


Orano Mining

# Corporate Social Responsibility Report

2022 Edition



Cover picture:  
Plantation program, Zuuvh Ovoo. Mongolia  
For more information, see p.123 

Orano Mining, RSE Direction  
May 2023

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Conception & Realisation: BCerise

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MESSAGE FROM

# Nicolas MAES

President of Orano Mining



**A major event marked the year 2022: the beginning of the war in Ukraine which, beyond the severe consequences for the populations affected by the conflict, had a significant impact on a world economy already impacted by COVID-19 and climate change.**

In the context of an energy supply crisis and climate change, nuclear power appears, more than ever, to be a reliable and sustainable solution to the challenges of tomorrow.

The diversification of supplies is a major issue for all players in the uranium market. Thanks to Orano Mining's presence on four continents and our projects in development, we are well positioned to fulfill our mission: to guarantee our nuclear utilities customers security of supply and thus contribute to the fight against global warming.

This year, we strengthened our portfolio through the acquisition of an additional 3.43% in the Cigar Lake site joint venture in Canada, operated with our partner Cameco, increasing our stake to 40.4%.

Owing to market uncertainties and inflation, we are continuing to take steps to manage our production and operating costs in order to be able to finance our investments.

## Uranium: a rising market focused on the long term

After major fluctuations in the second half of 2021 and a peak at 60 USD/lb in the days following the Russian

invasion of Ukraine, prices on the spot market stabilized between 47 and 53 USD/lb  $U_3O_8$  in 2022. The year also saw electricity companies returning to the long-term market. The confirmation of the choice of nuclear power by many countries, the better understanding of the need for new mines towards the end of the decade and renewed long-term contracting led to a major increase in long-term price indicators, at 52 USD/lb  $U_3O_8$  at the end of 2022 against 41 USD/lb  $U_3O_8$  at the end of 2021.

Commercial activity has been sustained and our order book gives us visibility over the next seven years. We have also started contracting for the next decade.

## Safety is our priority

In 2022, despite the tools deployed and the progress in reducing work accidents, we deplore a fatal accident which led to the death of two people who were employees of subcontracting companies dismantling the COMINAK plant.

After a root-cause analysis, looking particularly at organizational and human factors, support was put in place for subcontractors to better consider safety aspects during activities. This is in addition to strengthening the contractual requirements for supervision and monitoring of compliance in service provider commitments, more in-depth preparation of sites and validation of operating methods.

At the end of 2022, our lost-time accident frequency rate was 0.5, i.e., less than one accident per million hours worked. This result reflects the commitment of everyone, every day. The sites in operation are also progressing with the implementation of the Industrial Risks action plan, which began in 2021 and will continue until 2025.





**Thanks to Orano Mining's presence on four continents and our projects in development, we are well positioned to fulfill our mission: to guarantee our nuclear energy producer customers security of supply and thus contribute to the fight against global warming.**



## Production gradually returning to normal

The year 2022 saw the gradual return of production to levels prior to the Covid-19 crisis.

Thanks to the actions of all our employees, Orano Mining produced 7,524 tU in 2022 on a consolidated financial basis, a slight increase compared with 2021 (6,814 tU). However, the shortage of acid in Kazakhstan, an essential reagent used in ISR (In-Situ Recovery) operations, adversely affected the KATCO site.

The signing of an amendment to the subsoil contract with the Ministry of Energy of Kazakhstan allowed KATCO to begin the industrial development of a new area, South Tortkuduk. The exploitation of this deposit, whose uranium reserves are estimated at 45,000 tonnes, should ensure that production at KATCO continues for the next fifteen years.

In Niger, at SOMAÏR, the new heap leaching area went into production after three years of building works and 650,000 hours worked, without any lost-time injury. This area makes it possible to extend the processing of low-grade ores, a third of the production at this site, by ten years.

This year was also marked by the reopening of the McArthur plant in Canada, operated by our partner Cameco. The site was mothballed for almost five years and the reopening helps to provide additional security of supply for our customers.

## Our responsible commitments to ensure the sustainability of our activities

We are continuing to roll out our 2025 – 2030 Commitments roadmap. During this second year of implementation, 92% of the objectives we have set have been achieved or are in progress.

On Climate, as mining activities are one of the main contributors to Orano Group's greenhouse gas emissions, we are pursuing our objective of reducing carbon-equivalent CO<sub>2</sub> emissions by 15% by 2025 for activities carried out at two major projects. In Niger, an impact study was finalized in 2022 for a project to build an 8 MWp solar power plant. In Namibia, Orano Mining Namibia and the electric company InnoSun Energy Holdings signed a 10-year partnership agreement for commissioning a 5 MW solar power plant near our Trekkopje site to supply electricity to Orano's Erongo desalination plant.

Discussions are also under way with the Saskatchewan, Canada, electricity supplier to contribute to the

development of renewable energy capacity in their energy mix.

At the same time, to operate efficiently while reducing our footprint, we are striving to reduce the quantities of water and energy consumed per tonne of uranium produced by 10% in 2025.

On biodiversity, since 2021, we have made the commitment, by 2025, to provide each site with a fauna-flora inventory dating back less than 10 years. In Mongolia, we are continuing our nursery program for saxauls, the iconic shrubs of Central Asia. Since the start of the project, more than 12,500 trees have been planted. This replanting initiative will soon be extended to Kazakhstan.

Orano Mining operates responsibly to ensure the sustainability of its activities over the long term, including end-of-life and the rehabilitation of mining sites. At COMINAK, redevelopment work is proceeding according to schedule with, in 2022, the removal of the factory and some of the buildings in the industrial zone, ongoing reprofiling and covering of the tailings pile as well as the permanent closure of the entrances to the underground mine.

A plan to support employees and subcontractors has been deployed, in addition to the existing legal requirements. At the end of 2022, 87% of COMINAK employees had an approved redeployment solution. The redevelopment project also includes a societal component with a transition plan drawn up in consultation with the stakeholders, which will be spread over 5 to 10 years, depending on the actions carried out.

These include support measures for the local economy and entrepreneurship, transfer of healthcare access facilities as well as training of health personnel, support for the education system and transfer of urban infrastructure managed by COMINAK to the State of Niger or the municipality. For COMINAK, it is a question of being part of a lasting, sustainable and useful societal transition for the population.

## Developing to ensure the long-term supply of uranium to our customers

To ensure long-term supply for its customers, Orano Mining continues to develop and is more than ever focused on the future.

2022 was also an opportunity to pursue our mining projects by focusing on deposits that are exploitable using ISR technology, in which we are continuing to

develop our expertise both from a technical point of view and in terms of project acceptability.

In Mongolia, Badrakh Energy teams finished pilot tests at the end of 2022 and demonstrated, with great technical and environmental expertise, that ISR technology is well suited for the extraction of uranium at the Zuuvch Ovoo site. Furthermore, in the interests of dialogue and transparency, we have opened the doors of our site to more than 700 people in order to present and explain our activities.

In 2022, we began negotiations with the Mongolian authorities to sign an Investment Agreement before the end of 2023. The future mine of Zuuvch Ovoo will be productive for more than 35 years and will allow Mongolia to join the circle of uranium-producing countries.

In Uzbekistan, with our subsidiary Nurlikum Mining, we continued our exploration activities to verify and increase the resources of the Djengeldi deposit and completed 50,000 meters of drilling. The construction of the pilot for ISR operation has been completed and the acidification tests began in November.

The year was also marked by the signing of a strategic partnership agreement between Orano Mining, Goscomgeology and Navoiyuran, which foresees the development and commissioning of new uranium mines in the country. This alliance significantly broadens the field of collaboration, reflecting the trust established between Orano and its partners in Uzbekistan.

Our third ISR development challenge is in Imouraren, Niger, where studies and geological work to determine the technical and environmental feasibility of exploitation by this method are under way. Its use could make the exploitation of this deposit, which contains more than 110,000 tU of resources and was previously destined for open-cast mining, environmentally acceptable and economically viable.

In parallel with these feasibility studies, a consultation program was begun to answer the questions of Nigerien stakeholders, who know little or nothing about this extraction method, and to take their opinions into account.

In Kazakhstan, Orano Mining signed a cooperation memorandum of understanding in November 2022 with Kazatomprom, our long-standing partner, which envisages, among other initiatives, the opening of discussions on the long-term development of the industrial partnership between our two companies.

## Strengthen our skills and recruit for tomorrow

To carry out all these projects, we are strengthening the skills of our teams and focusing on training employees. We also hired more than 200 external recruitments in 2022.

At the same time, several partnership memoranda of understanding with universities and schools have been signed in Niger, Kazakhstan and Uzbekistan, to train the employees of tomorrow. We are proud to be committed to local education with the establishment in 2022 of a new scholarship program in Namibia. We are continuing to award scholarships in Mongolia, Kazakhstan, Niger, and even in Canada, for the indigenous populations of northern Saskatchewan. In France, we inaugurated CREGU, a new joint uranium research laboratory in Nancy.

In addition, Orano Canada has entered into a ten-year partnership with the University of Saskatchewan Polytechnic to train women in technical engineering and managerial professions. All of these programs aim to improve the resilience of communities and enable their long-term socio-economic development.

## Governance and transparency

We also have a policy of transparency and regularly welcome auditors to our various sites. In this same spirit of openness, we are continuing our active approach in supporting the Extractive Industries Transparency Initiative. We publish our contracts and encourage the countries in which we operate to become members of the EITI to support responsible, transparent production and guarantee a sustainable future.

Our Compliance and Duty of Care action plans are also deployed and regularly improved, in line with applicable local or international laws.

Although marked by a tense political, economic and environmental context, which affected our activities and our lives, 2022 was also a year which, thanks to the commitment of all employees, enabled Orano Mining and its subsidiaries to achieve significant operational steps and to pursue promising development actions that allow us to look to the future with commitment, pride, determination and optimism.



# 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

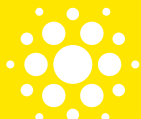
Orano's governance is supported by a Board of Directors, an Executive Committee and four specialised committees that issue opinions and recommendations: the Strategic and Investment Committee, the Audit and Ethics Committee, the Appointments and Compensation Committee, the End of Cycle Obligations Monitoring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



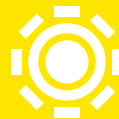
Mining



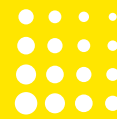
Uranium conversion and enrichment



Used fuel recycling



Nuclear logistics



Dismantling and services



Engineering



# ORANO MINING KEY FIGURES 2022

**1,343 M€**

Revenue  
(32% of Orano revenue)

**4**

sites in production in 3 countries

**2,915**

employees\* around the world

**12.6 M€**

community investments

**7,524**

tons of uranium

**79%**

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

**TOP 3**

Worldwide in its businesses

**98.2%**

of our employees  
are from the host country

\* Excluding internship / apprenticeship contract

# 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 Mining 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.

[More information on Orano Mining innovation](#)



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
- **Production:** extraction of uranium ore using various mining techniques, and ore processing (concentration of natural uranium by chemical means)
- **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 Mining 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 an industrialized country of about 50 millions inhabitants such as Spain.

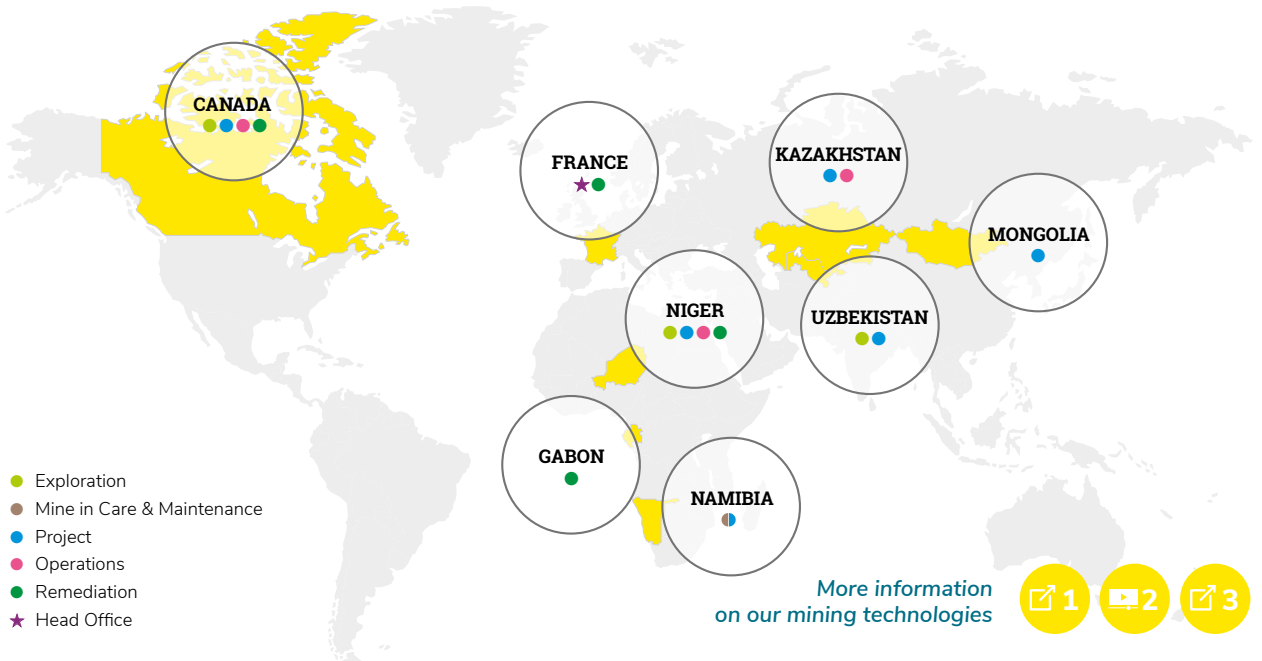
The production of the same amount of electricity from coal would have resulted in the release of 240 million additional tons of GHG.



Orano Mining has a diverse assets and portfolio, which constitutes an important security factor for utilities

seeking longterm guarantees with regard to uranium supplies.

### OUR MAIN MINING SITES



## PHASE 1

### EXPLORATION FINDING NEW URANIUM DEPOSITS

Exploration consists of finding uranium ore deposits of sufficient grade to allow mining under acceptable economic, technical, environmental and social conditions. This is an important step in developing the basis for a constructive dialogue with the people living near the potential future mining project and in conducting an initial environmental assessment.

## PHASE 2

### DEVELOPMENT OF FUTURE MINING PROJECTS

Project development follows feasibility studies that have confirmed the possibility of exploiting a deposit.

At this stage the techniques for extracting and processing the ore are selected. This is also the phase in which the new facilities and associated infrastructure are built. These development activities are accompanied by an environmental impact study presented to the

authorities and civil society during public hearings and multi-stakeholder working groups. This is also a time during which the integration of future operations in the regions (development of local socio-economic projects, creation of direct and indirect jobs, etc.) is being prepared.

