



Dear Claudio Descalzi – Eni,

Greetings. We are writing from the Business & Human Rights Resource Centre to invite Eni to respond to the findings of our recent report, ‘Digging in the Shadows’. We are writing to express concern regarding the human rights impacts of your investments in Eastern Europe and Central Asia.

‘Digging in the Shadows’ examined the human rights policies and performance of the 10 largest extractives companies in Armenia, Georgia and Kazakhstan. The report found grave abuses related to many of these companies, including those receiving foreign investment. You can find our investor summary [here](#) and key findings [here](#).

According to our findings, Eni investments have been linked to allegations of severe abuse, including the poisoning of children in Berezovka, toxic emissions, and chronic health issues in nearby communities.

Eni’s declaration on respect for human rights, code of ethics, sustainability policy, and supplier code of conduct incorporate frameworks such as the UN Guiding Principles on Business and Human Rights and the 2030 Agenda for Sustainable Development. However, evaluations of Eni’s projects in the region stand in stark contrast to these policies.

We believe that it is important to give companies and investors the opportunity to respond when concerns are raised about their operations, so that our readers have access to their perspective. We would like to publish your response alongside this letter, and kindly ask for your response by **5:00pm CET, Friday 10 December 2021**.

Notable Rights Allegations Related to Eni Investments

- **Karachaganak Petroleum Operating:** By 2004, 45% of residents in Berezovka – a village near the Karachaganak oil field – suffered from chronic health problems, including cardiovascular problems, chronic illnesses, memory loss, vision loss, muscular-skeletal problems, tooth loss, respiratory illness and gastroenterological problems. Blood samples taken by an independent laboratory during 2004 indicated that villagers were exposed to hydrogen sulphide and other toxins associated with oil production. Nineteen children and three teachers all simultaneously lost consciousness on 28 November 2014, allegedly due to fumes from the oil field. Thirty-one people were affected within two days. While Berezovka was later relocated, KPO has not compensated the children for the significant damage of their health. The IFC found KPO in violation of its environmental and social policies; among the noted problems was no reported hydrogen sulphide monitoring reported over a span of several years. Mass layoffs and delays from payment of wages have also led to worker unrest. [You can see the sources for the above allegations within the company profile.](#)
- **North Caspian Operating Company:** Pollution, emissions and disturbances from Kashagan have contributed to the mass die-off of marine life in the Caspian Sea. One environmentalist warned that left unchecked, the oil industry could result in a ‘total biological death’ of the Caspian Sea in the coming decades. NGOs and activists have raised alarms that residents of the Atyrau region are at significant risk of exposure to poisonous substances. Long-term

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exposure to hydrogen sulphide can lead to brain damage, permanent memory loss, vision problems, nausea and headaches. Top medical staff at the region have expressed fear that, if an accident were to occur at Kashagan, tens of thousands of people living in Atyrau could be killed or severely impacted by toxic gas emissions. Common problems in the area include cardiovascular illness, blood disease, premature births, respiratory illness and stillbirths. [You can see the sources for the above allegations within the company profile.](#)

We invited Karachaganak Petroleum Operating and North Caspian Operating Company to respond to the allegations and submit information on their human rights policies. Karachaganak Petroleum Operating [responded to the allegations](#); North Caspian Operating Company did not respond to the allegations, but did provide [information on its rights policies](#).

While Eni's sustainability policies are welcome and have promise, continued investment in the above projects demonstrates that Eni should do more to ensure these policies are implemented in practice.

Investors like Eni play a critical role in ensuring business projects in Eastern Europe and Central Asia do not infringe on human rights or contribute to severe environmental destruction. Many governments in this region, including those of Armenia, Georgia and Kazakhstan, have failed to address human rights issues, or are unable or unwilling to do so. In many cases, government officials have ownership or significant interest in business projects like those above, making it difficult or impossible to seek justice from the state. When states fail to protect, and businesses fail to respect, communities look desperately to investors for assistance and intervention.

In light of this, the Business & Human Rights Resource Centre has issued a few [preliminary recommendations](#) on responsible investment in the region, based on engagement with activists monitoring these extractives projects. Notably, these recommendations focus on public participation, due diligence, and grievance mechanisms. Early and timely access to information for affected rights-holders is also a key issue. Access to information is critical for preventing and addressing human rights impacts, as well as securing access to remedy for those who have been adversely impacted by extractives projects. However, such access to information is poor in the region as a whole, meaning investors should pay particular attention to this topic when making investments.

About the Resource Centre

The [Business & Human Rights Resource Centre](#) is an independent non-profit organization that tracks the human rights impacts of over 10,000 companies, including [Eni](#), in over 180 countries. With an audience of more than 2 million users per year, our digital platform links to reports about positive initiatives by companies as well as reports about concerns that have been raised by civil society. For further details, please see the ["About us" section](#) of our website.

Invitation to Respond

While socioeconomic development is greatly needed in the region and can play a critical role in the achievement of human rights, growth without human rights due diligence and remedy undermines

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the stated purpose of development: to improve the lives and well-being of the individuals and communities within a society.

We are encouraged by Eni's public commitments to human rights and sustainability, and believe in the company's potential role to ensure human rights are protected. We invite Eni to respond by **5:00pm CET, Friday 10 December 2021**. Please notify us if you need additional time. We hope to publish your response along with this letter. We are also inviting the other investors mentioned in the report to respond.

- Format: PDF, word document, or web link
- Must clearly indicate the date
- If Eni has already taken action with regards to any or all of the allegations, please feel free to include that in your response.

If Eni does not provide a response, we will indicate in the Weekly Update that we invited Eni to respond, but that it did not. Your response or non-response will be permanently registered in all relevant sections of our website.

Please do not hesitate to get in touch if you require any further information – we can be reached by email or telephone (see contact details below).

Kind regards,

Ella Skybenko (Eastern Europe/Central Asia Senior Researcher & Representative based in Kyiv) & Ashley Nancy Reynolds (Eastern Europe/Central Asia Research Assistant based in Croatia)
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Eni Response

North Caspian Operating Company has issued a response on behalf of its shareholders; the response is attached.

Regarding Karachaganak Petroleum Operating, Eni supports [KPO's response to the allegations](#) and does not have any further comment.

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January 31, 2022

Dear Ms Skybenko, Ms Reynolds,

We have familiarised ourselves with *the Digging in the Shadows* report published by the Business & Human Rights Resource Center in June 2021 with great interest. We have found that quite a number of statements cited in the report regarding NCOC's operations and practices have no grounds and are unjustified. Therefore, we would also like to thank you for the opportunity to share our views on some of these statements and the assumptions made by your organisation in the report. We would also like to point out that the initial enquiry made to NCOC in the form of a questionnaire did not reflect the positions outlined in the report.



Please note that NCOC is committed to developing a world-class project designed and operated in a manner protective of the people's health and environment. We conduct our operations responsibly and in full compliance with the laws of the Republic of Kazakhstan (RoK), and in line with applicable international regulations, standards, and best practices. All contractors working with NCOC are obligated to adhere to our Health, Safety and Environmental policies in all aspects of their work as well.

We welcome BHRRC's publishing of our response on your website for the general public, our shareholders, our communities and our other stakeholders to see. We also welcome your readers to visit our Company's website and read our annual Sustainability Report for accurate and factual information about our operations and practices. We also extend our invitation to the representatives of BHRRC to visit NCOC and learn firsthand about our people, operations, practices, and the way NCOC engages with its stakeholders. This can be arranged for with due notice and various safety and COVID-19 requirements and restrictions permitting.

With kind regards,

Olivier Lazare
NCOC Managing Director

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Health Impacts on Workers and Local Communities

BHRRC: NGOs and activists have raised alarms that residents of the Atyrau region are at significant risk of exposure to poisonous substances. Oil from both Kashagan and the nearby **Tengiz** oil field contains high levels of sulphur and mercaptans, both of which are highly hazardous for humans. According to Friends of the Earth, 'Thousands of people have already been relocated in the region because of sulphur emissions and other highly poisonous chemicals such as mercaptans, which are present at very high levels in Northern Caspian oil'.

Reactive sulphur can become toxic under certain conditions which are present in Kazakhstan, including very high temperatures. The U.S. Agency for Toxic Substances and Disease Registry has classified hydrogen sulphide as a neurotoxin, and intense exposure to it can cause death or severe illness. Long-term exposure can lead to brain damage, permanent memory loss, vision problems, nausea and headaches. The U.S. Environmental Protection Agency has noted this as a particular risk near oil and gas fields since communities near such fields have been found to experience 'neurological deficits'. Notably, hydrogen sulphide is believed to be the substance that poisoned the children in Berezovka.

