

NCOC
NORTH CASPIAN
OPERATING COMPANY

ТҰРАҚТЫ ДАМУ ТУРАЛЫ ЕСЕП

ОТЧЕТ
ОБ УСТОЙЧИВОМ
РАЗВИТИИ

SUSTAINABILITY
REPORT





Солтүстік Каспий жобасының Операторы NCOС компаниясы өзінің өндірістік қызметін барлық мүдделі тараптардың және жұртшылықтың мүдделерін ескере отырып, жауапкершілікпен жүргізуде. Оның ең басты міндеттерінің бірі – Каспийдің бірегей және сезімтал экожүйесін сақтау. Осы экожүйенің өте маңызды өкілі – тек осы өңірде мекендейтін жалғыз ғана сүтқоректі Каспий итбалығы. Қазіргі кезде жойылу қаупі төніп тұрған осы әдемі және сирек кездесетін эндемик жануар Каспий теңізі ортасының индикаторы ғана емес, сондай-ақ оның символына айналған. Сол себепті биылғы есебіміздің өзекті тақырыбы ретінде Каспий итбалығын таңдадық.

Оператор Северо-Каспийского проекта компания NCOС ведет свою производственную деятельность ответственно, учитывая интересы всех заинтересованных лиц и общественности. И одна из ее приоритетных задач – сохранение уникальной и чувствительной экосистемы Каспия. Крайне важным представителем этой экосистемы, единственным млекопитающим, которое водится только здесь, является каспийский тюлень. Это красивое и редкое животное-эндемик, которое сегодня оказалось под угрозой исчезновения, служит не только индикатором состояния среды Каспийского моря, но и его символом. Именно поэтому концептуальной темой нашего отчета в этом году мы выбрали каспийского тюленя.

NCOС as the Operator of the North Caspian Project performs its operations in a responsible way considering the interests of all stakeholders and the community. And one of its priorities is the conservation of the unique and sensitive ecosystem of the Caspian Sea. A crucial representative of this ecosystem is the Caspian Seal, the only mammal found nowhere else in the world. This beautiful endemic now listed as an endangered species serves as an indicator of the Caspian Sea ecosystem status and a symbol of the sea. With this in mind, we have chosen the Caspian Seal as the conceptual theme for the Report.



MESSAGE FROM MANAGING DIRECTOR

NCOC as a responsible Operator runs its activities on the principles of sustainable development. We approach sustainability by addressing challenges and seeking opportunities that would benefit not only the Operator, but also our stakeholders, communities where we operate and the Republic of Kazakhstan as whole.

2021 was a significant year filled with major milestones both for Kazakhstan and our company. We marked the 30th anniversary of the Republic's Independence and the 5th year of commercial production by reaching 500 million barrels of oil since the start of oil production at Kashagan. I am particularly proud of the commitment and dedication our people have demonstrated over the past years to successfully achieve production targets with safe, stable and reliable oil production at Kashagan.

Our achievements showcase not only our success as a business, but exceptional professionalism of our staff, their uncompromising commitment to achieving the North Caspian Project's strategic direction, while demonstrating NCOC values. Safety is our most important value. Our goal remains zero incidents. This requires continuously improving our safety performance through training, monitoring and developing a culture in which safety is seen as a key indicator of successful operations. In 2021 we continued positive safety performance and completed the year with the best results we have had so far, with the total recordable injury rate and the number of injuries that led to time off at 0.15.

Moreover, NCOC maintains top industry results in process equipment availability and reliability and keeps the volumes of safety flaring the lowest in the industry. In 2021 the actual flaring constituted 0.34% of total associated gas produced, which is well below IOGP performance indicators for the European Union.

The air quality is an area of particular concern for the Atyrau region and its residents. As we had previously shared in our reports, there are 20 automatic air quality monitoring stations located in Eskene West, nearby settlements and in Atyrau which constantly monitor the air parameters and ensure that NCOC facilities stay within the regulatory limits without impacting the air in Atyrau. In

addition to that, the comprehensive air quality studies completed in 2021, which were conducted as a response to direct request from the public. The studies were carried out by national research centres and fully supported by NCOC. These were the first studies of such scale performed in Kazakhstan. And as part of our commitment to the communities, we shared the studies' results at the end of the year at a dedicated roundtable.

People working at the North Caspian Project are our most valuable asset. Since 2016, NCOC has decreased its expatriate staff by almost 50% and overdelivered its nationalisation plan for the last 4 years 1.5-fold. I am particularly proud to be working alongside with my fellow colleagues, Kazakhstani nationals, who comprise over 50% of NCOC's senior leadership team. In our Diversity and Inclusion efforts we also strive to achieve gender balance among our workforce.

Local Content development is an essential part of economic sustainability. Over the past decades the North Caspian Project has attracted major investments into the region for the development of local vendors, manpower and infrastructure and significantly contributed to the establishment and development of a new industry in Kazakhstan. In 2021, we further improved our local content performance by reaching over 58% of total expenditures on local goods, works and services. This is the highest we have achieved in the past seventeen years and we will continue to work on enhancing in-country value even further.

Now, as we look into the future of the North Caspian Project, let me mention the gas processing plant the construction of which began in 2021 by a third party and which is expected to process 1 billion cubic meters of raw gas from the Kashagan field annually. For NCOC this project would enable boosting oil production at Kashagan currently restricted by gas utilization issues, while the Republic would also benefit from the expansion of the resource base for further gasification of the country, development of the gas processing industry and new jobs for the region.

Another important enabler for future growth projects is the seabed dredging project. Due to the declining Caspian Sea level and associated shallowing of the sea around NCOC offshore facilities the seabed dredging is considered inevitable to continue marine vessels navigation and support safe operations at the Kashagan field. The dredging activities are restricted to navigation routes and deploy the best available technologies, while various environmental parameters are continuously monitored across the entire North Caspian Sea.

In NCOC we run our business guided by the principles of responsibility, transparency and compliance with laws. We have always been open to the public, including through our hotlines for suppliers and staff operated by third parties, and in 2021 we have taken a further step to get closer to communities via our social media accounts. During this year we have been keeping our stakeholders updated about our activities in Instagram, Facebook, LinkedIn and Youtube reaching thousands of subscribers and viewers. We are thankful to every person showing interest in NCOC.

As a company we have ambitious plans to give our best to the country and contribute to its dynamic growth. I am proud of our achievements so far, but I am sure we have more successes ahead of us. We will keep you updated on our accomplishments in various areas through our annual Sustainability Report.

Sincerely,
Olivier Lazare
NCOC Managing Director

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CASPIAN SEAL

The Caspian seal or *Pusa caspica* is an endemic of the Caspian Sea and the only mammal inhabiting the sea. It is listed in the Red Books of all Caspian littoral states now, as well as in the Red List of the International Union for Conservation of Nature as an endangered species.

The seal inhabits the entire Caspian Sea area and serves as an indicator of the sea ecosystem status. However, its northern region, and in particular the territorial waters of Kazakhstan, are of particular importance for the animal. It is in the north that the seal pups are born, which makes the region critical for preservation of the Caspian seal population.



POPULATION

302 thousand



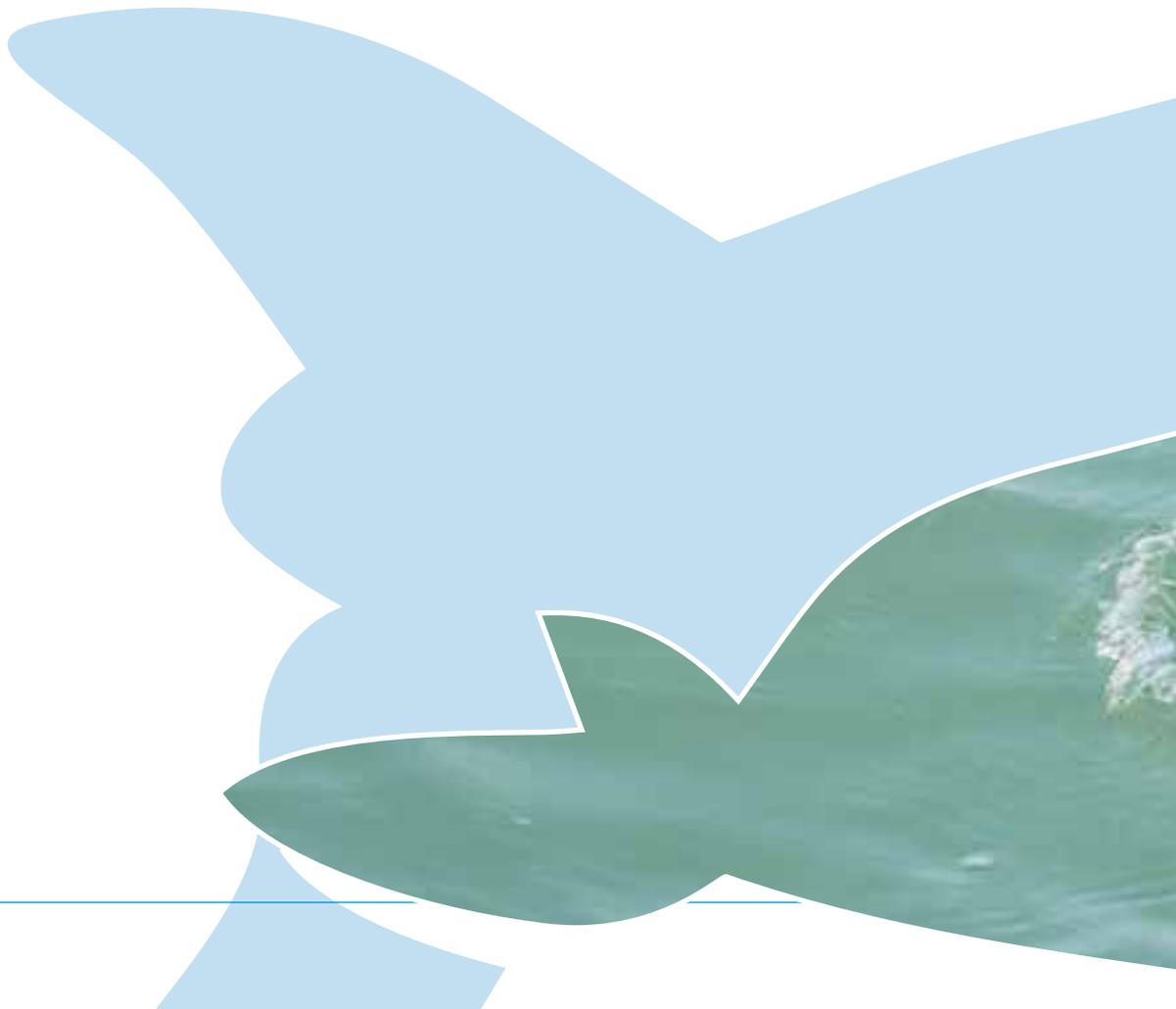
LENGTH

120-150 cm



WEIGHT

45-60 kg





01 SUSTAINABLE DEVELOPMENT GOALS

The UN's Sustainable Development Goals aim to address the world's pressing economic, social, and environmental challenges. We adopted 11

of these goals into our corporate culture and continue to contribute to their achievement in Kazakhstan.

3 GOOD HEALTH AND WELL-BEING



We promote a healthy lifestyle among our people, families, contractors, and communities in which we operate

4 QUALITY EDUCATION



We invest in the quality education and skill-based training of local communities

5 GENDER EQUALITY

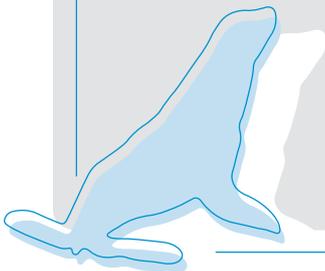


We provide equal career opportunities, compensation, and benefits for all employees

6 CLEAN WATER AND SANITATION



We conserve a freshwater supply in the regions in which we operate via the use of desalination, water efficiency, wastewater treatment, and reuse technologies; we follow a zero discharge policy into surface water bodies, including the Caspian Sea



8 DECENT WORK AND ECONOMIC GROWTH



We contribute to sustainable economic growth and provide decent work opportunities for all

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



We invest in building a solid infrastructure in the regions in which we operate and the greater adoption of clean and environmentally sound technologies and industrial processes

12 RESPONSIBLE CONSUMPTION AND PRODUCTION



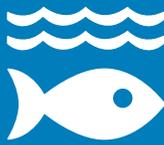
We ensure responsible consumption and production, reduce waste generation and release to air, promote improvement in energy efficiency, and follow zero discharge policy

13 CLIMATE ACTION



We strive to minimize our impact on climate change

14 LIFE BELOW WATER



We operate in an environmentally responsible and efficient manner, as well as develop our scientific knowledge and research capacity to preserve unique biodiversity of the Caspian Sea

15 LIFE ON LAND

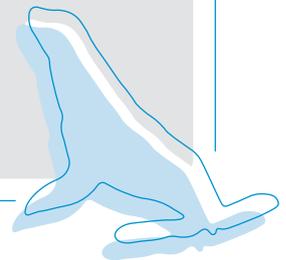


We actively support green initiatives in the regions in which we operate and implement the Company's Biodiversity Action Plan

16 PEACE, JUSTICE AND STRONG INSTITUTIONS



We promote honesty, integrity, and fairness in all aspects of our business



1 NO POVERTY



2 ZERO HUNGER



7 AFFORDABLE AND CLEAN ENERGY



10 REDUCED INEQUALITIES



11 SUSTAINABLE CITIES AND COMMUNITIES



17 PARTNERSHIPS FOR THE GOALS





2021 MILESTONES



5 years

of stable and safe production



68 mln tonnes

of oil export since restart



6.6 mln tonnes

of sulfur export since restart



2021

was the best year on record for:

- TRIR and LTIF for both staff and contractors
- Safety flaring and air emission performance
- GHG and energy intensity, and
- Freshwater reuse



0 incidents

Tier 1 or Tier 2 process safety incidents for the third year in a row



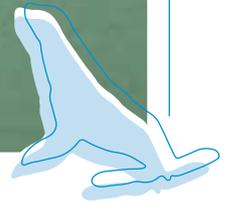
1300 days

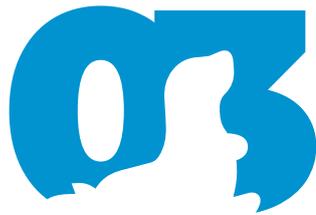
without Lost Time Incidents of offshore operations staff and contractors



- The first mobile temporary refuges manufactured in Kazakhstan
(more information in 8.3. Local Content section)
- Local goods, works, and services purchased since 2004:
USD 15.9 billion
- Overall social project investments since 1998:
USD 887 million







GOVERNANCE AND BUSINESS ETHICS

3.1. GOVERNANCE AND MANAGEMENT SYSTEM

The North Caspian Project is developed under the North Caspian Sea Production Sharing Agreement (NCSPSA), signed by the Republic of Kazakhstan and an international consortium of major oil and gas companies in 1997.

The consortium includes seven of the world's largest and most experienced energy companies: KazMunayGas, Eni, Shell, ExxonMobil, TotalEnergies, CNPC, and Inpex. Each shareholder is independently responsible for transporting and marketing its own share of production, as well as for reporting and sharing that production with the government according to the NCSPSA.

The Project is managed by the Operator, acting on behalf of the shareholders. Prior to 2015, the North Caspian Project was operated under a model in which the Operator delegated certain development and production activities to four "agent" companies. In late 2014, the shareholders agreed to further integrate and consolidate management with the creation of the unified Operator North Caspian Operating Company N.V. (NCOC¹). The top executive officer of NCOC is the managing director.

To ensure the Company's systems and processes meet the highest international standards, NCOC holds and regularly updates its international certifications. As of 2021, NCOC has been certified to 3 International ISO Standards:

- ISO 9001 – Quality Management System (QMS)
- ISO 14001 – Environmental Management System (EMS)
- ISO 45001 – Occupational Health & Safety Management System (OH&S MS).

3.2. BUSINESS ETHICS

Honesty, integrity, and fairness in all aspects of NCOC business is a fundamental principle; we require the same of all those with whom we do business.

NCOC General Business Principles apply to all our business affairs and describe the behaviors expected of every staff member of NCOC, including direct-hire Kazakhstan citizens, secondees, and contract staff. In addition, all NCOC staff are required to adhere to the Code of Conduct, which instructs them on how to apply the General Business Principles in line with our core values. It provides

SHAREHOLDERS



КазМұнайГаз
NATIONAL COMPANY OF PETROLEUM COMPANIES



eni



ExxonMobil



TotalEnergies



CNPC

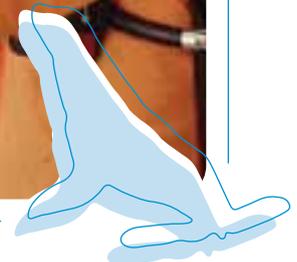
INPEX

¹ Here and elsewhere in this document, the abbreviation NCOC refers only to North Caspian Operating Company N.V. The term Operator may refer to NCOC, or to any of the previous Operators under the NCSPSA as appropriate in context.

practical guidance on how to comply with laws and regulations, as well as how to relate to customers, communities, and colleagues. Staff communications and monitoring programs are designed and implemented to assure compliance.

No one at NCOC may instruct staff to take actions that violate the law or contradict our General Business Principles or the Code of Conduct. If an employee observes such an action or instruction, they are required to refer

the situation in confidence to a supervisor, to a NCOC ethics and compliance officer, or to the Compliance Hotline for further investigation and possible disciplinary action. The Compliance Hotline is a third party operated website (<http://www.ncoc.deloitte-hotline.com>) with an e-mail address (ncoc.hotline@deloitte.kz) and phone number (8 800 080 15 65) that allows anyone to report suspected violations of the law, the General Business Principles, and the Code of Conduct, including on an anonymous basis.



