**Framework Convention for the Protection of the Marine Environment of the Caspian Sea**

**The Second State of the Environment Report of the Caspian Sea**

**The Republic of Azerbaijan**

**DRAFT**

**2018**

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# **Foreword**

# **1. Introduction**

# **2. Methodology**

# **3. Drivers**

## **3.1. Socio-economic situation**

* + 1. **Population growth**

The population of the country for 2011-2016 has changed with increasing dynamics. The increase over the years ranged between 1.1-1.4% and totalled 6.53% or 594.5 thousand people over the past six years and reached to 9.7 million people. The proportion of rural (47%) and urban population (53%) were almost the same in the country.

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| --- |
| **Population change (thsd.persons)[[1]](#footnote-1)** |
| **Years** | **Population size - total** | **Total annual increase** | **Including:** |
| **thsd persons** | **%** | **urban places** | **rural places** |
| **2011** | 9111.1 | 124.0 | 1.4 | 4829.5 | 4281.6 |
| **2012** | 9235.1 | 121.4 | 1.3 | 4888.7 | 4346.4 |
| **2013** | 9356.5 | 120.6 | 1.3 | 4966.2 | 4390.3 |
| **2014** | 9477.1 | 115.9 | 1.2 | 5045.4 | 4431.7 |
| **2015** | 9593.0 | 112.6 | 1.2 | 5098.3 | 4494.7 |
| **2016** | 9705.6 | 104.4 | 1.1 | 5152.4 | 4553.2 |

The population density in the country is mostly observed in Baku city. According to information available at the beginning of 2017, 1049 people fall to per square kilometer area in Baku, which is 10 times more than the overall country, which is 113.

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| **Territories, number and density of population by economic regions located in the coastline of Caspian Sea and Baku city[[2]](#footnote-2)** |
| **Towns and regions** | **Territory, thsd sq. km1)** | **Population, thsd person** | **Population density for 01.01.2017 (per 1sq. km, person)** |
| **on the****base of population census 2009** | **at the beginning of the 2017** |
| Azerbaijan Republic | 86.6 | 8922.4 | 9810.0 | 113 |
| Baku city | 2.14 | 2045.8 | 2245.8 | 1049 |
| Absheron economic region | 3.73 | 514.0 | 563.1 | 151 |
| Lankaran economic region | 6.07 | 824.0 | 917.8 | 151 |
| Guba-Kahchmaz economic region | 6.96 | 488.7 | 538.8 | 77 |
| 1) Including areas of islands in the Caspian sea. |

The population growth in the country was mostly observed in Baku, and in the past 6 years it was 133.4 thousand people, which means a 6.4% increase. In Absheron economic region it was amounted to 35,000 people in Lankaran economic region 62,700 people and in Guba-Khachmaz economic region 34,200 people. The highest increase was observed in the Lankaran economic region and accounted for 7.44%.

**Population by economic regions located in the coastline of Caspian Sea and Baku city (thsd. persons)[[3]](#footnote-3)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Towns and regions** | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| Azerbaijan Republic | 9111.1 | 9235.1 | 9356.5 | 9477.1 | 9593.0 | 9705.6 |
| *including:* |
| urban population | 4829.5 | 4888.7 | 4966.2 | 5045.4 | 5098.3 | 5152.4 |
| rural population | 4281.6 | 4346.4 | 4390.3 | 4431.7 | 4494.7 | 4553.2 |
| Baku city | 2092.4 | 2122.3 | 2150.8 | 2181.8 | 2204.2 | 2225.8 |
| Absheron economic region | 522.8 | 529.1 | 538.4 | 545.3 | 551.8 | 557.8 |
| Lankaran economic region | 843.2 | 855.7 | 868.1 | 880.4 | 893.3 | 905.9 |
| Guba-Khachmaz economic region | 498.4 | 505.4 | 511.7 | 518.4 | 525.7 | 532.6 |

The amount of pensions and social allowances is constantly increasing according to the Decrees and Orders of the President of the Republic of Azerbaijan to improve the welfare of the citizens and to strengthen the social protection of the underprivileged people.

**3.1.2 Growth of coastal residential areas**

One of the indicators reflecting the social welfare of the population is the housing. Currently the average housing fall to per capita in Azerbaijan is 17.9 m², which is lower than the average in CIS (20 m²) and Eastern Europe (30 m²) countries.

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| **Housing conditions of the population****Distribution of dwelling fund per capita by types of property by economic regions located in the coastline of Caspian Sea and Baku**[[4]](#footnote-4) |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| total space, m2 | living space, m2 | total space, m2 | living space, m2 | total space, m2 | living space, m2 | total space, m2 | living space, m2 | total space, m2 | living space, m2 | total space, m2 | living space, m2 |
| Azerbaijan Republic - total  | 17.7 | 11.7 | 17.8 | 11.9 | 17.8 | 11.9 | 17.8 | 12.0 | 17.8 | 12.0 | 17.9 | 12.0 |
| Bakı city | 17.6 | 11.9 | 17.5 | 11.8 | 17.5 | 11.7 | 17.3 | 11.6 | 17.4 | 11.6 | 17.4 | 11.6 |
| Absheron economic region | 17.1 | 11.8 | 17.2 | 11.9 | 17.1 | 11.8 | 17.1 | 11.7 | 17.3 | 11.8 | 17.5 | 11.8 |
| Lankaran economic region | 17.7 | 11.2 | 17.7 | 11.2 | 17.6 | 11.2 | 17.9 | 12.9 | 18.1 | 13.2 | 18.3 | 13.4 |
| Guba-Kahchmaz economic region | 20.1 | 12.8 | 20.3 | 12.9 | 20.2 | 12.8 | 20.0 | 12.7 | 19.9 | 12.6 | 19.8 | 12.6 |

* + 1. **National economic indicators[[5]](#footnote-5)**

In 2011-2016, deep economic reforms and stability were observed, macroeconomic stability was ensured in the country, and the country's economy entered a new stage of development. Complex measures are being taken to increase the business environment in the country, efforts for the development of entrepreneurship were strengthened, complex measures were taken to diversify the economy and socio-economic development of the regions.

According to the State Statistical Committee, the economic growth rate in 2011-2014 was 2.7 percent on average. At the same time, investment in the country's economy in 2011-2014 amounted to 11.9 percent on average.

Starting from 2010, the key driving force of economic growth in the country has been transformed from oil sector to non-oil sector, while the oil sector has declined by 2.9 percent in 2010-2014 and non-oil sector grew by 8.8 percent, in overall 3 percent economic growth has been achieved.

From the end of 2014 negative impact of acute decline in oil prices on world commodity markets has begun to be observed in Azerbaijan's economy since the second half of 2015. Negative impact was primarily transferred to the balance of payments, and then to the economic activity through the financing channels of economic growth. The US Dollar exchange rate has risen by about two times against the national currency. The Azerbaijani government has taken a lot of measures to further improve economic policy and speed up institutional reforms in order to restore economic activity.

The economy of Azerbaijan has entered a qualitatively new stage since 2015.

While the main driving factor of economic growth was the traditional oil sector by 2010, the major contribution to growth in 2010-2014 was formed from non-oil sectors. According to the State Statistical Committee, in 2014 non-oil sector grew by 6.9 percent, construction sector - by 8.8 percent, service sector - by 7.6 percent. Analysis of the share of these sectors in GDP shows that natural resources contributed 37 percent to the economic growth in 2014 and in the second place is the construction sector with 14 percent.

The high economic growth in 2004-2014 were also accompanied by the social welfare of the population. Azerbaijan has turned into a high-middle-income country from a low-income country in a short period of time.

Growth of GDP in Azerbaijan was proportional to domestic consumption and state investments. Thus, according to the State Statistical Committee, the actual final consumption expenditures increased by 9.0 percent, respectively per year on average for 2010-2014.

In 2015, the national currency was corrected twice for the purpose of improving the foreign sector framework, restoration of external balance on the basis of realities of the new era, as well as minimizing the negative effects on the internal economic balance. At the end of the year, the exchange rate of 1 US dollar against the manat increased from 0.78 to 1.55 manat comparing with the beginning of the year.

According to the official statistical data, in 2015 real GDP growth was 1.1 percent (2.8 percent in 2014), including 1.1 percent in non-oil sector (7 percent in 2014), 1.2 percent in oil sector (2.9 percent decline in 2014). In January-August 2016 GDP declined by 3.1 percent in real terms, including 5.8 percent decline in the non-oil sector and 2.5 percent increase in the oil sector.

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| **GDP production in the section of oil and non-oil of economy, at current prices, million manats** |
|   | **2011** | **2012** | **2013** | **2014** | **2015** | **2016\*** |
| Gross domestic product - total  | **52,082.0** | **54,743.7** | **58,182.0** | **59,014.1** | **54,380.0** | **60,393.6** |
| of which: |  |  |  |  |  |  |
| oil - gas sector | 25,829.9 | 24,487.3 | 23,778.1 | 21,405.2 | 15,382.2 | 19,648.9 |
| non - oil sector | 23,196.1 | 26,864.4 | 30,525.9 | 33,195.9 | 34,138.8 | 36,153.5 |
| net taxes on product and import | 3,056.0 | 3,392.0 | 3,878.0 | 4,413.0 | 4,859.0 | 4,591.2 |

\*) On the basis of primary data

The continuation of the observed accelerate pace of economic growth in the world economy in 2017, which has started at the second half year of 2016 and the gradual rise of oil prices following the obtaining of contracts that restrict oil supply by oil exporting countries, the reforms undertaken to develop the non-oil sector in the country had a positive impact on Azerbaijani economy. The national currency has been stabilized as a result of the significant increase in export revenues, the expansion of non-oil exports and the reforms undertaken toward changes in import substitution.

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| **Revenues and Expenditures of the state budget (*million manats)*[[6]](#footnote-6)** |
|   | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| **Revenues - total** | **15700.7** | **17281.5** | **19496.3** | **18400.6** | **17498.0** | **17505.7** |
| **Expenditures-total** | **15397.5** | **17416.5** | **19143.5** | **18709.0** | **17784.5** | **17751.3** |
|  including: |  |  |  |  |  |  |
| national economy | 6803.2 | 6960.7 | 8207.5 | 7598.7 | 6408.8 | 4124.0 |
| social and cultural activities | 3447.2 | 4072.9 | 4081.8 | 4484.4 | 4442.9 | 5789.5 |
|  of which: |  |  |  |  |  |  |
| education | 1268.5 | 1453.2 | 1437.7 | 1553.9 | 1605.1 | 1754.4 |
| health care | 493.4 | 609.4 | 618.9 | 665.3 | 708.2 | 702.5 |
| social protection and security | 1495.4 | 1769.5 | 1750.3 | 1971.2 | 1857.2 | 2645.2 |
| culture, art, information, physical training and activities not included in other categories | 189.9 | 240.8 | 274.9 | 294.0 | 272.4 | 687.4 |
| science | 106.1 | 116.7 | 117.0 | 124.2 | 113.2 | 110.2 |
| court authority, law enforcement agencies | 710.3 | 929.2 | 1049.3 | 1103.6 | 1105.7 | 1117.1 |
| legislation, executive and governmental authorities | 281.9 | 342.3 | 349.3 | 449.7 | 430.9 | 470.1 |
| other expenditures | 4048.8 | 4994.7 | 5338.6 | 4948.4 | 5283.0 | 6140.4 |

* + 1. **Rising individual consumption**

Consumption dynamics of food products per capita in households for 2011-2016 increased by 2,12% and reached to 905.5 kg.

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| **Consumption of food products per capita by main products groups in 2011- 2016, annual, kg[[7]](#footnote-7)** |
|  | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| Bread and bakery products  | 147.7 | 144.3 | 141.6 | 139.8 | 138.4 | 138.3 |
| Potatoes | 59.3 | 63.1 | 64.2 | 71.3 | 71.8 | 72.3 |
| Vegetables and market gardens | 92.9 | 98.5 | 103.8 | 106.4 | 106.5 | 106.6 |
| Meat and meat products | 32.4 | 33.5 | 33.8 | 33.8 | 33.9 | 33.5 |
| Fish and fishery | 6.9 | 7.1 | 7.1 | 7.2 | 7.3 | 7.2 |
| Milk and dairy products | 293.7 | 294.4 | 285.0 | 274.3 | 272.1 | 270.7 |
| Eggs, piece | 144.0 | 155.0 | 155.0 | 158.0 | 158.0 | 158.0 |
| Fruit and berries | 68.5 | 74.8 | 75.2 | 77.2 | 78.0 | 78.2 |
| Sugar and confectionery | 32.0 | 31.7 | 31.5 | 30.6 | 30.2 | 30.2 |
| Vegetable oil and margarine | 9.3 | 9.9 | 9.9 | 10.3 | 10.4 | 10.5 |
| Total | 886.7 | 912.3 | 907.1 | 908.9 | 906.7 | 905.5 |

According to 2016 indicators the number of economically active population was 5012.7 thousand, of which 4759.9 thousand people were employed population. This means 6.92% increase compared to 2012. Taking into consideration that the population growth rate was 6.53 percent over those years, in general growing dynamics is observing in the number of economically active population.

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| --- |
| **Economic activity of population[[8]](#footnote-8)** |
|   | **2012** | **2013** | **2014** | **2015** | **2016** |
| Number of economically active population - total, thsd. persons1) | 4688.4 | 4757.8 | 4840.7 | 4915.3 | 5012.7 |
|  Men | 2395.3 | 2436.0 | 2475.7 | 2510.8 | 2573.2 |
|  Women | 2293.1 | 2321.8 | 2365.0 | 2404.5 | 2439.5 |
| Employed in summary quantity of economically active population - total, thsd. persons | 4445.3 | 4521.2 | 4602.9 | 4671.6 | 4759.9 |
|  Men | 2291.8 | 2337.5 | 2376.1 | 2408.2 | 2465.7 |
|  Women | 2153.5 | 2183.7 | 2226.8 | 2263.4 | 2294.2 |
| Unemployed persons2) - total, thsd. persons | 243.1 | 236.6 | 237.8 | 243.7 | 252.8 |
|  Men | 103.5 | 98.5 | 99.6 | 102.6 | 107.5 |
|  Women | 139.6 | 138.1 | 138.2 | 141.1 | 145.3 |
| 1) Calculated taking into account total unemployed during 2005-2016 based on İnternational Labour Organization's methodology. |
| 2) Based on İnternational Labour Organization's methodology (including unemployed persons receiving official status). |

## **3.2. Direct drivers (sectors)**

* + 1. **Economic contribution of the main sectors such as fisheries, aquaculture, tourism, agriculture, extractive industries, transportation including shipping industry**

High economic growth was achieved as a result of directing part of oil revenues earned over the years of 2004-2010 to the economy. The average growth rate of the economy for this period was 16.9 percent, which is 12.9 percent more than the global average, 10.6 percent for the relevant indicator of the developing countries, and 12.6 percent above the CIS average[[9]](#footnote-9).

Average annual economic growth in the oil sector was 24.9 percent, and in the non-oil sector was 11.7 percent. The large-scale investments in the non-oil sector have led to significant growth in the sector. Starting from 2010, the key driving force of economic growth in the country has been transformed from oil sector to non-oil sector, while the oil sector has declined by 2.9 percent in 2010-2014, non-oil sector grew by 8.8 percent, and overall 3% economic growth was achieved.

 В общем балансе продовольственный рынок страны по белково-содержащим продуктам всего лишь на 6-7 % формируется за счет рыбы и рыботоваров. Потребление рыбной продукции в расчете на душу населения в 2007-2009 гг. составило около 1,7 килограмма в год. Однако в последние годы отмечается увеличение показателя потребления рыбной продукции в расчете на душу населения: 2009 г. – 5,1 кг, 2010 г. – 5,1 кг, 2011 г. – 5,2 кг, 2012 г. – 5,5 кг, 2013 г. – 5,7 кг, 2014 и 2015 гг. – около 7,0 кг. Это происходит как за счет увеличения импорта рыбной продукции в последние годы, так и за счет увеличения объема рыбной продукции аквакультуры в 2010-2015 гг.[[10]](#footnote-10)

In rural areas, beekeeping, fishing, and aquaculture activities are being stimulated, and various development plans are being implemented to support farms who want to engage in production activities in this direction in order to fully utilize the production potential of family-peasant farms and other small farms, to provide employment in rural areas and increase incomes of the population, as well as to increase the specific weight of local production in the country's supply of beekeeping and fishery products and other water bioresources.

The major part of the mining sector is crude oil and natural gas production in Azerbaijan. Extraction of metal ores in the mining industry has been steadily rising in recent years. The positive dynamics observed in 2015 show that there is still unused potential in this field.

**The role of tourism in the economy of Azerbaijan[[11]](#footnote-11)**

Azerbaijan is famous for its marvelous nature and national parks, starting with the capital city of Baku, with its modern infrastructure and ancient rich historical monuments in the reaches of the East and West. However, it is no coincidence that Baku has a large part of Azerbaijan's share in the global tourism sector. According to popular tourism portals, about 75[[12]](#footnote-12) percent of foreign tourists visiting the country preferred tourist centers located in Baku. The other part is the share of regional tourism, which is the source of growth in the future.

As a result of recent analyzes, the tourism sector of Azerbaijan is experiencing a period of ascension. In 2010-2015, there was an increase in the number of tourism enterprises in Azerbaijan by 4.5 percent per year on average, the level of employment in the tourism sector by 6 percent, and the number of foreign citizens coming for tourism by 8.5 percent[[13]](#footnote-13).

**Current state of Azerbaijan's commercial and transport assets[[14]](#footnote-14)**

In recent years, Azerbaijan has grown by about 10 percent in total service exports in the share of freight services. International transportations from Azerbaijan are mainly carried out by railway. The volume of import and export operations in these cargos is high and the volume of transit shipment to the intermediate point before the delivery to the final destination is relatively low.

Transit cargo transportation prevails in ports of Azerbaijan. In 2015, the volume of cargo on import and export operations via sea transport was 0.5 million tons, transit cargo transportation was 5.6 million tons which means 59 percent of total transit cargo transportation in the country.

Most of the transported cargo was constituted of coal, refined petroleum products, coke, mineral products, agricultural goods, and crude oils in the form of liquid. At the same time, container transportation was relatively small in both railways and ports.