Top medical staff at the region have expressed fear that, if an accident were to occur at Kashagan, tens of thousands of people living in Atyrau could be killed or severely impacted by toxic gas emissions. Risks are so high that, allegedly, plans to relocate the entire population of Atyrau (220,000 as of 2007) had been considered. Consortium experts have estimated that, in case of an accident, a toxic cloud could cover the entire city within fifteen minutes. Perpetuating the problem, residents have not been informed of how to act during an emergency, and they are not prepared for a mass evacuation. There is, allegedly, no emergency plan for the city nor for nearby settlements of Karabatan and Iskenye. A number of factors amplify the risk of mass poisoning, including: the close proximity of the oil field to the city of Atyrau; highly windy conditions that could quickly spread toxic clouds; and the geography of the local valley, which is below sea level and allows heavy gases to concentrate in the area. The company has deemed the scenario 'unlikely'.

The company was already forced to move workers' living quarters and other facilities after simulations showed that they were in danger of mass poisoning. The risk at some areas is so acute that workers must carry gas masks.

NCOC response: Population and territory protection issues related to the prevention and liquidation of natural and man-caused emergencies and their consequences, the provision of emergency medical and psychological assistance to the population in the emergency zone are regulated by the RoK legislation on civil protection. Classification of natural and man-caused emergencies, depending on the extent of coverage or consequences of emergency situation it may create, is divided into global, regional, local and facility level emergencies. Emergency response plans are approved depending on the scale of the emergency and its consequences as following:

- for global and regional scale emergencies - by the Government;
- for emergencies of local scale - by local executive authorities;
- for emergencies of facility/object scale - by organizations;

The organization and management of the works for the liquidation of natural and man-made emergency is carried out by the head of the liquidation of the emergency, depending on its scale.

NCOC responsibilities include evacuations and implementation of measures at facility level/scale, timely notification of state authorities and provision of possible assistance to emergency rescue services and formations.

NCOC adopts the risk tolerability criteria with respect to the potential major incident hazard risks to members of the public, based on international best practice from e.g. UK HSE and OSHA. NCOC's risk tolerability criteria, inter alia, defines a zone outside the 10^{-8} risk contour as location individual specific risk zones where housing and other public activities are allowed without any restrictions.

As per Project's Environmental Impact Assessment (EIA, 2009), elemental sulphur produced from associated gas at the Kashagan OPF is a solid crystalline material that is stable below 95.6 °C, i.e. in the ambient

temperatures specific for the region, and meets the requirements of GOST 127.1-93 Grade 9998. In line with Project design and its EIA NCOC minimizes elemental sulphur production at source by reinjecting associated gas with high H₂S content, maximizes elemental sulphur volumes sold into conventional (export) markets and encourages domestic sales for alternative uses, as well as envisages buffer storage of any redundant elemental sulphur in covered blocks to minimise potential harm to people and the environment.

Regarding the hazardous impact of sulphur, hydrogen sulfide and mercaptans present in Kashagan oil on human health, The 7-km sanitary protection zone (SPZ) for Kashagan Experimental Program (EP) onshore facilities including Bolashak OPF is sufficient to protect the residents of the nearby settlements from long-term air emissions impacts on their health and it provides for a high margin of safety even in case of non-routine events and emergencies, thus no drills on emergency evacuation of the nearby settlements are required. The 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 public health risk approach and cumulative impact assessment results, and set by the authorized governmental body as a safe distance from Kashagan onshore facilities during normal operations and in credible scenarios of incidents and emergency situations/accidents. Risks to members of the nearby settlements in case of an accident are [assessed](#) based on the Major Incident Hazard (MIH) hydrocarbon release scenarios for the OPF and the onshore section of the pipelines. The 10⁻⁸ risk contour due to releases originating on the OPF does not extend outside the 7 km OPF SPZ. The maximum width of the 10⁻⁸ contours is 2.9 km either side of the sour pipelines. Nearest settlement – Taskesken railway station is located at least 8.8 km North Kashagan Experimental Program (EP) onshore facilities, Atyrau city is 40 km South-West, Karabatan and Eskene Stations are 11-17 km West-North-East. That means that, in case of an accident, a toxic dose cloud will not reach nearest settlements and Atyrau city.

[In line with RoK sanitary rules](#) the size of SPZ validated by impact monitoring and industrial control results that confirm the appropriateness of the assessment, compliance with applicable residential and working air quality standards. Service licensed contractors and nationally accredited laboratories conduct impact monitoring and industrial environmental control at Kashagan Experimental Program (EP) facilities. Emissions from the sources at NCOC facilities are within the regulatory limits for air emissions and discharges. Ambient air quality is monitored on 24/7 basis at 20 Air Quality Monitoring Stations (AQMS) at the border of SPZ (7 km radius from OPF) and at nearest settlements. The results are available to RoK hydro-meteorological agency.

Republican Research Center for Ambient Air Protection LLP, Al-Farabi Kazakhstan National University and the Information and Production CenterGidromet Limited have been conducting comprehensive air quality studies in Atyrau city and Bolashak Onshore Processing Facility (OPF) location area at Eskene West since 2019. The 2021 study (over 30 mln points analysed) results conclude that Eskene West industrial area does not affect the air in Atyrau.

It is worth noting, that the Republican Research Center for Ambient Air Protection LLP presented 2020-2021 results of the air quality studies to the local community members, environmental NGOs and local academia as recently as 23 December 2021 at a roundtable conducted by NCOC.

Moreover, NCOC has a nationally accredited Industrial Hygiene laboratory equipped for testing hazardous workplace atmospheres. We undertake regular monitoring and Health Risk Assessments on monthly and quarterly basis and report to Sanitary and Epidemiological Service (SES). These have shown that potential risk for poisoning is low and mitigated during normal operations. NCOC was originally designed to avoid routine flaring and venting, no H₂S-containing gases are vented into the atmosphere. All produced gas is re-injected, 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.).

All potential non-routine and emergency releases of toxic agents are identified and assessed, barriers and controls are in place, such as fire and gas, high temperature and smoke detection systems followed by sealing off sections of process lines and equipment, shutdown certain equipment, depressurization of process vessel's inventory to closed drain buffer capacity and flares that neutralize any volatile toxic compounds. Company has a robust emergency response capability and plans. Personnel are provided with personal H2S gas detectors and Emergency Self-Contained Breathing Apparatus. Personal H2S gas detectors are designed to keep people safe by alerting them in the unlikely event that the level of hydrogen sulphide reaches specific concentration limits (5 ppm and 10 ppm). The provision of Emergency Self-Contained Breathing Apparatus provides a second layer of protection ensuring all workers a safe environment during an emergency release. (OBJ) (OBJ)

NCOC has emergency response plans for each company location with various scenarios of potential emergency situations that may take place at that facility and ensures that appropriate safety standards are continuously applied to mitigate those risks. All these scenarios are tested, and response processes are validated during our internal exercises taking place at both Onshore and Offshore facilities on a regular basis. We coordinate all our activities with relevant state authorities for major cases identified in the emergency response plans.

BHRC: Even in 2007, nine years before production at Kashagan began, local villages had already reported health problems. The Koshanai waste treatment facility and the Bautino marine base, both of which are involved with Kashagan's operations, are both located close to residential areas, and locals have complained about their health impacts. Common problems of the area include cardiovascular illness, blood disease, premature births, respiratory illness, and stillbirths. Children have experienced skin diseases, made worse by bathing in the Caspian Sea. It is important to note that other activities—including the Tengiz oil field—may have contributed to these health conditions. However, medical specialists have stated that the aforementioned health problems are likely related to oil development and the massive amount of toxic emissions in the area.

NCOC response: The statement allegedly linking local villages health cases with Company's activities has not been supported by any factual evidence. Since 2007, NCOC has received no complaints from local community regarding air quality and public health in Mangistau region.

Additionally, as per 2006 Offshore Environmental Baseline report prepared by Environmental Resources Management Limited in most of the sea water samples total hydrocarbons (THC) and phenol concentrations were below the Kazakhstan maximum permissible concentrations (MPCs) at Offshore, including Tupkaragan Bay. However, sediments Tupkaragan Bay had somewhat increased concentrations of barium (and aluminium), slightly increased concentrations of cadmium and THC. This area is very close to the coast and is a developed harbour suggesting that contamination would be difficult to attribute to a single operational activity and is highly unlikely to be the result of conventional shipping activities. Collection of scientific articles "Environmental Monitoring of the North-East Caspian Sea during Development of Oil Fields in the Period 1993-2016" conclude that increased concentrations of those components occurred in Tupkaragan Bay in 1996 – well before drilling operations at the Kashagan field.