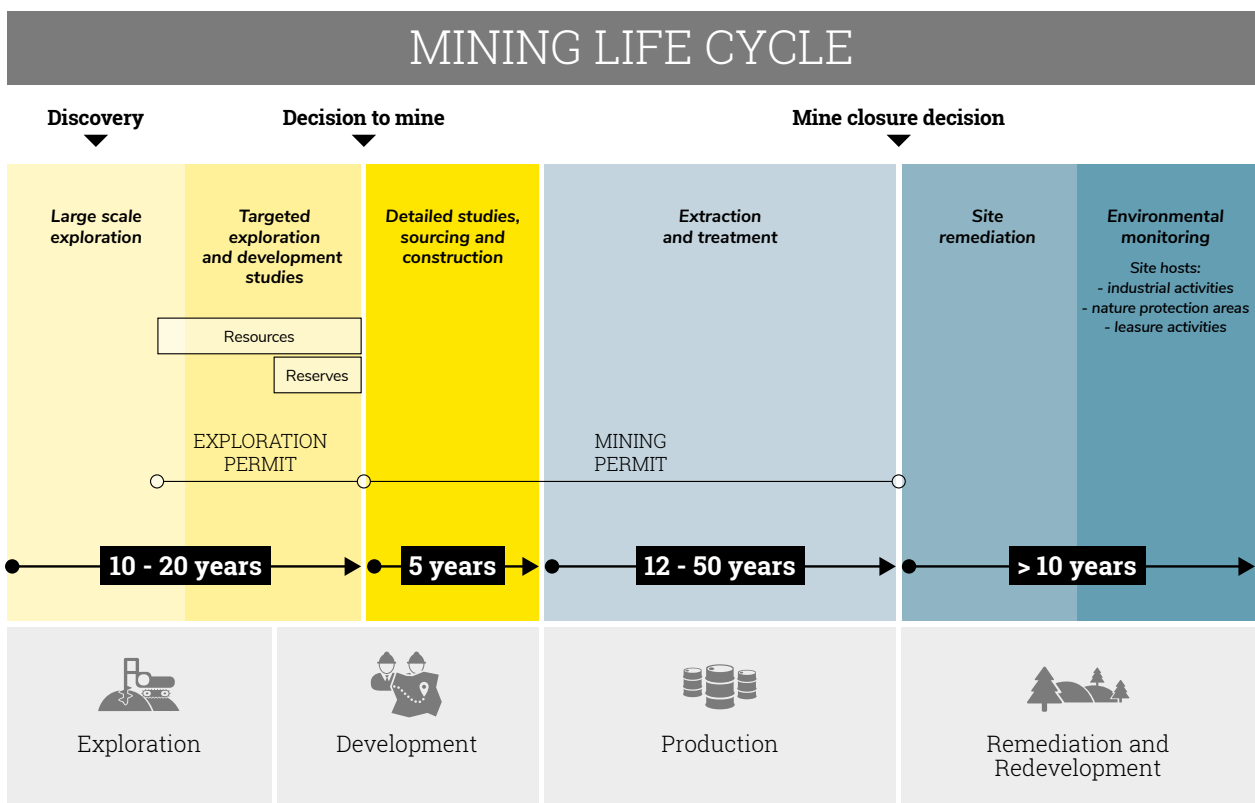
## PHASE 3

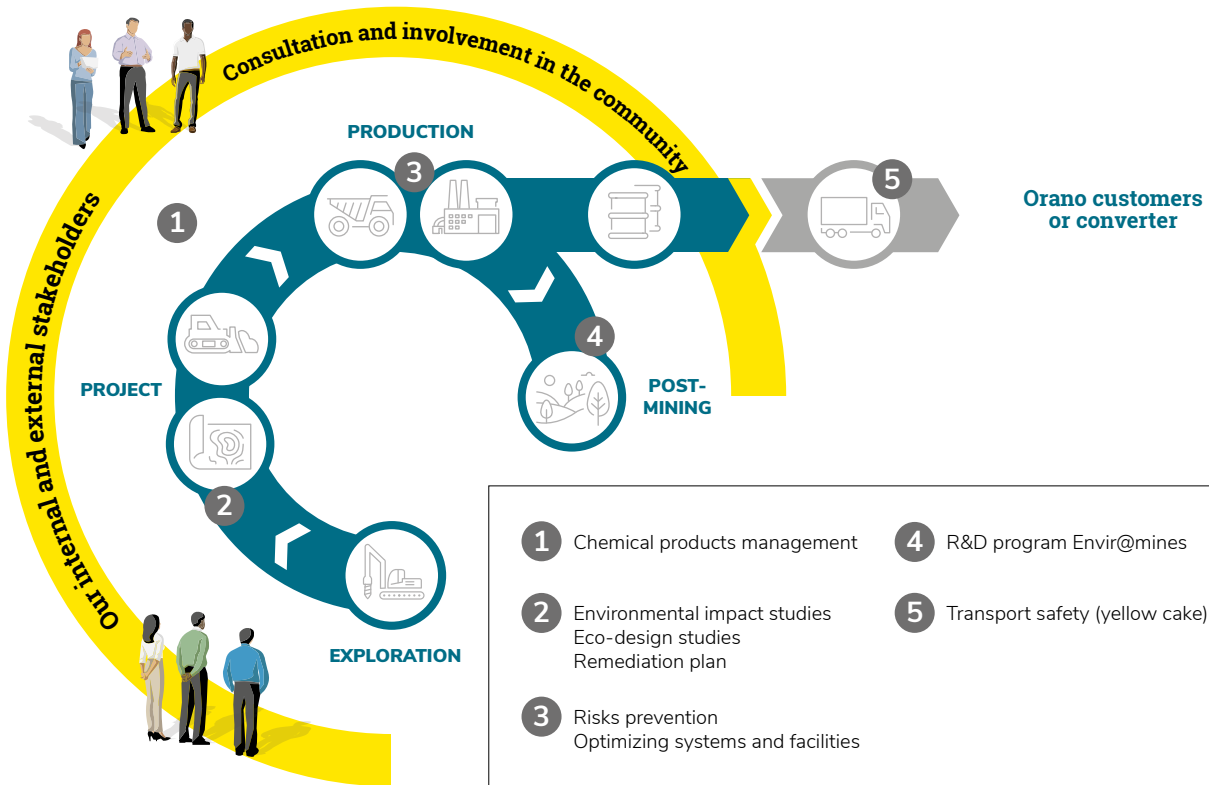
### MINING

Mining itself includes the extraction and processing of the ore. Three methods are used to extract uranium ore: open-pit mining, underground mining, and in situ recovery (ISR). These techniques are used depending on the configuration of the deposit and the nature of the ore (depth of the deposit, uranium content, safety conditions and environmental protection, etc.).

The extracted ore is then treated mechanically and chemically according to a process adapted to its intrinsic properties in order to be transformed into a uranate concentrate: the "yellow cake". This is the form in which the uranium is marketed.

Processing the ore requires the use of chemicals, the transport, storage and use of which are covered by our





risk prevention and management system. This phase of high industrial activity requires that all necessary measures be put in place to ensure the health and safety of employees and neighboring populations. The impact on the environment must be as low as reasonably possible. This is also an important phase for local socio-economic development, as industrial activities generally last for several decades.

**PHASE 4**

**REMEDIATION OF MINE SITES**

After the production period (and as early as possible), Orano Mining plans the remediation of the mining sites. This involves ensuring public safety and health, reintegrating the landscape, and limiting the residual impact of past activities on the environment and populations.

Orano has developed real expertise in this field, regardless of the type of mine. Since the beginning of the group's mining activities, several hundred million euros have been invested to ensure the remediation and environmental monitoring of former sites in France, Gabon, the United States, Canada, and Niger.

**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 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 operating subsidiaries (SOMAÏR, KATCO, OCI).

**Orano Mining**

Since the Meeting of Shareholders held on April 13, 2022, Orano Mining has changed its legal form from a Société Anonyme to a Société par Actions Simplifiée with a single shareholder. Nicolas MAES has been appointed President of the Company.

The Chairman of the Company is appointed for four years by the sole shareholder. He is responsible for the administration and general management of the

Company. The Chairman of the Company is vested with broad general powers to act on behalf of the Company within the limits of the corporate purpose and represents the Company vis-à-vis third parties. The Chairman is not assisted in the performance of his duties by general managers. Each year, the Chairman makes a declaration of conflict of interest in accordance with Orano's internal procedure. N. Maes is also a member of Orano's Executive Committee.

The Company's primary mission is to ensure the operational consistency of the mining business in France and abroad.

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) and two other sites abroad (Niger and Kazakhstan).

## 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 every two weeks 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, Engagement and Communication, Sourcing, Supply & Customer Service) and the functional departments (Human Resources, Finance, Legal, Strategy and Development).

In 2022, there are 3 women out of the 12 Parisian members of the Management Committee, representing 25% of the members, a 8% increase compared to 2021.

# Uranium market



**Orano Mining 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 particular in Mongolia, Uzbekistan or in Niger.**

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

2022 is a continuation of the gradual restoration of production levels prior to the health crisis for mining operations in a geopolitical and economic context marked by the conflict in Ukraine, tensions in the raw materials supply chain and inflationary pressure.

While during the second half of 2021, the spot price price had risen and fluctuated sharply, mainly in response to mainly in response to massive purchases by financial investors, spot uranium prices stabilized between USD 40 and 45/lbU<sub>3</sub>O<sub>8</sub> in early 2022.

With the outbreak of the Russian-Ukrainian conflict and the risk of sanctions against imports from Russia, the spot price rose sharply to almost 60 USD/lb. to reach almost 60 USD/lbU<sub>3</sub>O<sub>8</sub> by mid-March 2022, its highest level in 11 years.

-In the absence of sanctions against Russia, the spot price, the spot price has fallen and is fluctuating between 45 USD/lbU<sub>3</sub>O<sub>8</sub> and 55 USD/lbU<sub>3</sub>O<sub>8</sub> since June 2022.

The long-term price indicator has also increased, stabilizing at around 52 USD/lbU<sub>3</sub>O<sub>8</sub> at the end of 2022

at the end of 2022 (compared to 41 USD/lbU<sub>3</sub>O<sub>8</sub> at the end of 2021).

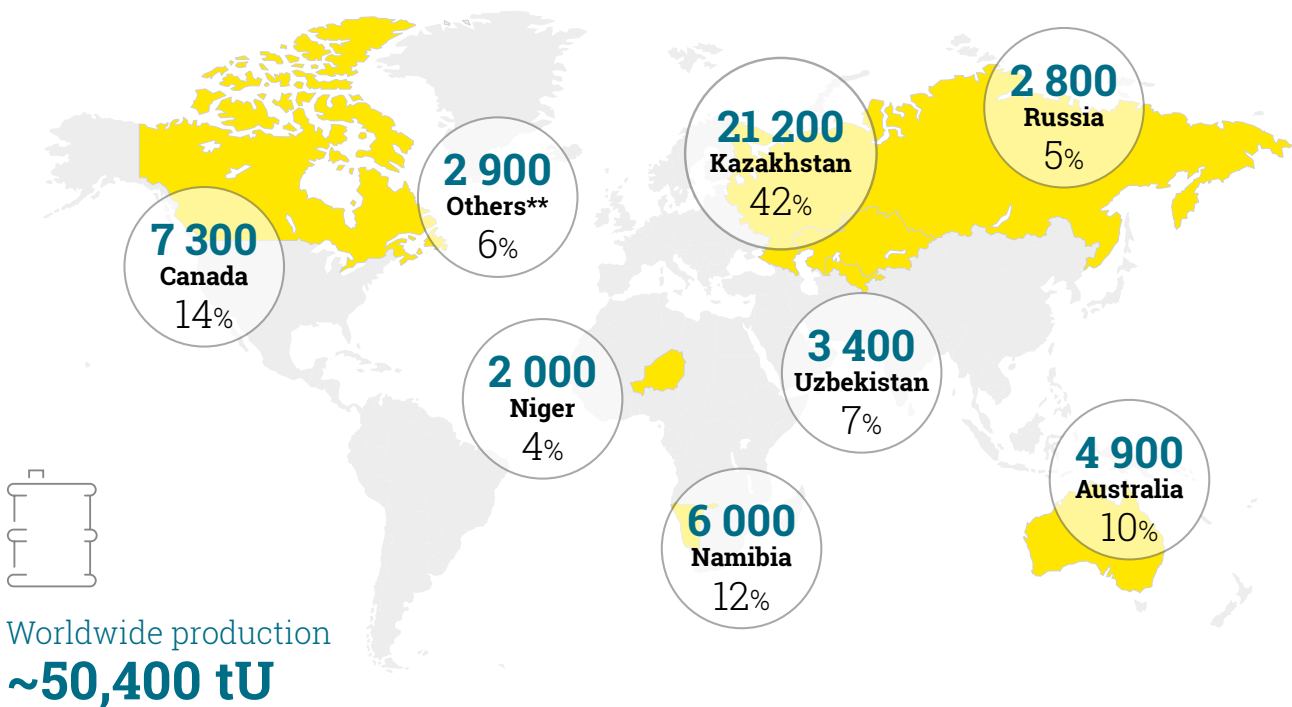
## Demand and supply

Uranium demand stood at approximately 74,000 tU in 2022, down from 2021, which was marked by significant additional demand generated mainly by financial funds and decreased in 2022.

Supply worldwide consists of:

- **Mining production**, which amounted to approximately 50,400 tU\*, up from 2021. This recovery is mainly related to a full year of activity at the Cigar Lake mine (Canada, operated by Cameco) and McClean Lake plant (operated by Orano) whereas 2021 was marked by a temporary shutdown the beginning of the year because of the health and the end of the maintenance shutdown at Olympic Dam (Australia - operated by Olympic Dam (Australia - operated by BHP Billiton, Smelter Campaign Maintenance 2021 Project - SCM21) in January 2022 and its return to full capacity in April 2022. In addition, there is the restart of the McArthur mine and Key Lake plant in November 2022. We also highlight that the reference level in

### MAIN URANIUM PRODUCERS IN 2022 (tU)



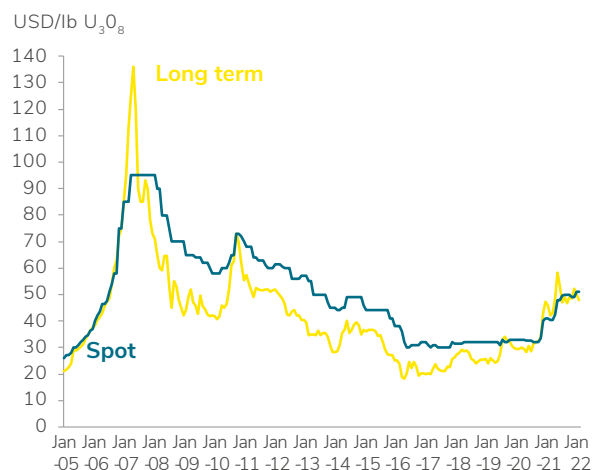
\* Sources: UXC Q4 2022 and external communication- Figures rounded to the nearest hundred of tU  
 \*\* China, South Africa, India, USA, Brazil, Ukraine, ...

Kazakhstan continues to be below the capacities provided for in the contracts for the use of the subsoil of the Kazakh mines, as decided by Kazatomprom

- **Secondary resources** estimated at a total of nearly 21 000 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 2005-2022 of uranium prices indices (In current dollars)



## 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 50% of the world's nuclear utilities, in Asia, Europe and North America.

## Production of mining sites

Despite an uncertain geopolitical and economic context and tensions on raw material supplies, in particular sulphuric acid in Kazakhstan, limiting the production of our KATCO mine, good control of production costs and

the level of investments have enabled Orano Mining to maintain good operational and financial performances in 2022:

- SOMAÏR produced 2,020 metric tons of uranium (on a 100% basis)
- KATCO produced 2,564 metric tons of uranium (on a 100% basis)
- Cigar Lake - McClean produced 6,938 metric tons of uranium (on a 100% basis)
- McArthur River - Key Lake produced 442 metric tons of uranium (on a 100% basis)

The restart of the McArthur mine and the Key Lake plant, announced in February 2022, has been effective since November 2022 after nearly five years of mothballing.

#### Orano mines production in 2022 (tU)

Country	Sites	Financial consolidation 2022 tU	Type*
Canada	McArthur River	133	UG
	Cigar Lake	2 807	UG
	<b>Total Canada</b>	<b>2 940</b>	
Kazakhstan	KATCO	2 564	ISR
	<b>Total Kazakhstan</b>	<b>2 564</b>	
Niger	SOMAÏR	2 020	OP
	<b>Total Niger</b>	<b>2 020</b>	
<b>TOTAL</b>		<b>7 524</b>	

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





# Orano's CSR Approach



## 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)

[For more information on the CSR policy](#)



It has its own governance system. 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, and 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 converted into action plans by the sites and regularly updated to keep pace with the expectations of our stakeholders.

