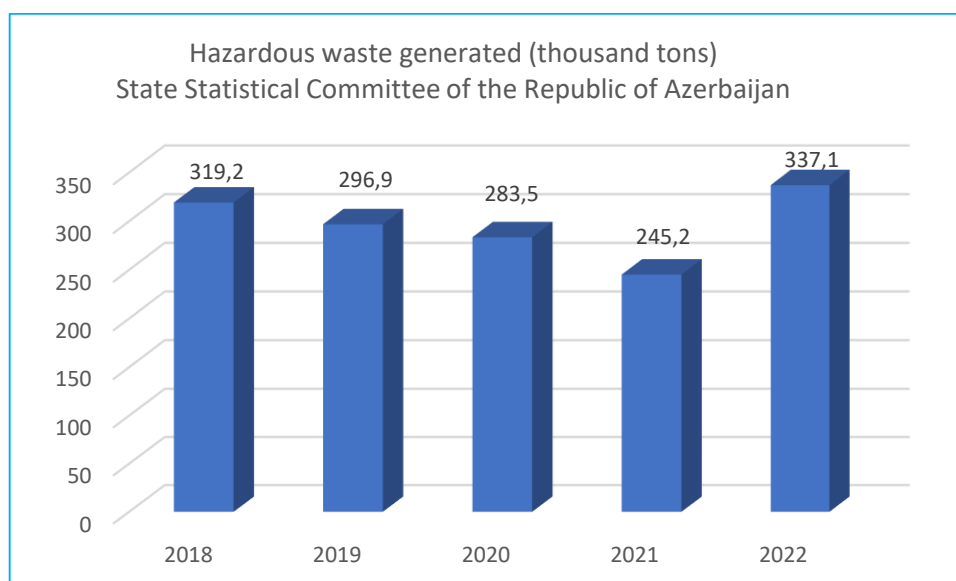
1. The Law of Azerbaijan on "Industrial and Domestic Wastes" (1998)
2. "State Strategy for Hazardous Waste Management in the Republic Azerbaijan," approved by the decision of the CoM dated August 25, 2004 (2004-2010)

In 2022, 337.1 thousand tons of hazardous waste were generated in our country, which is 27.2% more compared to 2021. Their share in the total amount of waste was 8.5%. Also, including the waste left over from previous years, 55 thousand tons of hazardous waste were completely neutralized last year<sup>75</sup>. The following table reflects the management of hazardous waste from 2018 to 2022<sup>75</sup>.

Hazardous waste management (t)	Years				
	2018	2019	2020	2021	2022
<b>Amount of hazardous waste generated</b>	319.2	296.9	283.5	245.2	337.1
<b>Import of hazardous waste</b>	15.0	13.1	13.6	7.2	19.5
<b>Export of hazardous waste</b>	0.02	0.2	0.5	1.8	1.8
<b>Amount of hazardous waste used</b>	5.7	13.5	15.9	5.8	37.2
<b>Amount of hazardous waste neutralized</b>	64.2	66.2	61.4	102.5	55

**Table 15. Hazardous waste management**

Based on MENR data, the table below presents the generation of hazardous waste from 2018 to 2022<sup>76</sup>.



**Figure 22. Generation of hazardous waste**

Electronics, which are an integral part of our lives with their widespread use, constantly change with new models and different dynamics and are rapidly consumed. Electronic waste is the

<sup>74</sup> Law of the Republic of Azerbaijan on Industrial and Domestic Waste, <https://e-qanun.az/framework/3186>

<sup>75</sup> State Statistics Committee of the Republic of Azerbaijan, about waste movement in 2022 <https://stat.gov.az/news/index.php?lang=az&id=5495>

<sup>76</sup> State Statistical Committee of the Republic of Azerbaijan, Environmental protection, Reference indicators of the joint system of environmental information, Hazardous waste management <https://www.stat.gov.az/source/environment/>



fastest-growing waste group in the world, with short usage lifetimes and limited repair opportunities making them the most challenging waste to manage.

The waste from electronic and electrical (electrotechnical) devices is called electronic waste and is referred to as "e-waste" or WEEE (Waste Electrical and Electronic Equipment) in international terminology. Waste from 600 types of devices is grouped under the name "electronic waste." This includes all electrical and electronic devices and their parts that are discarded by their owners without the intention of reusing them as waste<sup>77</sup>.

Electronic waste encompasses six waste categories:

- Temperature exchange equipment known as cooling or freezing appliances (refrigerators, freezers, air conditioners, heat pumps, etc.)
- Screens, monitors (displays, laptops, televisions, tablets, etc.)
- Lamps (fluorescent, LED lamps, etc.)
- Large appliances (washing machines, dishwashers, dryers, electric stoves, large printers, etc.)
- Small appliances (microwaves, toasters, electric kettles, hair trimmers, etc.)
- Small IT and communication equipment (mobile phones, GPS, pocket calculators, personal computers, printers, telephones).

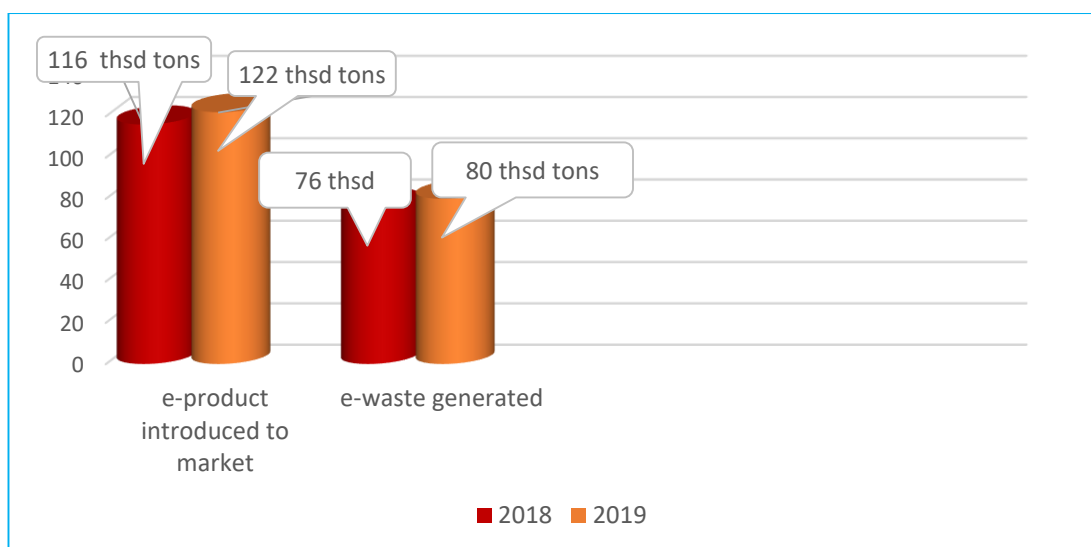
According to the UN's "Global E-Waste Monitor 2020," the volume of this type of waste will reach 75 million tons by 2030, which means their volume will double. In 2019, a record 53.6 million tons of electronic waste was generated worldwide, which is 21% more compared to 2014 (Figure 24). When expired electrical and electronic waste is not properly disposed of, it turns into a serious threat to the environment and human health<sup>78</sup>.

Based on information from the "Global Waste" website, in Azerbaijan, 122,000 tons of electronic products entered the market in 2019 (116,000 tons in 2018), and 80,000 tons of electronic waste were generated (76,000 tons in 2018). There is no designated collection point for electronic waste, and neither import nor export is conducted. The table below provides information on e-products entering the market and e-waste generated in Azerbaijan in 2018-2019.