The Company supported by service licensed contractor and nationally accredited laboratories initiated monitoring study at Bautino, Atash, Fort-Shevchenko settlements and Agip KCO facilities in 2002. The study report outlined NO contribution of the Company's facilities to air quality in Atash, Fort-Shevchenko settlements, as for Bautino village contributions included third parties in the adjacent industrial area and Company facilities. Company reduced its contribution its cuttings and oily water treatment and disposal operations to the VOC (Volatile Organic Compounds) impact in Bautino village by implementing the plan of impact mitigations measures recommended by the study and prescribed by the legislation. The study found no evidence of public health degradation in the Bautino base.

Driven by the increase of offshore drilling work, and third party activity growth in adjacent industrial area near Bautino, Fort-Shevchenko and Atash settlements Company decided to relocate all cuttings and oily water

treatment and disposal operations from Bautino marine base and Atash industrial area. As per the 2005 project design documentation with EIA materials new cuttings and oily water treatment and disposal facility was built at Koshken (Koshanai) landfill area at least 10 km apart from aforementioned settlements and began operations at the end of 2006.

The 1-km sanitary protection zone (SPZ) around Koshken Cuttings and oily water treatment facilities and 0.3-km SPZ around Bautino marine base are sufficient to protect the residents of the nearby settlements from long-term air emissions impacts on their health.

[In line with RoK sanitary rules](#) the size of the SPZ validated by impact monitoring and industrial control results that confirm the appropriateness of the assessment, compliance with applicable residential and working air quality standards. Service licensed contractors and nationally accredited laboratories conduct impact monitoring and industrial environmental control at Kashagan Experimental Program (EP) facilities. Emissions from the sources at NCOC facilities are within the regulatory limits for air emissions and discharges.

BHHRC: Residents also expressed difficulty accessing healthcare. Some claimed that they went to Aktau for treatment, but the medical professionals did not want to treat them. The toxicologist at Atyrau regional hospital complained that the community did not have a chemical and toxicological laboratory, despite a number of major chemical risks in the area. The doctor said that, when there are cases of poisoning, he sends blood samples off for forensic examination, but the labs in question test only the blood upon the request of law enforcement agencies (like in case of crimes). As a result, local doctors have to guess whether patients have been poisoned because of combustion of oil products. However, the toxicologist explained, 'legally we have no right to make 100% diagnosis without confirmation from the laboratory'. Additionally, local people have claimed that many workers have died in their sleep because of poisoning from the oil fields; the toxicologist said it is impossible to confirm this without results from a toxicology lab—which the community does not have access to.

NCOC response: NCOC is not aware of any cases of toxic poisoning or employee death caused by Company's operations. Being a socially responsible company, NCOC annually allocates a budget for development of [social infrastructure projects](#), including construction of hospitals and provision of medical equipment. Social Infrastructure Projects (SIPs) are generally proposed by the Oblast Akimats (local authorities). Proposals are analyzed by NCOC and the Authority to ensure they comply with the Production Sharing Agreement requirements and are developed into projects in close collaboration with the Oblast Akimats demonstrating sustainable benefits for local population. Since 1998, cumulative spend on social infrastructure projects has reached \$841.4 million.

A total of 18 healthcare projects have been implemented in Atyrau and Mangistau regions so far:

Atyrau:

1. Construction of a Hospital in Atyrau
2. Construction of the Regional Blood Center in Atyrau city
3. Construction of a laboratory facility's extension for the State Department of Atyrau Regional Center for Sanitary and Epidemiologic Experts' review in Atyrau
4. Construction of laboratory building extension for Makat District Branch Department of Regional Center for Sanitary and Epidemiological Expert Review
5. Major repair and construction of additional building for the Regional Children Hospital in Atyrau
6. Construction of the Regional Center for AIDS prevention and treatment in Atyrau city
7. Construction of Regional Infectious Diseases Hospital for 180 beds in Atyrau city
8. Construction of outpatient clinic in Koktogai village, Inder district
9. Construction of an additional building for the city cardiological hospital in Atyrau

10. Construction of a modular type infectious hospital for 180 ward beds and 20 beds of resuscitation and intensive care unit in Atyrau
11. Construction of central district hospital for 75 beds in Ganyushkino village, Kurmangazy district

Mangistau:

12. Construction of maternity hospital in Aktau city
13. Construction of polyclinic capable of receiving 100 patients per day with a day hospital facility for 25 patients in Fort-Shevchenko
14. Construction of a paramedic facility in Telman settlement
15. Construction of polyclinic capable of receiving 100 patients per day with a day hospital facility for 25 patients in Fort-Shevchenko
16. Construction of a 30-bed children department for the Tupkaragan District Hospital
17. Construction of a modular type infectious hospital for 180 ward beds and 20 beds of resuscitation and intensive care unit in Aktau
18. Construction of oncology dispensary for 100 beds in Aktau city

Moreover, during COVID outbreak in 2020, NCOC provided direct assistance to the healthcare systems of Atyrau and Mangistau regions by purchasing essential medical equipment and consumables for a total of 3 billion tenge (~7 million US dollars). Please note that procurement of medical equipment for state run hospitals (including Toxicology laboratory) is within the Ministry of Health's purview.

NCOC has a nationally accredited Industrial Hygiene laboratory and a contracted ambient air quality laboratory that have necessary equipment for testing hazardous workplace atmosphere and ambient air quality. We undertake regular monitoring and carry out Health and Environmental Risk Assessments that confirm compliance with industrial hygiene standards and validity of sanitary protection zone (SPZ) for Kashagan onshore facilities during normal operations and credible scenarios of emergency situations (nearest settlements are in a zone outside the 10-8 risk contour). As per RoK legislation, SPZ size is defined based on the public health risk approach and cumulative impact assessment results approved by the authorized governmental body and is validated by environmental and health field measurements.

Environmental Degradation and Pollution

BHRRC: The Kashagan oil project is located within the Caspian Sea, the world's largest enclosed body of water. The Caspian Sea is extremely important to the economy, well-being and socioeconomic status of surrounding countries. Consequently, pollution of the water can have devastating impacts for the environment, wildlife and local communities. Because of the extreme climate of Kazakhstan and the high concentration of toxic compounds within the oil, NGOs have warned that oil extraction and transport 'bears high risk of causing irreparable environmental devastation'.

Oil in the northern Caspian Sea contains approximately forty toxic pollutants that can have strong negative impacts for the environment and the health of local communities. Mercaptans are particularly dangerous, and researchers warn that amounts as low as 0.001mg/m³ can be lethal to humans. The oil in Kashagan also contains very high levels of reactive sulphur—up to 18%. Reactive sulphur can form toxic hydrogen sulphide gas, which has severe negative health impacts for those who are exposed to it (see above). It can also form acid rain; as a result, sulphur pollution from Kashagan has direct implications for Europe. Concerningly, sulphur does not dissolve; instead, it accumulates in the air, soil and water. Depending on climatic conditions, it can travel 2,000 km over just two days.

Sulphur has already caused major environmental problems at Kashagan. From the beginning of the project, issues surfaced about where and how to store the sulphur from Kashagan. Consortium experts calculated that the Bolashak processing facility, which prepares the oil from Kashagan for export, would produce more than one million tons of sulphur per year. Eventually, agreements were made to store the sulphur in sealed wooden

boxes. However, the company made unauthorised changes to the design, drawing criticism from the Head of the Department of Ecology in Atyrau, Erbol Kuanov.

NCOC response: Kashagan Project facilities are located outside the special environmental restriction and water protective areas, Akzhayik nature reserve, sturgeon spawning and migration areas, fishing grounds, nesting and seals concentration grounds. NCOC, in conducting its operations, maintains a policy of zero waste and wastewater discharges into surface water bodies, including the Caspian Sea. All waste generated at offshore facilities is transported to onshore waste facilities by vessels specially equipped for safe loading and transportation of wastes and effluents. NCOC's Waste Management System is aimed to reduce or fully eliminate waste generation at the source or during the process through a proper planning of Company's operations. Waste management is performed throughout the life cycle of the waste, which consists of prevention, reduction, reuse, treatment, and disposal.

The conservation of biodiversity in the Caspian Sea and its coastal areas is an integral part of NCOC activities under the NCSPSA. Due to the completion of onshore and offshore construction and transition of the Project for Kashagan development to the stage of Experimental Program (EP), the decision was made to update the Biodiversity Action Plan (BAP). In 2020 NCOC with support licensed service contractor completed the update of the BAP.

The main objective of the BAP is the conservation and improvement of biodiversity through identification and proactive management, minimization of potential impacts and operational risks at the EP phase.