The aggregate volume of agricultural products increased by 7.7 times (in real terms - 2.4 times) in 1995-2015, and 3.1 times in 2005-2015 (38.4% in real terms). Including, the actual increase in the production of plant products was respectively, 6.6 and 2.8 times (real growth was 2.3 times and 25.4 percent, respectively), while production of livestock products was respectively, 9.3 and 3.4 times (real growth was 2.5 times and 53.8 percent, respectively). [[15]](#footnote-15)

The share of agricultural production in GDP increased from 5.5% to 6.2% in 2010-2015.

|  |
| --- |
| **Production of the GDP, in current prices, million manat**[[16]](#footnote-16) |
|  | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| A - Agriculture, hunting and forestry | 2521.0 | 2702.7 | 2991.5 | 3015.2 | 3235.8 | 3230.0 |
| B - Fishing | 123.2 | 111.0 | 130.7 | 124.0 | 123.6 | 156.8 |
| C - Mining and quarrying | 24980.2 | 23606.1 | 22790.2 | 20222.3 | 14370.2 | 18557.0 |
| D - Manufacturing | 2077.2 | 2319.0 | 2452.8 | 2777.8 | 2714.0 | 2978.9 |
| E - Electricity, qas and water supply | 953.6 | 1148.7 | 1198.7 | 1169.3 | 828.2 | 862.1 |
| F - Construction | 4141.3 | 5508.2 | 6753.7 | 7454.4 | 6499.5 | 6338.9 |
| G - Retail and wholesale trade, repair of vehicles, personal and household goods | 3283.8 | 3654.3 | 4148.9 | 4652.0 | 5387.8 | 6251.8 |
| H - Hotels and restourants | 757.3 | 897.5 | 1069.2 | 1269.1 | 1312.8 | 1424.1 |
| I - Transport, storage and communication | 3487.4 | 3638.6 | 3580.8 | 3726.8 | 4329.6 | 5133.8 |
| J - Financial intermediation | 714.9 | 920.0 | 1262.0 | 1536.7 | 1580.7 | 1549.1 |
| K - Real estate, renting and business activities | 1235.8 | 1669.2 | 2208.9 | 2488.2 | 2884.9 | 2702.6 |
| L - Public administration and defence: social security | 1162.2 | 1353.6 | 1471.7 | 1638.6 | 1695.7 | 1729.6 |
| M - Education | 1604.0 | 1710.7 | 1896.9 | 1942.8 | 1947.4 | 1901.9 |
| N - Health and social work | 724.1 | 908.8 | 1030.6 | 1133.2 | 1137.9 | 1083.0 |
| O - Other community, social and personal service activities | 1463.9 | 1408.9 | 1654.0 | 1787.7 | 1828.9 | 1984.9 |
| **Total** | 49026.1 | 51351.7 | 54304.0 | 54601.1 | 49521.0 | 55503.7 |
| Net Taxes  | 3055.9 | 3392.0 | 3878.0 | 4413.0 | 4859.0 | 4921.5 |
| **Gross domestic product** | 52082.0 | 54743.7 | 58182.0 | 59014.1 | 54380.0 | 60425.2 |

* + 1. **Mapping out pressing issues within sectors such as overfishing, marine debris, waste generation, oil spills etc.**
		2. **Urbanization, coastal zone development. Coastal development (e.g., new areas, large development projects)**

In recent years, attention has been given to environmental issues such as improvement of ecological situation in Baku bay, Bibi Heybat zone, surrounding areas of H.Aliyev International Airport, lakes in Absheron Peninsula, oil-contaminated soils, areas underneath of produced water and contaminated areas with other production waste, and wastewater and solid waste management that focused on the protection of the environment and the recovery of the current situation.

Works on cleaning oil contaminated areas in Absheron peninsula and other parts of the country have been initiated since 2007 and relevant measures are being taken in this direction.

More than 500 hectares of oil-polluted land was reclaimed to improve the ecological condition of the Bibi Heybat zone, and the existing communications lines, engineer equipment and equipment in the dry and offshore zones of the zone were removed and landscaping works were carried out in the area. Closed sewage collector with a length of 3.96 km and a diameter of 800-1000 mm is installed.

Sank and semi-sunken vessels, defective metal and concrete structures weighing tens of thousands of tons and other voluminous waste have been cleaned in Baku bay and other coastal areas. Transfer of enterprises out of the city, operating in the coastal strip of the Baku Bay and adversely affecting the environment, were realized. A new port was built in Alat settlement to change the location of the port and the ferry located in the Baku Bay.

A polygon has been put into operation near the city of Sumgait to place hazardous waste. 127.5 thousand m3 of the mercury-containing toxic waste of the Surface Active Substances Plant, causing serious environmental pollution in the Sumgayit city, was transported to the Hazardous Waste Landfill near Sumgayit and neutralized, the land cover, which was underneath of the waste, was cleaned.

Within the framework of the first stage of the project on complex restoration of Boyukshor lake, as a result of the work done in the area of 300 hectares located in the eastern part of the lake 76 sewage water sources have been completely abolished.

Renovation works were carried out in Boyukshor boulevard and its coastal areas, tree and shrubs were planted, online control of water, as well as groundwater quality, was maintained and permanent protection of the protection zone was ensured.

Measures for implementation of phase 2 of the Boyukshor lake rehabilitation project have been started.

The project "Neutralization of radioactive contaminated coal waste in the production of iodine-bromine in Surakhani district" was implemented. The main objective of the project is to neutralize radioactive and non-radioactive wastes accumulated in the Surakhani and Ramana production sites as a result of long years of operation of the Baku Iodine Plant, located in the Absheron Peninsula.

As a result of the research on both production areas of the plant, it was found that the volume of radioactive waste accumulated at the beginning of 2007 was about 82,000 cubic meters and total production area of the plant exposed to technogenic pollution was 32.5 hectares.

As a result of implemented measures, the area was not only cleaned out of radioactive waste but also turned into an ecological recreational site, with a large green area. "ECOLAND" park has been built in the Ramana production area, which has all conditions for the rest of the population. The area has been fully utilized to use for economic purposes.

**Baku White City[[17]](#footnote-17)**

In respect of the Decree of the President of the Azerbaijan Republic, entitled comprehensive action plan for improving the ecological conditions in Azerbaijan Republic steps were undertaken for the removal of industrial uses to the edge of the city, decontamination of land, and improvements of the coastal boulevard.

In accordance with the order of the Head of Baku Executive Power dated June 11, 2010; it was decided to restore and redevelop the Black City area.

The master plan of Baku White City refers to the redevelopment of 221 hectares of the former industrial land area - Black City, which was located directly at the centre of Baku Bay and to the east of the city center.

Around 75 percent of the project will be residential units, creating a new community of 19,700 households for about 50,000 people as well as commercial and leisure units that will provide up to 48,000 jobs. The project is set to be completed in 2020.

In 2015, the eastern part of the Baku Boulevard, the city's seaside promenade, was extended by 2.7 kilometres with the area of 33 hectares to cover the coastal part of White City.

**Sumgait boulevard**

In addition to Baku, projects are implementing to establish new parks, alleys, recreation areas and fundamentally rebuild their existing ones in all cities and regions. One of the most important projects realized in this direction was the redevelopment of restoration and recultivation of Seaside Boulevard and City Beach area in Sumgayit.

The total area of the 4-kilometre boulevard along the Caspian Sea coast is 106 hectares.

## **3.3. Indirect drivers**

* + 1. **Climate change (changes in precipitation, water resources)[[18]](#footnote-18)**

In recent years, the impact of global climate change on the territory of the Republic has been reflected in the regional aspect. Thus, studies show that starting from 1980-1982 years, the changes occur in the annual dynamics of temperatures, precipitation, wind and other factors, which are considered as the main climatic factors, and this changes have become more characteristic since 1995.

The recurrence of many hazardous hydrometeorological phenomena in Azerbaijan has intensified in recent years, coverage areas have been expanded, and their damage continues to increase year by year. Some natural processes have gone beyond the local and regional limits and have a global scale.

* + 1. **Long-term Sea Level Fluctuation[[19]](#footnote-19)**

Since the Caspian Sea is a closed basin, there are periodic changes in the sea level. The main factor in the change of sea level is the climate of its basin. Thus, climatic fluctuations occurring in the basins of Volga, Ural, Samur, Kur, Terek, Safidrud and other rivers, which account for about 80% of the revenue portion of the Caspian Sea water balance, have a significant impact on the increase or decrease of the water level.

In Azerbaijan, the observations on the sea level were started in the first half of the 19th century (Baku station - 1830). At present, in the section of the Caspian Sea, which belongs to the Republic of Azerbaijan (on the coast, in the open sea, in the islands and trestles) 13 hydrometeorological observation stations of National Hydrometeorology Department are operated, where sea level observations are carried out on 7 of them.

In the second half of the last century, the level of fluctuations observed on the level of the Caspian Sea was temporary. In 1977, the sea level dropped to the lowest point observed in the twentieth century with the Baltic system up to -29 meters, and then the sea water level increased by 2.5 meters to -26.5 meters in a short historical period (1977-1995). From 1995, a decrease has been observed in the sea level. The rise in the sea level not only affected the economy but also demographic and social processes. Rising sea level can dramatically reduce the spawning places of the fish found in river beds and offshore areas. Heating of sea water as a result of climate change may result in the faster start of fish spawning season. However, considering the ability of fish to adapt, it can be assumed that this will not be so dangerous.

The calculations show that, if the sea level reaches a maximum limit (- 26.00 mBS), then 825.1 km2 of the coastal area may be flooded. At the same time, when the level decreases up to -29.0 m and even below the area of the sea and the amount of water evaporated from its surface is reduced. The mechanism of self-regulation functions. Therefore, despite the fact that so much water is withdrawn from the Caspian Sea rivers (60 km3/year), the probability of water level drops below -30.0 m in the next 30-40 years is 0.1-0.3 %.

# **4. Pressure**

## **4.1. Fishing**

**Fisheries is one of the main driving force and pressure on marine ecosystem. Overfishing**

Одним из основных факторов риска для ихтиофауны является перелов рыб, особенно значение этого фактора возросло в 90-е годы. Ранее в 70-80-е годы существовал запрет на морской лов осетровых и лососевых, после чего до 2011 года он был отменен, что стало причиной неконтролируемого браконьерского их лова. Только начиная с 2011 года всеми прикаспийскими странами был введен технический мораторий на коммерческий вылов осетровых рыб.

* + 1. **What is the official fish catch of main fish species e.g., sturgeon, bony fish, tulka, kilka catches (tons per year)? [[20]](#footnote-20)**

Currently, the upward trend is observed in the fishing of Cypriniformes in the Azerbaijani sector of the Caspian Sea. More than 20 fish species are recorded in industrial fishing in the Kura River and in the Azerbaijani sector of the Caspian Sea. Caspian kutum (Rutilus frisii kutum) prevail (40-84%) in the industrial fishing in the sea. The second place in the commercial fishing of Cypriniformes is occupied by Pseudophoxinus (Rutilus caspicus). In the Kur River, the amount of fishing of this fish was between 14-23% and in the Caspian Sea - 12-32%. In recent years, an increase in the number of fishing of Carassius - the invasive species for the ichthyofauna of the republic. The amount of fish catch of common carp varies between 1-17% in the commercial fishing in the Azerbaijani sector of the Caspian Sea. The next places, due to the significance of the sea fishing accounts for bream and vimba bream (Vimba vimba). The amount of fishing of asp (Aspius aspius) and Hypophthalmichthys in industrial fishing is not so high.

Since 2000, fishing of kilka has decreased from 18520 tons to 316 tons (2016) in Azerbaijan. At present, common kilka (80-85%) forms the basis of kilka fish catch, in the second place (10-15%) comes Anchovy sprat and Southern Caspian sprat (1-2%) in the third.

Over the last 30 years, the overall fishing of sturgeons in the Caspian Sea has dropped 30 times (from 27 thousand tons in 1980 to 0.6 thousand tons in 2010). Total fishing of Acipenseriformes in Azerbaijan during 2000-2010 decreased from 70 to 2 tons. Since 2011, a technical moratorium on sturgeon fishing in the Caspian Sea has been announced and hunting is permitted only for scientific research and fish breeding purposes.

**Activity of private aquaculture farms[[21]](#footnote-21)**

|  |
| --- |
| **Fish caught by farms engaged in lakes and puddle fisheries** |
|  | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| Number of legal and physical persons engaged in lake and puddle fishing, unit | 106 | 99 | 92 | 85 | 161 | 108 |
| Area of lake and puddle surface, ha | 1381 | 1435 | 1283 | 1109 | 1847 | 1,093 |
| Quantity of caught fish, ton | 404 | 376 | 387 | 370 | 603 | 645 |
| including: |  |
| Sturgeon fish | - | 42 | 22 | - | - | - |
| Wild carp | 176 | 165 | 173 | 150 | 177 | 201 |
| Carp | 7 | 6 | 30 | 30 | 28 | 31 |
|  White amur | 7 | 16 | 13 | 6 | 20 | 23 |
| Carp fish | 51 | 22 | 31 | 41 | 24 | 20 |
| Rainbow trout | 86 | 89 | 88 | 89 | 304 | 315 |
| Other types of fish | 77 | 36 | 30 | 54 | 50 | 55 |

|  |
| --- |
| **Fish caught by quota (tons)[[22]](#footnote-22)** |
| **Fish species** | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| **Caught fish – total** | **1121** | 970 | **855** | **929** | **626** | **739** |
| including : |  |
| Bream | 83 | 83 | 77 | 58 | 27 | 44 |
| wild carp | 29 | 38 | 28 | 38 | 41 | 49 |
| Crusian | 20 | 16 | 18 | 11 | 13 | 4 |
| Roach | 59 | 62 | 72 | 52 | 54 | 50 |
| Omul | 82 | 80 | 117 | 162 | 116 | 93 |
| Chub | 1 | 2 | 2 | 2 | 0.2 | 2.0 |
| Pike | - | 1 | - | - | - | - |
| grey mullet | 139 | 125 | 125 | 157 | 78 | 68 |
| cat-fish | 7 | 5 | 4 | 4 | 1 | 4 |
| pike perah | 37 | 33 | 32 | 12 | 5 | 3 |
| bullehead | - | - | - | - | - | - |
| sturgeon fish | - | 2 | - | - | - | - |
| rainbow trout | - | - | - | - | - | - |
| herring | 152 | 126 | 150 | 247 | 118 | 86 |
| sprat | 485 | 372 | 206 | 164 | 138 | 316 |
| karasol | 7 | 12 | 5 | 3 | 4 | 3 |
| shamai (royal fish) | 19 | 13 | 17 | 10 | 4 | 4 |
| other types of fish | 1 | - | 4 | 9 | 27 | 13 |

* + 1. **What are the estimated fish stock in your country[[23]](#footnote-23)**

Marine expeditions are organized to evaluate acipenseriformes reserves in the Caspian Sea. Reserves, feed bases, the habitat of acipenseriformes and other fish species are studied in the central and Southern part of the Caspian Sea belonging to Azerbaijan. Stocks and population dynamics of acipenseriformes, salmoniformes, clupeiformes and Cypriniformes are evaluated. Specific weight (%) of biologically stable fish stocks and the hunting norms of the fishery important fishes are determined.

**Registry data for indicators of specific weight (%) of biologically stable fish stocks on fishery important fishes for 2015 and 2016[[24]](#footnote-24)**

|  |  |  |
| --- | --- | --- |
| **№** | **Species of fishery important fishes** | **Specific weight (%) of biologically stable fish stocks**  |
| **2015**  | **2016** |
| 1 | *Clupeonella*  | 16,3 | 16,7 |
| 2 | *Alosa*  | 38,1 | 38,8 |
| 3 | *Lisa* | 46,8 | 47,6 |
| 4 | *Rutilus frisii kutum* (Kamensky, 1901) | 35,9 | 36,7 |
| 5 | *Vimba vimba persa* (Pallas, 1774) | 27,5 | 26,9 |
| 6 | *Abramis brama orientalis*(Berg, 1949 ) | 37,2 | 37,9 |
| 7 | *Cyprinus carpio* Linnaeus, 1758  | 34,8 | 35,4 |
| 8 | *Rutilus rutilus caspicus* (Jakovlev, 1870) | 38,0 | 38,8 |
| 9 | *Chalcalburnus chalcoides* (Güeldenstäedt, 1772)  | 28,5 | 28,3 |
| 10 | *Aspius aspius taeniatus* (Eichwald, 1831) | 27,0 | 27,1 |
| 11 | *Sander lucioperca* (Linnaeus, 1758)  | 31,5 | 31,8 |
| 12 | *Carassius carassius* (Linnaeus, 1758)  | 38,7 | 38,4 |
| 13 | *Silurus glanis*(Linnaeus, 1758) | 39,4 | 40,2 |
| 14 | *Esox lucius*(Linnaeus, 1758) | 37,0 | 38,3 |
|  | **Total, average for all types:** | **34,05** | **34,49** |

* + 1. **What is the share of illegal fishing in your country?[[25]](#footnote-25)**

In 2011, 54 people were prosecuted for illegal fishing. 8 water vehicles, 70 illegal hunting tools and 740 illegally hunted different kind of fishes were taken from illegal fishers.

In 2012, 104 people were prosecuted for illegal fishing. 29 water vehicles, 99 illegal hunting tools and 842 illegally hunted different kind of fishes were taken from illegal fishers.

In 2013, 53 people were prosecuted for illegal fishing. 184 illegal hunting tools and 532 illegally hunted different kind of fishes were taken from illegal fishers.

In 2014, 34 people were prosecuted for illegal fishing. 7 water vehicles, 7063 illegal hunting tools and 453 illegally hunted different kind of fishes were taken from illegal fishers.

In 2015, 30 people were prosecuted for illegal fishing. 3 water vehicles, 7687 illegal hunting tools and 898 illegally hunted different kind of fishes were taken from illegal fishers.

In 2016, 24 people were prosecuted for illegal fishing. 8 water vehicles, 212 illegal hunting tools and 631 illegally hunted different kind of fishes were taken from illegal fishers.

* + 1. **What is the estimated fish farms in your country**

There are 12 fish breeding enterprises operating under the Department for Reproduction and Protection of Aquatic Bioresources of the Ministry of Ecology and Natural Resources, which provide for restoration and enhancement of reserves of fishery important fish species, preserving their gene pool and conservation biodiversity in the waters of the Caspian Sea belonging to Azerbaijan, rivers and inland water basins.