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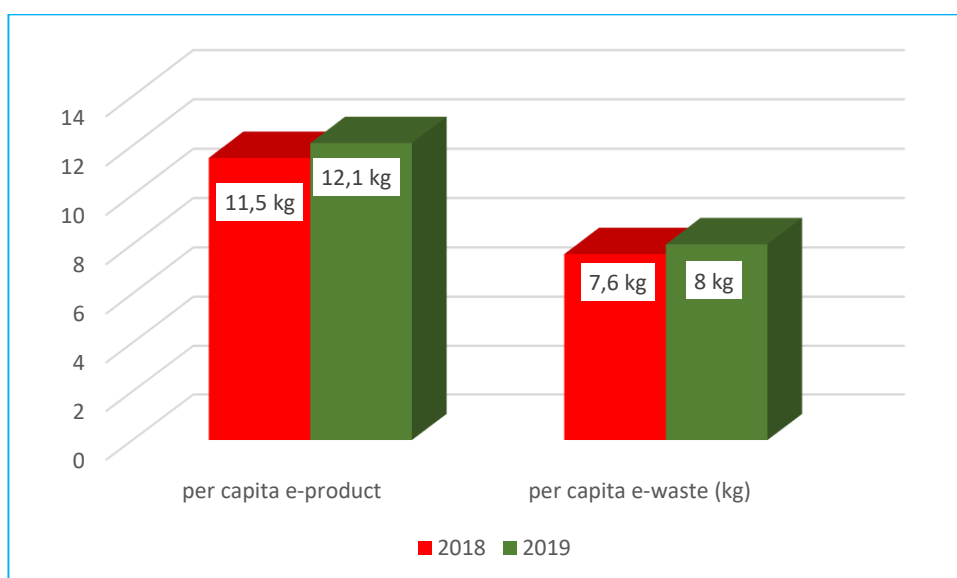
<sup>77</sup> Globalewaste.org, WHAT IS E-WASTE <https://ewastemonitor.info/gem-2020/>

<sup>78</sup> The Global E-waste Monitor 2020 – Quantities, flows, and the circular economy potential <https://ewastemonitor.info/gem-2020/an/2019/>



**Figure 23. E-products entering the market and e-waste generated**

The table below reflects the per capita quantity of electronic products and electronic waste in Azerbaijan for the years 2018-2019<sup>79</sup>.



**Figure 24. Per capita e-product and e-waste in Azerbaijan for 2018-2019**

According to the UN Institute for Training and Research's Regional E-waste Monitor 2021, the volume of e-waste in the Commonwealth of Independent States (CoIS) countries and Georgia increased by 50% in 2019, reaching 2.5 million tons<sup>80</sup>.

In Azerbaijan, no legal framework has been established for the recycling and disposal of electronic waste. Therefore, from legal point of view, activities related to waste are carried out in accordance with international agreements to which Azerbaijan is a party. This includes the "Basel Convention" (to which Azerbaijan joined in 2001) and the UNIDO program (to which Azerbaijan joined in 1993), among others<sup>81</sup>.

<sup>79</sup> The Global E-waste statistics partnership, Country sheets <https://globalewaste.org/statistics/country/azerbaijan/2019/>

<sup>80</sup> Ewastemonitor.info, monitors, <https://ewastemonitor.info/regional-e-waste-monitor-cisgeorgia-2021/>

<sup>81</sup> [www.unido.org/about-us/member-states](https://www.unido.org/about-us/member-states) [https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg\\_no=X-9&chapter=10&clang=en](https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=X-9&chapter=10&clang=en)

Plans are in place for the construction of a facility in the Balakhani Industrial Park the foundation of which has been laid, that will focus on the recycling of WEEE, along with industrial and domestic waste, as well as creating an appropriate legal framework.

It should be noted that the healthcare field is also a major user of electrical and electronic equipment. In recent years, the widespread application of high-tech equipment in medicine has significantly eased the implementation of diagnostic, treatment, and rehabilitation measures, thereby improving the level of service to people. As a result, the improper disposal of expired electronic waste poses a serious ecological, toxicological, radiological, and epidemiological risk to the environment and human health. This is because such waste, when dumped in landfills like regular domestic waste, degrades under the influence of precipitation, wind, and sunlight. It transforms into persistent environmental toxins with carcinogenic, teratogenic, and mutagenic effects due to the electromagnetic and ionizing radiation generated by harmful compounds in their composition. Consequently, it causes damage to human health and biodiversity, leading to cancer, reproductive and endocrine disorders, and various diseases of nervous and respiratory systems<sup>82</sup>.

To prevent used batteries from ending up in nature, the Ministry of Ecology and Natural Resources (MoENR) has launched campaigns like "Hand Over the Batteries, Protect the Nature," "One Tree - A Thousand Breaths," and "Exchange Waste for Seedlings." Initially, collection points have been set up in large retail networks, and collecting bins were placed in administrative buildings of state and private organizations, as well as at schools and universities<sup>83</sup>.

Adequate conditions for battery disposal exist in our country. National Center for Hazardous Waste Management, established under the MoENR in 2003, near the city of Sumgayit, carries out the disposal of electric batteries. This center meets modern standards and norms. Pilot projects on disposal of electric batteries are executed by manufacturing companies within the framework of their corporate social responsibility. Additionally, batteries used in households are collected by volunteer organizations and individual citizens and handed over to the aforementioned National Center.

**Pollution related to conflict:** In recent times, scientific and technological progress, industrial development, military technology tests, and the expansion of war zones have turned into a global problem for humanity. Consequently, forest fires caused during times of conflict, the firing of weapons, and the explosion of mines result in toxic substances mixing with the atmospheric air, leading to severe pollution<sup>84</sup>.

In Azerbaijan, during the Garabagh conflict, forest fires caused by the enemy, as well as military operations to restore territorial integrity, have contributed to the pollution of the land and especially the atmospheric air. According to information provided by the Azerbaijan State Aerospace Agency (ASAA), the concentration of gases collected in the post-conflict zone's atmospheric air is several times higher than the norm<sup>84</sup>. These include nitrogen dioxide, sulfur

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<sup>82</sup> Zeng X, Huo X, Xu X, Liu D, Wu W. E-waste lead exposure and children's health in China. *Sci Total Environ*. 2020 Sep 10;734:139286. doi: 10.1016/j.scitotenv.2020.139286. Epub 2020 May 11. PMID: 32460072

<sup>83</sup> Ministry of Ecology and Natural Resources of the Republic of Azerbaijan

<sup>84</sup> International scientific-practical congress "Actual problems of medicine" dedicated to the 100th anniversary of the birth of national leader H. Aliyev. May 3-6, 2023.

dioxide, hydrogen sulfide gas, phenol, aromatic hydrocarbons, arsenic, mercury, and other heavy metals. These compounds accelerate the spread of a range of chronic diseases.

Among these, H<sub>2</sub>S gas predominates. Modern literature indicates that H<sub>2</sub>S gas, upon entering animal and plant cells, adversely affects intracellular processes<sup>85</sup>. Exposure to these substances results in observed damage to the central nervous system, respiratory system, cardiovascular system, endocrine system, and irritation of the mucous membrane of the eye<sup>86,87</sup>. When the concentration of H<sub>2</sub>S gas in the atmospheric air is relatively higher than the norm, symptoms such as headaches, nausea, a sweet metallic taste in the mouth can occur. At even higher levels, it can cause paralysis of the nerves innervating the oral cavity, pulmonary edema, and sudden death<sup>88</sup>. It has been determined that the concentration of H<sub>2</sub>S gas in the atmospheric air of the post-conflict region of Garabagh has increased 2-3 times<sup>84</sup>.

The Scientific Research Center (SRC) of the AMU and the Military Academy of the Azerbaijan Ministry of Defense (MoD) have been working for 2 years to determine the effects on the human body of gases released from weapons and mines during the conflict period in the liberated areas. For this purpose, research is being conducted on experimental animals to learn about the effects of H<sub>2</sub>S and SO<sub>2</sub> gases on the nervous and endocrine systems, as well as the visual organ, and theses have been written on this subject<sup>84</sup>. Since the research work is ongoing, there is not yet extensive information on the progress of the work.

### 3.4 Air Pollution: household and ambient air quality

Every year, polluted air in both indoor and outdoor environments results in the premature death of 600,000 children under the age of 15<sup>89</sup>. According to WHO data, every day 93% of children under the age of 15 worldwide, i.e., 1.8 billion children, breathe polluted air. Of these children, 630 million are under the age of five. Approximately 9 out of 10 people are exposed to dangerously toxic air, and as a result, 7 million people die prematurely each year<sup>89</sup>.