In early November 2020, draft BAP was discussed with NGOs and public representatives, scientific organizations in RT. It provides a set of actions for biodiversity study and conservation and raising the public awareness and involvement on biodiversity of the region.

The BAP planned actions cover three areas:

- Study of offshore and onshore biodiversity for its further conservation;
- Use of advanced technologies for biodiversity study and conservation including use of unmanned aerial vehicles for wildlife surveys, multispectral survey of the Caspian seal population, and creation of a sturgeon breeding scientific center;
- Support of environmental programs.

The activities related to offshore and onshore biodiversity study and conservation (support of environmental programs) with participation of RoK and international scientific institutes, state accredited laboratories and licenses service contactors [include](#):

- Regular monitoring of onshore and offshore environmental parameters as part of compliance monitoring, including ;
- Surveys of the Caspian seal population.
- Birds observations, environmental surveys in the Zhayik river;
- Development of a biodiversity geographical information system;
- Landscaping works at the OPF «Bolashak» SPZ;
- Development of a sensitivity map for the North-Eastern part of the Caspian Sea;
- Surveys of the artificial island colonization with bottom organisms;
- Release of fish youngsters from the sturgeon hatchery into the Zhayik-Caspian water basin.

On December 23, 2021, in Atyrau, NCOC together with Zhaiyk Caspian Aarhus Center held a Roundtable with the representatives of local government authorities, local communities, NGOs, academicians, and the media to inform the public about the results of the air quality study and the Caspian seal population surveys.

The outcomes of the surveys aimed at assessing the population and well-being of the Caspian seal were presented. These surveys are a part of the Kazakh-Russian Caspian Seal Research Program in the North Caspian Sea (2019-2023), sponsored by NCOC (more information can be found in the 2020 Sustainability Report on www.ncoc.kz). The Program implementation will result in obtaining information about the seal concentration grounds for further arrangement of specially protected nature zones in these areas. The Kazakh Agency of Applied Ecology LLP with participation of RoK and Russian scientific and research institutions and state accredited laboratories, wildlife regulators, with NCOC's support, perform a transboundary monitoring of the Caspian seal to find out its current population size, reproductive potential and demographic parameters, study the food stock, and understand its biology in order to develop conservation measures and recommendations.

The current condition of the Caspian seal population was studied by tagging and testing the biological material in 2019-2020 where 20 satellite radio beacons were installed on seals captured in the Kazakhstan Sector of the North Caspian Sea. In addition, samples of biological material were taken from the captured seals for toxicological, physiological (serological and hormonal), virological and microscopic tests. It should be noted that seals' tagging and their tracking has provided valuable information on seal migration routes and key habitats during different seasons of the year and supplemented the sampled information. Further accumulation of data and information will allow identifying the specific movements of the entire Caspian seal population.

The completed surveys indicate that the total seal population in 2021 makes 302,000 seals. The analysis of the available data for 2012, 2020 and 2021 showed an increase in the number of seals in the current year (2021) by 19.7% in comparison with 2012 data and by 6.5% in comparison with 2020 data. For 10 years, the annual growth of the Caspian seal population is about 1%. "The Caspian Seal Research Program in the North Caspian Sea (2019-2023) is aimed at taking all necessary measures to conserve the biological diversity, protect, restore, and ensure sustainable and rational use of the biological resources of the Caspian Sea.

Advanced technologies employed in biodiversity studies and conservation: unmanned aerial vehicles (UAV) for seal and bird surveys, saiga antelope survey in 2015, multispectral survey of the Caspian seal population.

Regarding the hazardous impact of elemental sulphur, hydrogen sulfide and mercaptans present in Kashagan oil on human health, NCOC can state with confidence that Bolashak Onshore Processing Facility (OPF) is safe for the community. Sanitary protection zone (SPZ) for Kashagan Experimental Program (EP) onshore facilities is defined by a licensed contractor on the basis of public health risk approach and cumulative impact assessment results and set by authorized governmental body as a safe distance from Kashagan onshore facilities during normal operations and in credible scenarios of emergency situations (nearest settlements are in a zone outside the 10-8 risk contour). In line with RoK legislation, SPZ size is defined based on public health risk approach, cumulative impact assessment results, approved by authorized governmental body and validated by environmental and health field measurements.

As a part of the Environmental Impact Assessment (EIA) procedure, NCOC conducts impact assessment of acidifying substances precipitation using the EMEP/MSC-W mathematical model developed by the Meteorological Synthesising Centre-West (MSC-W, Norway) within the framework of the Cooperative Programme for Monitoring and Evaluation of the Long-Range Transmissions of Air Pollutants in Europe or EMEP. The modelling was performed for the total flux of long-range transport of pollutants both from the Kashagan field sources and from other sources located within the Republic of Kazakhstan and abroad. Based on the modelling results, sulphur compounds from Kashagan field facilities precipitate predominantly in the

North Caspian area of the Republic of Kazakhstan and constitute 7.4% of the total flux of sulphur compounds to the surface of RoK.

Impacts on soil and water acidification were assessed using the Steady-State Water Chemistry (SSWC) and Steady-State Mass Balance (SSMB) models on the basis of acidifying substances precipitation modeling results. Impact of the acidifying substances fallout from the Kashagan field sources will not cause significant changes in PH of water and soil and is assessed as insignificant or zero level for all recipients (Caspian Sea water, Caspian Sea ecosystem, soils, vegetation, underground water).

There was no change in the design of sulphur storage mentioned in your report. As per Project design with EIA materials "EIA for 4MT Sulphur storage design. North Offsite Area. Kashagan Field Development Experimental Program" elemental sulphur produced from associated gas at the Kashagan OPF is a solid crystalline material that is stable below 95.6 °C, i.e. in the ambient temperatures specific for the region, and meets the requirements of GOST 127.1-93 Grade 9998. In line with design project with EIA materials, NCOC minimizes elemental sulphur production at source by reinjection of associated gas with high H₂S content, maximizes elemental sulphur volumes sold into conventional (export) markets, encourages domestic sales for alternative uses, and envisages buffer storage of remaining elemental sulphur in covered blocks to minimize potential harm to people and the environment. The aforementioned Project design with EIA materials were approved by state environmental expertise. NCOC conducts public consultations on all EIAs in line with RoK legislation and the UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters. For better transparency and increased public participation these public hearings are led by an independent body - the regional Aarhus centre, which is to-date the best practice in Kazakhstan.

Processing sour gas and managing sulphur safely and effectively is of crucial importance to NCOC. The liquid sulphur generated as by product at the OPF plant is processed and exported as sulphur pastilles. The storage area is lined and provided with drainage to prevent seepage into groundwater, and fully equipped with fire and gas-detectors along its perimeter. Since 2017, sulfur pastillation unit has been operational, resulting in significant reduction of sulfur placement at storage pads.

BHRRC: Just a few weeks after the project started operations during 2014, production was shut down due to leaking pipelines that emitted corrosive, sulphuric gas. Some sources say that, after fourteen years of development, production at the target level lasted for just one hour before the emergency triggered a shutdown.

The company initially attempted to conceal the cause of the failure; researchers later found that the leak was due to the high content of corrosive sulphur in the oil, which exceeded the maximum limit permissible in the pipes. Critics argued that this indicated a failure of the facility's capacity to adequately and to safely process the oil at Kashagan. In the end, the consortium had to replace 200 km of leaking pipelines, delaying production by an additional two years. Contractors expressed concern that valves and casings could rot due to sulphur exposure, potentially leading to a new accident

NCOC response: Production from Kashagan field was started on 11 September 2013. However, the operations had to be stopped on 24 September, due to a gas leak in the onshore section of the gas pipeline running from offshore to the Bolashak onshore processing facility.

NCOC cooperated with the relevant RoK authorities in the investigation of this incident and never attempted to conceal the causes of the pipeline failure.

NCOC informed the public about the pipeline incident and provided updates on pipeline replacement activities through several public hearings and official statements/publications.

The immediate cause of the pipeline failures was traced by material experts (as part of incident investigation) to be sulphide stress cracking due to unexpected locally elevated hardness of the steel.

Laboratory analyses and simulations of the operational environment with samples from the pipeline concluded that the steel specifications for the pipeline were appropriate for the conditions of the Kashagan field. The specifications meet the requirements of the NACE standards (National Association of Corrosion Engineers), respective ISO standards, and best practices in international oil and gas field development. The sour gas line material (clad pipe with Inconel 625 cladding) was suitable to withstand the expected H₂S content and the presence of water. Further the pipeline was designed in full compliance with international pipeline design standards (ISO and DNV) and constructed with full QAQC during various stages of construction.

