

Orano Mining

# Corporate Social Responsibility Report

2021 Edition



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Cover picture:  
Drilling in the region of Djengeldi. Uzbekistan, Nurlikum Mining

Orano Mining, RSE Direction  
May 2022

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Conception & Realisation: BLEU CERISE

## OUR 2020 PERFORMANCE:



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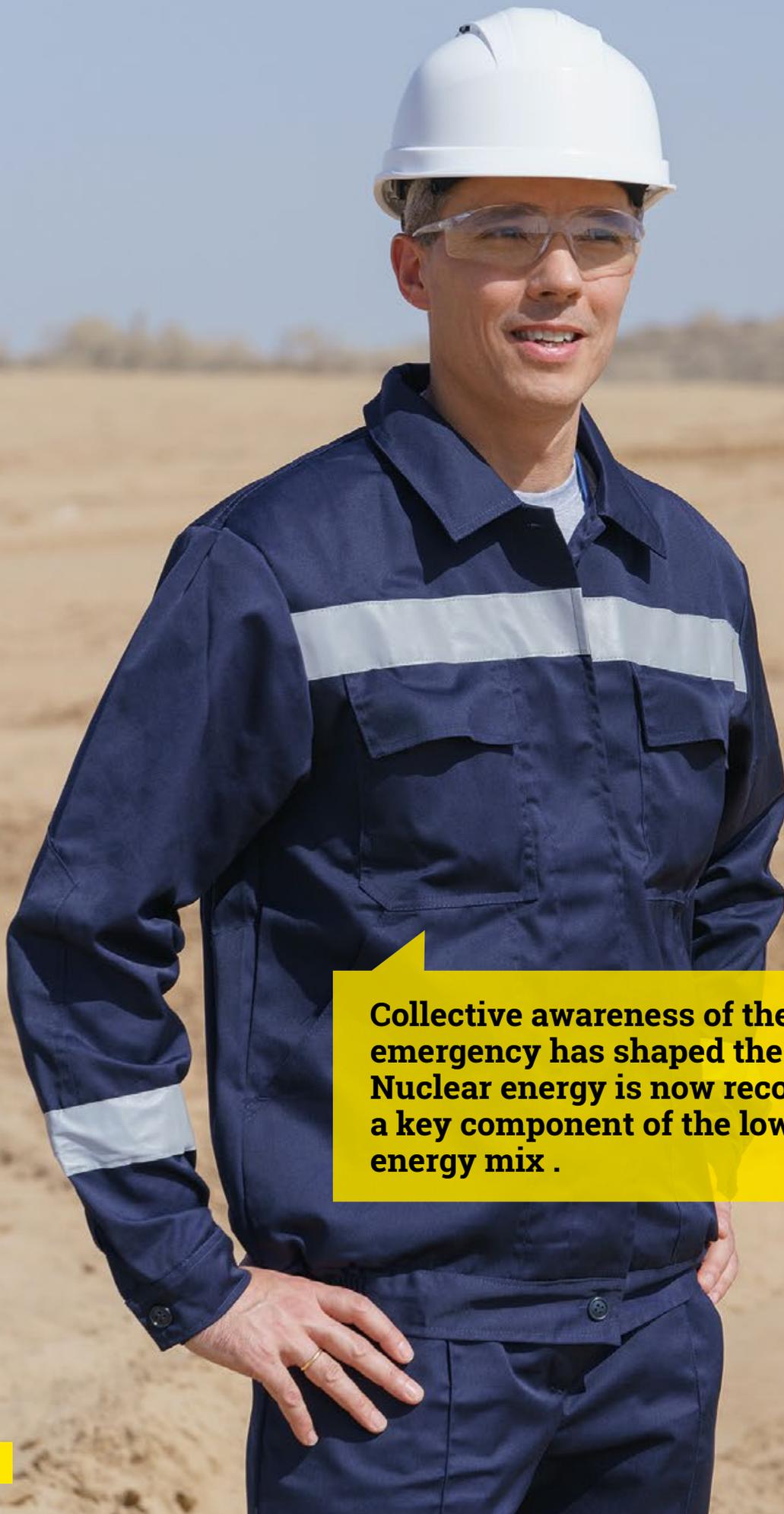


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**Collective awareness of the climate emergency has shaped the year 2021. Nuclear energy is now recognized as a key component of the low-carbon energy mix .**

## MESSAGE FROM

**Nicolas MAES**

Orano Mining CEO



**Collective awareness of the climate emergency has shaped the year 2021. It has clarified energy priorities and put nuclear power back**

**at the heart of the debate. Nuclear energy is now recognized as a key component of the low-carbon energy mix alongside renewable energies.**

A number of publications and statements testify to this. We can quote the positions expressed by the IEA (International Energy Agency), the inclusion of nuclear power in the European taxonomy, and declarations made by governments in France, across Europe, but also the United States. It is now clear that our economies cannot afford not to include nuclear power in their mix if they are to meet their obligations in terms of greenhouse gas reductions while at the same time responding to exponential demand for electricity.

In this context, which is favorable for our sector, the uranium market, following the beginnings of a recovery in 2020, experienced renewed interest in 2021 and the closing price at year end hit 42.00 USD/lb, the highest price since 2013. In this new environment, we continue to position ourselves as a reliable long-term and diversified supplier and a trusted partner to our customers.

Fulfilling our commitments to our customers is one of our top priorities. So even though 2021 was a difficult year in terms of production, particularly at the Katco and Orano Canada sites, due to the continuing Covid-19

health crisis, we succeeded in meeting deliveries to all our customers on time. Our teams worked hard to minimize the impact of the pandemic by applying the necessary barrier measures to continue production and meet their needs. I would also like to highlight the strong performance of Cominak, despite the prospect of closure, and of Somaïr, who managed to meet and exceed their production targets.

2021 also marks the first year of deployment of the 2025-2030 CSR roadmap. As I promised, you will find in this report details of the progress of this action plan, which is aligned with the Group's strategic pillars, the "5Cs" - Communities, Climate, Competencies/Skills, Customer Growth and Cash.

Nearly 80% of our objectives for 2021 have been achieved or are in the process of being met. We have made progress on the role of women, even if there is still a long way to go to improve their representation in our industry. We have reduced our CO<sub>2</sub> emissions and overall water consumption at our sites in operation, but we must continue our efforts to operate them ever more efficiently to meet environmental protection challenges. In certain areas, however, objectives have as yet not been fully achieved, such as in digital transformation, or the construction of the new photovoltaic farms in France, still awaiting permits.

The responsible closure of the Cominak site which ceased production at the end of March 2021, after 40 years of operation, is one of the key commitments in our roadmap.

I would like to take this opportunity to pay tribute once again to the men and women who worked on this site





with dedication until the very last day. Orano is working towards a transition that should benefit the local community, with one third of the closure budget devoted to social and community projects. The strong involvement of the human resources teams needs to be highlighted, as nearly 80% of the former Cominak employees had an agreed solution in place by the end of the first year.

The remediation work, which will take about ten years to complete, has already begun. It is in line with our corporate social responsibility approach and respects our values.

Finally, the different communication tools set up by Cominak, with the website, newsletter, meetings with stakeholders, caravan, etc. will allow us to report throughout the remediation project and to engage in the dialogue and consultation that are essential for the success of this project.

Turning now to our production and exploration sites, in terms of safety, our record over the period is mixed. In particular, we were saddened in 2021 to have to report a fatal accident at our Katco site in Kazakhstan, during a drilling operation carried out by one of our subcontractors.

This tragic event reminds us of the importance of adhering to our safety rules at every stage of a project, whether in preparation, execution or post-operational monitoring. It also leads us to rethink the way we supervise subcontracted activities, in particular drilling.

The work carried out in 2021, in particular on strengthened-safety positions and safety culture, is yielding results, since lost-time and non-lost-time accidents were lower than the target set at the beginning of the year.

As we had announced, industrial safety was one of our priorities in 2021. We deployed the management standard for industrial process safety at all our production sites and further reduced the number of high-risk scenarios. A dedicated safety culture training program that we have been rolling out since the end of the year will help to consolidate these good results.

## Continuing to develop and innovate to prepare for the future

In the short and medium terms, we will continue to develop our production sites. We are constantly engaging new industrial performance actions and these are combined with the strengthening of appropriate digital solutions, enabling us to extend the life of our operating mines. This is the case at Somaïr, for example, with the commissioning of connected tools and a control room that enables real-time, optimized data monitoring, or at Katco, which pilots its production in real time with OSIDEM. Thanks to the HYTEC 3D modeling tool developed by our teams in partnership with the French engineering school Mines ParisTech, which dynamically simulates the operation of an ISR deposit, Orano Mining is able to optimize operating performance by improving yields and therefore the life of deposits.

For operations in the mid-term, we have finalized field tests of the Sabre technology in Canada with our partner Denison. Designed and developed by Orano engineers, this new high-pressure waterjet extraction technique implemented from the surface will make small but high-grade near-surface deposits exploitable and economically viable. Sabre's deployment to mine the McClean Lake deposit is expected to be confirmed in 2022 after the analysis of test results is completed.

With the same forward-looking approach, Orano Canada has developed a project to expand the McClean Lake tailings storage facility to extend the life of the site beyond 2027. In early 2022, this project received authorization from the Canadian Nuclear Safety Commission.

In Kazakhstan, our subsidiary Katco has finalized the engineering of the future plant for the South Torktuduk project, which will guarantee production for the next fifteen years. Construction will begin as soon as the final administrative authorizations come through.

Over the longer term, one of the thrusts of our development is the commissioning of future mines that can be operated using the ISR technique, a technology that has less impact on the environment and is more

economical than conventional mines. In this area, Orano is developing the most comprehensive portfolio of projects in its sector, with three ISR pilots being conducted in Mongolia, Uzbekistan and Niger.

In Mongolia, the tests conducted on our Zuuvch Ovoo pilot, which has been in operation since June 2021, have enabled our teams to produce the first five tons of uranium. The pilot, which will continue to operate throughout 2022, will serve to confirm the technical, economic and environmental feasibility of the project.

In Uzbekistan, at the Nurlikum Mining site, in 2021 geologists continued "exploratory" drilling to better qualify the deposit's resources. Two hundred wells have been drilled. In 2022, construction of the pilot is scheduled to test the processes and validate the operational parameters. In Niger, the ISR method is also being considered to operate part of the Imouraren deposit. A hydrogeological investigation has been conducted to study the circulation of fluids in the mineralized layer and to evaluate the feasibility of this technology, which has as yet never been implemented in this country.

## Diversification

Orano Mining has also begun to diversify its activities around innovative projects in the fields of energy transition and the circular economy, both in France and internationally, with CIME. In 2021, we inaugurated the new state-of-the-art building housing the center for innovation in extractive metallurgy (CIME - Centre d'Innovation en Métallurgie Extractive). It represents an investment totaling 30 million euros. The facility will be used for a wide range of projects, for Orano itself and for our external customers. Industrial trials will be taking place notably to test the recycling and recovery of metals.

On this same site, two industrial pilots supported by the France Relance recovery program and the Nouvelle-Aquitaine region will be deployed as of 2022 to test the process for recycling the materials contained in electric vehicle batteries. This project fits in perfectly with our development strategy, both in terms of our know-how and our purpose, with its strong focus on resource efficiency.

## Transparency

Orano Mining is one of the mining companies committed to making its contracts public. This is a commitment I personally made in 2019 at the EITI (Extractive Industries Transparency Initiative) congress and we have met it on time.

Our CSR engagement is also a strength that helps us attract and hire new staff, especially young people.

The company's values are important: giving meaning to our work and being accountable are fundamental values that help us recruit the talent we need to meet our development challenges. To help our employees grow, we have instituted career paths that encourage gateways between our different disciplines and functions, and promote mobility and exchanges between countries, such as recently between Niger, Canada and Uzbekistan. Pride of belonging is one of the factors in our CSR roadmap, and in 2022 we hope to reproduce one of the excellent indicators that came out of our last internal opinion barometer in 2020 - we hope to again achieve a score of at least 80% of employees who would recommend Orano Mining as an employer.

Performance, Development and Pride of belonging are key drivers that will guide us throughout 2022.



# Orano Group PROFILE

“Orano, giving nuclear energy its full value.”

As a recognized international operator in the field of nuclear materials, Orano delivers solutions to address present and future global energy and health challenges.

Its expertise and mastery of cutting-edge technologies enable Orano to offer its customers high value-added products and services throughout the entire fuel cycle.

Every day, the Orano group's 17, 000 employees draw on their skills, unwavering dedication to safety and constant quest for innovation, with the commitment to develop know-how in the transformation and control of nuclear materials, for the climate and for a healthy and resource-efficient world, now and tomorrow.

## GOVERNANCE

Orano's governance is supported by a Board of Directors, an Executive Committee and four specialised committees that issue opinions and recommendations: the Strategic and Investment Committee, the Audit and Ethics Committee, the Appointments and Compensation Committee, the End of Cycle Obligations Monitoring Committee

The Board of Directors is chaired by Claude Imauven. Philippe Knoche is the Group's Chief Executive Officer.

More information on Orano annual report



Mining



Uranium conversion and enrichment



Used fuel recycling



Nuclear logistics



Dismantling and services



Engineering

# ORANO MINING KEY FIGURES 2021



**1,065 M€**

revenue  
(23.5% of Orano revenue)



**3**

sites in production in 3 countries



**3,022**

employees\*



**5.1 M€**

community investments\*\*



**6,814**

tons of uranium



**75%**

of purchasing volume comes from the  
countries in which we are based



**TOP 3**

worldwide  
in its businesses



**98%**

of our employees are  
from the host country

\* Excluding internship / apprenticeship contract

\*\* Construction and equipment of an emergency medical center in Kazakhstan included

# Mining activities



The group's mining activities concern the production and commercialization of natural uranium used after enrichment to make fuel for nuclear reactors.

Orano counts among the world's leading producers of uranium with competitive production costs and cutting-edge extraction techniques implemented in mines in operation in Canada, Kazakhstan and Niger.

The principal line operations of the Mining Business Unit follow the lifecycle of a mine, i.e.:

- exploration: search for new deposits;
- developing mining projects: detailed studies, procurement and construction; I production: extraction of uranium ore using various mining techniques, and ore processing (concentration of natural uranium by chemical means); and
- site redevelopment and conversion after operation: rehabilitation of mining sites in accordance with current environmental standards, followed by environmental monitoring.

Committed to its role as a responsible mining company, Orano conducts its mining activities in a manner that fully respects people and the environment and contributes to the economic development of local regions and their populations.

The amount of uranium produced annually by Orano is enough to supply the electricity needs of a country such as Spain.

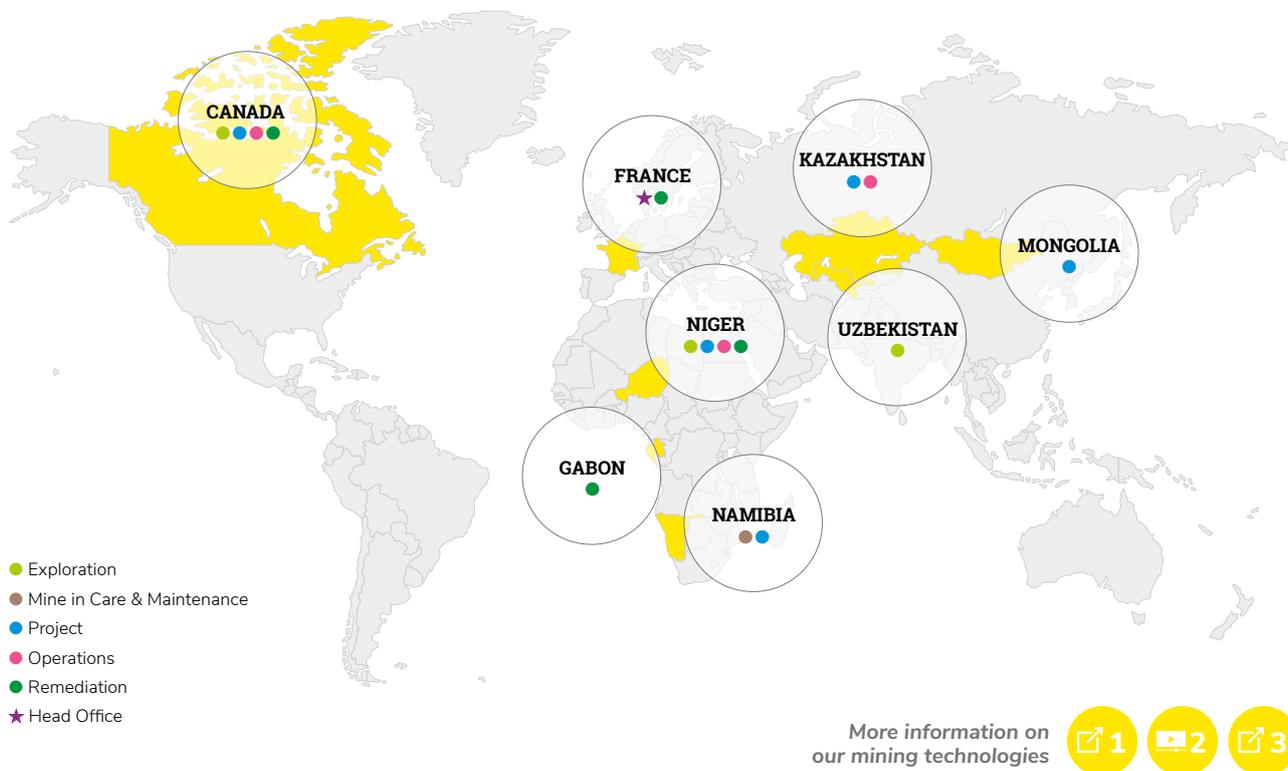
The production of the same amount of electricity from coal would have resulted in the release of 240 million additional tons of GHG.

Orano Mining has a diverse assets and portfolio, which constitutes an important security factor for utilities seeking longterm guarantees with regard to uranium supplies.

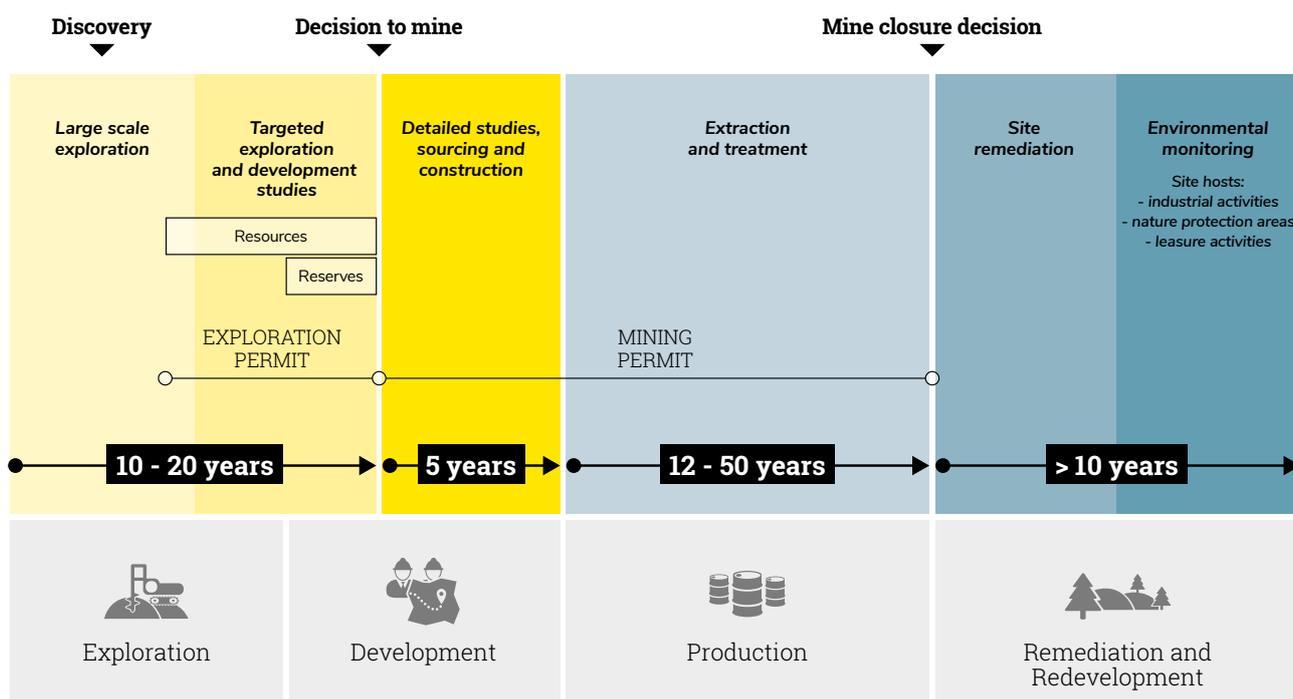
More information on Orano Mining innovation



### OUR MAIN MINING SITES



## MINING LIFE CYCLE



## ORANO MINING GOVERNANCE AND ORGANISATION

The Mining Business Unit includes all the Orano's mining activities "Orano Mining" and its subsidiaries and "mining operations" abroad and in France.

The method of exercise of the General Management of the company, namely the separation of the functions of Chairman of the Board of Directors and Chief Executive Officer, has been in place since February 2016.

The Mining Business Line is managed by M. Nicolas Maes since November 1, 2018. He chairs the Mining Business Unit Management Committee which includes the operational directors, the directors of support functions involved in mining activities and the directors of the main subsidiaries in the extended Management Committee.



## BOARD OF DIRECTORS

Orano Mining is a business corporation with Board of Directors. Its primary function is to ensure operational consistency in mining activities carried out in France and internationally.

Orano's CEO, Philippe Knoche, is the Chairman of Orano Mining and Nicolas Maes is the CEO.

Orano Mining has a share capital of 25,207,343 euros and is 100% owned by Orano.

The head office of Orano Mining is at Châtillon. Orano Mining has another site at Bessines-sur-Gartempe (Limousin).

The organization, operation and prerogatives of the Board of Directors are set by the statutes. The Board of Directors meets at least twice a year. It decides how the company orients its activities and ensures their implementation.

The Board of Directors comprises 9 administrators and includes 3 women and 3 men (note that staff representatives are not counted when calculating parity):

- 4 appointed at the proposal of Orano
- 1 State representative
- 1 appointed at the proposal of the French State
- 3 elected staff representatives A State inspector and a government auditor also attend board meetings, along with the secretary of the Social and Economic Central Committee. Management Committee

## MANAGEMENT COMMITTEE

The Mining Business Unit is run according to a decentralized operating model, based around a head office that performs overall management and oversight functions, and structures that carry out mining operations in France and internationally.

"Mining operations" covers exploration, project, production, remediation and mine closure monitoring activities.

The Management Committee meets regularly in order to study safety, commercial, industrial and financial results as well as to draw up and monitor mining activity action plans.

It also ensures that the Orano Code of Ethics is respected, in addition to the company's commitments to sustainable development, and leads the risk management process for the Mining Business Unit.

The Management Committee is made up of directors from the operational departments (Operations, Industrial Projects and Support, Geoscience, Health Safety and Environment, Remediation, Corporate Social Responsibility and Communication, Sourcing, Supply & Customer Service) and the functional departments (Human Resources, Finance, Legal, Strategy and Development).

17% of the Members of the Management Committee in France are currently women. 41% of its Members are between 30 and 50 years of age and 59% of its Members are over 50 years of age.

## Uranium market

**In this context, Orano Mining's objective is to continue to optimize the competitiveness of existing sites and to maintain its project portfolio by conducting the studies necessary for the extension of its production for the years to come.**

In this way, Orano Mining aims to consolidate its position of reliable uranium supplier on the long term while remaining competitive.



Many uranium producers were obliged, from the beginning of March 2020, to reduce, or even interrupt, the activity of their mines due to the Covid-19 pandemic.

In 2021, the group’s mining activities were its sole activities impacted by the Covid crisis from January to early May, with the shutdown of the Cigar Lake mine and the McClean Lake mill.

The improvement of the health situation during the summer, as well as the implementation of protective measures by the producers, allowed a gradual return to normal activity. This was the case at the Cigar Lake mine (operated by Cameco) and the McClean Lake mill (operated by Orano), which had been shut down in mid-December 2020 due to the resurgence of the Covid-19 pandemic and were able to restart at the end of April with the improvement of the pandemic status in Canada.

While the spot price of uranium hit a low of around 27.3 US dollars/lb in early March 2021, the spot price reached 51.12 US dollars/lb in the third quarter before closing the year at 42.0 US dollars/lb, which is the highest closing price since 2013.

This sharp increase and the significant fluctuations during the year can be explained by the massive purchases of physical uranium by investors, initially by “Junior Mining companies”, then above all by financial funds.

The long-term indicator also increased in the second half of the year to reach 41 US dollars/lb at the end of 2021 (compared to 33 US dollars/lb at the end of 2020).

## DEMAND AND SUPPLY

Uranium demand stood at approximately 81,900 tU in 2021 (source: UxC Q4 2021), up sharply from 2020 due to the additional demand generated by the financial funds and, to a lesser extent, by the Juniors.

Supply worldwide consists of:

- **mining production**, which amounted to approximately 47,600 tU, a level comparable to 2020. Despite the gradual recovery, several sites entered scheduled shutdown in 2021, such as the COMINAK site for Orano in Niger, or announced maintenance shutdowns such as Olympic Dam in Australia. Moreover, it should be recalled that since 2016, and in response to the historic weakening of market indicators, several producers (Orano, Cameco, Paladin and Kazatomprom) had announced closures, mothballing of operations and reductions in production.
- **secondary resources** estimated at a total of nearly 34,300 tU, from materials not directly derived from mining operations, mainly re-enrichment of depleted uranium, low-enriched uranium and de-stocking by electric utilities.

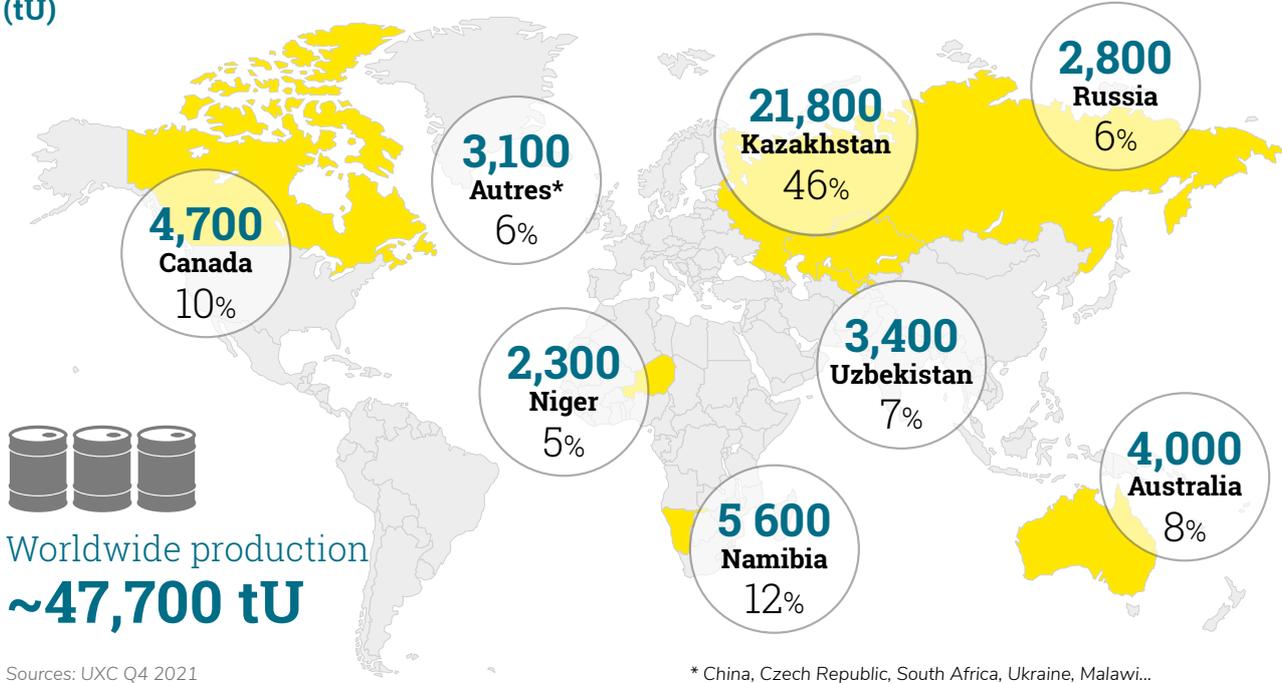
Uranium demand stood at approximately 81,900 tU in 2021 (source: UxC Q4 2021), up sharply from 2020 due to the additional demand generated by the financial funds and, to a lesser extent, by the Juniors.

### Evolution 2014-2021 of uranium price indices

(In current dollars)



# Main uranium producers in 2020 (tU)



## BACKLOG

The Orano Mining backlog is diversified among customers in the different uranium-consuming regions. The uranium sold originates either from the mining resources of companies in which Orano Mining has an equity interest or from uranium bought on the market.

## CUSTOMERS

Orano Mining is a supplier to about 80% of the world's nuclear utilities, in Asia, Europe and North America.

## PRODUCTION OF MINING SITES

Measures taken by Orano Mining and its partners to combat the Covid-19 pandemic are responsible for the decrease in mine production for 2020.

Despite this difficult context, the mobilization of our sites, the respect of sanitary protocols set up, the effective control over its production costs and its level of capital expenditure, the Mining business turned in good operating and financial performance in 2021.

- SOMAÏR produced 1,996 metric tons of uranium (on a 100% basis)
- COMINAK produced 204 metric tons of uranium (on a 100% basis)

- KATCO produced 2,840 metric tons of uranium (on a 100% basis)
- Cigar Lake-McClean produced 4,747 metric tons of uranium (on a 100% basis)

### Orano mines production in 2021 (tU)

Country	Sites	Financial consolidation 2020 tU	Type**
Canada	McArthur River	0	UG
	Cigar Lake <sup>3</sup>	1,736	UG
	McClean (Sabre)	52	UG
Canada total		1,788	
Kazakhstan	KATCO	2,840	ISR
Kazakhstan total		2,840	
Niger	SOMAÏR	1,996	OP
	COMINAK***	190	UG
Niger total		2,186	
<b>TOTAL</b>		<b>6,814</b>	

\*\* Type of operation: ISR: In-Situ Recovery; OP: Open-Pit, UG: Underground.

\*\*\* COMINAK has been consolidated under the equity method since January 1, 2014. Source: Orano.

# ORANO'S CSR APPROACH

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## Orano's Purpose

Orano's social and environmental commitment was renewed and reshaped in 2020 resulting in an ambitious roadmap which was co-constructed with the Group's extended management and feedback from stakeholders.

On this occasion, Orano and its Board of Directors also set out the company's purpose, as follows:

« To develop know-how in the transformation and control of nuclear materials for the climate, for a healthy and resource-efficient world, now and tomorrow ».

Structured around our values and strategic goals, this new roadmap, through a set of 13 objectives, reflects the ways in which Orano wishes to embody its purpose and contribute to the Sustainable Development Goals.



## Orano Mining, proactive in defining Orano's Commitments

Orano Mining, along with each of the Business Units, has actively participated in the co-construction of the CSR Engagement approach.

Across our sites, 150 managers took part in some 15 workshops. At the same time, a panel of 130 external stakeholders was interviewed in each country.



On the basis of this feedback and its own CSR approach, and after validation by the Management Committee and the CSR Committee, Orano Mining identified and reported on the representative issues and specificities of its mining activity.

## A CSR policy anchored in Orano Mining's strategy

In its corporate strategy, Orano Mining states its resolve to be a leader in the industry in terms of health and safety at work, community involvement, and environmental and ethical practices.

As a responsible mining company, we ensure sustainable, concerted and balanced management of resources and meet

the social, environmental, societal, technical and economic challenges, at each stage of the mining cycle, in all of the countries where we operate.

Our CSR policy, drawn up in consultation with the various different sites and departments of Orano Mining and approved by the Senior Executive Vice President of the Business Unit, defines the following principles of action:

- Forward planning and prevention
- Consideration of the local context | Compliance with regulations and international standards
- Information, listening, dialogue and consultation
- Ethics and transparency

It lends a precise framework to our approach to corporate social responsibility and addresses two convergent demands:

- Orano Mining's desire to structure and formalize its corporate responsibility action,
- The determination to apply the principles and best practices advocated in the extractive industries sector and in particular those set out by the ICMM (International Council on Mining and Metals).

It has its own governance system.

[More information on Orano Mining CSR policy](#)



This is structured as follows:

- **The Corporate Responsibility, Engagement and Communication Department** which oversees implementation and monitoring of policies and standards defined by the Group and makes sure they are consistent with the particularities of the industrial, economic and social contexts of our locations.
- **Orano Mining CSR Committee.** This body, set up in 2016, is made up of the Orano Mining management committee, the site directors, along with the Social Responsibility, Engagement and Communication department team. The CSR Committee meets once or twice a year and reviews the main current and future CSR issues for the various subsidiaries. It takes care to ensure the consistency of the actions undertaken with regard to the Orano Mining CSR policy and validates financial commitments for certain amounts for new projects.
- **The Mining Social Committees (CSMs)** of Orano Mining, created in 2013, are tasked, in each country where we operate, with putting social actions into practice at the local level in terms of partnerships and economic development aid:
  - identification of indicators and development of a monitoring system to measure deployment of the CSR policy;
  - highlighting of the value of social commitments both internally and externally;
  - choice of perimeters and topics to be given priority for the deployment of significant and sustainable courses of action;
  - determination of associated budgets (budgets of Subsidiaries and/or central budgets);

- supervision of validated financial commitments;
- reporting on actions taken.

These committees meet once or twice a year, chaired by the managing directors of the subsidiaries, and bring together local CSR leaders, and the coordinating and support teams from head office. Frequency of meetings varies depending on the country and on the needs. All Orano Mining locations are covered by CSMs, including Canada, Gabon, Kazakhstan, Uzbekistan, Namibia, Niger, Mongolia.

### ORANO MINING MATERIALITY

The materiality matrix aims to prioritize the main CSR issues in light of stakeholders' expectations and Orano Mining's priorities. It was updated at the end of 2018 by questioning Orano Mining's management.

Regular stakeholder mapping exercises conducted in the locations where we operate allow us to update our understanding of the expectations of external stakeholders.

They are then broken down by the sites into an action plan and regularly updated to be as close as possible to the expectations of our stakeholders.

In 2021, Orano Mining launched a mapping in Uzbekistan whose results will be taken into account in 2022. Furthermore, the Group-wide materiality exercise conducted by Orano in early 2020 identified key expectations, risks and opportunities.

All of this served as a basis for defining the CSR Engagement approach. The resulting matrix (*More information on Orano annual report, p. 19*) confirms the feedback registered by Orano Mining, its priorities and key issues within the mining scope.

PRIORITIES AREAS SELECTED	MINING PRINCIPLES DOMINANT
Transparency	1 - 2 - 10
Environmental footprint	6 - 4 - 7 - 8 - 2
Health / Safety	5 - 4
Risk management	2 - 4
Remediation / Post-mining	6
Community involvement	9 - 10 - 1 - 2
Ethical business	1 - 2 - 3 - 4
Our employees	3

### SUSTAINABLE DEVELOPMENT GOALS (SDGS)

The Sustainable Development Goals are key challenges defined by the United Nations for achieving a better future and they reflect the collective awareness of the need for a sustainable society.

Orano Mining contributes to many of the United Nation's 17 Sustainable Development Goals.

At the end of 2019, the Orano Executive Committee, after consulting 200 Group managers, reaffirmed its wish to contribute to the UN Sustainable-Development Agenda for 2030, and identified the following six SDGs as priorities for the Group.

Two additional goals corresponding to Orano Mining's activities have been added: SDG 6 (Clean water and sanitation) and SDG 16 Peace (justice and strong institutions).

These 8 goals have helped define Orano Mining's CSR roadmap and Commitments to 2030.



### COMMITMENTS ROADMAP

Orano's Commitments Roadmap was defined collectively, based on 6,000 contributions, and then adapted to each Business Unit.

Within Orano Mining, the goals have been shared with the various departments and set out in the operational Master Plan for each site.

As announced in the previous report, the achievement of the 2021 objectives and the objectives set for 2022 are presented throughout the report and summarized in the table below.

The CSR roadmap is the subject of a quarterly status report by Orano Mining's Management Committee. A summary of

the progress is then regularly communicated to staff, allowing everyone to understand the milestones and achievements.

In 2021, 82% of the objectives set have been achieved or are in progress. Only 12% of the targets could not be achieved, such as the construction of the Bernardin photovoltaic power plant due to the waiting for administrative authorizations or the unauthorized strike of some subcontractors in Mongolia. 6% of the targets were not met in 2021.

The 2022 objectives have been shared within the BU and are available on the sites and should make it possible to achieve the commitments made for 2025 or 2030. Finally, Orano Mining's Biodiversity strategy defined in May 2021 made it possible to add two new objectives.