In 2022, the mapping conducted by the Nurlikum Mining subsidiary in Uzbekistan was finalized. A partial update of KATCO's mapping was launched, as well as a call for tenders for a stakeholder mapping on the Imouraren site in Niger.

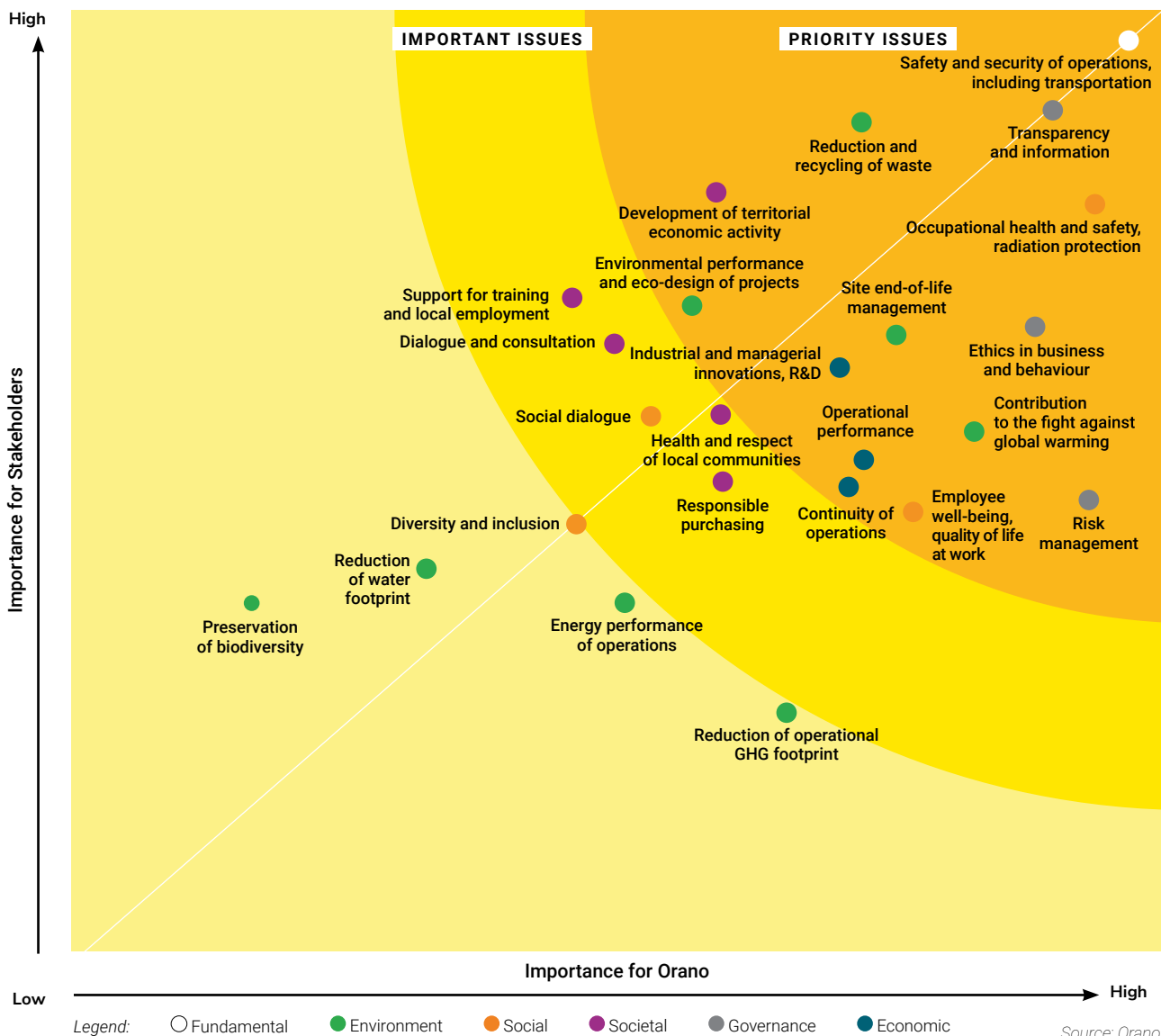
Furthermore, the Group-wide materiality exercise conducted by Orano in early 2020 identified key expectations, risks and opportunities. All of this served as a basis for defining the CSR Engagement approach. The resulting matrix (cf. Orano annual report, chapter 4.2.1, p.98 ) confirms the feedback registered by Orano Mining, its priorities and key issues within its mining scope.

PRIORITIES AREAS SELECTED	MAIN MINING PRINCIPLES
Transparency	1 - 2 - 10
Environmental footprint	6 - 4 - 7 - 8 - 2
Health / Safety	5 - 4
Risk management	2 - 4 - 8
Remediation	6

Community involvement	9 - 10 - 1 - 2
Ethical business	1 - 2 - 3 - 4
Our Employees	3

This materiality analysis and the resulting non-financial risks are consistent with the risks detailed in the Group's activity report (see detailed risks in chapter 3, p.40 and the list of material issues in chapter 4.2.1, p.98).

### MATERIALITY MATRIX FOR ORANO'S STAKEHOLDER ISSUES



## 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, which extends to 2030, is structured around five axes:

- **Competencies:** mobilize proud and committed employees who embody our purpose
- **Cash:** operate efficiently by reducing our footprint
- **Climate:** contribute to carbon neutrality and adapt to climate consequences
- **Customer growth:** innovate to preserve resources and protect health
- **Communities:** be engaged and responsible locally in our environment

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 selected shared with the various departments and set out in the operational Master Plan for each site.

In the interest of transparency and providing information to our stakeholders, the achievement of the 2022 objectives and the objectives set for 2023 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 synthesis of the roadmap' follow-up is regularly communicated to staff, allowing everyone to understand the milestones and achievements.

In 2022, 92% of the objectives set have been achieved or are being achieved. The 3% of 2022 objectives that could not be achieved concern the 10% increase in the share of women in the TOP 160\*. 5% of objectives were not linked to a specific KPI in 2022.

Finally, the 12% of objectives that could not be achieved in 2021 were achieved in 2022, i.e. the construction of the Bernardin photovoltaic power plant was able to start in 2022 and no strike lasting more than one week took place at our sites.

The 2023 objectives have been shared within the BU. They have been adapted for each site and should enable us to meet our commitments for 2025 or 2030.

\*TOP 160: 160 leading positions in Orano Mining

## Orano Mining's Commitment Roadmap

Our Values		
SAFETY, SECURITY		
2025	2022	
<b>Tend to a long-term TF1 &lt;or = at 1</b>	Mapping of the enhanced security posts and defined additional barriers Define drilling action plan Provide KATCO and SOMAÏR feedback to all site	●
<b>Tend to a TF2 &lt; or = to 3.5</b>	Progress on deviation detection: - 100% « Living » Pareto in MVP - 100% Working Group lifting and security culture done and Actions plan deployed	●
<b>Maintenance of the Health Observatory in Niger after the closure of COMINAK</b>	Strengthen OSRA's role and missions with stakeholders by taking into account its new governance	●
<b>Towards passive management of tailings storage for new mining sites (2030)</b>	2022 PNGMDR Commitments compliance Stability expertise for Bernardan tailings storage	●
<b>Industrial risks: 0 unacceptable scenario according to the MMR</b>	80% of 2022 improvement measures identified for unacceptable scenarios implemented 100% of OCI hazard studies carried out	●
<b>Application of ICMM "tailings dams" recommendations in proportion to the challenges</b>	Mounana Expertise (report done) and Bernardan stability study Governance on sites (SOMAÏR, OCI et France) according to « Orano Mining Standard tailings dams »	●

Our Values		
ETHICS DIALOGUE AND TRANSPARENCY		
2025	2022	
<b>Contracts published under the EITI standard whenever authorized by the States</b>	Publications réalisées	●
<b>Deployment of the compliance action plan</b>	Grievance mechanism: pursue deployment and 1st publications	●
	Duty of Care: approach and action plan deployed in all countries	◐
	Rules of validation of social actions and communication, updated and deployed (Mining DOA update)	●

The 5C levers

**COMMUNITIES: TO BE COMMITTED AND RESPONSIBLE LOCALLY IN OUR ENVIRONMENT**

2025	2022	
Maintain a high level of local recruitment (95% minimum)	Rate maintenance	●
Promote access to employment for people who are far from it	Build 3 new partnerships on diversity and inclusion	●
Taking into account CSR criteria in the tender documents > 1 M€	Goal achieved in 2021	●
Maintain the local purchase rate (75% minimum)	Rate maintenance	●
Develop the installation of photovoltaics (+130 MW in France)	Starting of the solar plant on the Baconnière site Start construction on Bernardan site	●
Responsible closure and remediation of COMINAK	100% of 2022 commitments within the framework of the redevelopment project 75% ZI milestones ON TIME DELIVERY	◐
Fauna-flora inventory of -10 years for each site in 2025	No goal set for 2022	⊗
Moving towards zero net loss biodiversity	Assessment of the footprint of Orano Mining on biodiversity Mapping of our land use	◐
Eco-design all our major projects > € 5M launched from 2021	100% of projects worth + € 5M eco-designed	●







The 5C levers

**CUSTOMERS GROWTH: INNOVATING FOR RESOURCE CONSERVATION AND HEALTH**

2025	2022	
Develop battery recycling (by building industrial facilities capable of processing waste from gigafactories of batteries for start-up in 2025)	Starting and exploiting the battery pilots	◐
Develop external turnover for the CIME (+ 5 M€)	Develop the business of CIME (+ 1M€ / year)	●





## The 5C levers

**COMPETENCIES: MOBILISING PROUD AND COMMITTED EMPLOYEES WHO EMBODY OUR REASON FOR BEING**

2025	2022	
Reach a significant rate of employee who recommend Orano (80%)*	Rate maintenance	
Support our employees towards certifying, qualifying or diploma training courses	10% of the training budget spent on qualifying, diploma or certification trainings	
Keep the level of social conflict as low as possible according to GRI criteria	Less than 1 week of strike per year per country of operation	
Increase the proportion of women in the top management in 160 key positions (+50%)	10% annual increase	
New partnerships with schools close to our sites in connection with our skills	Target 3 new school / business partnerships	
Supporting our employees to succeed in the digital transformation	By continuing to roll out our digital transformation initiatives Maturity goals defined for each site	

## The 5C levers









**CLIMATE: CONTRIBUTE TO CARBON NEUTRALITY**

2025	2022	
Reduce CO <sub>2</sub> emissions equivalent to carbon on operated activities (-30%)	To target a secure portfolio at 35% of the 2025 objectives by the end of 2022	
Supporting the decarbonisation of electricity in the countries where we operate	Finalize the engineering study and start building solar plant in SOMAÏR Looking for renewable energy opportunities (KATCO, Namibia...)	
When relevant, increase the share of low carbon energy on our sites in operation	Taking into account the evolution of countries' emission factor in the carbon trajectory	
Carbon Energy Performance Plan (-10% ref. 2019)	By conducting an inventory of the action plans of the energy audits carried out on our sites in 2017	





\* New survey methodology

The 5C levers

**CASH: OPERATING EFFICIENTLY BY REDUCING OUR FOOTPRINT**

2025	2022	
<b>Reduction water consumption per ton of U produced (-10%)</b>	Mapping and water measurement reliability, action plans completed on site (KATCO, OCI, SOMAÏR) By elaborating eco-design recommendations in line with Orano Working Groups (Water and Eco-design)	
<b>Provide each site with water issues with a water management plan shared by stakeholders</b>	Gap analysis with water ICMM Standard completed for operational sites	
<b>Developing predictive models on natural attenuation in ISR</b>	80% environmental R&D roadmap milestones achieved on: KATCO & KAZATOMPROM, Zuuveh Ovoo pilot and ISR studies on Imouraren	
<b>Contribute to national policies for reducing plastic waste in our areas of operation</b>	KATCO: improve the plastic water bottles recovery Arlit: recycling sector development identification	
<b>Maintain R&amp;D actions in the optimization of water treatment in stations</b>	Jalerys: project sizing phase Bellezane et Le Cellier: waiting for study results	
<b>Reduce our production of non-recycled waste (- 25% in 2030 compared to 2019)</b>	Fiabilization of conventional waste measurement Action plan completed for KATCO, OCI, SOMAÏR sites Define waste management for new sites	
<b>Keep our certifications on our production sites and deploy them on planned sites</b>	Bessines certification renewal	
<b>Operational excellence commitment</b>	By maintaining a portfolio > 40 M€ By stabilizing our maturity at 30 points By deploying model areas on all our sites	

Captions

-  Completed
-  In progress
-  Not achieved
-  Not applicable



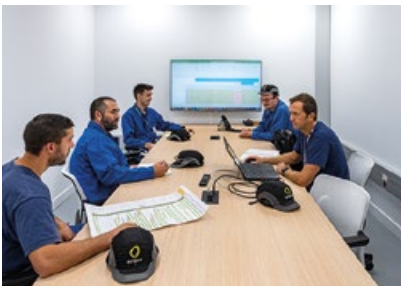
## OUR 2022 PERFORMANCE:



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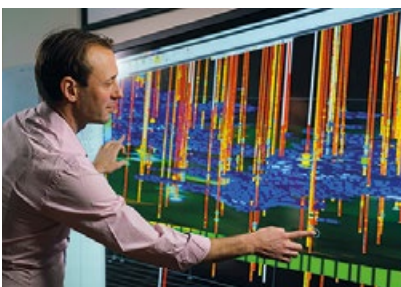
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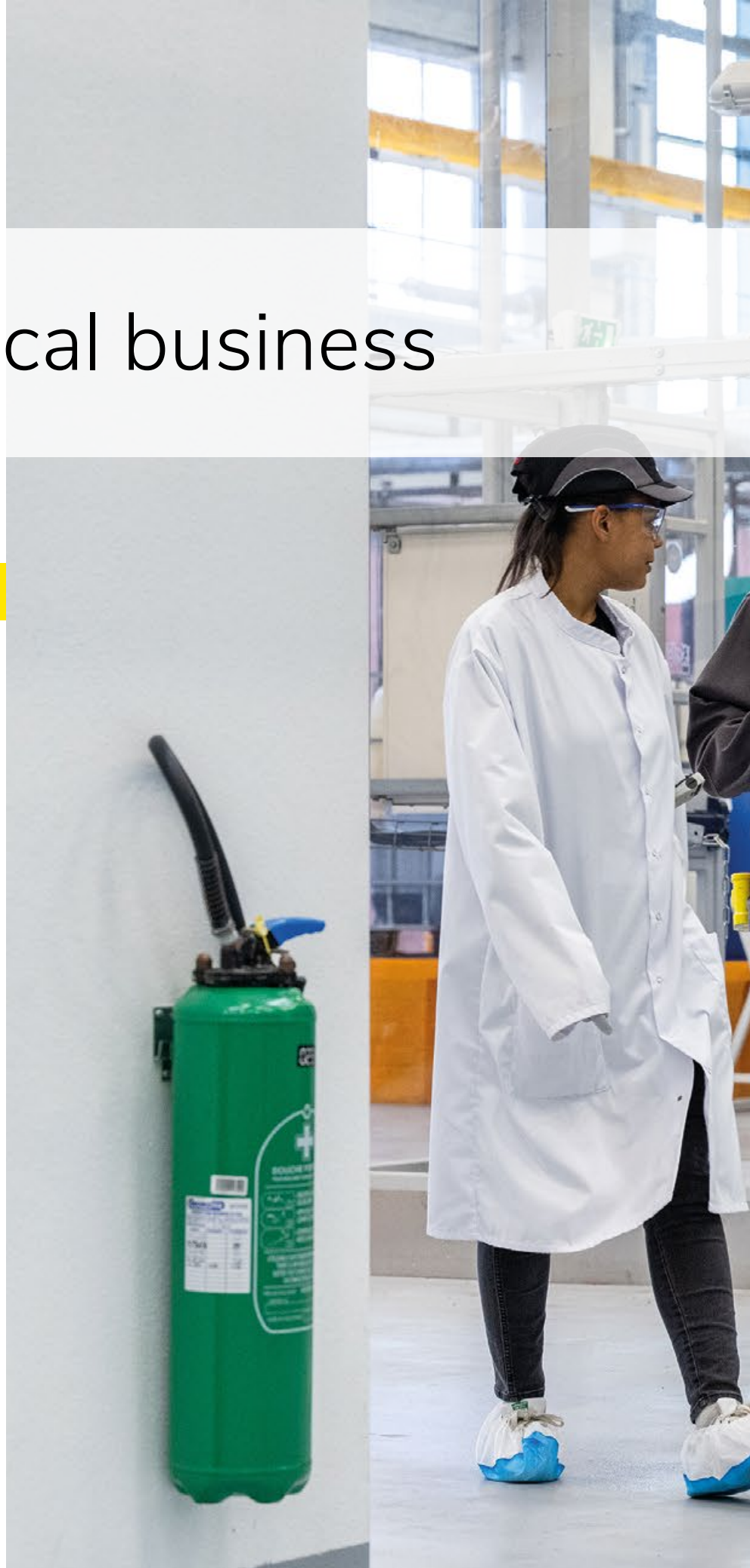
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# Ethical business

## MINING PRINCIPLE

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





## 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 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 fiscal year based on French law over the whole relevant scope by the application of this law and according to the principles of the EITI.