Air pollution is particularly dangerous for children; in the world, it is the specific cause of one in every ten deaths of children under the age of five<sup>89</sup>. This issue is more pronounced in low and middle-income countries, where 98% of children under the age of five are exposed to polluted air. Every year, 2 million child deaths are recorded worldwide due to acute respiratory infections, half of which are related to indoor air pollution<sup>90</sup>. In addition, acute respiratory infections, especially pneumonia, are the leading cause of death among young children. Roughly half of these deaths occur due to smoke resulting from the burning of solid fuels in confined spaces<sup>90</sup>.

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<sup>85</sup> Singh S, Kumar V, Kapoor D, Kumar S, Singh S, Dhanjal DS, Datta S, Samuel J, Dey P, Wang S, Prasad R, Singh J. Revealing on hydrogen sulfide and nitric oxide signals coordination for plant growth under stress conditions. *Physiol Plant*. 2020 Feb;168(2):301-317. doi: 10.1111/ppl.13002. Epub 2019 Jul 2. PMID: 31264712.

<sup>86</sup> Murphy B, Bhattacharya R, Mukherjee P. Hydrogen sulfide signaling in mitochondria and disease. *FASEB J*. 2019 Dec;33(12):13098-13125. doi: 10.1096/fj.201901304R. Epub 2019 Oct 24. PMID: 31648556; PMCID: PMC6894098.

<sup>87</sup> Kenessary D, Kenessary A, Kenessaryev UI, Juszkiwicz K, Amrin MK, Erzhanova AE. Human health cost of hydrogen sulfide air pollution from an oil and gas field. *Ann Agric Environ Med*. 2017 Jun 8;24(2):213-216. doi: 10.26444/aaem/74562. Epub 2017 Jun 8. PMID: 28664696

<sup>88</sup> Santana Maldonado CM, Kim DS, Purnell B, Li R, Buchanan GF, Smith J, Thedens DR, Gauger P, Rumbelha WK. Acute hydrogen sulfide-induced neurochemical and morphological changes in the brainstem. *Toxicology*. 2023 Feb;485:153424. doi: 10.1016/j.tox.2023.153424. Epub 2023 Jan 4. PMID: 36610655

<sup>89</sup> AzadlıqRadiosu © 2023 Inc., Hər il çirkli havadan 600 min uşaq ölür (Every year, 600,000 children die from polluted air), <https://www.azadliq.org/a/29572607.html>

<sup>90</sup> Center for Public Health and Reforms, Health Portal, Environment and Children, Constitution of the Republic of Azerbaijan, <https://saglamliq.isim.az/news/2015/etraf-muhit-ve-usaqlar>

In the capital of Azerbaijan, industrial facilities, along with private and public transportation, play a significant role in air pollution. Neftchilar, Nobel, Heydar Aliyev, and Qara Qarayev Avenues, the Ukraine roundabout, Darnagul highway, Lokbatan roundabout, and the area near the 20 January metro station are noted as the most polluted areas in Baku. In these areas, the levels of nitrogen gas and processed gases are 1.2 times higher than the established norms<sup>91,92</sup>. These areas are also the busiest in terms of transportation in the capital. The levels of nitrogen oxide, sulfur dioxide, carbon monoxide, hydrogen sulfide, dispersed dust particles, benzene, ethylbenzene, toluene, and xylene in Baku's air exceed the norm<sup>92</sup>.

Observations indicate that during the warm periods of the year, the concentration of both gaseous mixtures and dispersed dust particles in the air is relatively high. These periods are characterized by an increase in temperature, stagnant air conditions, and other meteorological factors that worsen air quality. Another source of atmospheric pollution is transboundary emissions, which have been increasing over the last decade. GRID assessments show that in Azerbaijan, the pollution of the air with suspended fine particulate matter (PM10 and PM2.5) is mainly caused by wind dust and hydrocarbon sources. This has led to a 10-18% increase in non-accidental deaths, a rate higher than the average for the Eastern and Central European regions. Additionally, according to the Global Burden of Disease (GBoD) estimates, welfare loss attributable to deaths account for 3% to 12% of the GDP<sup>93</sup>. Air pollution and ecogeographic problems in Azerbaijan's major cities represent the most significant environmental risk factor for people of all age groups<sup>94,95</sup>.

Based on scientific research by M. G. Tutar, the possible teratogenic mechanisms of air pollutants are related to cardiovascular diseases. These mechanisms provide a biological basis for assessing the link between prenatal exposure to air pollution and congenital heart defects. Results confirm the association between air pollution during pregnancy in Baku and congenital heart defects<sup>96</sup>.

Although the lecture curriculum for the "Child and Adolescent Hygiene" course at AMU lists atmospheric air pollution as a factor affecting the health of this age group<sup>97</sup>, no other specific statistical data or scientific research for the last five years has been found in specialized literature or other sources.

According to the State of Global Air report<sup>98</sup>, air pollution was among the top 10 risk factors for death in Azerbaijan in 2019, accounting for approximately 11% of all deaths. Individually, fine particulate matter (PM2.5) ranks first, while household air pollution (HAP) is fifth. Ozone does not make it into the top 20 risk factors. Six percent of Azerbaijan's population lives in areas where

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<sup>91</sup> © 2023 Sputnik, "Азербайджан, Названы участки Баку с самым грязным воздухом", <https://az.sputniknews.ru/20211230/nazvany-uchastki-baku-s-samym-gryaznym-vozdukhom-437726331.html>

<sup>92</sup> Мамедова Р.Ф. Атмосферный воздух и его соответствие санитарным требованиям в Азербайджане. Вопросы науки и образования. 2022. № 4 (160), с 4-12.

<sup>93</sup> Apa, Infrastructure, World Bank: Air pollution in Azerbaijan increases deaths by 10%-18%, <https://apa.az/en/infrastructure/world-bank-air-pollution-in-azerbaijan-increases-deaths-by-10-18-391164>

<sup>94</sup> M. Yusifova. Impact of atmospheric pollution on human's health in Azerbaijan. Khazar University. 1-2 June 2018. Baku. Azerbaijan. p.23-26

<sup>95</sup> S. Mammadova. Ecogeographical Problems of Air Pollution in the Big Cities of Azerbaijan. Bulletin of Science and Practice. 2020. 6(2):20-41. DOI: 10.33619/2414-2948/51/02

<sup>96</sup> Tutar M. G. Environmental pollution and congenital heart defects in Baku. EurAsian Journal of Biosciences. Jan-Jul 2020, Vol. 14 Issue 1, p1345-1351

<sup>97</sup> Health status of children and adolescents, diseases and their age structure. Factors affecting health: <https://amu.edu.az/storage/files/6/muhazire/USAQ-YENIYETMƏLƏRİN%20SAĞLAMLIĞI/40/42.pdf>

<sup>98</sup> State of Global Air: Azerbaijan. Air Pollution and Health Factsheet. <https://www.stateofglobalair.org/resources/countryprofiles?country-choice=Azerbaijan>

the PM2.5 level is higher than the WHO's Interim Target for Healthy Air (35 µg/m<sup>3</sup>). About 19% of PM2.5 in outdoor air originates from the combustion of fossil fuels (coal, oil, and gas). Eight percent of deaths due to air pollution are children under the age of five. Nine percent of neonatal deaths are associated with air pollution. Atmospheric pollution has reduced the average lifespan in Azerbaijan by 1.3 years.