## Orano Mining's Commitment Roadmap

FOCUSES AND COMMITMENT	OBJECTIVES 2030	ORANO MINING MARKERS IN 2025	ORANO MINING OBJECTIVES 2021	RESULTS 2021	OBJECTIVES ORANO 2022
<b>OUR VALUES</b> <b>Aim for the highest standards</b> 	<b>Aim for the highest standards in terms of nuclear safety, Environment, health and occupational safety</b>	Tend to a long-term TF1 <or = at 1 Tend to a TF2 <or = to 3.5	TF 1: < or = at 1 TF2: 3,8		TF1: < or = at 1 TF2: 3,5
		Maintenance of the Health Observatory in Niger after the closure of COMINAK  Towards passive management of tailings storage for new mining sites (2030)  Industrial risks: 0 unacceptable scenario according to the MMR matrix  Application of the ICMM "tailings dams" recommendations in proportion to the challenges	Continued funding for OSRA  Meeting the 2021 commitments of the PNGMDR  80% of improvement measures identified for unacceptable scenarios implemented  100 % of tailings dams assessed in Niger	   	Consolidate OSRA's role and missions with stakeholders  Meeting the 2022 commitments of the PNGMDR  80 % of improvement measures identified for unacceptable scenarios implemented for 2022  Expertise of the structure in Gabon and stability study in France  Implementation of a governance system in accordance with GSTM standards
<b>COMMUNITIES</b> <b>Be engaged and responsible locally in our environment</b> 	<b>Strengthen local roots, particularly in the area of skills development and employment</b>	Contracts published under the EITI standard whenever authorized by the States	Publications released		Up-to-date publications
		Deployment of the compliance action plan	Grievance mechanism: Annual review published  Duty of care: Action plan 2021 completed	 	Grievance mechanism: Annual review published  Duty of care: action plan finalized and deployed
<b>COMMUNITIES</b> <b>Be engaged and responsible locally in our environment</b> 	<b>Strengthen local roots, particularly in the area of skills development and employment</b>	Maintain a high level of local recruitment (95% minimum)	Maintaining the rate		Maintaining the rate
		New partnerships with schools close to our sites in connection with our skills	Target 3 new school / business partnerships		Target 3 new school / business partnerships
		Maintain the local purchase rate (75% minimum)	Goal achievement		Goal achievement
		Taking into account CSR criteria in the tender documents > 1M€	Criteria implemented by the end of the year		

FOCUSES AND COMMITMENT	OBJECTIVES 2030	ORANO MINING MARKERS IN 2025	ORANO MINING OBJECTIVES 2021	RESULTS 2021	OBJECTIVES ORANO 2022
<b>COMMUNITIES (continued)</b>	<b>Build a second life for sites</b>	Develop the installation of photovoltaics (+130 MW in France)  Responsible closure and remediation of COMINAK	Start construction of the photovoltaic park on the Bernardan site  100% of 2021 commitments within the framework of the redevelopment project	  	Start the construction of a photovoltaic park Commissioning of a new photovoltaic park  100 % of 2022 commitments as part of redevelopment
	<b>Eco-design all our major projects</b>	Eco-design all our major projects > €5M	100% of projects worth + €5M eco-designed		100 % of projects worth + €5M eco-designed
	<b>Working towards zero net loss of biodiversity</b>		-		Assessing Orano Mining's footprint on biodiversity  Mapping our land use
<b>CLIMATE</b> Contribute to carbon neutrality  	<b>Reduce the "equivalent" carbon footprint of our business in line with the Paris Agreement</b>	Reduce CO <sub>2</sub> emissions equivalent to carbon on operated activities scopes 1 and 2 (-15% of Tco <sub>2e</sub> compared to 2019 or -40% compared to 2015) reference year of the French SNBC	By reducing CO <sub>2</sub> emissions by 10% compared to 2019		By aiming for a secure portfolio equivalent to 35% of 2025 objectives by the end of 2022
	<b>Innovate to reduce the footprint of our customers and increase the acceptability of nuclear power and nuclear materials</b>	Supporting the decarbonization of electricity in the countries where we operate  When relevant, increase the share of low carbon energy on our sites in operation	By developing the photovoltaic power plant construction project in SOMAÏR  By examining the different options on site	  	Launching the technical studies for the construction of the photovoltaic plant in SOMAÏR  By pursuing the different options on site
<b>SKILLS</b> Mobilize proud and committed employees who embody our purpose   	<b>Offer professional and personal development within attractive work environment</b>	Maintain a significant rate of employee who recommend Orano (75%)  Support our employees towards certifying, qualifying or diploma training courses  Keep the level of social conflict as low as possible according to GRI criteria	Keep the rate at 80% minimum  10 % of employees per year  Less than 1 week of annual strike per country of operation	    	Keep the rate at 80% minimum  Aim for 10% of the training budget to be spent on training leading to qualifications, diplomas or certificates  Less than 1 week of annual strike per country of operation
	<b>Be a benchmark, inclusive employer, promoting diversity</b>	Increase by 50% the share of women in the top 160  Promote access to employment for people who are far from it	10% annual increase  Aim for a 25% increase in the Education budget for social actions (compared to 2020)	  	10% annual increase  Sign 3 new partnerships on the theme of diversity and inclusion
	<b>Develop our innovation ecosystem</b>	Supporting our employees to succeed in the digital transformation	Develop the digital roadmap with all sites and set up a system to measure its achievement		By continuing to deploy our digital transformation initiatives and defining a maturity target for each site

FOCUSES AND COMMITMENT	OBJECTIVES 2030	ORANO MINING MARKERS IN 2025	ORANO MINING OBJECTIVES 2021	RESULTS 2021	OBJECTIVES ORANO 2022
<p><b>CUSTOMER GROWTH</b></p> <p>Innovate to preserve resources and protect health</p> 	<p><b>Broaden our recycling offer</b></p>	<p>Develop the external activity of CIME</p> <p>Develop battery recycling</p>	<p>Develop the business of CIME</p> <p>Build the pilot</p>	<p>😊</p> <p>😊</p>	<p>By continuing the development of CIME'S external business</p> <p>By starting and operating the battery pilots</p>
<p><b>CASH</b></p> <p>Operate efficiently and reduce our footprint</p> 	<p><b>Improve the efficiency of the extended enterprise by 25%</b></p>	<p>Reduction in water consumed per ton of U produced (-10% and -10% in overall water consumption (compared to 2019)</p> <p>Provide each site with water issues with a water management plan shared by stakeholders</p> <p>Developing predictive models on natural attenuation in ISR</p> <p>Maintain R&amp;D actions in the optimization of water treatment in stations</p> <p>Operational excellence: pursuing the road map value 2021-2023</p>	<p>By performing 100% of water diagnostics</p> <p>Environmental R&amp;D roadmap achieved</p> <p>Study report completed</p> <p>By implementing the road map value 2021-2023</p>	<p>😊</p> <p>😊</p> <p>😊</p> <p>😊</p> <p>😊</p>	<p>By pursuing Water action plans at production sites</p> <p>R&amp;D environment roadmap completed</p> <p>Sizing of the defined pilot</p> <p>By implementing the road map value 2021-2023</p>
	<p><b>Reduce our production of non-recycled waste by 25%</b></p>	<p>Contribute to national policies for reducing plastic waste in our areas of operation</p> <p>Reduce our production of non-recycled waste (-25% in 2030 compared to 2019)</p> <p>Keep our certifications on our production sites and deploy them on planned sites</p>	<p>Inventory of waste policies by country</p> <p>By defining non-recycled waste action plans</p> <p>SOMAÏR and KATCO certification renewal</p>	<p>😊</p> <p>😊</p> <p>😊</p>	<p>Consolidate our plastic recovery process at one of our operational sites</p> <p>By defining waste management recommendations for new projects</p> <p>Renewal of certification in Bessines</p>

CAPTIONS: 😊 realized    😬 in progress    😞 not realized    😐 not applicable

# ETHICAL BUSINESS

## MINING PRINCIPLE

**Apply ethical business practices and sound systems of corporate governance and transparency to support sustainable development.**



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# Performance expectations

## PRINCIPLE 1.1

**Establish systems to maintain compliance with applicable law.**

This commitment is made at the very highest level by the Board of Directors of Orano. It relies on four specialized committees including the Audit and Ethics Committee.

The mission of the Audit and Ethics Committee includes overseeing the Group’s compliance with the best international ethical practices, reviewing the Code Ethics and Business Conduct and its updates and making recommendations to the Board of Directors.

More specifically, it conducts the review of the annual internal control campaigns INCOME after the internal audit assessment, and also the review of the Group’s risk mapping and action plans with follow-up, as well as the follow-up of the audits carried out with validation of annual audit plan. It also reviews the payments made to Governments for each reporting period based on the EITI (Extractive Industries Transparency Initiative) declarations of the subsidiaries in Niger and in Kazakhstan, and on the ESTMA (Extractive Sector Transparency Measures Act) declarations of the Canadian subsidiaries.

More information on the EITI report



The role of the Orano Mining Compliance Officer is carried out by the General Counsel for our activities, in conjunction with the local Compliance officers in the countries where we are present. She works together with Chief Compliance Officer of Orano, who reports to the Chief Executive Officer of Orano. This organization makes it possible to maintain close relations with mining sites and operational activities whilst benefiting from a single line of reporting.

Orano Mining, like all the Business Units of the Group, conducts an internal ethical reporting process on the proper application of the Code Ethics and Business Conduct, any infringements observed, action plans put in place to remedy such breaches, and the sanctions imposed.

For more information on Orano Code Ethics and Business Conduct

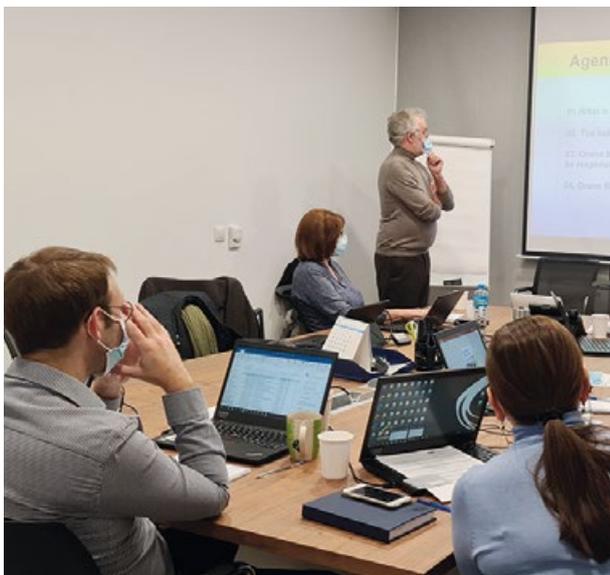


## PRINCIPLE 1.2

**Implement policies and practices to prevent bribery, corruption and to publicly disclose facilitation payments.**

**Orano has taken a proactive approach in developing its own Code Ethics and Business Conduct and its anticorruption program and communicating these to all its employees, as well its industrial and commercial partners.**

The Orano Code Ethics and Business Conduct update in 2021 and released early 2022 – accessible to everyone on the www. orano.group website and made available to all our employees and communicated to all industrial partners (sub-contractors, suppliers, contractors, etc.). It is given to all new hires, the group’s employees are reminded of it during the individual interview, and it is communicated to third parties at the time contracts are signed. In particular, it includes Executive Management’s commitment to conducting a process to prevent and detect corruption and influence peddling and



the group's "zero tolerance" policy on corruption. It defines the prohibited behaviors that may characterize corruption and influence peddling, based on the risks identified in the risk map, and summarizes the disciplinary measures and consequences in the event that these rules are not followed; In addition, the Compliance Department has published a guide entitled "Ethics and Compliance: How to act?", which

illustrates with concrete examples the rules of the Code of Ethics and Business Conduct and identifies the reflexes to be adopted in the various situations with which employees are liable to be confronted, particularly in terms of preventing corruption.

The Compliance Policy specifies how the Code is to be implemented at all levels, across all activities and in all countries; this policy also explains how compliance is organized within the Group.

## Review and update of the Code of Ethics

In 2020-2021, Orano updated its values, reviewed its corporate plan, published its purpose and clarified its roadmap in terms of CSR commitments and appointed a new Chairman of the Board of Directors. Thus, the Code of Ethics has been reviewed and updated to reflect this change. The structure and content of the code have been reworked to make it more practical with the addition of illustrative examples.

More information on Orano annual report



In order to ensure compliance with the anti-corruption requirements of the Sapin II Act of December 9, 2016, and in accordance with the recommendations issued at the end of 2017 by the French anti-corruption agency AFA (Agence Française Anticorruption), the Compliance Policy is structured around the following actions:

- mapping of risks of bribery and influence peddling for Orano Mining (updated every year),
- updating of our Anti-corruption Code of Conduct (appendix to the Code Ethics and Business Conduct) and its incorporation into the internal regulations of Orano Mining and all its subsidiaries,
- an e-learning course developed specifically on the basis of the Orano Code Ethics and Business Conduct and intended for all employees,
- a face-to-face or e-learning training course deployed to the employees most exposed to risk,
- the systematization of the third-party compliance verification process in accordance with a Group procedure (For more information, see Orano annual report, chapter 4.2.3, p. 105 .
- or the reinforced formalization of certain controls, in particular relating to accounting transactions, with the putting in place of procedures to ensure that books and records are not used to hide acts of corruption or influence peddling.

To identify and assess the risks of bribery and influence peddling to which Orano Mining is exposed, all of our sites worldwide undergo an annual assessment.



These risks are classified into sub-families of risks (purchasing, sales, conflicts of interests, gifts and invitations, human resources, representatives dealing with public officials, mergers & acquisitions, joint ventures, donations, influence peddling, other) which are assessed according to 3 criteria (severity, occurrence, and level of control).

Several further measures were taken:

- we issued a policy on gifts and invitations and a SharePoint for declaring them,
- Orano improved the ethics alert mechanism via an outsourced platform, accessible to all Group employees in several languages (French, English, Russian, Mongolian...). Through this system, employees are able to report anonymously any breaches of applicable regulations or of the group's internal rules and procedures, in particular breaches related to the Code of Ethics and the Anti-Corruption Code of Conduct. This system is constantly communicated via the intranet and/or by posters at the sites.
- management continued its frequent communication,
- an educational booklet "Ethics and compliance - what you need to do" was issued and circulated.

## Strengthening the whistleblowing system

In 2021, the Orano whistleblowing system was opened to employees and associates of business partners (suppliers, service providers, subcontractors and customers), as well as to recruitment candidates. In addition, specific training

sessions on "conducting an internal investigation" were provided for the alert officers, compliance officers and human resources representatives.

More information on Orano annual report



It is a reflex and a duty for each and every one of us to immediately raise the alert if any blatant incident or breach of a statutory or regulatory obligation or violation of the Code Ethics and Business Conduct or compliance policies and procedures is observed.

The rules of conduct of the Code Ethics and Business Conduct deal with the action we take in particular in terms of the following: compliance with international treaties, conflicts of interest, insider trading, corruption, corruption, gifts and unfair advantage, influence peddling, payments and relations with third parties, facilitation payments, competition, advocacy and lobbying, political funding, protection of life and property, corporate sponsorship, etc.

Every year, Orano Mining, like all the other Business Units of the Group, conducts an ethical reporting process. Each campaign opens with a letter from the Senior Executive Vice President of Orano Mining, in application of the letter of instruction from the CEO of Orano. This process involves all our directors and their managerial staff in all the countries where we are present (Orano Mining and its sites in France and abroad, as well as its subsidiaries).

All members of the Orano Mining Management Committee and of the management committees of subsidiaries have followed or will be following training in Ethics.

## PROCESS

The ethical reporting process is underpinned by the principle that our employees can report an infringement they have found without repercussion to themselves if the facts are proven (whether the issue is within our own operations or





related to the practices of our subcontractors). In the same way, if anyone is given an order that clearly runs contrary to the Orano Code Ethics and Business Conduct, they are entitled not to comply, and must report the matter to Group's Compliance Department immediately.

Our employees can use this system or else raise any issue with the human resources teams, their managers, their staff representative, or the network of compliance officers. A description of the system and how it works is available on the Orano intranet.

A system for alerting and issuing complaints in case of discrimination has been in place for several years. It guarantees the confidentiality and protection of whistleblowers acting in good faith. Since 2019, a dedicated, secure external web platform (available in several languages) for collecting alerts has allowed the system to be further strengthened.

In addition to the ethics alert mechanism available on the platform, every year an ethics report provides information on the various ethics events reported and declared during the course of the previous year, as well as how they were handled and the actions taken or being taken concerning these cases. Reporting is carried out via the managerial chain or alerts raised by partners.

Depending on their severity, disciplinary measures have been taken in some cases, with some even resulting in the dismissal of the offending persons.

These events are classified by family, and 62 cases were reported in 2020 related to:

- interpersonal relations and human rights,
- protection of life and property,
- data protection and privacy,
- corruption,
- competition
- safety, security and environment
- export-control, non-proliferation and international sanctions.

## CONTROLS AND SANCTIONS

The nature of corrective actions and/or sanctions proposed will vary depending on the severity of the failure to comply.

Of the 42 cases reported for 2021:

- 2 dismissal
- 2 resignations
- 7 disciplinary sanctions ranging from a simple reminder to a layoff

In 2021, the ethics alert mechanism was used twice within the scope of mining activities.

Furthermore, in 2021, a system for the management of claims and complaints in particular concerning any risks of Human rights violations was deployed on all of Orano Mining's sites (See Mining Principle 9.3, p.144 .

## PRINCIPLE 1.3

**Implement policies and standards consistent with the ICMM policy framework.**



In addition to the Group's Code Ethics and Business Conduct, Orano Mining is implementing specific policies, the next editions of which will incorporate the Group's social and environmental commitments, in the following areas:

- a Nuclear Safety and Environment policy;
- a Health - Safety - Radiation Protection policy;
- a Purchasing policy;
- agreements and guidelines in the areas of diversity and inclusion, skills and quality of life at work and social dialogue;
- a policy for combating corruption and influence peddling.

These policies are validated by the Executive Committee and the Board of Directors. Their appropriation and their application are verified by the Group's Internal Control bodies, in particular by internal audit or the General Inspectorate. They cover topics relating to duty of care. Other policies (quality, protection, etc.) supplement the action taken by the Group.

These different policies and codes help organize the company's operations in compliance with human rights and in the interest of environmental protection and the laws that govern them.

In its corporate strategy, one of Orano Mining's stated priorities is to be a leader in the industry in terms of health and safety at work, community involvement, environmental and ethical practices. A CSR policy, drawn up in consultation with the various different departments in order to define the principles of action and set out a precise framework for this approach, has been approved by the Management Committee (See Mining Principle 2.1 - Decision Making p. 32 .

As a responsible mining company, Orano Mining is committed to implementing the Position Statements defined by the ICMM, as well as the 10 mining principles and their performance expectations.

Orano Mining strives constantly to improve its performance in all areas and takes account of the expectations of those of its stakeholders that are directly or indirectly affected by the Group's activities.

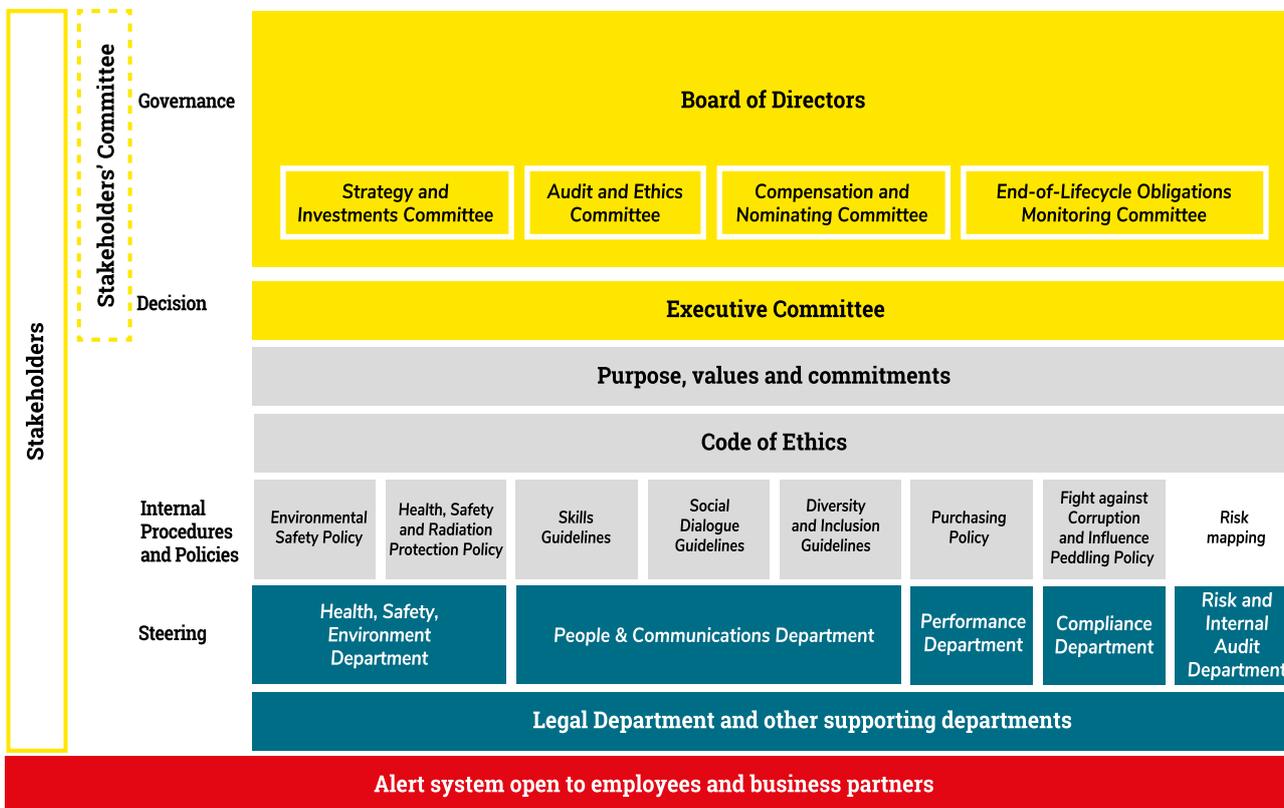
**PRINCIPLE 1.4**

**Assign accountability for sustainability performance at the Board and/or Executive Committee level.**





ORANO'S NON-FINANCIAL GOVERNANCE



Source : Orano

**NON-FINANCIAL GOVERNANCE OF ORANO**

The Board of Directors of Orano guides and controls the actions of the Group's Committees and its results, including in non-financial matters. Environmental, Social and Governance (ESG) matters are managed on an ad-hoc basis by each of the specialized committees of the Board of Directors depending on the topic. An overall review of progress with regard to the Commitments roadmap is carried out by the Board of Directors at least once a year (For more information, see Orano annual report, chapter 4.1.4, p. 98 [📄](#)).

**REGARDING ETHICS**

The Chief Compliance Officer, reporting to the Orano Chief Executive Officer, manages the program in the area of ethics and the prevention of corruption and influence peddling. She coordinates an operational network within the Business Units and Central Departments.

Every year, the alerts and incidents reported by each Business Unit are summarized and presented to the Executive Committee and to the Audit and Ethics Committee. The trend, in recent years, shows that the area in which the most

incidents are reported is "discrimination and harassment" (For more information, see Orano annual report, chapter 4.2.3, p. 105 [📄](#)).

**PRINCIPLE 1.5**

**Disclose the value and beneficiaries of financial and in-kind political contributions whether directly or through an intermediary.**

Orano Mining does not favor any political party, group or individual and does not make any direct or indirect payment to political parties or to candidates in any of the countries in which we are present.

# DECISION- MAKING

## MINING PRINCIPLE

**Integrate sustainable development in corporate strategy and decision-making processes.**



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**PRINCIPLE 2.1**

**Integrate sustainable development principles into corporate strategy and decision-making processes relating to investments and in the design, operation and closure of facilities.**

their use, and we address the challenges, whether they be social, environmental, societal, technical or economic, at each stage of the mining cycle in the countries where we operate.

Orano Mining is committed to implementing the Position Statements defined by the ICMM (International Council on Mining and Metals), as well as the 10 mining principles and their 38 performance expectations by adopting a continuous improvement approach.

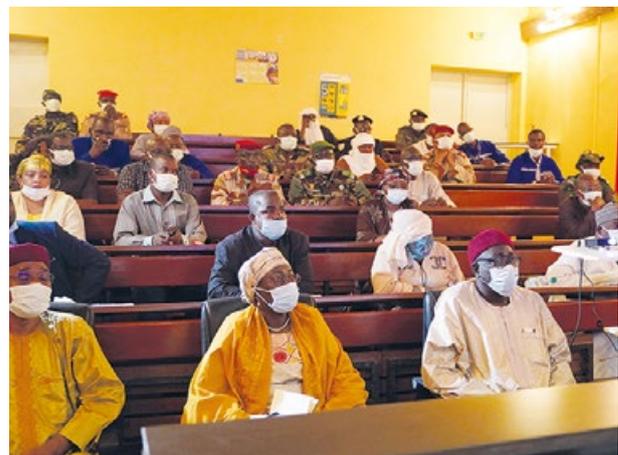
More information on ICMM Mining principles



Because it is convinced that protection of the climate, resources and health are issues of fundamental importance, Orano has made addressing them central to its purpose and intends to use and develop know-how in the transformation and control of nuclear materials for the climate, for a healthy and resource-efficient world, now and tomorrow.

In 2020, Orano updated its strategic vision incorporating social and environmental commitments put together with managers of the group and thanks to feedback from stakeholders. Structured around a purpose, values and strategic goals, its 13 objectives reflect the way in which Orano wishes to embody its purpose and contribute to the achievement of Sustainable Development Goals.

As a responsible mining company, we ensure sustainable, concerted and balanced management of resources and of



## GOVERNANCE OF ORANO MINING'S APPROACH TO CSR

The CSR policy, drawn up in consultation with the various different sites and departments of Orano Mining, then approved by the Management Committee and signed by the Senior Executive Vice President of the Business Unit, defines the following principles of action:

- Forward planning and prevention;
- Consideration of the local context;
- Compliance with regulations and international standards;
- Information, listening, dialogue and consultation;
- Ethics and transparency.

The CSR policy lends a precise framework to our approach to corporate social responsibility and addresses two convergent demands:

- Orano Mining's desire to structure and formalize its action in the area of corporate social responsibility,
- the determination to apply the principles and best practices advocated in the extractive industries sector and in particular those set out by the ICMM (International Council on Mining and Metals).

In order to ensure its deployment, a CSR committee was established in April 2017 and the Mining Social Committees (CSMs) created in 2013 have evolved to adapt to this new governance.

For more information, see CSR Approach, p. 16



As far as relations with its suppliers and subcontractors are concerned, Orano Mining follows Orano's purchasing policy, which includes social and environmental criteria.

Orano Mining's supply chain works closely with the HSE, Legal and Compliance Departments to ensure that suppliers meet compliance requirements, particularly with regard to the prevention of corruption and influence peddling.

Suppliers are assessed based on the criteria of quality, conformance, competitiveness, safety and the environment, and on their ability to supply products and services that meet the needs and specified requirements.

Orano has made a point of getting its suppliers to engage in a process of sustainable development. For several years, all Orano contracts have included provisions on the compliance of suppliers with such a commitment.

Under the terms of this commitment, suppliers undertake to promote and safeguard compliance with human rights, labor law (pertaining to labor standards, child labor, discrimination, working hours, minimum wage) and protection of the environment.

Each supplier also makes a pledge to prevent corruption, and this is a factor in the selection of Orano suppliers.

As an integral part of the contracts signed with suppliers, the General Terms and Conditions of Purchase (T&C) or contractual

## PRINCIPLE 2.2

Support the adoption of responsible health and safety, environmental, human rights and labour policies and practices by joint venture partners, suppliers and contractors, based on risk.



clauses set out the health, safety and protection obligations for suppliers, as well as their environmental responsibility. They include provisions concerning the obligations of the supplier with regard to:

- hygiene, safety and the protection of health;
- regulated substances (REACH regulations);
- sustainable development in terms of human rights, health, safety, labor law and the environment.

Non-compliance with these provisions may result in termination of the contract or order.

The Terms & Conditions (T&C) or contractual clauses include provisions so that Orano, where applicable, its customer, any third party mandated by Orano or any empowered authority, can access the premises of the supplier, or its subcontractors



and suppliers, for the purpose of verifying or auditing all the requirements specified in the order.

The various documents and processes that make up the supply chain management system (Code of Ethics, T&C, Purchasing policy, Sustainable development commitment, etc.) take into account:

- risk analyses by purchasing market (hazards table) and by country (see Orano's internal procedure "Country Compliance Classification") via a compliance questionnaire;
- the mitigation plan for associated risks prior to contract award;
- supplier performance metrics and required improvement plans;
- the ethical and sustainable development aspects of contractual clauses, in accordance with the French Sapin II and Duty of Care laws;
- studies carried out by the Group's business intelligence unit, for all SOC suppliers, when justified by the risk analysis.

Since the end of April 2019, a systematic assessment process for new suppliers, adapted to the level of risk involved (compliance, corruption), has been deployed in coordination





with the Compliance Department. The completed and approved third party assessment form is a mandatory prerequisite for the creation of a supplier in Orano Mining's ERP.

Depending on the results obtained within the framework of the assessment procedure, and where deemed necessary, a questionnaire is sent to the supplier (containing in particular questions concerning the subsidiaries of the company and existing equity ties), and, where applicable, an investigation by the business intelligence unit is carried out.

This business intelligence investigation is carried out systematically for suppliers with a medium or high level of risk, including in Sourcing Opportunity Countries (sourcing from low-cost countries, mainly Niger, Kazakhstan, China and Turkey).

Since December 2, 2021, Orano has also been a signatory of the "Responsible Supplier Relations Charter" (<http://www.rfar.fr/>) and in this respect demonstrates its desire to implement a continuous improvement plan with its suppliers within a framework of mutual trust and respect for the rights and responsibilities of each individual. This commitment is supplemented by the appointment of an internal mediator within the company, who can be referred to by the group's



suppliers when a situation has not been resolved through amicable negotiation. The internal mediator will seek a concerted solution that suits both parties, contactable at an email address that will be communicated in 2022 on the Orano website (supplier relations section).

In 2021, in order to be in line with the commitment made for 2025, Orano Mining has carried out the following actions as part of its Duty of Care action plan, which will be completed and finalized during 2022:

- Implemented CSR criteria in calls for tender exceeding €1 million from the first quarter of 2021,
- Raised awareness on duty of care among management at all sites through participatory workshops during a managerial convention,
- Worked on the development of a CSR risk analysis grid adapted to Orano Mining's purchasing categories for deployment in 2022.



#### 2025 OBJECTIVE:

to expand the inclusion of CSR criteria in calls for tender totaling more than €1 million in Orano Mining subsidiaries, depending on the local legislation in force.

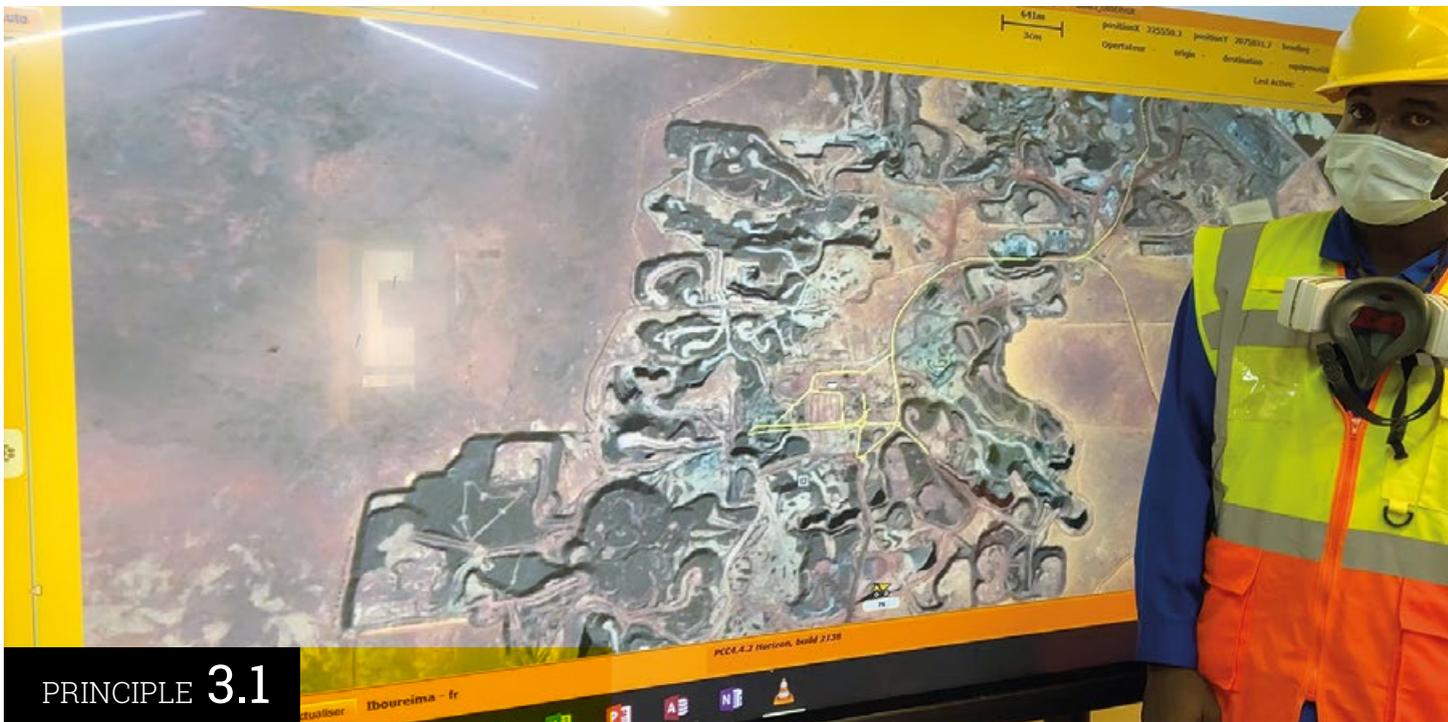
# HUMAN RIGHTS



## MINING PRINCIPLE

**Respect human rights and the interests, cultures, customs and values of employees and communities affected by our activities.**





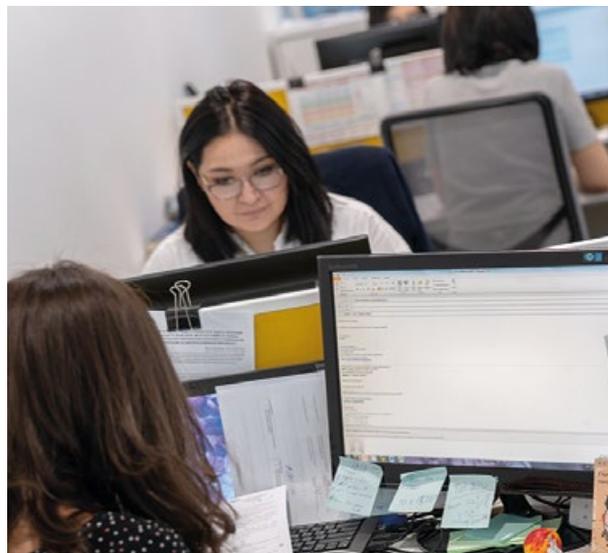
**PRINCIPLE 3.1**

Support the UN Guiding Principles on Business and Human Rights by developing a policy commitment to respect human rights, undertaking human rights due diligence and providing for or cooperating in processes to enable the remediation of adverse human rights impacts that members have caused or contributed to.

Orano Mining values transparency and dialogue with its stakeholders, in particular on questions relating to human rights raised in these different forums for exchange such as the Site Monitoring Committees (CSSs) or the Local Information Committees (CLIs). Moreover, the management of grievances plays an essential part in the quality of our relations with our stakeholders. With this in mind, Orano Mining deployed a grievance mechanism on all of its sites in 2020 to resolve complaints at an operational level and gives a feedback of the complaints received in 2021 (See Mining Principle 9.3, p. 144 .

Orano conducts its business in compliance with the fundamental texts aimed at protecting human rights, namely:

- the Universal Declaration of Human Rights adopted by the UN in 1948;
- the fundamental conventions of the International Labour Organization (ILO);
- the Guidelines for Multinational Enterprises issued by the Organization for Economic Co-operation and Development (OECD).



## PRINCIPLE 3.2

**Avoid the involuntary physical or economic displacement of families and communities. Where this is not possible apply the mitigation hierarchy and implement actions or remedies that address residual adverse effects to restore or improve livelihoods and standards of living of displaced people.**

**COMUF (a subsidiary of Orano Mining in Gabon) mined the Mounana uranium deposits, from 1958 to 1999, the date of the last commercial shipment.**

In 2001, the International Atomic Energy Agency (IAEA) found that concrete made in part of radiologically contaminated products was being used for the construction of parts of the buildings in the town of Mounana.

Between 2006 and 2011, two exhaustive inventories of dwellings conducted by the CNPRI (Centre National de Prévention et de Protection contre les Rayonnements Ionisants) that later became the Gabonese Nuclear Safety and Security Agency (Agence Gabonaise de Sûreté et de Sécurité Nucléaire – AGSSN), were carried out, taking account of the 1990 Recommendation of the International Commission on Radiological Protection (ICRP) reducing the effective dose limit for public exposure from 5 to 1 mSv/year.

In this context, COMUF took the decision to participate in the management of these radiologically contaminated houses, as part of the "Mounana 200" project, based on the diagnostics carried out and the location of the dwellings concerned.

The project is divided into four parts:

- 69 houses in the municipality of Mounana, demolished and rebuilt in the same place,
- 24 houses on a new plot of land, with the necessary roadworks and works to install the necessary supply networks,

- 100 houses in the Cité Rénovation, demolished and rebuilt in the same place,
- 8 dwellings only requiring partial works.

The definitive list of the houses concerned by the project was approved in 2012 by a technical committee, made up of COMUF, representatives of the Gabonese State and the supervising ministries.

In 2021, 68 houses were built under the Mounana 200 project. A total of 168 houses have been rebuilt as of December 31, 2021. The reconstruction project is expected to end in 2022.

Also in 2021, before the families move into their new homes, a specific commission made up of representatives from the Prefecture, the Sub-Prefecture, and the Town Hall, and community leaders, was created to:

- Draw up the list of tenants and owners of the dwellings,
- Finalize the framework for compensation payments for rehousing and compensation for damages for the populations during the works phase,
- Assign the houses built,
- Examine disputes.

Within the framework of a public consultation, the persons concerned were able to make their comments and grievances known to the Sub-Prefecture and the Town Hall. No complaint was lodged with the authorities.

This procedure makes it possible to ensure that people have not been moved against their will.



## COMINAK

A report on the situation of the movements in the within the mining town of COMINAK will be made in the next in the next CSR report.

As the site will close on March 31, 2021, it is premature to premature at this time to have a status report.

For more information on  
COMINAK site remediation



PRINCIPLE 3.3

Implement, based on risk, a human rights and security approach consistent with the Voluntary Principles on Security and Human Rights.

Orano Mining regularly assesses risks identified with regard to the Voluntary Principles on Security and Human Rights in the countries where it is present, as an essential part of ensuring the safety of personnel, and of local communities.



PRINCIPLE 3.4

Respect the rights of workers by: not employing child or forced labour; avoiding human trafficking; not assigning hazardous/ dangerous work to those under 18; eliminating harassment and discrimination; respecting freedom of association and collective bargaining and; providing a mechanism to address workers grievances.



Orano conducts its business in compliance with the fundamental texts aimed at protecting human rights.

It reflects the company's commitment to eliminating child labor and all forms of forced or imposed labor, adherence to free association, privacy, and the right for collective bargaining.

For more information on grievance mechanism, see Mining Principle 1.2 p. 25



For more information, see Orano annual report, Chapter 3.4.1, p. 74



## POLICY

Due to the diversity of the countries in which Orano Mining operates, we work in local communities with different and cosmopolitan cultural, religious and ethnic backgrounds.

As an economic player in these territories, Orano Mining is also a leading employer ambitious to attract, develop and retain talented individuals who will make our projects a success. We propose career paths to our employees which favor the development of their careers, by offering them a level of remuneration that is competitive on the job market and by fostering quality of life at work and labor relations dialogue.

Orano's Human Resources Policy acts as a framework for all Orano Mining entities, both in France and internationally. Operational entities of Orano Mining apply it in the form of an action plan while ensuring compliance with the regulations in force and international standards.

## GOVERNANCE

To respond to the issues before us, operational teams are supported by the Human Resources Department, whose director is a member of the Orano Mining Management Committee.

HR teams at central level train, develop and provide their support to HR teams on site: they regularly carry out missions in the field to meet with teams (managers, talents, etc.), conduct participatory safety visits, and give tours allowing for a better understanding of how our facilities work.

Dedicated training sessions and seminars are organized on a regular basis to allow local teams to improve their skills. They ensure that HR programs and processes (annual interviews, personnel and salary reviews, etc.) are consistent, make sure that best practices are shared and incorporate all actions into a continuous improvement approach.



Each entity establishes a human resources management plan adapted to the specific challenges of each site, with an HR team that is present in the field and involved in operational issues. For example, issues related to staff turnover were given particular attention in Kazakhstan and Canada, while recruitment issues were closely examined in our developing countries, as is the case in Uzbekistan, and finally in Niger, with the shutdown of COMINAK production, our teams worked particularly hard on redeployment.

For more information on COMINAK social challenges, p. 90



## ENCOURAGING EMPLOYEE-EMPLOYER DIALOGUE AND RESPECTING THE FREEDOM OF ASSOCIATION AND THE RIGHT TO COLLECTIVE BARGAINING

Orano and Orano Mining take care to maintain employee-employer dialogue at all levels: at local or national level in the countries where we operate, or at central level through participation on representative bodies or by the signature of agreements.

Within the framework of remediation of the COMINAK site, an agreement concerning the redundancy plan was signed with staff representatives and the Labor authority of Niger on November 25, 2020. This agreement guarantees the fair implementation of the agreed measures. With the support of the union representatives and the Niger Labor Administration, COMINAK has put in place a system for its employees which provides, in addition to the conventional, legal and regulatory system, complementary measures for internal and external reclassification, as well as additional financial compensation.

For more information on COMINAK remediation plan, p. 90



In France, work continues to further strengthen our labor relations policy with the signature of several agreements concerning quality of life at work and training in particular.

Discussions are guided by a readiness to listen and consultation, which equally have a key role to play in the smooth running of the company. Staff representative bodies are one of the key categories of stakeholders involved in employee-employer dialogue. Regarding collective bargaining, agreements can be signed with union representatives at group level, as well as with each of the companies that make up the group, whilst ensuring compliance with the regulations in force.

Within Orano Mining, 100% of our sites in operation have trade union representation.

The topics covered vary but some such as hygiene, health, safety, remuneration, equality of opportunity, recruitment, quality of life at work are addressed on a systematic basis.

Regular discussions are also organized to keep people up-to-date with the latest developments concerning the company, whether via staff representative bodies (Instances Représentatives du Personnel - IRP) or at informal meetings organized with all of our sites.

Mandatory annual negotiations are organized with the staff representative bodies.

- In France and Niger, 100% of employees are covered by a collective bargaining agreement.
- In Canada, workers and other employees are covered by a collective bargaining agreement under the "Canadian Labour Standards Acts". In addition, a three-year collective agreement has been negotiated for the McClean Lake site (June 2019 – May 2022).
- In central Asia: In Mongolia, an agreement covering all employees has been signed for a period of 2 years (May 2021 – May 2023), while in Kazakhstan, a collective agreement is in place for a period of 3 years (April 2021 – April 2024) for all employees. And finally, in Uzbekistan, an agreement on work in shift rotation has been in place since 2020.