[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 the Orano Risks, Compliance, and Internal Audit Department 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. When necessary, local correspondents report on legislative changes in their country concerning compliance. In addition, a legal monitoring is implemented locally with the aim of anticipating new regulations and regulatory changes applicable to Orano Mining and its subsidiaries.

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.

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 corruption and influence peddling** for Orano Mining (updated every year)
- **Implementation of the Anti-Corruption Code of Conduct** (appendix of the Code of Ethics and Business Conduct), its integration in Orano Mining's internal regulations, and its deployment (and providing each employee with the Orano Code of Ethics and Business Conduct)
- **An e-learning course** specifically developed on the basis of the Orano Code of Ethics and Business Conduct and intended for all employees. A comic book of the e-learning was created for the employees who don't access to the web.
- **A face-to-face training or remote course** deployed for the employees most exposed to risk
- **The systematization of the verification process for third-party compliance** in accordance with a Group procedure (see chapter 4.3.3 of the Orano annual report p. 113 )



- Or the reinforced formalization of certain controls and in particular relating to accounting transactions, with the implementation of procedures to ensure that accounting books and records are not used to hide acts of corruption or influence

#### The pillars of the orano anti-corruption and prevention of influence-peddling program



To identify and assess the risks of corruption and influence peddling to which Orano Mining and its subsidiaries are exposed, all of our sites worldwide undergo an annual assessment. These risks are classified in 12 risk sub-families (purchasing, sales activities, intermediaries and/or agents, lobbying, relations with public authorities, partnership/consortium, real estate, M&A – acquisition/transfer of participation, sponsoring – donations and patronage, trading, confidential information, etc.) that are assessed according to 3 criteria (severity, occurrence, and level of control).

Risk mapping is performed based on 12 sub-groups risks defined by the Group. The most significant scenarios for Orano Mining remain linked to 4 risk sub-families:

- Risk in relations with public authorities
  - Principal corruption risk, both active and passive, to obtain a favorable decision: known and relatively controlled
  - Payment of facilitation payments
- Risk as part of purchasing goods and/or services
  - Risk originating with suppliers – active corruption
  - Risk of imposed supplier
- Risk linked to obtaining or disclosing confidential information
- Risk in sponsoring, donation, and patronage
  - Related to local actions => risks common to all countries

Several further measures were set up at the Group level and deployed in subsidiary entities of Orano Mining:


- we issued a policy on gifts and invitations and a SharePoint for declaring them

- we reinforced the Orano ethics-related alerts via an externalized platform, accessible to all Group employees in several languages (French, English, Russian, Mongol, etc.). Using this system, the employees can anonymously report any breaches of applicable regulations or of the Group's internal procedures and rules, in particular breaches linked to the Orano Code of Ethics and Business Conduct. Permanent communication about this system is carried out via the intranet and/or displays at the sites
- we continued a number of managerial communication campaigns
- we released and circulated an educational booklet: "Ethics and compliance - What you need to do"

#### 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.

In 2022, Orano updated its Code of Ethics and Business Conduct. It defines the shared values, consistent with the Group's reason for being and its commitment strategy. The Group's Code of Ethics and Business Conduct sets forth the principles and rules for complying with these values on a daily basis. It reflects the Group's culture and its commitments regarding all stakeholders, notably to promote sustainable development and compliance with human rights.

It serves as a reference for all employees and directors and presents the expectations and the level of requirement to any person wishing to play a role in its development. It applies to sub-contractors and suppliers who must sign a specific sustainable development commitment document.

The Orano Code of Ethics and Business Conduct is accessible to all, in 9 languages, on the website  and on the Group's intranet. It is provided to every new hire who must familiarize themselves with it. They may refer to it in a situation seemingly contrary to the code's principles, whether this involves an issue related to human rights or to other values and principles espoused by the Group. Orano has also set up an e-learning training module, "Our Code of Ethics" (30 minutes in several languages), focused on the proper application of the Group's Code of Ethics and Business Conduct, including a knowledge validation test. During their annual interview with their manager, the employees formally confirm their commitment to comply with the rules of the Code of Ethics and Business Conduct and participate in the online training.

The Orano Code Ethics and Business Conduct 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 Orano Risks, Compliance, and Internal Audit 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.

Orano Mining supports beneficial ownership transparency and is committed to avoid partnering or contracting with companies assessed as high corruption risk that decline to identify their beneficial owners unless appropriate mitigation measures are implemented to reduce corruption risk as per our principles included in our Code of Ethics and business conduct.

## Strengthening the whistleblowing system

Since 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 several languages. 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 of the Group’s employees to immediately raise the alert if any blatant incident or breach of a statutory or regulatory obligation or violation of the Code of 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, 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

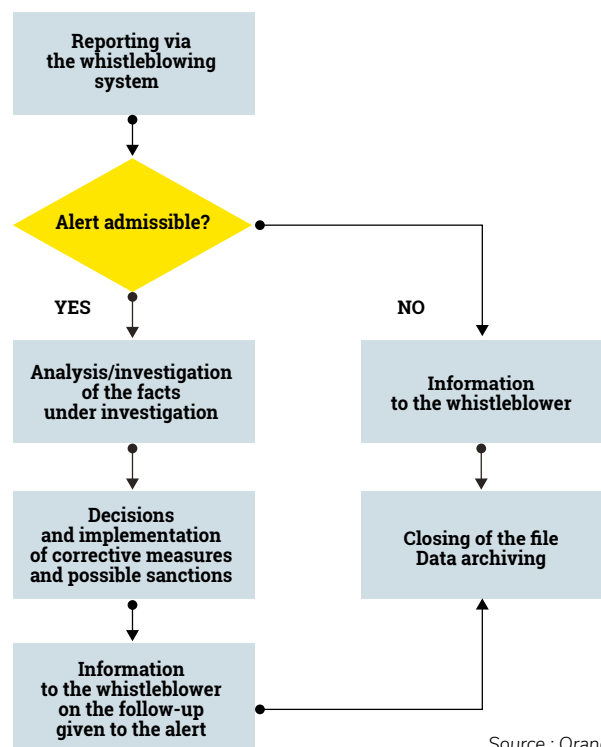


campaign opens with a letter from the Senior Executive Vice President of Orano Mining, in application of the letter of instruction from the CEO of Orano. This process involves all our directors and their managerial staff in all the countries where we are present (Orano Mining and its sites in France and abroad, as well as its subsidiaries).

All members of the Orano Mining Management Committee and of the management committees of subsidiaries are made aware of the subject and have followed or will be following training in Ethics. A managerial kit has been created to help directors to manage ethics-related alerts.

## PROCESS

### Orano process for handling an ethics-related alert



Source : Orano



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 the Group's Risks, Compliance, and Internal Audit Department immediately.

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. Since 2019, a dedicated, secure external web platform (available in several languages) for collecting alerts has allowed the system to be further strengthened.

[Consult Orano's annual report](#)



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 occurring within Orano Mining in France and internationally are classified by family, and 2022 reporting concerned 73 cases related to:

- Interpersonal relations and human rights
- Security, safety, and the environment
- Data protection and privacy
- Quality fraud
- Financial fraud, theft, and false declarations
- Corruption
- Competition


## CONTROLS AND SANCTIONS

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

The 73 cases reported in France and internationally, within Orano Mining in 2022, were:

- 9 dismissals
- 26 disciplinary actions, from a simple warning to suspension

In 2022, the ethics alert mechanism was used 4 times within the scope of mining activities.

Furthermore, since 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.142* ).

## 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 of the BU (See *Mining Principle 2.1 - Decision Making p.36* ).


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.

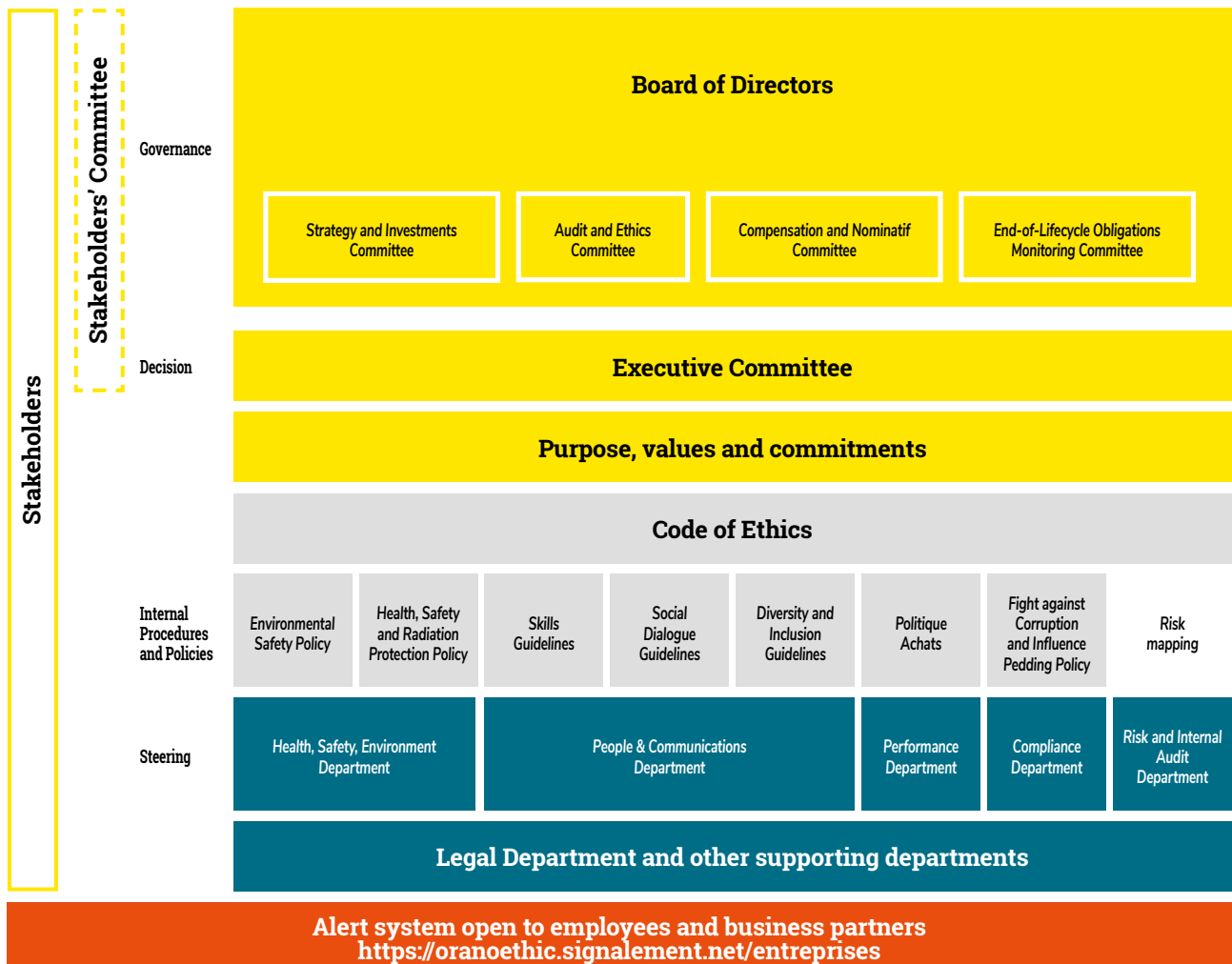
### Non-financial governance of Orano

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 4.1.3, p.96 ).

The Risks, Compliance, and Internal Audit Director, 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

#### Orano's non-financial governance







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 4.3.3, p.113 .

## PRINCIPLE 1.5

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

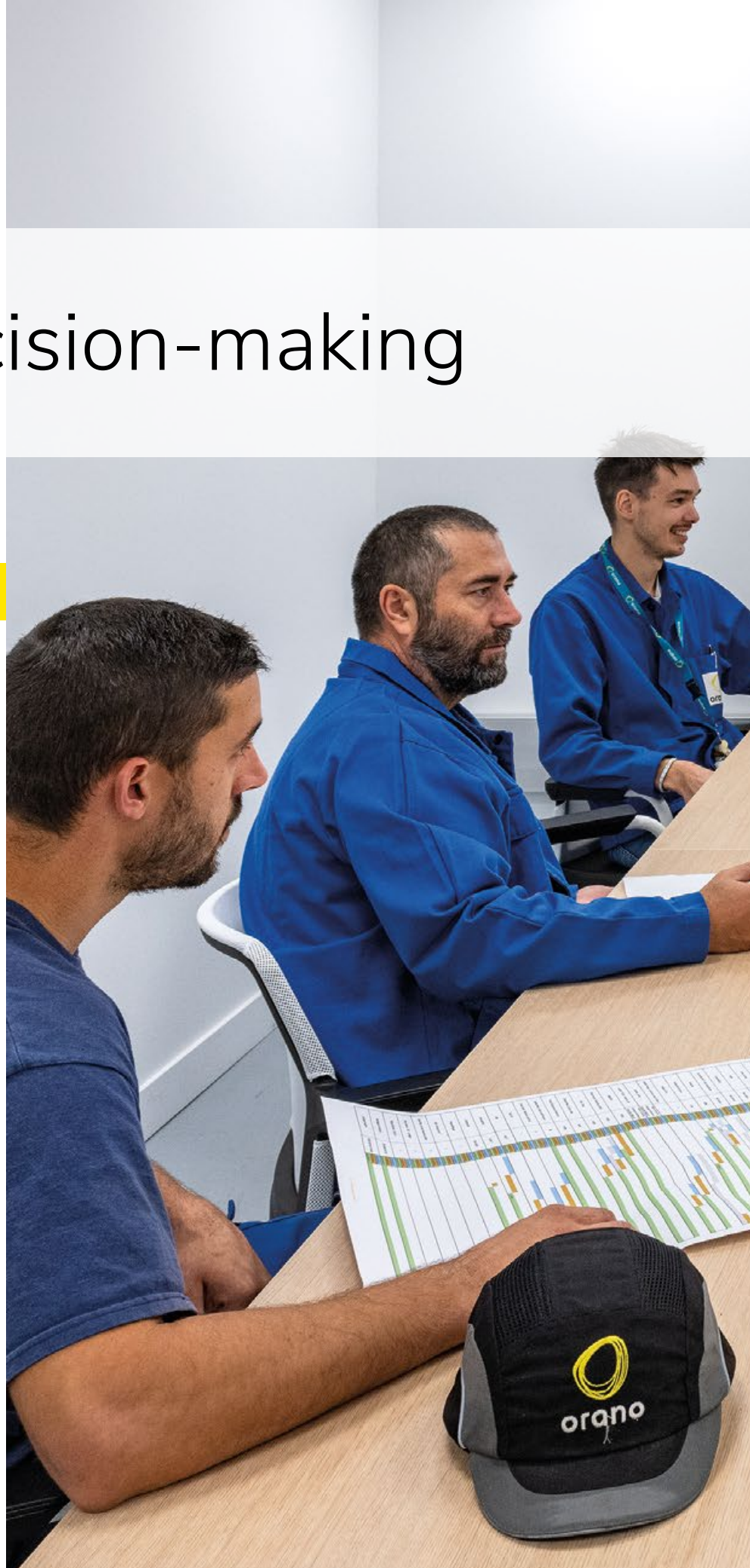
Orano Mining does not favor any political party, group or individual and does not make any direct or indirect payment to political parties or to candidates in any of the countries in which we are present.