NCOC staff, vendors, suppliers, contractors, and anyone else can raise concerns or report possible non-compliance to the NCOC ethics and compliance officer or to the Hotline, even anonymously. Details are kept confidential. The ethics and compliance officer investigates allegations and, if confirmed, NCOC management takes actions appropriate to the circumstances. NCOC does not tolerate retaliation of any kind against those who report an issue concerning our General Business Principles, the Code of Conduct, the Anti-Bribery & Corruption Manual, or compliance with applicable law.

In order to build an ethical workplace culture, every year NCOC conducts ethics and compliance training for its staff and major contractors.



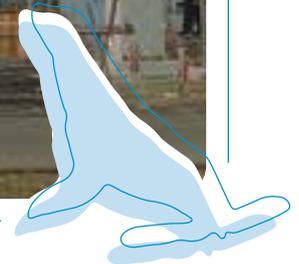
[Corruption Prevention](#)
WWW.NCOC.KZ



[General Business Principles](#)
WWW.NCOC.KZ



[Code of Business Ethics](#)
WWW.NCOC.KZ



3.3. EXTERNAL ADVISORY BOARD

We continue to successfully develop the NCOC Sustainability Report in close cooperation with the External Advisory Board (EAB), led by Shynar Izteleouva, Director of the Zhayik Aarhus Center in Atyrau. For 5 years the Board – consisting of the leading environmental and social NGO representatives, academics, and the Kazakhstan Business Council for Sustainable Development – has been counseling us on the best reflection of NCOC's performance and the most transparent way of disclosing it to the public.

The joint discussions enabled us to highlight the positive outcomes of NCOC's activities in environmental and social areas, as well as to identify issues that require more attention and improvement.



EXTERNAL ADVISORY BOARD



**Shynar
IZTELEUOVA**
Atyrau

Director of Zhaiyk Caspian Aarhus Centre



**Zhaksygul
MAKHANBETOVA**
Aktau

Head of the Focal Area Group of the Regional Projects Monitoring Centre of SEZ Aktau Seaport JSC



Kirill OSIN
Aktau

Director of *Eco Mangystau* NGO

Civil leader in environment protection, eco-tourism development, and volunteer movements



**Galina
ARTYUKHINA**
Almaty

Executive Director of Kazakhstan Business Council for Sustainable Development (BCSD Kazakhstan)

Editor-in-chief of *Ecology and Industry of Kazakhstan*

National expert on environment protection, green economy, and sustainable development in the Republic of Kazakhstan



Galina CHERNOVA
Atyrau

Chairman of NGO *Globus Centre* for Environmental Law Initiative

Initiator of public monitoring and public examination of social and investment projects carried out by investors in Atyrau Oblast



**Gulzhamal
TULEMISSOVA**
Atyrau

Senior lecturer of the Department "Chemistry and Ecology" at Atyrau State University, named after Kh. Dosmukhamedov

Head of the Educational and Research Laboratory "Ecology"



**Kuanysh
KUSMOLDANOV**
Atyrau

Head of the Grant Projects Centre at Atyrau University of Oil and Gas, named after S. Utebayev



**Zhansaya
ISMAGULOVA**
Aktau

Head of Marketing and Communications Management at the Caspian State University of Technologies and Engineering, named after Sh. Yessenov

04 NCOC PERFORMANCE DATA

	2018	2019	2020	2021
PRODUCTS				
Oil Production (wellhead, million tonnes)	13.22	14.13	15.14	16.24
Gas Production (wellhead, billion standard cubic meters)	7.70	8.45	9.15	9.88
• Of which reinjected (billion standard cubic meters)	2.24	3.15	3.81	4.31
Produced Sulfur Export (thousand tonnes)	1,056	1,207	1,228	1,234
• Sulfur in block storage, year-end (thousand tonnes)	1,409	1,527	1,594	1,696
HEALTH AND SAFETY				
Occupational injury and illness				
• Total Recordable Injury Rate (TRIR), per million man-hours	0.44	0.88	0.23	0.15
• <i>NCOC Employees</i>	0.66	0.47	0.15	0.16
• <i>Contractors</i>	0.36	1.01	0.27	0.15
• Lost Time Injury Frequency (LTIF), per million man-hours	0.09	0.11	0.06	0.15
• <i>NCOC Employees</i>	0.17	0	0	0.16
• <i>Contractors</i>	0.06	0.14	0.09	0.15
• Fatalities	0	0	0	0
• Fatal Accident Rate, per million man-hours	0	0	0	0
• Fatal Incident Rate, per million man-hours	0	0	0	0
Number of Process Safety Tier 1 Events (per API RP 754²)	0	0	0	0
Number of Process safety Tier 2 Events (per API RP 754²)	2	0	0	0

² API RP 754 is American Petroleum Institute Recommended Practice 754, which classifies process safety indicators for the petrochemical and refining industry into four tiers. Tiers 1 and 2 are considered suitable for public reporting. See <http://www.api.org>.

	2018	2019	2020	2021
ENVIRONMENT				
Greenhouse Gas Emissions				
• Direct (Scope 1), thousand CO ₂ -equivalent tonnes ³	3,333	3,068	3,035	3,190
• Carbon dioxide (CO ₂), thousand tonnes	3,158	2,885	2,842	2,986
• Methane (CH ₄), thousand CO ₂ -equivalent tonnes	167	175	184	196
• Nitrous oxide (N ₂ O), thousand CO ₂ -equivalent tonnes	8	7,9	8,8	8,5
• Indirect (Scope 2, imported energy), thousand CO ₂ -equivalent tonnes ⁴	10	8	7,5	7,8
• GHG intensity, CO ₂ -equivalent tonnes per 1000 equivalent tonnes of oil produced ⁵	180	159	149	148
Energy Use				
• Total, million gigajoules (GJ) ⁶	42.25	37.63	43.14	43.45
• Energy intensity, GJ per equivalent tonne of oil produced	2.28	1.94	2.11	2.00
• Total energy exported (imported) by NCOC, million GJ	(0.11)	(0.11)	(0.42)	(0.40)
Hydrocarbon Flaring , standard ⁷ million cubic meters	63	57.7	47.2	34

³ The Global Warming Potential multipliers used to calculate CO₂ equivalence are 21 for CH₄ and 310 for N₂O, using 100-year time horizons based on the RoK Ministry of Environmental Protection Order № 280-e(p) of 5 November, 2010, On Approval of Certain Methodologies on Calculation of Greenhouse Gas Emissions. Emissions are calculated at the facility level based on approved methodologies and requirements established by the RoK Environmental Code and applicable regulation, as well as consistent with the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.

⁴ Calculated from indirect electricity consumption using a demand-side emission factor of 0.919 tCO₂/MWh for the Kazakhstan grid (combined margin) in 2020, per "Methodology for Calculation of Emissions Coefficient for Electric Power Systems," Kazakh Scientific Research Institute of Ecology and Climate of the RoK Ministry of Environment (2012), based on the EBRD methodology in the Appendix (Lahmeyer International, 2012).

⁵ The normalization factor for intensity figures in 2021 is 21.714 million tons oil equivalent (TOE). This is calculated from the total wellhead production of crude oil, dry gas, and natural gas liquids (including flared gas and gas used for fuel but excluding gas reinjected into the reservoir) in TOE, according to "Recommended normalization factors for environmental performance data" in the 3rd edition (2015) of IPIECA "Oil and Gas Industry Guidance on Voluntary Sustainability Reporting," p.37. Physical tons of crude oil are converted to TOE by multiplying 1.018 TOE/ton oil. Physical volumes of associated gas are converted to TOE by multiplying 0.932 TOE/000 Sm³. The conversion factors are specified in Appendix 2 of the Order of the Chairman of Statistics Committee of the RoK Ministry of National Economy № 160 of 11 August 2016 "Methodology to form fuel-energy balance and calculation of certain statistics indicators typical for the energy industry."

⁶ 1 megawatt-hour (MWh) = 3.6 gigajoules (GJ).

⁷ Standard cubic meter at 20°C and pressure 1 atm. The format for reporting flared amounts is established in the RoK Government Decree № 1104 of 16 October 2014.

	2018	2019	2020	2021
Fresh water				
• Total volume withdrawn, thousand cubic meters	964	1,064	812	871
• Total generated from seawater, thousand cubic meters	36	39	17.5	30.8
• Total volume consumed, thousand cubic meters	1,000	940	762	871
• Freshwater intensity, tonnes of water consumed per 1000 equivalent tonnes of oil produced ⁴	52	55	40	40
Controlled Discharge to Surface Water				
• Hydrocarbons, metric tonnes	0	0	0	0
Air emissions				
• Volatile organic compounds (VOCs) emitted, metric tonnes	943	1,113	947	828
• Sulfur dioxide (SO ₂) emitted, metric tonnes	27,949	22,760	14,899	11,161
• Nitrogen oxides (NO _x) emitted, metric tonnes	2,550	3,711	3,818	4,012
Spills to the environment				
• Number of spills >1 bbl reaching environment	0	0	0	0
• Volume of hydrocarbons (oil) spilled, metric tonnes	0	0	0	0
Waste				
• Total quantity of waste disposed, metric tonnes	10,976	13,726	4,839	12,142
• <i>Of which classified as hazardous by local regulation, metric tonnes</i>	5,731	9,092	3,149	9,581
SOCIO-ECONOMIC				
Nationalization of NCOC Workforce⁸				
• Percentage of national employees in management	80	82	85	87
• Percentage of national employees in technical and engineering positions	95	95	95	97
• Percentage of national employees in worker and support positions	100	100	100	100
Composition of NCOC Workforce, percentage of women	32	29.18	32	30
Cumulative number of Kazakhstan citizens receiving NCOC-sponsored training, thousands	16	18	19.3	22.2
Cumulative value of intensive job-related training for NCOC employees who are Kazakhstan citizens, million U.S. dollars	263	289	291	294
Cumulative payments to local suppliers for goods, works, and services⁹, billion U.S. dollars	14.1	14.8	15.3	15.9
Cumulative direct contribution to social infrastructure and community donations in Atyrau and Mangystau Oblasts, million U.S. dollars	640	718.1	818.5	887

⁸ Employees of NCOC N.V. only. "Management" corresponds to NCSPSA Categories 1 and 2, "technical and engineering" to NCSPSA Categories 3 and 4, and "worker and support" to NCSPSA Category 5.

⁹ Local goods, works, and services are defined per the unified methodology on local content calculations, defined in the 2010 RoK Law *On Subsurface and Subsurface Use*.



BREEDING

Most of the Caspian seal females whelp in late January to early February. In recent years, breeding grounds of seals have been formed mainly in the Kazakhstan part of the sea ice area.

Whitecoat pups (as new-born seals are called), have high, soft fur of light greenish-yellow colour. Infant seal coat starts to change when they reach two weeks of age. For three weeks, the mother feeds the pup with nutritious fat milk. In late February to early March, milk feeding stops, and the pups begin an independent life.



Newborn pups:



LENGTH

65-79 cm



WEIGHT

5 kg



Three-week-old seal
(at the end of milk feeding):



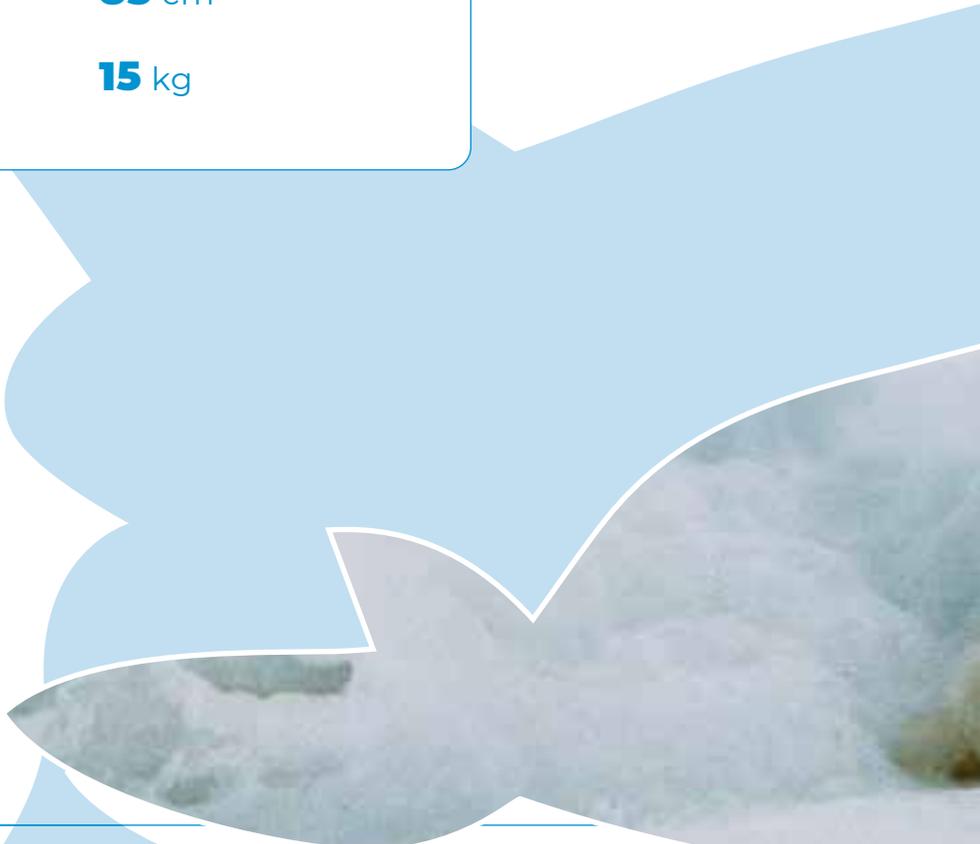
LENGTH

85 cm



WEIGHT

15 kg







HEALTH AND SAFETY



5.1. WORK SAFETY

The health and safety of our employees and contractors is paramount, which means a commitment to zero injuries. The NCOC value of caring drives our overriding commitment to health and safety. Robust systems and processes provide the foundation of our management approach to health and safety. It is NCOC policy to achieve no harm and no leaks across our work every day. We proudly call this our Goal Zero commitment.

NCOC eliminates or mitigates risks by identifying hazards, taking actions to reduce these hazards, and sharing what we know. Everyone at NCOC is trained and empowered to identify work-related hazards and we further expect all workers to stop any work which may appear unsafe. Hazards are reported through our incident reporting system to ensure the hazard is communicated to others and that controls and learning may be put into place across our operations.

In 2021 we worked to develop safety improvement projects focusing on hazard identification and risk management, contractor safety, safety leadership, and incident investigation. We are particularly proud of our efforts to improve safety by working closely with our contractors. Furthermore, in this year NCOC leaders collaborated with the executives of NCOC major

contractor companies to discuss strategies and practical steps to improve safety culture and achieve our Goal Zero ambition.

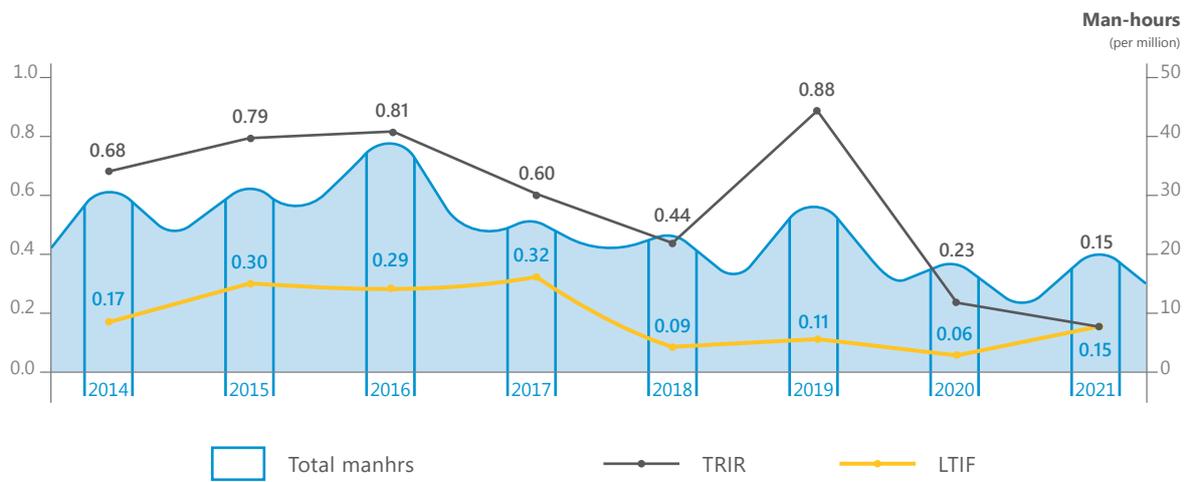
We aim for a safety culture that goes beyond compliance and reaches a place where people feel listened to, cared for, and comfortable raising concerns. We have three workforce safety committees which give our employees and contractors an opportunity to learn how they can manage safety hazards in their work and share ideas with one another. Conversations and campaigns led across NCOC in 2021 focused on the themes of working together and collaboration, road safety, and avoiding becoming complacent about everyday risks such as slips, trips, and falls.

In 2021 we continued the successful safety performance of 2020 and completed the year with good results. The number of injuries per million working hours – the total recordable injury rate (TRIR) – was 0.15. The number of injuries that led to time off work (LTIF) was slightly higher than in 2020 at 0.15.