### **3.5 Climate Change related: Heat stress, Floods and/or excessive rainfall, Drought**

According to the National Hydrometeorology Service (NHS), the weather conditions in Azerbaijan are determined by its location at the junction of temperate and subtropical zones<sup>99</sup>. As already mentioned, 8 out of 11 climate zones exist in the country<sup>8</sup>. The type of climate varies depending on the elevation of the area and its distance from the Caspian Sea. These include arid subtropical, humid subtropical, temperate, and cold climate types. The arid subtropical climate is characteristic of the Kura-Araz lowland and the Absheron Peninsula, while the humid subtropical climate is typical for the Talysh Mountains and Lankaran lowland. The temperate climate that prevails on the forest-covered slopes of the Greater and Lesser Caucasus is divided into types such as dry temperate, warm dry temperate, warm humid temperate, and cold temperate. The high mountainous regions and peaks of the Greater and Lesser Caucasus have a cold climate type. The average annual temperature varies from +14°C in the lowlands to 0°C and below in mountainous areas. The average temperature in July ranges from 25-27°C in the lowlands to as low as 5°C in the mountainous regions, and in January, it is correspondingly 3-6°C and -3-5°C. The absolute maximum reaches 43°C, and the absolute minimum goes down to -30°C. Precipitation is very unevenly distributed<sup>99</sup>. Generally, in Azerbaijan, summers are hot, and winters are moderately cold<sup>100</sup>.

In the Absheron coastlines, less than 200 mm of precipitation falls annually, while in the lowlands and medium mountainous zones, it varies between 300-900 mm, on the southern slopes of the Greater Caucasus it is 1000-1300 mm, and in the Lankaran-Astara zone, it is 1200-1400 mm and even more<sup>99</sup>. Generally, precipitation is most often observed in spring and autumn<sup>100</sup>.

The distribution of solar radiation in the area is uneven, and its amount varies between 130-160 kcal/cm<sup>2</sup> throughout the year; the duration of sunshine ranges between 1900-2800 hours<sup>99</sup>.

The average annual wind speed is 5.4-5.8 m/s in coastal areas, and in other areas, it ranges between 2.4-3.1 m/s. On the Absheron Peninsula, the number of days with wind speeds exceeding 8 m/s is 226, while in other regions of the country, it ranges between 20-70 days<sup>100</sup>.

**Climate Change:** According to the latest assessment report from the Intergovernmental Panel on Climate Change, the average global temperature has increased by 0.8 degrees Celsius over the last 100 years. The increase in temperature is mainly due to anthropogenic factors. Observations over the past century show that the intensity and frequency of hurricanes, cyclones, and other extreme weather events have increased. Hot winds, storms, and precipitation have intensified. At the same time, the number of flood and flash flood events has also increased. Previously, the ocean surface warmed up to a depth of 1000 meters, but now the warming reaches up to 2000

<sup>99</sup> National Hydrometeorological Service, Azerbaijan Climate, <https://meteo.az/index.php?ln=az&pg=9>

<sup>100</sup> Climate risk country profile (Azerbaijan) by the World Bank Group and Asian Development Bank. 2021, <https://www.adb.org/sites/default/files/publication/707466/climate-risk-country-profile-azerbaijan.pdf>

meters. This further intensifies warm currents<sup>101</sup>. Essentially, climate change can be pointed out as the main factor in the increase of all these natural disasters. Azerbaijan has not been spared from the effects of global climate change. In the last 100 years, the average annual temperatures in Azerbaijan have increased by 0.4-1.3°C. The temperature increase is unevenly distributed depending on the regions. Over the past decade, the number and intensity of floods and flash floods in small mountain rivers in Azerbaijan have increased. According to a report jointly prepared by the World Bank and the Asian Development Bank on "Climate Risk Profiles of Countries," some forecasts have been made in relation to climate changes in Azerbaijan. It is estimated that the rate of temperature increase in the country will be higher than the average global temperature increase. This increase is most likely to be observed during the summer months, which will, in turn, have a negative impact on the food sector, the country's water resources, and the health sector. According to the report, some of the natural hazards that the country will face are:

- Heatwaves: Forecasts indicate that the number and duration of heatwaves will increase over time, which will negatively affect human health.
- Drought: Two types of droughts can be observed in Azerbaijan – meteorological and hydrological drought. Both can lead to agrarian drought. The country could face food security issues.
- Floods: According to the report, a significant increase in precipitation is not expected in the future. Therefore, further research on this subject is necessary.

All the mentioned climate changes generally have a negative impact on human health and particularly put children at risk. In his report 'Climate, Landscape Analysis for Children in Azerbaijan' for UNICEF, Rovshan Abbasov has noted the following issues concerning the impact of climate change on children<sup>102</sup>:

- Children are highly vulnerable to climate change and environmental degradation.
- The increasing temperature will lead to problems in the agricultural sector as well as water scarcity. This will be more pronounced in rural areas and will negatively affect economic development.
- The Kura and Araz rivers originate in other countries, making Azerbaijan dependent on neighboring countries for water resources. Pollution in these rivers creates problems in the potable water supply in the lowland zone. Water scarcity causes not just economic issues but also health problems. Children are particularly affected by this situation.
- Similar issues exist in cities; due to problems in access to clean drinking water, various diseases (including infectious diseases) can emerge. Children are more affected by toxins in water than adults because they consume a higher amount of water per kilogram of body weight. For this reason, families in cities tend to use bottled water, which in turn puts an additional financial burden on the household.
- The increase in floods particularly affects families living in flood-prone areas. This is evident both in mountainous and lowland areas.

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<sup>101</sup> The official website of the Ministry of Ecology and Natural Resources of the Republic of Azerbaijan: <http://eco.gov.az/az/hidrometeorologiya/iqlim-deysmeleri>

<sup>102</sup> Climate, landscape analysis for children in Azerbaijan. Rovshan Abbasov. UNICEF. Baku 2018

- Environmental degradation in Azerbaijan over the last 100 years, in addition to existing problems, puts water, food, and environmental safety for children at risk. Drought and soil salinization are considered serious issues for the country's food security.
- Over the last 20 years, the number of days with maximum heat has increased on average more than fivefold. This, in turn, leads to an increase in sunstroke and myocardial infarction cases. These problems are more pronounced in cities. Schools are inadequately prepared for such climate changes.
- The connection between climate change and the spread of infectious diseases is undeniable. With rising temperatures, the spread of certain infectious diseases is predicted to increase. Although malaria has officially been eradicated from the country since 2013, rising temperatures could lead to its re-emergence. This risk is higher for mountainous areas. A similar forecast is also given for Hepatitis A.
- Despite having various laws, policy strategies, and state monitoring mechanisms related to the management and use of natural resources, there are gaps in their enforcement. The involvement of local communities and society in these processes is unsatisfactory. The Azerbaijani government, along with various international institutions, has taken significant steps to make the environment safer, which in turn has led to improvements in certain areas.
- Climate change and environmental degradation also negatively affect the nutrition of women and children. This impact is more pronounced in rural areas where families are engaged in farming.

The UNICEF Technical Note on “Children's Environmental Health - Country Assessment” compares and analyzes the effects of environmental factors on children in 14 different countries<sup>103</sup>. In the report, along with several environmental factors, the factor of climate change is also noted. The impact of non-optimal air conditions (both lower and higher degrees of air conditions) on children is described. The metric used for this purpose, Disability-Adjusted Life Years (DALYs), is considered as the years of healthy life lost due to death and disability. For each country, the number of healthy years lost per 100,000 children under the age of 19 due to environmental risk factors is indicated. For lower temperature, this number is 603.44 years, and for higher temperature, it is 25.4 years. According to the information, the first number is the highest for Azerbaijan among all countries, while the second number is relatively low compared to other countries.

According to another comparative table in the technical note, in Azerbaijan, 146.97 out of every 100,000 children under the age of five die due to the harmful effects of the environment. This number is higher than the mentioned three post-Soviet countries (Georgia, Kazakhstan, and Kyrgyzstan) for comparison.

According to UNICEF's report "The coldest year of the rest of their lives – protecting children from the escalating impacts of heatwaves," in 2020, 160,000 children (6%) in Azerbaijan were exposed to increased frequency of heatwaves and 2,800,000 (100%) were exposed to prolonged

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<sup>103</sup> Children's environmental health country assessment, technical note. Unicef. 2022



heatwaves<sup>104</sup>. According to the report, these indicators will be 100% by 2050, and this forecast is reached both in best case and worst-case scenarios.