A mechanism for the processing of workers' grievances is in place within the company (For more information, see Mining Principle 9.4, p 145 .

In 2021, besides Mongolia where a strike took place, no strikes or lock-outs lasting for more than a week took place on any of Orano Mining's sites worldwide.

**Working conditions and decent work**

<b>Number of strikes and lock-outs exceeding one week's duration, by country</b>	1
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 **Orano Mining has set itself the objective of keeping the level of social action as low as possible by 2025.**

Every year, in the main countries where it is based, Orano conduct an internal opinion survey - Orano Vox - with its employees to gather their opinions and expectations concerning their professional situation and their perception of the company.

This survey did not take place in 2021 due to a bidding process as part of the tool and vendor change; the survey will be reinstated in September 2022.

<b>RESULTS 2021</b>	
<b>Maintain the minimum rate of 80% of employees who recommend Orano</b>	
<b>Maintain the level of social conflict below one week of annual strike per country of operation</b>	



**PRINCIPLE 3.5**

**Remunerate employees with wages that equal or exceed legal requirements or represent a competitive wage within that job market (whichever is higher) and assign regular and overtime working hours within legally required limits.**

**Attracting and retaining talented individuals are challenges that we have to meet to enable our employees to develop. It is necessary to strike the right balance to optimize human resources, support employees throughout their professional development and adopt a fair and competitive remuneration policy.**

**In 2021, we had 3,022 employees\*, 93.02% of whom were on permanent contracts\*\* (Contrats à Durée Indéterminée - CDI).**

\* Excluding internship / apprenticeship contract  
 \*\* Cat A (permanent present contract) and Cat B (temporarily absent contract)



### PRIORITIZING LOCAL RECRUITMENT

In the countries where we are present, Orano Mining is contributing to the improvement of employment opportunities and to the advancement of social and economic development in local communities.

Orano's social policy expresses a commitment to promoting the local recruitment of employees. In 2021, 98.1% of our employees on our sites are from the host country.

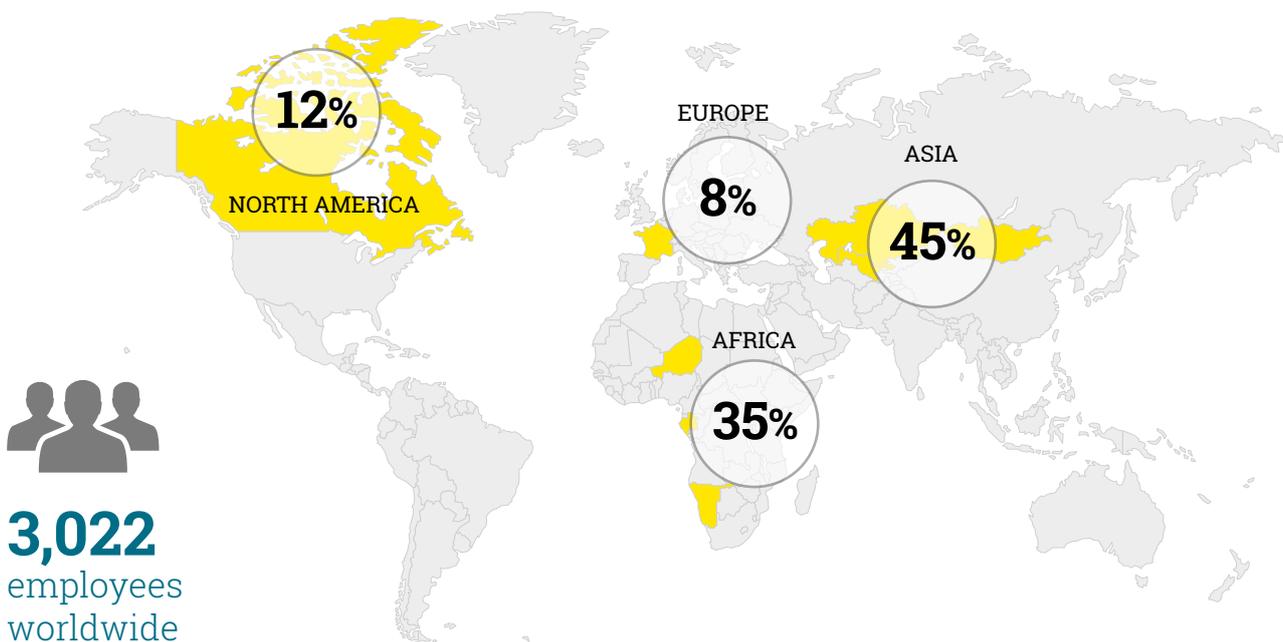
#### Split of employees by country

Countries	Total number of employees	Local employees	Percentage of local employees
Canada	336	331	98.5%
France	256	250	97.7%
Kazakhstan	1,104	1,089	98.6%
Mongolia	77	73	94.8%
Namibia	17	16	94.1%
Niger	907	891	98.2%
Uzbekistan	38	33	86.8%
<b>TOTAL</b>	<b>2,735</b>	<b>2,683</b>	<b>98.10%</b>

#### Split of employees by gender and contract type\*

Type of contract	Female	Male	TOTAL
Permanent	454	2,357	2,811
Temporary	34	177	211
<b>TOTAL</b>	<b>488</b>	<b>2,534</b>	<b>3,022</b>

\* Except China, Gabon and Germany - entities with less than 10 employees



**Turnover (cat. A)**

Countries	Entries	Departures	Turnover
Canada	56	54	15.5%
France	33	29	12.2%
Kazakhstan	87	80	7.4%
Mongolia	3	4	6.2%
Namibia	1	0	2.9%
Niger*	44	493	20%
Uzbekistan	13	1	26.9%
<b>Total</b>	<b>237</b>	<b>661</b>	<b>14.2%</b>

\* Figures including departures related to the COMINAK redundancy plan

For more information on work organization, see p. 48



For more information, see Orano annual report, chapter 4.3.1, p. 115

**Ratio (lowest internal salary divided by the local minimum salary)**

Countries	Ratio
Canada	1.4
France	1.6
Kazakhstan	1.4
Mongolia	1
Niger	3.1
Uzbekistan	2.4

Internally, fair treatment is ensured by processes of performance assessment (annual interview), conducted by the manager, as well as during the course of people reviews, which bring together managers, HR and a compensation manager.

For more information on Orano remuneration policy, chapter 4.3.1. p. 113

**Ratio of the CEO's total annual compensation to the median of the total annual compensation of all employees employees (excluding CEO)**

Countries	Ratio
Canada	4.1
France	4.2
Kazakhstan	10.6
Mongolia	5.6
Namibia	1.8
Niger	6.2
Uzbekistan	4.5

**MANAGEMENT AND DEVELOPMENT OF SKILLS****Adapting skills to the goals of the sector (France)**

Every year, Orano prepares a skills review. This mapping makes it possible to have a vision of the skills to be maintained and brought on board, as well as to identify professional areas where there may be skills shortages and to report on individual needs. This "Skills 2025" ("Compétences 2025") skills development plan can be broken down into 4 areas:

- the process of skills management
- the recruitment policy
- training, digitization and transfer of skills
- development of the pool of experts

**A FAIR AND COMPETITIVE REMUNERATION POLICY**

The purpose of Orano's remuneration policy, applied within Orano Mining, is to reward the efforts of employees worldwide and also to attract and retain people with the skills that are valuable to the group. It is founded on three pillars: remunerate performance, guarantee internal fairness, and help to make Orano more attractive in particular on the market for technicians, managers and engineers.

The majority of employees are covered by legislation guaranteeing minimum pay. Where this is not the case, in particular in Namibia, Orano Mining guarantees a level of remuneration superior to the minimum seen locally.



Every year, employees have the benefit of an interview conducted to assess their performance and development of skills.

During the 2020-2021 campaign, 99% of managers completed an annual interview via single IT tool "OPUS". Used at group level, OPUS provides one single, traceable and comparable form, thus allowing consistency to be guaranteed between all countries.

### PEOPLE REVIEW

Following these interviews, in all the countries where we are present, meetings between managers and HR are organized every two years to examine the potential and career development prospects of management staff. Action plans make it possible to define training pathways and succession plans for identified "talents" and people in key positions.

### ACCESS TO TRAINING

The training offer is structured not only around the "École des métiers" but also reference "pathways" and independent modules in order to adapt as best as possible to the expectation of each employee and to enhance employees' professional prospects over the long term.



**2025 OBJECTIVE FOR ORANO MINING:**  
 10% of employees to receive training leading to a qualification or diploma each year.

3,000 training courses are being offered to employees to help them to improve their skills.



Nearly 60% of employees were trained in 2021, with an average number of hours per employee of 46, up from 2020. This result reflects Orano's commitment to supporting its employees in their professional development. It should be noted that the percentage of women who received training (66%) is higher than that of men (56%).



Average training hours per year, per employee

	Gender		Category		TOTAL
	Female	Male	Executive	Non-executive	
Total number of training hours provided to employees	34,279.5	92,311.75	50,990.75	75,600.5	126,591.25
Total number of employees (CDI)	435	2,330	875	1,890	2,765
Average hours of training that the organization's employees have undertaken during the reporting period	78.8	39.6	58.3	40	45.8



**“École du Management”**

Orano’s Management School (“L’École du Management”) offers strategic training programs to develop and support managers in the Group’s transformation.

The School encourages the development of skills, as well as simplification and proximity to what is happening in the field. The aim is to give employees the means of remaining committed and confident in the future. These training sessions are also contributing to build a common managerial culture within Orano in all its entities.

In 2021, due to health situation, the majority of courses (86%) were delivered remotely throughout the world. Remote welcome sessions are organized for managers in the countries where we operate.

**Mining College**

The Mining College offers more than thirty training courses in technical areas to employees of Orano Mining and Orano, in France and on our subsidiaries’ sites (Canada, Kazakhstan, Mongolia and Niger). These courses are designed and delivered by employees of Orano Mining, and experts and specialists in our activities.

The Mining College supports the maintenance and development of technical skills in our core businesses of mining from exploration to mine closure. It is aimed at engineers, managers and technicians both from technical and support functions.

In 2020, 39 training courses (56% of which were remote courses – representing 40% of the trainees) were delivered to 447 trainees.

**EXPERTISE**

Orano has 800 experts and specialists. A policy is in place to ensure the value of this sector receives due recognition in terms of remuneration and status. In addition to the contribution they make to scientific and technical excellence, our experts also contribute to the distribution and sharing of knowledge through active participation in networks, mentoring and teaching.

As a result of the campaign to renew and identify Orano’s population of experts conducted in 2020, 53 experts have been identified or confirmed within Orano Mining. From this college of experts, 14 experts are new, 9 have moved up a level and 30 have been re-confirmed in their positions. The number of women has also increased: nine women have been recognized as being part of our group of experts (compared to six in 2017). In subsidiaries, Orano Mining is continuing to pursue its policy to develop expertise with 39% of experts working in Niger, Kazakhstan, Canada and Mongolia.

Our new expertise campaign will be launched at the end of 2022.

**RESULTS 2021**

**Provide training leading to certification, qualification or diploma for at least 10% of our employees per year**



**PRINCIPLE 3.6**

**Respect the rights, interests, aspirations, culture and natural resource-based livelihoods of Indigenous Peoples in project design, development and operation; apply the mitigation hierarchy to address adverse impacts and; deliver sustainable benefits for Indigenous Peoples.**



**Orano recognizes a responsibility to the Indigenous Peoples in areas in which we have activities and is committed to working in partnership with Indigenous Peoples in the spirit of reconciliation and collaboration. To meet this commitment Orano Canada Inc. communicates with and provides opportunities for two-way sharing of information with Indigenous Peoples and considers all views in order to build consensus.**

From exploration permitting, through licensing and development, then expansion and/or decommissioning, we involve local leaders and community members by offering information, tours, one-on-one meetings and technical presentations.

In accordance with the Orano Code of Ethics, we also provide employment and business opportunities and social investment support. Orano reports on our progress to Indigenous Peoples and the public. Nearly 40% of Orano's employees in Canada declare themselves to be Indigenous, a figure well above the Canadian average Indigenous representation in the upstream mining industry (extraction and primary processing; 12% (cf. Mining principle 9.2 p. 143 )).

Furthermore, the percentage of Indigenous employees working for Orano's long-term contractors comes to more than 77%. While there are numerous opportunities for communication and conflict resolution in our day-to-day interactions and collaboration agreements, we also offer a grievance mechanism for transparent dispute resolution to strengthen trust-based relationships with Indigenous Peoples near our activities (cf. Mining principle 9.3, p. 144 ).



**PRINCIPLE 3.7**

**Work to obtain the free, prior and informed consent of Indigenous Peoples where significant adverse impacts are likely to occur, as a result of relocation, disturbance of lands and territories or of critical cultural heritage, and capture the outcomes of engagement and consent processes in agreements.**

Orano is a partner in the Pinehouse (2012), English River First Nations (2013) and the Ya'Thi Néné (2016) Collaboration Agreements.

The Collaboration Agreements build upon the enduring partnership in the development of uranium resources in northern Saskatchewan. They are structured on the five pillars of workforce development, business development, community engagement, environmental stewardship and community investment.

Subcommittees under each agreement include local representation and meet quarterly to discuss uranium mining and community matters such as environmental protection, health and safety, employment and training opportunities, contracting and business opportunities, and benefits, such as wages, scholarships, donations, and sponsorships.

In the cases where Orano’s undertakings may have an impact on traditional activities in the area, we meet with Indigenous leaders, their communities, and other interested parties to agree on how and when we will communicate with each other, and how the party will be accommodated or compensated.

**PRINCIPLE 3.8**

**Implement policies and practices to respect the rights and interests of women and support diversity in the workplace.**



**2025 OBJECTIVES FOR ORANO MINING:**  
 Increase the proportion of women in our 160 key positions (+50%).

*\* Top 160: 160 key positions within Orano Mining*

**OUR RESULTS**

The indicators for Orano Mining are encouraging: women make up 38% of the teams in France. We still need to improve the overall numbers of women abroad which now stands at 16% (up by 2% since 2020), and make sure they are promoted at all levels of the organization, particularly in Management Committees.

Efforts are made to accompany the international careers of talented women from one country to another from Kazakhstan to Canada and from Niger to France.



Employees involved in governance bodies (management committee) by gender and age group

	Gender		Age group		
	Female	Male	Under 30 years	30-50 years	Over 50 years
Number of employees	17	64	0	50	31
Percentage of employees	21%	79%	0%	61.7%	38.3%
<b>Total number of members</b>	<b>81</b>				

In 2021, Orano Mining has 2 women out of the 12 Parisian members of the Orano Mining Codir, i.e. 16.67%; for Orano Mining as a whole, we have 20 women out of the 92 members of the Codirs, i.e. 21.74%, an increase of 1% compared to 2020.

RESULTS 2021	
Increase by 10% the share of women in the TOP 160 perimeter every year	
Maintain a minimum of 95% local recruitment	

**In France, a course of training on the prevention of sexual harassment and sexist behaviors has been delivered by the Orano group.**

At Orano Mining France, awareness of the issue has been raised with Trade Union organizations, members of the Social and Economic Committee (Comité Social et Économique - CSE), HR managers and other managers. This training program should be implemented on the Orano Mining sites soon.



**FRANCE**

**Professional gender equality**

The index of gender equality in the workplace is 92 / 100.

Created by the law of September 5, 2018 for the freedom to choose one's professional future, the Index is calculated from 5 indicators:

- The gender pay gap: 37/40 for Orano Mining France.
- The distribution gap for individual increases: 20/20.
- The distribution gap for promotions (only in companies with more than 250 employees): 15/15.
- The percentage of female employees who receive a raise upon return from maternity leave: 15/15.
- The number of people of the under-represented gender among the 10 highest earners: 5/10.

Convinced that mixed working environment is a major asset in the life of the group and for its development, Orano concluded an agreement on equality between women and men in 2019 for a period of four years.

This agreement is structured around 6 areas of action:

- Gender diversity in the workplace
- Gender equality on pay
- Access for women to posts of responsibility
- Parenting integrated into day-to-day professional life
- Improvement of working conditions and looking for a better balance between professional activity and personal life
- Steps to prevent and counter sexual harassment and sexist attitudes and behavior

## Being a woman, moving and developing is possible at Orano

Coralie Prin joined Orano Canada as CFO in December 2021. This is a new professional adventure and a new life for her.

Having joined the group in 2007 after graduating in political science and an MBA, Coralie has held various positions, notably in the group's strategy department and then as strategy director for Orano's Recycling BU. This career path proves that mobility is possible both between the different businesses of the group and in geographical terms.

Within Orano Mining, since 2018, more than 115 mobilities have taken place internationally and/or between our Business Units.

## DIVERSITY - EQUAL OPPORTUNITIES

Orano is convinced that diversity is a performance factor, a source of innovation, that diversity enriches exchanges, confronts skills and nourishes reflections. Orano's commitment is recognized by the Diversity Label obtained in 2010 and renewed in September 2020.

The scope of the Diversity Label covers France, but Orano Mining, given its international and multicultural dimension,



see itself as a driver for the worldwide expansion of the Diversity policy. After all, it brings together a diverse range of skills from around thirty countries on all continents.

Orano Mining applies the group's policy and our HR teams promote diversity during the course of exercising their functions by taking care to develop employees' skills and career paths in a way that excludes any discrimination related in particular to origin, gender, race, sexual orientation or identity, disability, age, or belonging to a political, trade union, or religious organization or to a minority.

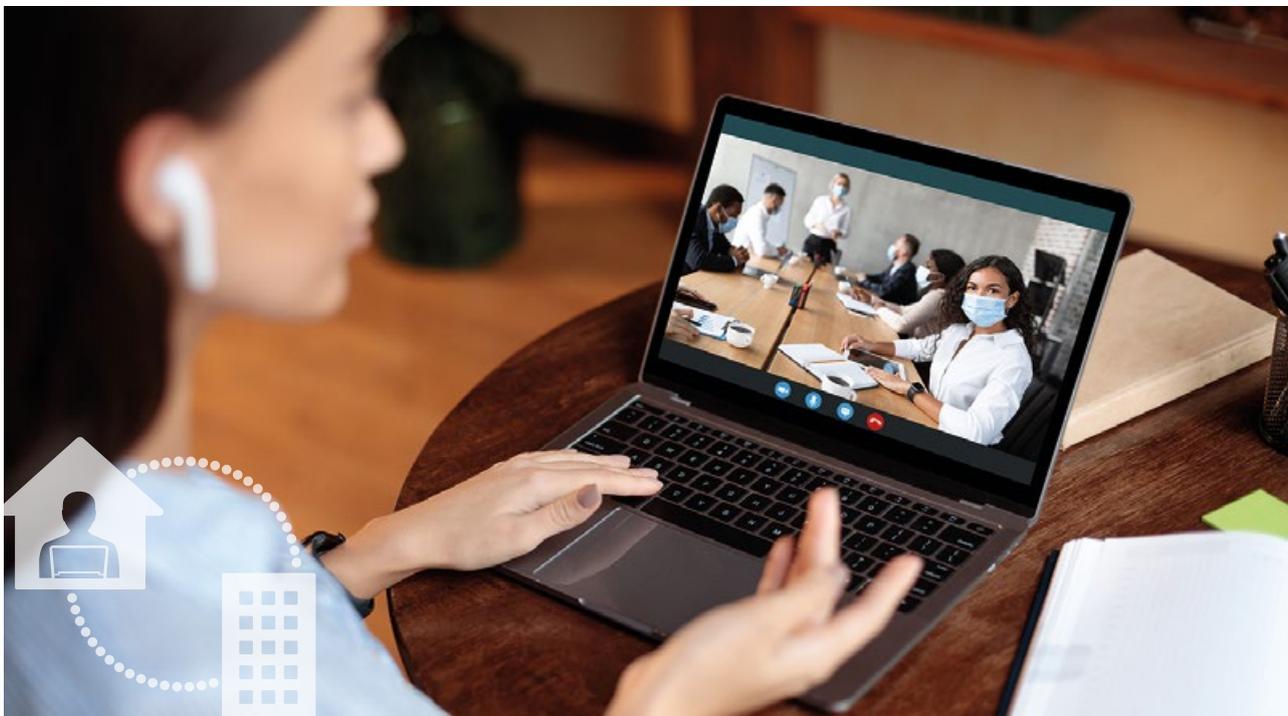


### FRANCE

## Disability is an integral part of our diversity policy

In France, the Orano Group Agreement to promote the employment of people with disabilities for 2021-2023 has set up several actions aimed at strengthening and developing recruitment of people with disabilities, employability and integration into the work group, job retention and associated measures such as training and professional development. The Group Agreement also includes measures to raise awareness among managers and employees, and develop purchases from the protected and adapted sectors and self-employed disabled contractors.

In 2021, the rate of employment of people with disabilities within Orano Mining in France was 3.47%.



**AGE DIVERSITY**

Maintaining a generational balance within the workforce makes it possible to plan for the renewal of skills and the transfer of knowledge.

The average age within Orano Mining at December 31, 2021 was 41 years. Employees over the age of 64 accounted for 0.49% of the workforce.

**WORK ORGANIZATION**

From the right to log off to teleworking, flexible working hours, services and employee benefits, every aspect has been addressed to promote the best work-life balance, so that

everyone can give the best of themselves in an environment that enables them to thrive.

Orano Mining complies with legal provisions on working hours at its various sites around the world.

For more information, see Orano annual report, chapter 4.3.2, p.115



**PART-TIME WORKING**

Employees can also opt to work part-time on a voluntary basis.

At Orano Mining, we have 17 employees working part-time in 3 countries where we are present (Canada, France and Namibia) of whom 13 are women and 4 are men.

**TELEWORKING**

The goals of organization of work vary depending on the countries in which Orano Mining is present, as well as on the environment in which employees exercise their activity: shift work, shift rotation schedule, office work, legislation in force, etc. Guidance on new working methods, such as teleworking is currently being provided in France and in Canada in order to promote a good work-life balance.

For the year 2021, due to the pandemic and in order to protect our employees, the practice of telecommuting has been generalized in all Orano Mining headquarters (Kazakhstan, Canada, Mongolia, Uzbekistan and Niger).

**FRANCE****All Orano Mining employees at Châtillon are teleworking on a regular basis**

At the Bessines site, an additional agreement was signed at the end of 2021, increasing the number of days that can be teleworked per year: from 45 to 75 days for eligible employees (about 60% of the site's workforce) and from 0 to 18 days for employees whose certain tasks can be organized as telework.

**PARENTAL LEAVE**

Particular attention is paid in the case of employees taking parental leave where there is such provision in the country.

During their return-from-leave interview, employees may ask for a specific update on their compensation status, professional mobility in relation to the remuneration policy in force within their department during their absence.

**Number of employees on parental leave in 2021**

Total number of employees (by gender)	Female	Male	TOTAL
Total number of employees that were entitled to parental leave	39	113	152
Total number of employees that took parental leave	39	20	59
Total number of employees that returned to work in the reporting period after parental leave ended	32	18	50
Total number of employees that returned to work after parental leave ended that were still employed 12 months after their return to work	17	23	40
Return to work rate of employees that took parental leave	82%	90%	84.8%
Retention rate of employees that took parental leave	71.8%	90%	78%

**EMPLOYEE BENEFITS****Employees social benefits**

Categories	Canada	France	Kazakhstan	Mongolia	Namibia	Niger	Uzbekistan
Life insurance	●	●	●	●	-	●	-
Health care	●	●	●	●	●	●	●
Disability and invalidity coverage	●	●	● (Except at Nursultan)	●	●	●	●
Parental leave	●	●	●	●	-	●	●
Retirement provision	●	●	●	●	●	●	-
Stock ownership	-	-	-	-	-	-	-



**Minimum notice periods regarding operational changes**

Minimum number of weeks' notice typically provided to employees and their representatives prior to the implementation of significant operational changes that could substantially affect them

Canada	France	Kazakhstan	Mongolia	Namibia	Niger	Uzbekistan
4 weeks	Between 1 and 3 months; 4 months if a major reorganization ensues (predetermined deadline that allows OS to use expertise) - e.g. Chatillon (France)	1 month	45 days prior notice in case of mass redundancy (Labor Code of Mongolia, Article 40.5)  14 days of prior notice in case of stand by (Collective Agreement)	4 weeks	2 weeks for SOMAïR	4 weeks

For organizations with collective bargaining agreements, report whether the notice period and provisions for consultation and negotiation are specified in collective agreements

Canada	France	Kazakhstan	Mongolia	Namibia	Niger	Uzbekistan
Yes	Yes	The collective bargaining agreement may be supplemented or amended only upon the mutual agreement of the parties in the procedure prescribed for conclusion of the collective bargaining agreement in accordance with the legislation of the Republic of Kazakhstan. The party, taking a notice from the other party with a proposal to start negotiations on conclusion of a collective agreement, shall consider it and enter into negotiations in the manner prescribed by the Labor Code within ten days.	The parties shall begin negotiating the renewal of the existing Collective agreement 6 months prior its expiry (According to the Collective agreement signed between Badrakh Energy LLC and its Employee representatives, Article 9.2., reg. 2019.05.01.).	Yes 4 weeks	No for SOMAïR  Yes for COMINAK	Yes 1 month

# RISK MANAGEMENT

## MINING PRINCIPLE

Establish effective risk management strategies and systems founded on a sound scientific basis and which take into account how stakeholders perceive risks.



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PRINCIPLE 4.1

Assess the environmental and social risks and opportunities of new projects and major changes to existing operations in consultation with the interested and concerned stakeholders, and publicly disclose assessment results.

Orano has created a risk management system in keeping with the recommendations of the *Autorité des marchés financiers (AMF)*, the French financial market authority), the professional standards of the *Committee of Sponsoring Organizations of the Treadway Commission (COSO)*, and the changes in regulations concerning the non-financial performance statement and the corporate duty of care.

Within Orano, a campaign to identify and assess risks of all kinds is conducted annually using a *Business Risk Model (BRM)*. This is used to adjust and update the action plans put in place to manage the risks.

The BRM lists, within a defined number of risk families, all foreseeable or unexpected situations or events that could have an impact on the health and safety of the staff, the environment, the operations, the strategy or the financial results of the group, its compliance with current regulations, as well as its reputation and image. The BRM is to be updated on a regular basis with best practices, feedback from experience and regulatory changes. Due diligence and risks of bribery and trading in influence have been integrated into the group's mapping of risks since 2018 (*More information on Orano annual report, chapter 3.2.1, p. 65 and 74* ).

In all regions where Orano operates, special attention is paid to preventing serious violations of human rights, and to the health and safety of people and the environment, whether in relation to the activities of the parent company or the companies it controls, or activities undertaken by



subcontractors or suppliers as part of their contractual relationship with Orano, it being understood that all these companies are required to comply with local laws.

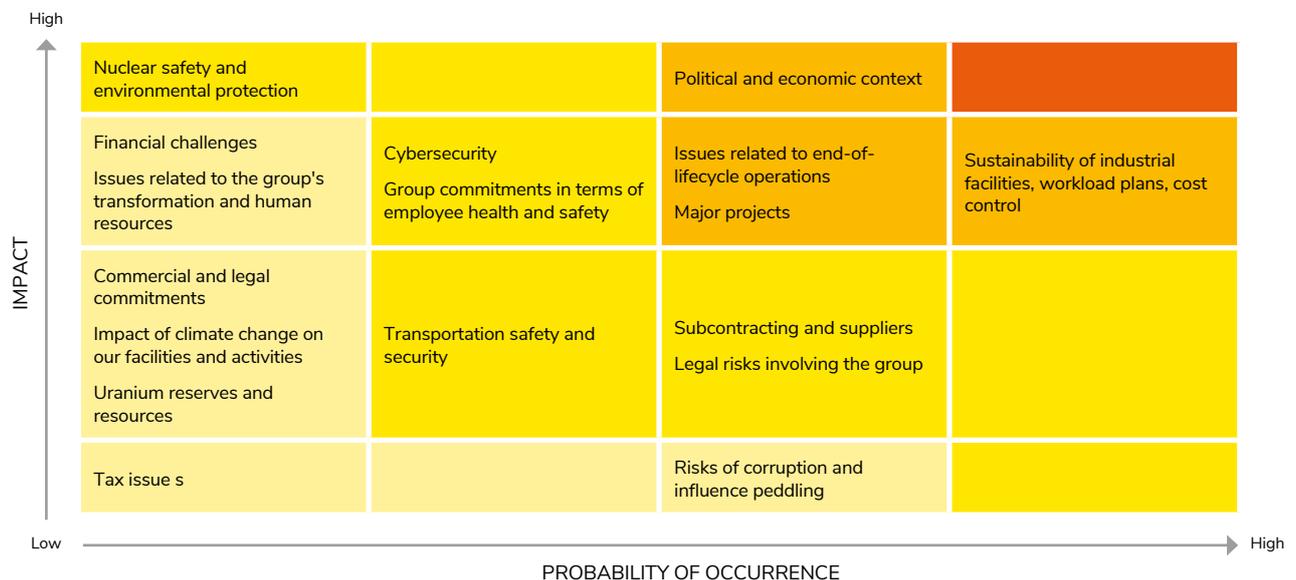
The campaign to identify and assess risks has the following main objectives:

- The formal identification of risks of all types
- The qualification and classification of these risks
- The establishment and implementation of action plans to control these risks



The list of the group's risk factors is presented in the Orano annual report (Chapter 3, p. 64 ). Their order of appearance and the materiality grid below reflect the degree of potential impact that the Orano group has assigned to its risks.

**Mapping of the main risks Orano Group in 2021**



The duty of care plan, incorporated into the annual risk mapping exercise, is subject to approval by the Board of Directors.

It is drawn up in accordance with the provisions of French Law No. 2017-399 of 27 March 2017 on the duty of care requirements incumbent on parent companies and contracting companies, which transposed into French law the duty of care as defined by international CSR reference frameworks (notably the United Nations Guiding Principles on Business and Human Rights, and the OECD Guidelines for Multinational Enterprises).

It is based on various approaches to identifying, reporting and monitoring that have been in place within the group for several years, and contains reasonable duty of care measures. (For more information, see Orano Annual Report chapter 3, page 65 and 74, mapping of risks and duty of care for the group )

In order to prevent serious harm to the environment, Orano carries out environmental studies throughout the life of mining and industrial projects.

Environmental impact studies (EIS) are performed for each new mining project and whenever a major modification to our industrial facilities is planned. They meet the regulatory requirements in force, and are submitted for public consultation in order to obtain approval from the local authorities.

These studies are used to map the impacts and improve understanding of the associated environment (e.g. biodiversity inventory, socioeconomic status of the region), and identify ahead of time any preventive or mitigating measures to be incorporated into our facilities to reduce risks at the source.

These studies also report on the principles of rehabilitation to be deployed at the end of the mine's life, as well as any offset measures and the principles of environmental monitoring of activities.

## Involving and sharing of Environmental Impact Studies with our stakeholders

In Niger, a public consultation is held before the impact study in order to present the project to stakeholders and to gather their opinions and concerns, which will appear in the report. A public hearing is also planned at the end of the study in the presence of all stakeholders. As a rule, Niger's National Bureau for Environmental Assessment (BNEE) posts summaries of the impact studies on its website. An announcement of the study may also be published in the Official Journal of the Republic of Niger and indicate where the report can be consulted.

In Canada, stakeholders have many opportunities to contribute to and influence the study throughout the process (before, during, and after the study). The public has an opportunity to intervene during public hearings. The federal environmental assessment office, which is responsible for the environmental assessment process, publishes the final environmental assessment on its website. Orano Canada Inc. also makes the EIS available to the public, if they wish to access it.



In 2021, the update of our impact study for the Zuuvch Ovoo pilot (Mongolia) was validated by the local authorities. Environmental monitoring of Nurlikum Mining's (Uzbekistan) exploration drillings before, during and after the drilling campaign has shown the absence of any significant impact on the environment.

Environmental impact studies (EIS) can also draw on more specific R&D work, where relevant, which makes it possible to demonstrate the relevance of rehabilitation solutions over the long term and provide the most suitable ecological offset solutions in the various countries where Orano works.

## PRINCIPLE 4.2

Undertake risk-based due diligence on conflict and human rights that aligns with the OECD Due Diligence Guidance on Conflict-Affected and High Risk Areas, when operating in, or sourcing from, a conflict-affected or high risk area.



Orano does not intend to act as an importer of metals as defined in Regulation (EU) 2017/821 of the European Parliament and of the Council of 17 May 2017.



**PRINCIPLE 4.3**

**Implement risk-based controls to prevent, minimise, mitigate health, safety and environmental impacts to workers, local communities, cultural heritage and the natural environment, based upon a recognised international standard or management system.**

Implement risk-based controls to prevent, minimise, mitigate health, safety and environmental impacts to workers, local communities, cultural heritage and the natural environment, based upon a recognised international standard or management system.

Nuclear safety is applied across the complete life cycle of facilities, throughout the design, construction, operations, shutdown and decommissioning phases. In addition to the group's Nuclear Safety Charter, the Safety and Environment Policy formally identifies nuclear safety, industrial safety

and environmental protection priorities. This policy has the following objectives:

- Maintain a high level of nuclear safety for our facilities, our products, and our services over the long term.
- Strengthen operational discipline and make it, in practice, a matter of a daily concern for operational management and all those involved in conducting operations.
- Take into account the priority given to risk prevention and environmental protection in each of the processes that make up our activities



Within Orano Mining, group requirements are addressed through:

- Prior analysis of industrial risks during the design, construction and operation phases, but also whenever there are significant changes in operating conditions or construction work, by means of studies or ad hoc analyses.
- Mapping of major industrial risks encountered on our sites and estimation of the degree to which these risks are controlled via the preventive and protective barriers. Improvement action plans are set up and regularly updated for further risk reduction and continuous improvement of process safety.

### RISK MANAGEMENT SYSTEM

At most of our sites, health and safety risks are managed using an integrated management system which meets the requirements of standard ISO 45001 (previously OHSAS 18001) (for occupational health and safety). These systems make it possible to set up a process and procedures to manage the main risks encountered on sites, prioritize them, monitor them, take corrective action and make improvements.

### A NEW STANDARD FOR MANAGING SAFETY AND INDUSTRIAL RISKS

In September 2020, Orano Mining published a new standard on the management of process safety and industrial risks. Its purpose is to improve and standardize the Process Safety Management at sites and reduce the risk of major accidents.

This standard, which will be implemented at McClean Lake in Canada, KATCO in Kazakhstan and SOMAÏR in Niger, describes the requirements regarding the seven elements of a Process Safety Management.



The Bessines (France) industrial site has an Integrated Management System certified to ISO 14001 and ISO 45001, which includes this standard and complies with French regulations in this area.



### LEADERSHIP COMMITMENT

Industrial risks are the subject of particular vigilance in the Hazard Studies carried out in each of the facilities (CIME, U308 storage, etc.). These hazard studies are renewed every five years. All regulatory training for employees is provided by centralized management of skills development in the human resources department.



In 2020, the sites performed a self-assessment in relation to the requirements of the Process Safety Management standard in order to identify their strengths and areas for improvement.

The sites then drew up a roadmap and defined performance indicators for the next two years, in order to consolidate their understanding, strengthen their industrial risk culture and reduce the risk of major accidents. This work has been performed with the support of central teams.

Over 2021, McClean Lake, KATCO, and SOMAÏR sites made significant progress on their Process Safety Management roadmap. They were able to reduce the number of their high risk scenarios and improve.

**Sharing of best practices regarding major incidents or high-potential events.**

Events related to industrial risks are regularly monitored and analyzed by the central teams. Whenever an incident or high-potential event occurs, particularly in other industries, feedback is formalized and shared with the dedicated teams. It reminds them of the preventive measures to be implemented and the importance of complying with the management system for industrial safety processes and rules.

In addition, every quarter, the teams review the progress made and share performance in terms of industrial risks with all Orano Mining employees.

For more information about accidental spills, see Mining principle 6.3, p. 109



**RESULTS 2021**

**80% of improvement measures identified for unacceptable scenarios implemented**



**Process Safety Management Awareness Training**

To further increase awareness and sensitization on Process Safety Management and Industrial Risks at our sites, a dedicated full-day training was developed by the Orano Mining central team and rolled out the senior leadership teams and some of operational managers of Orano Canada, KATCO, and SOMAÏR.

Overall, about 80 people participated in this training. This training will be customized and integrated in each of the sites training programs.





PRINCIPLE 4.4

Develop, maintain and test emergency response plans. Where risks to external stakeholders are significant, this should be in collaboration with potentially affected stakeholders and consistent with established industry good practice.

**Within Orano Mining, each operating entity sets up an organization to manage emergency situations.**

Having this organization in each entity provides for strong analytical and decision-making capability so that all necessary measures can be taken in the event of an emergency or crisis situation to make facilities safe, mitigate the impact of the event and deliver information internally and externally. Different levels of drills are conducted on a regular basis to test the effectiveness of this organization, involving external stakeholders such as local and national authorities, the Nuclear Safety Authority, local residents, etc.



We organized more than sixty drills at our sites in 2021 to test the effectiveness of the alert systems and the technical management of accidents and emergency situations. There was no emergencies which involved the headquarters crisis management. There were events/incidents and were managed at the site level.

Training during these exercises prepares Orano Mining staff and other stakeholders to act and to make use of the emergency systems provided. It is also an opportunity to teach all those present within the perimeter of the protected area what to do in the event of an incident.

Responsiveness, the resolution of the incident both technically and operationally, and the management of multiple interfaces



are all elements that help to make our business a committed and responsible industrial player.

**Different levels of exercise are implemented:**

- Level 1: Local exercises such as fire drills at least once per quarter.
- Level 2: Local exercises with involvement of the subsidiary's general management, at least once every two years.
- Level 3: Local exercises with involvement of the subsidiary's general management and Orano Mining headquarters. Level 3 exercises are performed once a year within the Mining BU.

## EXAMPLES

**In France, the management of emergency situations is governed by the Integrated Management System (Système de Management Intégré – SMI), in particular the emergency folder associated with an Internal Emergency Plan (PUI) specific to each facility.**

Around ten emergency tests (level 2) are carried out each year. A crisis exercise (level 3 or 3A) is also carried out on an annual basis (per Group schedule). Performance evaluation is included in the SMI reviews (4 per year) as well as in audits (10 internal audits and one annual AFNOR audit).



**In 2021, a dedicated Crisis Management software was introduced to the Orano Mining operational sites.**

The software was specifically configured for each site and the sites were trained on the use of the software. This software facilitates and streamlines the communication among various entities (local, regional, and headquarter) involved in the management of a crisis and allows quick access to the critical information and procedures needed to manage a crisis by Crisis Management Team members.

## Focus on the emergency drill at our pilot site in Mongolia in 2021

**In September, a Level 2 crisis exercise was conducted at the Zuuvch Ovoo pilot site in Mongolia.**

The scenario involved the release of aqueous ammonia during the unloading process due to a failure in the connection of the flexible unloading hose. This was the first crisis exercise conducted on site since the pilot began operation in early 2021.

The drill highlighted both strengths and areas for improvement for the teams, key points being their high level of responsiveness and the alert/escalation chain for the event. The number of certified first aiders needs to be increased.