The material selected for the replacement pipeline is a composite steel made of two layers: a cladding layer, which is in contact with the sour oil and gas, made of a corrosion-resistant alloy, and a backing layer, made of specially formulated carbon steel to provide the strength and toughness required. Each pipe section is 12 meters long and weighs about 10 tonnes. The steel manufacturers and NCOC conducted process qualification tests during plate and pipe fabrication to assure they meet specifications, and additional tests were conducted upon delivery of the pipe to the installation sites.

The pipelines from offshore to the Bolashak Onshore Processing Facility are fitted with pressure sensors and are continuously monitored as part of a software-based Leak Detection System (LDS) to alert control room operators in the event of pressure changes that could indicate a leak. Pipelines are also regularly inspected by intelligent pigging and monitored by helicopter and foot patrol for both security and integrity assurance purposes. These systems were in place earlier, and in fact, detected leaks and isolated them without harm to people or the environment. Since production restart in 2016 we've had no incidents and leaks.

BHRRC: Kazakhstan's environmental ministry declared that it would seek \$737 million in damages for the pipe leak. The project had flared 2.8 million cubic meters of toxic gas, polluting the atmosphere and the local environment. Consortium members challenged the fine at court, and the amount was reduced to just \$55 million. The company agreed to finance the social project, and it contribute \$50 million to the construction of an international exhibition in Astana. NGOs criticised the decision, saying, bureaucrats received 'bread and circuses' at the cost of damages to local communities near the oil field.

NCOC: Unlike the practice in OECD countries, the former Kazakhstan environmental legislation envisaged application of indirect method of calculating monetary damages that relied on pre-established formula and hence did not require measurements (or physical evidence) of actual damage to the environment in determining the amount of compensation that must be paid. This punitive approach of the Environmental Legislation had been repeatedly criticized by different industry associations and international organisations, including OECD, as scientifically unsound, non-transparent and discriminatory against Oil and Gas industry.

As a result of environmental legislation reform in 2016, Kazakhstani legislation was amended to allow safety flaring and emissions from such flaring, as practiced in other OECD oil-and-gas producing countries. The new Environmental Code, effective 1 July 2021, along with other changes aimed at introducing EU Environmental Impact Assessment model, fixing mechanisms to implement Kazakhstan's international commitments, and promoting public participation in decision-making process by the environmental authority, adopted "polluter pays" model based on evidence of actual harm to the environment and eliminated environmental damage to the ambient air as well.

With respect to NCOC's contribution to the International EXPO Exhibition in 2017, this was done as part of the Social Infrastructure Projects (SIPs) spending, based on the request of the RoK Government. It is the prerogative of the Government of the Republic of Kazakhstan to select the projects that fall under the category of SIPs

within the North Caspian PSA. Being long-term partners of Kazakhstan, a number of foreign investors (not only the members of North Caspian PSA consortium), acted as global partners of the international specialized exhibition Astana EXPO-2017, thus demonstrating their support to the Republic of Kazakhstan in its transition to a "green economy", and also provided sponsorship support to Astana EXPO-2017. With regards to the North Caspian project the sponsorship of the shareholders was provided through NCOC.

BHHRC: Concerns around air pollution have also been persistent. Locals complained that, when construction began at the Bolashak complex, 'there was so much dust in the air that the local residents could not recognize their cows when they returned from the steppe in the evening; the animals were completely covered in dust'. NCOC promised to install air monitoring centres near its processing facilities and Atyrau; however, as of 2007, these facilities evaluated only the levels of two hazardous pollutants, rather than the nine recommended by environmental experts. Additionally, during construction, the air monitoring centres only worked at half capacity, and thus, they did not give full data on emissions. The company allegedly did not allow the government or researchers to conduct independent monitoring. Of the twenty-eight air monitoring stations at Atyrau, twenty belong to NCOC.

NCOC response: NCOC is not aware on dust impact from land leveling to animals. Short term construction activities were performed in line with project documentation with EIA materials, that envisage dust suppression and land leveling techniques to tackle the dust generation, sand blasting activities were performed in the closed areas, soil recultivation measures put in place. NCOC is one of the first companies in Kazakhstan that installed 20 automatic stations for continuous monitoring of the air quality in Atyrau region on voluntary basis and so far no other industrial Company in RoK has such complex Air Quality Monitoring System (AQMS) network. 4 stations are located along the perimeter of the 7-km sanitary protection zone of Bolashak OPF; 7 more stations are installed in nearby and remote from the OPF settlements including Dossor and Makat; and 9 stations are located in Atyrau city.

The list of monitored parameters had been agreed with the authorities. In each AQMS, the concentrations of 5 air pollutants (hydrogen sulphide, sulfurs dioxide, nitrogen dioxide, nitrogen oxide and carbon oxide) are measured continuously, round the clock. Also measured continuously are the meteorological parameters which influence the dispersion of impurities in the atmosphere (wind speed and its direction, air temperature, barometric pressure and relative humidity). Further, additional air parameters such as mercaptans and hydrocarbons, are measured once a month at all AQMS locations. These tests are analyzed in the accredited contractual laboratory.

At the end of 2008 NCOC completed a project on remote data collection and transmission from air quality monitoring stations. Upon completion of the project in 2009, online access to monitoring data was organized for the employees of Kazgidromet branch in the Atyrau region. In addition, in 2017, access was granted to the employees of the Natural Resources and Nature Regulation Department. Starting from December 2020, data generated by the stations located in Atyrau are available in real time to the local people via AirKz mobile application and interactive map developed by Kazgidromet. Additionally, LED screens were installed all over Atyrau, broadcasting monitoring data.

Currently, NCOC is conducting Air Quality Complex Study around its production facilities and within Atyrau city. The Study program has been endorsed by the government officials including the Committee for Environmental Regulation and Control (CERC) and public representatives in line with Aarhus Convention principles. About 40 air pollutants are monitored in the frame of the Study.

In the spirit of transparency, NCOC organizes regular site visits for the representatives of state bodies, public and NGO representatives with the application of all company safety and security requirements. Onshore Processing Facility (OPF) is a hazardous facility, and therefore access can be granted only to those who have

received mandatory trainings to avoid any safety risks. There are no restrictions to conduct safe environmental measurements outside of the SPZs set at Kashagan onshore facilities.

Access to Water

BHRRC: Oil and gas projects in Atyrau, including Kashagan, have contributed to water shortages at local communities. The area has experienced increasing droughts and a lack of drinking water during recent years. As of 2017, the Mangistau region has experienced water shortages of up to 40,000 cubic meters per day. The Bolashak facility, which processes oil and gas from Kashagan, draws water from the same water main that supplies communities for the Mangistau region. As a result, the facility could continue to endanger the access to water for local communities, especially in the absence of an adequate water recycling system.

Additionally, NCOC has been accused of dumping toxic wastewater into the sewage system (see above).

NCOC response: UN [ranked](#) Kazakhstan as region with a low (25-50%) water stress. NCOC is committed to maximize conservation of fresh water.

No surface watercourses connecting the existing Onshore Complex facilities with the Caspian Sea are observed. The nearest surface watercourses of the Ural and the Emba Rivers are located at a distance of more than 40 km from the area of the existing OPF.

The Onshore Complex facilities are in the region with 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 will completely depend on import of water resources; therefore, its efficiency will affect the environmental indicators of the company activity.

Due to lack of own freshwater resources, water will be supplied at the account of the Volga River water taken in the Astrakhan area and transported along the North-East coast of the Caspian Sea via the “Astrakhan-Mangyshlak” water line operating by KazTransOil (KTO) of 1,200 mm diameter and 5.5 MPa pressure.

General water intake facility is located at Kigach river which is the Volga River delta effluent and is running along the west boundary of Atyrau region. Water intake facility is located on the left bank of the river 2.5 km downstream from the ferry line near Maliy Aral village.

As of current situation, the “Astrakhan-Mangyshlak” pipeline used for transportation of the Volga River water is able to ensure a permanent yield and the required quality of water for production needs of the Onshore Complex within the whole year. In 2020, 28.4 million cubic meters of water were supplied through the main water pipeline. NCOC consumes less than 3% of the annual “Astrakhan-Mangyshlak” pipeline water supply with a plan to further reduce freshwater intake.

In 2021, NCOC withdrew 871 thousand m³ of fresh water, treated and reused 448 thousand m³ of wastewater, which constitutes 51% of freshwater intake. The volume of fresh water consumed per unit of hydrocarbon production in 2021 was 39 cubic meters of water per thousand equivalent tonnes of oil - at the level of IOGP (the International Association of Oil and Gas Producers) [performance indicators for EU region](#) (40.98 -37.02 cubic meters of water per thousand equivalent tonnes of oil in 2019-2020).