In summary, the report has relied on foreign literature due to the lack of scientific research exploring the effects of climate change on children in Azerbaijan. Given the importance of this field, it is advisable to conduct extensive research.

#### 4. STAKEHOLDERS AND PARTNERSHIPS MAPPING ANALYSIS

1. MoENR develops and implements programs and action plans for environmental protection in coordination with other ministries and government agencies. The focus on the implementation of state programs related to environmental pollution in Azerbaijan indicates that this field is one of the country's priority directions<sup>105</sup>.
2. The National Environmental Monitoring Department (NEMD) is engaged in monitoring the atmosphere, soil, water, and radioactive pollution. It assesses and forecasts processes occurring in the environment as a result of anthropogenic impact and creates a database on the state of the environment.
3. The main areas of activity for the State Environmental Safety Service (SESS) include:
  - a. Implementing state supervision over the use of natural resources, the protection of biological diversity, and prevention of the impacts of harmful environmental factors, ensuring that the population lives in a healthy environment.
  - b. Implementing state supervision over the use and protection of the environment and natural resources, and compliance with laws on the protection of atmospheric air.
  - c. Implementing state supervision over the disposal and neutralization of hazardous and non-hazardous industrial and domestic waste.
  - d. Implementing state supervision over compliance with ecological safety and environmental quality standards in the disposal of hazardous, radioactive, industrial, and domestic waste by organizations, administrations, and enterprises, regardless of their organizational-legal form.
  - e. Collecting information about hazardous waste and creating and developing a database.
  - f. Implementing state supervision to ensure compliance with regulations and norms regulating harmful physical impacts of the environment.
4. State Environmental Examination Agency (SEEA): SEEA determines compliance of any activity with environmental safety requirements by conducting state environmental examination in accordance with the laws of Azerbaijan on "Environmental Protection," "Ecological Safety," and "Environmental Impact Assessment":
  - Coordinating approval of documents on environmental impact indicators of production facilities engaged in activities envisaged by the Law of Azerbaijan on "Environmental Impact Assessment."

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<sup>104</sup> The coldest year of the rest of their lives – protecting children from the escalating impacts of heatwaves. Unicef. USA. 2022, <https://www.unicef.org/media/129506/file/UNICEF-coldest-year-heatwaves-and-children-EN.pdf>

<sup>105</sup> The Ministry of Ecology and Natural Resources. Information Center. Environmental policy. State programs. <https://eco.gov.az/az/ekoloji-siyaset/dovlet-programs>

- Permitting the emission of harmful substances into the atmospheric air and harmful physical effects.
  - Providing consent for the use of land areas for the placement and neutralization of waste, in accordance with Azerbaijan's law on "Industrial and Domestic Waste."
5. "Hazardous Waste" LLC ("Təhlükəli Tullantılar" MMC): Established in 2004 by the MoENR in the territory of the city of Sumgait, "Hazardous Waste" LLC aims to neutralize lands contaminated with mercury. Its main duties include the neutralization and disposal of wastes that are dangerous to human health and the environment within the Republic's territory. The facility neutralizes hazardous waste in special cells while complying with occupational safety rules to protect health and the environment.
  6. NHS: The National Hydrometeorology Service under the MoENR, is an agency involved in the collection, analysis, processing, storage, and dissemination of hydrometeorological data. It also engages in the organization of metrology and standardization work, as well as the implementation of state policy on the monitoring of the natural environment, including air and water<sup>106</sup>.
  7. State Agency for Renewable Energy Sources under the Ministry of Energy (MoE) of the RA ensures the development of programs for new renewable energy sources and the adoption of relevant laws and regulations. Currently, the "Qaradağ" and "Şəfəq" Solar Power Plants and the "Khizi-Absheron" Wind Power Plant have been commissioned<sup>107</sup>.
  8. MoH: As the main executive authority, the Ministry of Health implements state policy in the field of public health protection. Its responsibilities include overseeing the sanitary-epidemiological situation, providing medical assistance to the population, preventing the spread of infectious diseases, planning, and implementing measures for the protection of mothers and children and family planning, organizing and improving medical assistance, creating a medical statistics bank for the study of demographic conditions, health, and causes of death, and enhancing the professional knowledge and skills of medical personnel<sup>108</sup>.
  9. TABIB: It is an institution responsible for managing and overseeing medical facilities that are part of the public healthcare system transferred to its jurisdiction. The main purpose of TABIB's activities is to ensure the organization of medical services in medical institutions under its jurisdiction and to improve the quality of medical services<sup>109</sup>.
  10. Ministry of Emergency Situations (MoES): Responsible for civil defense, the protection of people and territories from emergencies, fire safety, the safety of people in water basins, as well as technical safety in industrial, mining, and construction sectors. It also ensures the prevention and mitigation of emergencies resulting from oil and oil product spills, and the creation of state material reserves<sup>110</sup>.

<sup>106</sup> The Ministry of Ecology and Natural Resources. Ministry. News. Work done by the National Environmental Monitoring Department in 2011. <https://eco.gov.az/az/nazirlik/xeber?newsID=5658>

<sup>107</sup> Let's create clean and sustainable energy for our future generations. <https://area.gov.az/en>

<sup>108</sup> Ministry of Health. Ministry. Regulation of the Ministry of Health <https://www.sehiyye.gov.az/nazirlik/sehiyye-nazirlilyngin-esasnamesi/>

<sup>109</sup> State Agency for Compulsory Medical Insurance, TABIB, <https://its.gov.az/page/tebib-2>

<sup>110</sup> Official internet information resources of the Ministry of Emergencies of the Republic of Azerbaijan © 2011-2023, Action directions, <https://www.fhn.gov.az/?aze/menu/20>

11. UNICEF collaborates with government institutions to improve the country's healthcare system, including ensuring children's health and proper nutrition, early detection and prevention of disabilities and developmental delays, administering vaccinations against preventable diseases, protecting vulnerable children, and advocating for children's rights<sup>111</sup>.
12. The WHO collects information on all diseases, studying regional and global health conditions and trends, and identifies ecological and social risk factors for human health. The WHO carries out numerous projects in Azerbaijan aimed at improving the healthcare system, public health, reducing child and maternal mortality, and addressing a range of other issues. Strong healthcare systems contribute to improved health in various countries and play a key role in ensuring the effectiveness of health programs<sup>112</sup>.
13. The Shared Environmental Information System (SEIS) reflects an initiative aimed at modernizing and simplifying the collection, exchange, and use of essential data and information for the development and implementation of the European Union's environmental policy. This initiative operates within the framework of the "European Neighborhood and Partnership Instrument" program to assist in environmental protection in countries neighboring the European Union<sup>113</sup>.

## 5. SUMMARY OF EXISTING CEH PROGRAMS, POLICIES, FRAMEWORKS, AND INITIATIVES

Child rights protection is one of the top priorities of social policy in Azerbaijan. According to the report "Climate and Landscape Analysis for Children in Azerbaijan" (UNICEF), the country has ratified more than 30 international conventions and adapted multiple legislative bills. It also collaborates closely with international organizations like UNICEF.

Two primary regulatory documents govern children's rights in the country: the "Law on the Rights of the Child" and the "Family Code of the Republic of Azerbaijan." Although these documents cover various aspects of child rights, they do not specifically address the right of children to grow up in a healthy environment or their rights to clean air and water.

On the other hand, although Azerbaijan has numerous laws and regulations concerning environmental protection, there is no specific clause or article related to the impact of the environment on children. The country's legislation, state policies, and programs do not touch upon issues related to the environmental impact on children. Therefore, it is imperative to develop new legislative bills and state programs in this direction. Strengthening relationships between sectors and ministries is necessary for this purpose.