**Activity of state fisheries enterprises for 2011-2016[[26]](#footnote-26)**

|  |  |  |
| --- | --- | --- |
| Виды рыб | Единица измерения | **Годы** |
| **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| Осетровые, всего | млн.экз. | **3.41** | **3,443** | **4.039** | **6,773** | **6,52** | **7.57** |
| Белуга |  | - | - | - | - | - | - |
| Шип |  | - | - | - | - | - | 0.196 |
| Осетр |  | 2,93 | 3,033 | 3,154 | 4,44 | 2,785 | 3.01 |
| Севрюга |  | 0,47 | 0,41 | 0,885 | 2,33 | 3.738 | 4.354 |
| Куринский лосось |  тыс.экз. | **171.6** | **185.78** | **166.15** | **177,9** | **181,02** | **199** |
| Частиковые, всего | млн.экз. | **331.4** | **362.13** | **383.5** | **383,2** | **389,803** | **398** |
| Сазан |  | 38,7 | 63,99 | 81,183 | 82,288 | 65,745 |  115 |
| Лещ |  | 13,12 | 11,06 | 9,559 | 7,14 | 7,685 | 25 |
| Кутум |  | 55,72 | 60,82 | 80,95 | 72,064 | 70,66 | 99 |
| Вобла |  | 159,1 | 163,3 | 135,2 | 152,74 | 159,0 | 149 |
| Жерех |  | 0,8 | 1,6 | 1,76 | 2,55 | 1,3 | 5 |
| Рыбец |  | 34,1 | 33,1 | 32,90 | - | - | - |
| Шемая |  | 1,2 | 1,4 | 1,81 | - | - | - |
| Судак |  | 9,0 | 7,0 | 5,7 | - | - | - |
| Другие | млн.экз. | 15,0 | 14,2 | 12,91 | 60,918 | 81,21 | 0.21 |
| Растительно-ядные и др. | млн.экз. | 4,6 | 5,5 | 5.5 | 5,5 | 4,2 | 5 |
| Общее, всего | млн.экз. | **335,02** | **365,76** | **380,61** | **390,2** | **396,50** | **406.5** |

Total number of fish fries by species released during 2011-2016:

* *Acipenseriformes – 32.149 mln*
* *Salmoniformes – 1.08 mln*
* *Cypriniformes* – 2.243 bln
* **Total –** 2.285 bln
	+ 1. **Mariculture, (eg, cage culture)**

## **4.2. Non-living resources extraction**

**Oil and gas extraction. Information on the current activities of oil companies in the country, including these related to suspended wells, environmental safety of off-shore exploration, production, refining and transportation of hydrocarbons in the Caspian Sea.**

**Oil Production in Azerbaijan, million tons[[27]](#footnote-27)**

**Gas Production in Azerbaijan, billion cubic meters**[[28]](#footnote-28)

* + 1. **Oil and gas production in country**

|  |
| --- |
|  **Production of energy products (in volume terms)[[29]](#footnote-29)** |
|   | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| Crude oil, thsd ton | 45 626,2 | 43 374,8 | 43 457,4 | 42 075,7 | 41 628,3 | 41 050,4 |
| Natural gas, million cubic metre | 16 361,4 | 17 242,1 | 17 895,1 | 18 826,5 | 19 236,1 | 18 717,6 |
| Natural bitum and natural asphalt, thsd ton | - | - | - | - | - | - |
| Refinery feed-stocks, thsd ton | - | - | - | - | - | - |
| Refinery gas, thsd ton | 244,9 | 262,5 | 276,1 | 246,5 | 215,8 | 231,0 |
| LPG, thsd ton | 249,8 | 214,8 | 262,5 | 201,9 | 172,3 | 199,6 |
| Motor gasoline, thsd ton | 1 295,5 | 1 296,6 | 1 407,1 | 1 238,3 | 1 223,9 | 1 153,1 |
| Kerosene - type jet fuel,thsd ton | 621,4 | 626,4 | 703,1 | 709,0 | 688,5 | 627,3 |
| Other kerosene, thsd ton | 0,3 | - | - | - | - | - |
| Diesel fuel, thsd ton | 2 483,3 | 2 368,8 | 2 495,4 | 2 946,2 | 2 803,7 | 2 315,3 |
| Fuel oil - low sulphur, thsd ton | 253,8 | 286,5 | 285,2 | 206,7 | 324,3 | 398,7 |
| Fuel oil - high sulphur, thsd ton | - | - | - | - | - | - |
| Naphtha, thsd ton | 219,0 | 148,7 | 125,1 | 235,3 | 219,3 | 197,4 |
| Petroleum coke, thsd ton | 268,6 | 231,0 | 223,0 | 251,9 | 254,8 | 206,6 |
| Bitumen, thsd ton | 265,7 | 288,1 | 312,7 | 241,9 | 171,8 | 179,1 |
| Lubricants, thsd ton | 91,1 | 63,2 | 47,2 | 54,1 | 25,7 | 9,7 |
| Other petroleum products, thsd ton | 205,9 | 269,4 | 237,6 | 205,3 | 285,4 | 311,4 |
| Heat, thsd Gcal | 1 083,4 | 1 195,2 | 1 298,4 | 1 618,7 | 1 552,7 | 1 739,2 |
| Electricity-total, million kWt hour | 20 293,8 | 22 988,1 | 23 354,4 | 24 727,7 | 24 688,4 | 24 952,9 |
| of which: |  |
| Hydro-energy, million kWt hour | 2 675,8 | 1 821,0 | 1 489,1 | 1 299,7 | 1 637,5 | 1 959,3 |
| Wind energy, million kWt hour | - | - | 0,8 | 2,3 | 4,6 | 22,8 |
| Solar (photovoltaic) energy, million kWt hour | - | - | 0,8 | 2,9 | 4,6 | 35,3 |
| Electricity generated from waste incineration, million kWt hour | - | - | 134,1 | 173,5 | 181,8 | 174,5 |
| Wood, thsd ton | 192,9 | 194,6 | 202,9 | 180,0 | 162,1 | 66,6 |

* + 1. **Import / export of oil and gas in country**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
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| **Import of energy products ( in volume terms)[[30]](#footnote-30)** |
|   | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| Crude oil, thsd ton | - | - | - | 0.1 | - | - |
| Natural gas, million cubic metre | - | - | - | - | - | 298.4 |
| Natural bitum and natural asphalt, thsd ton | 0.3 | 1.4 | 4.5 | 1.1 | 7.1 | 1.0 |
| LPG, thsd ton | - | - | 0.1 | - | - | - |
| Motor gasoline, thsd ton | 1.0 | 0.3 | 0.2 | 193.6 | 45.8 | 81.0 |
| Diesel fuel, thsd ton | 0.1 | 3.1 | 2.0 | 0.9 | 12.4 | 3.9 |
| Other kerosene, thsd ton | 0.3 | 19.6 | 28.4 | 4.5 | 14.5 | 10.6 |
| Fuel oil - low sulphur, thsd ton | - | - | 9.5 | 20.9 | 135.0 | 186.7 |
| Fuel oil - high sulphur, thsd ton | - | - | - | - | - | - |
| Petroleum coke, thsd ton | 0.1 | - | - | 0.1 | 4.0 | 0.1 |
| Bitumen, thsd ton | - | - | 20.5 | 0.1 | - | 4.8 |
| Lubricants, thsd ton | 26.1 | 20.5 | 27.3 | 37.0 | 37.3 | 26.2 |
| Other petroleum products, thsd ton | - | - | 34.0 | 19.2 | 31.9 | 15.9 |
| Electricity, million kWt hour | 128.0 | 140.9 | 127.3 | 124.1 | 107.5 | 114.4 |
| Other fuel products, thsd ton | 9.3 | 10.6 | 11.0 | 7.0 | 8.8 | 5.4 |

|  |
| --- |
| **Export of energy products ( in volume terms)[[31]](#footnote-31)** |
|   | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| Crude oil, thsd ton | 39,028.7 | 36,756.5 | 36,707.8 | 35,227.3 | 35,109.9 | 34,972.4 |
| Natural gas, million cubic metre | 6,817.4 | 6,616.7 | 7,308.0 | 8,093.2 | 8,145.2 | 8,049.1 |
| LPG, thsd ton | 109.4 | 90.0 | 92.5 | 35.1 | 15.5 | 58.8 |
| Motor gasoline, thsd ton | 96.5 | 60.1 | 24.6 | 13.4 | 4.7 | 4.5 |
| Kerosene - type jet fuel, thsd ton | 78.9 | 146.0 | 131.3 | 196.7 | 236.5 | 236.3 |
| Naphtha, thsd. ton | - | - | - | - | - | - |
| Diesel fuel, thsd ton | 1,359.1 | 1,139.0 | 1,084.8 | 1,523.2 | 1,655.0 | 1,228.1 |
| Fuel oil - low sulphur, thsd ton | 213.1 | 107.1 | 228.3 | 236.8 | 113.4 | 23.4 |
| Petroleum coke, thsd ton | 262.5 | 192.9 | 214.7 | 286.7 | 263.9 | 172.7 |
| Bitumen, thsd ton | 20.0 | 11.1 | - | 3.2 | - | - |
| Lubricants, thsd ton | 72.6 | 49.4 | 40.5 | 36.3 | 14.9 | 9.4 |
| Other petroleum products, thsd ton | - | - | 27.2 | 25.8 | 25.8 | 1.9 |
| Electricity, million kWt hour | 804.8 | 680.3 | 495.6 | 489.3 | 265.0 | 1,095.5 |

 |

* + 1. **Oil spills and accidents**

В 2004 г. Международная конвенция по обеспечению готовности на случай загрязнения нефтью, борьбе с ним и сотрудничеству была подписана Азербайджаном.

В целом Министерство по чрезвычайным ситуациям несет ответственность за мониторинг и обзор действий по предупреждению и ликвидации разливов нефти на море. Область применения и географический охват являются районы Каспийского моря, порты и береговые линии в пределах территориальной юрисдикции Азербайджанской Республики.

На территории Азербайджана крупные нефтяные компании (SOCAR, BP Azerbaijan и др.) располагают необходимыми ресурсами для сбора нефти и реализации других операций по борьбе с загрязнением. Они также имеют значительный технический опыт в области борьбы с загрязнением нефтью, включая информацию, связанную с процедурами охраны здоровья и безопасности.

In recent years, there have not been recorded pollution of the Caspian Sea with serious cases of oil spills.

### **4.2.4 Mining and sand extraction**[[32]](#footnote-32)

Since 2004, a new era of development industry has begun in Azerbaijan. During this period, some of the revenues from the oil and gas industry were directed to the development of various industries, state programs were developed for the optimization of industrial structures in the regions, significant works were done in the direction of solution of energy supply, improvement of the overall infrastructure and numerous projects were implemented for the opening of new production facilities.

In recent years, the growth rate of the non-oil industry has steadily exceeded the overall industry growth rate. Over the past years, gradual optimization has taken place in the industrial structure, the share of the mining sector has decreased and the share of the processing sector has increased.

|  |
| --- |
| **Main indicators of mining industry[[33]](#footnote-33)** |
|   | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| Number of acting enterprises -total, unit | 289 | 289 | 318 | 322 | 325 | 298 |
|  State | 29 | 30 | 27 | 23 | 25 | 26 |
|  non-state | 260 | 259 | 291 | 299 | 300 | 272 |
| Manufacture of main types of products in natural value |  |  |  |  |  |  |
| Masons sand, thsd.ton | 1,335 | 2,211 | 2,139 | 1,420 | 752.7 | 367.8 |
| Gravel, peble, flint and crashed stone, thsd.ton | 3,304 | 4,162 | 2,108 | 1,869 | 862.2 | 739.7 |
| Calcareous building stone, thsd. Ton | 411.5 | 415.9 | 443.9 | 458.5 | 402.1 | 553.1 |
| Salt extraction, ton | 20,941 | 28,550 | 32,021 | 35,156 | 39,461 | 63,931 |
|  of which commodity  | 5,123 | 5,345 | 6,268 | 5,173 | 4,743 | 4,699 |
| Gold, kilogram | 1,775 | 1,562 | 1,619 | 1,873 | 2,229 | 1,895 |
| Iron ore (ware), thsd. ton | 214.3 | 207.3 | 141.4 | 91.4 | 127.6 | 25.5 |

* + 1. **Physical alteration of coastal area**

## **4.3. Transportation and infrastructure (eg. shipping)**

**Land and marine transportation hubs are possible pollution sources and disturbing factors to biodiversity. Infrastructure development (e.g., pipelines), and transport infrastructure (e.g., routes)**

|  |
| --- |
| **Passenger turnover (million passenger-km)[[34]](#footnote-34)** |
|   | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| **Total passenger turnover** | **21009** | **22882** | **25021** | **26316** | **27125** | **27650** |
| including: |  |  |  |  |  |  |
| **Maritime transport** |  |  |  |  |  |  |
| Passenger transport demand | 7 | 6 | 5 | 5 | 3 | 9 |
| Share in total turnover, % | 0.03 | 0.03 | 0.02 | 0.02 | 0.01 | 0.03 |

|  |
| --- |
| **Pipeline transport**[[35]](#footnote-35) |
|  | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| Pipelines, thsd. km (by the country) | 6,526 | 6,370 | 5 710 | 5,402 | 5,355 | 5,431 |
| oil pipelines | 1,673 | 1,677 | 1 531 | 1,527 | 1,526 | 1,522 |
|  gas pipelines | 4,853 | 4,693 | 4 179 | 3,875 | 3,829 | 3,909 |
| Transportation, thousand tonnes | 62,870 | 61,092 | 62,211 | 65,832 | 65,146 | 63,685 |
| oil pipeline | 49,419 | 47,238 | 47,819 | 50,082 | 49,895 | 48,258 |
| transport sector | 45,602 | 43,316 | 43,549 | 45,784 | 45,672 | 44,129 |
| non-transport sector | 3,817 | 3,922 | 4,270 | 4,298 | 4,223 | 4,129 |
| gas pipeline | 13,451 | 13,854 | 14,392 | 15,750 | 15,251 | 15,427 |
| Goods turnover, million tonne-km | 69,018 | 66,427 | 67,278 | 70,606 | 71,020 | 69,351 |
| oil pipeline | 65,128 | 62,426 | 62,818 | 65,597 | 66,016 | 64,334 |
| transport sector | 61,960 | 59,171 | 59,274 | 62,030 | 62,511 | 60,907 |
| non-transport sector | 3,168 | 3,255 | 3,544 | 3,567 | 3,505 | 3,427 |
| gas pipeline | 3,890 | 4,001 | 4,460 | 5,009 | 5,004 | 5,017 |
| Average transportation distance of 1 tonn goods in the transport sectors, km | 1 097,8 | 1087,3 | 1 081,4 | 1,072.5 | 1,090.2 | 1,089.9 |
| oil pipeline | 1 317,9 | 1 321,5 | 1 313,7 | 1,309.8 | 1,323.1 | 1,333.1 |
| transport sector | 1 358,7 | 1 366,0 | 1 361,1 | 1,354.8 | 1,368.7 | 1,380.2 |
| non-transport sector | 830.0 | 830.0 | 830.0 | 829.9 | 830.0 | 830.0 |
| gas pipeline | 289,2 | 288,8 | 309,9 | 318.0 | 328.1 | 325.2 |

* + 1. **What are the recent development with regards to land and marine transportation (e.g., hubs, ports). What are transportation capacities e.g., old, new ships? What is the trend of shipping traffic? [[36]](#footnote-36)**

The establishment of a free trade zone, including the new Baku International Sea Trade Port (Baku Port), located in Alat settlement, might create an opportunity for Baku to join major regional trade routes and turn into a regional importance trade junction thanks to the opportunities provided by the favorable business environment.

Initiatives are continuing for the benefit of the country's economy in the form of added value from transport not only through the passage of cargo flows through the territory of the country, as well as providing storage, packaging and other services.

Other countries in the region are also striving to benefit from the potential advantages of special economic zones. Currently, there are six such zones in the Caspian Sea basin, and three of them is over 1000 ha.

Special Economic Zones in the Caspian Basin deal mainly with the processing of construction, chemical and agricultural products. As a regional trade zone, the advantages of Baku include links to major regional trade routes and efficient operations of the new port of Baku. Establishing a more favourable business environment in Azerbaijan has been defined as a target, and includes ensuring both favourable environments and physical space for import, export, and transit in free trade zone.

Additionally, the Hovsan International Sea Port with a 13.9-hectare area, Sangachal Sea Port with a 45-hectare area, and the Zykh Sea Port with a 10-hectare area can be mentioned as a main port infrastructures.

|  |
| --- |
| **Sea transport**[[37]](#footnote-37) |
|  | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| Goods transportation, thousand tonnes | 12 499,1 | 12 371,2 | 11 509,7 | 9,934.1 | 6,625.9 | 5,807.3 |
| foreign link | 12 499,1 | 12 349,5 | 11 499,6 | 9,934.1 | 6,573.9 | 5,783.5 |
| import | 1 622,4 | 1 493,8 | 1 595,8 | 554.9 | 200.1 | 316.1 |
| export | 1 311,1 | 1 289,7 | 1 114,0 | 715.1 | 319.0 | 510.0 |
| transit | 8 430,5 | 8 621,1 | 8 241,5 | 8,296.3 | 5,567.4 | 4,208.3 |
| between foreign ports | 1 135,1 | 944,9 | 548,3 | 367.8 | 487.4 | 749.1 |
| coasting | - | 21,7 | 10,1 | - | 52.0 | 23.8 |
| Freight turnover, million tonne-km | 5 186,6 | 5 061,5 | 4 632,4 | 4,123.7 | 2,937.4 | 3,002.0 |
| foreign link | 5 186,6 | 5 056,7 | 4 631,8 | 4,123.7 | 2,933.9 | 3,001.8 |
| coasting | - | 4,8 | 0,6 | - | 3.5 | 0.2 |
| Passengers transportation, thousand passengers | 17,3 | 17,1 | 13,7 | 14.7 | 8.5 | 19.6 |
| foreign link | 17,3 | 17,1 | 13,7 | 14.7 | 8.5 | 19.6 |
| coasting | - | - | - | - | - | - |
| Passengers turnover, million passenger-km | 6,8 | 6,4 | 4,8 | 5.2 | 3.4 | 9 |
| foreign link | 6,8 | 6,4 | 4,8 | 5.2 | 3.4 | 9 |
| coasting | - | - | - | - | - | - |
| Average transportation distance of goods, km | 415.0 | 409,1 | 402,5 | 415.1 | 443.3 | 516.9 |
| Average transportation distance of passenger, km | 393,1 | 374,3 | 350,4 | 353.7 | 400.0 | 459.2 |
| Number of sheep, unit | 80,0 | 82,0 | 81.0 | 62.0 | 62.0 | 67.0 |
| Gross registered, thousand tons | 448,2 | 459,4 | 452,7 | 376.4 | 376.4 | 395.4 |
| Deadweight capacity of ships, thousand tons | 496,4 | 488,1 | 476,1 | 378.6 | 377.8 | 405.8 |
| Passenger capacity of sheep, passenger place | 228,0 | 300,0 | 300,0 | 312.0 | 336.0 | 336.0 |

|  |
| --- |
| **Length of link ways**[[38]](#footnote-38) |
|  | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| Pipelines, thsd. km(by country) | 6,526 | 6,370 | 5,710 | 5,402 | 5,355 | 5,431 |
| oil pipelines | 1,673 | 1,677 | 1,531 | 1,527 | 1,526 | 1,522 |
| of which length of exploration | 1,617 | 1,621 | 1,531 | 1,527 | 1,526 | 1,522 |
| Baku-Tbilisi-Ceyhan | 442 | 442 | 442 | 442 | 442 | 442 |
| Sangachal-Supsa | 456 | 456 | 456 | 456 | 456 | 456 |
| other (local) | 719 | 723 | 633 | 629 | 628 | 624 |
| gas pipelines | 4,853 | 4,693 | 4,179 | 3,875 | 3,829 | 3,909 |
| of which length of exploration | 4,007 | 3,834 | 3,836 | 3,336 | 3,808 | 3,893 |
| Baku-Tbilisi-Arzurum | 442 | 442 | 442 | 442 | 442 | 442 |
| other (local) | 3,565 | 3,392 | 3,394 | 2,894 | 3,366 | 3,451 |

* + 1. **Remediation of old ports? Do you have new ports or port services in your country?** [[39]](#footnote-39)

On March 18, 2015, by the Decree of the President of the Republic of Azerbaijan the Baku Port was reconstructed and Baku International Sea Trade Port Closed Joint-Stock Company was established. At present, the Baku Port is going to be the main transport and logistics junction in Eurasia region. The construction of the new Baku Port is underway in Alat settlement. After completion of the third phase of the construction, it is planned that the new port will overtake 25 million tons of cargo and 1 million TEU containers.

* + 1. **Port service systems e.g., waste management. For instance, do ports have “waste take back” system? [[40]](#footnote-40)**

The Coordinating Council on Transit Freight was established by the Decree of the President of the Republic of Azerbaijan of October 21, 2015, in order to use the transit potential of the country more extensively and effectively.

The State Maritime Agency (SMA) uses the CleanSeaNet service within the framework of TRACECA with the European Maritime Safety Agency to obtain information on the discharges from the ships to the marine environment. When SMA receives relevant information on discharge (disposal) of harmful substances into the marine environment, it informs Crisis Management Center of the Ministry of Emergency Situations, which responsible for implementation of International Convention on Oil Pollution Preparedness, Response and Cooperation.

Azerbaijan Caspian Sea Shipping CJSC is the largest shipping company in the Republic with its transport fleet, specialized fleet, ship repair factories and ports.

The Republic of Azerbaijan is a member of the International Maritime Organization since May 15, 1995. Since then, Azerbaijan has ratified the major conventions such as SOLAS, MARPOL, STCW and other conventions and codes on promoting ship safety rules, marine environment protection, human factor development, as well as the safety of human life, offshore property, shipbuilding.

Measures are being taken to apply international standards on certification and training of sailors in order to eliminate issues related to the human factor, one of the main causes of accidents in sea ships.

Port of Baku is being developed as a world-class Green Port and logistics centre, using the latest innovative Environmental practices. These developments will include the following key areas: energy, waste management, water and air quality, as well as sustainable business practices. Green ports and logistics are areas in which activities can reduce the environmental and energy footprint of freight distribution, including material management (storage and packing), waste management and physical distribution. The benefits of the project will include greater operational and cost efficiency, environmental improvements (reductions in water and air pollutants such as greenhouse gases) for users of the port and will likely translate to increased demand for Port of Baku’s services[[41]](#footnote-41).