TRIR & LTIF GRAPH



	2015	2016	2017	2018	2019	2020	2021
TOTAL RECORDABLE INJURIES	24	31	15	10	24	4	3
LOST TIME INJURIES	9	11	8	2	3	1	3

Our performance is also seen in the continued elimination of High Potential Incidents (HiPo’s). We completed 2021 with a second year of zero high potential incidents.

We are encouraged by our continued gains in workplace safety, particularly with regard to the total recordable incident rate (TRIR). While our goal is to eliminate all injuries, we will place increased attention on the elimination of serious injuries and life-altering events in addition to our continuing efforts to reduce incidents of lesser events.

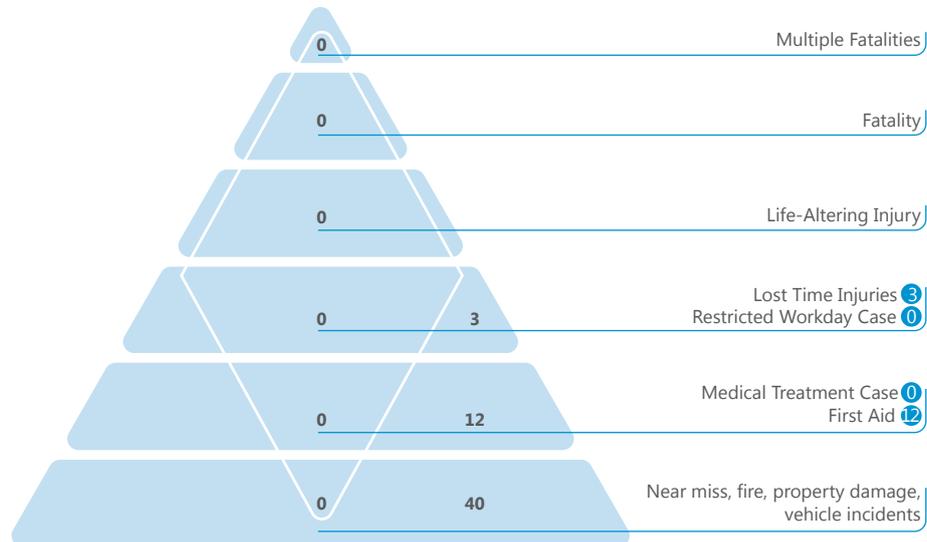
We will continue to develop strategies to pinpoint and address those situations or work activities that have a high potential for serious injury. These strategies include our traditional attention in maintaining safety barriers and conducting training. In addition, we will also focus more heavily on how we can help our workers when in high-risk situations, specifically ensuring management controls are in place, effective, and complied with.

We acknowledge that human error has been shown as a factor in nearly every serious incident. Therefore, as we move into 2022 our focus on improving human performance and making our barriers more effective is critical to achieving a Goal Zero workplace where we have “No Harm, No Leaks.” Our efforts will therefore



General Health, Safety, Security, and Environment Policy
WWW.NCOC.KZ

HiPo DIAMOND TRIANGLE 2021



Numbers within the gold diamond represent incidents with an actual or potential severity level fatality or life-altering injury – HiPo

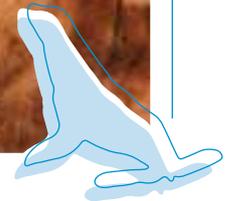
continue in improving the skills of those personnel who are responsible for ensuring barriers are in place and properly managed. One example in this regard is our structured Site Leadership Engagement program that ensures our leadership team interfaces with workers at all locations.

5.2. TRANSPORT SAFETY

Transport safety remains a NCOC priority in ensuring safe logistics activities, such as transporting people and delivering materials and equipment. The adoption of international standards supported by industry standards and best practices to manage safety risks continues to be our main focus area to ensure that the likelihood of such incidents is minimized.

The Company continued its strong logistics safety performance. In 2021, with 13 million kilometers driven, 450 helicopter flying hours, and countless marine activities, we again registered zero serious, major, or catastrophic road traffic, aviation, or marine incidents. It is





important to note that we had a second year of excellent winter safety performance.

With regard to road transport, all vehicles of the Company have in-vehicle monitoring systems (IVMS) that help monitor driver behavior on the road, such as speeding, harsh braking, and seatbelt compliance. Programs are in place such that all light vehicle drivers take mandatory defensive driver training every 2 years, bus drivers once a year. In 2021, we introduced in-cab cameras to all passenger transportation vehicles. This additional control allows us to learn from incidents so that we can coach drivers into becoming safer drivers.

Due to the ever-present danger of animals on roads in Kazakhstan, we continue to support local communities by distributing high visibility paints and reflective bands for local farmers. These paints and bands will reduce the likelihood of traffic accidents involving animals in the darkness and low visibility conditions on the roads.

In 2021, NCOC installed road ice detection stations at the most dangerous areas of the Atyrau-Karabatan-Dossor highway. The goal of

this unique project was to implement a system that delivers near-real-time monitoring of ice conditions on the road. The Road Ice Monitoring System is fully operational and supports the Road Safety Monitoring Team by providing updates on the ice conditions of the road every 10 minutes. The system includes standard weather and road monitoring sensors, such as air temperature, humidity, wind, visibility, road icing, infra-red sensor for road surface temperature, and camera.



[Road Ice Monitoring System Data](#)

WWW.CASPIANWEBMET.COM

5.3. PROCESS SAFETY AND ASSET INTEGRITY

Process safety is achieved by using specific safeguards, or barriers, to keep our facilities safe and our products safely contained. Our goal is to eliminate potential impacts and to protect people, the environment, and our assets. Any unplanned release of hazardous material is considered a process safety event. We have consistent practices and processes for the prevention, control, and mitigation of process safety events.

Effective barriers can involve equipment and/or people and may be active, passive, or procedural. We utilize redundant barriers when necessary to reduce risk and achieve multiple safeguards depending on the severity of the potential hazard.

We constantly work to improve our process safety culture and performance across NCOC. Operations and process safety experts meet each month to share knowledge and discuss best practices for continuous improvement.



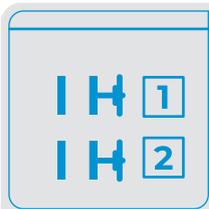
To strengthen our process safety performance:

- Engineers design our processes with inherent safety when possible and industry leading safety systems with new knowledge and technologies.
- We perform routine maintenance to ensure healthy barriers, mitigate process hazards, and ensure asset integrity.
- Process safety experts analyze events to understand the failure mechanism(s) and share knowledge across the company.

Enhancing process safety awareness and competency across our Company is also one of our key objectives. Process Safety Fundamentals were refreshed as simple, actionable, good operating practices developed to improve process safety awareness. These Fundamentals provide clear guidelines for good operating practice to prevent unplanned releases of hazardous materials. We have also implemented a comprehensive competence assurance process to ensure our workers have the necessary skills to execute safety critical tasks assigned to their positions.



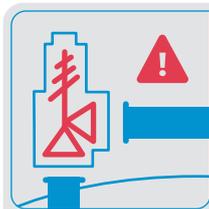
PROCESS SAFETY FUNDAMENTALS



Always use two barriers for hydrocarbons and chemical drains & vents



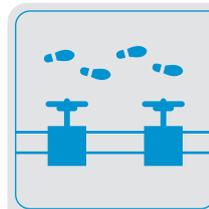
Do not leave an open drain or critical transfer unattended



Take interim mitigating measures in case of failure of Safety Critical Equipment



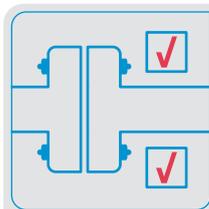
For all defined high risk activities, follow the procedures and sign off after each step



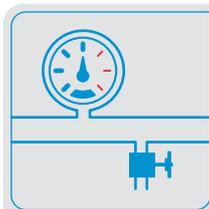
Walk the Line – Verify and validate any line up change



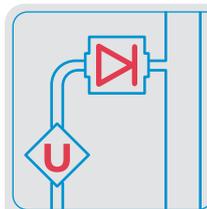
Do not make a change without a proper MOC



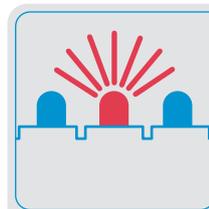
Verify for complete tightness after maintenance work



Always check that equipment is pressure free and drained, and provides safe isolation before start maintenance work



Perform MOC and install backflow protection when connecting utilities to process



Respond to critical alarms

Process Safety Fundamentals

NCOC continues to strengthen barriers that involve critical safety tasks carried out by frontline staff via embedding Process Safety Fundamentals across the Company.

These Fundamentals provide clear guidelines for good operating practice to prevent unplanned releases of hazardous materials. The Company encourages its employees and contractors to use them in daily conversations to identify safety dilemmas so they can be resolved.

In 2021, Hardware Barrier Assessments were carried out for Onshore and Offshore Facilities as part of our annual Asset Integrity Assurance Program, which aimed to demonstrate the technical integrity status of sampled Safety Critical Elements. In addition, we established Process Safety Basic Requirements which outline key process safety objectives based on high probability process safety incidents from industry

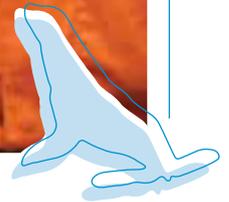
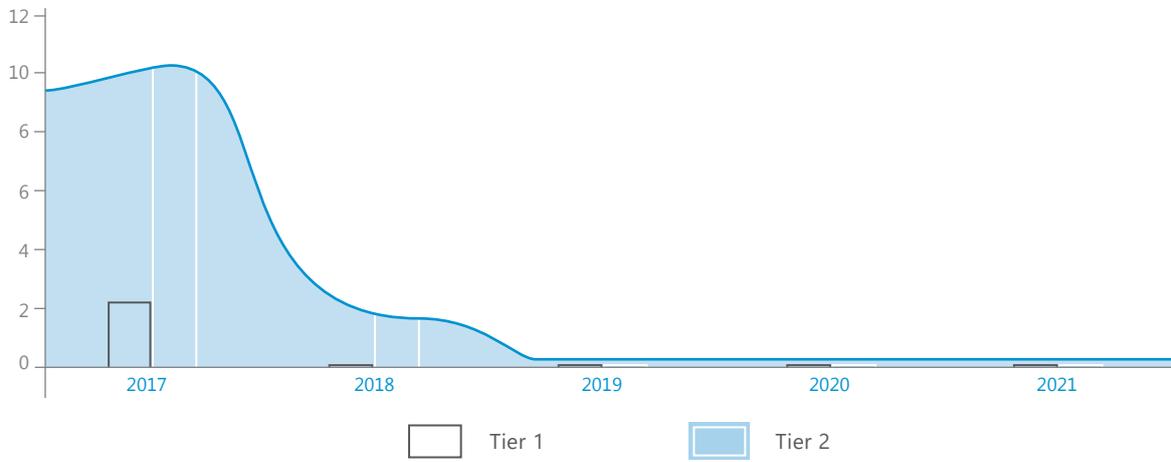
experience and will ensure barriers are in place to prevent these incidents. Additionally, our shareholders conducted a Cold Eyes Review to review the health and effectiveness of our process safety systems and controls. NCOC operating standards and procedures were examined and site visits were conducted to evaluate process safety performance and provide feedback. We currently document the HSE Safety Case and utilize bow-tie analysis, whereby process safety hazards are identified and managed through prevention and response barriers. We regularly inspect, test, and maintain these barriers to ensure they meet industry standards.

Process Safety Performance

In line with industry standards, we measure and report process safety incidents according to significance defined by API 754. We continued our 2019 and 2020 success and maintained zero Tier 1 and 2 operational process safety events in 2021.



TIER 1 AND TIER 2 INCIDENTS IN 2017-2021



ENVIRONMENT PROTECTION



6.1. BIODIVERSITY OF THE CASPIAN ECOSYSTEM

The Caspian Sea is a unique ecosystem with rare and endemic species found nowhere else in the world. As of today, it is experiencing global changes due to natural and anthropogenic factors. Protection and preservation of this unique area is a top priority in NCOC activities.

The various studies carried out since 1993 have allowed NCOC to collect a vast environmental data required to accomplish important tasks – the creation of specially protected natural sites and the conservation of biodiversity in these areas under the changing climate conditions and growing economic activities in the Caspian Sea.

For NCOC, the development of the offshore field is not only a matter of hydrocarbon production but also an opportunity to contribute to the North Caspian Sea environment protection activities through a comprehensive NCOC program aimed at protecting marine ecosystem, which includes:

- Study (monitoring) of flora and fauna.
- Study of offshore and onshore biodiversity for the purpose of its conservation.
- Use of best practices.
- Support of environmental programs and

CASPIAN BIODIVERSITY CONSERVATION PROTOCOL RATIFICATION

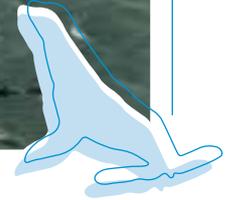


In 2021, Kazakhstan enacted the law ratifying the Caspian Biodiversity Conservation Protocol to the Framework Convention for Protection of the Marine Environment of the Caspian Sea.

According to this law, each Caspian State may assign, with the consent of other countries, protected offshore and coastal areas in order to:

- Protect habitats vital for the survival, breeding, and recovery of endangered or endemic flora and fauna species.
- Protect sites of primary importance due to their scientific, aesthetic, cultural, or educational significance.

Since the date of signing the law ratifying the Caspian Biodiversity Conservation Protocol, NCOC has been taking an active part in the initiatives of the Ministry of Ecology, Geology, and Natural Resources of the Republic of Kazakhstan to develop and establish specially protected natural sites (SPNS) and the State Nature Reserve "Seal".



raising public awareness about biodiversity in the region.

Biodiversity study and conservation activities include:

- Annual observations of onshore and offshore environmental parameters during industrial monitoring.
- Caspian seal population surveys.
- Bird observations.
- Creation of a biodiversity geoinformation system.
- Tree-planting activities.
- Development of a sensitivity map for the North-East Caspian Sea.
- Studies on the colonization of artificial islands by sea bottom organisms.
- Release of farmed sturgeon juveniles into the Zhayik-Caspian Basin.

NCOC actively employs the best innovative technologies to study and conserve biodiversity.

Such technologies include unmanned aerial vehicles in wildlife survey, multispectral surveys of the Caspian seal population, modern equipment at Atyrau sturgeon hatcheries, and others.

As part of a public awareness campaign for biodiversity conservation, the Company's ecologists provide data on biodiversity, publish scientific information, make video films, support environmental events, and consult schoolchildren and students.



**Biodiversity
of the North East Caspian region**
WWW.NCOC.KZ



**Environmental Monitoring
of the North-East Caspian Sea
during Development of NCOC N.V.
Oil Fields in the Period 2006-2016**
WWW.NCOC.KZ



**NCOC Environmental Surveys
and Initiatives**
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CASE STUDY



Tree planting

As part of the Bolashak OPF Sanitary Protection Zone Size Justification Project, NCOC is engaged in tree planting in Eskene West Sanitary Protection Zone (SPZ) as a buffer zone for absorbing atmospheric emissions.

As of today, the greened area accounts for 14.7 hectares and more than 7,000 trees in the green shelter belt area. During 2021 and in the coming years, NCOC will maintain the care and watering of the planted trees both in the SPZ and at Sokolok pilot site. However, during multiyear tree-planting activities at the SPZ sites, the Company has faced and continues to face problems with the development of the shelterbelt, particularly with irrigation due to water shortage in this region, soil salinity, and dry climate. Given such difficulties with the shelterbelt's development, the Company has considered the possibility of revising its commitments regarding SPZ greening and considering other sites for greening in and around Atyrau city.

Given the above, on 20 April 2021 NCOC and Atyrau Oblast Akimat signed a Memorandum of Understanding (MoU). Under the MoU terms, the commitment to SPZ project will be transferred to another site and formalized in the SPZ project for 2022, since the landscaping is part of the SPZ project.

According to the soil inspection report, the following areas have been defined for tree-planting in 2021-2025:

- 194 hectares near Sokolok canal
- 73 hectares in Bereke village





- 21 hectares in Yerinkala village (highway)
- 20 hectares in Makat District.

NCOC jointly with Kazakh Forestry and Agricultural Reclamation Research Institute, named after A.N. Bukeikhan (service contractor), NCOC carried out research works and commenced development of a tree-planting project for the above areas.

Tree planting activities in Bereke village area started in September 2021. As of the year end, a 62 ha area was fenced and cleaned of solid domestic wastes, a soil prepared for planting, drip irrigation pumps, materials and planting stock had been purchased, and more than a 10 ha area had been planted with trees. Tree planting will continue in spring 2022.

When planting trees and shrubs in the Atyrau region special agrotechnical conditions should be considered because of the prevailing sulfide and chloride salts in the soil. The brackish soil causes the death of many types of trees. Atyrau oblast is characterized by the lowest precipitation rate – below 200 ml per year (3 to 4 rains per season). NCOC has engaged a service contractor with a long track record in the selection and growing of the planting stock in such environment. The stock range includes heat and salt resistant regional species of Chinese and Ulmus (Karagach) elms, as well as the common ash, False Acacia, Siberian pea shrub, Siberian pea tree (Caragana), Oleaster, prim, and tamarisk.

Tree watering employs a drip irrigation method which allows the water to reach each tree, thus saving moisture and preventing secondary soil clogging.

The tree planting program provides for mandatory use of organic and mineral fertilizers.

Caspian seal

The Caspian seal, *Pusa caspica* (Gmelin, 1788), is the only marine mammal in the entire Caspian Sea. The mammal endemic to this region plays a unique role, being the end master link in the food chain of the Caspian aquatic ecosystem and, therefore, considered an indicator of the ecosystem health.