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<sup>111</sup> UNICEF. The legal and judicial system of Azerbaijan is more adapted to the needs of children. What we do. [https://www.unicef.org/azerbaijan/az/press\\_release/azerbaycanin-huguq-ve-mehkeme-sistemi-is-more-%C3%A7ox-suitable-for-children-needs](https://www.unicef.org/azerbaijan/az/press_release/azerbaycanin-huguq-ve-mehkeme-sistemi-is-more-%C3%A7ox-suitable-for-children-needs)

<sup>112</sup> ВОЗ. Главная страница. Информация о ВОЗ. Деятельность ВОЗ. <https://www.who.int/ru/about/what-we-do>

<sup>113</sup> ENI SEIS II EAST. Home. About. Areas of work. Countries. Azerbaijan. <https://eni-seis.eionet.europa.eu/east/countries>

## 6. NATIONAL AND GLOBAL ENVIRONMENTAL GOVERNANCE

### National ecological policy directions

Improving the environmental situation is an essential part of Azerbaijan's long-term development strategy. Extensive work is underway in the Republic to address environmental issues.

Several programs and initiatives have been implemented to protect the environment and make efficient use of natural resources. These include the "Social-Economic Development Strategy of the Republic of Azerbaijan for 2022-2026," "Transforming our World: The 2030 Agenda for Sustainable Development," "State Program for Social-Economic Development of the Regions of the Republic of Azerbaijan for 2019-2023," "State Program for Geological Exploration and Efficient Use of the Bowels of the Earth for 2020-2024," "State Program for the Conservation and Sustainable Development of Forests in the Republic of Azerbaijan for 2022-2030," and the "National Strategy for Efficient Use of Water Resources."

To modernize the management system for solid domestic waste in line with contemporary standards and create relevant infrastructure, a "Commission on the Management of Solid Domestic Waste in the Country, Including the Liberated Territories," was established by the Order No. 675 dated November 27, 2021, of the CoM of Azerbaijan<sup>114</sup>.

### Legislation

In the country, there are several laws, presidential decrees, and normative legal acts of CoM related to ecology and environmental protection. The Constitution of Azerbaijan defines the principles of environmental protection and ownership of natural resources, and the rules for their use. Significant steps are also being taken to strengthen the legal framework in this area<sup>114</sup>.

### International Cooperation

A bilateral legal agreement base has been created and is being expanded year by year in the field of environmental protection with foreign countries and international organizations. More than 30 bilateral agreements have been signed in this area. To expand international cooperation in environmental protection and actively participate in addressing global ecological problems, Azerbaijan has joined several environmental conventions<sup>114</sup>.

#### List of International Conventions and Protocols to which Azerbaijan has acceded:

- UNESCO Convention Concerning the Protection of World Cultural and Natural Heritage,<sup>115</sup> November 16, 1972.  
December 6, 1993
- European Convention on the Conservation of European Wildlife and Natural Habitats<sup>116</sup> (Bern, September 19, 1979).  
October 28, 1999

<sup>114</sup> The official website of the Ministry of Ecology and Natural Resources of the Republic of Azerbaijan. Environmental Conventions and Protocols ratified by the Milli Majlis of the Republic of Azerbaijan. <http://eco.gov.az/az/qanunvericilik/konversiyalar-ve-protokollar>

<sup>115</sup> YUNESKO-nun "Ümumdünya mədəni və təbii irsin qorunması haqqında" Konvensiyasına Azərbaycan Respublikasının qoşulması barədə AZƏRBAYCAN RESPUBLİKASI MİLLİ MƏCLİSİNİN QƏRARI <https://e-qanun.az/framework/8744> Bakı şəhəri, 6 dekabr 1993-cü il.Nö 764

<sup>116</sup> "Avropanın canlı təbiətinin və təbii mühitin qorunması haqqında" Avropa Konvensiyasına qoşulmaq barədə AZƏRBAYCAN RESPUBLİKASININ QANUNU <https://e-qanun.az/framework/29863>

- Convention on Environmental Impact Assessment in a Transboundary Context<sup>117</sup>  
February 1, 1999
- UN Framework Convention on Climate Change<sup>118</sup>, adopted in 1992.  
1995
- Kyoto Protocol to the UN Framework Convention on Climate Change, adopted on December 11, 1997, in Kyoto, Japan. Effective from February 16, 2005<sup>119</sup>
- Doha Amendment (18.07.2000), ratified on April 14, 2015, by the parliament of Azerbaijan and signed by the President and signed by the President of RA.<sup>120</sup>
- Convention of the World Meteorological Organization<sup>121</sup>  
October 3, 1993
- Annex 3 on Aeronautical Meteorological Services to the Convention on International Civil Aviation<sup>122</sup>  
July 14, 1992
- Montreal Protocol on Substances that Deplete the Ozone Layer (September 15-17, 1997)<sup>123</sup>.  
July 18, 2000
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (Washington, March 3, 1973)<sup>124</sup>.  
July 23, 1998
- Convention on Environmental Impact Assessment in a Transboundary Context (Espoo, February 25, 1991)<sup>125</sup>.  
February 1, 1999
- UN Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus, June 25, 1998)<sup>126</sup>.  
November 9, 1999
- Convention on Biological Diversity (June 5, 1992), and Cartagena Protocol on Biosafety to the Convention on Biological Diversity<sup>127</sup>.  
March 23, 2005

<sup>117</sup> Ümumdünya meteorologiya təşkilatının konvensiyasına Azərbaycan Respublikasının qoşulması barədə AZƏRBAYCAN RESPUBLİKASI MİLLİ MƏCLİSİNİN QƏRARI Bakı şəhəri, 3 sentyabr 1993-cü il № 700 <https://e-qanun.az/framework/5105>

<sup>118</sup> Birləşmiş Millətlər Təşkilatının İqlim dəyişmələri üzrə çərçivə konvensiyasının Azərbaycan Respublikası tərəfindən təsdiq edilməsi barədə AZƏRBAYCAN RESPUBLİKASI MİLLİ MƏCLİSİNİN QƏRARI <https://e-qanun.az/framework/9117> Bakı şəhəri, 10 yanvar 1995 № 948.

<sup>119</sup> "Birləşmiş Millətlər Təşkilatının "İqlim Dəyişmələri haqqında" Çərçivə Konvensiyasına dair" Kioto Protokoluna qoşulmaq barədə AZƏRBAYCAN RESPUBLİKASININ QANUNU <http://e-qanun.az/framework/339> Bakı şəhəri, 18 iyul 2000-ci il № 912-IQ

<sup>120</sup> Birləşmiş Millətlər Təşkilatının "İqlim dəyişmələri haqqında" Çərçivə Konvensiyasına dair Kioto Protokoluna Doha Düzəlişinin təsdiq edilməsi barədə AZƏRBAYCAN RESPUBLİKASININ QANUNU <https://e-qanun.az/framework/> 29913 Bakı şəhəri, 14 aprel 2015-ci il № 1256-IVQ

<sup>121</sup> Ümumdünya meteorologiya təşkilatının konvensiyasına Azərbaycan Respublikasının qoşulması barədə AZƏRBAYCAN RESPUBLİKASI MİLLİ MƏCLİSİNİN QƏRARI <https://e-qanun.az/framework/> 8568 Bakı şəhəri, 3 sentyabr 1993-cü il № 700.