The New Port at Alat is designed to achieve the status of Green Port by employing various efficient technologies to reduce its carbon footprint and will have a programme to reduce waste from port operations through material reuse, recycling and composting. It will be designed to allow the management, treatment and disposal of all wastes generated during the port’s operations. Appropriate waste treatment plants and equipment will be installed at the port site.[[42]](#footnote-42)

Green zones will be created to the north and west of the port, along with the coastline and around the switchyard. These zones will enable soil enrichment and the moderation of the microclimate in the area resulting in a more positive impact on the surrounding semi-desert landscape. Rainwater drained from the roofs of buildings will be used to develop and water the aesthetic landscape.[[43]](#footnote-43)

# **4.4. External inputs: Discharges and run off**

**Discharges from point sources. Pollution from industries and municipalities. Information on volumes of untreated (polluted) wastewater discharge, and trends in changing of volumes of polluted wastewater discharges in the country. What is the situation with wastewater treatment plants? How many new treatment plants have been installed over the last years? What are capacities of the recent instalments? [[44]](#footnote-44)**

 Different mixed water is discharged through 224 streams to the Caspian Sea through the territory of the Republic. In 2011, the number of these streams was 265. As a result of the measures taken, the number of streams is currently reduced to 224. Majority of these streams (121) are natural rivers and canals, 9 belong to industrial enterprises and 94 to municipalities.

The discharge of untreated wastewater into the water sources has been reduced since the launch of new treatment facilities.

The Hovsan aeration station was renovated and reconstructed substantially. New devices were built in the territory of the station, equipment was completely refurbished and fully automated. The station works with a centralized management system and mechanical, biological and chemical neutralization processes of wastewater are fully controlled. Newly installed technology allows cleaning the wastewater to the smallest microorganisms. During the reconstruction, a glass fibre high-pressure pipe with a length of more than 5,000 meters was laid from Zykh pump station № 2 to Hovsan aerating station. Upon completion of the reconstruction, the daily capacity of the station reached from 480,000 cubic meters to 640,000 cubic meters.

 Nowadays works are being done towards treatment of wastewater discharged into the sea from the territory of the Republic of Azerbaijan. Works on construction of new biological treatment facilities for the treatment of waste water are being carried out in Khachmaz (in this district, regional treatment facilities are being constructed with intention to treat waste water formed in Guba and Gusar districts) and Shabran, Siyazan, Masalli, Lankaran and Astara districts. In addition, the construction works of biological treatment facilities with capacity of 40 thousand m3 per day are being carried out in Baku in order to treat waste water formed in settlements located in northern part of Absheron Peninsula and with capacity of 200 thousand m3 per day near Lokbatan settlement in order to treat waste water formed in residential areas located in the south-western part of Baku. At the end of 2017, a new modern complex of treatment facilities (physical, chemical and biological treatment) with capacity of 3000 m3 per day were constructed and commissioned for the "Azerchemistry" PU Organic Synthesis Plant.

### **4.4.1 What are the pollution loads in our country? What are Biological Oxygen Demands (BOD) loads? What are total emissions of acidifying substances e.g., phosphorus, nitrogen, oil (in tonnes per year)?**

### **4.4.2 Discharges from diffused sources e.g., agriculture activities?**

|  |
| --- |
| **Consumption of mineral and organic fertilizers[[45]](#footnote-45)** |
|  | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| Agricultural area\*), mln. ha | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 | 2.1 |
| ***Consumption of mineral fertilizers*** |  |
| Consumption of nitrogen fertilizers, thsd. ton | 49.3 | 63.2 | 69.8 | 80.5 | 93.7 | 157.1 |
| Consumption of nitrogen fertilizers per unit of agricultural area, kg/ha | 23.5 | 30.1 | 33.2 | 38.3 | 44.6 | 74.8 |
| Consumption of phosphate fertilizers, thsd. ton | 18.1 | 27.4 | 21.7 | 24.0 | 23.8 | 31.9 |
| Consumption of phosphate fertilizers per unit of agricultural area, kg/ha | 8.6 | 13.0 | 10.3 | 11.4 | 11.3 | 15.2 |
| Consumption of potash fertilizers, thsd. ton | 1.2 | 1.6 | 1.7 | 3.1 | 7.1 | 12.4 |
| Consumption of potash fertilizers per unit of agricultural area, kg/ha | 0.6 | 0.8 | 0.8 | 1.5 | 3.4 | 5.9 |
| Total consumption of mineral fertilizers, thsd. ton | 68.6 | 92.2 | 93.2 | 107.6 | 124.6 | 201.4 |
| Consumption of mineral fertilizers per unit of agricultural area, kg/ha | 32.7 | 43.9 | 44.4 | 51.2 | 59.3 | 95.9 |
| Area treated with mineral fertilizers, mln. ha | 0.9 | 1.1 | 1.2 | 0.8 | 1.0 | 1.3 |
| Share of area treated with mineral fertilizers in total agricultural area, % | 42.9 | 52.4 | 57.1 | 38.1 | 47.6 | 61.9 |
| Mineral fertilizers sale, thsd. ton | 68.6 | 92.2 | 93.2 | 107.6 | 124.6 | 201.4 |
| \*) Agricultural land = sown area + area under perennial plants |
| \*\*) Physical weight |  |  |  |  |  |  |
|  | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| ***Consumption of organic fertilizers*** |   |
| Consumption of organic fertilizers, thsd. ton | 1135.8 | 1148.7 | 1161.8 | 1172.2 | 1170.5 | 1175.1 |
| Consumption of organic fertilizers per unit of agricultural area, kq/ha | 540.9 | 547.0 | 553.2 | 558.2 | 557.4 | 559.6 |
| Area treated with organic fertilizers, thsd. ha | 90.4 | 122.1 | 109.4 | 136.0 | 71.5 | 68.5 |
| Share of area treated with organic fertilizers in total agricultural area, % | 4.3 | 5.8 | 5.2 | 6.5 | 3.4 | 3.3 |

## **4.5. Air emissions**

* + 1. **Significant sectors of air emissions**

The main source of atmospheric pollution is the organized sources of various enterprises and organizations operating in coastal areas, and maritime transport, as well as the infrastructure of offshore hydrocarbon production, emissions released from the basin and coastal water discharges. The settlement of 15-17 million people in the Caspian region and their livelihood activities also have an impact on the sea pollution.

The trend of declining harmful substances into atmosphere from industrial enterprises is largely due to the removal of old production sites and the provision of cutting-edge technologies to new production areas. The increase in discharges from motor vehicles is due to the rapid increase in the number of vehicles in recent years.

The main sectors that pollute the atmosphere in Azerbaijan are as follows:

* Historically polluted areas;
* Manufacture of building materials and construction;
* Energy;
* Oil and gas extraction and processing;
* Motor transport.

Due to the construction of modern power plants, upgrading physically obsolete devices and equipment, emissions into the air from this sector has reduced compared to previous years. The black oil was replaced with natural gas at thermal power plants, as a result application of more advanced technologies in this sector, carbon dioxide emissions have dropped by 6.6 million tons over the past five years.

However, as a result of exploitation of old-fashioned stations, the prevention of excessive emission of harmful gases into the atmosphere has not been fully avoided.

One of the sectors with a sufficient share of pollution in the atmosphere is the production and use of building materials.

One of the reasons for pollution of atmospheric air in the Absheron Peninsula, where industrial facilities are concentrated, is associated with releasing hydrocarbon compounds and other substances into the atmosphere from historically contaminated areas, especially from oil polluted areas, lakes and ponds, abandoned stone quarries covering large areas and polluted areas of production and household wastes. In recent years, the amount of harmful substances emitted from the polluted areas has been reduced as a result of reconstruction of the domestic wastewater landfill in Balakhani and putting into operation the domestic waste incineration plant, the measures taken to clean up the most polluted lakes, including the completion of the first phase of the Boyukshor lake clearance project, cleaning of oil contaminated soils in Bibiheybat, cleansing of contaminated soils and creation of modern infrastructure in the “White City”, expansion of the Boulevard with the abolition of old industrial facilities along the Baku bay and the construction of modern parks on the spot.

At present, internal combustion products, which are mainly exported by car engines, play a major role in the air pollution in the country. Increased number of vehicles and road traffic tension in the country creates difficulties in preventing harmful emissions into the atmosphere.

|  |
| --- |
| **Main indicators characterizing protection of air and harmful influence on it[[46]](#footnote-46)** |
|   | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| Number of stationary sources of pollutant emissions into the air-total, unit | 11665 | 10829 | 11048 | 10986 | 11112 | 9285 |
| of which, organized sources | 3751 | 3310 | 4806 | 3604 | 5658 | 3830 |
| Total amount of pollutants produced by stationary sources, thsd. ton  | 479 | 316 | 282 | 273 | 485 | 432 |
| Pollutants captured and detoxified from stationary sources - total,  | 255 | 90 | 84 | 83 | 307 | 244 |
| Air pollutant emissions - total, thsd. ton | 1003 | 1076 | 1137 | 1155 | 1156 | 1170 |
| including: |  |  |  |  |  |  |
| stationary sources | 224 | 277 | 197 | 189 | 178 | 188 |
|  per capita, kg | 24 | 30 | 21 | 20 | 18 | 19 |
| mobile sources | 779 | 849 | 940 | 966 | 978 | 982 |
|  per capita, kg | 85 | 91 | 100 | 101 | 101 | 101 |
| Share of air pollutant emissions from motor vehicles in total quantity of emissions, percent | 78 | 79 | 83 | 84 | 85 | 84 |

At present, regular monitoring of dust, PM10, sulphur compounds, nitrogen oxides, carbon oxides and other harmful pollutants is carried out in the country.

* + 1. **What are the significant point source emitters?**

### **What are the air pollution loads in your country? Air missions of SO2, NO2, CO, CO2, and VOC, tones per year?**

|  |
| --- |
| **Air pollutant emissions from stationary sources by ingredients[[47]](#footnote-47)** |
| **Years** | **Air pollutant emissions - total** | **including:** |
| **particulates** | **gaseous and liquid matters** | **of which:** |
| **sulfuric anhydride (SO2)** | **carbon oxide (CO)** | **nitrogen oxides (NO2)** | **hydrocarbons** |
| **min ton** |  |
| **2011** | 224.0 | 18.0 | 206.1 | 2.7 | 33.5 | 21.3 | 136.6 |
| **2012** | 226.5 | 9.9 | 216.6 | 3.3 | 34.9 | 23.7 | 142.9 |
| **2013** | 197.3 | 11.6 | 185.7 | 5.6 | 34.8 | 33.5 | 101.1 |
| **2014** | 189.3 | 9.0 | 180.3 | 1.6 | 32.2 | 19.5 | 116.4 |
| **2015** | 178.0 | 6.6 | 171.4 | 3.8 | 27.9 | 18.9 | 108.1 |
| **2016** | 187.6 | 6.1 | 181.5 | 22.9 | 24.3 | 18.2 | 105.6 |

|  |
| --- |
| **Air pollutant emissions, thousand ton[[48]](#footnote-48)** |
|  | **Air pollutant emissions - total** | **including:** |
| **particulates** | **gaseous and liquid matters** | **of which:** |
| **sulfuric anhydride**  | **carbon oxide**  | **nitrogen oxides**  | **hydrocarbons (excluding volatile organic compounds)** |
| **All industries** |
| **2011** | 184.7 | 17.2 | 165.7 | 2.3 | 31.3 | 20.5 | 101.7 |
| **2012** | 169.7 | 9.1 | 160.3 | 2.8 | 29.8 | 22.9 | 93.5 |
| **2013** | 144.8 | 9.7 | 135.0 | 4.7 | 27.4 | 31.8 | 60.7 |
| **2014** | 133.5 | 7.2 | 126.3 | 1.1 | 29.4 | 18.8 | 66.7 |
| **2015** | 129.6 | 5.3 | 124.3 | 3.4 | 24.5 | 17.7 | 66.5 |
| **2016** | 135.7 | 5.4 | 130.3 | 22.5 | 21..4 | 17.2 | 58.9 |
| **Mining industry** |
| **2011** | 104.9 | 4.0 | 100.9 | 0.4 | 8.9 | 7.3 | 81.5 |
| **2012** | 87.2 | 4.0 | 83.1 | 0.7 | 8.5 | 7.2 | 64.2 |
| **2013** | 75.8 | 5.5 | 70.2 | 3.7 | 7.2 | 20.3 | 37.5 |
| **2014** | 73.0 | 5.0 | 68.0 | 0.3 | 8.3 | 8.8 | 48.5 |
| **2015** | 72.7 | 3.4 | 69.3 | 0.3 | 8.0 | 8.3 | 50.3 |
| **2016** | 76.0 | 3.5 | 72.5 | 14.4 | 7.5 | 8.5 | 41.5 |
| **Manufacturing industry** |
| **2011** | 41.8 | 11.9 | 29.9 | 1.3 | 2.2 | 3.3 | 14.3 |
| **2012** | 42.8 | 4.8 | 37.9 | 1.1 | 1.8 | 4.5 | 21.6 |
| **2013** | 29.1 | 4.0 | 25.1 | 0.8 | 2.2 | 1.6 | 12.1 |
| **2014** | 28.6 | 2.1 | 26.5 | 0.7 | 4.9 | 1.3 | 12.5 |
| **2015** | 27.5 | 1.5 | 26.0 | 0.6 | 3.6 | 1.8 | 11.5 |
| **2016** | 24.3 | 1.1 | 23.2 | 0.6 | 3.0 | 1.3 | 9.9 |
| **Electricity, gas and steam production, distribution of supply** |
| **2011** | 37.2 | 1.3 | 35.9 | 0.6 | 19.7 | 9.8 | 5.7 |
| **2012** | 39.2 | 0.3 | 38.8 | 1.0 | 19.1 | 11.1 | 7.6 |
| **2013** | 39.5 | 0.2 | 39.3 | 0.15 | 17.7 | 9.9 | 11 |
| **2014** | 31.4 | 0.1 | 31.3 | 0.1 | 15.9 | 8.6 | 5.6 |
| **2015** | 28.9 | 0.4 | 28.5 | 2.5 | 12.6 | 7.5 | 4.6 |
| **2016** | 34.9 | 0.8 | 34.1 | 7.5 | 10.6 | 7.4 | 7.4 |
| **Water supply; wastes treatment and disposal**  |
| **2011** | 0.8 | 0.01 | 0.8 | 0.01 | 0.5 | 0.07 | 0.2 |
| **2012** | 0.5 | 0.01 | 0.5 | 0.002 | 0.4 | 0.05 | 0.1 |
| **2013** | 0.4 | 0.008 | 0.4 | 0.003 | 0.3 | 0.04 | 0.1 |
| **2014** | 0.5 | 0.008 | 0.5 | 0.003 | 0.3 | 0.09 | 0.1 |
| **2015** | 0.5 | 0.006 | 0.5 | 0.003 | 0.3 | 0.05 | 0.1 |
| **2016** | 0.5 | 0.006 | 0.5 | 0.018 | 0.3 | 0.04 | 0.1 |

|  |
| --- |
| **Air pollutant emissions generated greenhouse gases from stationary sources (thsd. ton)[[49]](#footnote-49)** |
|
|   | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| Carbon dioxde (CO2) | 13809.4 | 12471.4 | 15135.8 | 16091.9 | 13980.8 | 14911.2 |
| Nitric oxide (N2O) | 25.9 | 15.8 | 5.0 | 4.7 | 7.0 | 3.3 |
| Metane (CH4) | 298.3 | 385.2 | 248.8 | 95.7 | 34.1 | 41.0 |
| Hydrofluorcarbons  | 0.0 | 6.4 | 3.9 | 1.8 | 0.7 | 0.8 |
| hexafluoride (SF6) | 0.7 | 0.6 | 0.2 | 0.05 | 0.0 | 0.03 |
| Perfluorocarbons | 0.1 | 5.6 | 2.4 | 0.02 | 0.0 | 0.01 |

|  |
| --- |
| **Emission of air pollutants from mobile sources by ingredients) (thsd. ton)** |
|   | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| **Azerbaijan Republic**  | **779.1** | **849.3** | **922.4** | **965.9** | **977.7** | **981.9** |
| including, by ingredients: |  |
| carbon oxide  | 554.7 | 604.7 | 645.6 | 700.3 | 708.1 | 678.9 |
| nitrogen oxides  | 65.4 | 71.3 | 84.5 | 91.1 | 92.2 | 105.6 |
| hydrocarbons | 106.7 | 116.3 | 141.9 | 151.8 | 154.5 | 166.7 |
| specific pollutants | 52.2 | 57.0 | 50.4 | 22.7 | 22.9 | 30.7 |
|  of which: soot and snuff | x | x | 26 | 22.7 | 22.9 | 27.8 |

## **4.6. Solid waste**

### **4.6.1 Information about waste generation and waste management. Information about historical waste sites (e.g., obsolete waste, and abandoned waste sites). Waste generation by sectors (e.g., industry, agriculture, shipping etc.) Waste reduction, recycling and recovery. Waste management practices. Data and information on availability in the country of warehouses, landfills, dumps, solid domestic wastes and oil extraction waste sites, that do not meet environmental requirements, as well as about conservation and elimination of land-based sources of pollution as of the reporting period.**

According to the annual report of the State Statistical Committee, in 2016, in total 6.6 mln. m3 domestic waste occurred in the country. Domestic waste management in this volume, in turn, requires a thorough and up-to-date management system.

At present, reduction of domestic wastes volume is a priority in the country from the sanitary-ecological and socio-economic point of view. This is primarily due to:

• A steady increase in solid household waste is observed. Traditional method of neutralization of such waste amounts is ineffective from sanitary-ecological and economic aspects;

• Compounding the content of solid household waste over the past decades. Thus, a steady increase is observed in the volumes of plastic and polymer materials, black and non-ferrous metals, electronic devices and household equipment, as well as hazardous waste.

In this regard, modern domestic waste incineration plant and modern sorting plant with the capacity to process 500,000 tons of domestic waste per year in Balakhani have been built and commissioned. Other such measures undertaken in our country recently in order to improve the domestic waste management system have laid the foundation for the development of the management system in line with international requirements, currently, measures are being taken in this direction continuously.

Housing and communal services associations of the city and region's Executive Authorities, representations in the settlement, as well as territorial municipalities are institutionally responsible organizations for waste management, that is, their collection, assembly and transportation in the country. According to the Decree of the President of the Republic of Azerbaijan dated August 6, 2008 "On improving municipal waste management in Baku", collection and transportation of domestic waste generated in city are in the competence of Baku city Executive Power, but reception and neutralization are in the competence of "Tamiz Shahar" OJSC. At the same time waste transportation is carried out by private companies operating under contract with local executive authorities. However as in previous years at present, domestic wastes are collected by the population in containers without being sorted, the utility services collect waste from these containers and place them in landfills.

**Hazardous Industrial Wastes**

According to the State Statistical Committee, at the end of 2016, there were 1.8 million tons of hazardous waste in enterprises on various sectors of the economy of the Republic of the Azerbaijan.

 In 2001 The Republic of Azerbaijan has joined the Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their disposal.

Due to the implementation of the obligations arising from the Convention requirements, the hazardous waste legislation base has been improved to meet the requirements of the Convention and new legislative acts came into effect over these years.

The regulation of transboundary movement of hazardous wastes and strengthening of the control, prevention of illegal import and export of waste and transit transportation of waste through the country. Relevant lists of waste have been prepared by Ministry of Ecology and Natural Resources and submitted to the State Customs Committee for the implementation of legislation.

A polygon meeting modern requirements have been built and put into operation near Sumgait city on the basis of the Project "Building Polygon for the decontamination of land from mercury waste and burial of Wastes" in order to manage hazardous waste in accordance with international norms and standards.