In XX century, a stable decrease in Caspian seal numbers was observed due to both natural and man-caused factors. Such causes include a reduction in the food stock, commercial seal hunting in the middle of the last century, various diseases, difficulties during breeding periods, unfavorable weather conditions, fishing and entrapping in fish nets, etc.

Since 2005, with commencement of intensive hydrocarbon exploration and developments in the Kazakhstan sector of the Caspian Sea, NCOC

has arranged multiyear seals studies including annual visual areal counts of the Caspian seal.

According to the scientists of the Caspian International Seal Survey (CISS) team, who carried out surveys with NCOC support in 2021, the Caspian seal population in 2005 was estimated as 104 thousand species, which was 91% lower than in 1900, when its number exceeded 1.2 million species.

A five-year Kazakhstan-Russian Caspian seal research program in the North Caspian Sea was initiated in 2019 with participation of the RoK and international scientific organizations. The program was developed based on the Convention on the Legal Status of the Caspian Sea, signed on August 12, 2018, in Aktau. Implementation of the convention aimed to promote and enhance the cooperation between the States in the Caspian region, facilitate the peaceful use of the Caspian

Sea and the sustainable use of its resources, and promote the study, protection, and conservation of its natural environment.

During the recent 2012, 2020, and 2021 surveys, the seal population size and annual pup number were analyzed. The studies are to be continued in 2022-2023.

The average annual pup rate for the last decade is 59,070 species; the average total population size is 286,200 species. The growth is evident for both the pup rate (from 56,700 species in 2012 to 62,260 species in 2021), and the total population number (from 274,700 species in 2012 to 302,000 species in 2021). The annual average growth of the Caspian seal's population in the last decade has been about 1%.

Thus, the total population size of the Caspian seals remains quite stable in the last 10 years, with a slight but stable tendency to grow despite the significant meteorological variations between the winters of these years. This signifies a high adaptivity of the Caspian seal, enabling its successful reproduction under a wide range of environmental changes.

Observations from icebreakers

During the winter navigation in 2021, icebreakers Tulpar and Mangystau-3 made eight observation trips during the pupping season with observers on board.

The main objective of the observers was to count the seals along the icebreakers' navigation route



and to confirm the compliance of the operational personnel's actions with the requirements of the Rules for Prevention of Sea Navigation Impact on Seals. The observers recorded 2,842 species of Caspian seals.

It should be noted that, as a result of NCOC operations including icebreaker operations, there have been no incidents of a vessel collision with a seal since the Rules have been implemented and no incidents of seal mass mortality since 2015.

Aerial helicopter surveys along the proposed navigation routes

The aerial surveys were performed along the routes of the icebreakers, providing support to Kashagan field development to establish the level of icebreakers' impact on the Caspian seal population.

ASSESSMENT OF BIRTH RATE AND TOTAL POPULATION OF CASPIAN SEALS IN 2012–2021

	Estimate pup rate, thousand species	Estimate total population, thousand species
2012	56.70	274.7
2020	58.24	282.0
2021	62.26	302.0
AVERAGE VALUE	59.07	286.2

The helicopter flight route was westbound from Kashagan field along the proposed navigation channel, then to the south till the exit from the virtual channel. Afterwards, it was from north-west to south-east along the icebreaker route to the open water edge. Rare groups and single animals were encountered northwards to Kashagan field. The overflight established 23 sites with highest density of the Caspian seal. Most seals were located on ice fields, with rare animals staying at the ice edge.

Ichthyofauna

In 2021, the Fishery Committee of the Ministry of Ecology, Geology, and Natural Resources and NCOC decided to take compensatory measures construction of the infrastructure for reproduction facilities and reconstruction of existing reproduction facilities for fish resources and other aquatic animals at Zhayik-Atyrau sturgeon hatchery.

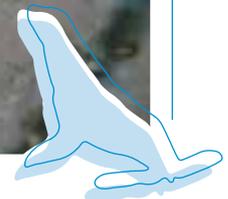
The list of compensatory measures also includes the release of artificially reared sturgeon juveniles into fishery water bodies. To maintain the sturgeon population in the Caspian Sea, NCOC has funded the activities of

the Zhayik-Caspian Sturgeon Hatchery (UCSH) on rearing and releasing around 800,000 sturgeon juveniles in 2017-2021 (27,000 juveniles in 2021). NCOC will continue stocking the Zhayik River with viable sturgeon juveniles in subsequent years. Activities are planned for 2022–2026 to fund the rearing and release of 2 million sturgeon juveniles into the natural water body.

Bird Surveys

The North Pre-Caspian region, including the deltas of the inflowing Zhayik and Volga Rivers, is classified as wetlands of international significance due to the global role it plays for waterfowl and semi-aquatic birds. The RoK scientific organizations, with support of NCOC, continue seasonal (wintering, spring-autumn migrations, and summer nesting) bird surveys in the vicinity of Kashagan facilities and along the coastal line.

Overall, the condition of the bird fauna in the North Caspian Sea in 2021 is good. The Caspian Sea level decrease has had no impact on the number of bird species or their diversity but rather influences their distribution within the habitat area.





6.2. FRESHWATER

The UN ranked Kazakhstan as a region with a high (25-50%) water stress. NCOC is committed to maximizing the conservation of freshwater.

The onshore facilities in the region have extremely limited reserves of fresh surface water. The ground water is characterized by high mineralization and cannot be used as a water supply source. Water economic activity fully depends on the imported water resources. Efficient water management can influence the availability of water for the local environment, socio-economic development, and future demands. That is why we manage water use in an intelligent and responsible way.

The total volume of freshwater withdrawn/ consumed during NCOC operations in 2021 was

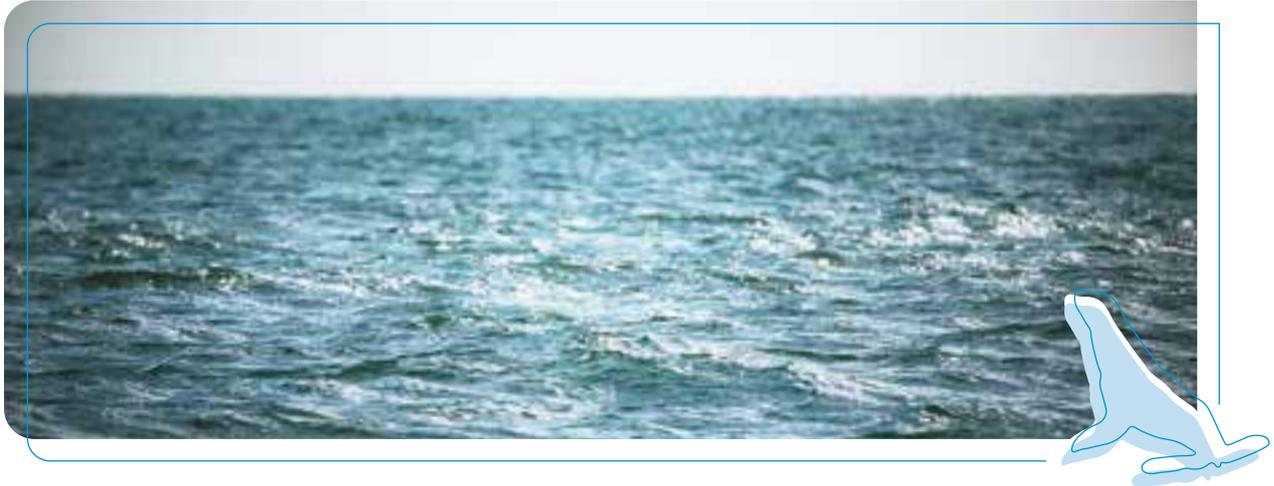


871 thousand m³. The KazTransOil's Astrakhan-Mangyshlak pipeline supplying the Volga River water along the North-East coast of the Caspian Sea remains the main source of freshwater supply for the operation needs.

	2019	2020	2021
FRESHWATER PARAMETER			
Astrakhan – Mangyshlak water pipeline supply, thous. m ³	902.27	712.14	841.03
Municipal freshwater supplies, thous. m ³	36.32	31.85	28.70
Purchased fresh water, thous. m ³	0.85	0.71	1.06
Total supply, thous. m ³	939.44	744.69	871
Fresh water reuse, thous. m ³	397.9	385.1	448.3
Fresh water reuse, % ¹⁰	42	52	51
Fresh water intensity, m ³ /kt of HC production ¹¹	48	36	39

¹⁰ % of total freshwater supply.

¹¹ Environmental data collection user guide (2020 data) – Definitions and exclusions (<https://data.ioiggp.org/Environment/UserGuide>).



There was a significant drop in freshwater consumption in 2020 due to the COVID-19 pandemic quarantine and restricted access to the sites in 2020. The 2021 performance is therefore compared to the pre-pandemic 2019 year. As compared to 2019, NCOC decreased the total amount of freshwater consumption by 7.3%, including a decrease of water intake:

- Freshwater withdrawn for Bolashak OPF needs from the Astrakhan-Mangyshlak pipeline was reduced by 7% due to water reuse from Tail Gas Treatment Unit.
- Freshwater from municipal freshwater supplies was reduced by 21% due to restricted access of personnel to the Company's supporting facilities in 2021.

As compared to 2020, there is an increasing trend in freshwater consumption. This was caused by the suspension of some operations at NCOC facilities due to the COVID pandemic quarantine and restricted access to the sites in 2020.

At the same time, the performance indicator of freshwater consumption is 39 m³ per 1,000 tons of HC production in 2021, which is not much higher the International Association of Oil & Gas Producers' performance indicators for EU region (37¹²).

The volume of freshwater consumed by NCOC onshore facilities is 870 thousand m³.

Offshore facilities also need freshwater. Apart from the purchased freshwater (1 thous. m³ in 2021), NCOC uses sea water to produce freshwater for offshore facilities' needs. After having been processed through desalination units, freshwater is used for domestic purposes and brine water is diverted back to the water source. Sea water intake and clean water (brine) discharge is regulated by a special water use permit obtained in accordance with the RoK legislation requirements.

The generated untreated domestic wastewater is sent to the wastewater treatment plant (Triqua). The treated wastewater is then transferred to a NCOC onshore facility in Mangystau region for further treatment and reuse for greenery irrigation and dust suppression.

The total volume of seawater withdrawn for desalination units in 2021 was 115 thousand m³. Return water from the desalination unit, in the volume of 84 thousand m³, was discharged into the sea in accordance with the special water use permit. About 31 thousand m³ were produced by offshore desalination units in 2021. The volume of freshwater obtained after the desalination unit replaces the volume of freshwater that would have been supplied from the onshore facilities.

As compared to 2019, NCOC decreased the total amount of sea water intake by 7%.

¹² Table A.34, <https://data.iogp.org/Environment/Water>.

	2019, thousand m ³	2020, thousand m ³	2021, thousand m ³
SEA WATER DESALINATION			
Sea water intake	124	66.7	115
Normative clean water discharge into the sea	88	49.2	84
Fresh water after desalination unit	39	17.5	31



The volume of freshwater consumed at onshore and offshore facilities per unit of production in 2021 was 40 tons of water per 1,000 equivalent tons of oil¹³.

In 2021, NCOC treated and reused about 448,300 m³ of wastewater at onshore and offshore facilities: 60,500 m³ of domestic wastewater for greening irrigation and dust suppression at onshore facilities in Mangystau and Atyrau Oblasts and for domestic use at the offshore facilities.

The highest effect can be achieved by industrial wastewater reuse. Thus, the volume of industrial wastewater reuse in 2021 was 387,800 m³ from Tail Gas Treatment Unit.

6.3. DISCHARGES TO WATER

NCOC pursues a policy of zero-discharge. The principles of this policy are no disposal and no discharges of waste and treated wastewater into a natural surface water, including the Caspian Sea.

¹³ The normalization factor for intensity figures in 2021 is 21.714 million tons oil equivalent (TOE). This is calculated from the total wellhead production of crude oil, dry gas, and natural gas liquids (including flared gas and gas used for fuel but excluding gas reinjected into the reservoir) in TOE, according to "Recommended normalization factors for environmental performance data" in the 3rd edition (2015) of IPIECA "Oil and Gas Industry Guidance on Voluntary Sustainability Reporting," p.37. Physical tons of crude oil are converted to TOE by multiplying 1.018 TOE/ton oil. Physical volumes of associated gas are converted to TOE by multiplying 0.932 TOE/000 Sm³. The conversion factors are specified in Appendix 2 of the Order of the Chairman of the Statistics Committee of the RoK Ministry of National Economy № 160 of 11 August 2016 "Methodology to form fuel-energy balance and calculation of certain statistics indicators typical for the energy industry."

NCOC uses lined evaporation ponds as the safest available method for managing treated industrial water. All industrial wastewater undergoes several stages of mechanical, chemical, and biological treatment. The best available technologies are applied to treat wastewater, including sour water stripping, oxidation, back flotation, sedimentation, separation, and filtration. Treated wastewater from industrial processes and treated domestic effluents are discharged via the strainer filters into evaporation ponds/

gathering ponds for further evaporation. The ponds are completely isolated from soil and subsurface waters.

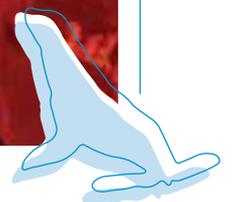
The total volume of hydrocarbons discharged with treated domestic effluents and industrial water into lined evaporation ponds was 0.3 tons in 2021. The significant decrease in hydrocarbon discharge into evaporation ponds versus the previous year (1.85 tons in 2020, 1.6 tons in 2019) was due to the upgrade of wastewater treatment facilities.



A NEW ONSHORE WATER TREATING FACILITIES PROJECT

In 2020, NCOC started the execution phase of the new onshore Water Treating Facilities Project. This major project aims to further reduce water intake from the Astrakhan-Mangyshlak pipeline by up to 70% and enhance the quality of water discharged into evaporation ponds via the extra treatment of the water from the Onshore Processing Facility. The environmental effect of the treated wastewater quality is a 57-97% reduction of pollutants such as methanol, oil, H₂S, iron, suspended solids, and sulfates (i.e. growth media for Sulfate Reducing Bacteria inhabiting the ponds).

The Water Treatment Facility is expected to be in operation in early 2023.



6.4. NON-GHG AIR EMISSIONS

The primary air emission sources at NCOC facilities include flaring units, gas turbine units, thermal oxidizers of TGTU, heating and hot-water boilers, and diesel generators.

As North Caspian Project was originally designed to avoid routine flaring and venting, no H₂S-containing gases are vented into the atmosphere. All produced gas is re-injected, processed to recover elemental sulfur for industrial use, used as fuel, or sold. Flaring is, however, needed in the course of operations as the safest and most effective way to deal with gas that, for temporary technical reasons, could not be processed (for example, commissioning activities, operations, intermittent discharges to flare due to operational upsets, etc.). The flaring

unit is a part of any oil and gas production facility and functions as a so-called “relief valve” of the plant to ensure the safe operation of the facility. A small ignition flame burns at all times to ensure readiness for flaring. The height of the flaring unit ensures maximum dispersion of combustion products in the air. Power is supplied to onshore and offshore facilities by gas turbine units running on associated gas produced from the Kashagan field. Elemental sulfur for industrial use is recovered from the produced gas with efficiency of 99.9% and any traces of residual hydrogen sulfide and other sulfur compounds are completely combusted into SO₂ in the thermal oxidizer of tail-gas treatment unit. The turbines are equipped with special burners designed to reduce nitrogen oxide emissions. Boilers produce steam, heat water, and provide heating for buildings. Boilers run on fuel gas,



however use of diesel fuel is also possible. Diesel generators are used only for stand-by power generation.

In 2021, as well as in 2020, there was no exceedance of emission limits set forth in the environmental permits at the air emission sources and the facility levels.

In 2021, the volume of non-GHG air emissions from all NCOC operations was within permitted volumes and totaled:

- 828 tonnes of volatile organic compounds (VOCs)
- 11,161 tonnes of oxides of sulfur (SO_x)
- 4,012 tonnes of oxides of nitrogen (NO_x excluding N₂O, which is reported under GHG air emissions).

SO_x emissions at onshore and offshore facilities, that make up 51.2% of overall non-GHG air emissions, consistently reduced from 2017 through 2021 owing to a reduction in gas flaring volumes due to improvements in the reliability and availability of technological equipment.

NCOC achieved industry top results on process equipment availability and reliability performance. Thus, actual volumes of safety flaring per unit of

hydrocarbon production at EP facilities are of the lowest in the industry and constitute 0.34% of total associated gas produced or 1.55 ton of gas flared per kiloton of hydrocarbon production in 2021, which is well below IOGP performance indicators for the EU (2.39 in 2020¹⁴).

The volume of SO₂ emissions per unit of hydrocarbon production in 2021 was 0.5 per thousand equivalent tons of oil, which is above the IOGP average performance indicators (0.21 in 2020)¹⁵. Higher SO₂ emissions are specific to high sour gas content oilfields and there are no performance indicators established for the similar fields to do a robust comparison.

NO_x emissions were higher than 2020 due to an increase in hydrocarbon production. VOC emissions were lower because of the downtime of living quarters and support barges, alongside reduced maintenance activities, due to limited operations at production facilities as a result of quarantine measures and a decrease in the volume of burnt gas on flares.