# Decision-making

## MINING PRINCIPLE

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





## 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.**

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 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.

[More information on Orano Mining's governance, p.13](#)



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](#)



### Governance of Orano mining's approach to CSR

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)

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 Director 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

In order to ensure its deployment, a CSR committee was established in 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.17](#)



## PRINCIPLE 2.2

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

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, Risks, Internal Audit 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 Mining has made a point of getting its suppliers to engage in a process of sustainable development. For several years, all Orano Mining 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, the prohibition of child labor, the fight against discrimination, compliance with the legal number of working hours, applicable 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 clauses set out 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 Mining, where applicable, its customer, any third party mandated by Orano Mining 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, human rights, social and environmental commitments, 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 (by means of supplier selection criteria and qualification audits and monitoring programs during the fulfillment of contracts or orders)
- 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
- The CO<sub>2</sub> emission factors of the most important suppliers

Since the end of April 2019, a systematic assessment process for new suppliers, adapted to the level of risk involved (compliance, corruption, the taking into account of social and environmental criteria, etc.), 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. It is the purchasing decision-making committee which takes a decision on the choice of suppliers and which takes care to ensure that different criteria, notably those of an environmental and social nature, and relating to human rights and safety, are taken into account.

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 dispute has not been resolved through amicable negotiation. The internal mediator will seek a concerted solution that suits both parties, contactable at the following email address: [mediateur@orano.group](mailto:mediateur@orano.group).

In 2022, in order to be in line with the commitment made for 2025, Orano Mining created a working group led by the Chairman of Orano Mining, with representatives from the Legal, Supply Chain, and CSR Departments. The set objective was to improve the mapping of the CSR risks of all suppliers and subcontractors for the scope of Orano Mining.

## Mapping of Orano Mining supplier and subcontractor risks with regard to CSR risks

This approach complements the risk analyses conducted during the annual Business Risk Model (BRM) campaign which has incorporated the duty of care since 2018 (cf. Orano annual report 3.2.1, p.61 ).

The identification of suppliers and subcontractors posing a risk is based on the three criteria selected by the Orano group, namely the annual volume of purchases made, the sector of activity, and the geographical location of the activity.

The first element taken into account is the country of origin of the suppliers, according to the Legatum Prosperity Index which ranks 167 countries based on 104 items divided into 12 categories such as health, education, personal freedom, governance, safety & security, and the environment, etc.. These countries have been classified by Orano Mining into 3 main categories.

The second element examined in the mapping is the Purchasing segment. Out of the 132 Purchasing segments, 13 are specific to the Mining BU, and mainly concern the purchasing and maintenance of site machinery or the purchasing of chemical process production equipment. These segments have been classified into 4 categories. The highest category (17 segments) is that for suppliers with high manual added value.

The purchasing amount is the 3rd criterion. In 2022, Orano Mining chose to concentrate its efforts on the assessment of suppliers from countries with the highest levels of risk (category 3), concerning a Purchasing segment with the highest level of risk (category 4) and with a purchasing amount in excess of € 1 million.

A lower purchasing amount (3rd criterion) and all countries where the Mining BU is present will be taken into account gradually from 2023.

For the suppliers and subcontractors concerned by the high-risk categories in 2022, a risk assessment questionnaire based on the 4 pillars of the duty of care

– human rights, the environment, health and safety of persons and fundamental freedoms – is filled out by the purchasers. Starting from 2023, it will be sent directly to suppliers for self-assessment.

The conditions for the signing of contracts and any action plan depend on the score obtained in this questionnaire. The arbitration for the signing of the contract and the validation of the supplier action plan, if the score obtained by the third party reaches a certain threshold, are the responsibility of an ad-hoc Duty of Care committee. Depending on the amounts concerned by the Purchasing procedure, there are two types of committee, one at the level of the subsidiary concerned and the other at the level of the Business Unit. These two decision-making bodies consist of representatives from the Legal, Compliance, Supply Chain, and CSR functions and the CEO of the subsidiaries or the Chairman of Orano Mining.



## Regular control of suppliers and subcontractors

The group's General Terms and Conditions of Purchase include specific provisions allowing Orano Mining, where applicable, its customer, or any third party mandated by Orano or empowered authority, to access the premises of the supplier or of the subcontractor, for the purpose of verifying or auditing all the requirements specified in the contract or the order. Suppliers may be subject to audits. The contracts or order are then subject to reviews with the suppliers with the registering, where necessary, of grievances and the application of penalties.

Likewise, Orano Mining reserves the right to verify, at any time, that the practices of its suppliers and subcontractors comply with the Code of Ethics and Business Conduct. Where necessary, non-compliance with the provisions set out in the Orano's GTCP and/




or Code of Ethics and Business Conduct may result in termination of the contract or order.

In 2022, SOMAÏR in Niger, for example, conducted several CSR audits thanks to the multidisciplinary skills of their auditors, of a panel of subcontractors with the highest level of risk. This allowed corrective plans of actions to be requested as a result.

## Training of employees and process for the collection and processing of alerts

In addition to raising all employees' awareness of the group's Code of Ethics and Business Conduct, since 2021 Orano Mining has been taking specific actions to raise awareness of the duty of care.

These sessions were first delivered to the management of Orano Mining and are now being gradually deployed in the subsidiaries, prioritizing representatives of the Supply Chain, Legal and CSR functions.

Employees and external stakeholders of Orano were also reminded on a systematic basis of the whistleblowing systems at their disposal (see section 3.4.3.2, Orano report 2022, p.88 ):

- The whistleblowing system which covers topics from Orano's Code of Ethics and Business Conduct and in particular topics arising from France's Sapin II Act and the law on the duty of care
- The mechanism for the processing of grievances deployed by all Orano Mining sites



## 2022 RESULTS

**Duty of care: approach and action plan deployed in all countries**



### OBJECTIVE FOR 2025:

**To expand the inclusion of CSR criteria in calls for tender in Orano Mining subsidiaries, depending on the local legislation in force and on the risks.**



# Human rights

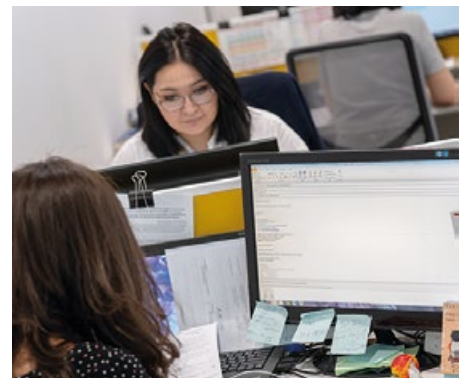
## MINING PRINCIPLE

Respect human rights and the interests, cultures, customs and values of workers 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 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)

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 annual feedback on the complaints received (See Mining Principle 9.3, p.142 )

## 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.

As part of its mining activities, Orano Mining has not, to its knowledge, caused the displacement of a population against their wishes. In Gabon, a project called "Mounana 200" was jointly set up with the government to participate in managing radiologically contaminated buildings.

In Niger, actions were implemented following the shutdown of production activities to limit population movements and the socio-economic impact.



## Mounana 200 project

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

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 CNPPRI (Centre National de Prevention 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. This made it possible to offer a solution for each dwelling in compliance with the list validated by CNPPRI and the Ministry of Mining (playing a supervisory role).

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, 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.


The last works were completed in June 2022. On October 20, 2022, the prefectorial committee met once again for a presentation of the final report on executing the works in the presence of the prefect, deputy prefect, mayor and village leaders. This meeting validated the end of the Mounana 200 project.

At the end of these works, COMUF joined forces with the mayor of Mounana to conduct a large-scale social initiative to renovate sports equipment for the entire Mounana population (For more information about this project, see p.139 .



### FOCUS ON COMINAK FOLLOWING THE SHUTDOWN OF ITS PRODUCTION ACTIVITIES

To limit the socio-economic impact of the shutdown of COMINAK's production activities, concrete actions and measures were put in place to limit as much as possible the physical or economic relocation of families and populations against their wishes.

In social terms, COMINAK transferred all dwellings not occupied by agents still working to the Nigerien State, with the possibility for outgoing agents to benefit from assistance to acquire their dwellings (see agreement between COMINAK and the Ministry of Urbanism signed on February 8, 2021 .

More broadly, of the entire social budget, 4 billion FCFA, or 6 million euros, were allocated over 5 years to develop projects that generate revenue for the local population.

In addition, after several workshops between COMINAK, the Nigerien State, and civil society, market gardening was found to have the strongest local development, with significant potential for the economic reconversion of municipalities in the Arlit and Ifrouane regions.

For more information on COMINAK remediation, see p.86



## 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 labor; avoiding human trafficking; not assigning hazardous/dangerous work to those under 18; eliminating all forms of harassment and discrimination; respecting freedom of association and collective bargaining and; providing a mechanism to address workers grievances.**

Orano Mining 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.28



For more information, see Orano annual report, Chapter 3.4.1, p.75



## 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.

Orano Mining ensures that its suppliers and subcontractors sign the Code of Ethics and Business Conduct along with contractual provisions (For more information ).

In addition, Orano's alert system is open to all (employees, suppliers, service providers, customers) so they can report any dysfunction or suspected transgression (For more information, see the ethics chapter, p.26 ).

A claim mechanism is also accessible to resolve complaints at the operational level (For more information about the claim mechanism, see p.142 ).

## 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.

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. Dedicated training sessions and seminars are organized on a regular basis to allow local teams to improve their skills.


International HR seminars are thus organized every 18 months or so, bringing together in France human resource teams from various countries. The last seminar took place in November 2022 (the first since the end of the pandemic) in the presence of HR directors and managers from Orano Mining France, Orano Canada Inc., KATCO (Kazakhstan), Nurlikum Mining (Uzbekistan), Badrakh Energy (Mongolia), Orano Mining Namibia,



Orano Mining Niger, SOMAÏR, and COMINAK (Niger). This latest seminar covered several topics; for example: 2022 HR master plan results, initial results of the Orano Vox barometer (survey among employees), and training around a questioning method for recruitment and mobility interviews.

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: enhancing employee loyalty in Kazakhstan and Canada in 2022, in a very dynamic employment market, and recruitment in our entities undergoing growth, for example in Uzbekistan.

Finally, in Niger the HR teams continued supporting the reclassification of employees who worked in the COMINAK mine, where production was shut down in 2021. This mine is currently in the remediation phase.


[For more information on COMINAK remediation - social component, see p.89](#) 

In 2022, most countries were confronted with high inflation. Orano Mining responded to this situation by implementing exceptional salary measures adapted to each country.

## Encouraging employee-employer dialogue and respecting the freedom of association and the right to collective bargaining

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. In France, Orano Group agreements have also been signed.

For example, as part of closing the COMINAK site and with support from union representatives and Niger's Administration of Labor, COMINAK implemented a system for its employees that provides for, in addition to the conventional, legal and regulatory system, additional measures for internal and external reclassification along with additional financial compensation.


[For more information on COMINAK remediation plan, p.86](#) 

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 labor Standards Acts". In addition, a three-year collective agreement has been negotiated for the McClean Lake site (June 2022 – May 2025)
- 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 1.2, p.28](#) ).

In 2022, 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>	0
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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.

In 2022, 83% of Orano Mining employees questioned responded to the survey. With favorable opinions at 73%, the measured engagement level is 15 points above that generally found by this type of survey in companies in the same sector. In addition, 85% of Orano Mining employees reported that they are proud to work for their company and 77% of them would recommend doing so to their entourage (source: Orano Vox 2022).



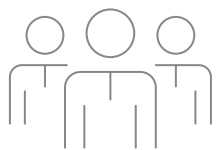
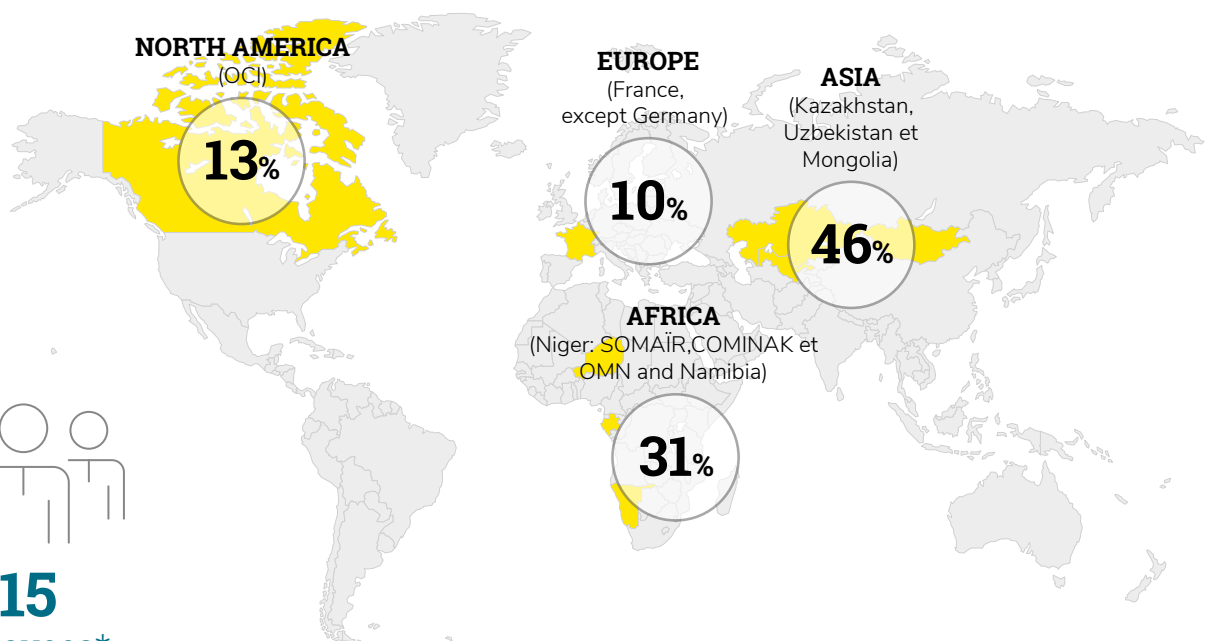
## 2022 RESULTS

Maintain the minimum rate of 80% of employees who recommend Orano	77%*
Maintain the level of social conflict below one week of annual strike per country of operation	

\* Not applicable since implementing a new survey protocol does not allow comparing data within the same scope.

## PRINCIPLE 3.5

Equitably 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.



**2,915**  
employees\*  
in the world

\* Excluding internship/apprentice contracts



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.

As of December 31, 2022, Orano Mining had 2,915 employees, 94.6% of whom were on permanent contracts (Contrats à Durée Indéterminée - CDI).

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

Type of contract	Female	Male	TOTAL
Permanent and present	436	2,322	2,758
Temporary*	26	131	157
<b>TOTAL</b>	<b>462</b>	<b>2,453</b>	<b>2,915</b>

## 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 2022, 98.2% of our employees on our sites are from the host country; less than 2% are expatriated employees.