**Generation, utilization and disposal of wastes (thsd. ton)[[50]](#footnote-50)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|   | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| Quantity of generated production and consumption waster | 2789.6 | 3096.7 | 2575.6 | 2386 | 2421.2 | 3019.7 |
| per capita, kg | 304 | 333 | 274 | 250 | 251 | 309 |
| Quantity of used and disposal of production and consumption waster | 572.3 | 665.0 | 537.2 | 497.3 | 771.2 | 796.6 |
| per capita, kg | 62 | 72 | 57 | 52 | 80 | 82 |

**Generation, use and disposal of hazardous wastes (thsd. ton)[[51]](#footnote-51)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|   | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| Quantity of generation hazardous wastes | 185.4 | 297.0 | 202.7 | 456.6 | 262.6 | 632.6 |
| Quantity of use hazardous wastes  | 3.6 | 6.3 | 0.6 | 3.2 | 5.2 | 47.8 |
| Quantity of disposal hazardous wastes | 37.1 | 113.9 | 86.4 | 111.3 | 210.9 | 25.9 |

**Generation secondary raw of and wostes (thousand ton)[[52]](#footnote-52)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|   | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| Paper and cardboard wastes, thsd. ton | 0.8 | 0.6 | 2.0 | 2.1 | 2.2 | 5.3 |
| Secondary textile materials, thsd. ton | 0.3 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 |
| Cotton seed, thsd. ton | 6.4 | 7.5 | 3.1 | 4.7 | 1.4 | 7.9 |
| Glass fragments, thsd. ton | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 |
| Used gumbrin, thsd. ton | 1.9 | 1.4 | 0.9 | 0.6 | 0.1 | 10.1 |
| Wood wastes, thsd. m3 | 2.6 | 3.8 | 3.2 | 0.5 | 0.6 | 25.9 |
| Soapstock, thsd. ton | 0.8 | 0.5 | 0.6 | 0.7 | 0.5 | 0.5 |
| Secondary polymer material, thsd. ton | 0.5 | 0.5 | 0.5 | 0.4 | 0.4 | 1.7 |
| Wastes of ferrous metals, thsd. ton | 370.5 | 434.1 | 337.2 | 302.5 | 346.3 | 483.2 |
| Wastes of non-ferrous metals, thsd. ton | 0.2 | 0.2 | 0.4 | 0.2 | 0.1 | 0.5 |
| Domestic wastes, mln. m3 | 7.4 | 6.9 | 7.0 | 5.6 | 6.4 | 6.6 |
| Bottom ash | x | x | 49.3 | 125.9 | 103.5 | 57.5 |

### **4.6.2 Waste generation by sectors and by districts?**

|  |
| --- |
| **Quantity of household waste accumulated by utility services in the country's economic regions (thousand cubic meters)[[53]](#footnote-53)** |
|  | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| **Azerbaijan Republic** | **7418.7** | **6862.9** | **6962.0** | **5645.3** | **6394.4** | **6625.4** |
| Baku city | 4583.5 | 4506.5 | 4664.3 | 3279.5 | 3557.1 | 3574.1 |
| Absheron economic region  | 1316.3 | 737.7 | 659.2 | 660.6 | 669.1 | 674.1 |
| Ganja-Kazakh economic region  | 596.4 | 587.8 | 672.2 | 667.2 | 670.5 | 834.4 |
| Shaki-Zakatala economic region | 81.9 | 89.8 | 96.3 | 113.8 | 109.3 | 115.0 |
| Lankaran economic region | 99.9 | 76.8 | 84.8 | 83.5 | 86.5 | 81.0 |
| Guba-Khachmaz economic region  | 221.8 | 172.0 | 176.7 | 133.3 | 131.2 | 137.8 |
| Aran economic region  | 317.8 | 440.4 | 426.7 | 547.6 | 575.6 | 604.4 |
| Upper Karabakh economic region | 7.5 | 9.9 | 9.9 | 12.4 | 15.1 | 24.8 |
| Mountainous Shirvan economic region | 84.5 | 109.1 | 112.5 | 99.3 | 102.6 | 101.9 |
| Nakhchivan Autonomous Republic | 109.1 | 132.9 | 58.5 | 48.1 | 477.4 | 477.9 |

**Generation of wastes by economic activity types (thsd. ton)[[54]](#footnote-54)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|   | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| Agriculture, fishing and forestry | 9.2 | 12.3 | 18.7 | 18.4 | 20.0 | 25.9 |
| Mining  | 409.5 | 542.9 | 334.3 | 550.0 | 196.7 | 644.5 |
| Manufacturing  | 529.3 | 868.6 | 482.3 | 394.4 | 576.6 | 650.5 |
| Production and distribution of electricity, gas and water | 4.6 | 11.2 | 5.6 | 3.3 | 4.6 | 6.2 |
| Construction | 0.6 | 0.7 | 1.2 | 1.1 | 3.3 | 1.6 |
| Other branches  | 55.9 | 13.9 | 62.6 | 63.9 | 85.3 | 100.9 |
| Hard domestic wastes1) | 1780.5 | 1647.1 | 1670.9 | 1354.9 | 1534.7 | 1590.1 |

1. m3conversed to ton using of rate

**Utilization of wastes by economic activity types (thsd. ton)[[55]](#footnote-55)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|   | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| Agriculture, fishing and forestry | 2.0 | 6.7 | 5.7 | 7.2 | 8.9 | 8.1 |
| Mining  | 28.6 | 76.8 | 5.1 | 10 | 10.9 | 117.7 |
| Manufacturing  | 482.7 | 565.0 | 472.2 | 407.2 | 684.5 | 571.6 |
| Production and distribution of electricity, gas and water | 4.8 | 4.2 | 1.1 | 1.4 | 3.9 | 7.0 |
| Construction | 0.6 | 0.7 | 1.2 | 0.4 | 0.6 | 0.8 |
| Other branches | 53.6 | 11.6 | 52.1 | 71.1 | 62.4 | 91.4 |

### **4.6.3** **Marine litter**

### **4.6.4** **(Micro)plastics**

### **4.6.5** **Accidental releases**

### **4.7. Tourism and recreation**

**Information about tourism flows, dynamics and seasonal trends. Tourism infrastructure. [[56]](#footnote-56)**

Azerbaijan is famous for its marvellous nature and national parks, starting from the capital city of Baku, with its modern infrastructure and ancient rich historical monuments located at the junction of East and West. According to popular tourism portals, 75 percent [[57]](#footnote-57)of tourism centres preferred by foreign tourists visiting the country are located in Baku. The remaining part accounts for regional tourism, which has potential to increase in the future

**Potential of Azerbaijan on different types of tourism**

**Cultural tourism**

As it is well known, people travelling to the country for cultural tourism spend most of their money on services compared to ordinary tourists. The cultural tourism potential of the country can be represented as art galleries in Baku, national music type - mugham, well-developed world jazz music, national and foreign dances, rich kitchen with a delicate taste, tolerant approach to all different religious and secular views.

**Health tourism**

There are both traditional and modern treatment options in Azerbaijan. There are thousands of hot and mineral springs in the country and from them, Istisu, Turshsu, Badamli, Galaalti, Shikhburnu, Surakhani are the most well-known therapeutic water sources. One of the most important resort resources of Azerbaijan is Naftalan oil. Naftalan oil is used in the treatment of rheumatism, vessels and organs, as well as for the metabolic disorders, skin and gynecological diseases. At the same time, the Nakhchivan Autonomous Republic is famous for its rare salt mountain.

**Mountain and winter tourism**

Mountain and winter tourism are one of the promising fields in Azerbaijan. As a result of purposeful steps towards the development of mountain and winter tourism in the country, the slopes of the mountains have been developed as a tourist destination. Therefore, recreation zones such as "Shahdag" Tourism Center CJSC and "Tufandag" Winter-Summer Tourism Recreation Complex have become popular resorts.

**Sport tourism**

It should be noted that sport is one of the fastest growing fields in Azerbaijan. In recent years, a great deal of money has been invested in the development of sports infrastructure. The launch of Olympic complexes and centers in Baku, Masalli, Sheki, Guba, Gazakh, Ganja, Nakhchivan, Barda, Lankaran, Zagatala, Shamakhi, Agdam, Bilasuvar, Oghuz, Shamkir, Kurdemir, Sabirabad and other cities and regions, establishment of sports grounds and facilities in different fields allows for the organization of prestigious sports competitions (European and world championships) in the country. International competitions on wrestling, gymnastics, boxing and volleyball can be noted as an example.

**Business tourism**

Business tourism is one of the most popular types of tourism in the country. At present, the opportunities of existing hotels in the country are used to develop this type of tourism. However, congresses and cultural centres located in different cities of the country can be widely used to organize such events, as well.

**Beach tourism**

Starting from the Absheron peninsula of the Republic of Azerbaijan, the north (Khizi, Siyazan, Shabran, Khachmaz districts) and southern zone (Lankaran, Astara regions) have beach tourism potential.

**Ecotourism**

Azerbaijan has a great ecotourism potential with its rich flora and fauna. The territory of Azerbaijan, where 9 climates types (from semi-desert and dry desert to mountain tundra climate) from 11 is being observed, is home to over 4100 plant varieties. This is also due to the concentration of several floristic regions and the different natural conditions. At the same time, about 10 percent of Azerbaijan's territory is covered with mountain forests, mostly oak, hornbeam, peanut, birch and jungle trees.

**Local Tourism**

While local tourism is widespread in Azerbaijan, there are serious opportunities for growth. Therefore, in 2015, travelling of 1.5-2 million citizens of Azerbaijan for tourism purposes[[58]](#footnote-58), gives a basis to say that this figure will continue to rise at a steady pace in the coming years.

**Neighbour countries**

The foreign demand for Azerbaijani tourism sector is more closely connected with neighboring countries such as Georgia, Iran, Turkey and Russia and more than 100,000 tourists flow [[59]](#footnote-59)from each of these countries to Azerbaijan in 2015. The geographical proximity, the common cultural values and the population of Azerbaijani origin are among the factors leading to the high flow of tourists from these countries. At the same time, this indicator also includes ethnic Azerbaijanis who came to visit their relatives living in Azerbaijan.

**4.7.1 Numbers of tourists by districts**

|  |
| --- |
| **Number of accommodated persons in hotels and similar establishments by economic regions located near the Caspian Sea coastline[[60]](#footnote-60)** |
| **Economic regions** | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| By country – total | 510162 | 624924 | 666348 | 672,345 | 838,145 | 1 122 068 |
| Baku city | 282410 | 363623 | 456464 | 432,491 | 535,390 | 686,793 |
| Absheron economic region | 13125 | 49098 | 5266 | 6,411 | 5,207 | 7,351 |
| Lankaran economic region | 25382 | 20399 | 17337 | 18,088 | 17,035 | 17,538 |
| Guba-Khachmaz economic region | 51631 | 42262 | 32914 | 42,060 | 58,610 | 82,998 |

|  |
| --- |
| **Tourism activity in the territory of national parks[[61]](#footnote-61)** |
|   | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| **National parks** |  |
| Number of museums, unit | 5 | 6 | 6 | 6 | 6 | 6 |
| Number of visitors, person | 2639 | 2733 | 2879 | 2978 | 3302 | 3607 |
| of which citizens of foreign countries | 322 | 353 | 396 | 412 | 474 | 659 |
|  Number of ecoways and routes - total, unit | 82 | 58 | 58 | 74 | 43 | 90 |
| of which: |  |
| water | 1 | 1 | - | - | - | - |
| horse | 5 | 5 | 6 | 7 | 5 | 26 |
| foot | 50 | 43 | 42 | 59 | 28 | 42 |
| Number of visitors, person | 5248 | 1781 | 1634 | 1432 | 74771 | 198583 |
| of which citizens of foreign countries | 445 | 336 | 484 | 183 | 733 | 2801 |

# **5. State: Current state of and changes in environmental conditions**

## **5.1.** **Changes in bioresources**

### **5.1.1 Aquatic bioresources are part of the reporting obligations under the Convention (fish stocks)[[62]](#footnote-62)**

In the period from 1991 to 2016, reduction observed in fish reserves and the fish catch of main commercial fishes in Azerbaijan, as well as in the total fish production. The reasons are:

***Natural effects***– climate changes; sea-level fluctuations; wastes of underwater mud volcanoes.

***anthropogenic*** – sea pollution, mostly by land; regulation of rivers; import of invasive species; use of underground resources; poaching.

Main commercial fishes are acipenseriformes, Salmonidae, scaly fishes (kutum, asp, common carp, Caspian shemaya, pikeperch, bream and etc.), as well as European eel, Clupea and etc. After acipenseriformes semi-migratory fishes (bream, pikeperch, kutum, carp and etc.) hold the second place for commercial importance.

In 2011-2016, under the general consensus of all Caspian littoral states, a technical moratorium on commercial hunting of acipenser fish genus (sturgeons) in the Caspian Sea was implemented. Commodity hunting of Sturgeons was not carried out, they were hunted only for fish breeding and for scientific purposes in small-scales.

However, the type of structure of the population in acipenseriformes is kept as it is: relatively numerous species are sturgeon, and then a  starry sturgeon. In general, as a result of their decline in the sea, there is no intense accumulation of acipenseriformes in the feeding areas, and their shelf distribution is distinctive.

The modern population of the acipenseriformes in the Caspian Sea is mainly composed of artificially generated fishes. Despite the tendency to increase the flow of the Kura River and the annual rainfall in the last 10-15 years, the siltation of the outfall of Kura river negatively affects the spawning of fishes. Thus, 7-8 km away from the outfall the water level does not exceed 40-60 cm. Except for beluga and bastard sturgeon, data on the reserve of the Kura flocks of acipenseriformes indicate that the total number and biomass of the sturgeons and starry sturgeon populations in the Caspian Sea water belonging to Azerbaijan is stably low.

Hunting of the Cypriniformes in Azerbaijan is carried out in Kura River and Caspian sea. The basis of fishing in the Kura River is bream that commercial importance ranges from 40 to 50% for many years. For commercial importance then comes pike-perch with 15-26%, and at the end kutum with 12-17%. Fishing in the Caspian Sea is based on two types of fish: of which kutum covers 27-60% of fishing. Fishing in inland water basins is mainly carried out in large water reservoirs such as Minghachevir and Shamkir water reservoirs. Here various types of Cypriniformes and Perciformes are caught.

Currently, sprats are in the first place covering 75% of the total fish catch due to the overall volume of fishing. Before the Mnemiopsis leidyi, an invasive species entered into the Caspian Sea ecosystem, and the massive increase in its number in 1998, the sprat reserves were satisfactory. Sprat, besides its fishing importance, is also considered as a main feeding object of Acipenseriformes, Clupeidae and other predatory fishes, as well as Caspian seal.

With the emergence of Mnemiopsis leidyi in the Caspian Sea, a decrease in the reserve and fishing of sprats is recorded. Thus, its hunting dropped from 271 thousand tonnes in 1999 to 316 tonnes in 2016 in the Caspian basin.

The dynamics of sprat hunting in the Caspian Sea in recent years have shown that they, in particular, have a steady decline in hunting resources due to anchovy sprats. At present, fishing of sprats with Azerbaijan fishing vessels in the South Caspian Sea has based on a coastline form that according to the data from 2016 its fishing was 93,7%, in the second place comes anchovy sprats with 5,9% and finally Southern Caspian sprat with 0,4%.

**Changes in sprat hunting in Azerbaijan in 2011-2016 (tons, %)[[63]](#footnote-63)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Species** | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| **Anchovy sprat** | 97,9 (20,2%) | 68.4 (20.0%) | 19.6 (9.5%) | 20,1 (12.3%) | 13,4 (9.7%) | 18.6 (5.9%) |
| **Southern Caspian sprat** | 3,4 (0,7%) | 1.7 (0.5%) | 1.0 (0.5%) | 2,1 (1.3%) | 1,4 (1.0%) | 1.3 (0.4%) |
| **Common sprat** | 383,4 (79,1%) | 271.7 (79.5%) | 185.4 (90.0%) | 141,3 (86.4%) | 123,2 (89.3%) | 295.7 (93.7%) |
| **Total:** | **484.7** | **341.8** | **206.0** | **163.5** | **138.4** | **315.6** |

## **5.2. State of marine water quality and incoming freshwater**

### **5.2.1 General description about the Caspian Sea and rivers coming into the sea**

25 large and small rivers flow from the territory of the Republic of Azerbaijan into the sea. From these rivers, Gudyalchay, Sumgayitchay, Vilashchay and Lankaranchay are partly polluted with household-fecal wastewater. Kura river is also polluted in the territory of the Republic of Georgia and goes into the territory of the Republic of Azerbaijan. At the same time, it is polluted by the Aras River which is polluted in the territory of the Republic of Armenia and reaches the Kur River in the Sabirabad region.

**Results of analyses on seawater samples from the Caspian Sea in 2011-2016[[64]](#footnote-64)**

|  |  |  |
| --- | --- | --- |
| **Indicators** | **Unit** | **Seawater taken around the 28 May Oil & Gas platforms** |
| **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| pH |  | 8,32 | 8,30 | 8,31 | 8,32 | 8,32 | 8,31 |
| Salinity | ‰ | 9,5 | 9,4 | 9,5 | 9,5 | 9,4 | 9,4 |
| Turbidity | NTU | 10 | 10 | 10 | 10 | 10 | 10 |
| Transparency | cm | 24 | 24 | 25 | 24 | 25 | 24 |
| Odour (200C) | grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Ammonium ion (NH4) | mg/l | 0,11 | 0,12 | 0,12 | 0,11 | 0,10 | 0,10 |
| Nitrites (NО2) | mg/l | 0 | 0,01 | 0,01 | 0 | 0 | 0,01 |
| Nitrates (NO3) | mg/l | 0,5 | 0,4 | 0,6 | 0,5 | 0,4 | 0,5 |
| Phosphates (PO4) | mg/l | 0,04 | 0,04 | 0,03 | 0,05 | 0,04 | 0,04 |
| Synthetic Surface Active Substances (SSAS) | mg/l | 0,3 | 0,4 | 0,4 | 0,3 | 0,3 | 0,4 |
| Chemical Oxygen Demand (COD) | mg/l | 4,2 | 4,0 | 4,2 | 4,0 | 4,1 | 4,1 |
| Oil products | mg/l | 0,03 | 0,04 | 0,04 | 0,04 | 0,03 | 0,04 |
| Phenols | mg/l | 0  | 0  | 0  | 0  | 0  | 0 |
| Hanging substances | mg/l | 1,0 | 1,0 | 2,0 | 1,0 | 1,0 | 1,0 |
| Chlorides | mg/l | 5317,0 | 5317,0 | 5494,0 | 5494,0 | 5317,0 | 5317,0 |
| Sulfates | mg/l | 2900 | 2850 | 2800 | 2900 | 2800 | 2800 |
| Roughness | mgekv/l | 72,0 | 71,0 | 72,0 | 72,0 | 71,0 | 72,0 |

|  |  |  |
| --- | --- | --- |
| **Indicators** | **Unit** | **Seawater taken around the N.Narimanov Oil & Gas platforms** |
| **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| pH |  | 8,32 | 8,32 | 8,30 | 8,33 | 8,33 | 8,32 |
| Salinity | ‰ | 9,6 | 9,6 | 9,5 | 9,4 | 9,6 | 9,5 |
| Turbidity | NTU | 10 | 10 | 10 | 10 | 10 | 10 |
| Transparency | cm | 24 | 24 | 24 | 25 | 25 | 24 |
| Odour (200C) | grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Ammonium ion (NH4) | mg/l | 0,11 | 0,12 | 0,10 | 0,11 | 0,12 | 0,10 |
| Nitrites (NО2) | mg/l | 0,01 | 0 | 0,01 | 0,01 | 0 | 0,01 |
| Nitrates (NO3) | mg/l | 0,4 | 0,5 | 0,5 | 0,4 | 0,5 | 0,4 |
| Phosphates (PO4) | mg/l | 0,05 | 0,05 | 0,04 | 0,05 | 0,05 | 0,04 |
| Synthetic Surface Active Substances (SSAS) | mg/l | 0,3 | 0,3 | 0,4 | 0,4 | 0,3 | 0,3 |
| Chemical Oxygen Demand (COD) | mg/l | 3,0 | 3,7 | 4,1 | 4,1 | 4,2 | 4,0 |
| Oil products | mg/l | 0,05 | 0,06 | 0,04 | 0,04 | 0,05 | 0,05 |
| Phenols | mg/l | 0,001 | 0 | 0,001 | 0,001 | 0,001 | 0 |
| Hanging substances | mg/l | 2,0 | 2,0 | 1,0 | 1,0 | 2,0 | 2,0 |
| Chlorides | mg/l | 5317,0 | 5494,0 | 5494,0 | 5317,0 | 5494,0 | 5317,0 |
| Sulfates | mg/l | 2800 | 2900 | 2850 | 2900 | 2900 | 2800 |
| Roughness | mgekv/l | 72,0 | 72,0 | 72,0 | 72,0 | 72,0 | 72,0 |