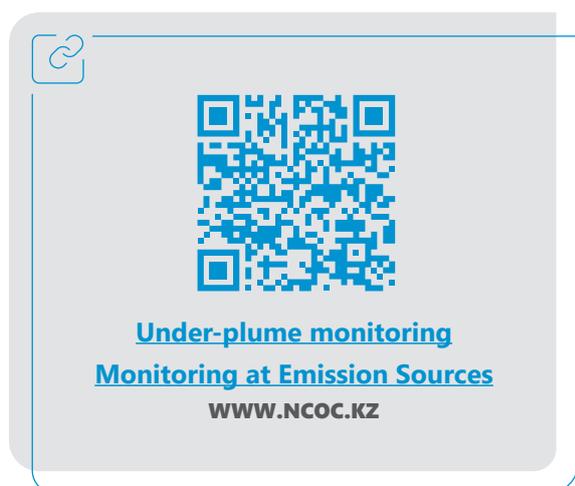
The volume of NO_x and non-methane VOC emissions per unit of hydrocarbon production in 2021 was 0.18 and 0.04 respectively per thousand equivalent tons of oil, which is well below the IOGP (International Association of Oil and Gas Producers) performance indicators for EU (0.27 and 0.19 respectively in 2020)¹⁵.

Air monitoring is an important part of NCOC general program for industrial environmental monitoring. It includes the following several components:

- Under-plume monitoring
- Monitoring at emission sources
- Air quality monitoring stations (AQMS).

Air quality monitoring stations

Supported financially and technically by NCOC, 20 automatic stations for continuous monitoring of the air quality are installed in Atyrau city and



¹⁴ Table A.12: Flaring per unit of hydrocarbon production – by region <https://data.iogp.org/Environment/Flaring>

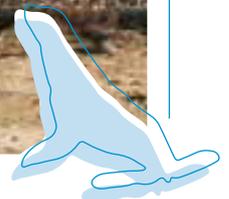
¹⁵ Table A.4: Emissions per unit of production <https://data.iogp.org/Environment/Emissions>

Atyrau Oblast. Four stations are located along the perimeter of the 7-km sanitary protection zone of Bolashak OPF, seven more stations are installed in the nearby and remote from the OPF settlements including Dossor and Makat, and nine stations are located in Atyrau city.

The AQMS operate on a 24/7 basis and continuously measure the concentrations of five components (hydrogen sulfide, sulfur dioxide, nitrogen dioxide, nitrogen oxide, and carbonic oxide), which are the main air pollutants, as

well as meteorological parameters determining the conditions of contaminant dispersion in the air (wind speed and direction, air temperature, barometric pressure, and relative humidity).

The remote data transfer project has been implemented for the purpose of centralized data collection from the stations. It allows the transfer of measurement data on a 24/7 basis from every AQMS to the central computer in the NCOC office, where such data is analyzed and stored. Simultaneously, specialists of the





Air quality monitoring
WWW.HYDROMET.KZ



AirKz App
APP STORE



AirKz App
GOOGLE PLAY

Atyrau Branch “KazHydroMet” and the Atyrau Oblast Department for Natural Resources and Nature Use Regulation are provided with remote access to the data received from the Company’s stations for online monitoring of the air quality. Both raw and ratified data are available to state authorities and the national hydrometeorological service.

Since the end of 2020, air quality data provided from eight stations of the Company installed in the main micro-districts of Atyrau (Zhilgorodok, Privokzalnyi, Avangard, Vostok, etc.) have become available on the Kazhydromet interactive map and in the AirKz mobile application, available for download from App Store or Play Market. In addition, Atyrau residents can observe the data on LED displays installed throughout the city.

Since 2016, the Company has been carrying out the modernization and upgrade of the stations, including enhancement of the data transfer system to reduce the data deference time, resulting in the interval reduction to 1 hour. The gas analyzers installed in the OPF area have been replaced with new series models. The phased upgrade of the measuring tools at all stations will continue in 2022.

Hydrogen Sulfide

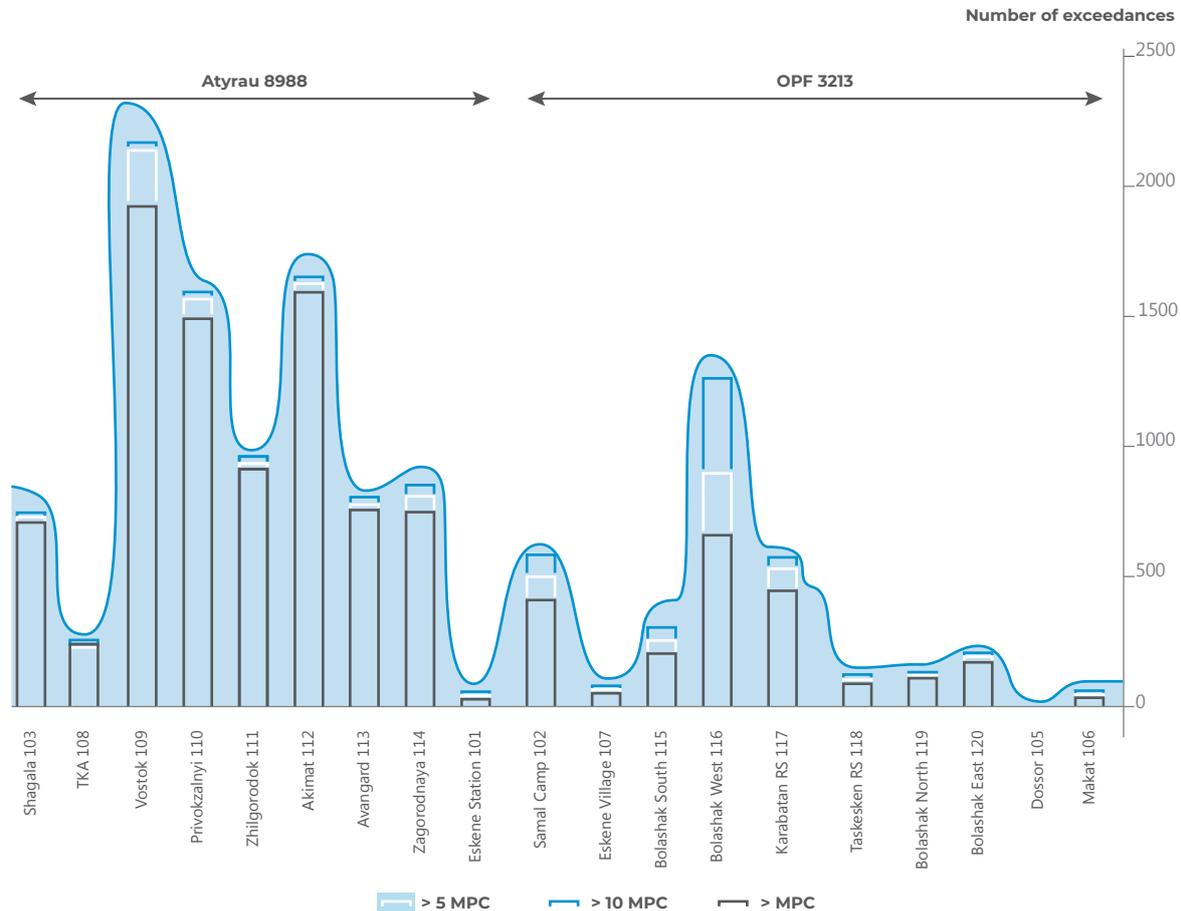
Hydrogen sulfide (H₂S) is another non-GHG air emission. It is a flammable and highly toxic substance with a strong and unpleasant odor. It can be generated anywhere with decomposition of sulfur-containing organic materials in the absence of oxygen; thus, it is emitted naturally in marsh gases and volcanoes (sometimes in large quantities), as well as from oil and associated gas in some oil and gas fields.

Given the sour nature of Kashagan field, hydrogen sulfide is present at every stage of oil and gas production, transportation, and processing and, accordingly, at all Company’s units associated with these processes.

The 7-km sanitary protection zone (SPZ) for Kashagan Experimental Program (EP) onshore facilities is defined in line with RoK sanitary rules by a licensed contractor on the basis of the results of a public health risk and cumulative impact assessment, and set by the authorized governmental body as a safe distance from Kashagan onshore facilities during normal operations and in possible scenarios of incidents and emergency situations/accidents. In line with RoK sanitary rules, the size of SPZ is validated by industrial control results and impact monitoring (that shows compliance 95% of AQMS operating time – within the tolerance threshold of an air dispersion model) confirms the appropriateness of the assessment. Thus, it is in compliance with applicable residential and working air quality standards and emission limits.

As in the previous years, the results of continuous monitoring in 2021 indicate that the short-term H₂S peaks (from 1 to 20 minutes in duration) are still far more likely in Atyrau than close to Bolashak OPF.

NUMBER OF HYDROGEN SULFIDE MPC_{0.T} EXCEEDANCES



The x-axis of this graph shows 19 NCOC air quality monitoring stations, except for West Oil AQMS No. 104 located in the industrial area of the city, the data of which is not subject to comparison with the maximum one-time concentration MPC for residential areas.

The vertical colored bars represent the number of instances (of short-term duration less than 20 minutes) in which each station registered H₂S concentrations in excess of the Maximum Permissible Concentrations (see legend for color coding).

Stations No. 103, 104, 108, 109, 110, 111, 112, 113, and 114 are located in Atyrau city.

Stations 105 and 106 are situated in the villages of Dossor and Makat, respectively.

Stations 101, 102, 107, 115, 116, 117, 118, 119, and 120 are located along the SPZ, in Samal Base, in adjacent Eskene, Taskesken, Karabatan railway stations, and village of Eskene West. These stations may be impacted by OPF Bolashak. The nearest settlement, Taskesken railway station, is located at least 8.8 km north of Kashagan Experimental Program (EP) onshore facilities, Atyrau city is 40 km south-west, and Karabatan and Eskene Stations are 11-17 km west/north-east.

Note: This diagram shows H₂S data only. In addition, NCOC air quality monitoring stations register CO, SO₂, NO, and NO₂ levels. It should be noted that SO_x and NO_x are possible fuel combustion and technologically unavoidable gas flaring products. The sources of H₂S may be from releases (internal to NCOC facilities or from other non-NCOC industrial sources) or naturally occurring biological activity. The baseline of H₂S excessive concentration cases at EW is leveled at 100-200 cases per year before the startup of hydrocarbon operations at Kashagan facilities that indicate that there are non-NCOC H₂S sources in area.



The transfer of data from West Oil AQMS No.104, located in the southern industrial zone of Atyrau city, has been suspended. Currently a possibility of re-locating the station from the industrial zone to the residential area of the city is under review together with governmental authorities, to enable the control over exposure of the population to pollutants and to ensure full compliance with the objectives of air quality monitoring in the residential areas.



CASE STUDY

Comprehensive Air Quality Studies within Atyrau City and in Eskene West Bolashak OPF Area

On 23 December, 2021 in Atyrau, NCOC together with Zhaik Caspian Aarhus Centre held a round table with representatives of local government authorities, NGOs, academics, and the media to inform the public about the results of Air Quality Surveys. In response to a request from the public addressed to NCOC in 2018 to assess the surface layer of atmospheric air and the dynamics of air quality changes, since 2019 the Republican Research Centre for Atmospheric Air Protection, Al-Farabi Kazakhstan National University, Information and Production Centre Gidromet Ltd and KAZECOANALYSIS LLP, have been conducting comprehensive air quality studies in Atyrau city and the Bolashak Onshore Processing Facility (OPF) area at Eskene West. These studies are the first of such scale performed in Kazakhstan. The studies consist of three stages which include data screening, analysis, and monitoring, with field and laboratory measurements.

PHASE I of the studies involved screening and analysis of historical 2009-2021 data on the air quality and permits, and data from Kazhydromet for Atyrau Oblast. The studied parameters included hydrogen sulfide and volatile organic compounds in Atyrau and Eskene West and nitrogen oxides, sulfur dioxide, and carbon monoxide in Atyrau.

The PHASE I study found that hydrogen sulfide air quality concentration exceedance cases registered by Air Quality Monitoring Stations (AQMS) have prevailing patterns. For instance, cases are typically prevalent as short-term spikes in warmer weather. The exceedance patterns also identify predominant wind directions suggesting possible primary sources of the pollutant. Study data specifically identifies 92% of cases registered in Atyrau and Eskene West as attributable to the city of Atyrau. Actual exceedances attributable to Atyrau city were 2 to 3 times higher than exceedances attributable to the Eskene West industrial area. The PHASE I study concluded that the Eskene West industrial area does not affect Atyrau.



PHASE II of the Air Quality Studies involved the development of the monitoring program that has been later approved by the environmental authorities and the community of Atyrau city.

PHASE III of the Air Quality Studies includes field measurements and air quality laboratory studies. The field air quality monitoring works started in autumn 2020 and were completed in November 2021. The field measurements were carried out four times a day for a year. In order to ensure accurate records, observation monitoring posts were identified in representative locations. Sixteen observation monitoring posts were selected in the territory of Atyrau, with further monitoring points identified in Eskene West and nearby settlements stations in Karabatan, Eskene, and Taskesen.

The PHASE III field measurements did not identify any exceedances of nitrogen oxides, sulfur dioxide, or carbon monoxide. The measurements also reaffirmed the overall findings of PHASE I overwhelmingly indicating hydrogen sulfide exceedances are not attributable to the Eskene West industrial area. The studies did register additional volatile organic compounds than those identified at PHASE I. However, no prevailing patterns (e.g., predominate wind direction) were identified to explain the reasons or sources of the newly registered compounds.

It should be noted that the Company's study, which included under-plume monitoring, did not identify any excess of pollutant emissions at the sources of onshore facilities in Eskene West. This confirms the compliance of the production facilities located in Eskene West with the design indicators and applicable standards. NCOC maintains its operations within permitted emission standards and continually seeks and implements opportunities to further reduce its emissions. To reduce the number and quality of cases with pollutant concentrations in excess of the MPC in the Eskene West area and biogenic formation of hydrogen sulfide in evaporation ponds, the Company developed and implemented the plan of technical measures, including a trial to reduce SRB activity and H₂S formation in ponds.

The results of the completed studies, which covered the 12-year period, indicate that the number of recorded excess pollutants in Atyrau city has not increased since the launch of the Bolashak plant. Studies have also shown that the number of Maximum Permitted Concentration (MPC) excesses in Eskene West is significantly lower than in Atyrau. We hope that the findings and recommendations of scientists will help our state authorities and industrial enterprises to improve the effectiveness of environmental activities in the Atyrau region. At the same time, experts note the high density of stations (both manually operated and automatic) in Atyrau, which is 10 times higher than in other cities.

To identify sources of pollution that contribute to the occasional AQMS exceedances in Eskene West (duration <5% of total recorded AQMS operating time), the Company initiated and implemented comprehensive studies of atmospheric air in West Eskene, identified the impact from the sources at the Company's facilities and from third parties, as well as assessed the reliability of ambient air quality data.

In accordance with the interim results, exceedances of maximum one-time air quality standards for hydrogen sulfide recorded by AQMS at the vicinity of the Company's onshore facilities are associated with external sources of third parties and the biogenic formation of hydrogen sulfide in the evaporation ponds, which is a metabolic by-product of the sulfate reducing bacteria that normally occur in nature.

6.5. WASTE MANAGEMENT

The total volume of wastes generated by the Company in 2021 was 12,142 tonnes, including 7,784 tonnes of amber-level waste and 1,797 tonnes of green-level waste, and 2,561 non-hazardous wastes.

In 2021, many of the Company's activities resumed after previous suspension in 2020 due to the COVID-19 pandemic outbreak. This led to a significant increase of generated waste volume.

NCOC, in conducting its operations, maintains a policy of zero waste disposal into surface water bodies, including the Caspian Sea. All wastes generated at offshore facilities are transported to a licensed contractor's onshore waste facilities via Bautino Supply Base by vessels specifically equipped for the safe loading and transportation of wastes and effluents.

NCOC Waste Management System is aimed at minimizing the generated waste at the source through process optimization and improvement.

The Company actively employs a system for the separate collection of waste at its facilities to simplify its further utilization. The waste management and monitoring system presents a full lifecycle from waste generation to final disposal.

The Company hands over its waste to specialized licensed companies engaged in the collection, transportation, preparation for recycling, segregation, pre-treatment, treatment, decontamination, and disposal of waste in accordance with statutory requirements.

In addition to statutory compliance, the Company follows international practices and monitors the quality of waste disposal activities performed by its contractors: methods of waste treatment, condition of the industrial control system, and availability of resources sufficient to fulfil the contractual commitments. Furthermore, NCOC supports and promotes the search of the methods aimed at maximizing waste recycling.

6.6. OIL SPILLS RESPONSE

NCOC places its first priority on the prevention of oil spills. However, no matter how confident we are in the efficiency of their prevention, the Company remains always prepared to respond quickly and fully to incidents were they to occur.

In 2021, there were 0 hydrocarbon spills in excess of 1 barrel reaching the environment from NCOC operations (total volume: 0 barrels of oil-equivalent).

Actions taken in 2021

- **Prevention.** The most efficient way to protect against oil spills is to prevent them from occurring in the first place. This is done by identifying spill risks and ensuring that the highest safety standards are continuously applied to mitigate those risks.
- **Technology.** We employ innovative technologies to assist in responding to oil spills and are actively engaged in research on new and more effective methods.
- **Response Training.** NCOC has a dedicated Oil Spill Response group, with about 100 trained staff and equipment suitable for use in the harsh environment of the North Caspian Sea. Such equipment is stored at support bases in Bautino and Damba. NCOC has a comprehensive Oil Spill Response Plan that is regularly drilled. Major drills include participation of local and state Fire Department and Authorities.