# HEALTH, SAFETY AND RADIATION PROTECTION

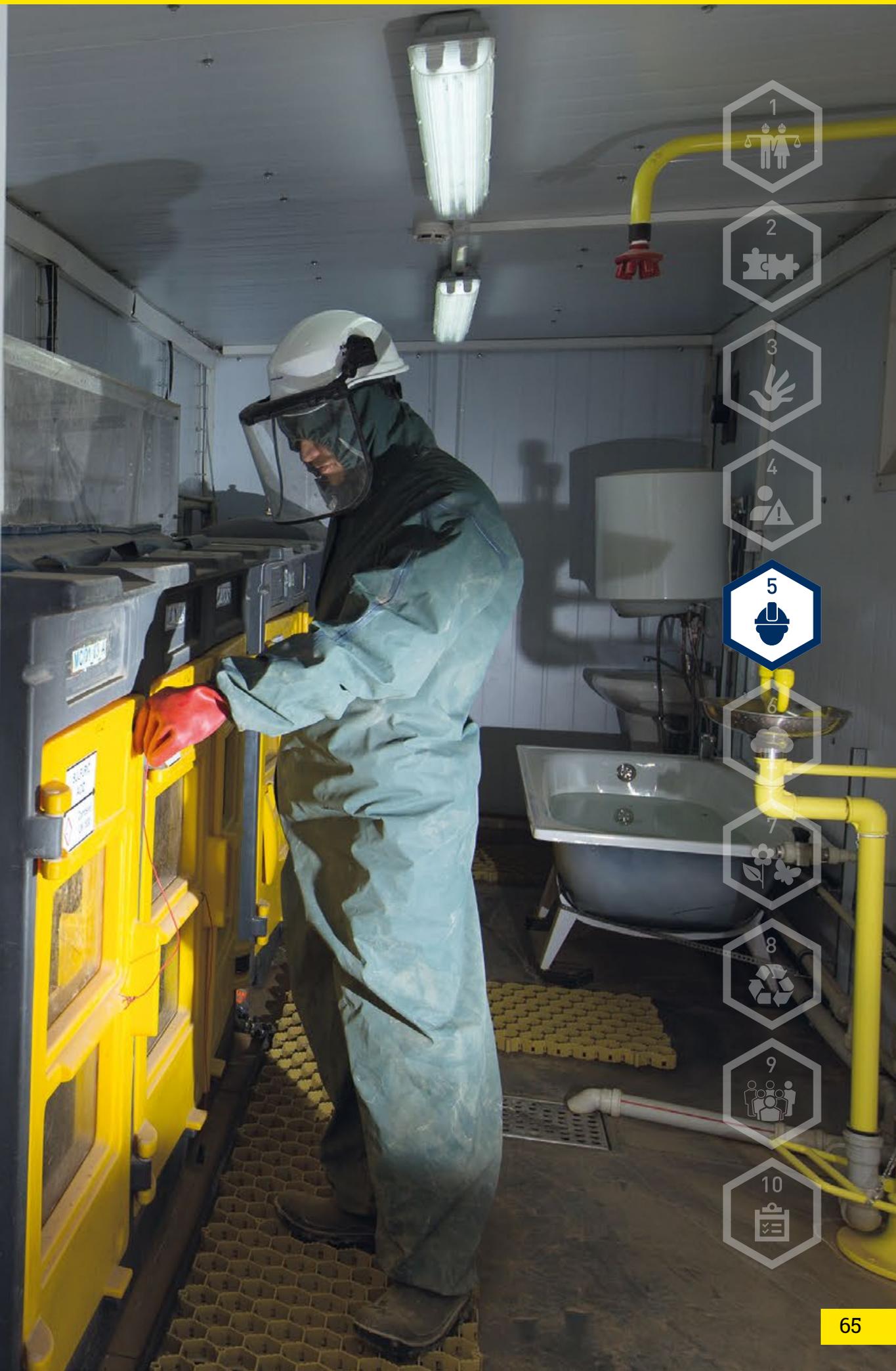


КВЛ АСТА  
КВЛ АСТА ТЭЖИМЭЛ КОРПОРАЦИОНЕ КВИМ



## MINING PRINCIPLE

Pursue continual improvement in health and safety performance with the ultimate goal of zero harm.



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**PRINCIPLE 5.1**

Implement practices aimed at continually improving workplace health and safety, and monitor performance for the elimination of workplace fatalities, serious injuries and prevention of occupational diseases, based upon recognised international standard or management system.

Operating mines involves hazardous activities, which must be identified and managed. Orano Mining employees carry out tasks that may include rock drilling and blasting, the use of heavy machinery or chemical products, work with live equipment, work at height, travel, or exposure to ionizing radiation. It is Orano Mining's people who make our group strong. Our priority is to protect their health and safety in all the countries where we work. The success of our strategic vision depends on it.

Orano Mining has implemented the Orano health, safety and radiation policy, with all its actions forming part of a continuous improvement approach.

**POLICY AND ACTION PLAN**

Orano Mining applies Orano's Health, Safety and Radiation Protection Policy with the objective of harmonizing its practices and applying international standards:

- Culture and leadership
- Compliance with fundamentals
- Organization and skills
- Risk prevention

Numerous training and prevention actions are carried out, in order to:

- guarantee and maintain a high standard of occupational safety,
- prevent severe and fatal accidents,
- work towards zero lost-time occupational accidents and zero impact of our activities on the health and safety of our employees, our operatives from outside companies, and everyone living in close proximity to our sites – these are our constant goals.

The operational teams and the site Health, Safety and Environment (HSE) teams are supported by the Health, Safety, Environment and Remediation Department (DSSER), whose director is a member of the Orano Mining Management Committee.

The Health, Safety and Radiation Policy is implemented by the sites through their management systems, which take into account specific features and regulations in local areas, as well as the requirements of standards ISO 14001 and/or ISO 45001. Operational health, safety and radiation protection

action plans, with measurable results across all our sites, are also drawn up. These are regularly reviewed, approved and audited by the Orano Mining DSSR teams.

From the beginning of the Covid-19 epidemic, in addition to safety, which is always the first topic discussed in all Orano Mining's Management Committees, a dedicated time was systematically added, called "Health Minute", in order to give the necessary preventive reminders and to take stock of the teams' situation.



# Safety

## OUR POLICY

The occupational safety objectives of Orano Mining aim to ensure the prevention and control of all risks related to our activities, for both our employees and our external operatives.

In practice, this involves:

- engaging our managers on a day-to-day basis in strengthening the safety culture of our teams;
- deploying applicable safety anchors\*and standards\*\* throughout the group;
- systematically evaluating risks in all our activities using a common methodology;
- involving all employees in the detection, elimination and control of hazardous and risky situations;
- collecting and exchanging bests practices in occupational safety;
- systematically analyzing any events with high severity potential, with the aim of anticipating any accident liable to have serious or fatal consequences;
- sharing the lessons learned from accidents and near-misses with group entities and our industrial partners.

## GOVERNANCE

Since 2019, Orano Mining has strengthened its governance system and transformed its Safety Steering Committee into a decision-making body. This Committee is formed of the members of the Orano Mining Management Committee, the site managing directors, the directors of operations, and the Orano Health, Safety and Radiation Director.

Its role is to prioritize and plan safety actions, and supervise their application, as well as monitor them and ensure continuous improvement in safety results across all sites where Orano Mining operates. In 2021, the Committee met twice, at the start of the year and midway through.

The occupational safety policy applies to everyone, including employees of Orano Mining subsidiaries, subcontractors and visitors.

In 2021, the Orano Mining Safety Steering Committee set the following objectives:

- Strengthen the assimilation of safety standards.
- Identify at all sites so-called "strengthened-safety" positions and barriers currently in place in order to raise the level of safety.
- Continue the deployment of Safety Pareto's\* across all existing visual management charts (see explanation below).

\* The anchors are an integral part of everyone's daily work, applied at all levels with strong involvement from management. They must be complied with to prevent employees and subcontractors being exposed to severe or fatal risks.

\*\* The standards complement the anchors. They correspond to a rule or best practice whose application contributes to risk control and the prevention of accidents.

- Implement the compliance requirements for power tools and deploy a risk awareness training module to reinforce the appropriation of the Pre-Job Briefing steps for internal staff and subcontractors.
- Reinforce the HOF aspects (Human and Organizational Factors) in the analysis of the root causes of accidents.



## Fatal accident at KATCO

On August 17, 2021, at the KATCO site in Kazakhstan, an assistant drill operative, who was working as a subcontractor on an operation to install drill pipes on a platform, was struck by a pipe that came loose and fell. He was taken to hospital where he died as a result of his injuries.

Following this tragic accident, a Stop of Work was conducted on all KATCO drilling platforms, and all platforms and lifting equipment were inspected.

In order to identify the factors that led to this fatal accident, the root cause analysis of the event was completed with an human and organizational factors (HOF) study. Once this work was completed, an action plan was drawn up and is currently being implemented.

The plan initially involves the implementation of precautionary measures to maximize the safety of drilling activities, and subsequently a mid- to long-term strategy to study the possibility of limiting the use of this type of drilling rig and incorporating technical changes into the current design.



### OUR 2020 SAFETY TARGETS:

- 0 fatal accidents
- TF1\*\* ≤ 1, i.e. no more than 14 lost-time occupational accidents
- TF2\*\*\* ≤ 3.8, i.e. no more than 36 occupational accidents without lost time

### OUR 2021 SAFETY RESULTS

	2019	2020	2021
Fatal accident	0	1	1
TF1**	1,4	1	0,6
TF2***	4,2	4,4	2,2

Despite one tragic fatality, the total numbers of lost-time accidents and non-lost-time accidents have decreased, as shown by the TF1\*\* and TF2\*\*\* figures, which are down and in line with objectives.

These results should be seen in the context of the global health crisis, which contributed to a reduction in activity but also in some cases weakened organizations (health focus, organizational impact on teams and management).

Despite this situation, the 2021 results are in line with the overall objective of achieving a TF1 figure below 1 on a sustainable basis.

RESULTS 2021	
TF1: < or = at 1; TF2: 3,8	
Continued funding for OSRA	

## STRENGTHENED-SAFETY POSITIONS

The “strengthened-safety positions” initiative aims to consolidate existing safety measures (called barriers) where there is a high potential for severity in the event of an accident.

The principle is to make sure that there are multiple barriers and that, for these activities in particular, the safeguards and not only “human”-type barriers.

\* **Pareto:** The Pareto principle, also known as the 80/20 rule, is based on the observation that 80% of effects are produced by 20% of causes. Based on this principle, the aim is to target risks on which efforts are to be focused (prioritization and efficiency). The categories which occur most frequently are highlighted thanks to the accumulation of reported results.

\*\* **TF1:** Lost-time accident frequency rate

\*\*\* **TF2:** Frequency rate of accidents without lost time

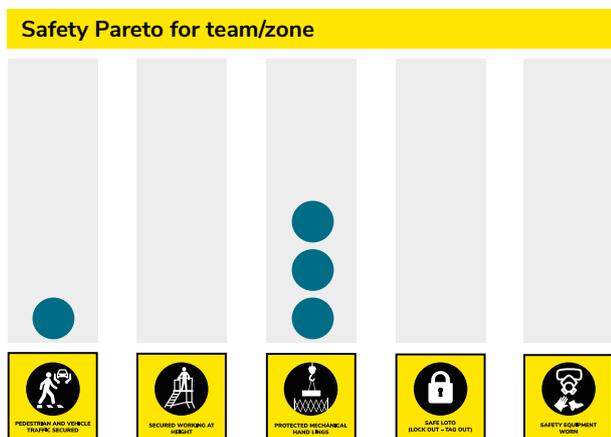
Definition of the types of barriers within the framework of the reinforced security posts approach

Human barrier	Organizational barrier	Reinforced organizational barrier	Technical barrier
Free will +no control or self-control ?? 	Free will +Presence of controls (third-party) ?? 	Free will + permanent detection of the deviation ?? 	Lack of free will ?? 

IDENTIFYING ACCIDENTS WITH HIGH POTENTIAL SEVERITY

Work to identify deviations on the ground, weak signals, near-misses and high-potential incidents (“HIPOs”) continues and is monitored and analyzed in a reporting tool, which is used to categorize and rank these elements. To identify and treat deviations, an additional tool, called the “Safety Pareto”, is deployed during the visual performance management (VPM) used by the teams to structure their meetings.

Visual management tool for classifying deviations by category and frequency

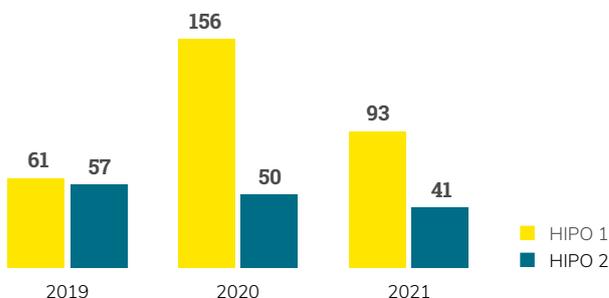


The systematic detection of deviations as close to the ground as possible strengthens team engagement and the involvement of each operator. The aim is to improve the prevention of severe and fatal accidents, and the Orano Mining accident figures in general.

There are systematic efforts to identify the root causes of events with high potential severity. Action plans and follow-up measures are immediately introduced.

\* **HIPO:** A High-POTential incident  
**HIPO 1:** Could have led to one or more fatal accidents.  
**HIPO 2:** Could have led to one or more accidents resulting in lost time and irreversible effects.

Monitoring of HIPO 1 and 2

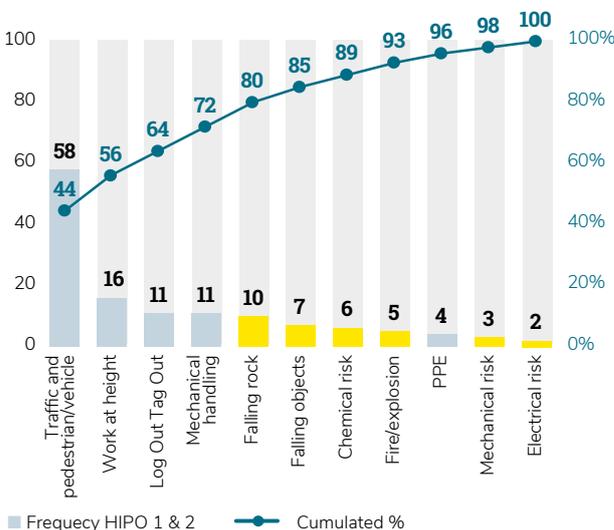


The number of HIPOs reported in 2020 has more than doubled. This is mainly due to the fact that COMINAK’s HIPOs were systematically classified as level 1 in order to raise the level of vigilance of operators and management and to ensure systematic follow-up of these events.

The analysis of risks and near-misses reported in 2020 shows that they were comparable to those in the previous two years:

- 44% Traffic and pedestrian/vehicle co-activity
- 12% Work at height
- 8% Mechanical handling
- 8% Log Out Tag Out (LOTO)

These 4 anchors amount for 70% of the HIPOs.



## Health policy

Orano Mining deploys a health service in all the countries where it works to meet the prerequisites for occupational medicine and healthcare, as well as provide support for medical evacuations for local people and expatriates.

In the course of our activities, various measures are taken to maintain a high level of occupational health and safety for all employees and subcontractors. Our actions are based on:

- Identifying and assessing risks at workstations
- Medical monitoring
- Preventive healthcare
- Medical care

### ASSESSING WORKSTATION RISKS

This is done at each site, and takes into account the risks identified at the workstation, whether these are chemical, physical, biological, ergonomic or psychosocial.

The analysis of these risks allows sites to draw up and implement an action plan incorporating local requirements and regulations, the risk of exposure of the personnel to the various hazards, and Orano's Health, Safety, Radiation Protection Policy.



### MEDICAL MONITORING

Occupational medicine at sites complies with the regulations of the relevant country.

This comprises:

- A pre-employment medical check-up, and regular medical check-ups (at a frequency set according to the risks of the role)
- Vaccination monitoring
- First aid training and regular refresher courses



### PREVENTIVE HEALTHCARE

This takes place through constant health monitoring, regular communications (country health sheets and pathology data, and medical alerts). "Travel advice" training is organized every quarter for personnel undertaking international assignments.

Orano Mining applies actions to promote the individual and collective health of its employees in the countries where it works. Examples include the vaccination and testing campaigns for certain diseases (such as flu) that are run for employees. Actions to raise awareness of lifestyle risks (anti-smoking, alcohol campaigns, etc.) or preventive actions are also regularly deployed at sites.

### MEDICAL CARE FOR EMPLOYEES

Each site has its own health organization, with medical standards.

Medical care is provided in liaison with the site occupational physicians and human resources teams. The care pathway is defined via procedures following healthcare schemes and flow charts for the Medical Emergency Response Plans (MERP) and medical evacuations.

## Specific measures TO COMBAT COVID-19

**From the start of the pandemic, Orano Mining and all its mining companies have been organized to face up to and overcome the crisis, with the health of its employees and subcontractors as a top priority.**

A specific organization was deployed at all sites, based on the following principles:

- Maintaining operational activities to meet the needs of our customers while maintaining the safety level of our facilities and preserving the health of our workers,
- A forward planning approach to health monitoring and technical oversight,
- Adaptation of the management and decision-making structures to the circumstances, to the specificity of each mining company and to its local context.

Throughout this pandemic, our teams have had to demonstrate agility and creativity over a sustained period of time and adapt to a global crisis with differing contexts and impacts depending on the country where the mining activities are located.

In addition to the measures applied to within our tertiary activities, such as maintaining basic barrier measures, systematically wearing masks, and working from home whenever possible, specific access protocols for sites operating on a roster basis and for living quarters were deployed, based on the implementation for instance of 7-day quarantines, tests and/or vaccination requirements.

International travel has also been severely restricted and regulated to address the increased risk of spread of the disease and to minimize risk and protect local workers.

Rotations of expatriate workers and missions of an imperative nature have been maintained in compliance with local national rulings and Orano Mining protocol.



PRINCIPLE 5.2

Provide workers with training in accordance with their responsibilities for health and safety, and implement health surveillance and risk-based monitoring programmes based on occupational exposures.



OUR MAIN ACTIONS

We raise awareness regarding occupational health and safety at all our sites through actions aimed at subcontractors and employees to encourage them to take the initiative.



In addition, we perform participative safety inspections and share operating experience feedback and best practice through communication actions, which allows us to learn from our successes and our mistakes.

We assess occupational risks and implement a crisis organization which is fully documented. Events with high potential for severity (HIPOs) are identified, and preventive measures and their follow-up are prioritized (See section above).

Discussions are organized on the ground for employees and subcontractors, and all sites have a safety day. This is traditionally held in June and known as “safety month”.

In going about our daily professional activities, there are anchors and rules that save lives, and everyone must know and comply with these rules, at all times. Eye-catching posters are used to illustrate occupational safety fundamentals and issues, and form the basis for team discussions during the “safety talks”. A “spot the hazard” game also provided the chance to tackle in-depth subjects in a more playful way.

In 2021, the skin disease awareness campaign, initiated in 2020, was deployed to all Orano Mining and subcontractor employees at the Bessines site and at Orano’s headquarters in Châtillon. Participants were also able to benefit from a free examination by a dermatologist as part of melanoma screening.

# EXAMPLES

## Power tools - making operations safer

Starting in October 2020 and continuing through 2021, an action plan dedicated to the use of power tools (for cutting, drilling, grinding, etc.) has been deployed with the following outcomes:

1. Inventory of all tools held on Orano Mining sites including by subcontractors working on site in order to retire any non-compliant equipment. This action aims to limit the risk at the source.
2. Development of a specific safety standard to bring together all the requirements and safety rules to be observed in one place.
3. Delivery of an awareness and communication campaign on the main risks and safety rules, as well as best practices.
4. Implementation of dedicated workshops at the sites. A learning tool has been created which, for a specific activity and in a specific situation, shows all the pre-briefing steps to be followed. A film tutorial was produced and made available to the workshop teams in French, English and Russian.



## Health observatory in Niger

**The Health Observatory of the Region of Agadez (OSRA) was created in 2012 to ensure post-professional monitoring of former SOMAÏR and COMINAK\* employees who might have been exposed to ionizing radiation at work.**

The Health Observatory is a transparent, independent initiative run on a multi-party basis (involving the mining companies, the State and civil society in Niger).

If occupational diseases caused by exposure to ionizing radiation were detected, care would be provided by the appropriate national entity or, failing that, by the Health Observatory.

Medical check-ups as part of this post-professional monitoring are organized every two years: they include an appointment with a doctor, and a clinical examination, chest x-ray and blood test. These

check-ups are provided by independent physicians assigned to work for the Observatory.

In 2021, 502 check-ups were carried out covering the Dosso, Maradi, Zinder and Diffa regions.

In total, since its creation, 5 657 post-professional monitoring check-ups have been performed for former employees of SOMAÏR and COMINAK, and no occupational diseases linked to exposure to ionizing radiation have been reported.

\* After closure of the COMINAK site on March 31, 2021, the former employees will continue to benefit from this post-professional monitoring.



## Radiation protection of employees

To successfully carry out their activities at the group's facilities, as well as at those of its customers, in France and abroad, employees of Orano and employees of outside companies are protected against ionizing radiation and benefit from dosimetric monitoring suitable for the type of exposure.



The fundamental principles of radiation protection are observed during operations in radiological environments:

- **Justification of practices:** The use of ionizing radiation can be justified where its benefits are greater than the disadvantages it may bring.
- **Optimization of protection:** The equipment, processes and system for organizing work are designed in order to keep individual and collective exposure as low as reasonably possible, given the technical conditions and economic and societal factors (ALARA principle).
- **Limitation of individual doses:** Dose limits that must not be exceeded are set in order to guarantee the absence of deterministic effects, and that the likelihood of stochastic effects appearing remains at an acceptable level given the economic and societal context.



At Orano facilities, measures to reduce exposure to ionizing radiation are incorporated from facility design. These measures aim to maintain an environment that is as "radiologically clean" as possible and protect operators from the ionizing radiation emitted inside facilities.

The radiation protection measures and level of personnel monitoring are the same for all workers exposed, in application of the principle of equity, which involves ensuring that individual doses are fairly distributed so as to minimize differences in exposure between workers.

In order to reduce the doses received by workers in controlled areas as far as possible, an in-depth study of the operating conditions and projected doses is performed prior to an operation, leading to measures such as the adaptation of exposure times, the use of protective screens, the integration of the physiological constraints of personal protective equipment (PPE) and the working environment.

In countries with less stringent legislation, Orano Mining is committed to applying a limit of 20 mSv/yr (over a rolling 12-month period) for the maximum individual additional dose received by workers exposed to ionizing radiation in its facilities. This is based on ICRP (International Commission on Radiological Protection) recommendations.

Orano Mining remains attentive to doses that exceed the internal alert limit of 14 mSv, in order to ensure that exposure is as low as possible, given the technical conditions, economic factors and the nature of the operation to be carried out, as required by French regulations (ALARA approach). In these situations, a systematic analysis is performed to introduce actions compatible with facility activities, in application of the radiation protection optimization principle.

# IONIZING RADIATION

**Radioactivity is a physical phenomenon related to the structure of material. Certain atoms, such as those of uranium, are unstable and emit ionizing radiation.**

Such radiation is referred to as ionizing radiation as, when it interacts with material, it can result in ionizations, in other words tear away one or more electrons from its atoms.

Once again in 2020, special attention was paid to certain operating conditions associated with work in underground mines, notably during activities that create a dusty atmosphere, activities to extract higher-grade ore or tests to adjust ventilation (mechanical ventilation tests) that lead to an increase in radon.

- 0 workers with exposure of over 20 mSv at the end of the reference period
- Maximum dose recorded in the Mining BU\*: 11.9 mSv (COMINAK sub-contractor)
- Average dose for Mining BU employees: 2.1 mSv
- Average dose for subcontractors: 2,3 mSv

**French regulations: effective additional dose limit of 20 mSv over a rolling 12-month period**

As indicated in the report for the year 2020, following losses of the power supply leading to the disruption of ventilation in the Cominak mine in July 2020, an increase in radon working environments led to an increase in the dose for 11 employees, whose total amount intermittently

exceeded 20 mSv over a rolling 12-month period. The working conditions of these employees have been modified in order to protect them from any exposure to radiation, guaranteeing compliance with the regulatory limit at the end of the reference period.

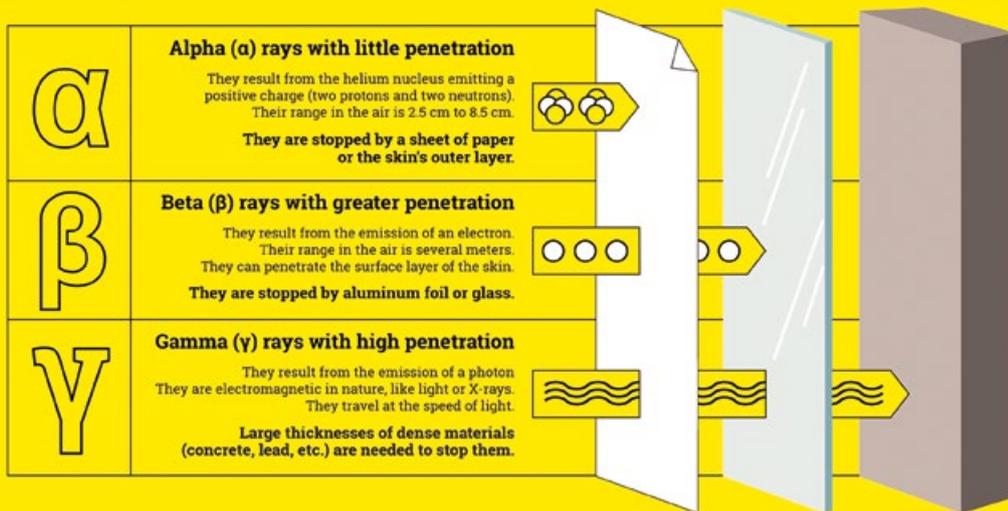
The in-depth analysis and treatment of this event led to the reinforcement of material (fan, beacons) and organizational measures.

Notable changes in 2021 specifically concern underground mining activities and a reduction in internal exposure.

## RADIATION PROTECTION RESULTS (EMPLOYEES AND CONTRACTORS)

	2019	2020	2021
Workers exposed to a dose exceeding 20 mSv	0	0	0
Maximum radiation exposure (mSv)	15.9	19.9	11.9
Average occupational radiation exposure for employees	2.5	2.8	2.1
Average occupational radiation exposure for sub-contractors	2	3	2.3

\* Reference period for maximum or average dose: July 2020–June 2021.



# ENVIRONMENTAL PERFORMANCE

## MINING PRINCIPLE

Pursue continual improvement in environmental performance issues, such as water stewardship, energy use and climate change.



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Throughout the life of the mine, the extraction and processing of uranium ore entail a need for raw materials and resources, especially water and energy. Our aim is to optimize our consumption of natural resources and our discharges, find ways to upcycle our waste and protect the ecosystems in which we operate.

**We are convinced that environmental stewardship is key to the acceptability of our activities and our "license to operate" in the countries where we operate.**



Orano Mining has designed dedicated action plans to tackle environmental performance such as as water management, energy consumption and climate change.

**POLICY AND ACTION PLAN/PROGRAM**

Orano’s Safety & Environment Policy acts as a framework for all Orano Mining entities, both in France and internationally. As well as ensuring compliance with the regulations in force and international standards, the Orano Mining operational entities apply this Safety & Environment Policy in the form of an action plan to:



- Reduce technological and environmental risks by means of a proactive approach
- Minimize the environmental footprint of their activities
- Improve the management of environmental liabilities
- Coordinate effectively with the Environment and Industrial Risk teams
- Integrate environmental standards at every stage in the mining cycle
- Maintain or implement an environmental management system (ISO 14001 or equivalent)

**GOVERNANCE**

To respond to these issues, the Health, Safety and Environment (HSE) operational teams are supported by the Health, Safety, Environment and Remediation Department (DSSER), whose director is a member of the Orano Mining Management Committee.

At the central level, our teams of specialists train, develop and support our on-site teams and regularly carry out field controls. They ensure that environmental programs are consistent, make sure that best practices are shared and incorporate all actions into a continuous improvement approach.

Each site establishes an environmental management plan adapted to its specific challenges, with an environment



Site revegetation in Kazakhstan

team highly focused on field interventions and involved in operational issues. The HSE employees are integrated into the operational department teams and provide a link to HSE management, remaining close to teams on the ground and being as reactive and proactive as possible.

## PERFORMANCE MEASUREMENT

The environmental results of Orano Mining activities are monitored using indicators throughout the life cycle of the mine. These indicators are available in our CSR reports. The environmental management systems at all our production sites have ISO 14001 certification.

The environmental objectives are adjusted according to changes in the mapping of risks, the expectations of stakeholders, internal and external best practices, the results of environmental monitoring and dialogue with operational entities.

Reporting of the various environmental indicators presented in this section is carried out thanks to a tool of calculation dedicated to Orano. The methods for calculating environmental indicators and the associated procedures are formalized in a measurement and reporting protocol. This protocol, updated every year, is distributed to all contributors.

The scope of reporting encompasses all entities for which Orano Mining is the operator. In 2021, the data energy consumption,

water consumption and GHG emissions

(GreenHouse Gases) from the desalination plant in Namibia (More information on chapter 6.2, p. 98 ) were counted in the data presented (retroactive to 2019).

For this section of the report, by convention and as in previous years, we count 100% of the emissions and consumption at the sites where we act as operator, regardless of our percentage share or offtake. **The uranium production figure used for calculating the 2021 ratios is 9,867 metric tons** (See Mining Activities p. 10 )

Since the beginning of the Covid-19 pandemic, many uranium producers have been obliged to reduce or even interrupt the activity of their mines. The improvement of the health situation during the summer of 2021, as well as the implementation of means of protection by producers have allowed the gradual return to normal activity. This implies variations in our consumption and our annual uranium production.

## ENVIRONMENTAL STUDIES

Orano Mining carries out environmental studies throughout the life of mining and industrial projects.

Environmental impact studies (EIS) are performed for each new mining project and whenever a major modification to our industrial facilities is planned. They meet the regulatory requirements in force, and are submitted for public consultation before being approved by the local authorities.

The approach to carrying out and appraising an impact study is similar in the various regulations in the countries where Orano Mining operates.

These studies are used to map the impacts and improve understanding of the associated environment (e.g. biodiversity inventory, socioeconomic status of the region), and identify ahead of time any preventive or mitigating measures to be incorporated into our facilities to reduce risks at the source. These studies also report on the principles of remediation to be deployed at the end of the mine's life, as well as any offset measures and the principles of environmental monitoring of activities.

In 2021, the update of our impact study of the Zuuvch Ovoo pilot (Mongolia) was validated by the local authorities. Environmental monitoring of Nurlikum Mining's (Uzbekistan) exploration drilling before, during and after the drilling campaign showed that there was no significant impact on the environment.

Environmental impact studies (EIS) can also draw on more specific R&D work, where relevant, which makes it possible to demonstrate the relevance of rehabilitation solutions over the long term and provide the most suitable ecological offset solutions in the various countries where Orano works (See Mining Principle 6.1, p. 58 )

PRINCIPLE 6.1

Plan and design end-of-life in consultation with the authorities and stakeholders concerned, implement measures to resolve the environmental and social problems associated with end-of-life, and have the financial resources needed to meet commitments taken for closure and remediation.



Photovoltaic panels installed on the former mining site of the Commanderie



Redeveloped mining site of L'Ecarpière, Vendée

**Mining site remediation and management of the post-closure phases** of sites are an integral part of the mining cycle. It is our responsibility, as the operator, to limit the impact of former mining sites on the environment and the population.

Orano Mining undertakes to plan and design end-of-life of sites in consultation with the authorities and stakeholders concerned, implement all measures related to respect for the environmental and social challenges and guarantee the financial resources needed to meet commitments made for the closure and remediation of sites.

**OUR POLICY**

Mining operations require the development of infrastructure (supply of energy, roads, facilities for the processing of uranium ore, underground and open-pit mines, etc.) which has an impact on the natural environment which has to be assessed, minimized and controlled. In order to anticipate risks, remediation is taken into account right from the exploration and development phases of mining projects. Although some remediation work is carried out while the mine is in operation, and studies are updated throughout the active period, most of the technical work takes place when mining operations cease. The employment-related and social implications of the closure of a site are taken into account as far upstream as possible in coordination with the competent authorities and in

consultation with all internal and external stakeholders. Finally, Orano Mining also pays particular attention to reconvert former mining sites to give them a new lease of life. This type of management is essential to maintain the confidence of local communities, authorities and all stakeholders involved. It is key to the long-term acceptability of our activities and our "license to operate" in the communities and in the host countries where we are made welcome.

**RESULTS 2021**

**Start construction of the photovoltaic park on the Bernardan site**

**Closure of COMINAK**



**DID YOU KNOW**



**The Après-Mines France takes advantage on the diversity of profiles**

After the closure of the mines in France, geologists, prospectors, miners, have integrated the Après-Mines France service. Strong of their mining knowledge and expertise in the field, they allowed the implementation, the maintenance and continuous improvement of monitoring environmental of our sites.

These former miners have now gone to the retirement. The next generation is assured, with a strong desire to diversify profiles to ensure expertise in all the areas concerned by the Après-Mines: treatment from the waters to the environmental monitoring expert in through geology, hydrogeology, legal, land management, ecology, administrative monitoring, data management, etc.

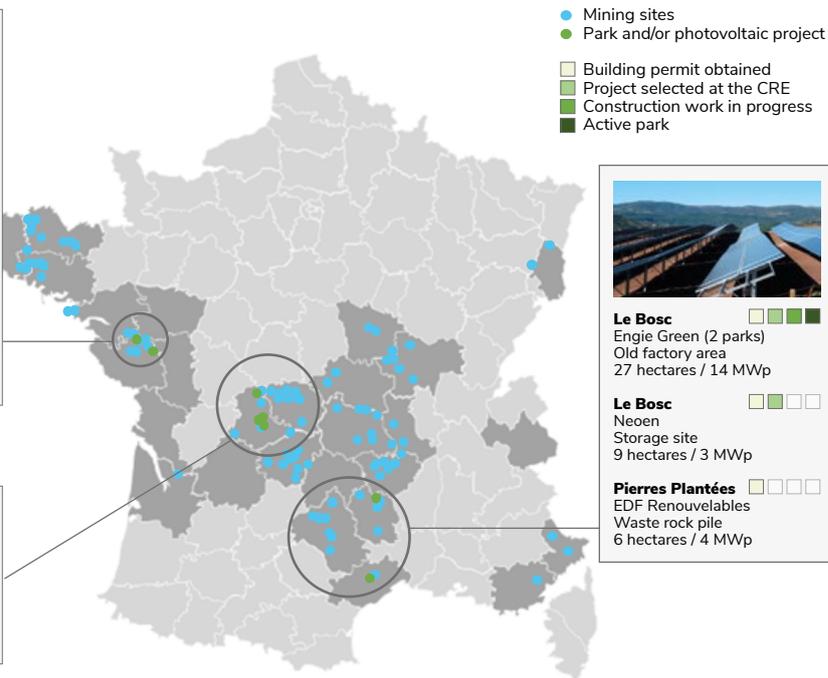
The issue of the memory of our predecessors was taken in counts from the mid-2000s, with:

- The drafting of departmental environmental reports,
- Management of the documentary fund,
- An early handover during retirements.

What our "Elders" have achieved is our heritage. It's up to us to take over, and continue to improve in a continuous way what has been bequeathed to us.

<b>L'Écarpière</b> Photosol Old factory area 11 hectares / 4 MWp	<b>La Commanderie</b> Photosol Mine pour 11 hectares / 4 MWp
<b>L'Écarpière</b> Neoen Storage site 15 hectares / 14 MWp	<b>Beaurepaire</b> EDF Renouvelables Mining right-of-way 12 hectares / 12 MWp
<b>Baconnière</b> Neoen Mining right-of-way 17 hectares / 13 MWp	

<b>Bernardan</b> Neoen Storage site 20 hectares / 17 MWp	<b>Bessines / G.</b> Neoen Storage site 20 hectares / 18 MWp
<b>Bellezane</b> TOTAL Energies Waste rock pile 16 hectares / 15 MWp	<b>Montmassacrot</b> Total Energies Storage site 5 hectares / 3 MWp



# The different remediation phases from a technical standpoint

There are several phases involved in the remediation of a mining site: a study phase, a works phase and a post-works monitoring phase.

## STUDIES

The first study consists of defining the remediation strategy best suited to the site by taking into account its specific

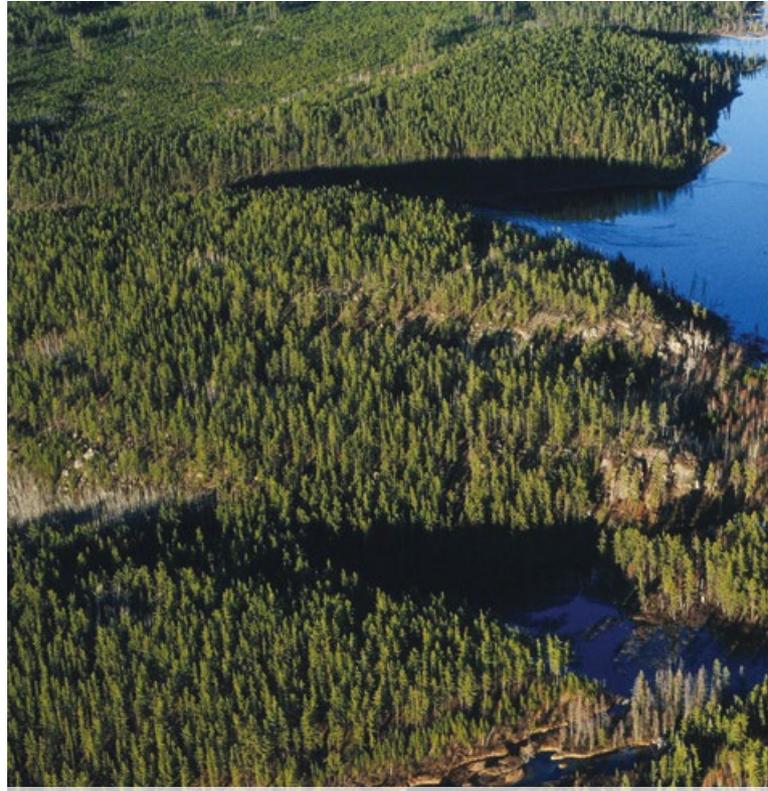
## Objectives of mine remediation

The main objectives of a remediation plan are as follows:

- Ensure long-term stability in terms of public health and safety;
- Minimize residual impacts to levels that are as low as reasonably possible (ALARA);
- Limit the land surface subject to usage restrictions;
- Successfully integrate the site into the landscape of its environment in order to preserve local biodiversity and allow potential reuse of the site depending on the level of easement;
- Enable the site to be managed properly from a social perspective in the mine closure phase;
- Support the reconversion of the site.

All Orano Mining’s sites are covered by a specific remediation plan. During the preparation and validation of detailed remediation plans, the latter systematically include technical, social and societal aspects. Since the beginning of its mining activities, Orano Mining has undertaken the dismantling of facilities, as well as the remediation and monitoring of former uranium mining sites in France, Gabon, the United States and Canada.

Orano Mining is currently implementing the closure plan for the COMINAK site in Niger, as approved by the competent authorities (cf. p. 90 ).



Cluff Lake Saskatchewan site, Canada

constraints: location, topography, climate, real estate and regulatory constraints, type of works, requirements from impact studies, environmental constraints, socio-economic environment, commitments made to different stakeholders (local authorities, residents) and by planning ahead to take into consideration new usages of the land for new agricultural, forestry or artisanal activities, etc.

This involves a detailed inventory of the site before (initial state) and after mining operations, its history, and additional technical studies (hydrogeological, geotechnical, radiological studies, etc.) to prepare a remediation plan and draw up a proposal to be submitted to the Authorities and forming a basis for dialogue with the stakeholders. Field tests may also be conducted during the operation phase to test out and refine assumptions in the remediation plan.

## MINING WORKS

Measures for the making safe of mining works are determined depending on the nature of the mine and the facilities concerned.

For underground mines, the aim is to ensure the stability of the works and to seal off access to all pit bottom to ground level connecting structures: pits, cross-cuts, ascending and descending shafts. Stability calculations are done for



works close to the surface and, depending on their results, reinforcement works may be conducted.

Open-pit mines may be either filled in with available waste rock and tailings or transformed into water features after partial filling-in. Waste rock stockpiles are remodeled and revegetated depending on the local context.

In the case of ISR (in situ recovery) operations, particular attention is paid to the quality of the water table in which the mined deposit is located. In general, regulations require that water quality be restored to a level close to its original level. It is worth noting that the initial quality of these waters (waters that may be naturally saline and radioactive due to the local geological context) is such as to prevent anything other than industrial use. The preferred method is natural attenuation: naturally-present or newly-formed minerals “trap” the pollutants by adsorption.

The majority of facilities on the surface are dismantled: processing plants, headframe, loading hoppers, etc. Some buildings (former offices and workshops) may be kept to allow a new activity to be developed on the site.

## TAILINGS STORAGE

(See chapter 6.3, p. 106 ).



## MONITORING OF SITES

The role of the mining operator is to limit the impact on populations and the environment to a level that is as low as possible and in regulatory compliance and to verify this through systematic and regular monitoring. This monitoring involves checking the ways in which uranium and its decay products, as well as various other substances related to mining activities, such as drained-off acid, may be transferred at sites and in the surrounding area. The monitoring network established concerns the checking of water (underground and surface water), the atmosphere (dose rate, radon, dust) on site and in its immediate environment, bio-indicators (sediments, aquatic plant life).