#### Split of employees by country as of December 31, 2022

Countries	Total number of employees	Local employees	Percentage of local employees
Canada	353	349	98.8%
France	273	265	97.1%
Kazakhstan	1,138	1,122	98.6%
Mongolia	74	70	94.6%
Namibia	16	16	100%
Niger	849	836	98.5%
Uzbekistan	55	50	90.9%
<b>TOTAL</b>	<b>2,758</b>	<b>2,708</b>	<b>98.2%</b>

\* Excluding internship / apprenticeship contracts

\*\* Turnover formula:  $[(\text{Number of departures in 2022} + \text{number of new hires in 2022}) / 2] / (\text{Workforce as of January 1, 2022})$

\*\*\* Figures including departures related to COMINAK's restructuring plan

## Turnover (cat. A)

#### Turnover\*\* by country of location

Country	New employees	Voluntary departures	Turnover
Canada	79	64	21.5%
France	28	3	6.1%
Kazakhstan	84	60	6.3%
Mongolia	1	1	1.3%
Namibia	0	1	3.1%
Niger***	11	46	3.2%
Uzbekistan	21	4	22.7%
<b>TOTAL</b>	<b>224</b>	<b>179</b>	<b>7.4%</b>

Turnover at Orano Canada is mainly due to the competitiveness of the local employment market and the new career opportunities available.

For more information, see detailed data sheet



In addition, at all Orano Mining entities, the main sub-contractor missions are carried out by local personnel. For example, this includes restaurant services, protection at drilling sites, notably in Central Asia, maintenance and cleaning operations, demolition and construction sites, along with upkeep of green spaces, etc.

## 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 skills that are valuable to the group. It is based on three pillars: remunerate performance, guarantee internal equity, and contribute to Orano's attractiveness on the market for workers and technicians as well as executives and engineers. The general remuneration policy is thus developed at the group level. However, the policy is applied at the local level based on the specific characteristics of each country (see the group's report, section 4.4.1, p.122 and 5.2 p.216 ).

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.

According to the country and the level of responsibility, remuneration can also include a variable part based on reaching collective and/or individual objectives.

In France, since 2022, positions at career levels not eligible for the variable pay component (RPV) have become eligible to maintain attractiveness compared to the sector's other groups.

RPV is partially subject to reaching 4 collective objectives. One of them concerns CSR which breaks down into 3 objectives: Carbon, Competence and Community.

- Reduce the BU's carbon balance (Carbon):
  - Produce the following deliverables with the aim of a secure portfolio at 35% of 2025 objectives by the end of 2022:
    - SOMAÏR solar: finalize the engineering study and begin construction in 2022
    - Orano Canada: Define the decarbonization action plan following the Eco Act study
    - KATCO: Launch the first adaptation tests for pumps or make progress on the heat pump: design validated and contract for construction currently being negotiated
- Balance the distribution of key positions between women and men (Competence):
  - Increase by 10% the number of women in the 160 key positions compared to 2021
- Guarantee the reconversion of as many COMINAK employees as possible as part of production shutdown (Community) - number of employees at the time of the shutdown: 575: 90% of them have a reconversion plan.

In addition, in France and since 2022, positions at career levels not eligible for variable pay component (RPV) have become eligible for to maintain attractiveness compared to the sector's other groups.

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

Countries	Gender	Ratio
Canada	Women	2.16
	Men	2.16
France	Women	1.67
	Men	1.67
Kazakhstan	Women	1.57
	Men	1.57
Mongolia	Women	1.00
	Men	1.00

Niger	Women	2.29
	Men	2.29
Uzbekistan	Women	2.35
	Men	2.35

\* Since Namibia has no legal minimum salary, this ratio is not available.

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.106](#)



[For more information on Compensation policy for corporate officers of the Company, see Chapter 5.2, p.216](#)



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

Countries	Ratio
Canada	4.1
France	4.85
Kazakhstan	10.35
Mongolia	4.82
Namibia	2.67
Niger	6.3
Uzbekistan	4.22

**Ratio of the increase in the total annual remuneration of the highest salary for each entity relative to the increase in the median of the total annual remunerations of all employees (excluding CEO and expatriates)**

Countries	Ratio
Canada	1
France	1.16
Kazakhstan	0.98
Mongolia	0.86
Namibia	1.50
Niger	0.97
Uzbekistan	0.93





## Management and development of skills

### Adapting skills to the goals of the sector (France)

Every year, Orano prepares a skills review that covers all the group's disciplines and trades. (for more information)

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

Every year, employees have the benefit of an interview conducted to assess their performance and development of skills. During these interviews, their objectives and a development plan for the year to come are established.

During the 2021-2022 campaign, 96.25% 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.

The eligible population represents 45.4% of the total workforce.

When the workstation does not provide access to information systems, assessments are carried out using a paper form. This is the case for nearly all workers.

## 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. Action plans and succession plans are reviewed once a year.

Every quarter, "mobility" committees are organized to prepare for future mobility projects. "Major projects" requiring the creation of dedicated teams have their own specific committees.

## Access to training

The training offer is structured around reference pathways and independent modules to meet the expectations of each employee as best as possible and to enhance employees' professional prospects over the long term.

**Average cost of training per employee according to socio-professional category and gender, all countries taken together**

Category	Gender	
	Women	Men
Executives	€1,109.81	€1,227.63
ETS	€573.13	€791.39
Workers	€1,096.99	€117.92



**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 (for more information).

Nearly 60% of employees were trained in 2022, with an average number of hours per employee of 46. This result reflects Orano's commitment to supporting its employees in their professional development.

**Average number of training hours per year and per employee\*\*, all countries taken together**

	Gender		Category			TOTAL
	Women	Men	Executives	ETS	Workers/employees	
<b>Total number of training hours</b>	25,370	101,778	77,825.75	30,572.5	18,750	<b>127,148</b>
<b>Number of employees* who benefited from at least one training module in 2022</b>	436	2,322	905	555	1,298	<b>2,758</b>
<b>Average number of training hours per employee who participated in at least one training module in 2022</b>	58	44	86	55	14	<b>46</b>

\* Employees with a permanent contract.

\*\* Excluding Badrakh Energy, Orano Mining Niger and COMINAK, which benefit from a specific social agreement signed with the unions and the Nigerien labor administration following the site's closure.

It should be noted that women benefited from an average number of training hours (78.8) that was higher than for men (39.6).

Since 2021, Orano Mining has implemented a mentorship approach. This has resulted in around ten employees undergoing professional development (starting a new position, expatriation, etc.) while receiving support by group mentors, mainly at the level of a business unit management committee. In 2022, this approach was extended to international pairs.

### “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 2022, in-person sessions resumed following the end of the Covid 19 period. That said, 41.5% of people trained participated in remote training.

### 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 2022, a two-day training module for integrating new hires was created. Organized by the Mining College, this module aims to present Orano Mining’s activities and organization.

In 2022, 46 training modules were organized for 436 trainees. One quarter of them took place in the countries where we work.



### 2022 RESULTS

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



## 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.

The college of experts is renewed every 3 years at the group level. The most recent campaign was launched in October 2022 and will end in the summer of 2023.

In 2022, Orano Mining included 53 experts, 39% of whom work at our sites in Niger, Kazakhstan, Canada and Mongolia.

## Work organization and part-time working

The right to disconnect and to benefit from remote working, flexible hours, and services and advantages for employees is among the actions deployed to promote the best work-life balance, so that everyone can give the best of themselves in an environment that enables them to thrive.

At its various sites in the world, Orano Mining complies with legal provisions with regard to working time.

Various work organizations exist for the group’s activities in France. However, all of them result in an annual average of 35 or fewer hours per week, depending on the organization.

In Niger, the main working time is 40 hours per week (8 hours per day, 5 days per week). Shift personnel work according to a cycle of 2 times 9 hours (for mining) or 3 times 8 hours (for the conversion plant).

In Kazakhstan and Canada, the working time for activities at the headquarters is also 40 hours and 5 days per week. At the mining sites, most of the personnel work by rotating between two weeks of full-time work involving 11 hours per day, followed by two weeks off from working. In addition, in Canada, management executives benefit from a rotation system known as “Flex,” covering 7 days (4 days on site and 3 days at home) and characterized by flexibility in working days according to operational priorities.

Employees can choose part-time work; within Orano Mining there are 23 part-time employees in 3 of the countries where we work (France, Canada and Uzbekistan in 2022), including 18 women and 5 men.



## Remote working

The challenges around work organization vary according to the country where Orano Mining is present, and according to the environment in which employees exercise their activity: shift work, rotation system, office work, legislation in force, etc.

In France, Mongolia, Kazakhstan and Canada, support for new working methods, such as remote working, is currently in place to promote work-life balance.

In France, for example, a remote working agreement makes it possible for employees, whose positions are compatible, to benefit from a maximum number of days they can choose to take off annually, up to three days per week.


### 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. Within OCI, an internal team, itself partly composed of representatives of Indigenous Peoples, is dedicated to dialogue with indigenous communities.

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. Over 35% 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.140 ).

Furthermore, the percentage of Indigenous employees working for Orano's long-term contractors comes to more than 82%.

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.142 .

### 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.

In 2022, no cases of violation of the rights of Indigenous People were recorded.

## PRINCIPLE 3.8

Implement policies and practices to respect the rights and interests of women that reflect gender-informed approaches to work practices and job design, and that protect against all forms of discrimination and harassment, and behaviors that adversely impact on women's successful participation in the workplace.

### 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.

### Our results

**40% of Orano Mining's workforce in France are women (permanent contracts). We still need to improve the overall numbers of women abroad which now stands at 14% in 2022 (-2.2% vs 2021) by ensuring their promotion to all levels of the organization, notably in management committees.**

In 2022, Orano Mining has 3 women out of the 12 Parisian members of the Orano Mining Codir, i.e., 25%; greater by 8 percentage points compared to 2021. However, Orano Mining did not reach its objective: +10% women in the TOP 160\*. Despite women's mobility, the number of employees remained stable over the period (nearly the same incoming/outgoing employees).



### 2022 RESULTS

Increase by 10% the share of women in the TOP 160 perimeter every year	<input type="radio"/>
Maintain a minimum of 95% local recruitment	<input checked="" type="radio"/>

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	22	54	12	40	24
Percentage of employees	28.95%	71.05%	15.79%	52.63%	31.58%
Total number of members	76				



## Preventing sexual harassment and sexist behavior

For example, in 2022, training modules on preventing sexual harassment and sexist behavior were organized in France and Kazakhstan, notably for members of KATCO's management committee. This initiative will be extended to all employees in 2023.

To go further in its commitment to fighting sexism, Orano signed a charter called #StOpE, which acts against everyday sexism. The signatory companies commit themselves to 8 criteria:

- Display and apply the zero-tolerance principle
- Raise awareness around sexist behavior (acts, speech, attitudes) and its impact
- Provide targeted training on obligations and best practices in fighting against everyday sexism
- Distribute training tools to employees so they can respond to sexist behavior in the workplace
- Encourage all employees to contribute to preventing and identifying sexist behavior and to take a stand against everyday sexism
- Prevent situations leading to sexism and provide personalized support to victims, witnesses and decision-makers in reporting and dealing with sexist behavior
- Penalize reprehensible behavior and raise awareness around the associated sanctions
- Measure and set up monitoring indicators to adapt the policy against everyday sexism



## In 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 to develop purchases from the protected and adapted sectors and self-employed disabled contractors

In 2022, the rate of employment of people with disabilities within Orano Mining in France was 3.66%..

## International mobility



**Kelsey Mc Key**  
Geologist specialized in 3D modeling at PRISME, France

In 2022, Kelsey McKee joined our team of geologists based in France. Her work involves creating 3D numerical models to facilitate mining exploration and to add to the resources for our geological programs.

Previously employed by Orano Canada, Kelsey benefited from a mobility program within Orano Mining.

*« Our diversity and multicultural dimension are our main source of wealth. Our geologists are expatriates who come from all over the world: Kazakhstan, Mongolia, Niger, Canada as well as France. I really value this. »*

Within Orano Mining, since 2018, there have been more than 133 mobility projects internationally and/or between our Business Units, including 18 projects in 2022.

## In France, gender equality index: 84/100



The women/men equality index enables assessing differences in remuneration using 100 points.

In 2022, the results for Orano Mining France broke down as follows:

- Women/men remuneration difference: 37/40
- Individual raise distribution difference: 20/20
- Promotion distribution difference: 15/15
- Indicator of percentage of employees who received a raise upon their return from parental leave: 15/15
- Parity among the 10 highest remunerations: 0/10

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

## 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, 2022 was 42 years.

## 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.

Among the 22 women who returned from their parental leave in 2022, 19 women initiated it in 2022 and 100% of them came back. Three women took their parental leave in 2021 and returned to work in 2022, which explains why 116% women returned to work in 2022.\*

## Employee benefits

Some subsidiaries offer advantages in addition to those listed in the table above. For example, at KATCO, the number of leave days is above that legally permitted. In addition, financial aid is made available to eligible employees who request it to pay school fees for their children. Finally, as part of a seniority collective agreement, KATCO pays an allowance in case of marriage, birth or death.

### Number of employees on parental leave in 2022

Total number of employees (by gender)	Female	Male	TOTAL
Total number of employees that were entitled to parental leave	75	309	384
Total number of employees that took parental leave	19	25	44
Total number of employees that returned to work in the reporting period after parental leave ended	22	25	47
Total number of employees that returned to work after parental leave ended that were still employed 12 months after their return to work	19	12	31
Number of employees who returned to their position in 2021 after parental leave by gender	32	18	50
Return to work rate of employees that took parental leave	116%*	100%	107%
Retention rate of employees that took parental leave	59.4%	67%	62%



### Employees social benefits

Categories	Canada	France	Kazakhstan	Mongolia	Namibia	Niger	Uzbekistan
Life insurance	X	X	-	X	X	X	-
Health care	X	X	X	X	X	X	X
Disability and invalidity coverage	X	X	X	X	X	X	-
Parental leave	X	X	X	X	-	X	X
Retirement provision	X	X	X	X	X	X	-
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

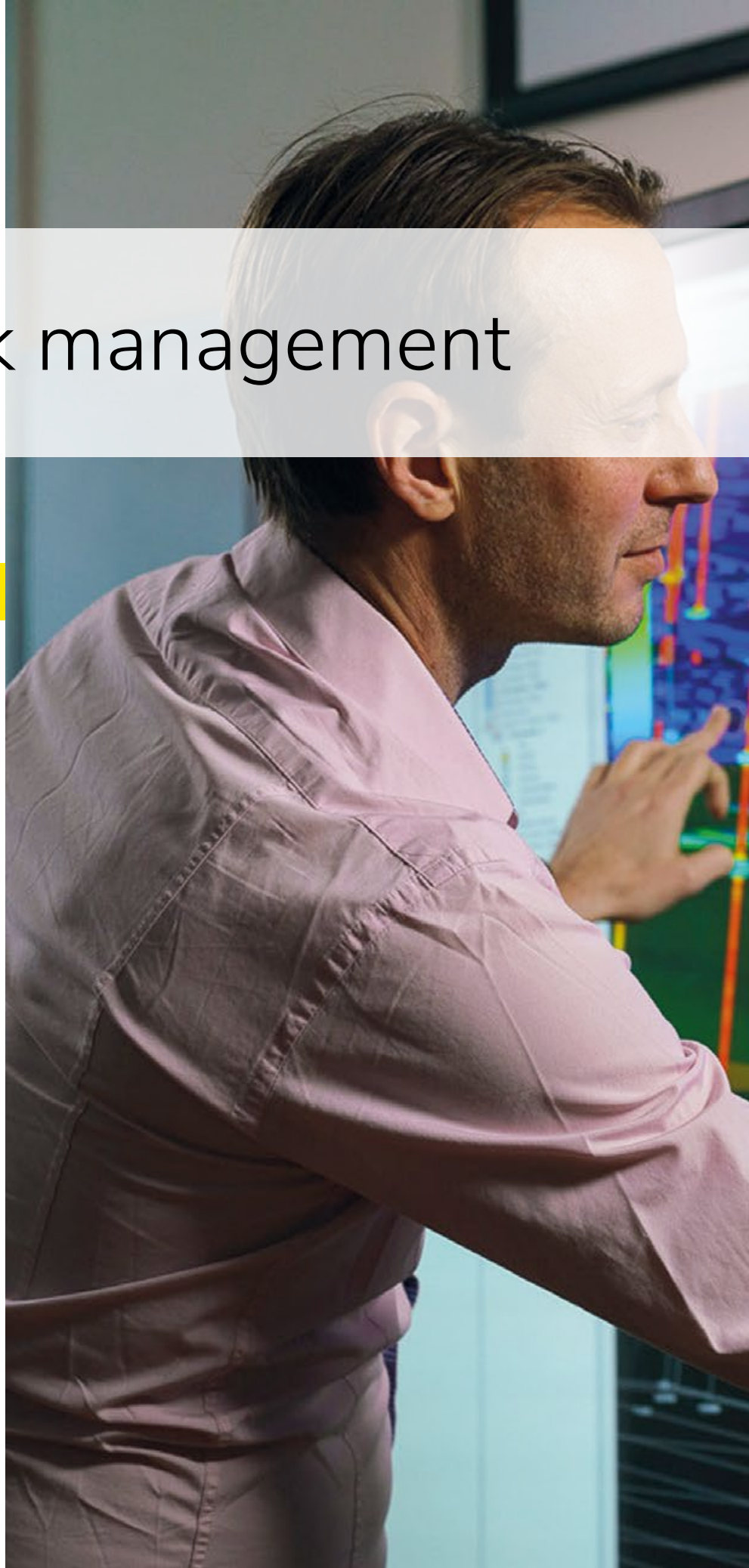
For organizations with collective bargaining agreements, report whether the notice period and provisions for consultation and negotiation are specified in collective agreements						
Canada	France	Kazakhstan	Mongolia	Namibia	Niger	Uzbekistan
Yes	Yes	The collective bargaining agreement may be supplemented 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

Implement effective risk-management strategies and systems based on sound science and which account for stakeholder perceptions of risks.