|  |  |  |
| --- | --- | --- |
| **Indicators** | **Unit** | **Seawater taken around the Absheronoil Oil & Gas platforms** |
| **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| pH |  | 8,33 | 8,31 | 8,31 | 8,30 | 8,33 | 8,32 |
| Salinity | ‰ | 9,5 | 9,5 | 9,6 | 9,5 | 9,4 | 9,5 |
| Turbidity | NTU | 10 | 10 | 10 | 10 | 10 | 10 |
| Transparency | cm | 24 | 24 | 25 | 24 | 25 | 24 |
| Odour (200C) | grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Ammonium ion (NH4) | mg/l | 0,11 | 0,1  | 0,12 | 0,1  | 0,11 | 0,1  |
| Nitrites (NО2) | mg/l | 0,01 | 0,01 | 0,01 | 0,02 | 0,02 | 0,01 |
| Nitrates (NO3) | mg/l | 0,5 | 0,4 | 0,5 | 0,4 | 0,5 | 0,4 |
| Phosphates (PO4) | mg/l | 0,04 | 0,05 | 0,04 | 0,03 | 0,05 | 0,04 |
| Synthetic Surface Active Substances (SSAS) | mg/l | 0,4 | 0,3 | 0,3 | 0,4 | 0,3 | 0,4 |
| Chemical Oxygen Demand (COD) | mg/l | 4,2 | 4,0 | 4,1 | 4,2 | 4,0 | 4,1 |
| Oil products | mg/l | 0,04 | 0,04 | 0,05 | 0,04 | 0,05 | 0,05 |
| Phenols | mg/l | 0 | 0  | 0 | 0  | 0  | 0  |
| Hanging substances | mg/l | 1,0 | 2,0 | 1,0 | 1,0 | 2,0 | 1,0 |
| Chlorides | mg/l | 5317,0 | 5317,0 | 5494,0 | 5317,0 | 5317,0 | 5317,0 |
| Sulfates | mg/l | 2800 | 2800 | 2900 | 2900 | 2900 | 2900 |
| Roughness | mgekv/l | 72,0 | 72,0 | 72,0 | 71,0 | 72,0 | 72,0 |
| **Indicators** | **Unit** | **Seawater taken around the Oil stones Oil & Gas platforms** |
| **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| pH |  | 8,31 | 8,32 | 8,33 | 8,31 | 8,32 | 8,32 |
| Salinity | ‰ | 9,5 | 9,4 | 9,5 | 9,6 | 9,5 | 9,5 |
| Turbidity | NTU | 10 | 10 | 10 | 10 | 10 | 10 |
| Transparency | cm | 24 | 25 | 24 | 24 | 25 | 24 |
| Odour (200C) | grade | 0 | 0 | 0 | 0 | 0 | 0 |
| Ammonium ion (NH4) | mg/l | 0,10 | 0,11 | 0,10 | 0,11 | 0,11 | 0,10 |
| Nitrites (NО2) | mg/l | 0,01 | 0 | 0,01 | 0,01 | 0 | 0,01 |
| Nitrates (NO3) | mg/l | 0,6 | 0,5 | 0,5 | 0,6 | 0,6 | 0,5 |
| Phosphates (PO4) | mg/l | 0,05 | 0,05 | 0,05 | 0,05 | 0,04 | 0,04 |
| Synthetic Surface Active Substances (SSAS) | mg/l | 0,4 | 0,3 | 0,4 | 0,4 | 0,3 | 0,4 |
| Chemical Oxygen Demand (COD) | mg/l | 4,3 | 4,0 | 4,1 | 4,2 | 4,0 | 4,1 |
| Oil products | mg/l | 0,06 | 0,05 | 0,07 | 0,05 | 0,06 | 0,06 |
| Phenols | mg/l | 0  | 0  | 0  | 0,001 | 0,001 | 0 |
| Hanging substances | mg/l | 1,0 | 1,0 | 2 ,0 | 2,0 | 1,0 | 2,0 |
| Chlorides | mg/l | 5494,0 | 5317,0 | 5494,0 | 5494,0 | 5317,0 | 5317,0 |
| Sulfates | mg/l | 2800 | 2900 | 2900 | 2900 | 2900 | 2800 |
| Roughness | mgekv/l | 72,0 | 72,0 | 72,0 | 73,0 | 72,0 | 72,0 |

### **5.2.2 Availability of the country List of pollutants under the control, and methods (criteria) for assessing the Caspian Sea marine environment quality (ref.: Unified reporting format)**

**The following analyses are made on water and sediment samples taken during monitoring in the Caspian Sea:**

**Water samples:**

pH

Salinity

Temperature

Dissolved oxygen

Electric conductivity

Turbidity

**Biogenic substances:** ammonium ion, nitrites, nitrates, phosphates, silicates.

Chlorides

Sulphates

General roughness

Hanging substances

Oil products

Phenols

Synthetic Surface Active Substances (SSAS)

Chemical Oxygen Demand (COD)

Biochemical Oxygen Demand (BOD5)

**Sediments:**

Oil products

Phenols

### **5.2.3 River input**

**Annual water consumption of rivers flowing to the Caspian Sea, m3 / sec[[65]](#footnote-65)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Years** | **Guba - Khachmaz** | **Lankaran - Astara** | **Pirsaatchay** **Poladli** | **Kura- Salyan** |
| **Gusarchay** **Kuzun** | **Gudiyalchay****Kupchal** | **Valvalachay Tangalti** | **Garchay** **Ruk** | **Harmidorchay****Khaltan** | **Lankaranchay****Lankaran** | **Vilashchay-Shikhlar** | **Tanganidchay Vago** |
| 2011 | 6,69 | 8,26 | 5,37 | 6,48 | 0,42 | 20,9 | 4,96 | 2,23 |  5,76 | 475 |
| 2012 | 4,21 | 9,46 | 4,14 | 4,47 | 0,45 | 12,9 | 3,93 | 3,02 | 6,31 | 327 |
| 2013 | 4,56 | 7,39 | 3,29 | 4,10 | 0,45 | 13,5 | 2,91 | 3,18 | 4,60 | 215 |
| 2014 | 4,40 | 6,51 | 4,08 | 5,35 | 0,39 | 10,4 | 3,19 | 3,54 | 3,99 | 158 |
| 2015 | 3,63 | 5,61 | 3,41 | 3,48 | 0,38 | - | 5,21 | 4,73 | 3,86 | 188 |
| 2016 | - | 7,11 | 4,51 | 4,00 | - | - | 4,99 | 3,10 | 9,23 | 246 |

## **5.3.** **State of air quality**

## **5.3.1 Air quality in coastal zones**

Monitoring of pollution of atmospheric air is carried out at 26 observation points in 8 major industrial cities of the Republic - Baku, Sumgayit, Nakhchivan, Ganja, Mingachevir, Shirvan, Lankaran and Shaki. Monitoring is carried out in accordance with the industry profile of each city, in territories where residential areas, intensive traffic zones and large industrial enterprises are located. There are 9 observation points and 1 automated station in Baku.

Trends in the state of atmospheric air (2011-2016):Based on the analysis, there is a relative decline in atmospheric emissions from organized sources along the coastline, which affects the sea basin and seaboard atmosphere of the Caspian Sea belonging to Azerbaijan. The main reason for this is the use of advanced technologies and replacing physically outdated equipment with more modern devices.

**The annual mean concentration of air pollutants in the coastal areas of Baku city[[66]](#footnote-66)**

|  |  |
| --- | --- |
| **Ingredients** | **Years (mg/m3)** |
| **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| Dust | 0.3 | 0.3 | 0.3 | 0.3 | 0.3  | 0.2 |
| Sulfur dioxide | 0.016 | 0.018 | 0.011 | 0.011 | 0.014 | 0.019 |
| Carbon monoxide | 3 | 3 | 3 | 3 | 3 | 1.9 |
| Nitrogen dioxide | 0.07 | 0.07 | 0.05 | 0.06 | 0.06 | 0.05 |
| Nitrogen monoxide | 0.04 | 0.01 | 0.02 | 0.04 | 0.04 | 0.02 |

**The annual mean concentration of air pollutants in the coastal areas of Sumgait city[[67]](#footnote-67)**

|  |  |
| --- | --- |
| **Ingredients** | **Years (mg/m3)** |
| **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| Dust | 0.2 | - | - | - | - | - |
| Sulfur dioxide | 0.025 | 0.026 | 0,028 | 0,025 | 0,027 | 0.026 |
| Nitrogen dioxide | 0.08 | 0.09 | 0,09 | 0,08 | 0,09 | 0.09 |
| Nitrogen monoxide | 0.04 | 0.04 | 0,04 | 0,04 | 0,04 | 0.03 |

**The annual mean concentration of air pollutants in the coastal areas of Lankaran city[[68]](#footnote-68)**

|  |  |
| --- | --- |
| **Ingredients** | **Years (mg/m3)** |
| **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| Dust | 0.2 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 |
| Sulfur dioxide | 0.027 | 0.032 | 0,036 | 0,038 | 0,037 | 0.036 |
| Carbon monoxide | - | - | - | - | - | - |
| Nitrogen dioxide | 0.03 | 0.04 | 0,04 | 0,04 | 0,05 | 0.05 |

## **5.4. State of sediment quality**

**5.4.1 Total Petroleum Hydrocarbon (TPH)**

* + 1. **Polycyclic Aromatic Hydrocarbons**
		2. **Chlorinated Organic Pesticides**
		3. **Alkanes and hopanes**
		4. **Heavy metals in sediments**
		5. **Pesticides in sediments**

## **5.5. Status of biodiversity**

**Specially protected natural areas[[69]](#footnote-69)**

As a result of the work carried out in 2003-2013, the total area of the protected areas in the country has reached to 892546,49 hectares, as well as 9 national parks (Shirvan, Zangazur National Park named after academician Hasan Aliyev, Hirkan, Altiaghac, Aggol, Absheron, Shahdag, Goygol, Samur-Yalama National Parks) were established. There are 9 National Parks, 11 State Nature Reserves and 24 State Nature Sanctuaries in Azerbaijan. In general, specially protected natural areas cover 10.3% of the country's territory, including national parks - 3.7%.

**Specially protected natural reserves located in coastal areas**

**Absheron National Park** was established in 2005 on the basis of Absheron State Nature Reserve in 783 hectares of the administrative territory of the Pirallahi district of Baku. The National Park is located in the south-east end of the Absheron Peninsula - in the Shah Dili area.

Among the animals that inhabit in the National Park are the Caspian seal, as well as various species of fish.

**Gizilagaj State Nature Reserve** is established in 1929. Its territory is 88 360 ha. Along with the reserve, there is also a small Gizilagaj State Nature Sanctuary with a total area of 10,700 hectares. The Gizilaghaj State Nature Reserve is the first in the country in terms of the area and the third for its establishment date.

The GizilagajState Nature Reserve was included in the "Ramsar List" of the Ramsar Convention on Water-Wetlands of International Importance, which is essentially a place of living for water birds, as one of the first wetlands in 1976. Therefore, it is considered as an international reserve. Taking into account the diversity of the nature of the reserve, the richness of the plant and, in particular, the richness of the animal kingdom, which will attract many local and foreign tourists to the area, and thanks to the expansion of the Gizilagaj State Nature Sanctuary and adjacent territories, the process of establishing a national park in the GizilagajState Nature Reserve, in total of 100,000 hectares has begun.

**Shirvan National Park**

Shirvan National Park was established in July 2003 in an area of 54 373, 5 hectares. It is a part of the specially protected site with an overall area of 65589 hectares on the south-eastern plain of the Kura-Aras lowland which also includes, Shirvan State Nature Reserve having an area of 6232 hectares and Bandovan State Nature Sanctuary with an area of 4930 hectares.

The National Park was created with a view to the conservation of foremost components of a semi-desert landscape, the protection of goitred gazelles listed in the “Red Book” of Azerbaijan and species of fauna that are typical to this territory. Its functions also envision the implementation of environmental monitoring, public environmental education, as well as creating conditions for tourism and recreation.

4 species of amphibians are encountered in the area of the Park - eastern spade-foot toad, green toad, tree frog and marsh frog. The spadefoot toad is included in the Red List of the International Union for Nature Protection and the Red Book of the Republic of Azerbaijan.

**Samur-Yalama National Park**

Samur-Yalama National Park was established in an area of 11772,45 hectares on the territory of Khachmaz region on November 5, 2012.

The aim of the establishment of the Samur-Yalama National Park is improving biodiversity conservation in Samur-Yalama area. It includes continuous protection of the ecosystem of Khudat plain forest, selection of a buffer zone (support zone) for the National Park and establishment of an ecological sanctuary covering surrounding marine areas and wetland areas located in the south-east of the park to protect the environment necessary for migratory bird species and endangered fish species.

The coastal waters of the National Park are rich in fish. Since the national park is located on the seafront area valuable fish species - sturgeon, starry sturgeon, Caspian kutum, chub, salmon, and etc. constitutes the main part of fauna.

|  |
| --- |
| **Specially protected areas(км2)[[70]](#footnote-70)** |
|   | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| **Total space of specially protected areas** | 8807.7 | 8925.5 | 8925.5 | 8925.5 | 8925.5 | 8925.5 |
| of which share by IUCN categories 1) |  |
| Strict Nature Reserves Wilderness Area | 23.7 | 23.4 | 23.4 | 23.4 | 23.4 | 23.4 |
| National Park | 35.3 | 36.1 | 36.1 | 36.1 | 36.1 | 36.1 |
| Habitat / Species Management Area | 41 | 40.5 | 40.5 | 40.5 | 40.5 | 40.5 |
| **Total area as share of national territory, in percent** | 10.2 | 10.3 | 10.3 | 10.3 | 10.3 | 10.3 |
|

|  |  |  |
| --- | --- | --- |
| 1) IUCN - International Union for Conservation of Nature and Natural Resources |  |  |

 |

* + 1. **Endangered seal and fish species[[71]](#footnote-71)**

В Красную Книгу Азербайджана (2013) включены 9 видов рыб, 6 из которых являются обитающими в Каспийском море: шип, каспийский лосось, каспийский усач, южно-каспийская белоглазка, чехонь, морской судак. Эти виды редко встречались и в 70-80-е годы прошлого столетия, а с 90-х годов они и вовсе уже находятся на грани исчезновения. В последние годы в результате неконтролируемого браконьерского лова значительно уменьшились промысловые запасы таких рыб, как осетровые, каспийский лосось, белорыбица, храмуля, шемая, усач, рыбец. Эти виды рыб находятся под угрозой исчезновения, особенно осетровые и лососевые, в связи со значительным уменьшением объемов выпуска молоди на рыбоводных заводах.

**Names of fish species included in the Red Book of Azerbaijan[[72]](#footnote-72)**

|  |  |  |  |
| --- | --- | --- | --- |
| № | **Scientific (Latin) name** | **Name in Azerbaijani language** | **Name in Russian** |
| 1 | *Acipenser nudiventris* Lovetsky, 1828 | Qaya balığı (kələmo) | Шип |
| 2 | *Salmo trutta caspius* Kessler, 1870 | Xəzər qızılbalığı (kumja) | Каспийский лосось |
| 3 | *Salmo trutta fario* Linneus, 1758 | Çay qızılxallısı | Ручьевая форель |
| 4 | *Rutilus atropatenus* Derjavin, 1937 | Şirvan külməsi | Ширванская плотва |
| 5 | *Lusibarbus capito* (Güldenstaedt, 1773) | Zərdəpər | Усач-чанари |
| 6 | *Lusibarbus brachycephalus caspius* (Berg, 1914) | Xəzər şirbiti | Каспийский усач |
| 7 | *Abramis sapa bergi* Belyaeff, 1929 | Cənubi Xəzər porusu | Южнокаспийская белоглазка |
| 8 | *Pelecus cultratus* (Linnaeus, 1758) | Qılıncbalıq | Чехoнь |
| 9 | *Sander marinus* (Cuvier, 1828) | Dəniz sıfı | Морской судак |

В течение XIX и XX веков на тюленей велась охота, в том числе на бельков на льдах Северного Каспия. В последние годы плановая охота на тюленей значительно сократилась. В 1996 году Международный Союз Охраны Природы и природных ресурсов (IUCN) рассмотрел статус Каспийского Тюленя и классифицировал статус этого вида в Красном Списке IUCN как ***“уязвимый”***, принимая во внимание деградацию среды Каспия и сокращающихся прибрежных мест обитания, являющихся лежбищами тюленей.

 В Азербайджане промысел Каспийского Тюленя был запрещен еще с 1952 года (Гуревич, Лопатин, 1962; Крылов, 1989). За пределами Северного Каспия забой Каспийского Тюленя запрещен законодательством прикаспийских стран.

* + 1. **Plankton and benthic communities[[73]](#footnote-73)**

In the last 10-15 years, the number and biomass of zooplankton have decreased 5-6 times in the Middle Caspian and approximately 10 times in the Southern Caspian. The highest biomass of Mnemiopsis Leidy has been identified in the South Caspian Sea. The biomass and number of Mnemiopsis leidyi comb on the western shelf of the Central and Southern Caspian are significantly increasing from summer to autumn. Thus, the jelly-shaped organism Mnemiopsis leidyi, which was brought to the Caspian Sea through the ballast waters in the late 1990’s, rapidly spread to the sea, directly and seriously damaged the biodiversity of the sea. It consumed large amounts of zooplankton, which is a feed base of sprat (approximately 10 times), and this has led to a decrease in the food base of Acipenseriformes, predatory Clupeidae, and others along the food chain. By consuming planktonic larvae of benthic animals (crab, mollusca etc.) mnemiopsis also destroys the food base of benthos-fed fishes such as Acipenseriformes and Cypriniformes and etc. During the last 15 years (2001-2016), in 2015 the biomass and number of mnemiopsis on the western coast of the Southern and Central Caspian region has been the highest in all observed years. This adversely affects the formation of hunting resources of fishes feeding zooplankton and zoobenthos.

The main part of the benthic animals of the western coast of the Caspian Sea consists of molluscs, crustaceans and worms. The plankton larvae as mitilyaster, abra, balyga, and crab are the victims of the mnemiopsis comb in the South Caspian. Thus, in recent years, abra and crab, which numbers considerably decreased, are rarely or not at all encountered in the benthos. Comparison with the data of the previous years, reveals that there are no spots created by high biomass of benthos as a result of the massive development of abra, serastoderma, nereis, on the western coast of the Southern Caspian. The advantage of abra and crab which created an abundance of the benthos in the South Caspian in previous years, along with nereis and balyanus, has not been recorded in recent years. However, in recent years at the expense of worms and some crustaceans in the benthos fauna, quality varieties and quantity indicators, as well as the high characteristics of food base of fishes are recorded in the western region of the South Caspian Sea. This also shows that there are favourable conditions for feeding fish from all trophic levels in the area. In modern times, the high development of plankton and benthic organisms in the western part of the Caspian is explained by the highwater of river flow.