And the food chain (samples of vegetables, fruits, milk, and fish taken close to sites). If necessary, waters originating from mining works and storage areas are treated to correct one or more of their radiological and chemical characteristics before being released into the surrounding environment.

The results of all these checks allow the actual Effective dose (Dose Efficace Annuelle Ajoutée DEAA) added to the local background level of radiation (radiological impact) to be assessed on an annual basis for populations living close to sites. In France, in accordance with the French Public Health Code, this dose must be less than 1 mSv/year.

### THE FRENCH NATIONAL PLAN FOR THE MANAGEMENT OF RADIOACTIVE MATERIALS AND RADIOACTIVE WASTE APPLIED TO MINING CLOSURE FRANCE

The French national plan for the management of radioactive materials and radioactive waste (Plan National de Gestion des Matières et Déchets Radioactifs – PNGMDR) is a document that assesses existing methods of managing radioactive waste and materials, identifies foreseeable storage and disposal facility requirements and indicates the capacities needed for those facilities and the duration of storage.

It is prepared and updated, every three years, under the supervision of the French Nuclear Safety Authority (Autorité

de Sûreté Nucléaire - ASN) and the French General Directorate of Energy and Climate (Direction Générale de l'Énergie et du Climat - DGEC).

Consultation meeting of the Bois-Noirs Limouzat



Orano Mining has been participating in the PNGMDR since the plan came into existence. Several studies, conducted in response to the proposed program, have been carried out within this framework since the first of these plans was drawn up in 2007. Active participation in the different working groups has made it possible to strengthen interactions with the different players in the field.

- Orano Mining is committed to continuing its active participation in the working groups concerning it, with a view to ensuring the transparency of its activities. 4 studies were submitted in 2021 within the framework of the working group concerning the long-term upkeep of tailings storage encircling dyke structures
- 1 study devoted to the interactions between the flows discharged by the Bois Noirs Limouzat site and the accumulation of sediments in a lake downstream.

The Après-Mines France has obtained the renewal of the Environment and Safety certifications - ISO 14001 and ISO 45001 - following the AFNOR audit of November 2021.

Our teams have continued the accelerated conversion of our Sites. In 2021, 2 building permits were granted to

Lodève in Hérault region and in the Écarpière in Loire-Atlantique region. The Energy Regulatory Commission has selected 2 new projects in Haute-Vienne region in Montmassacrot and Bessines for the creation of photovoltaic parks. A construction site started in Beaurepaire in Loire-Atlantique, while the preparatory work has begun on the Bernardan site in Haute-Vienne.

The program of sustainable and diversified management of the limousine forest continues to unfold: more than 500 hectares are managed in this framework as of December 31, 2021.

## EXAMPLES

### Orano continues to digitalize its routine operations

**Digitalization is helping to improve the performance of operations. Applied to environmental monitoring, for example, it makes it easier to take and monitor samples.**

Mining Closure France takes close to 6,500 environmental samples per year. The process of taking samples, referencing them, and sending them to the laboratory must comply with traceability standards to ensure perfect control of the process.

Orano has developed an application that allows for referencing of samples on a digital tablet as soon as they are taken in the field. All important parameters measured in situ (pH, conductivity, temperature, etc.) are thus noted at source. These data, collected on computer, are directly integrated into a common database shared with our laboratory.

Radiometric measurements in the field are also part of the operations regularly performed by the teams. Carried out during routine work or inspections, they allow us to make mappings of the terrain. In the past, these measurements were recorded on paper in the field. Since the 2000s, new devices have made it possible to record georeferenced data. Up until recently, however, the results were only visible on a computer after the data had been imported. In 2021, an application was created to allow a direct link between the measuring device and a tablet. The measurements appear in real time on a map on this digital tablet. This makes it possible to immediately adapt the meshing and the controlled zones, according to the results obtained.



## Modernization of water treatment stations

Since the end of the 2000s, Orano has been modernizing its water treatment stations in line with the best available techniques, resulting from R&D at the CIME (Center for Innovation in Extractive Metallurgy) in Bessines sur Gartempe (see p. 100 ).

CIME is developing effective effluent treatment processes that comply with environmental standards before discharge in order to limit the impact of its activities on the ecosystem.

Under our policy of continuous improvement, the teams carry out studies that include the development and fine-tuning of processes for the realization of pilots before industrialization of the process on site.

### Research and development

Like any R&D project, after a complete bibliographic study, the first step is to carry out laboratory tests to validate the effectiveness

of the treatments envisaged. This includes testing of innovative processes.

### Pilot phase

The most promising treatment is then tested on a semi-industrial scale, on site and in real conditions. This step allows to confirm the laboratory results and to determine the conditions for implementation.

### Industrialization

The last step consists in implementing the process on site. This is coupled with the modernization of the equipment, wherever feasible with the use of remote control.



## Information and transparency, one of the pillars of mining closure with the app CartOmines

**Orano Mining has developed a new application for accessing complete data on old uranium mines in France, their environmental monitoring, and their redevelopment.**

Since this application CartOmines was first put online in 2019, several actions were taken into 2020 to raise awareness of this public database.

CartOmines is aimed at the general public and in particular at municipalities, local residents and associations. It is the result of extensive preliminary work involving the digitization, 3D vectorization, and tablet-based gathering of data in the field.

The website is currently organized around two informational tools:

- a general map of old mine sites with a series of indicators such as production, volume of stored tailings, and redevelopment data.
- a map tool indicating all the regulatory sampling points (air, water, bio-indicators) located near the sites.

Each year, the French Nuclear Energy Society (SFEN) awards the Bertrand Barré Prize for a communication project aimed at the general public. Orano Mining earned recognition in 2021 with a mention for its CartOmines application.

### KEY DATA CATALOGED IN THE APPLICATION:

- **248 former mining sites, 118 of which are still under the responsibility of Orano Mining**
- **photographs taken during operation and after remediation**
- **372 sampling points indicated: water, air, bio-indicators (sediments, soils, food chain, plants)**
- **educational content on mining operations and mining closure (videos, links, etc.)**

Link to the cartOmines web application  
(available in French only)



# MANAGEMENT OF POST-MINING: MAJOR CHALLENGES OF TODAY AND TOMORROW

## Planning for the rehabilitation of a mining site in operation for 15 years

### EXAMPLE IN KAZAKHSTAN

#### KATCO SITE

- Creation of joint venture between Orano Mining (51%) and KazAtomProm (49%) in 1996
- The first uranium mining operation in the world to use the ISR technique
- More than 48,440 tU produced in total since 2006
- Mine in operation with production of 2,840 tU in 2021

#### Mine in operation and remediation of the site

- R&D program to confirm and speed up the remediation of the aquifers tested on-site, mainly through natural mitigation
- In 2021, the remediation estimate was updated to incorporate future operations



KATCO site, Kazakhstan



SOMAÏR site, Niger

## Planning the remediation of a mining site in operation for more than 50 years

### EXAMPLE AU NIGER

#### SOMAÏR SITE

- Mining of uranium deposit by open-pit mines and ore processing facilities (dynamic and static processing)
- Aggregate production of 75,710 metric tons since 1968, with production of 1,996 tU in 2021
- Projected date of end of operations in 2042. Update of the site remediation study and corresponding costs taking into account the new mining plan



## Anticipating remediation right from the feasibility study phase



### EXAMPLE IN MONGOLIA

- Environmental and societal acceptability of uranium deposit exploration and mining projects
- Optimization of ISR (In Situ Recovery) technology

#### Mining project

- 2020: 1 exploration license and 3 mining licenses (Umnut, Dulaan Uul and Zoovch Ovoo)
- 77,800 tU of resources estimated in 2020
- ISR (In Situ Recovery) pilot conducted in 2010/2011 at the Dulaan Uul site
- Start of the ISR pilot (extraction + processing) on the Zoovch Ovoo site
- Aim of the pilot: confirm and improve the technical and economic conditions of the project

#### Remediation plan for the project

- Well field: filling-in of wells, dismantling of the surface facilities and rehabilitation of land
- Industrial facilities: dismantling, demolition and rehabilitation of land
- Water table: restoration by natural mitigation, based on various hydrogeological studies and studies demonstrating the effectiveness of natural mitigation with regard to the aquifers of the areas mined
- Revegetation: Plantation of Saxauls (protected local trees) in rehabilitated areas and in neighboring areas as part of an environmental offset project
- Ongoing monitoring of water tables through a network of piezometers

## Preparing the transfer of a remediated site to a supervisory authority

### EXAMPLE IN CANADA

#### CLUFF LAKE



- Site which was mined for 22 years, from 1980 to 2002, located in the Athabasca basin, in the north-west of Saskatchewan province, Canada
- Mining by underground mining works (2) and open-pit mines (4), and an ore processing plant
- Production of 28,000 metric tons of U3O8 and 250 kg of gold
- Main remediation works carried out between 2004 and 2006, in compliance with the conclusions of the impact study completed in 2004 – dismantling of the last facilities in 2014
- Plantation of around 500,000 trees and shrubs on the site

#### Monitoring

- Deployment of monitoring, in particular of the quality of underground waters and surface waters
- Demonstration of absence of impact of the site on the population and thus limitation of restrictions on usages on site
- Transfer of the remediated Cluff Lake site to the province of Saskatchewan in progress, with continuation of monitoring by the province, thanks to funding made available by Orano (balancing payment)



Zuuvch Ovoo site, Mongolia

## Conducting monitoring and oversight of remediated sites

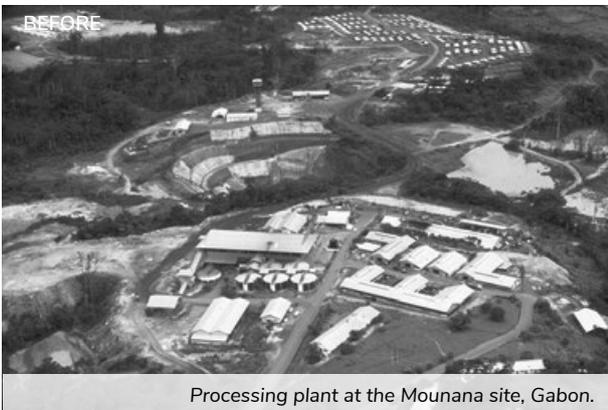
### EXAMPLE IN GABON



- Ensuring environmental monitoring and safety of the closed site since 1999, according to a program updated on an annual basis
- Holding of local information committee meetings (Commissions Locales d'Information – CLIs) chaired by the Prefect, allowing the public to be kept informed
- Reconstruction of 201 dwellings for the local population following inspections and the detection of a radiologically contaminated dwelling in the former mining town, conducted in cooperation with the Gabonese State
- 168 houses rebuilt in Dec 31, 2021 - finalization of the Mounana 200 construction program

### REMEDIED COMUF SITE

- Deposits in the Haut-Ogoué in Mounana mined from 1958 to 1999



- Open-pit mine and underground mining works with a processing plant
- 7,600,000 metric tons of ore extracted at 3.73 %
- Production of Yellow Cake: 26,600 metric tons
- Remediation carried out from 1997 to 2004

## Providing a second life for a rehabilitated site

### EXAMPLE IN FRANCE



To achieve the reconversion of the former mining site in an economic framework such that new projects can be located at the site.

### THE REMEDIATED BELLEZANE SITE

The former mining site of Bellezane, which has been rehabilitated since 1997, today plays host to a diverse set of industrial activities as well as a sediment storage facility.

- Site located in Haute-Vienne and mined from 1975 to 1992, and in remediation up to 1997



- Open-pit mines and underground mining works
- 2.8 million metric tons of ore extracted, 4,053 metric tons of uranium produced, corresponding to almost 5% of domestic production
- Environmental monitoring conducted by the team from Mining Closure France
- A site treatment plant
- The mining area reconverted into a business park
- One-of-a-kind facility in Haute-Vienne for storage of radiologically contaminated sediments
- A photovoltaic farm project on the former mining site

## A diversified second life for the site

### Industrial activity

As soon as mining operations ceased, a civil engineering company moved into the office premises formerly used by the underground mining operation (near the water treatment station).

### Sediment storage facility

Sediments presenting low levels of radiological contamination accumulated through the period of mining operations in a

number of ponds downstream of the region's former uranium mines.

Since 2006, and when - in agreement with the authorities - it is deemed to be the best solution, these sediments have been dredged by Orano Mining and stored in a facility specifically created for this purpose on the Bellezane site. An initial storage volume has been filled in one of the remediated open pit mines and above the tailings storage. A second site, still in operation, was inaugurated in 2014. Measures to protect fauna and flora have been put in place, in coordination with and under the supervision of the environmental authorities.



The redesigned site of Bellezane

### Photovoltaic power station project

A photovoltaic power station project with an installed capacity of approximately 11 MWp has been selected. It is expected to be commissioned in 2025.



## FOCUS

# CLOSURE AND REMEDIATION OF THE COMINAK SITE



Created on June 12, 1974, the Compagnie Minière d'Akouta (COMINAK) had produced 75,824 tU by end March 2021. Since 1978, it had been mining the Akouta, Akola and Ebba deposits along the western border of the Air mountains in the Agadez region of Niger.

On March 31, 2021, in accordance with the decision made in October 2019 by the COMINAK board of directors, the site stopped its production activities. The decision to close the mine resulted from the unfavorable context of the uranium market, the high costs of extraction, and the exhaustion of COMINAK resources and reserves.

## Our commitments

As part of the remediation of the COMINAK site, the Orano Group, the majority shareholder, committed to making the site safe, healthy and non-polluting, in compliance with national regulations and recommendations. It also committed to minimizing the social and societal impact of the mine's closure in the Arlit-Iferouâne regions.

To respond to identified local issues and expectations, a remediation plan consisting of three components was initiated:

- **Technical and environmental component:** remediate all the site's source terms;
- **Social component:** support our employees and subcontractors in their career change projects;
- **Societal component:** work to foster a sustainable, long-lasting and useful societal transition for the populations.

Find our 20 commitments





# Governance

COMINAK worked closely with national and local authorities, the decentralized administration and local associations to build the remediation program and control its implementation.

A multi-stakeholder governance was set up between the company, government representatives and civil society making it possible for everyone to work together and stay informed.

**Internal:**

- Project team;
- External experts;
- Control committee.

**Mixed (COMINAK + administration):**

- Technical committee;
- Stakeholders in the administration, elected officials in civil society;
- National committee for technical monitoring;
- Local monitoring committee.

**Administrative and political:**

- Steering committee;
- Nigerian ministry of mining.

**TIMELINE OF REDEVELOPMENT MILESTONES**



# Technical and environmental component

All the work aims to ensure long-lasting stability in terms of public health and safety and to reduce the residual impacts and the surface area of the zones subject to use restrictions after remediation.

## MONITORING COMMITMENTS OF TECHNICAL AND ENVIRONMENTAL COMPONENT

Commitments	Indicators/objectives	Results on 12/31/2021
Start remediation work from the end of production activities	03/31/2021	Remediation work started at the beginning of April 2021
Implement a suitable environmental monitoring plan from the start of the remediation project. Monitoring prolonged by an extendable 5 years (if conditions warrant it) after the end of the project	20 inspections/year (water, air and food chain)	In 2021, 750 samples were taken (all analyses and all works/radiological monitoring stations)
Comply with a total annual added effective dose below or equal to 1 mSv for the public	Less than 1 mSv/year	All inspections show compliance with limiting to less than 1 mSv
Perform a complete radiological diagnostic on the buildings of the city of Akokan	100% of buildings	As part of the counting plan, 100% of houses in Akokan were covered by this diagnostic
Treat radiologically marked buildings in Akokan according to the criteria defined as part of the counter plan which received tripartite validation in 2010	100% of marked buildings treated	95% of buildings requiring an operation were treated. The operations were planned according to the identified level of marking. The end of works is planned for the first semester of 2022
Limit as much as possible the surface areas of marked radiological areas in industrial zones (area work, disposal cells and muck pile remediation)	2 areas with restricted use and access (2 = muck pile and ponds)	Reprofiling the muck pile and remediation of the storage areas are under way in accordance with the schedule
Guarantee for the mine the stability of remediation works open to the surface	100% of large holes filled in and ramp blocked off	Underground work is in progress and all large holes as well as both ramps are filled in/blocked off  Ground stability is checked throughout the work
Treat and monitor aquifers so that the drinking water supplied to Arlit complies with national and international drinking water standards (WHO)	Zero exceeding of the threshold for drinking water	Aquifers are monitored by water sampling and a network of 150 piezometers installed at the site and in the surrounding area Describe the results
Treat and monitor aquifers so that the drinking water supplied to Arlit complies with national and international drinking water standards (WHO)	90% of worked hours are carried out by local subcontractors	At the end of 2021, more than 90% of hours for all work were carried out by local subcontractors



## Social component

The social strategy for COMINAK closure aims to minimize the social impact of shutting down production activities and to ensure fair and equitable treatment of all employees.

The union representatives and the Niger work administration signed a social agreement on November 25, 2020. This agreement guarantees the fair application of the measures agreed on.

With the support of the union representatives and the Niger work administration, COMINAK set up a system for its employees that provides for additional measures for internal and external reclassification, additional financial compensation, and health insurance for five years; this is in addition to the conventional, legal and regulatory system.



### RECLASSIFICATION UNIT

Consisting of dedicated professionals, the reclassification unit, a unique system in Niger set up by COMINAK, provides for various career change possibilities. Its objective is to support employees in their professional reclassification projects and procedures.

### SUBCONTRACTORS

To go further in reducing the impacts on its subcontractors of ending its activities, COMINAK has voluntarily initiated concrete actions for its subcontractors:

- **Financial contribution:** At end of the worksite, COMINAK made a contribution to subcontractor employees. The amount of this contribution (323,389,003 CFA francs) corresponds to the legal rights in case of termination caused by the employer. This end-of-worksite contribution is exclusively reserved for employees of companies with an effective contract with COMINAK and who have a permanent work contract with these companies as of December 31, 2020. The agreement validating this component was signed on April 21, 2021.
  - The check was given to the prefect of the Arlit region on May 14, 2021.
- **Training for career change:** the objective is to provide access to training for obtaining B, C, D or E driver's licenses and access to training for office work:
  - IT training (60 people) – the sessions started on May 19, 2021;
  - Driver's license training (120 people) – the sessions started on May 31, 2021.

### MONITORING COMMITMENTS OF SOCIAL COMPONENT

Commitments	Indicators/objectives	Results on 12/31/2021
<p>Advise each employee concerning career change</p> <p>Set up support measures adapted to each employee</p> <p>Support employees and subcontractors in eligible and viable entrepreneurial projects</p>	<p>90% of solutions implemented for all former employees</p>	<p>As of December 31, 2021, 78% of former COMINAK employees had an implemented solution (pre-retirement, retirement, self-employment, external reclassification, mobility within the Group), the objective being 90%</p>
<p>Ensure former employees exposed to ionizing radiation have free post-professional medical monitoring through OSRA (health observatory of the Agadez region)</p>	<p>Maintain the budget allocated to OSRA by COMINAK</p>	<p>100% of former COMINAK employees who worked at a workstation exposed to ionizing radiation are included in the OSRA system (see box p. 73 ).</p>

## Societal component

The objective of the societal component is to take into account and minimize the impacts of the closure on the community by ensuring a sustainable transfer adapted to the needs of local populations.

An official consultation with all local and national stakeholders as part of the remediation project, conducted in 2019, made it possible to map the societal impacts of the closure and develop the progressive societal transition plan that has been deployed now for several years.



### SOCIETAL TRANSITION PLAN

The societal transition plan includes several elements: economic, health and education support and transfer of infrastructure.

The main actions are:

- Involving local and international actors in the decision-making process upstream of closure and in monitoring the site remediation work;

- Transferring critical infrastructure to the Nigerian government;
  - Ultimately, the COMINAK mining compound will be transferred to the Nigerian ministry in charge of urban planning and housing. The final part of the housing currently occupied by COMINAK personnel working on the remediation project will be transferred at the end of the project;
  - Transferring water and electricity systems to the national companies NIGELEC, SPEN and SEEN;
  - Progressively (over 5 years) transferring the COMINAK hospital to the Nigerian ministry in charge of public health;
- Setting up an ambitious program to use local and national subcontractors and laborers in performing the remediation work with an objective of 90% of worked hours carried out by local laborers;
- Continuing the financial support for cultural associations and the local education system over several years after the closure;
- Financial support in the amount of 4 billion CFA francs for the economic reconversion/revitalization in the Arlit and Ifrouane regions. The goal is to financially contribute to implementing new structural projects for economic revitalization in these two regions which have been directly impacted economically by the COMINAK closure.

### ENTREPRENEURIAL PROGRAM

COMINAK, through its partner Maison de l'Entreprise, a recognized expert at the national level, initiated in December 2020 a call for entrepreneurial projects among COMINAK employees, inhabitants of Akokan, subcontractors, suppliers and promoters in the Arlit and Ifrouane regions.

Following the selection process, 56 projects were chosen out of 1,300 candidates. The selected projects cover a wide range of sectors of activity and reflect the major priorities of the regional development policy in Arlit and Ifrouane.

### Selection process for entrepreneurial projects at a glance:

The selected projects are to be announced before the end of the 2nd quarter of 2021.

Pre-selection by the Maison de l'Entreprise

Elimination of incorrectly prepared and/or non-compliant applications

Selection by a competent jury

#### Evaluation of the applications

- Organization of projects by activity



- Grading according to program criteria

#### Evaluation of the candidates

- Interview of the candidates (oral)

75 folders selected maximum

56 folders selected





The 56 selected projects will have “technical” support from the Maison de l'Entreprise: assistance in setting up a business plan, in managing the company and in preparing bank loan and “management” applications.

- **30%** of winners are projects led by COMINAK employees.
- **20%** are COMINAK subcontractors. The number of subcontractor applications selected is two times greater than the company's commitment.
- **80%** of projects are located in the Agadez region. The projects outside Agadez are led by COMINAK employees.
- Women will lead **20%** of the projects.

**MONITORING OF COMMITMENTS OF SOCIETAL COMPONENT**

Commitments	Indicators/objectives	Results on 12/31/2021
<b>Involve local stakeholders in the decision-making process upstream of closure and in monitoring the site remediation work</b>	<ul style="list-style-type: none"> <li>● 1 CLI (local information committee)/year</li> <li>● 2 visits of local and national monitoring committees/year</li> </ul>	<p>One CLI in December 2020 upstream of the closure and 1 CLI in 2021 brought together the population and local stakeholders. In addition, a campaign to raise awareness among the population called a “caravan” was organized in 8 districts of the city in December 2021</p> <hr/> <p>In 2021, the following took place at the COMINAK site:</p> <ul style="list-style-type: none"> <li>● 1 visit of the national monitoring committee</li> <li>● 2 visits of local monitoring committee</li> <li>● 3 ministerial visits   Around ten meetings with local stakeholders (outside CLIs)</li> </ul>
<b>Support the process of continuous and transparent communication</b>	<ul style="list-style-type: none"> <li>● 3 newsletters/year</li> <li>● Dedicated Internet site created</li> </ul>	<ul style="list-style-type: none"> <li>● 2 newsletters were published in 2021</li> <li>● A dedicated Internet site was created</li> <li>● An information office in the Akokan urban area was opened in 2020</li> </ul>
<b>Transfer of drinking water system of the compound</b> Transfer the drinking water system of the mining compound to companies in charge of treating and distributing water in Niger	07/31/2021	As of 12/31/21, 25% of housing in the compound had been transferred to companies in charge of water distribution in Niger (SPEN et SEEN). During the work, COMINAK will continue to ensure water supply until the end of the transfer
<b>Transfer of electrical system of the compound</b> Transfer the electrical systems of the mining compound to companies in charge of electricity distribution in Niger	07/31/2021	As of 12/31/21, 100% of housing in the compound has been transferred to companies in charge of electricity distribution in Niger (NIGELEC). During the work, COMINAK will continue to ensure the electricity supply until the end of the transfer
<b>Transfer of the COMINAK hospital</b> Transfer the COMINAK hospital to the government over 3 to 5 years and ensure support for 5 additional years	07/31/2021	Since July 1, 2021, the first healthcare personnel of the public healthcare system have been arriving and will be supported/trained for 3 to 5 years by the teams already in place
<b>Transfer housing and shared buildings of the mining compound to the government</b>	100% of housing transferred as of 12/31/2021	100% of housing not used as part of the remediation project were transferred to the Nigerian government in compliance with the agreement signed with it and validated by the ministry in charge of urban planning and housing. Dilapidated housing presenting an immediate danger have been or will be demolished.

Commitments	Indicators/objectives	Results on 12/31/2021
<p><b>Limit socio-economic and environmental impacts and participate in developing economic reconversion/revitalization projects and economic development projects</b></p>	<p>Report on the socio-economic impacts of COMINAK's closure and the economic reconversion conducted by the government via the Gold project</p>	<p>In 2021, COMINAK participated in 3 "actors meetings" on the socio-economic impacts of closing COMINAK after which the Nigerian government published a report focusing on five economic growth sectors: public transport, transport &amp; logistics, agri-food, recovering mineral resources, and traditional activities/commerce/other activities</p>
<p><b>Support the maintenance and, if possible, the development of market gardening activities in the city of Akokan</b></p>	<p>3 wells transferred on 12/31/2022</p>	<p>The work of transferring the wells started at the beginning of 2022 (equipping with a solar-powered pumping system)</p> <p>COMINAK set up the necessary infrastructure for maintaining water supply to market gardeners pending the effective transfer of the wells</p>
<p><b>Promote career change for people economically impacted by the closure via support for entrepreneurship</b></p>	<ul style="list-style-type: none"> <li>● 50 entrepreneurial projects selected</li> <li>● Partnership with the Maison de l'Entreprise set up</li> <li>● "Creation of a business plan" training for all winners</li> </ul>	<p>In total, 56 projects were selected to be part of the entrepreneurial program set up with the Maison de l'Entreprise</p> <p>Training for winners in creating a business plan is finished. The launch of the first projects is expected during the first semester of 2022 along with support for project backers</p>





## Focus on setting up scholarships

The field of education through support for the school system is one of the major axes of COMINAK's societal transition plan in connection with its commitment to local development.

The aim is to maintain and strengthen the quality of Arlit's teaching.

From the beginning of September 2021 and for a period of 5 years, a scholarship program has been set up for students and high school students in the departments of Arlit and Ifrouane.

4 students were selected in September 2021 and will be accompanied throughout their graduate studies.

**165** million CFA francs will be allocated for all aspects of the school education program.

An agreement was signed in August 2021 between COMINAK and the Nigerien agency for awarding scholarships (ANAB), representing the Nigerien ministry for higher education. The agreement covers a period of 10 years.

The study areas were chosen to meet the qualification needs in the regions of Arlit and Ifrouane. The double goal is to help young people in these regions succeed and encourage training in technical and social fields.

## INFORMATION OFFICE IN AKOKAN

An information office in the urban area of Akokan was opened in 2020 to respond to the questions of local stakeholders and populations. It can host around twenty people in the hall, a place for holding meetings. The office is also used for all COMINAK's societal activities (meeting with representatives of the population and other ways of providing support to the populations). This office will remain operational throughout the remediation period.

## INFORMATION MEETINGS AND WORKSHOPS

A local information committee bringing together mining companies and local populations met in December 2021.

This CLI, set up in 2005 by mining companies to have a framework for transparency and dialogue with populations living near the site, issues an activity report every year covering the mining sites and the impact of our activities on people and the environment.

It brings together all socio-professional levels in the Arlit and Ifrouane regions.

In collaboration with civil society and leaders of the districts in Akokan, an information tour, in the form of an itinerant caravan, made it possible at the end of 2021 to reach out to the inhabitants of 8 Akokan districts.

## Communication and transparency

In addition to governance bodies, COMINAK has set up various communication media accessible to all, and workshops and thematic meetings to promote exchange and make sure information is understood and shared with local communities.

- Dedicated Internet site
- Information newsletter

Visit the website





PRINCIPLE 6.2

Implement water stewardship practices that provide for strong and transparent water governance, effective and efficient management of water at operations, and collaboration with stakeholders at a catchment level to achieve responsible and sustainable water use.

## Water

A precious natural resource, water is essential to the well-being of the communities and environment where Orano Mining operates, as well as to the smooth running of its mining operations.

Mining activities can have a significant impact on water resources, not only in terms of quantity, but also potentially on their quality.

In order to preserve this resource, the question of water is a subject of constant attention at Orano Mining.

### POLICY

As a member of the ICMM, Orano Mining endeavors to implement the requirements listed in the ICMM principles regarding the management of water resources in terms of performance, namely the application of strong, transparent governance and effective management that enables collaboration with stakeholders in order to successfully share use of the resource in a responsible and sustainable way.

### OUR INTERACTION WITH WATER

The Orano Mining sites use water for their operations, not only for operational needs but also for workers and the use of surrounding populations, as in Niger.

On all Orano Mining sites, the processing of uranium ore is carried out by wet process, which requires a water supply. The pumping of groundwater is essential to allow access to the deposits in the open-pit and underground mines in Niger. At ISR (In Situ Recovery) sites, like those in Kazakhstan, pumping allows to recover dissolved uranium.

In addition, water is also used at sites for dust suppression, thereby limiting, as far as possible, physical, chemical and radiological impacts on the environment and workers. Last but not least, Orano Mining is committed to providing access to good quality drinking water and appropriate sanitary facilities to all of its employees, but also to their families living close to operating sites.

On all Orano Mining, the main mining activities consuming water are:

- Extraction and processing of ore by wet process, via static or dynamic leaching
- Evaporation from production or effluent storage ponds
- Steam production for facilities heating or ore treatment for ore heating or treatment
- Dust control
- Production of drinking and/or sanitary water

The water used for our industrial and mining processes comes from various sources depending on the site: surface water (lakes, rivers, the sea, etc.), groundwater (aquifers), mine drainage water and recycled industrial water.

Depending on their needs, sites are likely to use water of three quality levels: drinking water, sanitary water and industrial water. These categories are set in accordance with the regulations and recommendations in force (national, regional or WHO – World Health Organization – regulations) or, failing that, according to their use.

Depending on the location of sites, the classification (natural quality) of the aquifers does not always allow for the natural supply of drinking water.

For such sites like in KATCO (Kazakhstan) and Badrakh Energy (Mongolia), bottled water is provided to employees for drinking water usage.



## DISCHARGES INTO THE ENVIRONMENT

At the SOMAÏR and COMINAK sites in Niger, the effluents produced during ore processing are stored in evaporation ponds and are therefore not discharged into the environment.

In Kazakhstan, the ISR mining process used by KATCO involves the management of solutions in a closed loop. Effluents do not exist as such: upon leaving the plant, the uranium-free leaching solution is reinjected into the mineralized aquifer and reintegrates the mining process.

At sites where there are aqueous discharges into the environment (former mining sites in France and in Gabon, the McClean Lake site in Canada), in addition to rigorous monitoring of water quality, regular internal and third-party studies are carried out to prove that the quantity and quality of aquatic ecosystems are not affected by the activities.

The effluents, receiving bodies of water and receiving ecosystems are subject to dedicated and regular measurement, sampling, and chemical and ecological monitoring, which is reported to the authorities and checked on a regular basis.

At McClean Lake, in Canada, all the effluents are treated by a dedicated unit prior to discharge. Effluents are discharged into the natural environment in batches, ensuring compliance with discharge standards and that their compatibility with the natural environment is checked in advance. Using environmental modeling studies approved by the authorities, in 2021 the McClean teams optimized the treatment of tailings and effluents before discharge, responding to the trend toward increased arsenic content in the ore to be processed.



For Mining Closure, in France, water is also of key importance, at the center of the monitoring of former sites and installations. Meteoric water forming surface run-off from rehabilitated sites can be drained, collected and discharged directly into the natural environment unlike waters collected from some decommissioned mine works and/or mine tailings storage areas at our Environmentally Regulated Facilities (ICPE), for example.

After passing through our water treatment stations, this water is checked and discharged into the natural environment in accordance with the standards imposed by prefectural order.

The teams from Mining Closure France, working in collaboration with the Center for Innovation in Extractive Metallurgy (Centre d'Innovation de Métallurgie Extractive - CIME) at Bessines-sur Gartempe, are conducting numerous studies on how to optimize mining water treatment stations by using fewer chemical reagents, notably thanks to passive filtration systems. These systems make it possible to simultaneously reduce the energy footprint of the water treatment stations and minimize the use of chemical reagents, while maintaining treatment effectiveness, which protects the receiving ecosystems (cf. example Mining principle 6.1, p. 85 ).

## RISKS AND OPPORTUNITIES

The management of water resources is an even bigger challenge given that, on all our sites seven are located in arid or desert areas (Niger (three sites), Kazakhstan, Mongolia, Namibia and Uzbekistan).

In this context, with what can be locally decisive issues regarding how this resource is shared, and in areas where climate change risks having major consequences on the environmental and societal balance, the challenges and opportunities associated with water management must be assessed and anticipated.

In Namibia, the Erongo desalination plant operated by Orano Mining Namibia makes it possible for the Trekkopje mining site and local communities to have drinking water produced from sea water, without drawing on the groundwater, a fragile resource. The discharges are to the sea and only consist of brine, which does not impact the underground resource and has a very limited impact on the receiving marine ecosystem.

In Niger, some effluents from treated domestic wastewater are reused in local communities for watering market gardens, which limits drawing on the fossil water.

Also in Niger, when the COMINAK site was closed, wells with drinkable water formerly operated by the mine were transferred to the market gardeners to offset the lack of treated wastewater for watering the crops. These pumping wells will be electrically powered using solar panels. Local communities will thus have additional wells to support their activities over the long term.



## METHODOLOGY

Since 2019, Orano Mining has assessed the level of water stress at all ten of its sites worldwide using the "Aqueduct Water Risk Atlas" tool from the World Resources Institute (WRI). At the end of 2020, WRI updated its tool (revising the aridity indices and integrating new databases from the World Bank and Available Water Remaining (AWARE), which led to changes in our assessment of water stress at our KATCO (Kazakhstan) and COMUF (Gabon) sites.

The situation at the end of 2021 is the same as the previous year:

- two sites were experiencing low water stress (<10%) (Gabon and Canada)
- our Post-Mining France sites (1 entity) have medium to high water stress (20-40%)
- one site was subject to high water stress (40-80%) (Namibia: Trekkopje site and the Erongo desalination plant)
- the rest of our sites were classified as "arid and low water use" (Kazakhstan, Mongolia, Uzbekistan and Niger), which corresponds to the highest level of water stress on the risk scale.

Site	AMF / France	COMUF / Gabon	Nurlikum Mining / Uzbekistan	Orano Mining Namibia / Namibia	OCI / Canada	Badrakh Energy / Mongolia	COMINAK / Niger	SOMAÏR / Niger	IMOURAREN / Niger	KATCO / Kazakhstan
<b>Water stress</b>	medium-high (20-40%)	low (<10%)	arid and low water use	high (40-80%)	low (<10%)	arid and low water use	arid and low water use	arid and low water use	arid and low water use	arid and low water use

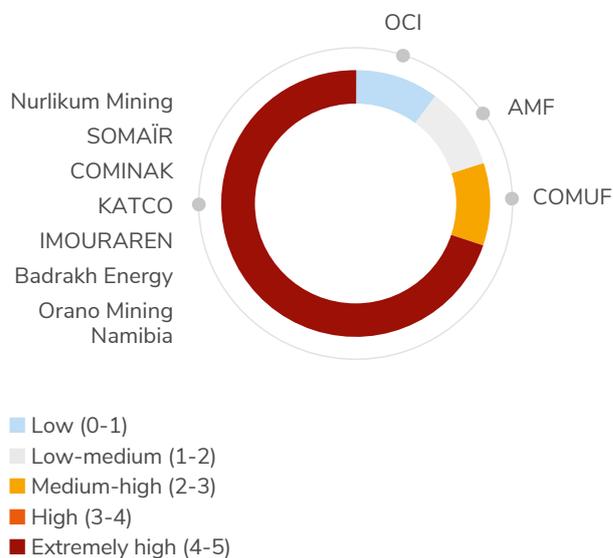
As part of its approach, Orano Mining also assesses water risks using the same “Aqueduct Water Risk Atlas” tool.

This assessment distinguishes between:

- the physical risk related to quantity, which is assessed based on the following eight indicators: water stress, water depletion, interannual variability, seasonal variability, groundwater table decline, riverine flood risk, coastal flood risk, and drought risk;
- the physical risk related to quality, which assesses the risk of access to water which is unsuitable for use, by aggregating two indicators: the existence (or lack) of treatment of connected wastewater and the potential for coastal eutrophication;
- the regulatory and reputational risk, which includes the risk related to water management by local organizations (drinking water, sanitation), as well as potential conflicts with the public concerning access to water.

The overall water risk combines these three risks.

**Overall water risk**



**Overall water risk and water stress (WRI classification)**

Site	AMF / France	COMUF / Gabon	Nurlikum Mining / Uzbekistan	Orano Mining Namibia / Namibia	OCI / Canada	Badrakh Energy / Mongolia	COMINAK / Niger	SOMAÏR / Niger	IMOURAREN / Niger	KATCO / Kazakhstan
<b>Physical risks quantity</b>	high (3-4)	extremely low (0-1)	extremely high (4-5)	high (3-4)	low (0-1)	extremely high (4-5)	extremely high (4-5)	extremely high (4-5)	extremely high (4-5)	extremely high (4-5)
<b>Physical risks quality</b>	low-medium (1-2)	high (3-4)	extremely high (4-5)	high (3-4)	low (0-1)	extremely high (4-5)	extremely high (4-5)	extremely high (4-5)	extremely high (4-5)	medium-high (2-3)
<b>Regulatory and Reputational Risk</b>	low (0-1)	extremely high (4-5)	low-medium (1-2)	high (3-4)	low (0-1)	extremely high (4-5)	extremely high (4-5)	extremely high (4-5)	extremely high (4-5)	medium-high (2-3)
<b>Overall water risk</b>	low-medium (1-2)	medium-high (2-3)	extremely high (4-5)	extremely high (4-5)	low (0-1)	extremely high (4-5)	extremely high (4-5)	extremely high (4-5)	extremely high (4-5)	extremely high (4-5)



General information										
Site	Après-Mines France	COMUF	Nurlikum Mining	Orano Mining Namibia	McClean	Badrakh Energy	COMINAK	SOMAÏR	IMOURAREN	KATCO
Countries	France	Gabon	Uzbekistan	Namibia	Canada / Saskatchewan	Mongolia	Niger	Niger	Niger	Kazakhstan
Climate Köppen Classification	Mild oceanic climate	Equatorial	Semi-arid cold	Warm desert	Sub-arctic	Cold desert	Warm desert	Warm desert	Warm desert	Cold desert
Activity	Remediate site	Remediate site	Exploration	In care and maintenance	Processing uranium	Exploration	Underground mining and uranium processing	Open pit extraction and processing uranium	In care and maintenance	ISR extraction and uranium processing
Context										
Main uses of water in 2020	Reagents preparation for mining water treatment	Sanitary use	Sanitary use	Sanitary water use, dust control	Uranium processing, production of sanitary and drinkable water	Sanitary use production	Mine drainage water, dust control, Uranium processing, production of sanitary and drinkable water	Mine drainage water, dust control, Uranium processing, production of sanitary and drinkable water	-	Production of sanitary water, elution process, drillings
Water consumption patterns	-	Sanitary use	Sanitary use	Evaporation, sanitary use	Process losses, sanitary use	Sanitary use	Evaporation, process losses, sanitary use	Evaporation, process losses, sanitary use	-	Evaporation, process losses, sanitary use
Risks and Opportunities										
Water stress*	medium-high (20-40%)	low (<10%)	arid and low water use	high (40-80%)	low (<10%)	arid and low water use	arid and low water use	arid and low water use	arid and low water use	arid and low water use
Overall water risk*	low-medium (1-2)	medium-high (2-3)	extremely high (4-5)	extremely high (4-5)	low (0-1)	extremely high (4-5)	extremely high (4-5)	extremely high (4-5)	extremely high (4-5)	extremely high (4-5)

\* Source Aqeduct 2021

## WATER RESOURCE ISSUES AT OUR SITES, SUMMARY OF MATERIAL WATER RISKS

70% of our sites are at high water risks.