NCOC pays great attention to incident prevention. We follow safety rules and always perform risk assessment. No matter how confident we are in preventing incidents, we shall be ready to respond quickly and effectively in case they occur. To this end, each year NCOC conducts exercises using different scenarios of major incident threats or situations identified as potential risks in future activities.

In September 2021, the Crisis and Emergency Preparedness team conducted Tier 3 Exercise Kyrkuyek-2021. The exercise focused on a major onshore incident threat involving crude oil storage tank and shipping facilities, i.e. the

loss of containment causing a major oil spill and subsequent fire.

It was the first time NCOC engaged the resources of the State Fire Department to test aligned processes on site. The exercise was observed by representatives

of the State Department of Emergency Situations and the Department of Industrial Safety. During the exercise, the notification and activation process of the Oil Spill and Response Limited (OSRL) contractor was tested. The event was also attended by the NCOC Incident Management Team, Shell



ICS instructors, and the Spill Consult contractor. In total, 130 people, including state firefighters, were involved in the exercise.

It was a valuable experience for all response teams. The received feedback will be taken

into account to further improve the process of preparedness for crisis and emergency situations. The teams noted that the objectives of the exercise were achieved, with timely and effective support and communication between the teams.



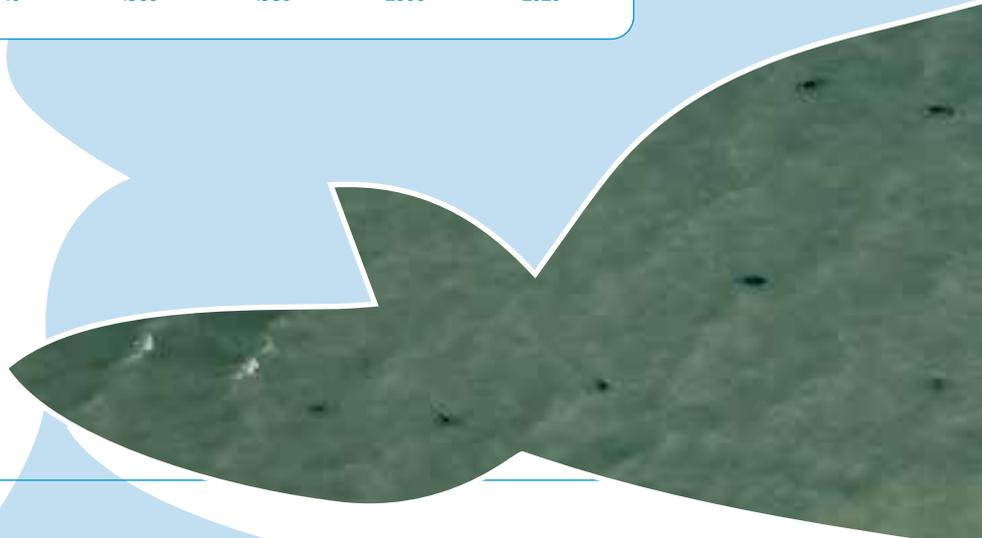
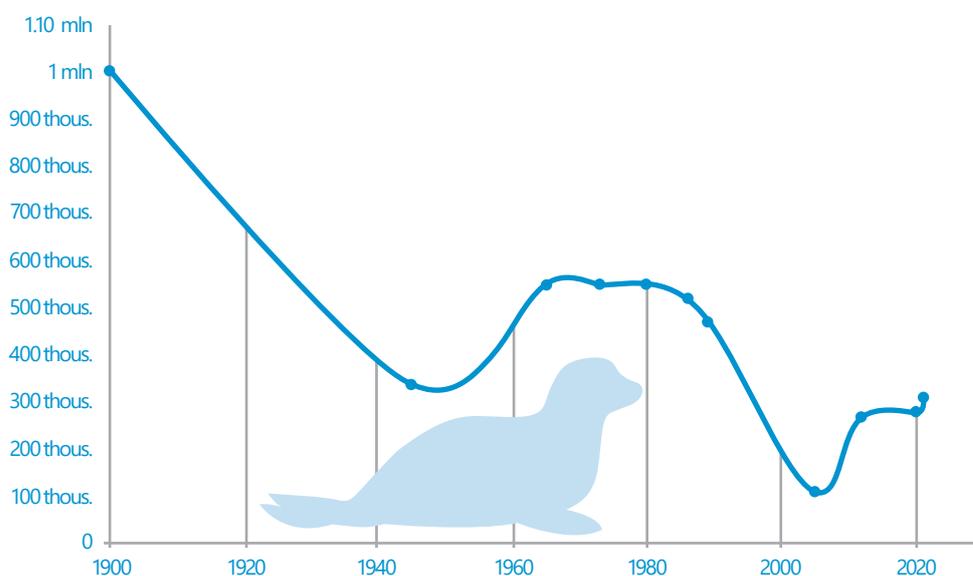
POPULATION

Over the past century, the population of the Caspian seal has declined sharply. This was influenced by both anthropogenic factors, including uncontrolled hunting of the animal until the end of the 1960s, and natural factors – fluctuations in the Caspian Sea level, climate change, and reduction of ice cover in winter. Measures to regulate hunting somewhat stabilized the population, which persisted until the 1980s.

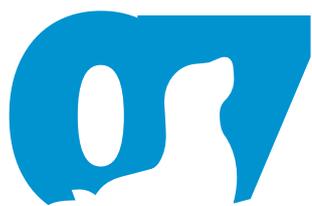
However, scientists consider climate change to be the main reason for the negative impact on the viable population of the Caspian seal. Warming leads to the larger areas of the Northern Caspian becoming ice-free, so the area of ice fields suitable for breeding grounds is reduced.

In addition to the climate change, poaching and illegal, unreported and unregulated seal hunting are causing significant damage to the seal population.

Caspian seal population size estimation (1900 – 2021)







CLIMATE CHANGE AND ENERGY

NCOC supports the principle of community and business consolidation in order to achieve the stated objectives of the Republic of Kazakhstan under the COP 21 Paris Agreement. In 2021 it amended its HSSE policy with commitment to reduce its GHG emissions to the As Low As Reasonably Practical (ALARP) level, compatible with operational constraints and safety as well as per international practice and recommendations. We believe the most effective way to achieve this is a combination of high operational reliability and continual improvement in the efficiency of our energy usage.

7.1. GREENHOUSE GAS EMISSIONS

The total volume of direct greenhouse gas emissions from NCOC operations in 2021 was 3,190 thousand metric tonnes of CO₂-equivalent, including 2,986 thousand tonnes of carbon dioxide (CO₂), 196 thousand tonnes of CO₂-equivalent of methane (CH₄) and 8.5 thousand tonnes of CO₂-equivalent of nitrous oxide (N₂O). This total volume includes the emissions from mobile and stationary sources.

NCOC production facilities are self-sufficient in power, heat, and steam supplies, which significantly increases the share of direct emissions (Scope 1) of the Company. Emission sources under the category "Energy Activities" are the major contributors and make up 70% of the total emissions.

Emissions (Scope 2) are generated from purchased power for supporting facilities such as Bautino Base and Atyrau Training Centre. The total volume of indirect greenhouse gas emissions from NCOC operations in 2021 was 7,552 metric tons of CO₂-equivalent, all carbon dioxide.

The level of greenhouse gas emissions intensity (greenhouse gas emissions per unit

of production) in 2021 was 147 tons of CO₂-equivalent per 1,000 equivalent tons of oil produced, which is slightly lower than the similar indicator in 2020 given the 7% increase in oil production. This intensity number is best used by stakeholders to compare NCOC's performance from year to year. NCOC's plan is to reduce the intensity by 15% versus the 2019 level.

Direct comparison to other projects is difficult due to methodological and baseline differences. However, it is a general rule that an offshore "sour" oil project, such as the North Caspian project, may be expected to have higher specific GHG emissions than less energy-intensive onshore or "sweet" oil projects.

In 2019, NCOC benchmarked its GHG performance using an approach that provides suitable metrics allowing for "apple-to-apple" comparison of differentiated assets of its contracting company as one step of GHG and EE Strategy development. The offshore facility has shown its performance lays within the best in class, whereas improvement opportunities are identified in the energy sector in onshore facilities.

7.2. ENERGY

The total energy volume consumed during NCOC operations in 2021 was 43.45 million gigajoules (GJ), where 0.40 million GJ was purchased in the form of electricity including 0.27 million GJ purchased from the Financial Settlement Centre to support renewable energy sources. Specific energy intensity (energy consumption per unit of production) in 2021 was 2 GJ per tonne of oil equivalent. The energy intensity of production has decreased this year versus the previous year, primarily due to higher production and a shift away from OPEC+ curtailment.



7.3. FLARING

NCOC follows "No Routine Flaring" policy.

Phase I of the Kashagan Project was originally designed to avoid routine flaring (see details on flaring performance and reductions in the "6.4. Non-GHG Air Emissions" section).

7.4. DECARBONIZATION AND REDUCTION OF GREENHOUSE GAS EMISSIONS

NCOC has developed its Greenhouse Gas Emission and Energy Efficiency Management Strategy based on the in-country commitments to reduce greenhouse gas emissions and on the experience of the shareholders in the development of decarbonization and low-carbon strategies. This strategy was approved in September 2020 by the Company's Shareholders Committee and is intended to reduce risks and develop comprehensive solutions for managing greenhouse gas emissions, given a need to a stable hydrocarbons production and achieve the design capacities by implementation of the following:

- Achieve 15% reduction in specific greenhouse gas emissions at Phase 1 of Kashagan development by 2030 versus 2019 level.
- Continue to explore the opportunities for further reduction in greenhouse gas emissions, including through the development of future growth projects.



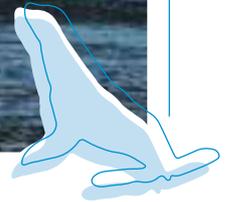
- Set up the targets for such growth projects of 0.135 tonnes of carbon dioxide equivalent per tonne of oil equivalent on ALARP basis.

The main NCOC activities to achieve the goals in the reduction of greenhouse gas emissions are defined as follows:

- Realization of the approved actions identified during the energy inspection and mandatory energy audit.
- Implementation of Energy Management System (compliant with ISO 50001 requirements), i.e. a systematic approach to energy conservation, development, and implementation of energy efficiency improvement measures.
- Implementation of advanced Leak Detection and Repair (LDAR) Program to monitor fugitive gas leaks into the air.
- Implementation of measures to reduce technologically unavoidable gas flaring.
- Introduction of a carbon competitiveness assessment process for design solutions.
- Assessment of projects for use of Renewable Energy Sources (RES) and alternative technologies to reduce the carbon footprint.

In 2021, NCOC continued a consistent implementation of its strategy, namely:

- Continued works on flaring reduction; prevented the volume of greenhouse gas emissions from flaring amounting to 2,400 tons of CO₂-equivalent.
- Continued works on the implementation of the LDAR Program aimed at a systematic detection of the actual gas (hydrocarbon) leaks that can be eliminated by the repair/replacement of components.
- Also, the Company has launched preliminary studies on the potential use of renewable energy sources and waste heat for energy needs and the utilization of flare gases at onshore and offshore production facilities. This work will continue in 2022.
- In addition, NCOC has included a requirement for the assessment of greenhouse gas emissions into mandatory project deliverables, which will allow the Company to improve its low-carbon competitiveness.





SOCIAL PERFORMANCE

8.1. LABOR PRACTICES

Employment and Working Conditions

NCOC's business strategy and success relies on its people. We create favorable and beneficial conditions to attract, retain, and motivate the greatest minds from all over the world who drive the Kashagan Project forward for the benefits of Kazakhstan. NCOC carefully calibrates the competitiveness of its salary and benefits package with market surveys.

NCOC provides employees with a social package that includes Oilman's Day bonus, Vacation Wellness Support payment, Individual Merit Salary increase, variable annual Company Performance bonus, and discretionary allowances and special monetary awards for outstanding performance or adherence to company values. Kazakhstan citizens who are directly hired by NCOC receive numerous other compensations and benefits, including generous paid and unpaid time off, medical and life insurance, free commute on the company shuttle bus, and financial assistance programs for gym, home mortgage, wellness and medical issues, bereavement, and children's education benefit.

Site-based Workforce Welfare and Accommodation

NCOC is a multicultural and diverse family where every employee is valued and respected regardless of race, color, religion, age, gender, sexual orientation, marital status, disability, ethnic origin, or nationality.

Respecting the human rights of our site-based employees is an important element of NCOC labor management practices. We strongly believe that employee performance depends on good care. We have clear requirements for the standards of living and working conditions provided for our employees and contractors at the sites based on RoK regulation requirements and NCOC accommodation policy.

We provide safe, secure, furnished, and serviced accommodation for our personnel and request the same from our contractors. All levels of accommodation are inspected by Company Security, Safety, and Health/Hygiene specialists before being utilized and are regularly checked thereafter.

We regularly conduct scheduled and ad-hoc hygiene and food inspections. In 2021 we

NCOC EMPLOYEES	2957	100%
Local	2761	93%
Expatriate	196	7%
Men	2051	70%
Women	906	30%
Local staff in managerial positions	634	85%
Expatriate staff in managerial positions	111	15%
Women in managerial positions	176	23%
Men in managerial positions	569	77%



held about 100 hygiene and food inspections on sites. Moreover, NCOC arranged Hazard Analysis of Critical Control Points (HACCP) Food Safety Training for key service personnel in order to assure the high standard of food safety performance. The main goal of the HACCP training is to reduce food safety risks by ensuring that senior catering staff are competent in international good practice management principles and methodologies.

Job Skills Training and Knowledge Transfer

Over two decades, the Operator has spent about USD 294 million in total on job skills and crafts training to build local capacity for the North Caspian Project. Since 1998, 22,279 Kazakhstan citizens working for the Company have received the training.

To ensure effective learning processes, NCOC has implemented a competency-based assessment model for planning personnel development and training. This model involves mapping the current competency levels against the required competency levels, identifying the resulting gaps, and creating a training plan to bridge those gaps.

The special feature of this model is that, due to carefully designed competency catalogues, every employee has an opportunity to develop their Individual Development Plan and complete the range of programs to bridge the competency gaps. This learning approach allows employees to maintain compliance with learning activities and the Company's business goals.

One of the fundamental aspects in developing and supporting highly qualified personnel is lifelong learning; Company management decided to provide access to global online learning platforms along with the corporate university resources of NCOC shareholder companies. This allows the Company's employees to master new skills and relevant knowledge.

The health and safety of NCOC staff and its contractor companies remains a priority for the Company. Therefore, the Company also pays special attention to safety education and other courses made mandatory by Kazakhstan legislation.



NCOC Scholarship Program

NCOC successfully implements a scholarship program for students in accordance with the NCSPSA. Overall, the Operator has sponsored 4,333 students from Kazakhstan to study in educational institutions inside and outside the Republic of Kazakhstan with the monetary value of USD 9.6 million.

NCOC provides the funding and the KAZENERGY Association manages the scholarship fund on a competitive basis for the academic training of Kazakhstan citizens (not NCOC employees) in disciplines related to the petroleum industry, including training at universities, colleges, or other educational institutions. In the 2021-2022 academic year, NCOC sponsored 454 students in 73 educational institutions.

Nationalization

Article XXVII of the NCSPSA specifies the overall targets in terms of manning levels of Kazakhstan citizens employed in the Petroleum Operations. In 2021, Kashagan Phase I Project significantly exceeded these targets, with:

- 87% of managerial staff taken by local personnel
- 97% of technical and engineering employees, administrative staff, and qualified specialists taken by local personnel
- 100% of workers and supporting personnel taken by local personnel.

Overall, at the end of 2021, 93.3% out of three thousand employees of the operating company NCOC are Kazakhstan citizens and

NATIONALIZED POSITIONS

2018	2019	2020	2021
47	38	48	22

92% out of over seven thousand contractors engaged in the North Caspian Project are Kazakhstan citizens.

8.2. HUMAN RIGHTS

Human Rights Due Diligence

The respect for and protection of human rights is part of NCOC’s corporate culture. Our approach

to respecting human rights consists of several core elements, including adherence to corporate policies, compliance with applicable laws and regulations, regular dialogue, and engagement with our stakeholders. Our commitments in this area are embedded in the General Business Principles, the Code of Conduct, the Anti-Bribery and Corruption Manual, and relevant company procedures.



We have programs and procedures in place that support non-discrimination and address workforce diversity.

NCOC strictly complies with the requirements of the labor legislation of the Republic of Kazakhstan and does not tolerate any form of harassment, nor any action, conduct, or behavior which is humiliating, intimidating, or hostile. Managers have a responsibility to protect their staff from harassment and to create a climate in which individuals with concerns about harassment in their work area may discuss the issues in confidence.

Suppliers are also contractually obligated to comply with our General Business Principles and Code of Conduct in all aspects of their work with us.

We respect all our employees irrespective of their nationality, gender, sexual orientation, age, and disability. No cases of human rights violation were recorded in 2021.

Human Rights and Security

NCOC continues to promote the safety of personnel and facilities as a priority and pays special attention to the human rights and security of the local community.

In terms of security, we care about the life and health of our employees as well as the communities in which we operate. We carefully assess the security threats and risks related to our operations. We work with the RoK government and partners to safeguard assets and provide a secure working environment for employees and contractors. NCOC does not use armed security as it does not correspond with the current risk portfolio.

The Company follows the Voluntary Principles on Security and Human Rights that guide involved parties in assessing human rights risks when working with public and private security organizations. Since the establishment of NCOC, we have had 0 incidents related to human rights violation in the Company or at contractors' sites.

During 2021, the NCOC Security department continued to play an important role in preventing the worst-case scenarios of mass spread of COVID-19 on the Company sites by securing

access points and being involved in all other related activities together with the Health and Safety teams. This approach helped to protect our people's health and their right to a healthy work environment.