## PRINCIPLE 4.1

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

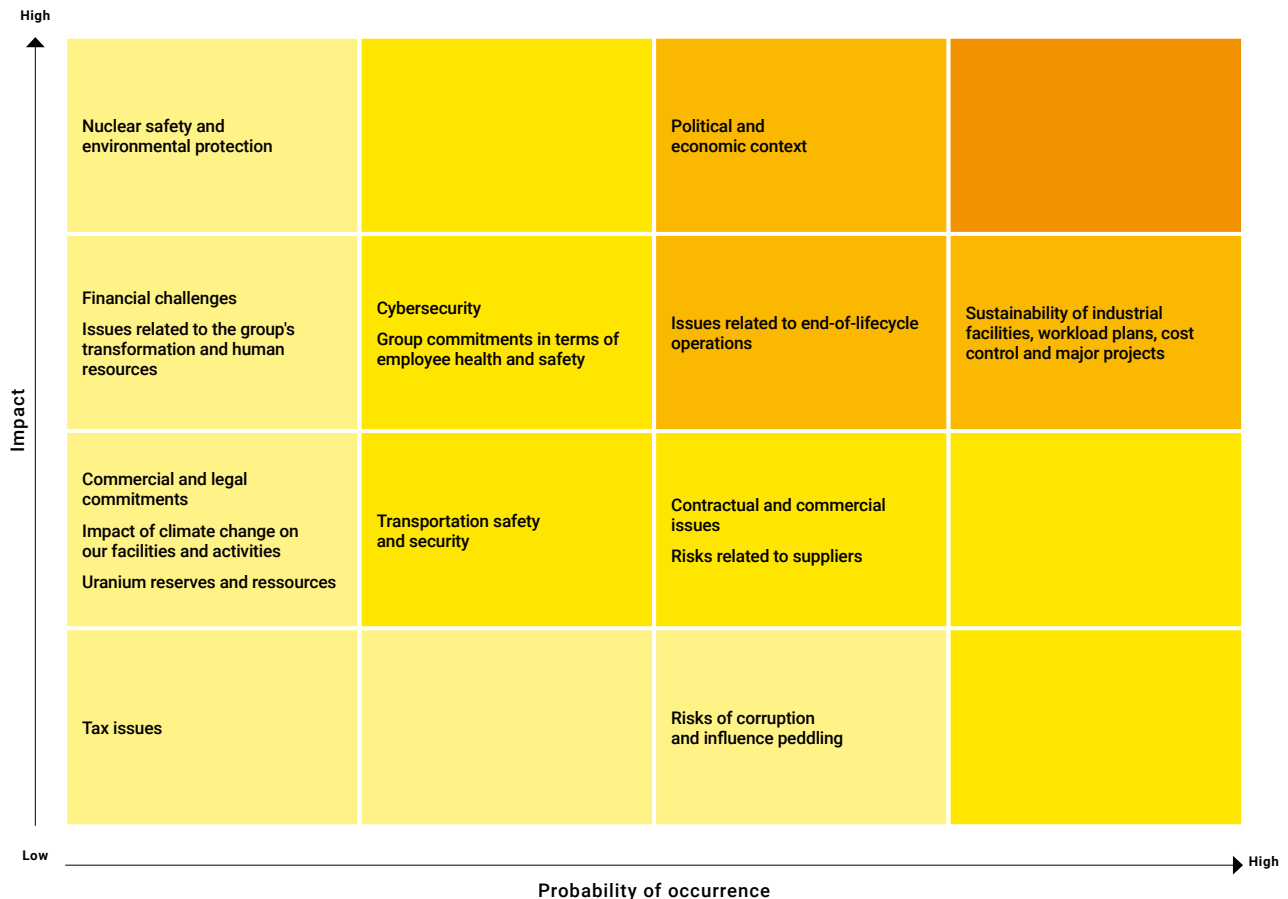
Orano has created a risk management system in keeping with the recommendations of the *Autorité des marchés financiers* (AMF, the French financial market authority), the professional standards of the Committee of Sponsoring Organizations of the Treadway Commission (COSO), and the changes in regulations 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 40 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, with, in 2022, a more in-depth analysis of the risks related to the group's social, societal and environmental engagement. Find out more about the mapping and governance process (see Orano's annual report 3.2.1, p.61 [🔗](#)).

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

### Mapping of the main risks




Source: Orano



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 characterization of these risks in order to prioritize them
- 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.

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. The Risk, Compliance and Internal Audit Department supports group entities in conducting their mapping (For more information, see Orano Annual Report chapter 3, p.58 , mapping of risks and duty of care for the group).

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

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



### EXAMPLES

In Niger, a public consultation is held upstream in order to present the impact study 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 impact 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.

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.

The process for conducting and reviewing an impact study is relatively similar under the various applicable regulatory frameworks 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 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.

For example, in 2022, studies were carried out on the Nurlikum Mining site in Uzbekistan as part of the environmental monitoring of the exploration work carried out. These studies are conducted at the beginning, middle and end of the drilling campaign to ensure that the work has no impact. For the launch of the South Djengheldi pilot, an environmental management plan and the associated monitoring program have also been set up.

At SOMAÏR in Niger, the impact study for the project to install a photovoltaic power plant has been completed and the environmental compliance certificate was issued in January 2023.

Environmental impact studies (EIS) can also draw on more specific Research & Development work, where



relevant, which makes it possible to demonstrate the relevance of remediation solutions over the long term and provide the most suitable ecological offset solutions in the various countries where Orano Mining operates.

## 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 avoid/prevent, minimise, mitigate and/or remedy physical and psychological health, 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



## A new standard for managing safety and industrial risks

Following several events relating to industrial safety (fire, uncontrolled gas emissions), though without significant impacts on our employees, neighboring residents, or our mining operations, an ambitious action

plan was launched for the period 2020-2025 to equip mining sites with a system equivalent to the existing industrial safety management system applied for French high-threshold SEVESO facilities.

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



### LEADERSHIP COMMITMENT

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

As regards the Bessines site, industrial risks are the subject of particular vigilance in the Hazard Studies carried out for each of its facilities (CIME, U308 storage, etc.). These studies are regularly updated in line with the authorities' requests. Regulatory training of employees is assured by centralized management of skills development within the human resources department.

In 2020, the McClean Lake site in Canada, the SOMAÏR site in Niger and the KATCO site in Kazakhstan carried out self-assessments in accordance with the requirements of the industrial safety management standard in order to identify their strengths and areas for improvement.

With the help of the central teams, these sites then drew up their two-year roadmaps and set milestones, in order to consolidate their understanding, strengthen their safety culture and reduce the risks of major accidents.

At the end of 2021, the management committees of the three sites in operation in Niger, Kazakhstan and Canada were trained in industrial safety management. Progress has been made in reducing the risk of major accidents on site with new risk control measures and concrete actions already implemented. This plan is jointly reviewed every six months by the management of Orano Mining and the HSE Department. In 2022,

sessions devoted to industrial safety were held during "safety month", and the Management Committee of Orano Mining (similarly to Orano's Executive Committee) devoted part of its November management seminar to "safety leadership".

**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.

At group level, events are fed back via a specific IT application known as "AHEAD". The Orano group has also developed a severity classification scale for near-events and events, ASSESS, in order to promote operating experience feedback and sharing within the group.

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.101



**2022 RESULTS**

80% of 2022 (approved and planned) improvement measures for priority scenarios implemented

McClean Lake hazard study reviewed



**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 2022 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 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.



## FOCUS ON THE CRISIS EXERCISE CONDUCTED IN CANADA

On October 13, 2022, a level 3 crisis exercise was conducted at the McClean Lake site in Canada.

The scenario involved a release of propane during a tanker delivery, following a traffic accident.

The exercise highlighted a number of strengths and areas for improvement.

Notably, the teams were able to react quickly, with suitable equipment available in a timely manner. Good coordination was observed between the Orano Mining and contractor teams.

A detailed report was drawn up and areas for improvement identified, in particular with regard to communication between the various teams.



# Health, safety

## MINING PRINCIPLE

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





fil :

7 standards

7 standards qui répondent à une règle ou une bonne pratique dont l'application contribue à la maîtrise des risques et à la prévention des accidents.

orano





## PRINCIPLE 5.1

Implement practices aimed at continually improving workplace physical and psychological health and safety, and monitor performance for the elimination of workplace fatalities, serious injuries and prevention of occupational diseases, based upon recognized 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

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 45001 or OHSAS 18001 on the main mining sites of Orano Mining. Operational health, safety and radiation protection action plans, with measurable results across all our sites, are also drawn up. In line with the Orano Mining Master Plan, they are validated and their progress regularly reviewed with the DSSER teams who provide support, notably during onsite missions.

# 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



\* 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 from 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.

## Governance

The members of the Orano Mining Management Committee, the site managing directors, the directors of operations, and the Orano Health, Safety, and Radiation Director form the Safety Steering Committee (decision-making body).

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 2022, the Committee met twice, at the start of the year and in October 2022.

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

In 2022, the Orano Mining Safety Steering Committee set the following objectives:

- For all sites, using the "strengthened safety position" approach and strengthening current barriers to increase the level of safety
- Continuing with the deployment of the Pareto principle for safety\*; in other words, the detection and processing of deviations in the field for all existing visual management charts (VPM) (see explanation on p.69)
- Strengthening the integration of HOF (human and organizational factors) in the analysis of root causes of accidents and the impact analysis of process modification, by training all HSE teams around this subject
- Strengthening implementation of Human Performance Tools (HPT) to better ensure the safety of activities where routine errors have a strong impact, by training all site HSE teams around this subject. The priority is implementation in the "strengthened safety positions" and deployment of "pre-job briefing"
- Strengthening the "Mechanized Handle" safety anchor by deploying the 2023 Orano Mining standard
- Strengthening drilling safety practices by performing external safety audits for the KATCO and Nurlikum subsidiaries and the deployment of specific action plans in 2023



### OUR 2022 SAFETY TARGETS – EMPLOYEES AND SUB-CONTRACTORS:

- 0 fatal accidents
- TF1\* ≤ 1, i.e., no more than 12 lost-time occupational accidents
- TF2\*\* ≤ 3.5, i.e., no more than 32 occupational accidents without lost time

## Our safety results for employees and sub-contractors

Despite an occupational accident killing two sub-contractors and injuring two others, 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.

	2020	2021	2022
Fatal accident	1	1	2 (1 event 2 victims)
TF1*	1	0.6	0.5
TF2**	4.4	2.2	1.6

\* TF1: Lost-time accident frequency rate

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



### 2022 RESULTS

Tend to a long-term TF1 < or = at 1



Tend to a TF2 < or = to 3.5



## Fatal accident at COMINAK that killed two people and injured two others

On January 15, 2022, during an operation on the dismantling site of the COMINAK plant in Akouta, a structure collapsed, killing two subcontractors and injuring two others. All activities at the site were immediately halted, a unit for psychological support was set up for all teams, and root cause analysis was performed.

Among the actions selected, a global assessment of procedures and risk analyses was conducted at all the site's active worksites. Supervision was also strengthened. Support for the sub-contractors in implementing human performance tools (HPTs) was also set up to improve the integration of safety aspects. Following an in-depth study of the organizational and human factors, each site conducted a review to strengthen contractual requirements and the monitoring of service providers' compliance with the relevant commitments.

## 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.

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

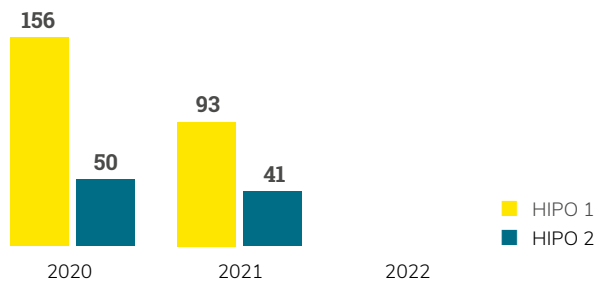
Human barrier	Organizational barrier	Reinforced organizational barrier	Technical barrier
Free will + no control or self-control	Free will + presence of controls (third-party)	Free will + permanent detection of the deviation	Lack of free will

## Identifying accidents with high potential severity

Work to identify deviations on the ground, weak signals, near-misses and high-potential incidents (“HIPO\*”) continues and is monitored and analyzed in a reporting tool, which is used to categorize and rank these elements.

An analysis of root causes of events with high potential severity is systematically conducted. Action plans and follow-up measures are immediately introduced.

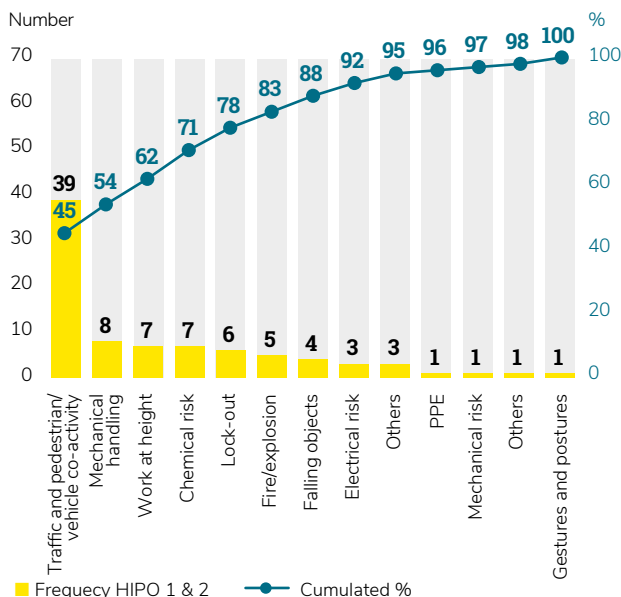
### Monitoring of HIPO 1 and 2



Analysis of risks and near-misses reported in 2022 confirm the preponderance of the accident-generating potential of situations concerning the following 4 Orano anchors and those related to the use of chemical products:

- 45% Traffic and pedestrian/vehicle co-activity
- 10% Mechanized handling
- 8% Work at height
- 7% Lock-out
- 8% Chemical risks

These 4 anchors amount for 70% of the HIPOs.