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 up to 70% and enhance the quality of water discharged into lined evaporation ponds by extra treatment of the water from Onshore Processing Facility. The environmental effect of the treated wastewater quality is the reduction of pollutants

such as methanol, oil, H₂S, iron and suspended solids. The Water Treatment Facility is expected to be in operation in early 2023.

BHRRC: NCOC did not provide information from its air monitoring stations for several months during 2017; ecologists said this made it impossible to tell which company was polluting the air or how much pollution came from NCOC during that time. During 2017 - 2020, 177 - 180 thousand tons of emissions were detected in Atyrau, mainly from major oil fields like Kashagan and Tengiz. Within the span of nine months, 151 instances of pollution exceeding the maximum permissible concentration (MPC) were registered, including two extreme exceedances.

NCOC response: From January to June 2017, AQMS reports were being submitted on a monthly basis per schedule. In July 2017, the software used for centralized data collection and report development malfunctioned. Therefore, submission of AQMS data was suspended, however, there was no data loss since the data was accumulated at the stations. In October 2017, software reinstallation and configuration were completed and all data from the stations was uploaded to the system. In October, the Company submitted reports for all previous months when the software was out of order (July-October 2017). Thus, state bodies (the Department of Ecology, Akimat, Kazgidromet) had been provided with all AQMS data for all 12 months of the year by end of 2017.

NCOC significantly reduced its actual emission from 78,575 tonnes in 2017 to 21,788 tonnes in 2021 by improving reliability and availability of the processing equipment.

Republican Research Center for Ambient Air Protection LLP, Al-Farabi Kazakhstan National University and the Information and Production Center Gidromet Limited have been conducting comprehensive air quality studies in Atyrau city and Bolashak Onshore Processing Facility (OPF) location area at Eskene West since 2019. The 2021 study (over 30 mln points analysed) results conclude that Eskene West industrial area does not affect the air in Atyrau.

BHRRC: NCOC has also been accused of improperly dumping toxic wastewater into the municipal sewage system. The wastewater contained toxic substances in concentrations of tens to hundreds of times above the maximum permissible concentration. The company had not even begun construction of a wastewater management facility by 2012, twelve years into project development, which is in violation of the Kazakhstan Water Code. Notably, the Water Code did not prohibit dumping untreated wastewater into the sewage system. The company was not ordered to address the issue until the scandal emerged. Employees began to dump the waste into a new location in Atyrau. Municipal pipes were soon clogged by oil products, causing outrage from utility companies and local residents. The company, allegedly, continued to dump wastewater outside of the city.

In another incident, the company had been found to dump wastewater into salt steppe lakes, which posed significant risks of leaking into the Caspian Sea. The oil-saturated wastewater in evaporation ponds had allegedly caused fires.

NCOC response: NCOC follows zero-discharge policy: no disposal or discharges of waste and treated wastewater into the natural surface waters including the Caspian Sea. As for onshore facilities, any wastewater discharges at the construction phase were performed in line with permit and service contract conditions for wastewater treatment and disposal. Wastewater at construction activities are waters from non-sour hydrotest activities. NCOC monitored and controlled compliance with permit and service contract conditions.

NCOC confirms there have been no fire cases caused by evaporation ponds as a result its operation activities.

NCOC has constructed and utilizes lined evaporation ponds as the safest available method for managing any wastewaters that cannot be reused. Wastewater from industrial processes and domestic effluents undergo several stages of mechanical, chemical and biological treatment to meet applicable water quality standards prior to discharge into evaporation ponds/ gathering ponds for further evaporation. Best available technologies are applied to treat waste waters, including sour water stripping, oxidation, back flotation, sedimentation, separation and filtration. The ponds are completely isolated from soil and subsurface waters.

Once NCOC gained sufficient data on performance of wastewater treatments facilities since start of production operations at the end of 2016, it started the design phase of the new onshore Water Treating Facilities project in line with Company's "Plan for conversion to water recovery and water reuse supply" required by the RoK Water Code. Execution phase of the project commenced in 2020. This major project aims to further reduce water intake from the Astakhan-Mangyshlak pipeline up to 70% and enhance the quality of water discharged into lined evaporation ponds by extra treatment of the water from Onshore Processing Facility. The environmental effect of the treated wastewater quality is the reduction of pollutants such as methanol, oil, H₂S, iron and suspended solids. The Water Treatment Facility is expected to be in operation in early 2023.

The same requirements are embedded into contract and procurement management rules and applied to all contracted services. For example, in line with Duty of Care approach, Company takes all reasonable steps to look after any waste and wastewater it generates throughout the lifecycle of the Project and ensure its lawful management and disposal by others on the company's behalf.

In the spirit of transparency, on October 22, 2021, NCOC invited the representatives of non-governmental organizations, communities, and local state authorities to visit the Kashagan Facilities at West Eskene and delivered a presentation on the evaporation ponds with a view to informing the community about the company's wastewater management systems as well as comprehensive studies of air quality in West Eskene. A constructive dialogue among all participants took place during the visit.

BHRRC: Furthermore, environmentalists have raised alarms about the lack of a comprehensive oil spill response plan in the case of a leak from oil tankers.

NCOC response: It is worth pointing out that NCOC does not ship oil by tankers, all produced oil is transferred by pipeline.

Answering your concern about the lack of a comprehensive oil spill response plan in case of oil leak, we affirm that NCOC gives the highest priority to preventing oil spills and has a comprehensive spill response plan. In accordance with the National Plan of provision of readiness to oil spill response actions at sea, inland water reservoirs and in the protective area of the Republic of Kazakhstan emergency situations are classified in 3 tiers, Tier 1 includes less than 10 tons of oil spills - response is carried out by the operating company, Tier 2 includes 10 -250 tons of oil spills - response is carried out by the operating company supported by local shore services resources, Tier 3 includes more than 250 tons oil spills - response is carried out by the operating company supported by local shore services and various resources including international ones. NCOC has developed an Oil Spill Response Plan based on the requirements of RoK legislation, International Standards and applicable Industry Practice, approved it in due course and submitted it to concerned state authorities. In order to provide tier 3 resources for oil spill response, NCOC has a contract with a specialized oil spill response organization with international recognition, qualified personnel and appropriate equipment as required by RoK legislation. NCOC's Oil Spill Response Plan is regularly tested. In 2021, in addition to on-going minor exercises at all locations, NCOC also conducted "Tier 3" exercises, simulating a major oil spill. In addition to that, NCOC has a dedicated Oil Spill Response group, with about a hundred fully trained staff, and equipment suitable for the harsh environment of the North Caspian Sea stored at marine support bases in Bautino and Damba. We use a wide range of innovative technologies to help respond to oil spills and are actively engaged in researching new and more effective methods. We identify spill risks and ensure that the highest safety standards are continuously applied to mitigate those risks.

BHRRC: Pollution, emissions and disturbances from Kashagan have contributed to the mass die-offs of marine life in the Caspian Sea, including 10,000 seals during 2000 and thousands more since then. Researchers estimated that NCOC's icebreakers killed nearly 5,000 seals each year, out of a population of only 90,000, according to leaked company documents. One environmentalist warned that, if left unchecked, the oil industry could result in a 'total biological death' of the Caspian Sea during the coming decades, largely due to toxic pollutants within the oil. These die-offs have already had severe impacts for the local people, many of whom rely upon the fishing industry (see below).

NCOC response:

Kashagan Project facilities are located outside of special environmental restriction and water protective area, Akzhayik nature reserve, sturgeon spawning and migration areas, fishing grounds, nesting and seals concentration grounds. NCOC in conducting its operations adheres to the policy of zero waste and wastewater discharges into surface water bodies, including Caspian Sea, air emission standards and the guideline to avoid impact of marine navigation on seals during ice season. Impact of the acidifying substances fallout from the Kashagan field sources will not cause significant changes in PH of water and soil and is assessed as insignificant or zero level for all recipients (Caspian Sea water, Caspian Sea ecosystem, soils, vegetation, underground water).

The protection and conservation of the unique biodiversity in the Caspian region is a top priority for NCOC in our company's sustainable development. Since 1996, the Company has been conducting regular studies of the Caspian seal population by employing state-of-the-art technologies to understand seal migratory behaviors, habitats, breeding and feeding grounds. The purpose of these studies is to prevent or mitigate potential adverse effects on seals from navigation and production operations at offshore facilities. The Caspian seal population was indeed in a critical situation. It has been decreasing since the last century due to a number of natural reasons, anthropogenic and technogenic factors. Reduction of feed capacity, commercial capture in the middle of the 20th century, various diseases, difficulties during the breeding season, unfavorable weather conditions, fishing, entanglement in fishing nets, and more.