NCOC Security participated in the review of the RoK resolutions related to anti-terrorism protection. Corresponding changes were discussed and suggested to the working group consisting of the RoK authorities and other major oil and gas companies.

8.3. LOCAL CONTENT

Local Content Performance

NCOC is committed to developing local content and maximizing the use local goods, works, and services through the skills enhancement of local people and the capacity of local companies.

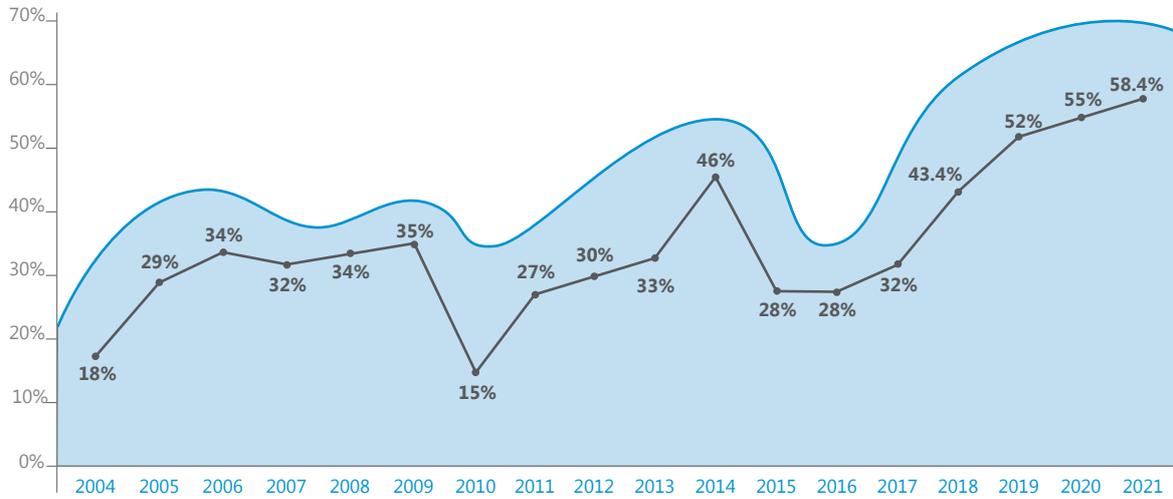
In 2021, the North Caspian Project spent USD 562.8 million on local goods, works, and services, equivalent to 58.4% of total expenditures. This adds up to the year-end total of more than USD 15.9 billion spent on local goods, works, and services since 2004. These and other facts speak to the depth of NCOC's commitment to the local content development.

NCOC has achieved its highest percentage of local content in the past seventeen years and will continue to work to increase the local content even further. Furthermore, NCOC provides opportunities to develop capabilities within the Kazakhstan labor market and manufacturing sector. This way, the LC strategy strengthens





LOCAL CONTENT PAYMENTS IN % TERMS FOR THE PERIOD OF 2004-2021



both the economy of Kazakhstan and NCOC's competitiveness.

Growing Local Industry Capability

Development of local vendors is a priority for NCOC. The objective is to help local companies improve their technical and managerial capabilities so that they are qualified as potential suppliers to the project and, in the longer-term, could bid on other opportunities within national and international markets.

NCOC undertakes the following activities to support local suppliers' development:

- Assist local companies to obtain international standards certifications for

their management, goods, and services, thus significantly increasing their competitiveness for contracts with NCOC

- Identify potential local suppliers and contractors
- Implement an improvement program through training, seminars, and workshops
- Participate in Joint Venture Facilitation events.

NCOC supported eight companies to complete non-destructive training and certification.

NCOC also completed a technical gap analysis at 36 local companies on two categories:

- Electrical equipment
- Offshore catering and hotel services.



IMPROVEMENT PROGRAM IN 2021

TRAININGS	Professional Technical and General Awareness	80
SEMINARS	General awareness: <ul style="list-style-type: none"> • Project Quality Management • Vendor Registration and Pre-Qualification Processes • HSSE. 	3
WORKSHOP	Underwater Inspection and Intervention Services Forum	1

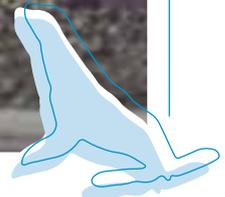
ISO CERTIFICATION

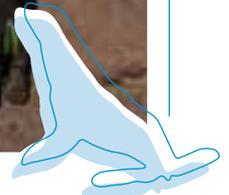

Eight local companies completed trainings on ISO certifications:

- Belkamit LLP
- Gaz Sroy Montazh KZ LLP
- AtyrauTechInvest LLP
- Tek Led LLP
- Uralsk Plant "Zenit" JSC
- Kazenergokabel LLP
- TemirSroyService LLP
- Centech LLP

Six local companies received certificates on ISO 9001, ISO 27001, and ISO 45001:

- Atyrau Tech Invest LLP – ISO 27001
- Global Procurement Company LLP – ISO 9001
- Winner Technology Group LLP – ISO 9001
- Tek Led LLP – ISO 9001
- Belkamit LLP – ISO 45001
- Uralsk Plant "Zenit" JSC – ISO 45001





MACHINE BUILDING DEVELOPMENT INITIATIVE

In 2021, NCOC continued to support machine building industry development: 32 producers of electrical equipment underwent technical gap analysis on technical and potential capabilities to participate in NCOC projects. NCOC conducted two ecology audits, three energy audits, and two technological consulting and improvement activities for local machine builders through:

- Professional craft and soft skills trainings
- Non-destructive training
- ISO training and certification
- ASME and API implementation and certification.

NCOC is actively involved in the development of the International Machine Building Centre (IMBC) for development of oil and gas machine building. Jointly with Tengizchevroil and Karachaganak Petroleum Operating, NCOC developed an Agreement of Intent signed by the Ministry of Industry and Infrastructure Development of the RoK, Ministry of Energy, PSA LLC, and Association of Kazakhstan Machinery Industry. The International Centre is expected to support Kazakhstani manufacturers in upgrading their business capabilities through potential localization of manufacturing in the RoK and adaptation of technical standards. IMBC was established and started its activities in 2021.

Goods localization

As a part of goods localization, focusing on "Early

Tenders" NCOC awarded the following contracts to local manufacturers:

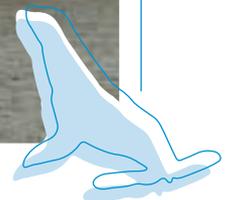
DESCRIPTION OF THE EARLY TENDER	CONTRACTOR
Supply of PPE	Sari Supply LLP
Valve maintenance services	Borkit SG LLP
Supply of Polypropylene Liner Envelopes/Bags for Sulfur Railcar Wagon	Novopack LLP
Procurement of Non-OEM Gaskets	Caspiy Plus LLP
	Novus Sealing Caspian LLP
Provision of HVAC filters	Altezza LLP
Provision of Lubricants	LUKOIL Lubricants Central Asia LLP
Provision of Non-OEM Fasteners	Studbolt Manufacturing LLP
Provision of Technical Rooms	KIOS Techflow LLP
Provision of Non-OEM Flanges	International Pipeline Structural Solutions Caspian LLP



SUCCESS STORY: FIRST MOBILE TEMPORARY REFUGES FULLY MANUFACTURED IN KAZAKHSTAN

In 2021, Kazakhstan Caspian Offshore Industries (KCOI) successfully completed the construction of temporary refuges custom-built for NCOG. Mobile container-type temporary refuges will be used for Kashagan emergency management, both offshore and onshore.

Construction work was carried out at the KCOI shipyard in the Mangystau region, with maximum involvement of Kazakhstani specialists whose share is 95% of the company's total personnel. These are the first mobile temporary refuges manufactured in Kazakhstan and certified to CT-KZ. The certificate of origin of goods CT-KZ was introduced in 2009 to support domestic manufacturers with intended use in the Republic of Kazakhstan.



STUDIES

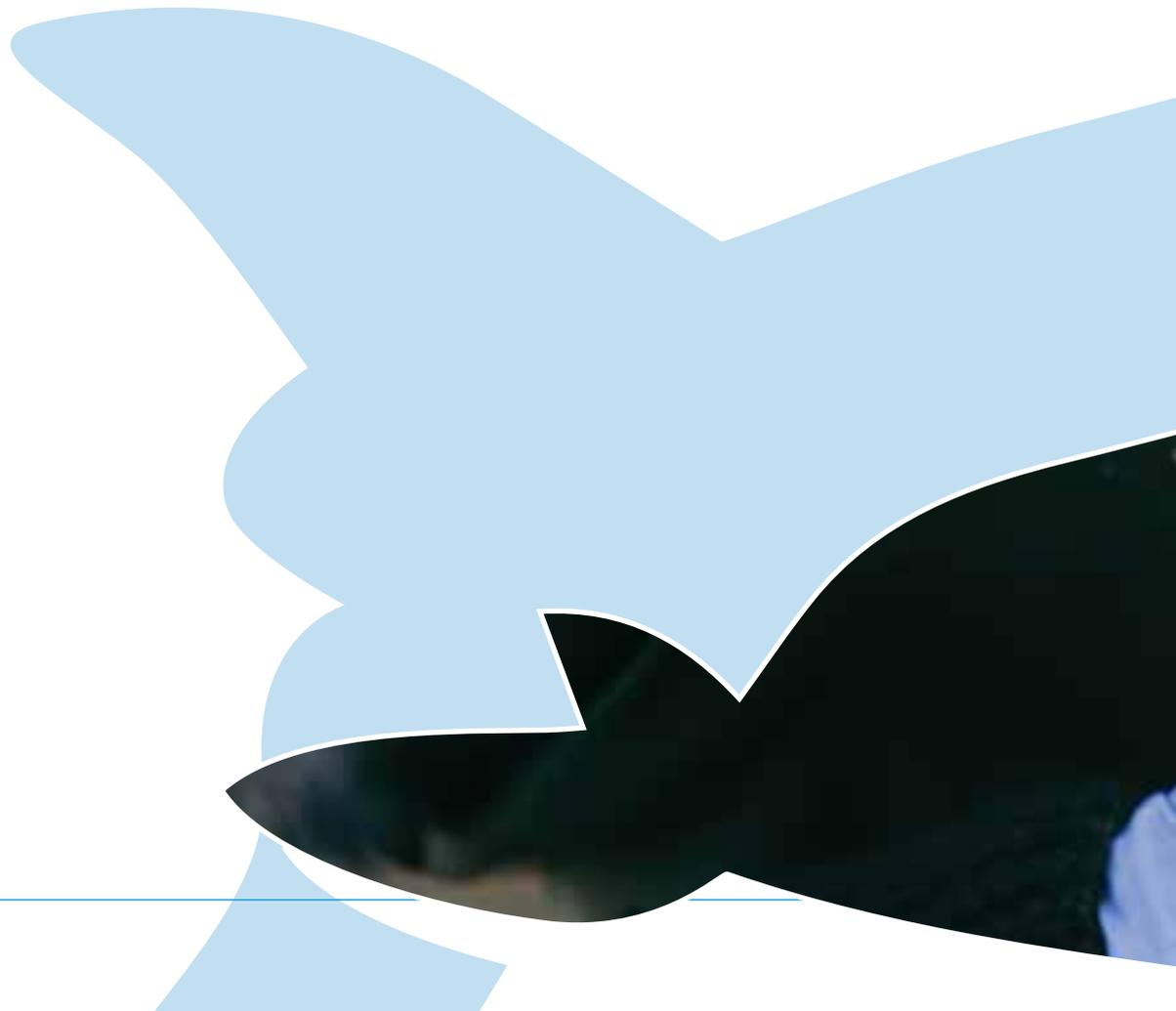
NCOC conducts annual studies to obtain information about the Caspian seal and develop a strategy for their protection. Specialists carry out reconnaissance flights on aircrafts, study migration routes of the animals using satellite telemetry, and information received from radio beacons – sensors on tagged animals.

The successful implementation of the five-year Comprehensive Caspian Seal Survey Program initiated by NCOC continues within the jurisdiction of the Republic of Kazakhstan and the Russian Federation.

Analysis of the available data for the last decade shows an increase in the number of pups in 2021 by 19.7% compared to 2012 data, and by 6.5% compared to 2020 data.

Starting from 2019, 20 satellite radio beacons have been installed on seals caught in the Kazakhstan Sector of the North Caspian Sea to study the Caspian seal migration paths in the autumn and winter seasons over the North Caspian waters. Morphometric studies were carried out, biological material samples were taken from the captured seals for toxicological, physiological, virological and microscopic studies.

The ongoing studies will allow scientists to identify the number of seals and assess the overall population status.







SOCIAL INVESTMENT



9.1. SOCIAL INFRASTRUCTURE PROJECTS

Under the NCSPSA, NCOC allocates a budget each year for the development of social infrastructure projects. In 2021, this budget amounted to USD 67 million. The funds for the construction of schools, kindergartens, hospitals, sport facilities, utilities such as roads and electric power and water supply lines, and other forms of infrastructure for the local communities are split equally between Atyrau and Mangystau oblasts, the areas of main activities under the North Caspian Projects.

In the period from 1998 to 2021, 225 social infrastructure projects were completed. Thus, the cumulative spend on social infrastructure projects reached USD 841.3 million.

In 2021, NCOC completed the construction of three projects as part of the SIP program.

The Oncology Centre in Aktau is the largest hospital in the western Kazakhstan, with a capacity of 100 beds and clinic department for 75 visits. The hospital is equipped with the most advanced equipment of the leading world manufacturers:

- Elekta Versa HD linear accelerator is a new achievement in medical technology

that significantly reduces the impact of radiotherapy on healthy tissues and reduces the side effects of treatment

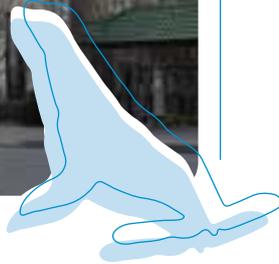
- Laser-guided CT and MRI scans of General Electric ensure the more precise planning of treatment processes
- Flexitron, the first Afterloading Platform for contact radiotherapy in Kazakhstan designed for brachytherapy procedures
- Sterilizers of the German-Czech company BMT, diagnostic equipment of General Electric (USA).

The provided equipment enables the latest methods of treatment.

Halyk Arena Box Center is a sports complex with a capacity of 2500 people. The purpose of this facility is to develop boxing and sports activities, promote a healthy lifestyle among Aktau residents, and organize sports and cultural events. The center is furnished with the necessary equipment for 19 types of sports, including basketball, volleyball, football, athletics, boxing, judo, weightlifting, swimming, and mini football.

Mangystau Regional Universal Library, named after Kabibulla Sydykov, is a part of the new Cultural Center in Aktau. The two-story building has 433 seats and a library collection of 304,343 books. The library includes reading rooms for children and adults, halls of local history and scientific studies, and a language laboratory.

Social infrastructure projects are generally proposed by the Oblast Akimats (local authorities). Proposals are reviewed by NCOC and the NCSPSA Authority to ensure they comply with PSA requirements and the Operator's sustainable development commitment, then are developed into projects in close collaboration



with the Oblast Akimats. Once approved, NCOC is responsible for a contract tender and the execution up to the handover.

Social Infrastructure Projects engineers, together with Technical Supervision representatives, regularly visit the sites and check the quality of construction and installation works and materials, as well as the equipment used, for their compliance with design documentation, technical specifications for connecting to utilities, and the requirements of technical regulations. Moreover, the SIP team conducts weekly meetings to discuss all issues related to the projects, including quality control and assurance.

🔗



[Social and Infrastructure Projects Brochure](http://www.ncoc.kz)
WWW.NCOC.KZ



[Social Infrastructure Projects 2020](http://www.ncoc.kz)
WWW.NCOC.KZ



[Social Infrastructure Projects 2019](http://www.ncoc.kz)
WWW.NCOC.KZ



SIP PROJECTS COMPLETED WITHIN 1998-2021

ATYRAU OBLAST	SIP AREAS	MANGYSTAU OBLAST
37	Education	22
21	Healthcare	17
46	Infrastructure	48
7	Culture	10
1	Sport	16
112	Total number of completed projects	113
USD 419.5 mln	Total spend	USD 421.8 mln



ONGOING PROJECTS STARTED IN 2021



PROJECT	LOCATION	CONTRACT START DATE	CONTRACT END DATE
Construction of 60-apartment 3-story residential building in Kulsary settlement of Zhylyoi District	Atyrau oblast	02/08/2021	01/08/2022
Construction of Schoolchildren Center for mass recreation of children and young people in Aktau city	Mangystau oblast	15/03/2021	14/11/2023
Improvement of micro districts in Aktau city	Mangystau oblast	01/06/2021	31/05/2022
Construction of student dormitory for 500 beds in Aktau	Mangystau oblast	04/08/2021	03/10/2022

9.2. SPONSORSHIP AND DONATIONS PROGRAM

Through its Sponsorship and Donations program, NCOC responds directly to the needs and requests of local communities. USD 1.5 million is split equally each year between Atyrau and Mangystau oblasts for community sponsorships and donations. The Sponsorships and Donation program focuses on five main areas of support for local communities:

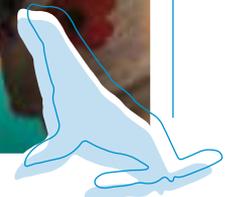
- Healthcare
- Education
- Sports
- Culture
- Charity.