<sup>122</sup> Beynəlxalq Mülki Aviasiya haqqında Konvensiyaya dəyişikliklərə dair protokolların təsdiq edilməsi barədə AZƏRBAYCAN RESPUBLİKASININ QANUNU

<sup>123</sup> "Ozon qatını dağıdan maddələr üzrə Monreal Protokolu"nın tərəflərinin qəbul etdiyi "Monreal Protokoluna Düzəliş"in təsdiq edilməsi barədə AZƏRBAYCAN RESPUBLİKASININ QANUNU <https://e-qanun.az/framework/> 341 Bakı şəhəri, 18 iyul 2000-ci il № 914-IQ

<sup>124</sup> "Kökünün kəsilməsi təhlükəsi olan vəhşi fauna və yabanı flora növlərinin beynəlxalq ticarətinin tənzimlənməsi Qaydaları"nın təsdiq edilməsi haqqında AZƏRBAYCAN RESPUBLİKASININ NAZİRLƏR KABİNETİ QƏRARI <https://e-qanun.az/framework/> 16045 Bakı şəhəri, 7 yanvar 2009-cu il № 2

<sup>125</sup> "Transsərhəd kontekstində ətraf mühitə təsirin qiymətləndirilməsi haqqında Konvensiya"ya I və II Düzəlişlərin təsdiq edilməsi barədə AZƏRBAYCAN RESPUBLİKASININ QANUNU <https://e-qanun.az/framework/> 43000 Bakı şəhəri, 9 iyul 2019-cu il № 1631-VQ

<sup>126</sup> Azərbaycan Respublikasının "Ətraf mühit ilə bağlı məsələlərdə məlumatın əldə edilməsi, ictimaiyyətin qərar qəbul edilməsində iştirakı və ədalət məhkəməsinin açıq keçirilməsi haqqında" BMT-nin Konvensiyasına qoşulması barəsində AZƏRBAYCAN RESPUBLİKASININ QANUNU <https://e-qanun.az/framework/> 5205 Bakı şəhəri, 9 noyabr 1999-cu il № 736-IQ

<sup>127</sup> "Bioloji müxtəliflik haqqında" Konvensiyaya Biotəhlükəsizliyə dair Kartagena Protokoluna qoşulmaq barəsində AZƏRBAYCAN RESPUBLİKASININ QANUNU <https://e-qanun.az/framework/> 9615 Bakı şəhəri, 4 mart 2005-ci il № 841-IIQ

- International Convention on Plant Protection (Rome, 1951)<sup>128</sup>.  
March 14, 2000
- UN Convention on Protection and Use of Transboundary Watercourses and International Lakes (Helsinki, March 17, 1992)<sup>129</sup>.  
October 22, 2002
- UNESCO Convention on Wetlands of International Importance, Especially as Waterfowl Habitat (Ramsar, February 2, 1971)<sup>130</sup>.  
July 18, 2000
- UN Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel, March 22, 1989)<sup>131</sup>.  
February 16, 2001
- Convention on Long-range Transboundary Air Pollution (Geneva, November 13, 1979)<sup>132</sup>.  
April 9, 2002
- Stockholm Convention on Persistent Organic Pollutants (May 22, 2001)<sup>133</sup>.  
December 9, 2003
- Convention on the Transboundary Effects of Industrial Accidents (Helsinki, March 17, 1992)<sup>134</sup>.  
May 4, 2004
- Framework Convention on the "Protection of the Marine Environment of the Caspian Sea" (Tehran, November 4, 2003)<sup>135</sup>.  
April 4, 2006
- European Landscape Convention (Florence, October 2000)<sup>136</sup>.  
June 24, 2011

<sup>128</sup> "Bitki mühafizəsi haqqında" Beynəlxalq Konvensiyaya qoşulmaq barədə AZƏRBAYCAN RESPUBLİKASININ QANUNU <https://e-qanun.az/framework/> 648 Bakı şəhəri, 14 mart 2000-ci il № 831-IQ

<sup>129</sup> "Sərhəddən keçən sül axınlarının və beynəlxalq göllərin mühafizəsi və istifadəsi haqqında" 1992-ci il tarixli BMT Konvensiyasının "Su və sağlamlıq haqqında" 1999-cu il 17 iyun tarixli Protokoluna qoşulmaq barədə AZƏRBAYCAN RESPUBLİKASININ QANUNU <https://e-qanun.az/framework/> 1267 Bakı şəhəri, 22 oktyabr 2002-ci il № 372-II Q

<sup>130</sup> YUNESKO-nun "Əsasən su quşlarının yaşama yerləri kimi beynəlxalq əhəmiyyətli olan sulu-bataqlıq yerlər haqqında" Konvensiyasına, 1982-ci il dekabrın 3-də imzalanmış "Əsasən su quşlarının yaşama yerləri kimi beynəlxalq əhəmiyyətli olan sulu-bataqlıq yerlər haqqında" Konvensiyaya dəyişikliklər haqqında Protokola və 1987-ci il mayın 28-də "Əsasən su quşlarının yaşama yerləri kimi beynəlxalq əhəmiyyətli olan sulu-bataqlıq yerlər haqqında" Konvensiyaya qəbul edilmiş düzəlişlərə qoşulmaq barədə AZƏRBAYCAN RESPUBLİKASININ QANUNU <https://e-qanun.az/framework/> 338 Bakı şəhəri, 18 iyul 2000-ci il № 911-IQ

<sup>131</sup> Azərbaycan Respublikasının Birləşmiş Millətlər Təşkilatının Təhlükəli tullantıların sərhədlərarası daşınmasına və kənarlaşdırılmasına nəzarət haqqında Bazel Konvensiyasına qoşulması barədə AZƏRBAYCAN RESPUBLİKASININ QANUNU <https://e-qanun.az/framework/> 4076 Bakı şəhəri, 16 fevral 2001-ci il № 80-IIQ

<sup>132</sup> "Böyük məsafələrdə havanın transsərhəd çirkəndirilməsi haqqında" Konvensiyaya qoşulmaq barədə AZƏRBAYCAN RESPUBLİKASININ QANUNU <https://e-qanun.az/framework/> 1590 Bakı şəhəri, 9 aprel 2002-ci il № 291-IIQ

<sup>133</sup> "Dəvamlı üzvi çirkəndiricilər haqqında" Stokholm Konvensiyasına qoşulmaq barəsində AZƏRBAYCAN RESPUBLİKASININ QANUNU <https://e-qanun.az/framework/> 2617 Bakı şəhəri, 9 dekabr 2003-cü il № 554-IIQ

<sup>134</sup> Sənaye qəzalarının transsərhəd təsiri haqqında" Konvensiyaya qoşulmaq barəsində AZƏRBAYCAN RESPUBLİKASININ QANUNU <https://e-qanun.az/framework/> 5926 Bakı şəhəri, 4 may 2004-cü il № 645-IIQ

<sup>135</sup> Xəzər dənizinin dəniz ətraf mühitinin mühafizəsi haqqında" Çərçivə Konvensiyasının təsdiq edilməsi barədə AZƏRBAYCAN RESPUBLİKASININ QANUNU <https://e-qanun.az/framework/> 11556 Bakı şəhəri, 4 aprel 2006-cı il № 89-IIIQ

<sup>136</sup> 2000-ci il oktyabrın 20-də Florensiya şəhərində imzalanmış "Avropa Landşaft Konvensiyası"nı Azərbaycan Respublikası adından imzalamaq səlahiyyətinin verilməsi barədə AZƏRBAYCAN RESPUBLİKASI PREZİDENTİNİN SƏRƏNCAMI <https://e-qanun.az/framework/> 2306 Bakı şəhəri, 27 sentyabr 2003-cü il № 1334

## 7. CONCLUSION AND RECOMMENDATIONS

### 7.1 Conclusion

According to the analysis, the natural increase and birth rates have decreased over the last 5 years. Specifically, from 2017 to 2021, the natural increase has dropped from 8.9 to 3.5, and the birth rate from 14.8 to 11.2.

The highest overall morbidity rates among children under 18 is recorded in the Absheron-Khizi economic region and Baku city.

In Azerbaijan, the prevalence of neoplasms among children aged 0-13 has increased by 37.5% over 5 years, and by 108% among those aged 14-17. According to WHO data, it is estimated that 20% of cases of neoplasms are attributable to air pollution and chemical waste management.

The same source states that respiratory diseases account for 35% of the disease burden and are caused by domestic and ambient air pollution as well as tobacco. In Azerbaijan, the incidence of newly diagnosed respiratory diseases among children aged 14-17 has increased, both overall and for individual diseases. The new cases of such diseases have increased 2.1 times over the last 5 years, with 22% attributed to occupational and domestic risks.

Additionally, the WHO notes that mental, behavioral, and neurological disorders account for 3% of global deaths but 10% of the global disease burden. Chemical substances, occupational risks, environmental factors, climate change, and noise are responsible for 12% of the disease burden. In Azerbaijan, the new cases of nervous system diseases among children aged 14-17 have increased 1.8 times.