Regarding icebreakers impact on seals, NCOC has developed its own rules (2012 amended marine operations and seal observer manuals) that are more stringent than legal requirements and cover:

- Properly planning the routes of icebreaker to avoid any impact on seal breeding grounds. The icebreaker planning activities includes analysis of satellite images of ice concentration, preliminary helicopter overflight along planned route, aerial surveys from board of specialized airplane.
- Barge transportation method. Towing instead of pushing improves visibility ahead of the icebreaker vessels.
- Instructions from specialists on ice situations before vessel navigation. The crews receive detailed information on the route and areas of seals concentration.

Each icebreaker vessel is equipped with night vision cameras to detect seals in front and be able to change the course. Also, there's on-line exchange of information on seals distribution on ice between the vessel crews. Another mitigation measure is to accommodate experienced seal watchers and representatives from government authorities on board of each NCOC icebreakers which also helps to build proper route to eliminate risk of any impact on seal breeding grounds.

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 ever since the rules to avoid impact of marine navigation on seals have been put in place and NO incidents of seal mass mortality since 2015.

Moreover, in 2019, NCOC initiated the five years [Program for Comprehensive Caspian Seal Research](#) within the jurisdiction of the Republic of Kazakhstan and Russian Federation. The Program aims at protection of environment and key habitats of Caspian seal as part of activities on conservation of the Caspian Sea biodiversity.

The current condition of the Caspian Seal population was studied by tagging and tracking seals from the Kazakhstan Sector of the North Caspian Sea over the 2019-2020 period with the use of radio beacons. Biological material from the seals was also collected for toxicological, physiological (serological and hormonal), virological and microscopic tests. The tagging and tracking of the seal provided valuable information on seal migration routes and key habitats during different seasons of the year.

The completed surveys indicate that the total seal population in 2021 was in excess of 302,000 seals. The analysis of the available data for 2012, 2020 and 2021 showed an increase in the number of seals in the current year (2021) by 19.7% in comparison with 2012 data and by 6.5% in comparison with 2020 data. For 10 years, the annual growth of the Caspian seal population is about 1%.

NCOC regularly informs the community about the results of seals surveys through our Sustainability Report and various engagement platforms, including dedicated round tables hosted by NCOC with the community representatives and NGOs. Most recent one, dedicated to the Caspian seals survey and Air quality monitoring, was conducted by NCOC in cooperation with the Zhaiyk Caspian Aarhus Center on 23rd December 2021. It was well attended by the local NGO's, academia, local authorities, and environmental groups.

Socioeconomic Impacts and Right to Livelihood

BHRRC: Livelihoods and means of sustenance have been severely impacted by oil projects at the Caspian Sea, including Kashagan and Tengiz. For instance, disturbances and pollution have had severe negative impacts for fishing in the Caspian Sea and surrounding waters. Mass die-offs of marine life have occurred in nearby water for two decades. Internal NCOC documents have acknowledged the company's activities as contributing to the mass deaths. Villagers reported drops of their fish catch and skin diseases on the fish they did catch, making them unmarketable. This has presented considerable threats to livelihood, since in some villages, 40% of the population had been employed with the fishing industry. While the Kashagan project has provided some employment opportunities to make up for these losses, critics say that residents face inadequate means to sustain their families. While development was underway, NGOs warned that, once the construction phase concluded and facilities began operation, employment of the sector would drop, leaving the local population without employment while also unable to return to their previous forms of livelihood.

NCOC response: Kashagan Project facilities located outside of special environmental restriction and water protective area, Akzhayik nature reserve, sturgeon spawning and migration areas, fishing grounds, nesting and seals concentration grounds. NCOC in conducting its operations adheres to the policy of zero waste and wastewater discharges into surface water bodies, including Caspian Sea, air emission standards and the guideline to avoid impact of marine navigation on seals during ice season. Impact of the acidifying substances fallout from the Kashagan field sources will not cause significant changes in PH of water and soil and is assessed as insignificant or zero level for all recipients (Caspian Sea water, Caspian Sea ecosystem, soils, vegetation, underground water).

Company does not cause significant impacts on fish resources while conducting its production operations. The above is confirmed by environmental impact assessment and monitoring results. The impacts during construction phase are eliminated where possible or reduced to the ALARP (as low as reasonably possible) level by implementing Best Available Technologies (BAT). There were NO incidents of fish mortality as a result of

NCOC operations. Any residual short-term potential indirect impacts on the fishery resources during offshore construction activities are compensated in line with regulatory approved list of compensation measures.

[Collection of scientific articles “Environmental Monitoring of the North-East Caspian Sea during Development of NCOC N.V. Oil Fields in the Period 2006-2016”](#) suggests that 70 species and subspecies of fish were identified during ichthyofauna monitoring in 2006-2016 NCOC operations. Monitoring results show that short-term impacts of technogenic factors during Kashagan field construction did not cause irreversible changes in the composition and population of fish species and once artificial islands are built, they serve as a shelter and/or food resources grounds for fish by indication of greater than average densities of some species.

Two periods of rapid decline in the number of commercial fish species annual catches in the Ural River and pre-estuarial areas following in 1996-1998 and in 2008-2011 and impact monitoring results on quantitative indicators of the bento-pelagic fish community suggest no impact of construction of the main structures of the Kashagan offshore facilities that were held from 2002 – 2007 and production operations at Kashagan EP facilities that started up in Sep 2016.

BHRRC: Even when employment opportunities are available, they are often not given to local workers. Most employees working with developing the Bolashak facility were not local residents. Speaking English was required to work in the facility, even as a cleaner at the railway station. The official languages of Kazakhstan are Kazakh and Russian; as such, the English requirement severely limited the ability of locals to apply for work. Reportedly, government authorities later concluded an agreement with the company to appoint an additional 3,000 local workers for the construction of the facility.

NCOC response: Our hiring practices are designed in a manner that we give preference to local people when hiring. These measures have led to reaching 85% of managerial positions being filled by local staff and 92% of technical and engineering, administrative and qualifies specialists are taken by local personnel.

NCOC undertakes every effort to develop and grow national staff, so they can take on increasing responsibilities and grow professionally in the company. Our succession program and intensive development of national staff has led to nationalization of 22 positions in 2021 and 155 positions in the last 4 years. By the end of 2021, almost 3000 staff are working in NCOC including around 2,800 of local employees vs 200 expatriate personnel with more than 93% overall staff nationalization, and over 7,000 of contractors are engaged in the Project with 92% of Kazakhstan citizens.

We understand your interest in NCOC employment practices to ensure transparency and fairness in recruitment. In this regard, we assure you that all NCOC vacancies are posted on LinkedIn, Company internal and external websites, where anyone can apply according to their qualifications, thus NCOC applies transparent and fair recruitment in compliance with all requirements of the Labor Code of the Republic of Kazakhstan.

NCOC recruits and employs qualified specialists to support and execute oil and gas operations and does not have any service staff at railway stations. Search and selection of candidates are performed on the basis of Job Descriptions, where all requirements for a job are indicated. English language requirements depend on specific functions and position levels. Unskilled positions filled by NCOC or our contractors do not require English language knowledge.

NCOC has clear policies and procedures for dealing with workforce grievances, which apply equally to its contractors and sub-contractors. Grievance procedures serve to bring employee problems to management’s attention and ensure open, proper and timely review and resolution before frustrations can evolve into conflict. Employees may express their grievances freely and openly without fear of dismissal and intimidation. NCOC must accept, register, and review any written grievance submitted by an employee

(<https://www.ncoc.deloitte-hotline.com/>). Employees have the right to appeal a decision, which he/she thinks may be violating his/her labor rights. If not resolved within NCOC, the grievance may be referred to appropriate RoK officials. By law, neither NCOC nor its contractors may compel employees to join or not join a legal labor action, and must reserve for the employee any prior job position and benefits.

NCOC has policies and procedures in place for monitoring timeliness of salary payment, living conditions and canteen facilities provided by our contractors and sub-contractors.

NCOC carefully calibrates the competitiveness of its salary and benefits package with market surveys.

BHRRC: While the production sharing agreement between NCOC and the government of Kazakhstan requires the company to carry out social and infrastructure projects, civil society groups say that there is little, if any, public participation with designing, implementing or monitoring these projects. While there have been some meetings and surveys, little discussion occurs between NCOC and the public or civil society groups, and there is allegedly no dialogue around costs. Activists also expressed concern about a lack of accountability for environmental impact assessments and social investment projects. Corruption is allegedly rampant, and it has impacted the contracts and costs for social development projects.