In this context, and regardless of the site, preserving water resource mainly involves maintaining its quality, and, by extension, protecting related ecosystems.

Thus, the main stakes regarding water management for Orano Mining are therefore, in both the short and long term:

- for countries in desert areas with "traditional" mining operations, preservation of the resource in terms of quantity and quality;
- for countries in desert areas with ISR mining operations, preservation of the quality of the groundwater outside of the license area;
- for countries in low water risk areas, where discharges are made into the environment, preservation of the quality of the water and receiving ecosystems.

At the end of 2021, Orano launched a study on the vulnerability of its activities relative to climate change.



Our mining sites in operation were thus assessed by a firm specialized in this area. Specific issues for each climate area were identified using IPCC models (scenario RCP 8.5) with 2050 as the target date.

In Niger, issues were identified concerning the intensity of weather episodes and the increase in average and extreme temperatures, which could lead to higher stress on the drinking water resource.

In Kazakhstan, the main identified issue is the increase in the number of high heat days, which could increase drinking water needs. In northern Saskatchewan, no major water issues were identified by this assessment.

This assessment initiated a discussion that will continue into 2022 with each of the sites, taking into account local contexts and models. The lessons learned will be used to adapt the risk and opportunity management plan for the sites and to dialog with our local stakeholders.

## WATER MANAGEMENT PLANS: INFORMATION EXCHANGE AND SHARING WITH OUR STAKEHOLDERS

Orano Mining is committed to sustainable, transparent and inclusive management through:

- Supplying drinking water to its employees (and to the mining towns on the Niger sites),
- Setting up programs to increase awareness of water preservation among employees and populations,
- Getting local populations involved in monitoring water quality,
- Favoring water reuse and recycling, both internally and to benefit local populations (supplying market gardens in Niger with water, for example).

At the scale of the site, water resources are systematically managed in collaboration with the population and with authorities, based on the needs for local activities. Multidisciplinary teams including environmental specialists, hydrogeological experts, process engineers, R&D specialists and social responsibility managers are involved in managing this resource.

The management plans for water resources are regularly presented and discussed with stakeholders (administrations, elected officials, associations, employees, families of employees, etc.) during site monitoring committee (CSS) meetings, management committee meetings and, for some sites, via participative monitoring.

Orano Mining systematically looks for new levers for minimizing water consumption at its sites, especially of high quality water. In 2021, a cross-disciplinary group involving site and central teams conducted a collective study using consumption diagnostics and is now working to identify new ways of reducing water consumption, notably through reusing and recycling water at the sites.

As part of a holistic ecodesign approach, the studied and future solutions aim to reduce not only water consumption, but also energy consumption and greenhouse gas emissions.

Orano Mining is setting up management plans integrated in the strategy of its sites to:

- Minimize and optimize water consumption, especially for sites in areas of high and extremely high water risk,
- Ensure protection of water quality,
- Facilitate water access initiatives for local populations.



### NIGER

## GOING FURTHER/ OUR PARTNERSHIPS

**Since 2003, Orano Mining has had a joint structure for the three companies (COMINAK, SOMAÏR and Orano Mining Niger), named "Aman". Its purpose is to refine our knowledge of the regional hydrogeology and guarantee the quality of water supply to the sites and surrounding towns.**

Periodic monitoring campaigns have been carried out since its creation, on a wider scale than those traditionally conducted at sites.

"Aman" will continue the hydrogeological monitoring at the COMINAK site via a network of dedicated piezometers. This will take place throughout the site remediation phase, to monitor groundwater changes and refine the models.

The "Aman" group also monitors the groundwater marking containment system for groundwater from the Teloua aquifer, downstream from the COMINAK industrial area. This system prevents the spread of the groundwater marking, thereby ensuring that there is no impact on health or the environment. Additional studies combining sampling and modeling, in partnership with the R&D teams, are under way for its medium- and long-term management.

Each site establishes its water resource management plan, taking account of the issues, risks and regulatory requirements that apply and setting suitable objectives that are compatible with those set by Orano Mining (see performance/commitments: -10% of global consumption and -10%/tU).

## PERFORMANCE MONITORING

To monitor performance, Orano Mining uses two slightly different reference bases: that of Orano, based on the definitions of FAO\* and OECD, and that of ICMM, jointly developed between members and more specific to the mining sector. Three types of indicators are monitored: sampled water, water returned to the environment and consumed water.

### VOLUME OF SAMPLED WATER

The “volume of sampled water” indicator is monitored regularly at the sites, but also by Orano Mining. If this indicator deviates, the cause is immediately sought to correct the deviation.

The quantities of sampled water are measured by flowmeters; however, some sampling points cannot be equipped with measuring devices, and in this case, the quantity is estimated or modeled.

### VOLUME OF DIVERTED WATER

The diversion volume consists of returned water whose physical-chemical characteristics have not been degraded. On Orano Mining sites, the only diversions in recent years involved returning water to the environment during pumping tests for projects in Niger, which did not degrade the resource itself.

### VOLUME OF DISCHARGED WATER – SPECIFIC TO ICMM

The volume of discharged water according to the ICMM reference base consists of effluent discharges after treatment. Evaporations, infiltrations and various process losses are not taken account of in this indicator but are counted as consumed water.

### VOLUME OF CONSUMED WATER – SPECIFIC TO ORANO

The “consumed water” indicator corresponds to the quantity of water specifically consumed for the site’s needs, which implies quantitative reduction of the resource (consumption during the treatment process and entrainment in the finished product, consumption by employees and potential losses) and/or qualitative issues (physical-chemical degradation). This definition is based on FAO and OECD definitions and is common across Orano.

### VOLUME OF CONSUMED WATER – SPECIFIC TO ICMM

Different from the Orano “volume of consumed water” indicator, consumed water according to ICMM is the total volume of water that is removed from the environment by evaporation, entrainment (in products or waste) or other losses, and that is not discharged in surface water, groundwater, sea water or to third parties.

The ICMM reference base takes into account the water resource that is directly available for the surrounding ecosystems.

The volume of consumed water according to the ICMM reference base is thus less than the Orano consumed water because discharges to the environment are subtracted from it. All groundwater and surface water pumping operations during the post-mine phases, for draining and treatment with immediate discharge in the medium (without consumption), are not counted in either of these two reference bases.

In 2021, historical data relative to water were homogenized and clarified, resulting in recalculation for some sites and some indicators. The presented numbers were all updated and involve an identical calculation method.

## OUR RESULTS

**In 2021, the “consumed water” indicator (Orano) fell 19% compared to 2020. The ratio of water consumption at all Orano Mining sites to metric ton of produced uranium is 674 m<sup>3</sup>/tU, representing a decrease of 21% compared to 2020.**



\* FAO: “Food and Agriculture Organization of the United Nations”



Evolution of indicators

Quantity of water abstracted, discharged and consumed - m <sup>3</sup>	2019	2020	2021	Trend 2020-2021
Volume of water abstracted from surface water (including rainwater)	573,327	339,841	450,274	+32%
Volume of water sourced from distribution network	37,966	34,798	64,225	+85%
Volume of exhaust water withdrawn	6,769,525	6,700,352	4,726,361	-29%
Volume of groundwater withdrawn via pumping wells	3,801,177	3,810,968	4,019,771	+5%
Transfers to other sites or to third parties	2,520,723	2,628,652	2,606,816	-0,83%
Volume of exhaust water used on site	8,661,272	8,257,307	6,653,815	-19%
Volume of water discharged	0	6,805	6,805	0%
Volume of water consumed	8 661 272	8 250 502	6 647 010	-19%
RATIO of water consumed per metric ton of U produced (m <sup>3</sup> /tU)	658	850	674	-21%
Volume of discharged water - ICMM	1 735 617	1 560 574	1 709 399	+10%
Volume of consumed water - ICMM	6 925 655	6 689 928	4 937 611	-26%

Two factors explain these changes.

The first factor is the end of production at the COMINAK mine at the end of the first quarter of 2021. Without pit water and mine drainage water, water consumption alone fell by nearly 2 Mm<sup>3</sup>, contributing to decreased consumption and a decrease in the ratio of consumption to metric ton of produced uranium.

The second impacting factor is the sanitary situation at the sites since 2020. The Covid-19 crisis led in 2020 and 2021 to halting production in some facilities (notably McClean in 2020 and 2021) or to a slowdown (KATCO in 2020). The subsequent drop in uranium production at the sites led to reduced water consumption, compensated by the keeping the facilities operational and carrying out in-depth maintenance activities.

The Covid-19 crisis thus had no significant impact on the overall water consumption figure. By contrast, the fall in uranium production during this same period negatively impacted the ratio of water consumption to metric ton of produced uranium.



**ORANO MINING COMMITMENTS FOR 2025:**

- Reduce water consumed per metric ton of U produced by 10%\*
- Reduce overall water consumption by 10%\*
- Provide each site facing water issues with a **water management plan** shared with its stakeholders

- Develop **predictive models regarding natural attenuation** for ISR through dedicated R&D
- Maintain R&D actions on passive water treatment

**RESULTS 2021**

Carrying out 100% of water diagnostics 

R&D actions in passive water treatment 

\* Reference year 2019



PRINCIPLE 6.3

Design, construct, operate, monitor and decommission tailings disposal / storage facilities using comprehensive, risk-based management and governance practices in line with internationally recognised good practice, to minimise the risk of catastrophic failure.

## Monitoring of Orano Mining structures

Launched in August 2020, the Global Industry Standard on Tailings Management developed by the United Nations Environment Program (UNEP), the Principles for Responsible Investment (an investor network supported by the United Nations) and the International Council on Mining and Metals (ICMM) following

the tragic Brumadinho tailings facility collapse in Brazil aims to achieve the ultimate ambition of zero harm to people and the environment.

Underpinned by an integrated approach to tailings management, this Standard aims to prevent catastrophic failure and enhance the safety of mine tailings facilities across the globe. It represents a radical change in terms of transparency, responsibility and the protection of the rights of people affected and involved in projects.



The Standard has six topic areas: affected communities; integrated knowledge base; design, construction, operation and monitoring of the tailings facility; management and governance; emergency response and long-term recovery;

and public disclosure and access to information. These topics contain 15 principles and 77 specific auditable requirements with which operators must comply.

This Global Industry Standard is directed at operators and applies to mining tailings management facilities, both existing and planned.

As of August 5, 2020, all ICMM members including Orano Mining are committed to implementing the Global Industry Standard on Tailings Management. Orano Mining wrote and then transmitted a procedure to its subsidiaries to be implemented according to the schedule established by ICMM: all encircling dike structures for tailings storage operated by Orano Mining and presenting “extreme” or “very high” risks

according to this standard will be compliant with it by August 2023. All other tailings facilities operated by Orano Mining that have not been remediated will be compliant by August 2025.

Two types of structure are taken into consideration: tailings storage and effluent storage ponds.

## TAILINGS STORAGE STRUCTURES

More information



### List of uranium tailing facilities dams (Orano Mining)

Name of the tailings facility	Location: town Department/ Country	Status	Operating years	Building materials and raising method	Dimensions (m) Maximum height/length	Stored tailings tonnage (Mt)	Date of the last independant expert review	Safety factor*	Internal and external monitoring	Is there a remediation plan?
Bois Noirs Limouzat	St Priest la Prugne (42 - FR)	closed	1958/1980	Waste rocks / Vertical	42/508	1.3	2020	1.6	Inspection, maintenance, topo, piezo / expert review each year, authorities review	Already remediated / Water cover (18 ha)
Ecarpière	Gétigné (44 - FR)	closed	1958/1990	Cycloned sands / Vertical then upstream	60/1,100	11.5	2020	2.76	Inspection, maintenance, topo, piezo, flows / expert review (5 years)	Already remediated / Solid cover
Brugeaud	Bessines sur Gartempe (87- FR)	closed	1978/1987	Cycloned sands / Upstream and vertical on the sides	22/500	7.3	2020	2.07	Inspection, maintenance, topo, piezo / expert review (5 years)	Already remediated / Solid cover
Lavaugrassse	Bessines sur Gartempe (87 - FR)	closed	1958/1978	Cycloned sands / Vertical	36/1,400	7.5	2020	2.76	Inspection, maintenance, topo, piezo / expert review (5 years)	Already remediated / Solid cover
Montmassacrot	Bessines sur Gartempe (87 - FR)	closed	1987/1990	Cycloned sands / Vertical	20/200	0.7	2020	1.69	Inspection, maintenance, topo, piezo / expert review (5 years)	Already remediated / Solid cover
Bernardan	Jouac (87 - FR)	closed	1978/2001	Cycloned sands / Vertical	22/1,700	1.9	2020	1.81	Inspection, maintenance, topo, piezo / expert review (5 years)	Already remediated / Solid cover
St Martin du Bosc	Bosc et Soumont (34 - FR)	closed	1978/1997	Waste rocks / Vertical then upstream	45/400	4.1	2017	1.53	Inspection, maintenance, piezo, flow / expert review (5 years)	Already remediated / Solid cover
Bertholène	Bertholène (12 - FR)	closed	1985/1991	Waste rocks / Vertical	50/110	0.5	2017	1.96	Inspection, piezo, flow / expert review (5 years)	Already remediated / Solid cover
Saint Pierre du Cantal	St Pierre du Cantal (15 - FR)	closed	1976/1985	Waste rocks / Vertical	15/140	0.6	2017	3.14	Inspection, maintenance / expert review (5 years)	Already remediated / Solid cover
COMUF	Mounana (Gabon)	closed	1990/1997	Waste rocks / Vertical + downstream	13/200	0.7	2017	-	Inspection, maintenance, topo, flows / expert review (5 years)	Already remediated / Water cover (20 ha)
SOMAÏR	Arlit (Niger)	Operating	a/c 1971	Waste rocks / banco / Vertical	5 to 11/3,500	23	-	-	Inspection, pond levels	Yes - by reprofiling and cover
COMINAK	Akokan (Niger)	Closed	1978/2021	Waste rocks / banco / Vertical	5 to 11/1,400	18	-	-	Inspection, pond levels	Yes - by reprofiling and cover

## IN FRANCE

Of the 17 tailings storage sites, all of which have been redeveloped, nine have structures measuring 15 to 65 m in height and 110 to 1,700 m in length, but only one has a water cover (Bois Noirs Limouzat site).

The tailings storage structures are constructed using sand from the cycloning of tailings, or mining waste rock.

Only the Bois Noirs structure (max. height: 42 m, length: 508 m) is considered under French regulations to be a class A dam subject to internal monitoring and regulatory monitoring. Under the regulations, the other structures in France are subject to internal monitoring by Orano Mining and are inspected by an external expert every five years.

The results of structure monitoring show that they are in a satisfactory state as far as their stability is concerned.

In addition, a working group, created as part of the National Plan for the Management of Radioactive Materials and Waste (PNGMDR) led by the French Ministry of Ecological Transition and the Nuclear Safety Authority (See p. 83 ), bringing together various experts and associations, and in which Orano Mining participates, continued its work in 2021 and will report its conclusions in 2022.

The methodology for assessing long-term stability is based on 2 main assumptions: work in normal operation (i.e. maintained) and in degraded operation (abandoned). In addition, there are accidental scenarios such as an earthquake or meteoric (flood).

## CANADA

### Orano Canada: green light on the project to enlarge the tailing storage facility at the McClean Lake mill

**The Canadian Nuclear Safety Commission (CCSN) authorized enlarging the tailing storage facility at the McClean Lake mill operated by Orano Canada.**

#### BACKGROUND

Situated in northeastern Saskatchewan, the McClean Lake uranium ore processing plant has been safely operated for more than 20 years by Orano Canada, Inc. The tailings generated by our operations—consisting mainly of rock crushed after extraction of uranium from the ore—are currently pumped from the mill in the form of mud and deposited in the open storage facility where they are stored under water.

#### ENLARGEMENT PROJECT

Since the current facility is set to reach its maximum capacity in 2027, our teams submitted to the Canadian authorities a file for its enlargement that complies with the industrial standard on managing mining tailings that was developed by the International Council on Mining and Metals (ICMM).

The enlargement, which would enable storing an additional 2.3 million cubic meters, uses the existing infrastructure. From an environmental standpoint (fauna, surface water and ground water), it will not impact new areas. A surveillance and monitoring program for the facilities has been implemented.

Inspections to ensure there is no impact will be performed regularly during the mill's operation as well as after its dismantling and remediation.

The Commission examined the suitability of the measures proposed to protect the environment and personal health and safety as well as to integrate consultations with indigenous peoples.

Following a public hearing on October 4, 2021, authorization was granted to Orano to develop the site. This hearing mobilized the teams of Orano Canada, Inc., its partners and the stakeholders representing local communities.

This positive decision ensures the future of McClean Lake as a regional mining center for the coming decades. It is a result of our team's mobilization on technical issues but also our dialog with communities and our continuous commitment to them.

More information about the expansion project: watch the video





## INTERNATIONALLY

In Gabon, Canada and Niger, the structures made of waste rock from mining are lower in height. Only the structure in Gabon, which is a remediated site, has a water cover. All of these structures meet regulatory requirements and are subject to internal monitoring by the group, with some of them undergoing inspection by an external expert.

### EFFLUENT STORAGE PONDS

Industrial effluent ponds are constructed either as superstructures, or partially buried. They are subject to regular monitoring, on a daily or weekly basis, depending on the case.

- **KATCO:** Four ponds are in operation to manage drilling mud; these are built out of sand, sourced on the site itself, and are 5 m high.
- **SOMAÏR:** Four ponds are in operation, constructed out of waste rock and measuring around 7 m in height.
- **COMINAK:** Six ponds are in operation, constructed from argillite present on the site, measuring 7 m in height.

In recent years, there has been a significant effort at sites to improve the monitoring of structures in operational and organizational terms. Their general condition is satisfactory, but COMINAK and SOMAÏR require closer attention.



#### ORANO MINING COMMITMENTS FOR 2030:

*Shift towards passive management of mining tailings storage at new mining sites.*

## ACCIDENTAL SPILLS

Preventing accidental spills is a major subject the Orano Mining teams have been working on for several years. Thanks to these efforts and the sharing of experience, such spills are limited and handled very swiftly and safely.

In order to prevent accidental spills, we encourage our operational teams to:

- adopt a proactive approach (from the design and construction phases through to the monitoring and operation of the facilities);
- analyze and share lessons learned from potentially significant accidents to ensure that they do not occur again;
- conduct rigorous monitoring of facilities.

Environmental events are fed back at group level via a dedicated internal digital platform named "AHEAD". The Orano group has also developed a severity classification scale for environmental near-misses and events, ASSESS, in order to promote operating experience feedback and sharing within the group

During the course of 2021, we recorded no environmental events leading to a major environmental impact. We incurred no fines or litigation arising from regulatory matters.

### RESULTS 2021

100 % of tailings dams assessed in Niger



Meeting the 2021 commitments of the PNGMDR (plan National de Gestion des Matières et Déchets Radioactifs)



## FOCUS

### Stability studies conducted in 2021 at the SOMAÏR and COMINAK sites in Niger

At **COMINAK**, two studies were conducted on:

- **Tailings pile:** the remediation of the tailings pile will include its reprofiling and setting up a cover for mechanical and radiological protection. From a geotechnical point of view, these works aim to ensure long-term stability of the pile and limit erosion phenomena. The study was used to make recommendations on the slopes and lengths of the banks and on surface arrangements for water collection.
- **The effluents pond:** as part of remediating these ponds, a study of encircling dike stability was conducted and led to proposing local reinforcement of some structures for long-term durability.

At **SOMAÏR**, geotechnical diagnostics of the encircling dike structures of the tailings pile and of the effluent pond were performed by an external engineering firm. These diagnostics led to recommendations on local reinforcement and supplementary surveillance measures.





**PRINCIPLE 6.4**

Apply the mitigation hierarchy to prevent pollution, manage releases and waste, and address potential impacts on human health and the environment.

## Waste management and the circular economy

Mining activities generate waste. This waste needs to be managed effectively, as much to comply with environmental regulations and minimize any impacts as to maintain the acceptability of activities.

### POLICY

Orano Mining assumes responsibility for its own waste and manages it effectively, in accordance with the regulations, whether it is radioactive or conventional waste. The volume of waste and its treatment varies from one site to the next.

It is identified, classified and stored before being recycled where possible, in line with national regulations. Our site teams ensure that waste is traceable through to its definitive disposal or recovery. This is part of their environmental management plan (ISO 14001).

We apply the waste management hierarchy (prevent, reuse, recycle and dispose) to prevent pollution, manage discharges and waste, and respond to any impacts on human health and the environment.

### GOVERNANCE

Our central and operational teams regularly examine ways to reduce the quantity of waste produced and optimize its reuse/recovery and recycling, as part of a continuous improvement approach. They also discuss the best practices in use, monitor regulatory changes and ensure the coherence of programs introduced.

### PERFORMANCE

Our waste is divided into conventional waste and radioactive waste:

#### CONVENTIONAL WASTE

Conventional waste is divided into two categories, set according to the national regulations of the countries in which we work:

- Hazardous waste, such as batteries and packaging for toxic substances, electronic waste, used oil, etc.
- Non-hazardous waste, such as household waste, rubble, scrap metal, tires, etc.



Our teams make sure that waste is collected and disposed of in conditions that do not present any risk of harm to our employees, neighboring populations or the environment. Facilities for the storage and disposal of waste, and hazardous materials more generally, undergo periodic reassessment as part of the review of the HSE risk management plan for our sites. A prior risk assessment is performed for each hazardous waste storage or disposal facility to determine the most suitable and safest management method.

In 2021, to reduce the quantity of non-recycled conventional waste, work groups were set up at each site in operation to find solutions and levers to reduce waste production and develop our recovery practices. This exercise was also an opportunity to agree on definitions common to all sites, which led to a revision of the principles of the production calculations by category of conventional waste (hazardous/non-hazardous) vs radioactive waste. The figures from previous years were corrected using this same basis.

Quantity in tons	2019	2020	2021
Conventional waste	5,096	2,641	3,934
Hazardous waste*	2,720	1,012	1,536
Non-hazardous waste*	2,375	1,628	2,397
Hazardous conventional waste recovered	910	229	436
Non-hazardous conventional waste recovered	1,144	719	1,432

	2019	2020	2021
Share of recovered waste linked to a normal activity	40%	36%	48%

For all the mining activities where Orano Mining is the operator, the tonnage of conventional waste increased by 49% between 2020 and 2021.

Two reasons may explain this increase: the return to activity following the slowdown of the KATCO plant in Kazakhstan, and the temporary shutdown of the McClean Lake mill in Canada. In Canada, the production of waste was multiplied by 7.

This increase is due to cleaning the ponds for domestic wastewater before discharge, in-depth maintenance operations at the McClean Lake mill and the first phase to expand the tailings storage facility (TMF Expansion, Chap 6.3 Tailings, p. 108 ).

The second factor to take into consideration is the start of the dismantling phase at the COMINAK plant in Niger.

The percentage of recovered waste is 48%.

### RADIOACTIVE WASTE

Our mining waste (excluding tailings from ore processing) only contains naturally occurring radionuclides and is classified as very low-level waste (VLLW).

This very low-level waste is either put into specific surface storage, or possibly, after processing and inspection, rendered safe for disposal via normal channels, when it is below the release thresholds defined by national regulations (if applicable).

Directives are sent out by the central teams to each of the operational units likely to produce radioactive waste to remind them of the objectives and specify the resources to be deployed in terms of organization and performance, in order to ensure this type of waste is managed safely. These directives are in particular based on local regulations, supplemented where necessary by IAEA (International Atomic Energy Agency) guides and standards. Sites apply them in the form of operational procedures adapted to their own context.

At our sites in countries where there is no centralized disposal route for radioactive waste, the waste is stored directly at the sites under conditions of safety and security that comply with the regulations in force.

Tons	2019	2020	2021
Total mass of radioactive waste linked to operation, recovered or disposed of via approved routes	1 217	879	647

In 2021, 647 metric tons of radioactive waste were produced by mining entities where Orano was the operator, which represents a 27% reduction compared to 2020. This drop is mainly explained by the fact that KATCO performed maintenance operations on nearly all its plant and mine ponds in 2020, which produced VLLW waste. As a reminder, in 2019, KATCO treated a case of pollution from before the licenses were obtained.



### ORANO MINING COMMITMENTS FOR 2025:

- Contribute to policies to reduce plastic waste in the areas where we are based
- Reduce our production of non-recycled waste (-25% by 2030)

\* Hazardous waste generated by our sites are mainly: used oil, filters of fuel, unnecessary antifreeze agent, superfluous batteries. They are collected in indicated containers and transported for the internal or external recycling. Empty barrels or canisters which contain typically the residue of products as oil, antifreeze agent and grease are returned to the suppliers or dedicated channels for recycling.

\*\* Our most significant non-hazardous waste includes scrap, used tires, internal industrial waste and the organic waste. All our scrap and a part of tires are recycled. When it was possible, our operational sites implemented recycling schemes of materials such as paper, plastic, pallets and glass.

## 2021 ACHIEVEMENTS

In 2021, a cross-disciplinary group involving site and central teams completed a collective study using diagnostics for conventional waste production. It is now working to identify new ways of reducing the quantity of non-recycled waste.

In 2022, the Orano Mining water work group will continue actions to reduce waste and favor recovery.

### RESULTS 2021

To make an inventory of waste policies by country	
Define non-recyclable waste action plan	
Renewing the environmental certification (ISO 14 001) of SOMAÏR in Niger and KATCO in Kazakhstan	

## KAZAKHSTAN

### Food waste valorization

Every day, food scraps and waste from KATCO's base camp restaurant are sorted and transported to a farm near our site where they are used to supplement cattle feed.

Fruits and vegetables (raw or cooked), rice, bread and pasta are added to the pellets and hay given to the animals. Meat products are not reintroduced into the cattle's diet.

This practice, validated by veterinarians, helps to limit food waste.



## DID YOU KNOW



### A key aim of the waste management program is to encourage the three “Rs” - Reduce, Reuse and Recycle - to minimize the quantity of waste thrown away

Before starting the program, a set of operating instructions is drawn up.

This specifies how to collect and dispose of the waste. These documents are updated in line with regulatory changes, the development of waste management routes and any internal operational modifications. Site personnel are trained to follow the recommendations and any updates.

To facilitate waste identification and sorting, the following categories have been established:

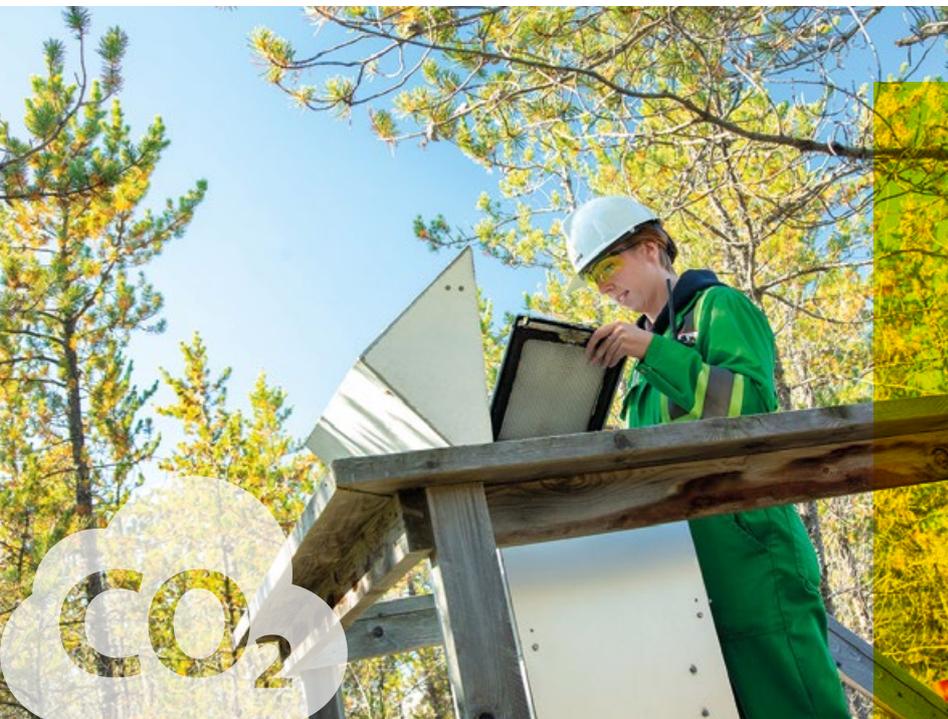
- Domestic waste
- Industrial waste
- Hazardous waste
- Low-level radioactive waste

### WASTE CATEGORIES



For each waste type, the following information is specified:

- Waste description and characterization (chemical, physical, quantity, etc.)
- Waste classification according to local and international regulations
- Waste inspection and monitoring procedures
- Mitigation measures used to prevent the waste having a negative impact on the environment
- Collection, storage, transportation and disposal measures



PRINCIPLE 6.5

Implement measures to improve energy efficiency and contribute to a low carbon future, and report the outcomes based on internationally recognised protocols for measuring CO<sub>2</sub> equivalent (GHG) emissions.

## Climate

### GREENHOUSE GASES (GHGS) AND GASES THAT DEplete THE OZONE LAYER

Convinced of the role nuclear energy can play in the energy transition to low-carbon electricity, Orano has been involved since 2004 in a program to reduce its emissions in order to contribute to the collective effort to reach the objectives of the Paris Agreement and to reach carbon neutrality by 2050.

### CONTRIBUTING TO CARBON NEUTRALITY BY 2050

The European Union has set the objective of carbon neutrality by 2050, and France is contributing by aiming to decarbonize energy production by 2050. As a supplier of decarbonized electricity, Orano is committed to carbon neutrality with an objective to reduce its direct and indirect (scope 1 and 2) GHG emissions by 40% by 2025\*.

The objective of "net zero emissions," scopes 1+2, by 2050 was reaffirmed in October by the collective commitment of the members of ICMM, including Orano Mining.

\* Reference year 2015.

Watch the ICMM Climate Change Statement video: Our commitment to net-zero by 2050 or sooner



### GOVERNANCE

The Orano Board of Directors ensures that the Group's strategy takes into account climate issues. Every year it assesses progress on the objectives to reduce GHG emissions.

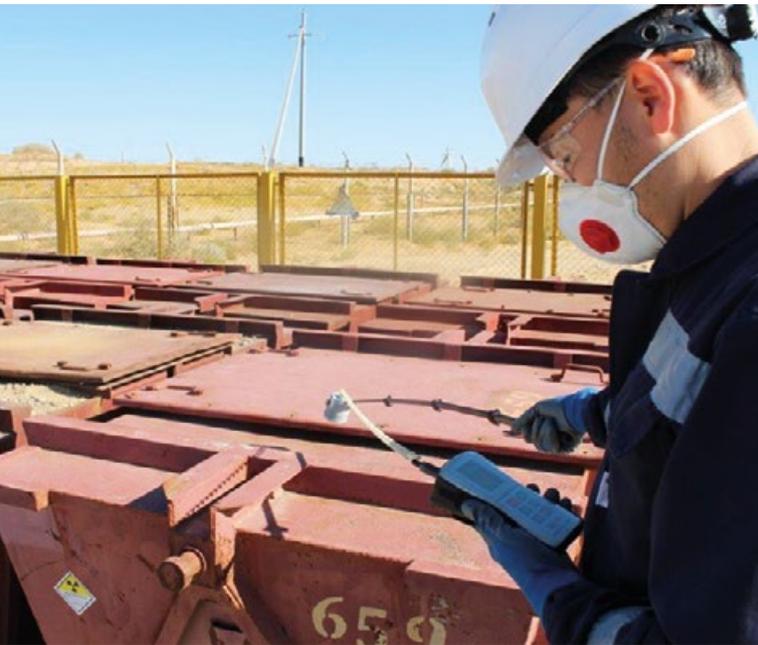
These objectives are applied within Orano Mining and at its sites. In addition, as a member of ICMM, Orano Mining is committed to implementing the requirements set forth in the principles on climate change and in the performance expectations.

This includes having a system of governance; publishing the results on our greenhouse gas emissions (scope 1 & 2\*) every year and having them audited; ensuring for this purpose a robust reference base that is aligned with the recommendations of the TCFD (Task-Force on Climate-Related Financial Disclosures); setting objectives to reduce emissions at the corporate level; and implementing adaption and attenuation solutions at our sites, while taking account of local opportunities and challenges and of the future consequences of climate change.

Orano Mining is taking part in the Innovation for Cleaner and Safer Vehicles (ICSV) initiative, which brings together members of ICMM, mining machinery manufacturers and all interested stakeholders. The GHG subgroup, in particular, is committed to having a zero-emissions mining fleet by 2040

by favoring the emergence of a new generation of innovative equipment that has been tried and tested directly in the field.

We are working on our value chain by measuring our greenhouse gas emissions (scope 3), by mapping strongly emitting points and by working together with our partners to reduce the carbon footprint of our activities. In parallel, in compliance with the ICMM commitment, we will define a reduction target for scope 3 emissions by 2023.



## EXTENSION OF THE GHG CALCULATION SCOPE TO SCOPE 3

In 2021, Orano estimated its indirect greenhouse gas emissions (scope 3): Orano is reporting its scope 3 emissions for the first year since the reference year of 2019. A cross-functional working group has been conducted since 2020 to both characterize scope 3 emissions precisely and identify the action levers needed to reduce them.

This group has concluded a set of actions, listed below and which began at the end of 2021 and will continue in the years to come:

- Make progress in measuring scope 3 emissions, in particular by accurately identifying the emissions factors of our suppliers;
- Conduct a joint initiative with Orano's main suppliers to reduce their activities on behalf of the group;
- Continue eco-design actions: a specific working group has been launched, bringing together all of the group's project players, to build an efficient decarbonization approach.

For more information,  
see ADEME site



## PERFORMANCE MEASUREMENT

Energy-consuming mining activities are generally located on isolated sites in countries where the energy mix is sometimes very reliant on fossil energy sources.

To reduce its GHG emissions, Orano mining prioritizes action on its main sources, which chiefly come from:

- Burning fossil fuels: the quantities of GHGs emitted are calculated from the quantities of fuel consumed and the corresponding CO<sub>2</sub> equivalent emission factors.
- Decarbonization during phases involving the chemical leaching of ore using acid, and reagents (including carbonates) put into contact with acid solutions. The quantities of CO<sub>2</sub> emitted are then calculated based on the carbonate contents of the processed ore and quantities of reagents used.
- Processing methods used (emission of nitrogen oxides, mainly) and the management of waste (methane and CO<sub>2</sub>). The greenhouse gas emissions are deduced from the quantities of waste produced, from the monitoring of emissions for nitrogen oxides, and from their associated GWPs (Global Warming Potential).
- Emissions of halogen compounds (electrical insulating materials), and of coolant, refrigerant and fire-retardant fluids used on industrial sites. The greenhouse gas emissions are deduced from the quantities of the different refrigerating fluids consumed and their associated GWPs (Global Warming Potential).

## PERFORMANCE/RESULTS

To meet our GHG reduction targets, we act on several levers simultaneously, such as the replacement of equipment with better-performing technology that does not use refrigerating fluids containing hydrofluorocarbons, the optimization of fossil fuel consumption, or programs to raise awareness among our employees.

Even if it remains difficult to act on emissions related to ore decarbonization, which are dependent on the geology of the areas mined, innovative studies are being carried out by Orano Mining to limit GHG emissions associated with the ore treatment process. In 2021, the SOMAÏR site changed its process to partially replace carbonates with sodium hydroxide in ore processing at SOMAÏR, which will make it possible to minimize the release of CO<sub>2</sub> due to decarbonization.

A set of actions have been studied during 2021. Some have been discarded due to lack of economic or practical interest, but others are still being studied, such as opportunities for heat recovery from boilers, condensate recovery, adapting the power of pumps on well fields, or projects to supply decarbonized electricity.

During the year, the SOMAÏR site made progress on its project to build a photovoltaic plant to decarbonize its electricity supply. The project has been approved by management, and studies are continuing to plan the construction phase.



Emission factors for electricity production vary depending on the location and activities of each site. As set out in Orano's baseline, they are for the most part taken from the latest update of the ADEME Carbon base, v.20.1.

The factors applied by Orano Mining to calculate GHG emissions are:

Site	Country	EF <sub>elec</sub> (in tCO <sub>2</sub> e/MWh)
KATCO <sup>(2)</sup>	Kazakhstan	0,766
Badrakh Energy <sup>(2)</sup>	Mongolia	1,492
Nurlikum Mining <sup>(2)</sup>	Uzbekistan	0,734
Orano Resources Namibia <sup>(2)</sup>	Namibia	0,197
Orano Mines Niger <sup>(3)</sup>	Niger	0,990
COMINAK <sup>(3)</sup>	Niger	0,990
SOMAİR <sup>(3)</sup>	Niger	0,990
COMUF <sup>(2)</sup>	Gabon	0,383
Orano Resources Canada <sup>(4)</sup>	Canada / Saskatchewan	0,657
Orano Mining HQ <sup>(4)</sup>	France	0,0407

Where:

- (1): ADEME Base Carbone, v18 (fuel, front end and losses being considered as scope 3, i.e. 24,3 gCO<sub>2</sub>eq/kWh for industrial sites in France and 39 gCO<sub>2</sub>eq/kWh for service sites in France)  
 (2): Base Carbone ADEME, v19  
 (3): Sonichar data

The CO<sub>2</sub> equivalent emission factors for pure diesel have also been updated to 2021.

#### CO<sub>2</sub>e emission factor, by fuel

Fuel	Density (t/m <sup>3</sup> )	GJ NCV/t	tCO <sub>2</sub> e/GJ NCV	tCO <sub>2</sub> e/MWh NCV	tCO <sub>2</sub> e/t	tCO <sub>2</sub> e/m <sup>3</sup>
Natural gas H	6.54,10 <sup>-4</sup>	49.6	0.0519	0.187	2.574	0.00168
Natural gas B	6.54,10 <sup>-4</sup>	38.2	0.0519	0.187	1.983	0.0013
Propane/LPG	0.538	46	0.0648	0.233	2.981	1.6
Heavy fuel	0.980	40	0.0786	0.283	3.144	3.08
Domestic fuel	0.845	42	0.0755	0.272	3.171	2.68
Pure diesel	0.845	42	0.0756	0.272	3.175	2.68
Pure gasoline	0.755	44	0.0742	0.267	3.265	2.47
Aviation turbine fuel	0.800	44	0.0719	0.259	3.164	2.53

These emission factors (related to fuel combustion only) are either taken from the ADEME carbon base v20 of september 2021, or from the national inventory report OMINEA 16th edition, May 2019, or calculated by the Orano group.

The calculation of Orano Mining's greenhouse gas footprint has been updated with these corrected factors, as well as with the extension of the reporting scope to the Erongo desalination plant.

Emissions (tCO <sub>2</sub> e)	2019	2020	2021	2021 change vs 2020
<b>Direct GHG emissions - scope 1</b>	<b>153,500</b>	<b>146,366</b>	<b>125,339</b>	<b>-14%</b>
CO <sub>2</sub> emissions from processes	37,265	45,834	33,517	-27%
Direct GHG emissions linked to fossil energies - scope 1	102,380	90,463	82,407	-9%
<b>Indirect GHG emissions - scope 2</b>	<b>204,490</b>	<b>200,463</b>	<b>176,091</b>	<b>-12%</b>
Emissions of ozone-depleting gases	42	30	18	-40%

In 2021, a significant decrease in overall greenhouse gas (GHG) emissions was observed at Orano Mining sites. The main reason for this reduction is the shutdown of the COMINAK site, which operated for only one quarter and accounted for almost a quarter of Orano Mining's Scope 1+2 GHG emissions. It should be noted that the improved availability of the power supply by Sonichar resulted in an increase in Scope 2 for SOMAİR. On the other sites, the levels of GHG emissions remained relatively unchanged, except at

Nurlikum Mining (Uzbekistan), which completed its first full year of exploration activity and whose emissions increased compared to 2020.

In order to continue to reduce its GHG footprint, the dedicated working group is continuing its collaborative work to identify new avenues for decarbonization, targeting innovative solutions, coupled with a reduction in energy consumption and optimization of environmental performance.

Global Orano Mining activities generated total GHG emissions (scope 1 + scope 2) of 301 489 t of CO<sub>2</sub> equivalent, down by 13% compared to 2020 and by 16% compared to 2019.