Household and environmental pollution, tobacco, and chemical substances are responsible for 31% of circulatory system diseases. The situation in this category of diseases is also unsatisfactory in Azerbaijan. The number of new cases of circulatory system diseases among children aged 14-17 has increased from 75.8 to 95.9 over the last 5 years, along with a rise in the number of hypertension diagnoses from 2.6 to 6.8.

According to Smith et al., Azerbaijan could be one of the regions at high risk of increased iron deficiency in the coming decades due to rising levels of CO<sub>2</sub> in the atmosphere. A UNICEF report on Azerbaijan also emphasizes that the prevalence of anemia is alarmingly high in the country. More than half of the infants aged 6-23 months suffer from anemia, and the prevalence of this disease among children aged 6-59 months is 39%.

Literature data indicate that the development of skin and subcutaneous tissue diseases is significantly influenced by air pollution, while the role of environmental factors is prominent in the development of myopia. In the country, a sharp increase has been observed in the first indicator since 2018, and in the second indicator over the past year.

The WHO reports that 23% of all global deaths and 26% of deaths among children under 5 are attributed to modifiable environmental factors. Among these, stroke, ischemic heart disease, diarrhea, and cancer are the leading causes. Based on an analysis for 2017-2021, the number of deaths among infants under the age of one in Azerbaijan has decreased from 11.1 to 7.5 per 1000 people. For children under 18, the main causes of death include nervous system diseases,



injuries, poisonings, and other consequences of external causes, respiratory system diseases, circulatory system diseases, and neoplasms.

The assessment of sector potential and workforce revealed a slight decrease in the number of doctors in 2022 compared to 2018. Furthermore, over the last five years, the number of hospital beds per 10,000 children under 18 has reduced. Similarly, the number of beds for pregnant women and women in postpartum period, including those in sanatoriums, has decreased slightly due to reorganization.

In higher and secondary medical schools, the impact of environmental factors on human health is taught through courses such as "Hygiene and Medical Ecology" and "Child and Adolescent Hygiene." No information has been found on research regarding healthcare workers' knowledge about the impact of environmental factors on child health.

There is no information available on the lead content in paints sold in the country, nor on the levels of lead in children's blood.

In Azerbaijan, serious problems exist regarding the lack of essential antidotes for treating acute and chronic poisoning from heavy metals like lead, mercury, cadmium, and arsenic in children. There are large areas contaminated with obsolete and banned pesticides that could pose risks to children's health. Additionally, each year in the country, numerous acute and even fatal cases of poisoning from toxic pesticides belonging to various chemical groups are recorded among children. The absence of essential antidotes in the country for treatment of the pesticide poisonings complicates the treatment of such patients.

In the capital city of Azerbaijan, Baku, industrial facilities as well as private and public transportation play a significant role in air pollution. The levels of nitrogen oxide, sulfur dioxide, carbon monoxide, hydrogen sulfide, particulate matter, benzene, ethylbenzene, toluene, and xylene are above the norm.

According to the analysis of hazardous waste, it has been observed in the country that anatomical waste is mixed with infectious waste. 43% of primary healthcare facilities have noted the absence of waste containers, plastic bags, and similar supplies on their premises.

A centralized processing facility for electronic waste has yet to be established in the Republic.

Furthermore, forest fires perpetrated by the enemy during the Garabagh conflict, as well as military operations to restore territorial integrity, have contributed to pollution of the territory, especially the atmospheric air. The concentration of gases accumulated in the post-conflict zone's atmosphere is several times higher than the norm.

In 2019, air pollution was among the top 10 risk factors for death in Azerbaijan, accounting for approximately 11% of all deaths. 6 percent of the Azerbaijani population lives in areas where PM<sub>2.5</sub> levels exceed the WHO's interim target for clean air (35 µg/m<sup>3</sup>). 19 percent of outdoor PM<sub>2.5</sub> originates from the combustion of fossil fuels (coal, oil, and gas). 8 percent of deaths resulting from air pollution are children under 5. 9 percent of neonatal deaths are attributed to air pollution. Air pollution has reduced the average life expectancy in Azerbaijan by 1.3 years.



Azerbaijan has not been spared the effects of global climate change. Over the last 100 years, the average annual temperature across the country has increased by 0.4-1.3°C. In recent decades, the number and intensity of flash floods and landslides in small mountain rivers in Azerbaijan have increased. The country is expected to experience a rate of temperature increase higher than the global average. This increase is most likely to be pronounced during the summer months and is expected to adversely affect the food sector, the country's water reserves, and the health sector.

In Azerbaijan, two types of droughts can be observed: meteorological and hydrological drought. Both can lead to agrarian, which in turn could pose challenges to the country's food security.

In the last 20 years, the number of days with maximum heat has increased more than fivefold on average. This has consequently led to an increase in the incidence of sunstrokes and myocardial infarctions. These issues are more pronounced in urban areas. Schools are poorly prepared for climate change.

It has been found that out of every 100,000 children under the age of five in Azerbaijan, 146.97 die due to adverse environmental effects.

In 2020, 160,000 children (6%) in the country were exposed to increased frequency of heatwaves, and 2,800,000 children (100%) were exposed to prolonged heatwaves.

The RA Azerbaijan has ratified more than 30 international conventions and adapted many legislative bills. The country also collaborates closely with several international organizations such as UNICEF. However, the two main legal documents regulating children's rights in the country, the "Law on the Rights of the Child" and the "Family Code of the Republic of Azerbaijan," do not specifically mention the impact of the environment on children.

On the other hand, although the RA has numerous laws and legal documents on environmental protection, there is no specific article or clause concerning the impact of the environment on children. Overall, issues specifically targeted at the impact of the environment on children are not addressed in the country's legislation, state policies, or programs.

## 7.2 Recommendations

- ❖ Investigate the relationship between environmental factors and the diseases with increasing incidence among children and adolescents in the country;
- ❖ Adopt a program to strengthen monitoring of air pollution indicators in confined spaces;
- ❖ Incorporate the subject "Environmental Factors in Child Health Formation" into the residency programs for medical students, family physicians, and pediatricians;
- ❖ Conduct training sessions for practicing physicians on the topic in question;
- ❖ Conduct research on the levels of lead in environmental samples (water, soil, dust, selected food), as well as in paints that are produced in Azerbaijan or imported into the country;
- ❖ Analyze the levels of lead and other heavy metals in children of various age groups in the country;

- ❖ Adopt a legislative document regulating the amount of lead in paints in Azerbaijan;
- ❖ Ensure a continuous supply of life-saving antidotes in compliance with the WHO list for treating acute and chronic intoxications and poisonings by high-toxicity substances in the country;
- ❖ Take measures to prevent children's exposure to hazardous chemical substances and pharmaceuticals to prevent acute and chronic poisonings by pesticides, and also preparing mechanisms for their safe disposal;
- ❖ Enhance the knowledge of doctors and healthcare workers in this field;
- ❖ Prohibit the free sale of vinegar essence;
- ❖ Adopt a national program that encompasses measures to limit the release of chemical substances into the atmosphere from stationary and mobile sources;
- ❖ Replace traditional fuels used for heating buildings with environmentally clean and harmless alternatives for children's health;
- ❖ Improve the management of healthcare waste in the country and apply modern technologies that are environmentally friendly and resilient to climate change, and recycling approaches;
- ❖ Differentiate waste containers to facilitate the segregation and recycling of waste; create special collection points; ensure that globally renowned companies recycle/dispose of electronic devices they consume in our country; prepare various action plans to increase public interest in this work;
- ❖ Conduct scientific research in the country to explore the impact of climate change on children;
- ❖ Analyze and improve the existing legislative framework;
- ❖ Prepare a cross-cutting strategy to reduce the impact of climate change on children's health and strengthen coordination in this direction;
- ❖ Conduct awareness raising activities in schools and higher educational institutions about climate change and its impact on the human organism.