NCOC response: NCOC is aware of the community's desire to be involved in the process of selecting social infrastructure projects (SIP). NCOC management and our shareholders engage with both Atyrau and Mangystau region Akimats in the discussions around the type of projects selected for SIP funding. NCOC has also recommended both the active community representatives and the Akimats to engage in a constructive dialogue within the framework of the regional Public Councils during the selection process. We also welcome such discussions at the various public hearings and roundtables held by the company, including a roundtable in 2019 where NCOC was presenting its SIPs and sponsorship and donation projects to the communities and local Akimats. With respect to the development of the design of the SIPs – these are implemented by the Oblast Akimats and then provided to NCOC- for execution.

Since 2015, NCOC has been issuing Sustainability Report where the public can get information about our SIPs. NCOC conducts public consultations on all project design documentation with ESHIA materials at public hearings in line with RoK legislation and the UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, usually known as the Aarhus Convention.

With respect to transparency of SIPs implementation, NCOC has very high standards of performance and ethical behaviors. Once NCOC receives the list of SIPs from the regional Akimats, these are approved by the shareholders and thereafter by the Authority, representing the RoK in the North Caspian PSA, for implementation. Then each project goes through a rigorous tender process. After the contractor is selected via such a tender process, construction works begin based on state expertise approved documentation. When the projects are completed, they are handed over to the Akimats through a prescribed acceptance process. Throughout this project cycle, numerous Health, Safety, Security and Environment (HSSE) and financial audits take place to ensure compliance with all required regulations. We also have an established Hotline to allow staff members and third parties (vendors, suppliers, contractors and any other stakeholders) to raise concerns and report instances of potential non-compliance with our values and principles. Every year in order to build workplace ethical culture NCOC conducts ethics and compliance trainings for its staff and major contractors. In case of non-compliance case, investigations may lead to dismissals from the Company.

BHRRC: NGOs have also criticised the investment projects that have already been implemented. A sixty-apartment housing block, instead of providing social housing, was privatised and sold to individuals who could afford a mortgage, effectively excluding low-income families. These apartments were allegedly poorly constructed. A kindergarten facility at Makatsky, which took more than eight years to construct, was built more than 5 km away from the village it was meant to serve. Activists say that the school began operating during 2019 and required major repairs only one year later. NGOs have also criticised a school

that was built to serve the village of Karabatan, but that was constructed about an hour away from the village. There is no public transportation to reach the school, and residents do not have the ability to take their children there. NCOC offered to provide a bus, but not to pay for petrol, and local districts could not decide who should pay. Consequently, children rely upon the train, which does not run regularly. The children take the train Monday morning and stay until Saturday afternoon, sleeping on the floor in the school building during the nights—which is sometimes without heating during the winter

NCOC response: Regarding the issue with sixty-apartment houses, we want to reiterate that any Social Infrastructure Project implemented by NCOC is proposed by the regional Akimats and subject to further approval by the parties concerned. Construction of several sixty-apartment residential buildings was also proposed by the Atyrau Oblast Akimat. Upon construction completion, the facilities were handed over to local authorities which are responsible for further distribution of apartments to the certain categories of the local community. Prior to implementation of these projects Atyrau Regional Akimat assured NCOC by the official letter that these apartments will not be used for commercial purposes.

With regards to the quality of the constructed facility, all Social Infrastructure Projects are supervised by Technical and Author Supervisions which are nominated by the Customer (Regional Akimats). Furthermore, prior to handing over the constructed projects, NCOC obtains an official letter from the Customer (Regional Akimats) on the absence of any claims to the constructed facility.

Regarding the kindergarten in the Dossor settlement of the Makat District, the contract was awarded in December 2011. Despite NCOC's (at that time NCPOC's) efforts to complete this facility, the Contractor failed to deliver the project. A new Contractor successfully completed construction in 2019. At the time of completion there were no claims on the quality and the facility was accepted into operation by the Customer (Oblast Akimat) based on Act of Acceptance of the facility into operation confirming construction completion and quality that was signed by the Customer (Oblast Akimat), Technical and Author Supervision representatives. Absence of any claims to the constructed facility was confirmed by the official letter from the Customer (Regional Akimats) provided to NCOC.

The school in the area of the Karabatan village was not constructed under the NCOC SIPs Program and has no affiliation with NCOC.

Labour Rights and Occupational Safety

BHRRC: Toxic gases at the Kashagan oil field and production facilities present significant dangers to workers' health. Local NGOs have raised concerns that foreign employees are better protected from emissions than local workers. Additionally, workers have expressed they feel weak and sleepy, symptoms of exposure to toxic gases. NGOs also told Friends of the Earth about cases of workers dying in their sleep. Locals have repeatedly brought up these cases, but local medical experts have said it is impossible to determine the cause of the deaths without access to a toxicology lab. Notably, such a lab is not present in Atyrau, and blood samples sent to existing labs are examined only upon the request of law enforcement. Additionally, workers are exposed to the same health risks as local populations (see above).

Workers referred to two compressors as 'the widow-maker' and 'the rotating bomb' due to their technical issues and breakdowns. A company spokesman asserted that the nicknames referred to the complexity of the machinery, not unsafe working conditions. Nevertheless, the compressors were soon replaced, even though they had hardly been used, due to the harsh chemical composition of the gas wearing on the materials.

Five-hundred Turkish workers were allegedly poisoned at the Karabatan-Bolashak facility, according to a trade union representative. Trade unions intervened to secure financial compensation for the affected workers.

NCOC response: NCOC is committed to operating properly, responsibly and safely, preventing harm to our employees, contractors, local communities and the environment. Safety is a crucial part of NCOC's operations. Whether in the Kashagan oil field production facility or at a Corporate office, NCOC works tirelessly to protect all employees and contractors. Our values are guided by "Goal Zero". This is NCOC-wide policy to achieve no harm and no leaks across our operations every single day.

NCOC collaborates with workforce safety committees as part of NCOC's safety leadership and engagement program to identify strategies and practical steps to improve safety culture and achieve our Goal Zero ambition of no harm and no leaks. We also work together to help align our NCOC Goal Zero vision at all levels and drive safety improvements for the frontline.

For NCOC, safety starts from design. NCOC continues to standardize safety procedures in the design and construction stages. This approach is known as 'safety in design'. NCOC conducts a full range of safety engineering assessments in support of design and safe operations. Included in these assessments are hazard identification and hazard and operability studies. Once we start safe operation, we know that machine maintenance is key. Maintenance plays an important role in keeping workers safe and keeping machines from failing. Regular maintenance checks are a critical part of our company's safety management process.

Finally, we strongly deny that any of our workers have poisoned or died due to symptoms of exposure to toxic gases. Any incidents that result in injuries or deaths at our premises are fully investigated by NCOC and the local law enforcement authorities. NCOC confirms that there have been no deaths of our personnel during their sleep.

Access to Information

BHRRC: Environmentalists have criticised NCOC for failing to release all available information about the environmental, social and health impacts of the Kashagan oil field. Residents near the Bolashak processing facility, which deals with dangerous sulphurous compounds, say they were never informed about risks for their community, particularly related to toxic gases. They also were not told beforehand of public hearings about the facility. The environmental impact assessment for the facility is not available for the public. Similarly, Aytrau residents were not informed about public hearings held in relation to the Bautino port project. The public hearings did not provide access to an expert who was informed about the technical elements of the project plans.

As a result, NGOs have decried the proceedings as a violation of the Aarhus Convention, which requires public access to environmental information and public participation in environmental decision-making.

NCOC response: As we mentioned above NCOC adheres to transparency, dialogue and respect when engaging with local communities. In line with UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, usually known as the Aarhus Convention and RoK regulatory requirements, we announce the planned public hearings in mass media, including periodical publications (newspaper). We also make all draft Environmental Impact Assessment (EIA) reports available for the community's review at the Internet resources of local executive bodies ([Atyrau](#) and [Mangystau](#) Oblasts) and NCOC website 20 working days before public hearings.

Public hearings are held under the chairmanship of a representative of the local executive body. We announce the holding of public hearings and the details on how to attend the hearings in mass media. We present the contents of the draft ESHIA, including all aspects of impacts during normal and abnormal operations and scenarios of emergency situations, control and mitigation measures, discuss the project with participants,

answer the questions and consider proposals and recommendations. Public hearings are recorded in minutes of the meetings and published at the official Internet resources of local executive bodies and NCOC website (www.ncoc.kz) within 7 days. Moreover, apart from statutory prescribed public hearings, NCOC conducts preliminary and project progress public consultations on complex projects with ESHIA materials at the format of round table.

Therefore, we engage with communities from early stages of the projects and keep them updated on ongoing processes through meetings, round tables, as well as public hearings.

NCOC also share the results of environmental surveys, Sustainability Report and other publications and information on feedback channel at Company website (www.ncoc.kz).