Emissions (tCO <sub>2</sub> e)	2019	2020	2021	2021 change vs 2020
Direct and indirect GHG emissions (scope 1 + 2) in tCO <sub>2</sub> e	357,990	346,829	301,489	-13.1%

These figures show that the emission intensity ratio for direct and indirect GHGs is 30,56 t of CO<sub>2</sub> equivalent per metric ton of uranium produced which is a decrease in comparison to 2019 (because uranium production has not yet returned to its pre-crisis level).

The closure of COMINAK has led to a reduction in electricity consumption, hydrocarbons and process emissions, resulting in a decrease in direct and indirect GHG emissions. The associated decrease in uranium production was offset by the gradual resumption of activities at sites that produced less in 2020 due to the health crisis. With the resumption of normal production at the sites in operation, the decrease in the ratio of GHG emissions per ton of uranium produced should be more visible in 2022.

Ratio (tCO <sub>2</sub> e/tU)	2019	2020	2021	2021 change vs 2020
GES scope 1	11.65	15.08	12.71	-15.7%
GES scope 2	14.87	20.66	17.85	-13.5%
GES scope 1 + 2	26.59	35.74	30.56	-14.5%

-  **ORANO MINING COMMITMENTS FOR 2025:**
- Reduce the emissions of CO<sub>2</sub> equivalent from activities as operator in scope 1 and 2 (-40%)\*
  - Work to decarbonate our electricity supply where relevant to increase the share of low-carbon energy at our operating sites (SOMAÏR: 5MWp of solar installed)



## ANTICIPATING AND ADAPTING TO CHANGES RELATED TO CLIMATE CHANGE

At the end of 2021, Orano launched a study on the vulnerability of its activities to the consequences of climate change, as recommended by the Task Force on Climate-Change Financial Disclosures (TCFD).

Orano Mining's operating mine sites have been assessed by a firm specialized in the subject. Specific issues for each climate zone were identified using IPCC models (RCP 8.5 scenario), with a target date of 2050.

The main physical risks identified on the mining sites are the risk of a sharp increase in extreme heat peaks, as well as the risk of an increase in the intensity of extreme precipitation events, especially in the Mediterranean region and in West Africa. The consequences for operations would be risks of reduced production or temporary stoppages, which could be coupled with logistical difficulties in the supply of raw materials and equipment or for the export of mining concentrate.

On the mining sites, the analysis of these physical risks shows that the vulnerability of Orano Mining's activities is moderate, but that the weaknesses identified require the definition and development of an adaptation plan.

These lessons learned will be used in 2022 to adapt the sites' short and long-term risk and opportunity management plans and to communicate with our stakeholders.

\* Reference year 2015.



## Energy

To ensure the continuity and safety of our activities, it is essential for Orano Mining sites to secure their energy supply while continuing to optimize their consumption and reduce their carbon footprint.

Whether it originates from fossil fuels or renewable sources, the energy consumed by the Orano Mining sites is monitored on a constant basis.

### POLICY

Since 2015, Orano Mining has been operating an energy efficiency program with the objective...of reducing consumption. Diagnostics were performed on our sites in France and internationally, and performance indicators were set up to identify the units with the highest consumption. Action plans are then implemented and low-consumption operating procedures incorporated into our site strategies.

Orano Mining participates in a dedicated working group led by the Orano group, in which the energy referents from each BU share the results of diagnostics, best practices and operating experience feedback, and draw inspiration from industrial examples that are tried and tested, or which show promise for application at our sites.

All the identified areas for action are also studied from the perspective of environmental performance in general, and from the specific perspective of equivalent CO<sub>2</sub> emissions.

### PERFORMANCE

An energy efficiency project was launched at Orano Mining at the end of 2015, with the objective of reducing consumption on our mining sites. To achieve this, energy efficiency assessments were carried out in 2015 at the Bessines site (France) and the KATCO site (Kazakhstan), and in 2016 and 2017 at the McClean Lake site (Canada), and SOMAÏR and COMINAK sites (Niger).

Continuing on this path, a review was performed in 2020 to assess the maturity of energy performance at production sites, taking into consideration the extent to which the following were integrated:

- Energy performance measurement
- An initiative to identify energy losses
- Optimization of energy performance
- Management of energy performance

The results of these assessments were not only shared among the sites concerned, but also at Orano group level, so that best practices could be pooled and areas for improvement identified for each site.

The maturity summary was used as a basis to launch a review of the leads identified during diagnostics, return to certain progress actions that had become more relevant, and reflect on new actions. Thanks to these new leads, the Orano Mining sites are able to continuously improve their energy performance, with the aim of making significant energy savings.

The main levers for action lie in:

- investing in new equipment that consumes less energy and is more efficient,
- reconfiguring certain networks to favor energy recovery,
- changing the operating mode of the workstations that consume the most energy,
- raising awareness among operators.

New actions across the Group, focused on the energy performance of equipment and consumption management, are planned for 2022 and 2023 at production sites. They should supplement Orano's efforts to reach its energy consumption reduction objectives (10% reduction by 2025 compared to 2019) (See Orano Annual Report, chapter 1.4, p. 10 ).

The consumed energy amounts to 576,936 MWh for 2021, lower than in 2020 (-8%) and 2019 (-15%), which brings down the ratio of consumed energy intensity per metric ton of uranium produced by Orano Mining to 58.5 MWh/tU (vs. 64.7 MWh/tU in 2020).



Energy (MWh)	2019	2020	2021	2021 change vs 2020
Energy consumed	681,811	627,358	576,936	-8%
Fossil energy consumed	394,974	345,870	315,976	-8.6%
Electricity consumed	286,548	281,546	260,961	-7.3%
Electricity from non-renewable sources consumed	286,542	281,541	260,955	-7.3%
Electricity from renewable sources* consumed	6	5	6	+20%
Ratio of energy consumed/tU	52	64,7	58,5	-9.6%

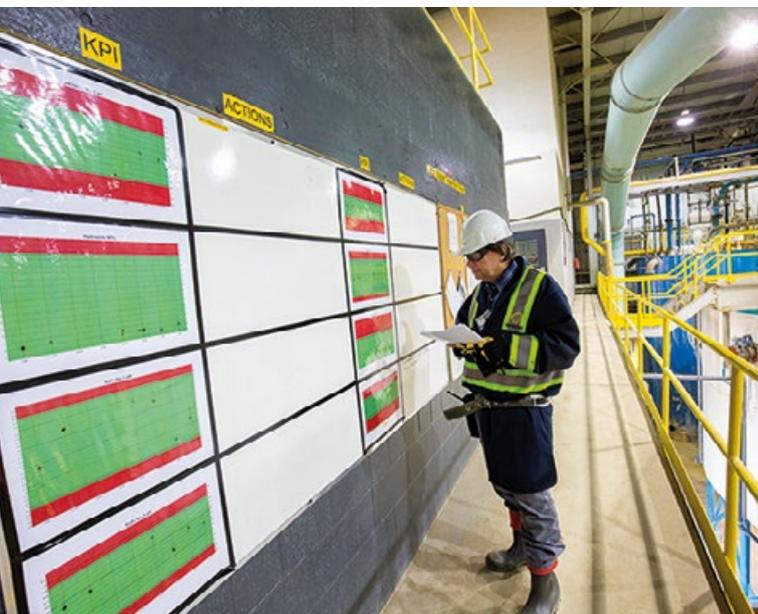
\* The Erongo desalination plant (Namibia) is included in the reporting scope dor 2019-2020-2021.

The main explanation for this decrease in energy consumption is the end of operation and closure of the COMINAK site at the end of the first quarter of 2021. In 2019, this site represented nearly 20% of Orano Mining’s energy consumption. This significant decrease in consumption was compensated by the return to production after Covid 19 at the sites in operation.

In terms of efficiency, the lowered ratio of energy consumption to metric ton of uranium compared to 2020 is explained by the return to activity after Covid-19, notably for the KATCO and McClean Lake sites. The effects of slowed production are nonetheless still present in the 2021 ratio, higher than in 2019.

The variations in consumption by energy type break down as follows:

- Fossil fuel consumption: -8.6% (diesel, gasoline, propane)
- Electrical energy consumption: - 7.3%



## Environmental Monitoring

**Environmental monitoring takes place at each mining site and the surrounding area. Thanks to this approach, Orano Mining ensures that the impact of its mining activities is controlled, and that there are no associated risks for local populations and the surrounding ecosystems.**

Orano Mining maintains or implements an environmental management system at its sites in line with the standard ISO 14001 or equivalent.

The basic principles of monitoring are recommended in the impact studies. On the strength of several years of sharing their experience, an annual environmental monitoring program is drawn up by the teams of each site. These programs are validated by the supervisory authorities.

Inspections or audits carried out by a third party, required by the authorities or initiated on a voluntary basis, are conducted periodically to ensure the transparency of our results.

In addition, in order to keep our local stakeholders informed and involve them more closely, we also conduct participatory monitoring, particularly in Mongolia and in Canada.

Multiple physical, chemical and radiological parameters are checked, in the air, the water, the soil, the vegetation and the food chain, with the objective of ensuring that impacts of the activity on the environment are properly managed and being ready to respond to even the slightest alert.

In 2021, Orano Mining and its subsidiaries worldwide did not identify any cases of non-compliance with environmental legislation and/or regulations in force that resulted in a financial penalty in the countries where it works.

## AIR MONITORING

Air monitoring chiefly consists in measuring exposure to ambient radioactivity, but gas discharges from ore processing operations are also monitored. Measurements are taken, depending on the site, of concentrations of gas in the air, in the environment or at the outlet of chimney stacks (e.g.: SO<sub>x</sub>). Radioactivity measurements are taken continuously, both at the site and in the nearby area, using specific dosimeters.

Measurements of dust and fine particles (PM) may also be taken in particular during construction or remediation phases or where heavy traffic is planned to happen near residential areas or work sites.



## WATER MONITORING

Campaigns to monitor the quality and quantity of aquifers and surface water, and sampling of surface water is carried out using a piezometric monitoring system installed upstream and downstream of our activities.

Hydrogeological and hydrochemical studies are performed at all sites, well before mining operations begin. These studies allow a better understanding of the groundwater and surface water, and their quality, so that we can adapt our projects accordingly. At all sites where it is necessary, discharged water is first sent through a treatment station in order to comply with the environmental and health standards in force.

## MONITORING OF THE FOOD CHAIN

Sampling and analyses are regularly carried out in the food chain and on plants, including aquatic flora and fauna, and fruit and vegetables produced in gardens.



## SOIL MONITORING

Soil monitoring allows any contaminated zones to be identified. If such zones are pinpointed, soil decontamination measures are applied to restore the zone to levels which comply with regulations or the original values.

## MONITORING OF FLORA AND FAUNA

Mining activities are likely to modify and disturb natural habitats. Biodiversity inventories or studies of biological indices are performed regularly at our different sites to monitor the potential impact of Orano Mining activities on local flora and fauna.

For more information, see biodiversity chapter



RESULTS 2021	
Reduce CO <sub>2</sub> emissions by 10% compared to 2019	
Implement different options at our operating sites to increase the share of low-carbon energy	
Develop the photovoltaic power plant project in SOMAÏR	

# PRESERVING BIODIVERSITY



**MINING PRINCIPLE**

**Contributing to the conservation of biodiversity.**





PRINCIPLE 7.1

**Avoid prospecting or developing new mines on sites classified as World Heritage Sites, respect areas recognized as “protected areas” by legislation, design and operate all new developments or modify existing mines so that they are compatible with the value attached to these areas.**

By their nature, our mining activities can be located in sensitive natural environments and may disturb ecosystems.

Aware of this issue, Orano Mining takes biodiversity and ecosystems into account from the exploration stage in order to minimize its impact.

This proactive approach to management is essential to maintain the acceptability of our activities in the countries where we work.

**POLICY**

As regards biodiversity, Orano pays great attention to ensuring its preservation and includes it as a crucial issue for the compatibility of its activities with their environment.

More information on Orano annual report



Orano Mining undertakes to:

- avoid prospecting or developing new mines in areas classified as World Heritage Sites by UNESCO;
- respect areas recognized as “protected areas” by legislation, design and operate all new developments or modify existing mines so that they are compatible and do not adversely affect the value attached to these areas;
- identify, assess and mitigate risks and impacts on biodiversity and ecosystem services by applying the mitigation hierarchy with the aim of moving towards zero net loss of biodiversity.

Orano Mining’s approach is fully in line with the recommendations of the IFC (International Finance Corporation) Performance Standard 6 on “Biodiversity Conservation and



Sustainable Management of Living Natural Resources”. At the heart of this approach, the protection of biodiversity, the maintenance of ecosystem services and the sustainable management of living natural resources remain among the priorities for ensuring the sustainable development of all Orano Mining activities.

In 2021, Orano Mining published its biodiversity strategy founded on 4 pillars:

- Respecting protected areas
- Knowledge and understanding of the initial state
- Applying the mitigation hierarchy to protect biodiversity in all mining phases
- Promoting biodiversity: enhancing the value of our actions - raising awareness and sharing actions and knowledge

To honor the commitments linked to the foundations of this strategy, Orano Mining is deploying the following action plan:

- Starting in 2021, every new remediation plan includes a biodiversity component.

### OUR COMMITMENTS :



- **Each operating site will have an inventory of flora and fauna dated within 10 years by 2025.**
- **A suitable assessment of actions in favor of biodiversity will be set up at each site by 2030 at the latest.**

Orano Mining strives to identify the total number of threatened species on the global Red List of the IUCN (International Union for the Conservation of Nature) and its national equivalent whose habitats are situated in areas affected by its activities, classified by level of risk of extinction:

- Critically Endangered
- Endangered
- Vulnerable
- Near Threatened
- Least Concern

The identification aims at assessing the potential impact of our activities on certain plant and animal species or on classified sites, and take the necessary measures to avoid harming them and prevent their degradation.

In the context of new projects, areas identified as a key area for biodiversity are excluded from license applications as a matter of principle.

UNESCO-classified World Heritage Sites near our mining operations are also identified within 500 km radius from our mining operations. We have identified 60 UNESCO-classified World Heritage Sites in total: 43 are located in France and 17 are abroad.

More information, see the sheet and visit the UNESCO website

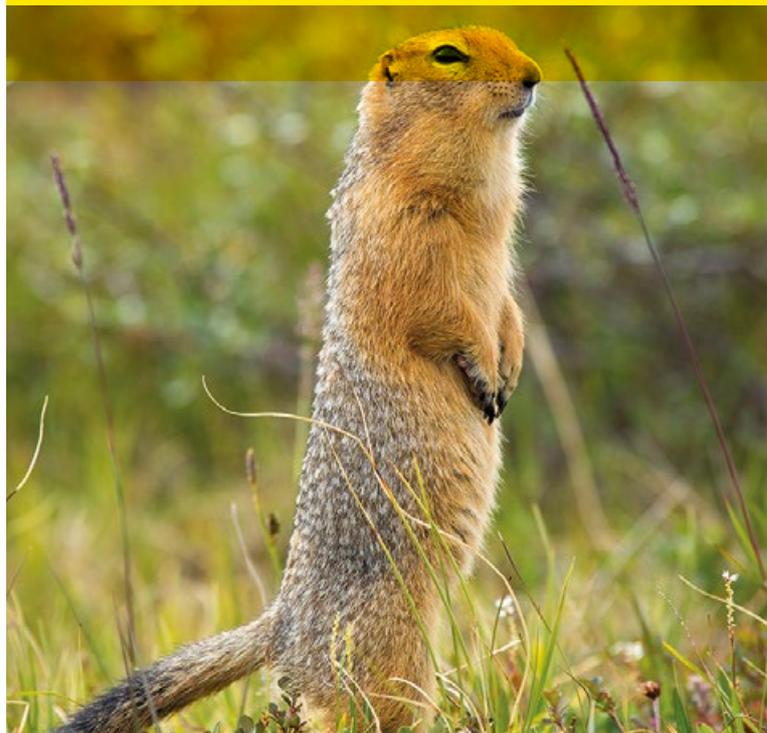


For more information, read the IUCN report



## PRINCIPLE 7.2

**Assess and resolve the risks and impacts on biodiversity and ecosystem services by applying the mitigation hierarchy, with the aim of moving towards zero net loss of biodiversity.**



Our central and operational teams work together to “avoid - minimize - remediate/restore - offset” and preserve ecosystems.

They share best practices used by mining companies that are members of the ICMM, while specific actions are carried out at each site in accordance with regulatory requirements.

This approach is integrated beginning with the impact study which is performed by multidisciplinary teams of experts who assess the impacts and propose mitigation actions.

Steps have also been taken to raise awareness among employees regarding biodiversity and the associated issues. In Kazakhstan, for example, employees launched a photo competition, which allowed them to show the diversity and wealth of the flora and fauna near the site. The snaps were displayed and shared on social media networks, and the winners received prizes.



## TAKING ACTION TO PROTECT BIODIVERSITY

Certain mining sites are located close to zones which are rich in biodiversity. In 2021, we continue to conduct dedicated studies and the implementation of actions to preserve sensitive zones alongside third parties, such as local communities, consultancy firms, university specialists or nature conservation bodies.

### AS AN EXAMPLE:

At our Mining Closure France sites, many inventories of flora and fauna have been drawn up or updated, as well as Global Biological Index (IBG) estimates. Former mining sites now provide special habitats for certain rare animal species, while in others rare plant species have been replanted. These



IUCN categories for the Red list



Extirpated species	Species threatened with extinction	Other categories
<b>EX:</b> Extinct worldwide	<b>CR:</b> Critically endangered	<b>NT:</b> Near threatened (species close to threshold of threatened species or which could be threatened if specific conservation measures are not taken)
<b>EW:</b> Extinct in the wild	<b>EN:</b> Endangered	<b>LC:</b> Least concern (species for which the risk of extinction is low)
<b>RE:</b> Regionally extirpated	<b>VU:</b> Vulnerable	<b>DD:</b> Data deficient (species for which evaluation could not be carried out due to insufficient data)



sites undergo ecological monitoring by independent bodies and associations, with an annual inventory taken of flora and fauna.

In France, at a former uranium mining site in the Cantal region, the preparatory steps to bring a former gallery into a safe configuration revealed the presence of bat (Chiroptera) hibernation roosts. The decision was thus made to make the access point safe by installing a reinforced grid, while allowing the bats to pass through so that this gallery could be preserved as a roost.

In Canada, the caribou census study project running since 2014, in collaboration with the University of Saskatchewan, has been completed and the results used to inform the Federal Caribou Habitat Recovery Strategy. Our Canadian teams have also started a long-term study of benthic sediments and invertebrates present in the McClean Lake site, and the sediments present in Fox Lake and Pat Lake, to check whether industrial activities have had an impact on the invertebrates and their habitat.

At our Central Asian sites that are known for their forests of saxauls, the iconic shrubs of the region, work has begun on a doctoral thesis on ecosystem compensation in collaboration with CIRAD, the French Agricultural Research Centre for International Development.

In Mongolia, we are continuing our project to replant saxauls, in collaboration with a consultant who is an expert in the field and the National University of Mongolia. As part of this project, a nursery has been built in the area covered by our Zuuvch Ovoo license, and the first plantings took place in 2021 over a surface area of 5 hectares.

Lastly, in order to assess the impact of mining activities on biodiversity, our subsidiary KATCO conducted a new flora and fauna inventory. The results are compared to those from 2010. Regarding the remediation projects, our teams have also launched campaigns to plant saxaul saplings and seeds in the test areas and follow their growth on a regular basis.

## DID YOU KNOW



### Orano has been involved in preserving biodiversity for several decades

**From delayed mowing to fauna and flora studies, not to mention forest management, Orano has made biodiversity central to its actions.**

Preserving biodiversity has been written into the French Environmental Code for many years. This shows the subject's importance throughout the industrial world.

Since 2010, Mining Closure France (organization around post-mining activities in France) has conducted 7 inventories of the fauna and flora at its sites in France, in addition to regulatory inventories as part of projects to install photovoltaic farms. These studies have made it possible to set up a schedule of operations that respects the relevant animal and plant species.

For example, mowing at our sites takes into account the nesting periods of ground nesting birds whose population in France has been decreasing over time due to the use and maintenance of prairie grasslands. As a result, the woodlark, a species whose population is decreasing each year in Europe, has moved to and reproduces at several of our former mining sites, including the Bellezane site in Haute-Vienne.

As part of a remediation project, Mining Closure France, in collaboration with the Conservatoire d'Espaces Naturels du Limousin (nature conservatory in central France), successfully heeled in and replanted a plant that grows in humid areas, *Sibthorpia europaea*. This small plant with yellow flowers is included on the red list of vascular flora in Limousin. This successful replanting is excellent news for conserving this protected species.

Moreover, Mining Closure France currently manages 1,300 hectares of forest under simple management plans (SMPs), focused on sustainable management, with local species, ensuring that balanced biodiversity will be maintained.

Consult the factsheet  
on forest management



*Sibthorpia of Limousin*



# EXAMPLES

## CANADA

### In Canada, in the Athabasca Basin region

**There are no areas of high value in terms of biodiversity close to the license areas of Orano Canada Inc.**

The nearest site, the Wood Buffalo National Park, is located more than 400 km away from our operating area. This site was classified as a UNESCO World Heritage Site in 1983, and is highly representative of the ecosystem of the prairies of the Northern Great Plains.

At the end of 2021 and the beginning of 2022, our Canadian teams summarized a set of fauna and flora inventories of the region;

this project specifically looked at vertebrate species. The results show that the McClean Lake region is part of the habitat for three animal species considered to be in danger of extinction:

- Among the mammals, the little brown bat (*Myotis lucifugus*) classified as Endangered and the reindeer (*Rangifer tarandus*) classified as Vulnerable.

- Among the birds, the rusty blackbird (*Euphagus caralinus*) classified as Vulnerable.

The table below indicates the current number of species observed in the McClean Lake area and the species potentially present in the region, as listed in the classification of the IUCN red list.



	Endangered species			Other categories	
	CR	EN	VU	NT	LC
Reptiles and amphibians (herpetofauna)					2
Birds (avifauna)			1	2	96
Mammals		1	1		21
Plants			1		7

## NAMIBIA

### The Trekkopje project

**The Trekkopje project is located near the Dorob National Park in the central Namib Desert and close to the Namib-Naukluft National Park.**

This park, which encompasses the Namib sand sea, is listed as a UNESCO World Heritage Site. The Namib is thought to be the oldest desert in the world.

It contains many species that have adapted to the harsh and extremely arid environment over several million years.

The Namib central desert may seem empty, but its climate, its soils and its diverse landscapes are home to a great variety of animal species. This area is considered a "hotspot" of biodiversity for reptiles and invertebrates, especially for geckos, sand lizards, beetles, scorpions and camel spiders.

However, no species of fauna or flora surveyed in the region is on the IUCN Red List for risk of extinction.





## MONGOLIA

### Protection of saxauls and inventories of animal species in proximity to our project

**On the boundaries of the Zuuvch Ovoo license areas is the forest of Khar Zag, which is protected locally, and consists of 2512 hectares of saxauls (species which are iconic symbols of Central Asia). Other protected natural areas are located more than 100 km from the pilot zone.**

Overlapping with the perimeter of our license areas, the Bayanshiree is a site known for its richness in dinosaur fossils from the Cretaceous period. In December 2014, the Mongolian government proposed that this site be inscribed on the UNESCO's Tentative List of World Heritage Sites. Orano then handed back the parts of the license areas concerned.

Inventories of animals present on our Zuuvch Ovoo and Umnut sites have been carried out as part of baseline studies.

So, if we take the class Aves (IUCN status), 11 species classified as Least Concern and 1 species classified as Near Threatened were observed.

Inventories of other animal species have been drawn up based on the

Mongolian Red List. These notably include *Gazella subgutturosa* (Vulnerable species), *Equus hemionus* (Endangered), 7 species classified as Least Concern and 4 classified as Near Threatened. It should be noted that *Gazella subgutturosa* is also classified as a Vulnerable species by the IUCN, but *Equus hemionus* is recognized as a Near Threatened species.

However, there are no specific areas of high value in terms of biodiversity close to Badrakh Energy's license areas.

In Mongolia, we are continuing our project to replant saxauls in collaboration with a consultant who is an expert in this area, with the National University of Mongolia. In this same vein, a tree nursery was set up in our Zuuvch Ovoo license

areas in 2019. In the fall of 2021, more than 2,100 saxauls and elm saplings from this nursery were transplanted over a surface area of 1.5 hectares. Since the beginning of the ecological compensation project, Badrakh Energy has planted 5,000 trees.



## In Mongolia, implementation of an approach to offset by plantation

In order to deal with the erosion of biodiversity related to mining projects, the “mitigation hierarchy”, also known as the “avoid – minimize – remediate/restore – offset” sequence, is implemented from the very first phases of the project, notably in accordance with the recommendations of the environmental impact studies. Our objective is to work towards no net loss of biodiversity.

With the framework of an approach to offset by plantation, we are working on the optimization of the principles of plantation (methodology, choice of species, etc.) by taking into account not only the landscapes and the surrounding ecosystems but also the usages and customs of the local population.

A first study has been conducted in Dornogobi province, a region of woodland and pasture, where the license areas of Badrakh Energy are located.

The inventory of ecosystems coupled with an ethnobotanic study has made it possible to highlight the need for different varieties of plants essential not only to feed the population and livestock but also for domestic or medicinal usages. The finalization of this first step has enabled us to broaden our understanding of the offset principles.

In 2020, we launched a doctoral thesis for closer examination of this subject in cooperation with CIRAD, the French Agricultural Research Centre for International Development, with the aim of generalizing this ecosystem services approach across the areas concerned.

For public health reasons linked to the pandemic, field campaigns started in 2021. Interview sessions involving local stakeholders were conducted to assess both the needs for ecosystemic services and the perceptions of an ecological compensation project. The results and recommendations of this study will be shared at the end of the project.

## FRANCE

### Protecting biodiversity: a priority for our remediation sites in France

176 sites out of 247 are located in or near ecological interest areas



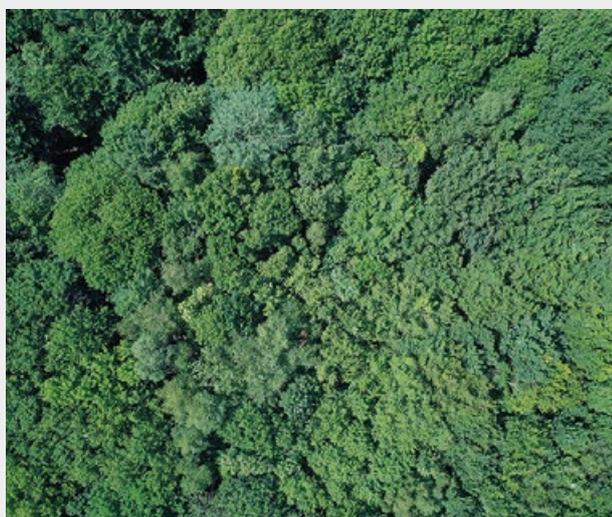
- 1 in a national natural park
- 1 in a regional natural park
- 40 in ZNIEFF1
- 112 in ZNIEFF2
- 10 in community interest areas
- 12 in former mine site special protection areas
- Former mining site
- ICPE
- ICPE ISO 14001 and 45001

#### Definitions

- **National parks:** Recognized internationally as exceptional areas, they offer a combination of remarkable terrestrial and maritime spaces and a mode of governance and management aimed at preserving their natural wealth. National parks are overseen by the French office of biodiversity to strengthen collective action to preserve biodiversity.



- **Regional parks:** Inhabited rural areas that are recognized nationally for their high heritage and landscape value. They are organized around concerted sustainable development projects based on protecting and enhancing the value of their heritage
- **ZNIEFF type I:** Ecologically homogeneous spaces defined by the presence of species, species associations, rare or remarkable habits, or habitats characteristic of the regional natural heritage. These are the most remarkable areas of the national territory; ZNIEFF type II: spaces that include functional and landscape natural clusters, having high cohesion and greater natural wealth than the surrounding environments.
- **Community important areas, special conservation areas or community important sites** aimed at conserving the types of habitats and the animal and plant species included in appendices I and II of the "Habitats" directive.
- **Special protection areas** aimed at conserving wild bird species included in appendix I of the "Bird" directive or that serve as areas for reproduction,



molting, or wintering or are relay areas for migratory birds.

In 2021, to facilitate access to information, our teams began the transfer of fauna and flora inventories prepared in recent years to a data management base. For example, in the table below, endangered species are transcribed in consideration of the most critical classification (regional or national in France).

Site	Dpt	Endangered species		
		CR	EN	VU
Le Bernardan	Haute-Vienne (87)			1
Bellezane	Haute-Vienne (87)		3	10
L'Écarpière	Loire Atlantique (44)	3	2	9
Fanay	Haute Vienne (87)	3	6	12
Hyvernesse	Creuse (23)		1	3
La Porte	Corrèze (19)		1	2
La Ribière	Creuse (23)		3	4
Site Industriel de Bessines	Haute Vienne (87)		5	5
Valiettes	Cantal (15)		1	3

Among the species considered to be Critically Endangered (CR) at the local scale, we inventoried the following:

- **Animal kingdom:**
  - Viviparous lizard (*Zootoca vivipara*) classified as LC at the international level
  - Whinchat (*Saxicola rubetra*) classified as LC at the international level
  - Common snipe (*Gallinago gallinago*) classified as LC at the international level
  - Common bent-wing bat (*Miniopterus schreibersii*) classified as VU at the international level
- **Plant kingdom:**
  - Loosestrife (*Lythrum borysthenicum*) classified as LC at the international level
  - Floating water-plantain (*Luronium natans*) classified as LC at the international level

**Acronyms:**

LC : Least concern  
 VU : Vulnerable  
 EN : Endangered  
 CR : Critically endangered

# RESPONSIBLE PRODUCTION

## MINING PRINCIPLE

**Facilitate and support the knowledge base and systems for the responsible design, use, re-use, recycling and disposal of products containing metals and minerals.**



- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

## PRINCIPLE 8.1

**In project design, operation and de-commissioning, implement cost-effective measures for the recovery, re-use or recycling of energy, natural resources and materials.**



**Orano Mining is in line with the group's policy to take better account of environmental issues in the company's activities.**

Our business unit is actively participating in the cross-functional working group set up by Orano, which is working on updating the eco-design guidelines, which will be initiated in 2021 and finalized in 2022 (For more information, see Orano annual report, chapter 4.1, p. 86 ).

Extracting uranium ore and producing uranium concentrate are activities that consume raw materials and energy, as do the infrastructure construction, dismantling and remediation phases. It is therefore important, from both an economic and environmental point of view, to limit the consumption of natural resources.

Orano Mining is working to reduce its consumption of water and electrical power, as well as of hydrocarbons, by taking action to improve performance, raise awareness and use new processes where possible. Examples of these actions

are available in Sections 6.2 (Water) and 6.5 (Energy) (See p. 98 , and p. 113 ).

During project planning, prior impact studies assess the natural resource consumption necessary. This phase of the study then allows Orano Mining teams to optimize the project in order to minimize the consumption of resources and energy (For more information, chapter 4.1, p.57 ).

On construction sites, certain national regulations (as in France) call for specific recovery rates of inert construction waste. The production of this waste is anticipated from the planning phase in order to reduce its levels. During construction, waste undergoes appropriate collection and sorting at the source, with incentives to encourage recovery and recycling, locally if possible. The compliance of disposal routes and waste traceability are guaranteed, to ensure that the applicable regulations are met, as well as the objectives set as part of this work.

Ore extraction and processing also consume mineral and metal resources at various points.

During the extraction and processing of ore, sites are likely to use nitrates (explosives for extraction, oxidants for processing), sulfur or sulfuric acid, lime, sodium hydroxide, carbonates, and iron and manganese oxides.

The procurement of these reagents represents a significant operational cost, and the environmental footprint varies depending on their geographical origin, the type of product and the quantities used.

The Orano Mining sites constantly strive to optimize their procurement and rationalize their consumption, while ensuring that their processes remain effective.

Where possible, these reagents are regenerated during processing. This is the case, for example, with nitric acid in the impregnators at the COMINAK and SOMAÏR sites.

At the SOMAÏR site in 2021, some of the carbonates were replaced by sodium hydroxide, enabling to limit the CO<sub>2</sub> emissions associated with ore processing.

At drilling sites, Orano Mining is working to introduce the recycling of drilling mud, which will help limit the consumption of both water and clays. In addition, this process reduces the safety risks and environmental footprint.

Where possible, metal waste (such as drums or batteries) is reused on site, or recycled internally or externally. Although this does not concern Very Low-Level Waste (VLLW), a radiological inspection is carried out before the external recovery of metal waste.

At the SOMAÏR open-pit mines, products from stripping operations (during mining) may be used either as mining backfill, or as construction or reinforcement materials for infrastructure (the base of dikes or superstructures, rock pile remodeling, infill, etc.) during remediation.



Lastly, the dismantling sites themselves also undergo prior studies so that as much inert mineral waste can be recovered as possible, in accordance with the applicable regulations and health, environmental and radiation protection standards (For more information about radiation protection (See *Mining Principle 5*, p. 74 ).

These practices are dictated by regulatory requirements (construction waste), production cost considerations (mineral inputs), safety issues (avoiding substances that are carcinogenic, mutagenic or toxic for reproduction - CMR substances, ensuring that storage and handling activities are safe for operators, etc.) and environmental considerations, and implemented with a view to contributing to the local economy.

Orano Mining has set itself the target of reducing its non-recycled waste by 10% by 2025 in comparison to 2019, which will notably be achieved by reducing the production of waste at the source, and prioritizing the use of recyclable or reusable materials. This objective is fully in line with the Group's commitments and *raison d'être* to preserve resources (For more information, see *Orano annual report*, chapter 3.4.2.3.6 *Preserving biodiversity*, p. 80).

Besides, the Orano Group is joining forces with recognized partners in the field – Paprec, MTB Manufacturing, Saft and CEA – to test an innovative process for recycling the metals contained in electric vehicle batteries.

A process, that separately purifies and recovers the metals contained in the batteries of electric vehicles (lithium, cobalt, nickel, etc.) so that they can be recycled and made into new battery components, has been developed.

Two industrial pilots will be built in the new facilities of the CIME (Center for Innovation in Extractive Metallurgy) on the Orano site in Bessines-sur-Gartempe in the Limousin region in order to conduct technical trials and tests on the process.

Recycling of batteries is an important way of protecting the environment as it limits the impact on natural resources. It also boosts French and European autonomy in the procurement of strategic materials. By 2030, the number of electric vehicles on the road worldwide is expected to increase from the current 10 million to 100 million.

## RESULTS 2021

100% of projects worth + €5M eco-designed



## PRINCIPLE 8.2

**Assess the hazards of the products of mining according to UN Globally Harmonised System of Hazard Classification and Labelling or equivalent relevant regulatory systems and communicate through safety data sheets and labelling as appropriate.**

In line with our group procedures, our operating sites comply with international and national requirements regarding the classification and labeling of the chemical products used and/or produced. All hazardous substances are regularly inventoried, labeled appropriately and stored correctly. Safety data sheets are systematically available and regularly checked. The regular review and management of these products and the integration of risk assessments into site HSE management plans is governed by the site integrated management systems, ISO 45001/OHSAS 18001, ISO 14001 (operations and post-mining) or equivalent (planned sites).

Risk assessments are done during the design phase of the Orano Projects to minimize the risk of accidents involving hazardous substances through a safe design.

Such assessments are updated on regular basis and/or when there are significant changes and depend on the scale of the project. For big projects e.g., new pilot site or major engineering improvements to a facility, the risk assessments are done by external experts with the involvement of the internal subject matter experts in accordance to the Orano and/or each site's risk assessment procedures.

For smaller work scopes, such assessments are done internally. Each site has their own risk assessment procedure. There are also Orano Group guidelines for conduct risk assessment for large projects.

# EMPLOYMENT PERFORMANCE



## MINING PRINCIPLE

Seek continual improvement of our employment performance and contribute to the social, economic and institutional development of host countries and communities.



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PRINCIPLE 9.1

Implement inclusive approaches with local communities to identify their development priorities and support activities that contribute to their lasting social and economic wellbeing, in partnership with government, civil society and development agencies, as appropriate.

Orano Mining is fulfilling its commitment to integration by working to improve the attractiveness and aid the economic development of the countries in which it operates.

To do this, Orano deploys mapping. Mapping aims to identify the expectations and power of each group of stakeholders at national and local level, and to determine how they perceive Orano, the project, etc. It makes it possible to establish strategic priorities on environmental, labor relations, social, economic and governance-related questions, and define an action plan associated with the results.

This consists first of a preparatory phase, with the validation of the method with internal stakeholders, the creation of information gathering tools (interview guide), the delimitation of the area and of stakeholders: state and local structures, NGOs/Associations, Suppliers, and the Media. This is then followed by what is known as the information gathering phase, including the conducting of interviews and documentary research. The third step is that of data processing and analysis, with the transcription of interviews, the exploitation of documentation, the production of graphs and comments on them, and the preparation of the plan of action. The exercise concludes with the phase of feedback to Stakeholders and of deployment of the action plan.

Stakeholder mappings are carried out regularly. In 2021, a mapping was launched in Uzbekistan in the Navoi region, following the opening of our subsidiary Nurlikum Mining. This is a first in this country for a foreign mining company.



Orano is a committed member of trade associations in its field, including:



Orano supports:



**BE INVOLVED IN LOCAL STRUCTURES AND SOCIAL PROJECTS**

Orano is involved in the life of the communities near its operations in France and abroad. Orano's principal industrial sites work proactively to make their areas of intervention



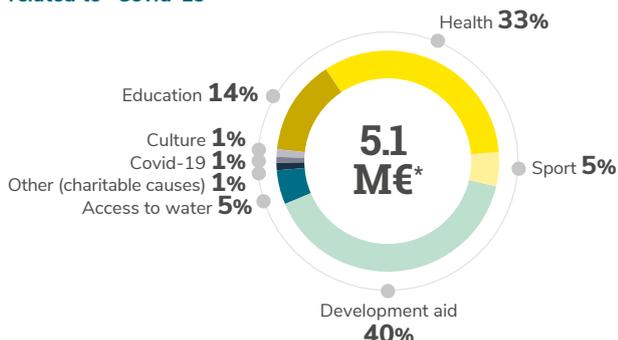
part of the local industrial fabric. Their senior management are active members of local and regional administrative and economic bodies.

Our stakeholders' expectations are taken into account in our projects in particular in the form of regular discussions with local players allowing us to interact with them on how they see the challenges associated with our activities.

More information about the closure of COMINAK



Breakdown of expenditure on social actions including those related to "Covid-19"



\* This amount includes the construction and equipment of an emergency medical center in Kazakhstan in our societal spending.

## SOME EXAMPLES OF PROJECTS SUPPORTED BY ORANO MINING AND ITS SUBSIDIARIES IN 2021

### EXAMPLES IN CANADA

Orano Canada is a signatory, alongside Cameco, of three cooperation agreements - Pinehouse (2012), English River First Nations (2013), Athabasca Basin Ya'Thi Néné (2016). Built around 4 pillars - economic development, training and development of the local workforce, community investments and environmental management, these agreements contribute to improving health and well-being of Indigenous peoples (First Nations and Métis), to promote their culture, the preservation of the environment, and their economic development.

**EXAMPLES OF ACTIONS CARRIED OUT IN 2021**

**A care centre dedicated to northern populations**



In 2021, Orano Canada contributed CAD \$200,000 to the wellness, healing and reintegration centre for communities around Lac La Ronge. This care center provides psychotherapeutic and psychiatric follow-up and treats addictions (alcohol, drugs, etc.) upstream and downstream of hospital care. It has the particularity of integrating in these therapeutic treatments values and heritage cultural of indigenous peoples.

Funding from Orano Canada has enabled the construction of a "sweat lodge" (a kind of sauna) to help residents of northern Saskatchewan on their healing journey.

**Strengthening adult literacy in Northern Saskatchewan**

Orano Canada partnered with "READ Saskatoon" during three years, to support its one-on-one tutoring program for adults. This program helps people with difficulties to assess and improve their skills and gain more self-confidence.

Orano Canada's support specifically targets Northern communities facing illiteracy and failure of the TOWES (Test of Workplace Essential Skills) test, pre-employment exam requested by many companies, including Orano Canada. Our support will allow them to prepare for this exam for their potential hiring within our teams, particularly at the McClean Lake site.