**Биомасса Зообентоса Южного Каспия (г/м2) – Азербайджан [[74]](#footnote-74)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Организмы | **2010** | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| Vermes | 3,25 | 5,16 | 2,11 | 1,47 | 3,98 | 5,34 | 1,02 |
| Crustacea | 2,07 | 4,85 | 12,01 | 7,69 | 9,26 | 8,05 | 8,75 |
| Mollusca | 1,85 | 1,37 | 5,1 | 8,23 | 14,02 | 11,26 | 6,29 |
| Total: | 7,174 | 11,38 | 20,22 | 17,39 | 27,26 | 24,65 | 16,06 |

**Биомасса Зообентоса Среднего Каспия (г/м2) – Азербайджан[[75]](#footnote-75)**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Организмы | **2010** | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| Vermes | 5,5 | 7,93 | 10,8 | 2,81 | 3,48 | 6,53 | 4,13 |
| Crustacea | 10,1 | 13,47 | 17,93 | 10,12 | 12,06 | 9,02 | 8,12 |
| Mollusca | 4,0 | 8,11 | 12,05 | 11,36 | 5,13 | 20,48 | 7,16 |
| Total: | 19,6 | 29,51 | 40,78 | 24,29 | 20,67 | 36,03 | 19,41 |

**Численность (экз/м3) и Биомасса (мг/м3) Зоопланктона в Азербайджанском секторе Каспийского моря[[76]](#footnote-76)**

|  |  |  |
| --- | --- | --- |
| **Годы** | **Средний Каспий** | **Южный Каспий** |
| численность (экз/м3) | биомасса (мг/м3) | численность (экз/м3) | биомасса (мг/м3) |
| **2011** | 10323,2 | 275,4 | 3326,7 | 88,1 |
| **2012** | 10620,8 | 301,8 | 4005,7 | 104,3 |
| **2013** | 12747,5 | 312,9 | 4109,0 | 102,8 |
| **2014** | 11620,5 | 308,6 | 4225,7  | 110,5  |
| **2015** | 12116,4 | 352,4 | 3835,2 | 96,9 |
| **2016** | 11903,3 | 347,8 | 3753,6 | 106,3 |

**Численность (экз/м3) и Биомасса (мг/м3) Зоопланктона в Азербайджанском секторе Среднего Каспия [[77]](#footnote-77)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Indicators** | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| Overall mean number | 10323,2 | 10620,8 | 12747,5 | 11620,5 | 12116,4 | 11903,3 |
| Overall mean biomass | 275,4 | 301,8 | 312,9 | 308,6 | 352,4 | 347,8 |

**Численность (экз/м3) и Биомасса Зоопланктона (мг/м3) в Азербайджанском секторе Южного Каспия [[78]](#footnote-78)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Indicators** | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** |
| Overall mean number | 3326,7 | 4005,7 | 4109,0 | 4225,7  | 3835,2 | 3753,6 |
| Overall mean biomass | 88,1 | 104,3 | 102,8 | 110,5  | 96,9 | 106,3 |

* + 1. **Invasive species such as comb jelly[[79]](#footnote-79)**

Mnemiopsis Leidy's monitoring studies conducted over the last 13 years (2001-2013) have identified the principles of distribution of Mnemiopsis on the western coast of the Southern and Central Caspian: the biomass and number of mnemiopsis decreases as the depth of the sea increases. About 60% of mnemiopsis is concentrated in the south of the outfall of Kura river. It is found out that 50% of Mnemiopsis is concentrated at a depth up to 10 m and 87% up to 75 m. Younger members of the Mnemiopsis population range 0-5, 6-10 mm are constituted 95% of the population in the Middle Caspian and 91% in the South Caspian Sea. The maximum size of Mnemiopsis in the Middle Caspian is 36-40 mm and 66-70 mm in the South.

**Биомасса Мнемиопсиса (г/м3) в Азербайджанском секторе Среднего и Южного Каспия (2011-2016)[[80]](#footnote-80)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Районы моря | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
| Средний Каспий | 1,8 | 3,3 | 2,5 | 5,8 | 8,2 | 7,6 |
| Южный Каспий | 6,83 | 5,98 | 4,13 | 9,34 | 11,9 | 6,7 |

* + 1. **Cyclostomes and fishes[[81]](#footnote-81)**

Остаются на стабильно низком уровне запасы осетровых рыб (белуга, шип, осетр, севрюга), каспийского лосося, килек. Причиной снижения запасов осетровых рыб и каспийского лосося является невозможность естественного нереста этих рыб из-за плотины Мингечаурской гидроэлектростанции, нехватки производителей для целей искусственного воспроизводства, снижения их кормовой базы (численности килек, служащих для них кормом) в Каспийском море, а также браконьерство. Азербайджан, как и все остальные прикаспийские страны, с 2011 года выдерживают технический мораторий на вылов осетровых рыб в Каспийском море.

Причиной снижения запасов килек за последние 15 лет является инвазия гребневика *Mnemiopsisleidyi* в Каспийское море в конце 90-х годов прошлого века, отрицательное влияние которого особенно существенно стало сказываться и нарастать после 2001 года. Роль вселенца гребневика *M.leidyi*, являющегося планктофагом, в экосистеме Каспия сводится к подрыву кормовой базы килек путем выедания больших количеств зоопланктона, создавая этим катастрофическую ситуацию для потребителей кормов. С появлением *M.leidyi* в Каспийском море отмечается снижение запасов и сокращение уловов килек, вылов которых в целом по Каспийскому бассейну уменьшился с 271 тыс. тонн в 1999 году до 54 тыс. тонн в 2003 году (Седов, и др., 2004), т.е. в 5 раз. В 2007 г. вылов килек в Азербайджане составлял около 3667 тонн, а в 2009 – всего около 840 тонн. Уловы килек и в последующем последовательно снижались в 2010 и 2011 гг., соответственно, до 708 и 485 тонн, а в 2012 и 2013 гг., соответственно, до 342 и 206 тонн. В 2014 и 2015 гг. уловы килек еще более снизились, соответственно, до 163 и 138. Однако в 2016 году вновь отмечается тенденция к увеличению уловов килек до 316 тонн.

 Запасы кефали и сельдей удовлетворительные и имеют тенденцию роста, однако их запасы в Азербайджанском секторе Каспийского моря недоиспользуются.

* + 1. **Vulnerable ecosystems[[82]](#footnote-82)**

Рассматривая ареал распространения видов рыб, следует отличать места размножения, нагула и зимовки. В Азербайджанском секторе западное побережье Среднего Каспия играет определяющую роль в формировании ихтиофауны всего моря. В данной части моря на глубинах 10-50 метров встречаются илисто-песчаный, песчано-илистый и илисто-ракушечный грунты, которые считаются наиболее заселенными бентическими кормовыми организмами. Поэтому в этом районе сосредоточивается молодь проходных и полупроходных рыб для откорма. Кроме того, в данном районе Среднего Каспия перед устьем рек Терек и Самур и более мелких речек скапливаются производители проходных и полупроходных рыб, готовые к размножению. Особенно большое значение этот район приобретает в весенне-летний период и в меньшей степени в осенний период. Сельдевые и кильки для размножения подходят к побережью Среднего Каспия в Ялама-Шабранской зоне, относящейся к Контрактной Площади, на глубине 10-50 метров. Здесь же в весенний период концентрируется молодь осетровых для нагула. В районах западного побережья Среднего и Южного Каспия находятся места зимовки и нагула осетровых на морских пастбищах с небольшими глубинами 10-40 метров. Поэтому все западное побережье Среднего и Южного Каспия может считаться зоной чувствительных мест обитания рыб.

There is 110 species of fish in the Caspian Sea sector, including sea, river, migratory and semi-migratory. The Gulf of Gizilagaj and the Lankaran coast play a decisive role in the formation of ichthyofauna of Southern Caspian, especially in the formation of reserves of Acipenseriformes, Kura salmondies and Cypriniformes, and therefore may be considered a sensitive zone where fish live. This region is particularly important during spring and summer, but less important in the autumn period. The vast majority of fish live at a depth of 50-75 m in the sea coastline. In the spring and autumn, the northeastern part of the Baku archipelago joins migratory routes of some species of fish, mainly the Clupeiformes (as well as the anchovy sprat), Mugilidae (leaping mullet) and Acipenseriformes. It is possible to observe 30 varieties of commercial fishes in various seasons in the coastal waters of the Azerbaijani sector of the Caspian Sea, especially in the outfall area of Kura river and waters in the around the Kura river, and it is also possible to observe more than 10 most observed species of Gobiidae in this watercourse.

* + 1. **Mammals[[83]](#footnote-83)**

Caspian seal is the only marine mammal and Caspian endemic that can be regarded as a sensitive species. At the beginning of the twentieth century, the number of Caspian seals amounted to about 1 million individuals, however, at present, there is quite contradictory information about the total population of the Caspian seal, ranging from 111,000 to 360,000 individuals. The Caspian seal hunt in Azerbaijan has been banned since 1952. The Caspian seal stands at the peak of the ecological pyramid in the sea and usually fed with sprat. Therefore, due to the invasion of the Mnemiopsis leidyi, in comparison with the 1999 year sprat reserves, 10 times reduced, and the decline of the food base of Caspian seal is one of the factors that affect the decrease in its number.

Наблюдения на территории созданного в 2005 году Апшеронского прибрежного заповедника для тюленей показывают, что в Среднем и Южном Каспии западное побережье (Абшеронский и Бакинский архипелаги, коса Шахдилли) используются Каспийским Тюленем (Phocacaspica) как круглогодичные места выхода на сушу. По результатам еще прошлых исследований Азербайджанской Международной Операционной Компании (AIOC), проведенных в 1996-1998 годах, вертолетные облеты выявили круглогодичные лежки на косе Шахдилли, островах Жилой, Малая Плита, Большая Плита и Подплиточный. После подъема уровня Каспийского моря, начиная с 1977-78-го года, особенно после 1990-го года, были затоплены значительные прибрежные участки лежбищ Каспийского Тюленя. Кроме того, на используемых некогда участках лежбищ этой группы животных в Южном Каспии, в частности на Апшеронском полуострове и на восточных островах, начались разработки новых нефтегазовых месторождений, что также негативно отразилось на численности и распределении его популяции в море. Большее количество традиционных лежбищ Каспийского Тюленя на сегодняшний день утеряно в связи с поднятием уровня Каспия, и поэтому концентрация тюленей увеличилась на уцелевших лежбищах.

 В последнее время Каспийский Тюлень уже столкнулся с рядом угроз. В последние годы снижается доступность участков лежбищ на побережье в связи с естественными и антропогенными факторами:

* с изменениями уровня моря;
* с развитием промышленности и инфраструктуры городов рядом с традиционными местами лежбищ тюленей;
* с рыбным промыслом, вызывающим либо непосредственную гибель тюленей, либо уменьшение их кормовых запасов;
* с недостаточно известным, однако, значительным влиянием промышленного загрязнения моря.

 Наблюдения последних лет показывают, что периодические случаи массовой гибели происходят в основном в северной части Каспия в весенний период. Большое количество трупов мертвых тюленей приносится морскими течениями и северными ветрами вдоль западного побережья Среднего Каспия в среднюю и южную часть моря.

## **5.6. Climate change**

* + 1. **Caspian sea level fluctuation[[84]](#footnote-84)**

Analysis of the available data on the level of the Caspian Sea (archaeological, historical, century, perennial) shows that the sea level has changed between -20.00 mBS and -34.00 mBS (absolute altitudes) over the last 3.5 thousand years.

The analysis of the long-term forecasts on the sea level fluctuation shows that none of them can give a precise forecast of the level. According to the data obtained from the instrumental observations (since 1830), the sea level varied from -25.00 to -30.00 mBS.

**The results of instrumental observations on the Caspian sea level**



For this reason, the above-mentioned levels (-25.00 and -30.00 mBS) can be regarded as the highest and lowest levels of the sea in the near future. - 28.00 mBS was taken as the "0" sea level in the graphic (this was accepted as "zero" level for the Caspian Sea in USSR since 01.01.1961).

High level: -25.00 mBs.

Multiple factors prove that the probability overcome this level is too small. At present amount of water received unrequited from the rivers of the Caspian basin reaches 60 km3 per year. This volume is approximately equal to a water thickness of about 10 cm, so the level of the Caspian Sea as a result of human activity is artificially maintained as the number shown each year. This means that the present highwater period of the Caspian basin rivers even remains for a long time,  the probability that the level exceeds -26.0 m is very small. This situation has already been confirmed in practice. During 20 years (since 1978), despite the high water of rivers flowing into the Caspian Sea, its level did not exceed -26.5 meters.

In addition to the above, when the level rises to -26.0 m, large flat areas and basements in the north and east coast of the Caspian Sea will flood. Because these areas are shallow, intensive evaporation will occur. According to calculations, approximately 25 km3 of water per year will be evaporated and this will again mean 6-7 cm of water layer per year. The above considerations and probabilistic calculations show that the probability of passing the level of -26.0 m is 0.1%.

In any case, it should be remembered that the level is at around -27.0 m, so only 1 m below the -26.0 m. Taking into account, this fact and all the calculations and explanations, it can be stated that the probability of the level to be up to above - 26,0 m is 0,1-0,3% by 2030.

The study of the development of atmospheric processes on the Caspian aquatory and the sea basin shows that the highwater regime of rivers flowing into the sea will last 30-40 years. Expected climate change scenarios indicate that the amount of rainfall in the Caspian basin will increase by the end of this century. This situation allows saying that the sea level is less likely to fall below -30.00 mBS.

As a result of the continuous increase of the level of Caspian Sea since 1978, the country's flooded area is approximately 500 km2, so 50 settlements, 250 industrial enterprises, 60 km of motorways, 10 km of railway lines, 40,000 hectares of winter pastures, 10,000 hectares of irrigated lands, the resort-sanatorium and other recreational facilities for 200 thousand people were flooded. According to approximate calculations, the damage to economic properties is estimated at 2-2.5 billion USD dollars.

|  |
| --- |
| **Oil stones HMS[[85]](#footnote-85)[[86]](#footnote-86)** |
| **Caspian Sea level, cm** |
| **Year/month** | **I** | **II** | **III** | **IV** | **V** | **VI** | **VII** | **VIII** | **IX** | **X** | **XI** | **XII** | **Annual** |
| **2011** | 80 | 80 | 77 | 79 | 87 | 95 | 96 | 91 | 76 | 70 | 72 | 67 | **80** |
| **2012** | 66 | 71 | 71 | 73 | 81 | 89 | 93 | 88 | 74 | 69 | 61 | 64 | **75** |
| **2013** | 58 | 62 | 62 | 68 | 75 | 89 | 92 | 90 | 76 | 69 | 58 | 60 | **72** |
| **2014** | 57 | 57 | 56 | 62 | 68 | 75 | 75 | 62 | 53 | 71 | 75 | 33 | **57** |
| **2015** | 31 | 33 | 33 | 42 | 44 | 50 | 52 | 42 | 31 | 16 | 9 | 12 | **32** |
| **2016** | 14 | 9 | 21 | 31 | 37 | 49 | 57 | 51 | 43 | 32 | 29 | 25 | **33** |
| **Caspian Sea level, mBS** |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Year/month** | **I** | **II** | **III** | **IV** | **V** | **VI** | **VII** | **VIII** | **IX** | **X** | **XI** | **XII** | **Annual** |
| **2011** | -27.2 | -27.2 | -27.23 | -27.21 | -27.13 | -27.05 | -27.04 | -27.09 | -27.24 | -27.3 | -27.28 | -27.33 | **-27.2** |
| **2012** | -27.34 | -27.29 | -27.29 | -27.27 | -27.19 | -27.11 | -27.07 | -27.12 | -27.26 | -27.31 | -27.39 | -27.36 | **-27.25** |
| **2013** | -27.42 | -27.38 | -27.38 | -27.32 | -27.25 | -27.11 | -27.08 | -27.1 | -27.24 | -27.31 | -27.42 | -27.4 | **-27.28** |
| **2014** | -27.43 | -27.43 | -27.44 | -27.38 | -27.32 | -27.25 | -27.25 | -27.38 | -27.47 | -27.29 | -27.25 | -27.67 | **-27.43** |
| **2015** | -27.69 | -27.67 | -27.67 | -27.58 | -27.56 | -27.5 | -27.48 | -27.58 | -27.69 | -27.84 | -27.91 | -27.88 | **-27.68** |
| **2016** | -27.86 | -27.91 | -27.79 | -27.69 | -27.63 | -27.51 | -27.43 | -27.49 | -27.57 | -27.68 | -27.71 | -27.75 | **-27.67** |

* + 1. **Selected impacts of climate change in the Caspian basin**

At present 10 administrative regions of the Republic (including the Absheron peninsula) are located on the sea coastline. The biggest cities of the country – Baku, Sumgait, and 75% of the industrial potential are located on the Caspian coast.

The most important problem of the Caspian Sea is happenings in the Caspian region due to its level change. The main reason for the fluctuation is the climate processes occurring in the sea basin.

* + 1. **Regional land degradation[[87]](#footnote-87)**

The physical-geographical features of the territory of Azerbaijan make it a highly vulnerable country to climate change. Location of the country at the northern end of the subtropical zone, on the western coast of the Caspian Sea, 28 meters below the ocean level, and having about 40% mountainous territories, location in the arid and semi-arid zone, increases the likelihood of being exposed to climatic changes, and accordingly, the vulnerability.

The country suffers from adverse effects of climate change such as floods, deluge, droughts, heat stresses and etc. growing due to power and repetition frequency devastating hydrometeorological events. For example, the damage caused by floods in Kura and Aras rivers in 2010 exceeded 400 million USD dollars.

It was determined that 20% of administrative regions, 6,7% of settlements, 20,1% of the population, 3,0% of industrial enterprises, 12,3% of agricultural enterprises, 14.2% of motorways in the country are interruptedly exposed to floods.

**Classification of impacts of natural disasters on different economic areas and population health[[88]](#footnote-88)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Hydrometeorological****events** | **Industrial Zones** | **Agriculture** | **Transport** | **The health of the population** |
| Flood | Very high | Very high | Very high | Medium |
| Deluge | Medium | Very high | Medium | Very high |
| Hail | Weak | Very high | Weak | Weak |
| Torrential rain | Medium | Very high | Medium | Weak |
| Strong winds | Medium | Very high | Medium | Medium |
| Droughts | Weak | Very high | Weak | Weak |

Factors causing deluge are significantly differed from factors causing a flood. Deluge is frequently replicated in the Azerbaijani territory mainly in plains, below the sea level, in the basin of the Kura and Aras rivers, along with the coasts of the Caspian Sea. The location of the Kura River bed below the sea level, frequently stuffing of the bed with brought and hanging materials is among of the factors that create the initial conditions for the deluge. This situation is observed in the lower Aras river basin, as well as in the Caspian region, Lankaran, Astara, Neftchala administrative regions and partly in Absheron. The deluge and flooding originated from the waves of the Caspian Sea covered large areas in the Samur-Davachi lowland. It is the result of deluge and flooding incidents, that occurred only in 2003 and 2007, the country's economy was hurt more than 50 million manats.

Drought is one of the most abnormal natural processes in Azerbaijan that damage, especially agriculture. Drought is widespread in the plains of Aras, the Absheron peninsula, the Kura-Aras and Samur-Davachi plains, which are dryland areas.

One of the factors that contribute to drought in these areas is that the rate of evaporation is very high relative to falling precipitation. Such a lack of moisture in the air creates a drought process. However, droughts are observed in mountainous and foothill regions, where some extreme temperatures occur.

As a result of investigations, it was identified that dry weather in Absheron is most common in south-west and south areas. The recurrence of dry weather in these areas is up to 52% in summer. However, the moderate dry weather (Class II) prevails in the observed dry weather, which favourable to human organism. Stuffy dry weather is repeated only in the summer with only 13% and less.