The Company gives preference to the projects that demonstrate sustainable development for the benefit of the local communities. Thus, we support projects including the full equipping

and certified training of beneficiaries that can be provided on a phased basis to achieve efficient results. By implementing the S&D program, we assume that the project will be able to develop independently in the future for the benefit of the community in terms of employment and stable financial growth.

Pursuant to the Company policy, the sponsorship and donation projects shall not support political or religious organizations, create conditions for unfair market competition, or undermine the ecological sustainability of local communities or natural ecosystems. The initiative for projects generally comes from the local communities, although they may also be initiated by NCOC.

In 2021, 41 projects were completed (21 in Atyrau Oblast and 20 in Mangystau Oblast). In the period from 1998 to 2021, 1,450 sponsorship and donation projects were completed for a total cost of USD 25.3 million.



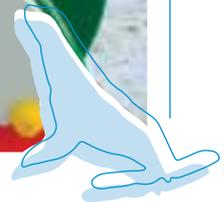
**SPONSORSHIP AND DONATIONS PROJECTS
IMPLEMENTED IN ATYRAU OBLAST IN 2021**


PROJECT DESCRIPTION	CATEGORY
Three-year English Language Distance Learning project in Atyrau Oblast in cooperation with the British Council (2018–2021)	Education
GAZELLE A31R33 dedicated vehicle additionally fitted with an air conditioner and special equipment to transport disabled people to a day-patient medical facility in Kyzylkoga District	Charity
GAZELLE A31R33 dedicated vehicle additionally fitted with an air conditioner and special equipment to transport disabled people to a day-patient medical facility in Issatai District	Charity
Installation of a football pitch for physical training of children staying at the Oblast Children's Tuberculosis Care Sanatorium	Healthcare
Specialized training equipment. EduQuest multimedia interactive educational software and methodological complex intended to teach children with special needs for the Atyrau Oblast Children's Rehabilitation Centre	Education
Specialized shower equipment for preventive treatment and health improvement of people with special needs for the Atyrau Oblast Rehabilitation Centre	Healthcare
Specialized fenced outdoor playground for physical development of children with special needs staying at Special Social Services Centre No. 3	Charity
Outdoor exercise facility for physical rehabilitation and development of children with special needs residing at the Oblast Specialized Boarding School	Education
Outdoor exercise facility for physical rehabilitation and development of children with special needs residing at Oblast Specialized Boarding School No. 3 for children with speech disorders	Education
Outdoor exercise facility for physical rehabilitation and development of children with special needs residing at the Oblast Auxiliary Boarding School in Makhambet village	Education
Montessori psychological and pedagogical correction classroom in Atyrau city and in Makat, Makhambet, and Inder villages	Education
Montessori psychological and pedagogical correction classroom in Kurmangazy, Kyzylkoga, Issatai, and Zhylyoi villages	Education
Provision of all necessary equipment in inclusion classrooms (IC) for 5 general education schools in Atyrau Oblast	Education



SPONSORSHIP AND DONATIONS PROJECTS IMPLEMENTED IN ATYRAU OBLAST IN 2021

PROJECT DESCRIPTION	CATEGORY
Gas chemistry laboratory and training equipment for the laboratory of the Atyrau Oil and Gas University named after S. Utebayev	Education
Oxygen concentrators for 54 home-front veterans and 3 Great Patriotic War (GPW) veterans in Atyrau Oblast in commemoration of the Victory Day as a support against COVID-19 pandemic	Charity
Special Montessori equipment for a correction classroom for children with speech delay	Education
Installation of necessary equipment in the STEM laboratory of Makat District Children’s and Youth Physical Education Club	Education
Support for publication of a collection of poems and compositions by young poets and writers of Atyrau Oblast	Culture
Professional equipment for therapeutic hippotherapy sessions for seriously ill children for Atyrau Small Country Public Association	Charity
200 backpacks with stationery sets as part of the Road to School charity campaign for primary school children in Atyrau city and Makat District	Charity
Computers and printers for 20 low-income families in commemoration of the 30th anniversary of Independence of the Republic of Kazakhstan	Charity



SPONSORSHIP AND DONATIONS PROJECTS IMPLEMENTED IN MANGYSTAU OBLAST IN 2021

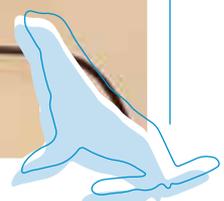


PROJECT DESCRIPTION	CATEGORY
Installation of necessary equipment in the inclusion classroom at the Secondary School named after Ye. Omirbayev in Tupkaragan District	Education
Specialized equipment for physical development of children residing at the Oblast Specialized Children's Home	Healthcare
Outdoor playground at kindergarten No. 59 named after S.N. Shapagatov in Aktau city for safe physical development of children	Education
Outdoor playground at Akku kindergarten No. 4 in Aktau city for safe physical development of children	Education
Outdoor playground at Baiterek kindergarten in Tupkaragan District for safe physical development of children	Education
Specialized exercise equipment for preventive treatment and health improvement of people with special needs at the Rehabilitation Centre	Charity
Medical equipment to improve the vision of residents at the Oblast Special Boarding School	Education
Specialized furniture and anti-bedsore mattresses for disabled children at Special Social Services Centre No. 3	Charity
Specialized school furniture and supplies for inclusion classrooms at 4 schools in Tupkaragan District: Gymnasium School named after Zh. Mynbayev, Lyceum School named after A.M. Gorky, Shakhty General Education School, Lyceum School No. 1 named after G. Aidarov	Education
Specialized school furniture and supplies for inclusion classrooms at 4 schools in Tupkaragan District: Akshukur Lyceum School, Gymnasium School named after M. Abdikhalikov, General Education School named after Z. Baimyrzayev, specialized boarding school with advanced study of individual subjects	Education
Specialized school furniture and supplies for inclusion classrooms at 2 schools in Tupkaragan District (Gymnasium School named after S. Shapagatov and Akshukur Gymnasium School) and 2 schools in the city of Aktau (General Education Schools No. 9 and No. 23)	Education
Oxygen concentrators for 67 home-front veterans and 6 Great Patriotic War (GPW) veterans in Mangystau Oblast in commemoration of the Victory Day as a support against COVID-19 pandemic	Charity
Outdoor playground at Kulyنشak kindergarten No. 17 in Aktau city for safe physical development of children	Education



**SPONSORSHIP AND DONATIONS PROJECTS
IMPLEMENTED IN MANGYSTAU OBLAST IN 2021**

PROJECT DESCRIPTION	CATEGORY
Outdoor playground at Kaussar kindergarten No. 17 in Aktau city for safe physical development of children	Education
Equipment to implement the project focused on building the potential of rural non-governmental organizations (NGOs) in Mangystau Oblast	Education
GAZELLE 32217 dedicated vehicle additionally fitted with air conditioner to transport the disabled people for Kazakh Society of the Blind Public Association in Mangystau Oblast	Charity
Futsal playground for physical development of children at the Tupkaragan Children’s and Youth Sports School	Sports
Sanatorium vouchers to Shipager Rehabilitation Centre in Aktau city for 60 veterans from Aktau and 40 veterans from Tupkaragan District	Charity
200 backpacks with stationery sets as part of the Road to School charity campaign for primary school children in Aktau city and in Tupkaragan District	Charity
Lighting and music equipment for the stage of the Mangystau Oblast Philharmonic Hall named after M. Oskinbayev	Culture



9.3. ENGAGEMENT WITH COMMUNITY

NCOC adheres to the values of transparency, dialogue, and respect when engaging with local communities. We admit that local communities may have concerns about potential environmental and social-economic impacts of our operations. Therefore, we engage with communities from the early stages of the projects and keep them updated on ongoing processes through meetings, round tables, and public hearings.

In 2021, NCOC arranged three round tables with non-governmental organizations (NGO), local authorities, and media representatives to address the community's concerns around dredging works in the Caspian Sea and inform on the work progress.

On October 23, in response to the Atyrau community's concerns about NCOC evaporation ponds and their impact on air quality, NCOC arranged a visit for representatives of NGOs and local state authorities to the following Kashagan facilities in Eskene West:

- New water treatment facilities under construction, which are designed to further reduce the water intake from the Astrakhan-Mangyshlak pipeline by about 70% and improve the quality of the water discharged into the evaporation ponds
- Treated wastewater collection ponds where industrial wastewater undergoes several stages of chemical, mechanical, and biological treatment. The ponds are properly isolated from soil and subsurface waters
- Air Quality Monitoring Station No 116 located close to Eskene West facility to measure concentrations of air pollutants.

On December 23, NCOC held a round table to present the initial results of the Caspian Seal Population Survey and Air Quality Survey to the public. The Caspian Seal Population survey is part of the five-year Kazakh-Russian Caspian Seal Research Program (2019-2023) aimed at acquiring information about the seal concentration grounds for further scientific



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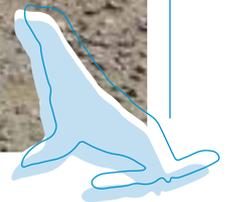
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studies. The Air quality Survey initiated by NCOC in 2019 was a response to the direct request from the public in 2018 to assess the surface layer of the atmospheric air and the dynamics of the air quality changes in Atyrau city and Eskene West. These air studies were the first of such scale performed in Kazakhstan (Read more in "6.4. Non-GHG Air Emissions" section).

Besides engagement with community through round tables, NCOC launched its official social media accounts in early 2021 to be even more open and closer to the community and

other stakeholders. NCOC considers social media accounts a good opportunity to keep its stakeholders updated on the Company's activities and get their feedback.



CASE STUDY



Engagement with the Community on Dredging Works in the Caspian Sea

In 2021, NCOC started the implementation of the seabed dredging project to enable marine displacement vessels to operate and support safe operations of the Kashagan field.

Prior to the project realization, NCOC conducted round tables and public hearings with the participation of NGOs, local authorities, and media to present the project and address the Environmental Impact Assessment (EIA) materials.

In 2021, the community raised its concerns about the potential environmental impact the dredging project may have on the Caspian Sea biodiversity. NCOC responded to this concern by arranging the following events:

- April 19, 2021. Round table with representatives of governmental bodies, NGOs, media representatives, opinion leaders, and activists.
- May 6, 2021. Visit of representatives of state authorities, scientists, and the community to offshore dredging area.
- May 6, 2021. Round table with governmental bodies, NGOs, media representatives, opinion leaders, and activists.
- May 18, 2021. NCOC participated in a round table organized by Atyrau Region Ecology Department to discuss the project «Kashagan Field Facilities Development. Offshore. Marine Access Channels. Environmental Impact Assessment». NCOC representatives and scientists delivered presentations covering a review of marine logistics options, a long-term forecast for the Caspian Sea level fluctuation in the Kashagan field area, and predictions for the impact of dredging works on the Caspian Sea level, quality of sea water, ichthyofauna (sturgeon and ordinary fish species), wildlife (birds, seals etc.), and the natural reserve areas.
- September 22, 2021. Round table with the state authority, community, and scientists. At the event, NCOC representatives and scientists informed the public about the progress of dredging activities and shared initial monitoring results.

All these events were aimed at increasing the stakeholders' awareness of dredging projects, responding to their concerns, and keeping them informed about the progress of ongoing activities.





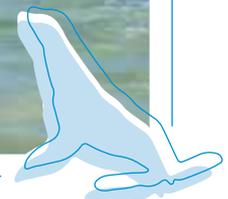
DREDGING WORKS IN THE CASPIAN

Due to the decline of the Caspian Sea level and associated shallowing of the sea in the area of the Kashagan field offshore facilities, the ability of NCOC marine vessels to operate has been impacted with a potential of full stop of marine operations.

The seabed dredging project secures emergency exit procedures for the staff on duty to save their lives in the event of safety critical emergency evacuation, safe operation of unmanned islands, and delivery of the turnaround scope scheduled for 2022 through providing sufficient water depth to bring in Living Quarter Barges and other bulk materials, plus continued operation till well after 2024.

The project impact area will total nearly 29 km², which is as low as 0.036% of the total North Caspian Sea area. The project involves dredging activities around five Kashagan islands to ensure the access is feasible for the operating fleet. The total length of the dredged area will be 56km.

The project deploys the best available technologies.





COVID-19 RESPONSE

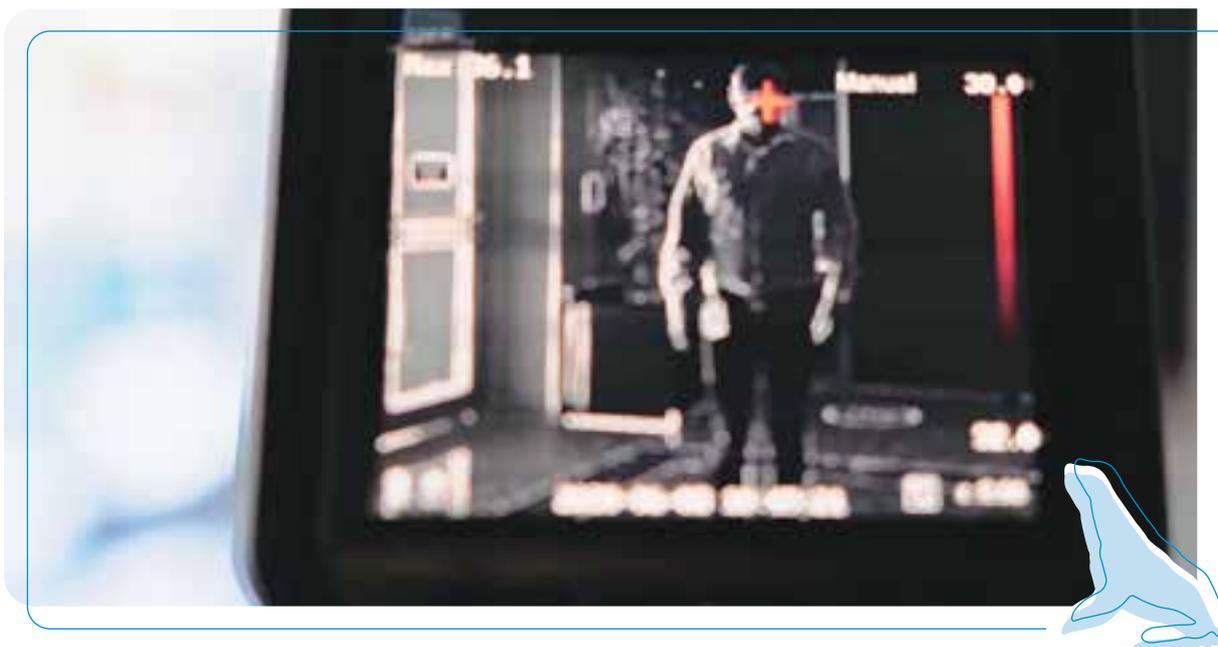
COVID-19 MANAGEMENT

The NCOC Crisis Management Team was activated in early March 2020 to facilitate the COVID-19 response and remains active today. Following our pre-determined framework for emergency preparedness, the team initially met daily to review the overall pandemic status updates and critical information from the Directorates and functions, as well as to prioritize the daily actions. The cross-functional team continues to meet regularly to share information and coordinate activities. Updates are provided to the Senior Leadership Team and to stakeholders on a regular basis. NCOC continues to properly implement virus mitigation protocols in field locations. NCOC also reached out to our shareholders with operations around the world to share knowledge and best practices.

Non-essential office workers in all locations, including our Atyrau offices, worked remotely

for portions of the pandemic. While our workforce adjusted to remote work, our IT team supported the staff and trained us to navigate the new virtual environment. To ensure safety, we updated Business Continuity Plans and adopted rigorous mitigation measures including early case identification, contact tracing, social distancing guidance, face covering requirements, and enhanced cleaning protocols.

At all worksites, logistics were modified to limit exposure while ensuring adherence to safety maintenance schedules and continuous production. A layered and flexible approach to control the spread of COVID-19 on our worksites included testing for the virus using high-quality PCR analysis, quarantine, and, very importantly, vaccination. Access to the operational sites was restricted and provided only to those workers who had a negative PCR-test, underwent pre-entry quarantine, or received a full vaccination against COVID-19.





On December 7, 2021, NCOC Health Services Manager Nurlan Baimenshin was presented with the "Outstanding Occupational Health Practitioner" award by the UK Society of Occupational Medicine for an exceptional contribution in its area of interest. NCOC and its Health Team has been praised for the anticipation, recognition, and control of COVID-19-related health hazards during the current global pandemic.

NCOC supported communities during the pandemic. We worked to accelerate the delivery and distribution of much-needed supplies and medical facilities. NCOC has maintained its commitment to support the local healthcare systems in the regions in which it operates. This has included the provision of critical care medical equipment and specialist staff (e.g., intensive care personnel).

The net effect of all the above measures has been to keep outbreaks to small and manageable numbers, prevent unplanned production reductions and delays, and, most importantly, keep our staff as healthy as possible during the pandemic period.

10.2. REACHING OUT TO THE COMMUNITY

In 2021, NCOC continued to work closely with the local authorities to prevent the mass spread of COVID-19.

NCOC supported the services of four intensivists from Georgia, from November 2020 till April 2021, who assisted in the treatment of COVID-19 patients in Atyrau Infectious Diseases Hospital.

In addition, NCOC donated medical equipment to Mangystau Regional Hospital:

- 20 artificial lung ventilators (ALV)
- 20 bedside monitors
- 200 medical syringe pumps that are parts of the ALV equipment – they are used to deliver small doses of medication from a variety of syringe sizes in acute care settings.

In total, since 2020 over USD 53 mln was allocated as direct assistance to the healthcare systems of Atyrau and Mangystau regions to fight against COVID-19.





NCOC
NORTH CASPIAN
OPERATING COMPANY

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