**EXAMPLE IN KAZAKHSTAN**

**Construction and equipment of an emergency medical centre**

In June 2021, a contract was signed with the the Turkestan region to finance the construction of a regional medical center.

Built on two hectares, this emergency unit will accommodate 25 ambulance teams and their vehicles. Strategic for the socio-economic development of this region, it will provide quality medical assistance (24 hours a day, 7 days a week). Built in the city of Turkestan, the building is expected to be delivered in Q1 2022.

**Donation of uniforms and computer equipment for schools**

Through its support for children's education, KATCO contributes to one of the major challenges in Kazakhstan.

In 2021, KATCO funded the complete equipment of the multimedia classrooms of 7 schools in the Sozak district. This action allows children to develop their computer skills and to be able to take distance courses in the event of a pandemic. In addition, as every year, KATCO sponsored the purchase of uniforms and school supplies for children from low-income families in the district.





## EXAMPLES IN MONGOLIA

### Mongolia: “FXB village”

This project designed in conjunction with the NGO FXB aims to improve all aspects of life of beneficiaries of the program simultaneously over a period of three years.

The program, deployed for the benefit of populations located in the region of Sainshand, in the Gobi desert, has 5 objectives:

- Strengthen the economic capabilities of 100 vulnerable families;
- Consolidate the food security of participants and eradicate child malnutrition
- Improve the families' access to medical care
- Improve living and hygiene conditions for participants
- Improve access to education for children and young people and improve the knowledge and capabilities of adults.

In 2021, restrictive health measures and then another lockdown in June severely disrupted the implementation of the project.

It was not possible to make any visits during the first half of 2021. Nevertheless, despite this context, the start of income-generating activities was possible for 95 families. To maintain contact with the population, the NGO intensified the use of social networks. More than 20 training sessions via Facebook were given on topics related to health, income management,

hygiene and nutrition. The results obtained at the end of this second year of the program show there to have been an improvement in the economic situation of the participants.

### Study grants, a multi-year program in Mongolia

Since 2010, grants are being provided for studies lasting for a period of 4 to 6 years.

Since the start of this program, 51 students have benefited from grants. The selection process is transparent and known to the communities: It is carried out by an ad-hoc commission consisting of representatives from the school, a social worker, and members of the local information committees (*Commissions Locales d'Informations - CLIs*). Upon completing his/her studies, the student has to return and work in the region.

### Livestock reconstitution project

The "Livestock reconstitution project" was set up to help the herders and counter the problem of inbreeding within their herds. As natural renewal is not possible due to the distance between the different herds, a livestock exchange program was launched in 2019. A total of 117 families in the Zumbayan region have benefited from this program, allowing their livestock activities to continue. This program should be extended to the districts around our site from 2022 and involve more than 30 additional herder families.

## EXAMPLES IN NIGER

### IRHAZER project

Initiated in 2011 in partnership with the State of Niger, the IRHAZER project aims to contribute to food security through the development of irrigated agriculture. This program allows the development of a 1,000-ha area (private and community irrigation) to be improved and accelerated by making it available for livestock farming and by promoting the value chain for farming and livestock products.

At community level, 2021 was notable for the transfer of 4 farming operations to the National Office for Hydro-Agricultural Development (Office National des Aménagements Hydro-Agricoles – ONAHA) which is now responsible for ensuring the continuity of the actions taken within the framework of the project.

In terms of support for the promotion of private holdings, 80 small-scale irrigation sub-projects are currently being carried out over an area of 150 hectares. Regarding the private livestock farming, four sub-projects including three banks reserved for livestock feed and a poultry farm have been



completed. As far as water for pastoral use is concerned, 35 water points have been dug.

As regards the private irrigation area, located near the SOMAÏR and COMINAK mining sites, the feasibility study begun in 2021 is now complete. Work should begin in 2022 to expand the area dedicated to the pilot project to the Arlit area.

Finally, the vaccination program has continued and close to 47,000 head of cattle have been vaccinated.

### Renewal of the partnership with “Les Puits du Désert”

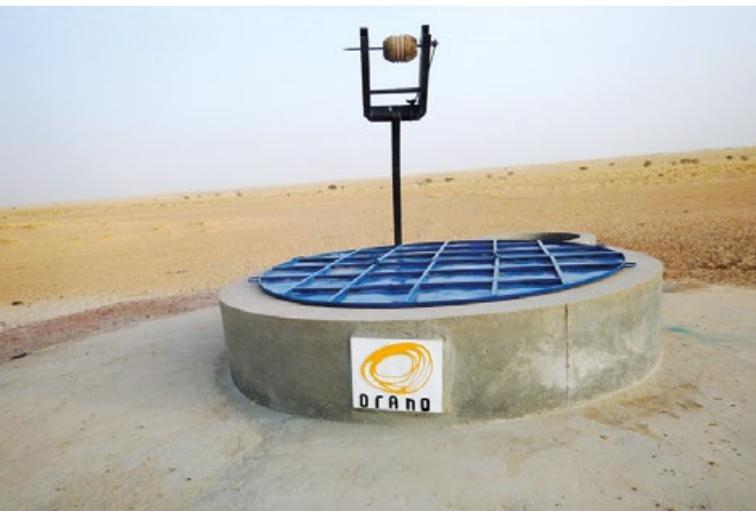
In October 2021, Orano Mining renewed its agreement with the “Les Puits du Désert” [Desert Wells] association for 2 years.

Committed since 2014 to a partnership involving the construction of drinking water supply infrastructures, Orano Mining wished to focus its support in 2021 on improving the living conditions of women in the Agadez region. The program deployed by the NGO “Le Puits du Désert” will reach some 750 beneficiaries. The objectives of this program are to:

- Strengthen the capacities of women in the region through functional literacy,
- Train a large number of beneficiaries in handicrafts and micro-entrepreneurship to combat against their marginalization.

By the end of this two-year partnership, the living conditions of these women in vulnerable circumstances should be improved. The women thus trained in micro-business management and handicrafts will in turn train other women. They will gain in autonomy and develop income-generating activities that will boost the economic fabric of northern Agadez.

More information, visit the association website



### Study grants

In September 2021, as part of the societal component of its redevelopment plan, COMINAK has launched a scholarship program for students and high school students in the departments of Iferouâne and Arlit over a period of five years. In accordance with the agreement signed with the Nigerien Agency for Scholarship Allocations, A maximum of five fellows per year will be selected to follow training courses dedicated to: the environment, energy or health. In 2021, for the first year of the convention, two girls and two boys were selected.

#### EXAMPLE IN GABON

### Priority to education and health



Health and education are COMUF's priority areas for community investment. In Mounana, in 2021, to improve patient care and care, a major donation of equipment was made to the Jean-Claude Andrault Hospital. This donation responds to a request made by the head doctor of the hospital, making it possible to ensure in particular a better follow-up in neonatal pediatrics.

In parallel, the project to rehabilitate the municipal library, promoting access to many manuals for schools and the surrounding population continued. Launched in 2020 in collaboration with the town hall of Mounana, this project is expanding with the creation of a media library.

A second building, located nearby, is being modified and should house other activities (music studio, theater, cinema ...) reinforcing the cultural offer proposed by the municipality. Work that began in December 2021 will continue in 2022.

#### RESULTS 2021

**Aim for a 25% increase in the Education budget for social actions (compared to 2020)**



**Target 3 new school / business partnerships**





**PRINCIPLE 9.2**

**Enable access by local enterprises to procurement and contracting opportunities across the project life-cycle, both directly and by encouraging larger contractors and suppliers, and also by supporting initiatives to enhance economic opportunities for local communities.**

The fact that preference is given - providing skill levels are comparable - to local suppliers during the bidding process enables the creation of a network of companies and numerous jobs in the region around each mining site.

In 2021, 75% of our purchasing volume came from the countries where Orano Mining operates.



By 2025, Orano Mining has committed to maintain a rate of local purchasing of at least 75%.

How the idea of "local" is to be understood varies depending on the country, its stage of economic development and the population density around the site.

Specific purchasing policies have therefore been implemented in the countries in which it has mining sites.

Orano Mining is thus setting itself the following rules:

- pay attention to include local suppliers in calls for tenders
- prefer, all other capacities being equal, a local supplier whose proximity ultimately constitutes an advantage over its competitors
- always be vigilant to ensure local suppliers adapt to standards (safety, transparency, human rights etc.)
- support local suppliers with their development

By way of example, in Canada, for similar contract bids, preference is systematically given to "local" northern suppliers, as per their status under provincial legislation in Saskatchewan.

A company has "local" northern status if it belongs to or operates within a community situated in northern Saskatchewan.

Contracts for services such as site catering or site monitoring, which represent a significant number of jobs, have, for example, been awarded to the suppliers in this region.

**RESULTS 2021**

**Maintain the local purchase rate (75% minimum)**



# EXAMPLES

## NAMIBIA

### Economic development at the heart of our decisions

**In Namibia, Orano Mining's teams are aware of the economic and social challenges faced by local communities near its sites. In order to contribute to their development, our teams have adopted specific purchasing, partnership and development policies.**

The purchasing strategy put in place reflects our commitment to the local economy, with 96% of our orders in 2021 placed with local suppliers.

Another example is our partnership set up since 2008 with Ugab Cleaning and Maintenance, a 100% Namibian company certified BEE (Black Economic Empowerment).

At the beginning of our collaboration, Ugab Cleaning and Maintenance provided office cleaning and laundry services. Gradually, the company has expanded its range of services and now offers maintenance services and maintenance to which we have subscribed.

The Ugab Cleaning and Maintenance team participates in all safety awareness and training campaigns deployed by Orano Namibia, thus helping to strengthen the knowledge of the teams.

We also provide direct support to local communities of Swakopmund, Arandis, Walvis Bay, Henties Bay, Spitzkoppe and the Erongo region.

We use local suppliers for community aid and development projects. For example, we hired local manufacturers at the height of the pandemic to provide us with sanitary equipment for schools, rather than resorting to importing that equipment.



## MONGOLIA

### Badrakh Energy LLC sources meat from local farmers



**Aden Services, Badrakh Energy's food service provider, entered into a contract on December 12 to source meat from local farmers.**

This meat will be used to supply the kitchens of the living compound, which accommodates up to 80 people on average. Five herder families from Argalant bagh in the soum of Ulaanbadrakh have participated in this operation and will provide 25 cattle and 250 sheep.

This type of action is an integral part of Orano Minnig's purchasing policy and contributes to local economic development. Badrakh Energy encourages local food procurement from neighboring communities and hopes to expand this initiative in the future.



## GABON

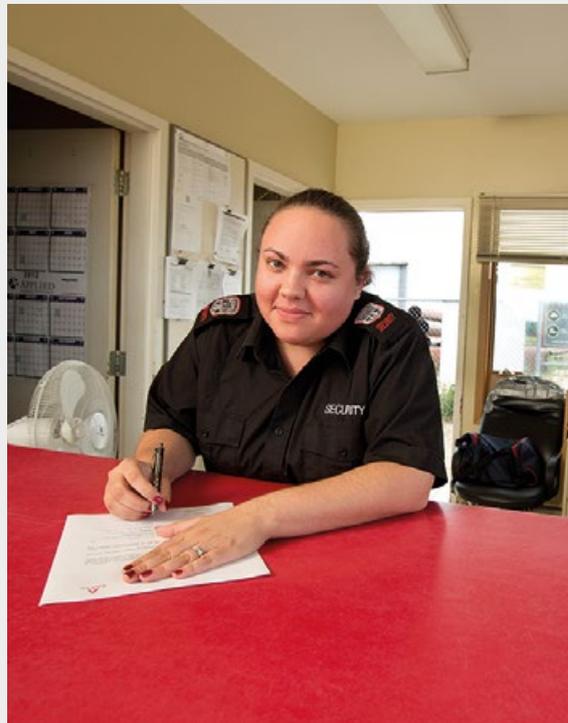
### Within the framework of the Mounana 200 project, COMUF has supported local development by promoting suppliers in the region

**Supporting local companies and promoting recruitment in the community has been one of the main objectives of the Mounana 200 project.**

Since the start of the project in 2016, COMUF has reserved a significant portion of the housing reconstruction contracts for local companies, located in the commune of Mounana or in the neighboring commune of Moanda, including companies such as ARABO, OBI and ETF.

COMUF's HSE teams have assisted these service providers in their development of skills, particularly in terms of safety, quality and respect for the environment, in compliance with the requirements of the Orano group.

In some cases, work required significant technical and financial resources, with substantial vehicles and machinery necessary for road works, for example. The local economic fabric was such that it was not possible to select a local company. In this case, the contracts were awarded to Gabonese companies from outside Haut-Ogooué. The Orano subsidiary then encouraged the companies to use local labor.



## CANADA

### Contribute to local development

**As part of the collaborative agreements with Indigenous peoples, Orano Canada and its partner Cameco have committed to contribute to the local economic development in the northern Saskatchewan territories.**

This must include the purchase of goods and services from local suppliers for a minimum of 35%, or \$250 million CAD from 2016 to 2020.

This target was significantly exceeded with total expenditures of CAD\$592 million as at December 31, 2021. Orano Canada alone spent more than \$150 million CAD on businesses in the Athabasca Basin between 2016 and 2021.

For example, long-term contracts with local companies that provide catering, security and cleaning services at our McClean Lake site by hiring employees from indigenous peoples.

## PRINCIPLE 9.3

Conduct stakeholder engagement based upon an analysis of the local context and provide local stakeholders with access to effective mechanisms for seeking resolution of grievances related to the company and its activities.



Orano Mining complies with international best practices in the extractive industries and values transparency and dialogue with its stakeholders. The management of grievances plays an essential part in the quality of our relations with our stakeholders.

With this in mind, Orano Mining deployed a grievance mechanism on all of its sites in 2020 to resolve complaints at an operational level. The purpose of this procedure is to process a complaint, a request for an explanation on a specific problem, or a remark about one of the company's activities. The process is managed by Corporate Social Responsibility (CSR) teams but may also include contributions from other company departments. The aim is to respond to grievances within a reasonable timeframe and to keep the complainant informed throughout the process.

## GRIEVANCE MECHANISM

Each site has carried out a survey of grievances or complaints received during the year 2021. The

process makes it possible to trace the entirety of the request (date, type of stakeholder, subject, nature, etc.) and to list it in a standard document, deployed on all our sites in France and abroad.

To optimize the process, feedback has also been integrated into our internal Integrated Management System and shared with the health, safety and environment teams (refer to the Health and Safety section p. 64 [↗](#)).

## COMMUNICATION

In 2021, each site re-launched an awareness campaign with its internal and external stakeholders. The aim was to raise awareness of this mechanism and to allow stakeholders to raise comments, grievances or complaints related to our activities.

As Covid-19 made it difficult to meet with local communities, different communication channels were used depending on the media best suited to the local population: information by email or through the website (Namibia, Canada), by newsletter or other communication media (France, Kazakhstan), or via social networks (Mongolia).

Feedback from field visits and consultation and information sessions (in Niger, Mongolia, France and Gabon) has fostered appropriation of the mechanism by the communities, notably in Kazakhstan.

## PROCESSING OF GRIEVANCES

Keeping track of and responding to the grievances and complaints of our stakeholders is important. In 2021, 90% of eligible complaints were processed within three months, in accordance with our procedure.

However, not all complaints are related to our activities. Indeed, some of our stakeholders use this mechanism to make remarks or issue requests on subjects that do not meet the conditions for registration and consideration.

### LIFTS 2021

This is the first time we have reported on this topic. In 2021, 32 complaints were identified and reported:

- 15 were treated as proven related complaints with our activities and integrated into reporting.
- 17 were treated but were not taken in account because they did not meet the eligibility criteria (requests unrelated to our activities, remarks, personal requests...).



Breakdown by country and entity

Countries	Gabon	France Direction Après-Mines	Kazakhstan	France Bessines Head office	Niger COMINAK	Niger SOMAÏR	Namibia	Canada	Mongolia
Number of eligible complaints	5	6	1	0	3	0	0	0	0

Themes of complaints issued

Themes	Number
Environment	9
Infrastructure	1
Governance	3
Partnership	1
Health	1

RESULTS 2021

Grievance mechanism: Annual review published



PRINCIPLE 9.4

Collaborate with government, where appropriate, to support improvements in environmental and social practices of local artisanal and small-scale mining (ASM).

Artisanal and Small-Scale Mining (ASM) is an important means of subsistence and source of income for over 40 million people in 80 countries.

It is estimated that ASM accounts for 15-20% of global non-fuel mineral production. It employs predominantly poverty affected populations, including children, is labor intensive, and is minimally mechanized.

ASM often exposes workers to significant safety, human rights and environmental risks. This activity is generally practiced illegally and is not governed by laws or regulations.

In Niger, ASM has existed since 1984 and has intensified since 2014 with the multiplication of sites. It employs approximately 450,000 people\* directly who extract gold mainly in the Tillabéry, Liptako, Djado, Tafassasset and Air regions. Mining methods have also evolved with the use of excavators, explosives, chemicals (cyanide and mercury) and tunnel mining.

Faced with this multiplication of sites and actors, the Ministry in charge of mining in Niger has worked to organize and supervise this activity, notably by adopting a law on small-scale mining in 2017. An activity that processes ore from Niger's gold mining regions has developed in Arlit and near Orano Mining's sites. The State wishes to structure certain practices related to working conditions there with the installation of a counter to simplify administrative procedures and provide equipment (crushing, grinding, cleaning, waste management). It has already placed surveillance teams on the most important sites and is helping to train artisanal miners. It is supported in these initiatives by the World Bank and Swiss investors in the framework of the Better Gold project.

Orano Mining has long been explicitly opposed to the practices of certain artisanal mines, particularly those that practice gold panning, because of the health, environmental and human rights problems encountered.

Although, to our knowledge, artisanal and small-scale mining does not involve uranium in the vicinity of the SOMAÏR and COMINAK sites in Arlit and more generally in Niger, as a responsible miner, Orano Mining has decided to support, in conjunction with the authorities who implement them, training and awareness-raising modules on the control of safety, health and environmental risks. This initiative allows us to contribute, in a small measure, to preventing and mitigating the impact of these activities by increasing the awareness and training of those involved. In 2021, 20 people were able to follow this module, developed by the Arlit Regional Mining Department. Other sessions are planned for 2022.

\* Source World Bank: report "extractive industries governance project for local development & Covid-19 Response"

# ENGAGING WITH STAKEHOLDERS



## MINING PRINCIPLE

**Proactively engage key stakeholders on sustainable development challenges and opportunities in an open and transparent manner. Effectively report and independently verify progress and performance.**



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**PRINCIPLE 10.1**

**Identify and engage with key corporate-level external stakeholders on sustainable development issues in an open and transparent manner.**

**To ensure the acceptability and sustainability of its business activities, Orano Mining is committed to a process of dialogue, consultation and sharing with its stakeholders.**

Various frameworks and tools enable Orano Mining to identify our stakeholders expectations:

- Regulations in force, whether national or international. These may designate, depending on the type of mining project, the stakeholders to be consulted as part of a clearly established dialogue and consultation process.
- Mining agreements, specific partnership agreements or special provisions in our contracts, may lay down a

framework for investments and dialogue for the benefit of communities or other local players with a view to socio-economic development.

- Frameworks and standards set by professional organizations in the sector and bodies in charge of voluntary transparency and responsibility initiatives.
- “Stakeholder mapping” are done on a regular basis and specific actions plans are then defined.
- Risk management exercises (e.g. the Business Risk Model). These are internal methodological principles. These systems help our teams identify and analyze the commitments to be made with regard to groups impacted by our mining and industrial projects.
- The materiality exercise that helps us to identify the main expectations of our stakeholders (See CSR Approach, p.15 .
- Local bodies for dialogue with stakeholders. Bodies such as the Bilateral steering committee (CBO - Conseil Bilatéral d’Orientation, Niger), which bring together local elected officials, relevant authorities and civil society, alongside Orano Mining Niger and our subsidiaries SOMAÏR and COMINAK, serve to elicit local stakeholder expectations.

Dialogue and consultation with our stakeholders are among the fundamentals of our approach. Our teams at headquarters and/or on site are their primary contact.



These formal exchanges may take the form of face-to-face discussions, public meetings, or communication in writing and are adapted to the environment in each of the countries in which we are based. The topics most frequently addressed are those relating to the environment and the economy. The frequency with which we enter into dialogue depends on the results of the stakeholder mappings carried out on a regular basis.

**DEDICATED DIALOGUE BODIES ARE IN PLACE THROUGHOUT THE MINING LIFECYCLE FROM EXPLORATION TO MINE CLOSURE, ON ALL OUR SITES**

**CANADA**

In Canada, several committees are set up to ensure dialogue with stakeholders because of the size of the territory and the diversity of the communities.

**Athabasca Joint Engagement and Environmental Committee (AJES)**

Since its creation in 1993, this body has been made up of representatives of the mining companies Orano Canada Inc. and Cameco Corporation and seven signatories: 3 First Nations and 4 communities in northern Saskatchewan, commonly referred to as the Athabasca Basin Communities. For Orano Canada, the focus of this body is primarily to discuss the McClean Lake Operation and our exploration projects in or near the communities' Traditional Territories. This forum for dialogue meets quarterly.

In 2021, the topics most frequently discussed with our stakeholders were related to Community Investment, Business Development, Environmental Stewardship and Workforce Development. Due to Covid19, all meetings were virtual.

The McClean Lake Tailings Management Facility (TMF) expansion project was discussed at AJES meetings, and one meeting was held on site to facilitate a tour of the TMF.

A regulatory hearing to review TMF's proposed expansion was held on October 4, 2021. AJES participated and supported the expansion project.

Concluded for a period of five years, this agreement is currently being renegotiated.

More information about TMF



**Community Based Environmental Monitoring Program (CBEMP)**

The CBEMP was developed to provide confidence to Athabasca Basin Communities that their traditional country foods will remain safe to eat today and into the future. If the monitoring program demonstrates an adverse impact on traditional country foods has resulted from the mining operations in the area, Cameco and Orano Canada will seek the feedback of AJES with respect to appropriate measures to mitigate such impacts on the communities.

The CBEMP is evaluated by AJES to ensure that the program is meeting the objectives of the parties. In addition to other factors, the evaluation will consider:

- program design;
- sample selection locations;
- sample types; and
- Indigenous knowledge



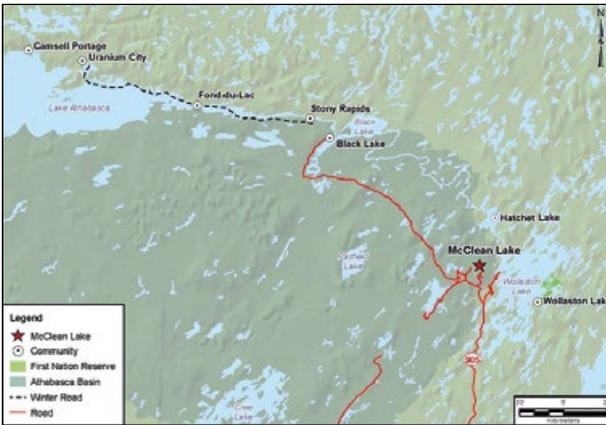
The CBEMP 2021-2022 is underway in Uranium City and Camsell Portage. To increase engagement in the program, the Ya'thi Néné Land and Resource Office (YNLR), created through the Ya'thi Néné collaboration agreement, partnered with Canada North Environment Services (CanNorth) to pilot the program.

In 2021, the first and second phases took place of the project, which included the collection of knowledge traditional and local community as well as the collection of traditional food samples. Analysis of the samples and preparation of the report will begin in early 2022, followed by a community meeting to share the results, scheduled for June 2022.

In total, three CBEMP studies have been carried out since the beginning of the YTN collaboration agreement. They have all demonstrated that the country's food remains safe to eat.

**Northern Career Quest Programs**

The Northern Career Quest (NCQ) is a business-led program to promote training for indigenous and métis peoples residing in the Northern Saskatchewan region.



As part of its Mill Operation Training Program, Orano Canada currently welcomes 9 people including 3 women to its McClean Lake site.

**Scope of the AEEDC Committee (Athabasca, Education, Employment and Development Committee)**

The purpose of this Committee is to liaise with the management and the YNLR team in order to collaborate on opportunities in the fields of education, employment and development in the region.

Through discussion forums, the AEEDC identifies needs, coordinates them and promotes them within the different groups. This allows information to flow well, avoids duplicating initiatives and combining them to act in the interest and as

close as possible to the needs of the expectations of the communities of Athabasca.

**FRANCE**

**118 former mines sites are under the responsibility of Orano Mining**

**Site Monitoring Committees (CSS)**

Set up on the initiative of local Prefects (government representatives), Site Monitoring Committees are bodies to promote dialogue and consultation between the operator and local stakeholders (residents, employees, elected officials, NGOs, etc.). Their aim is to inform the people on and around our sites about the effects of activities relating to tailings storage facilities, on public health and the environment.

The Prefect is entitled to set up a CSS for each waste treatment facility for which a permit is requested and is obliged to set up a CSS for all storage facilities for the collection of final waste or special industrial waste, or where a request is made by one of the municipalities located within the area covered by the public enquiry.



Through these Committees, Orano Mining presents the different environmental outcomes and the work to be carried out to improve monitoring of former mining sites.

In 2021, in spite of the Covid-19:

- Orano Mining sat on four Site Monitoring Committees in the region: the first one Ecarpière (Loire-Atlantique) the second in Bois-Noirs-Limouzat (Loire) as well as the CSS organized by the departments of Haute-Vienne and Corrèze.
- 9 site visits were made to a diverse audience: the newly appointed sub-prefect of Bellac, representatives of municipalities, students from the universities of Poitiers and Nancy, an industrial technical conference, etc.

Since 2019, Orano Mining has also made generally available an interactive mapping application for accessing relevant data relating to the old uranium mines for which it is responsible in France, how they are monitored environmentally and how they are redeveloped. The interactive map gives access to a wealth of data on the sustainable management of former sites, and thus forms part of our approach of overall transparency, making clear our commitments as a responsible mining company (See *Mining Principle 6.1*, p. 80 ).



## MONGOLIA

### Maintaining forums of dialogue

Due to the pandemic, few meetings with local stakeholders were held during the first half of 2021. Nevertheless, dialogue continued and in the second half of the year, five home visits were made.

A remote Local Information Commission (CLI) was also organized in November 2021 to communicate on the societal projects and the start of the pilot.

A visit of its pilot plant was also by Badrakh Energy for representatives of its partner MONATOM (Mongolian national company), and students from the Ulaanbadrakh region.

In October, a meeting of the Implementation Committee, the decision-making body of the Cooperation Agreement, was dedicated to the renewal of the contract for another two years.

During the deployment of the test phase known as the "Operating Pilot", the Cooperation Agreement, signed in 2018, defines the framework for dialogue and exchange between the Badrakh Energy teams and the communities. Themes of cooperation have been specified: the environment, employment and the development of societal projects.

The contribution to be allocated to societal projects is programmed for the entire duration of the agreement and is structured around seven commitment pillars: access to water, human health, animal health, education, culture, access to energy and economic development.

## GABON

### Continuous relationship with stakeholders

The Local Information Commission bringing together local stakeholders and the administration took place in December 2021. A progress report on the road and network rehabilitation work was made, as well as a presentation of the delivery schedule for the 124 houses linked to the "Mounana 200" project.

In total, 168 houses have been built by December 31, 2021 out of the 200 planned.

For the record, "Mounana 200" provides for the construction of 201 homes to replace those radiologically marked and identified by the CNPPRI (National Center for Prevention and Protection against Ionizing Radiation) now the AGSSN (Gabonese Agency for Nuclear Safety and Security) and validated by a Technical Committee made up of various stakeholders (See *Mining principle 3.2*, p. 39 ).

**KAZAKHSTAN**

**Maintaining dialogue**

In Kazakhstan, dialogue with stakeholders has been difficult due to Covid-19. Due to travel restrictions, visits and meetings with our stakeholders could only take place in the second half of 2021. To maintain the link, in February a public hearing was held to present the South Torkuduk project and the associated societal projects.

In September, meetings with Turkmenistan city authorities and service providers were held to monitor the implementation of the project to build and equip an emergency medical center. In December, 4 visits were made to the Sozak District (Tasty, Shu, Sholakrgan and Taukent) to communicate on KATCO's complaint management mechanism approach (See Mining principle 9.1, p. 136 ).

In December 2021, KATCO was awarded for the second year in a row in the regional "Generous Heart" competition and voted "Best Company of the Year" for the implementation of its social projects



**NIGER**

**Various forums for dialogue to ensure ongoing relations with our stakeholders**

Despite restrictions due to the pandemic, more than 70 meetings were held with stakeholders, including meetings within the framework of the CBO. In addition to these meetings, two awareness caravans were held in the Arlit and Akokan neighborhoods, and a joint Local Information Commission (CLI) was held at the end of 2021 between SOMAİR and COMINAK.

This CLI, which brings together all the neighborhood leaders, the mining companies and the commune, has made it possible to improve the quality of discussions and to answer questions raised during the awareness caravans.

An action plan was drawn up and shared, taking into account all the issues related to health, access to water, education and the transfer of plots of land near the mining installations.



**Closure of COMINAK**

More information about the closure of COMINAK





Signature de l'accord de Partenariat entre Orano Mining et Goskomgeology, Ouzbékistan.

**PRINCIPLE 10.2**

Publicly support the implementation of the Extractive Industries Transparency Initiative (EITI) and compile information on all material payments, at the appropriate levels of government, by country and by project.

**TRANSPARENCY OF REVENUE IN THE EXTRACTIVE SECTOR**

Orano Mining is committed to transparency and supports the EITI (Extractive Industries Transparency Initiative) framework since its creation in 2003.

Orano Mining publishes its earnings from mining.

See the income publication of Orano Mining



**CONTRACTS TRANSPARENCY**

As of June 2019, on the occasion of the EITI Global Conference held in Paris, Nicolas Maes, CEO of Orano Mining, made a commitment to work with our public and private co-shareholders or counterparties and the States of the countries in which we operate and for the projects where we intervene as operators, to aim for publication, by 2021, of the mining contracts and agreements entered into with States.

Since January 2021, you can visit our website to review the publication of mining contracts and licenses of our subsidiaries engaged in exploration, development and production activities concluded with local governments, insofar as these are not subject to legal, regulatory or contractual confidentiality obligations.

True to our values of continuous progress and integrity, we are committed to pursuing work with our partners and the governments of the countries in which we operate to encourage them in the disclosure of contracts, in accordance with the EITI principles.

See Orano mining contracts and licenses list



**RESULTS 2021**

Contracts published under the EITI standard whenever authorized by the States



## PUBLIC FINANCIAL ASSISTANCE

Within the framework of their mining activities, neither Orano Mining SA nor any of its subsidiaries included in the financial consolidation scope have received public financial assistance for the financial year 2021, except for SOMAÏR and COMINAK in Niger.

Items not considered as public assistance for the purposes of this statement include incentives, in particular financial incentives, automatically applied to all mining operators, as expressly provided for by the legislation, including mining legislation, of the countries concerned.

In 2021, SOMAÏR and COMINAK benefited from safeguard measures in the form of tax exemptions and/or reliefs for an estimated amount of CFAF 1, 848, 522, 245 granted because of the need to maintain activity in Northern Niger, a constrained uranium market and the end-of-life financial situation of these entities.

Mining activities include exploration, development of mining projects, production of uranium concentrates, and remediation of mining sites. In 2021, these operations were performed in the following countries: France, Gabon, Niger, Namibia, Kazakhstan, Mongolia, Canada and Uzbekistan.

Within the framework of the RECYVABAT project (Recycling and Recovery of Batteries), Orano Mining SA has received support from the France Relance program and the Nouvelle-Aquitaine region, for a total amount of 1,408,193 Euros.

At December 31, 2021, the company Orano Mining SA is wholly owned by Orano SA, which is 80% owned by the French State (79,99% directly and 0,01%% indirectly through AREVA SA).

In addition, the following subsidiaries have stock held by a State other than the French State or by companies controlled by a State other than the French State (as at December 31, 2021):

## PRINCIPLE 10.3

Report annually on economic, social and environmental performance at the corporate level using the GRI Sustainability Reporting Standards.



Subsidiary	Country	State or State-owned entity	Pourcentage de participation
KATCO	Kazakhstan	KAZATOMPROM company (75% owned by the Kazakh State)	49%
SOMAÏR	Niger	SOPAMIN company (100% owned by the State of Niger)	36,6%
COMINAK	Niger	SOPAMIN company (100% owned by the State of Niger)	31%
		ENUSA company (100% owned by the Spanish State)	10%
IMOURAREN SA	Niger	SOPAMIN company (100% owned by the State of Niger)	23,35%
		State of Niger	10%
COMUF	Gabon	Gabonese State	24,75%
Badrakh Energy LLC	Mongolia	MONATOM company (100% owned by the Mongolian State)	34%
NURLIKUM MINING	Uzbekistan	State of Uzbekistan	49%

## GRI AND EXTERNAL AUDIT

Within the 2021 scope of our mining activities, our teams have applied the guidelines set out in version Standards of the Global Reporting Initiative (GRI), as well as the Mining and Metals Sector Supplement (MMSS).

We therefore meet the commitments made as part of our involvement in the International Council on Mining and Metals (ICMM). This process is being carried out in accordance with the Grenelle 2 environment law, which lays down regulations with regard to the topics to be dealt with in nonfinancial reporting by companies.

Following the global health crisis that occurred in 2020 requiring the prioritization of certain internal projects over the period, the independent external audit scheduled for February began in March 2022 and will be finalized with the audit of a site in the second half of 2022. The insurance certificate will be issued by the end of 2022.

Besides the independent verification of the content of this report, we have commissioned the third party to audit a set of extra-financial indicators in compliance with the ICMM Audit procedure and the AA1000 ethical auditing principles.

Each year the Orano group conducts an audit on a sample of extra-financial indicators as part of the independent verification of the Annual report. As such, number of our mining sites may be selected for the review of these indicators. SOMAÏR, a subsidiary of Orano Mining in Niger, was audited in 2020, KATCO in 2021 without any non-compliance. In 2022, the McClean Lake site in Canada will be audited by the audit firm for validation of the 2021 report

See Orano annual report p. 149



The 2021 CSR Report is the twelfth edition of this annual exercise. Previous reports are still available for download in this "Report Archive" box.

Learn more, check out former CSR reports



### PRINCIPLE 10.4

Each year, conduct independent assurance of sustainability performance following the ICMM guidance on assuring and verifying membership requirements.



# GRI STANDARDS AND DUTY OF CARE

The Orano Mining's CSR Report 2021 has been prepared in accordance with the GRI Standards guidelines. The Mining and Metals Sector Supplement (MMSS) has also been used.

More information on  
ICMM Mining principles



## PROFILE

	GRI Standard
Name of the organization	GRI 102-1
Activities, brands, products, and services	GRI 102-2
Location of headquarters	GRI 102-3
Location of operations	GRI 102-4
Ownership and legal form	GRI 102-5
Markets served	GRI 102-6
Scale of the organization	GRI 102-7
Information on employees and other workers	GRI 102-8
Supply chain	GRI 102-9
Significant changes to the organization and its supply chain	GRI 102-10
Precautionary Principle or approach	GRI 102- 11
External initiatives	GRI 102-12
Membership of associations	GRI 102-13
Statement from senior decision-maker	GRI 102-14

## STRATEGY

	GRI Standard
Key impacts, risks, and opportunities	
Values, principles, standards, and norms of behavior	

## REPORTING PROTOCOL

GRI Standard
GRI 102-45
GRI 102-46
GRI 102-47
GRI 102-48
GRI 102-49
GRI 102-50
GRI 102-51
GRI 102-52
GRI 102-53

## Concordance table ICM Mining principles, GRI Standards, and Duty of care


**MINING PRINCIPLE 1 -  
ÉTHIQUE PROFESSIONNELLE**

Apply ethical business practices and sound systems of corporate governance and transparency to support sustainable development

	GRI STANDARD	DUTY OF CARE
1.1	GRI 102-16	✓
1.2	GRI 205-1	
	GRI 205-2	
	GRI 205-3	✓
	GRI 201-4	
	GRI 406-1	
1.3	GRI 102-16	
1.4	GRI 102-18	✓
	GRI 102-26	
1.5	GRI 415-1	


**MINING PRINCIPLE 2 -  
DECISION-MAKING**

Integrate sustainable development in corporate strategy and decision-making processes

	GRI STANDARD	DUTY OF CARE
2.1	GRI 102-31	✓
	GRI 102-32	
2.2	GRI 308-	✓
	GRI 414-1	


**MINING PRINCIPLE 3 -  
HUMAN RIGHTS**

Respect human rights and the interests, cultures, customs and values of employees and communities affected by our activities

	GRI STANDARD	DUTY OF CARE
3.1		✓
3.2	MM9	
3.3		✓
3.4	GRI 401-1	
	GRI 401-2	
	GRI 401-3	
	GRI 402-1	✓
	GRI 102-41	
	MM4	
3.5		✓
3.6		
3.7	GRI 411-1	
	MM5	
3.8	GRI 404- 1	
	GRI 404-3	
	GRI 405-1	✓
	GRI 405-2	


**MINING PRINCIPLE 4 -  
RISK MANAGEMENT**

Establish effective risk management strategies and systems founded on a sound scientific basis and which take into account how stakeholders perceive risks

	GRI STANDARD	DUTY OF CARE
4.1	GRI 102-15	✓
	GRI 102-30	
4.2		
4.3		✓
4.4		✓



**MINING PRINCIPLE 5 - HEALTH, SAFETY AND RADIATION PROTECTION**

Pursue continual improvement in health and safety performance with the ultimate goal of zero harm

	GRI STANDARD	DUTY OF CARE
5.1	GRI 403-1	✓
	GRI 403-2	
5.2	GRI 403-3	✓



**MINING PRINCIPLE 6 - ENVIRONMENTAL PERFORMANCE**

Pursue continual improvement in environmental performance issues, such as water stewardship, energy use and climate change

	GRI STANDARD	DUTY OF CARE
6.1	MM3	✓
	MM10	
6.2		✓
6.3	GRI 307-1	✓
6.4	GRI 306-4	✓
	GRI 306-5	
6.5	GRI 302-1	✓
	GRI 302-3	
	GRI 305-1	
	GRI 305-2	



**MINING PRINCIPLE 7 - PRESERVING BIODIVERSITY**

Contributing to the conservation of biodiversity

	GRI STANDARD	DUTY OF CARE
7.1	GRI 304-1	✓
7.2	GRI 304-4	✓



**MINING PRINCIPLE 8 - RESPONSIBLE PRODUCTION**

Facilitate and support the knowledge base and systems for the responsible design, use, re-use, recycling and disposal of products containing metals and minerals

	GRI STANDARD	DUTY OF CARE
8.1		✓
8.2	GRI 417-1	✓
	GRI 417-2	



**MINING PRINCIPLE 9 - EMPLOYMENT PERFORMANCE**

Seek continual improvement of our employment performance and contribute to the social, economic and institutional development of host countries and communities

	GRI STANDARD	DUTY OF CARE
9.1	GRI 102-42	
	GRI 102-42	
	GRI 102-44	
	GRI 203-1	
9.2	GRI 204-1	✓
9.3	GRI 102-43	✓
9.4	Non applicable	



**MINING PRINCIPLE 10 - ENGAGING WITH STAKEHOLDERS**

Proactively engage key stakeholders on sustainable development challenges and opportunities in an open and transparent manner. Effectively report and independently verify progress and performance

	GRI STANDARD	DUTY OF CARE
10.1	GRI 102-26	✓
	GRI 102-40	
10.2	GRI 201-4	✓
10.3	GRI 102-54	✓
	GRI 102-55	
10.4	GRI 102-56	✓

As a recognized international operator in the field of nuclear materials, Orano delivers solutions to address present and future global energy and health challenges.

Its expertise and mastery of cutting-edge technologies enable Orano to offer its customers high value-added products and services throughout the entire fuel cycle.

Every day, the Orano group's 17,000 employees draw on their skills, unwavering dedication to safety and constant quest for innovation, with the commitment to develop know-how in the transformation and control of nuclear materials, for the climate and for a healthy and resource-efficient world, now and tomorrow.

Orano, giving nuclear energy its full value.

**[www.orano.group](http://www.orano.group)**

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Energy is our future, don't waste it!