* + 1. **Caspian Sea Ice[[89]](#footnote-89)**

The icing in the Caspian Sea is mostly observed in winter seasons in the northern part of the country during the cold period of the year. However, icing in the Middle and Southern Caspian is almost not observed.

Anomalous icing in the Caspian Sea was observed in 1920 and 1953. In the cold winter of 1920, strong icing in the Middle Caspian coastal zones resulted in the destruction of more than 10,000 migratory birds in the Gulf of Gizilagaj.

In the winter of 1953, strong ice-covering in the north of the Caspian, in the Middle Caspian, on the shores of Absheron created ice drift (flows) in the sea and such ice flows moved up to the middle Caspian, to Absheron and had great dangers for hydraulic structures, ships, and especially the Offshore Oil and Gas sector. Even special airplanes and cannons were used to break ice caps in order to eliminate the danger.

* + 1. **Caspian coastline**

**5.6.6. Vulnerability to flooding[[90]](#footnote-90)**

While protective measures against deluge and flooding in the republic have reduced their intensity, the climate change, anthropogenic and other factors that have taken place in recent years have increased their recurrence each year.

As a result of recent global climate changes, the dynamics of natural disasters, including floods, deluges, droughts, hurricanes and forest fires, continue to increase negatively.

Although deluge accidents are the second largest cause of destructive and economic losses after floods, it has been found that the deluge has caused more damage to the country's agricultural sector.

**Areas of territories exposed to flooding by zones in 2 different situations of Caspian Sea level[[91]](#footnote-91)**

|  |  |  |
| --- | --- | --- |
| Zone | Length of the coastline, km | Flooding area, km2 |
| -26.50 mBS | -25.00 mBS |
| The territory from the Samur River to the Absheron Peninsula | 152.4 | 42.3 | 71.7 |
| The territory of the Absheron Peninsula | 289.6 | 38.2 | 60.1 |
| The territory from the Absheron Peninsula to the Kura River | 208.3 | 372.3 | 1118.0 |
| The territory from the Kura River to the Astara River | 87.7 | 31.7 | 59.8 |
| Total | 738.1 | 484.5 | 1309.6 |

# **6. Impact**

## **6.1. Consequences for the social and economic sectors**

### **6.1.1 The health and well-being of residents in the Caspian Sea coastal area including consequences of changes caused by different sectors.**

### **6.1.2 Impacts on artisanal fisheries and industrial fisheries[[92]](#footnote-92)**

В последние годы (2011-2016 гг.), по сравнению с 2005-2010 гг., количество лицензий на вылов рыб возрастает. Однако это увеличение связано с ростом числа лицензий на вылов частиковых рыб (Clupea, Mugil, Pseudophoxinus, kutum, carp, Vimba, bream, Alburnus) и возрастанием количества лицензий на маломерный флот (лодки). В последние годы уменьшение общего объема вылова промысловых видов рыб в Азербайджанском секторе, проявляющееся как общая тенденция для всего Каспия, связано с уменьшением вылова килек. Снижение запасов килек и уменьшение объема их вылова в последние годы становится все более значительным, тогда как объем вылова частиковых рыб все более возрастает. Таким образом, по сравнению с 2005-2010 гг., в последние годы (2011-2016 гг.) отмечается тенденция переориентации развития коммерческого рыболовства от вылова килек на вылов частиковых рыб.

Учитывая складывающиеся в последние годы изменения в развитии рыболовства и факторы их вызывающие, можно предположить, что в ближайшие годы эти тенденции сохранятся в связи со все усугубляющимся состоянием водных биоресурсов Каспийского моря. Таким образом, дальнейшие тенденции развития рыболовства будут больше всего связаны с общей тенденцией динамики ухудшения общего состояния биоты Каспийского моря. В последующем, интенсификация вылова обыкновенной кильки в мелководной зоне моря отрицательно скажется на ее воспроизводстве. Складывающиеся тенденции состояния моря и особенностей развития рыболовства позволяют предположить, что в ближайшие годы промышленный лов килек может остановиться ввиду его экономической нерентабельности, а ежегодно возрастающий вылов частиковых рыб может привести к чрезмерной эксплуатации и уменьшению их ресурсов.

Еще одним прогнозируемым фактором возможного снижения рыболовной деятельности (активности) в Азербайджане в ближайшие годы может стать ожидаемое бурное развитие аквакультуры. Летом 2014 года был принят измененный и усовершенствованный Закон Азербайджанской Республики «О рыбном хозяйстве». Старый Закон не охватывал правовые рамки быстро развивающегося частного сектора аквакультуры. Поэтому в Закон были введены новые положения о правилах ведения аквакультуры. Летом 2017 года Кабинетом Министров был принят Указ по «Правилам ведения аквакультуры». Это позволит обеспечить устойчивое развитие аквакультуры в сельской местности, создать альтернативные источники заработка, повысить уровень благосостояния и здоровья прибрежного населения страны.

### **6.1.3 Impacts on coastal infrastructure**

### **6.1.4 Impacts on economic activities e.g., agriculture, ports and harbor infrastructures, submarine cable and pipelines**

## **6.2. Impact on environmental services and bioresources**

### **6.2.1 Stress factors impacting on the Caspian Sea region’s coastal and marine ecosystems and on its biodiversity should be discussed in this chapter specially those resulting from human activities[[93]](#footnote-93)**

Загрязнение рек, впадающих в Каспий, характеризуется повышением предельно-допустимых концентраций по таким показателям, как биохимическое потребление кислорода, нефтепродуктам, фенолам, пестицидам, тяжелым металлам.

Регулирование речного стока влияет на ихтиофауну, особенно весной, что приводит к нарушению генетической запрограммированной миграции производителей проходных и полупроходных рыб, препятствуя их заходу на нерест. Этот фактор влияет на распределение молоди этих рыб в предустьевом пространстве во время откорма. И наконец, одним из важнейших факторов риска для биоразнообразия Каспия в последние годы становится инвазия гребневика мнемиопсис, подрывающего кормовую базу килек, которые составляют основу рациона хищных рыб (осетровых, сельдевых и других) и каспийского тюленя.

До инвазии гребневика мнемиопсис экологическое состояние Каспийского моря уже характеризовалось в целом как неблагополучное, поскольку за последние несколько десятилетий оно значительно изменилось в результате совокупного воздействия антропогенных и природных факторов. К числу природных факторов можно отнести климатические изменения, колебания уровня моря и активность грязевых вулканических образований. К антропогенным воздействиям можно отнести химическое и биологическое загрязнение. Токсические химические вещества поступают с водосборной площади моря и непосредственно на акватории Каспия. Вселение же гребневика мнемиопсис усугубило ухудшающееся состояние экосистемы Каспия. Инвазия мнемиопсиса в Каспийское море повлекла за собой очень быстрые изменения на всех уровнях его трофической цепи. При поедании мнемиопсисом до 90% зоопланктона и сложившемся дефиците кормовой базы кильки переходят на питание балластного, почти неусваивающегося корма. На фоне деструктивных процессов и снижения иммунитета организм килек становится все более уязвимым к химическому загрязнению Каспия. В результате развивается стресс-фактор, приводящий к массовой гибели килек и изменению соотношения численности отдельных их видов (анчоусовидной, большеглазой и обыкновенной). Изменяющееся экологическое состояние Каспия угрожает его биологическому разнообразию, негативно сказывается на всех звеньях его реликтовой экосистемы, и главным образом на кильке, составляющей вместе с осетровыми 80% всей ихтиомассы моря. Являясь основным кормовым объектом сельдей, осетровых и каспийского тюленя, запасы кильки являются основным компонентом поддержания численности этих эндемичных видов Каспия.

### **6.2.2 The most notable stress factors in the region are climate change, sea level rise and desertification.**

# **7. Response**

## **7.1.** **Regional governance**

**This section should begin with a short summary of major policies in the region including The Tehran Convention; The Caspian Environment Programme; The International Commission on Aquatic Resources of the Caspian Sea; and Coordinating Committee on Hydrometeorology and Pollution Monitoring of the Caspian Sea (CASPCOM). Each section should briefly describe the intention of the policy and any recent relevant updates or decisions.**

## **7.2 National governance**

**Each country should develop a short description listing changes or developments from 2011 within national-level governance structures relating to the marine and coastal environment and in particular relating to the activities listed in Section 7.6. Where relevant, an update on the National Caspian Action Plan should also be included.**

Azerbaijan hosted the First Inaugural Session of the Commission for the Conservation and Rational use of Aquatic Biological Resources and Management of Shared Stocks of such Resources on 21-23 November 2017, in Baku. The Ministry of Ecology and Natural Resources conducts coordinating work on international cooperation with the Caspian littoral countries within the chairmanship of Azerbaijan in that Commission for two years (2017-2018).

The Ministry of Ecology and Natural Resources has prepared national projects on assessment and management of vulnerable ecosystems of the Caspian Sea in the "Ecologically or Biologically Significant Marine Areas" project of the UN Convention on Biological Diversity (EBSA, CBD, UNDP, 2017-2020).

By the Decree of the President of the Republic of Azerbaijan dated May 19, 2006, the Ministry of Ecology and Natural Resources has been appointed as the Scientific Authority of the Republic of Azerbaijan on Convention of International Trade in Endangered Species of Wild Fauna and Flora (on sturgeon species).

**Protection of atmospheric air**

Azerbaijan has joined the Paris Agreement of United Nations Framework Convention on Climate Change and committed to reducing carbon emissions by 35% by 2030 compared to the base year (1990).

Decisions made by the Cabinet of Ministers to harmonize requirements to Euro-2 (2010) and Euro-4 (2014) environmental standards for harmful substances emitted to the atmospheric air from motor vehicles released into circulation in the territory of the Azerbaijan Republic.

Measures are being taken to provide industrial enterprises with appropriate gas and dust extraction equipment to improve air quality in Baku and surrounding areas, complete management of harmful substances and associated gases produced during oil and gas extraction, complete modernization of energy sector and increasing energy efficiency, historically contaminated areas , particularly in the direction of ecologic rehabilitation of oil polluted areas, lakes and ponds.

The Twinning project is being held between the Ministry of Ecology and Natural Resources and the European Union on " Upgrading the National Environmental Monitoring System (NEMS) of Azerbaijan on the base of EU best practices ". The Twinning project has the important role in the study of European experience and serves to the theoretical improvement of the quality of environmental activity in Azerbaijan, especially the quality of air monitoring.

**Sea transport**

An action plan that covers strategic targets and priorities has been developed in order to ensure the competitiveness and sustainable development of the maritime transport sector of Azerbaijan. The strategy is of particular importance for the efficient organization of the merchant shipping industry and the effective application of international regulations. The strategy serves to improve the Safe and Efficient Sustainable Transportation System, as well as the prevention of marine pollution, energy efficiency and the protection of natural resources.

## **7.3. Policy and legislation**

**Instruments at a federal, national or local level relating to the environment of the Caspian Sea and adjacent coastal areas and any relevant changes or additions since 2011.These could include Caspian Action Programme (SCAP) and associated protocols as well as the five National Caspian Action Plans (NCAP) developed under the Caspian Environment Programme (CEP). As the previous section, particular focus should be placed on those activities listed in Section 7.6.**

The existing legal and policy framework for fishing in Azerbaijan is cooperated with FAO since early 2011 to ensure that the future legal and policy framework of the rapidly developing aquaculture sector is consistent with international standards, best practices and agreements. The Azerbaijan Scientific Research Institute of Fisheries with the technical support of FAO has adopted the Law of the Republic of Azerbaijan "On Making Amendments to the Law of the Republic of Azerbaijan on Fishing" dated June 27, 2014.

In 2016, the “Statue on Water Bioresources Development, Rehabilitation and Protection Fund” was approved. In connection with amendments to the Law of the Republic of Azerbaijan "On fishing", the following normative-legal documents were adopted by the Cabinet of Ministers during 2016-2017: Registration form and rules for conducting registration of fishery subjects, Regulations and Cases for releasing new types and hybrid forms of fish and other aquatic bioresources into natural fishing water objects, Regulations for the transport of acclimatization objects and acclimatization of fish and other aquatic bioresources, Regulations on the application of special protection regime of fish and other aquatic bioresources in water protection zones and coastguard strips, Regulation for list of important fishing water objects and the restriction of water use, Regulations for hunting of fish and other aquatic bioresources, Regulation of implementation of aquaculture, Regulation of conducting fishery expertise.

The work is underway on the future legal and policy framework of the aquaculture site, the improvement of management infrastructure, the application of innovative technologies based on international experience and science for the development of aquaculture.

In 2016, the National Strategy for the Protection and Sustainable Use of Biodiversity in the Republic of Azerbaijan for 2017-2020 was approved. This National Strategy, along with the promotion of reforms in this field, will have a positive impact on the enhancement of cooperation between international organizations and governments in biodiversity and general environmental protection activities. The Agreement on the Conversation and Rational Use of the Aquatic Biological Resources of the Caspian Sea, the Agreement on Cooperation in the Field of Hydrometeorology of the Caspian Sea, the Agreement on cooperation in emergency prevention and Response in the Caspian Sea were signed at the 4th summit of the Caspian littoral states' leaders in Astrakhan, Russia in 2014. All the Agreements have been ratified by all the Caspian littoral states.

**Tourism policy frameworks**

In recent years, the implementation of a number of measures for the development of the tourism sector has led to the development of this sector. As a continuation of this policy, in order to form a modern tourism sector that meets the highest economic, social and environmental requirements in Azerbaijan and to make it one of the key development pillars of the country's economy "State Program on Tourism Development in the Republic of Azerbaijan for 2010-2014" was approved by the Decree of the President of the Republic of Azerbaijan of April 6, 2010.

## **7.4 Monitoring and compliance**

**There should be an update on the Framework Convention for the Protection of the Marine Environment of the Caspian Sea and its four protocols—land-based sources of pollution; preparedness, response and cooperation in combating oil spill incidents; environmental impact assessments in a transboundary context – and if they were adopted and how they are being implemented in terms of indictors. As well, countries should provide details regarding its own monitoring programme relating to the Activities listed in Section 7.6.**

Azerbaijan ratified the Framework Convention for the Protection of the Marine Environment of the Caspian Sea on April 4, 2006. Protocol concerning “Regional Preparedness, Response and Co-Operation in Combating Oil Pollution Incidents to the Framework Convention on the Protection of the Marine Environment of the Caspian Sea” was ratified on 21 December 2012 and Protocol for the “Protection of the Caspian Sea against Pollution from Land-Based Sources and Activities to the Framework Convention for the Protection of the Marine Environment of the Caspian Sea” was ratified on 25 February 2014. Relevant measures are being undertaken to ratify the Protocol on Biodiversity Conservation.

At present, the FAO is supporting the Ministry of Ecology and Natural Resources to develop a National Strategy for the development of the fishing industry. The main goals of the national strategy are to increase competitiveness, manufacture and productivity in the fishing industry, as well as the sustainable growth and development of the aquaculture sector.

## **7.5. Participation and outreach (private sector, and information sharing)**

**Each country should attempt to describe the levels of public participation in environmental matters, as well as any analysis on public perceptions or concerns.**

In 2010, the Public Ecological Council under the Minister of Ecology and Natural Resources was established. The composition of this Council is primarily of non - governmental organizations. Discussion of major, global environmental issues, projects, legislative acts, and other important issues are being debated at this council. Relevant decisions are made with the participation of public representatives. In November 2013, a decree was signed on the adoption of the Law on “Public Participation” and in January 2014, on the application of this law. The exemplary statute on the establishment of Public Councils under the Central Executive Bodies of the Cabinet of Ministers was approved as the execution of this law. In accordance with this exemplary statute, the Public Council was established under the MENR. As in the previous council, the Public Council under the MENR is discussing all environmental issues, ongoing environmental problems on the agenda and joint decisions are made.

## **7.6. Recommendations: (Should be regional)**

 **7.6.1 Physical loss of seabed/coastal habitats in the coastal environment**

 **7.6.2 Litter**

 **7.6.3 Contamination by hazardous substances**

 **7.6.4 Nutrient and organic matter**

 **7.6.5 Biological disturbance**

 **7.6.6 Spatial Protection Measures**

# **Acronyms and abbreviations**

MENR – Ministry of Ecology and Natural Resources

SOCAR – State Oil Company of the Republic of Azerbaijan

TEU - Twenty Foot Equivalent Unit

FAO – Food and Agricultural Organization

GDP - Gross domestic product

CIS - Commonwealth of Independent States

TRACECA - Transport Corridor Europe-Caucasus-Asia

SOLAS - Safety of Life at Sea

MARPOL - The International Convention for the Prevention of Pollution from Ships

STCW - Standards of Training, Certification and Watchkeeping for Seafarers

EBSA - Ecologically or Biologically Significant Areas

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65. Source: National Hydrometeorology Department under MENR [↑](#footnote-ref-65)
66. Source: National Environmental Monitoring Department under MENR [↑](#footnote-ref-66)
67. Source: National Environmental Monitoring Department under MENR [↑](#footnote-ref-67)
68. Source: National Environmental Monitoring Department under MENR [↑](#footnote-ref-68)
69. Information from Department of Protection of Biological Diversity and Development of Specially Protected Nature Areas under MENR [↑](#footnote-ref-69)
70. Source: State Statistical Committee [↑](#footnote-ref-70)
71. Information from the Department of Reproduction and Protection of Aquatic Bioresources under the MENR [↑](#footnote-ref-71)
72. Information from the Department of Reproduction and Protection of Aquatic Bioresources under the MENR [↑](#footnote-ref-72)
73. Information from the Department of Reproduction and Protection of Aquatic Bioresources under the MENR [↑](#footnote-ref-73)
74. Data from the Department of Reproduction and Protection of Aquatic Bioresources under the MENR [↑](#footnote-ref-74)
75. Data from the Department of Reproduction and Protection of Aquatic Bioresources under the MENR [↑](#footnote-ref-75)
76. Data from the Department of Reproduction and Protection of Aquatic Bioresources under the MENR [↑](#footnote-ref-76)
77. Data from the Department of Reproduction and Protection of Aquatic Bioresources under the MENR [↑](#footnote-ref-77)
78. Data from the Department of Reproduction and Protection of Aquatic Bioresources under the MENR [↑](#footnote-ref-78)
79. Information from the Department of Reproduction and Protection of Aquatic Bioresources under the MENR [↑](#footnote-ref-79)
80. Data from the Department of Reproduction and Protection of Aquatic Bioresources under the MENR [↑](#footnote-ref-80)
81. Information from the Department of Reproduction and Protection of Aquatic Bioresources under the MENR [↑](#footnote-ref-81)
82. Information from the Department of Reproduction and Protection of Aquatic Bioresources under the MENR [↑](#footnote-ref-82)
83. Information from the Department of Reproduction and Protection of Aquatic Bioresources under the MENR [↑](#footnote-ref-83)
84. Information from National Hydrometeorology Department under the MENR [↑](#footnote-ref-84)
85. Hydrometeorological Station [↑](#footnote-ref-85)
86. Data from National Hydrometeorology Department under the MENR [↑](#footnote-ref-86)
87. Information from National Hydrometeorology Department under the MENR [↑](#footnote-ref-87)
88. Information from National Hydrometeorology Department under the MENR [↑](#footnote-ref-88)
89. Information from National Hydrometeorology Department under the MENR [↑](#footnote-ref-89)
90. Information from National Hydrometeorology Department under the MENR [↑](#footnote-ref-90)
91. Data from National Hydrometeorology Department under the MENR [↑](#footnote-ref-91)
92. Information from the Department of Reproduction and Protection of Aquatic Bioresources under the MENR [↑](#footnote-ref-92)
93. Information from the Department of Reproduction and Protection of Aquatic Bioresources under the MENR [↑](#footnote-ref-93)