## SHARING OF BEST PRACTICES FOR A COMMON OBJECTIVE: ZERO ACCIDENTS



Through training videos, Orano Mining has chosen to share the lessons learned following high-potential accidents or events that took place on its sites.

The first video, concerning the fatal accident that occurred in June 2020 on the SOMAÏR site in Niger and describing how a series of events can lead to a potentially fatal accident, was posted on YouTube and shared across social networks and with members of the ICMM (International Council on Mining and Metals).

For more information



## Pareto safety

To identify and process deviations, an additional tool called “Pareto safety” is used during visual performance management (VPM) by the teams to lead their meetings.

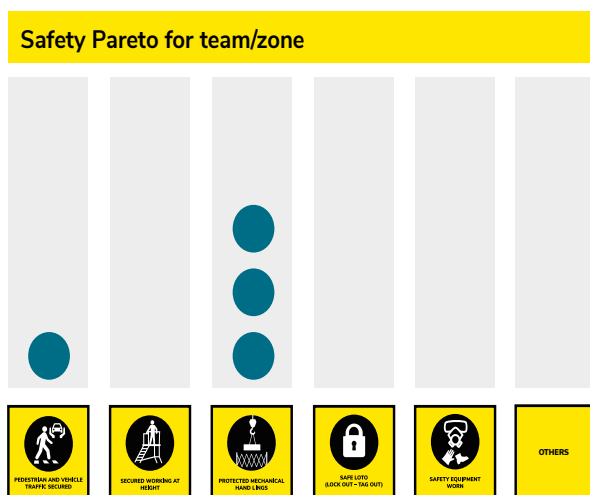
The Pareto principle, also known as the 80/20 law, is based on the observation that 80% of effects are produced by 20% of causes. Based on this principle, the aim is to target risks on which efforts are to be focused (prioritization and efficiency).



\* 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

The accumulation of reported results highlights the most frequent categories and fosters exchange between the manager and his/her team.

### 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. In 2022, we conducted an analysis of the maturity of this approach on the sites. It revealed the need to explain the approach and to focus on the subject during Management Field Visits.

## 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

Employees of our organizations benefit from health services provided by doctors and/or nurses: occupational medicine, prevention, medical care (injuries, illnesses).

The subcontracted employees who work on our sites are followed up for occupational by their respective companies, but receive the same care but receive the same care on site if necessary as Orano Mining as Orano Mining employees.

In case of emergency, employees and subcontractors benefit from the same quality of care (by qualified personnel, with medical equipment that meets international standards), on site or at the hospital if necessary.

## 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.

For the employees, 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).

Orano Mining applies actions to promote the individual and collective health of its employees in the countries where it works. For example, the employees on our international sites receive vaccines that are mandatory according to local legislation and they are also offered additional vaccines related to their activity or the risks specific to the site's location, but also during seasonal epidemics. Public health actions such as awareness raising associated with lifestyle risks (tobacco, alcohol, drugs, poor diet, etc.) and targeted actions related to risks identified at workstations (noise, chemical



products, falls, carrying heavy loads, etc.) are regularly carried out on the 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.

### PRINCIPLE 5.2

**Provide workers with training in accordance with their responsibilities for physical and psychological health and safety, and implement health surveillance and risk-based monitoring programs 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.

Awareness-raising campaigns and training modules around health and safety for employees are based on accident experience feedback from Orano Mining and on the Group's regulations and requirements.

Aligned with Orano's policy, they are part of the Orano Mining Master Plan and the applied safety action plans. Each site adapts the proposed measures and adds to, as necessary, the themes and contents according to its specific subjects.

For example, the analysis of events that have occurred within Orano Mining in recent years show that most causes have an organizational and human component. In the 2022 Safety Action Plan, we thus committed to focusing on the organizational and human factors (HOF), notably with two training actions proposed at all sites.

- A training module on Human Performance Tools (HPT) to present simple, standardized, and recognized tools used in high-risk industries,
- A training module on "HOF awareness-raising base" for acquiring or strengthening knowledge of these fundamental principles of HOF aspects.

Among the HSE teams and representatives on all our sites, 50 people were trained.

Also, depending on local regulations and site work situations on site, employees are, for example, identified for training on first aid and refresher courses.

Some training modules or awareness-raising campaigns may be designed by Orano Mining's central teams and proposed to various sites for local use and site-oriented and content-specific deployment. The central HSE teams at Orano Mining may thus act as trainers or support staff.

For regulatory or mandatory training modules, the site's dedicated entity supervises their design so that the required renewal or refresher modules are delivered on schedule.

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 terms of occupational health, the site HSE representatives work closely with the medical and paramedical teams to ensure that the site's medical resources match the identified risks and that prevention actions are conducted in a relevant manner. Thus, for example, on our SOMAÏR site in Niger, the occupational physician actively monitors workers for hearing problems and makes sure those with the most exposition to noise have suitable hearing protection equipment.



## 2022 RESULTS

Reinforcing the role and mission of OSRA with regard to stakeholders by taking account of its new governance



### 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 2022, 468 check-ups were carried out and represent the fifth phase of post-professional monitoring. They concerned the regions of Dosso, Maradi, Zinder, and Diffa.

In total, since its creation, 6125 visits and 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, the former employees 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. To monitor worker doses, each Orano Mining site uses an organization or laboratory that attests to its competence through an approval or accreditation, according to the country.

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.

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

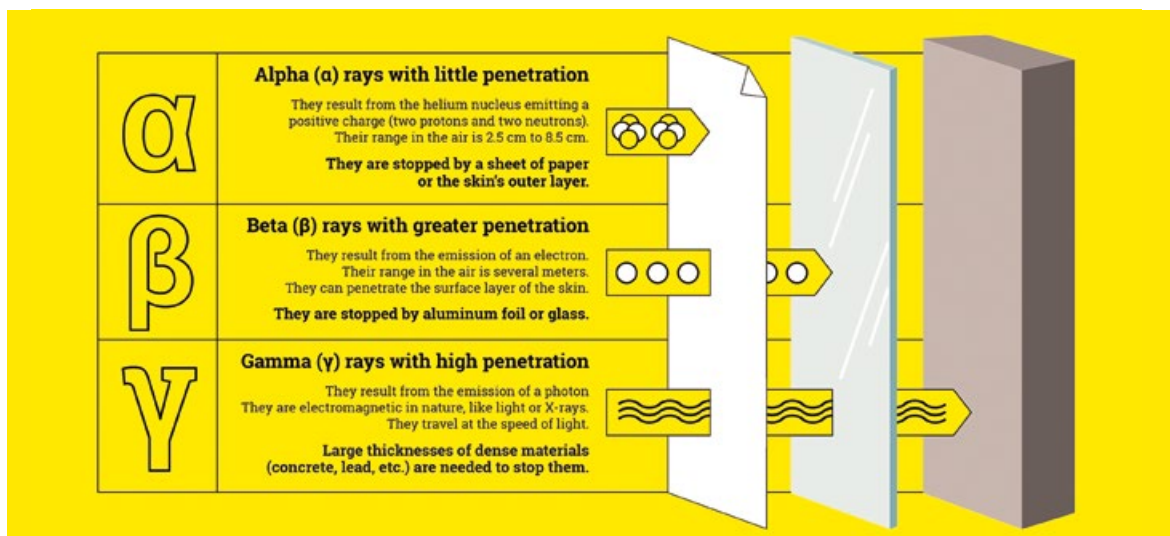
For the reference period\*, in 2022, the accumulated dose shows, for Orano Mining employees as well as sub-contractors, a decrease in the average dose and a decrease in the maximum dose compared to 2021.

These results can be explained by the end of production activities at the COMINAK site and start of remediation

activities in May 2021. The contribution of COMINAK in the total Orano Mining dose, counting all workers, decreased from 49% in 2021 to 11% in 2022.

**Our radiation protection results for employees and sub-contractors**

	2020	2021	2022
Workers exposed to doses above 20 mSv	0	0	0
Maximum recorded dose (in mSv)*	19.9	11.9	8.3
Average dose of Orano Mining employees	2.8	2.1	1.5
Average sub-contractor dose	3	2.3	1.6



\* Includes Orano Mining employees and sub-contractors

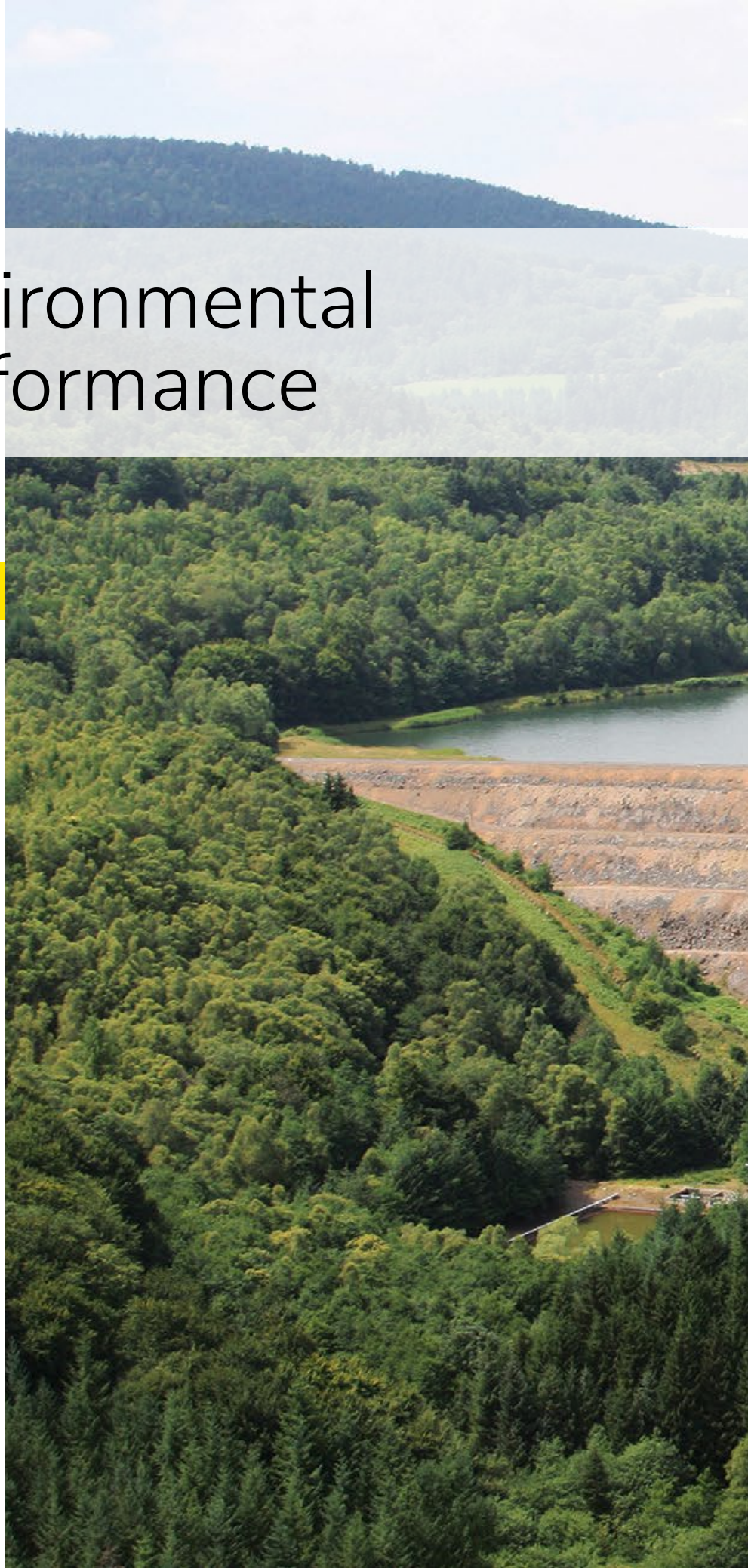
\*\* Reference period of the table data: July of year n-1 – June of year n.



# Environmental performance

## MINING PRINCIPLE

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





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 is implementing action plans on environmental performance issues such as water management, energy consumption, waste recovery and reduction, and climate change.

## Policy and action plan

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:

- Prevent 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 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 for the various environmental indicators presented in this section is carried out using the Orano group's dedicated calculation tool "Tennaxia". The methods used for the calculation of environmental indicators, as well as the associated procedures, are formally set out in a measurement and reporting protocol. This protocol, which is updated every year, is sent out to everyone involved.

The scope of reporting encompasses all entities for which Orano Mining is the operator.

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 2022 ratios is 11 522 tons** (See Mining Activities p.10 )

## 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 for conducting and examining an impact study is similar in the various regulations in force in the countries where Orano Mining operates.

These studies make it possible to establish an impact map, to better understand the various physical, ecological and socio-economical components of the environment, to assess risks associated with the project and to identify upstream the mitigating measures to incorporate preventively within our facilities to mitigate 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 2022, studies were conducted at the Nurlikum Mining site in Uzbekistan as part of environmental monitoring of exploration work. These studies are conducted at the beginning, middle and end of the drilling campaign to ensure the absence of impact by the work. As part of launching the South Djengheldi pilot, an environmental management plan and its monitoring program were also set up.

The process of developing the impact study for our Zuuvch Ovoo and Dulan Uul projects in Mongolia was initiated at the end of 2022, with completion in 2023.

At SOMAÏR in Niger, the impact study for the project to build a photovoltaic power plant is finalized and the environmental certificate of conformity was delivered in January 2023.

In 2022, the studies conducted by Orano Canada dealt with:

- Trophic transfer of selenium in receiving water bodies potentially affected by effluent discharges; a study initiated in 2018 with the University of Saskatchewan. The results have been published in peer-reviewed scientific journals and will inform the next Environmental Risks Study. This study is set to continue until 2023
- Assessment of the mitigation potential for Contaminants of Potential Ecological Concern (COPC) in two lakes close to the McClean Lake site; a study initiated in 2021 with the University of Saskatchewan. This study will make it possible to improve the understanding of the geochemical characteristics of the receiving environment downstream of tailings storage, while improving the accuracy of the contaminant transport model. This study is set to continue until 2023
- Tracing by monitoring the conductivity of effluents in the receiving aquatic environment, with the aim of monitoring potential changes in their distribution since 2015

- Soil and vegetation studies for informing the assessment of ecological risks, relative to the potential impact of aqueous discharges in the receiving terrain

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.

For example, monitoring water quality at the Dulaan Uul and Zuuvch Ovoo pilots in Mongolia enabled studying and modeling the change in aquifers after ISR usage to anticipate post-operation remediation. Models on a larger scale were also created for deposits in Kazakhstan and enabled developing tools for predicting the environmental footprint.

## PRINCIPLE 6.1

**Plan and design for closure in consultation with relevant authorities and stakeholders concerned, implement measures to address closure-related environmental and social aspects, and make financial provision to enable agreed closure and post-closure commitments to be realized.**

**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.



### 2022 RESULTS

Commission the photovoltaic farm at the Baconnière site	●
Start construction of the photovoltaic park on the Bernardan site	●
Closure of COMINAK	See dedicated chapter



# The different remediation phases

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

## 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
- 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. 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 remediation and rehabilitation plan for the COMINAK site in Niger, following its closure on March 31, 2021 (See p.86 ).

## Studies

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

## DID YOU KNOW?

### Management of former mining sites in France

**Orano Mining has adopted a continuous improvement approach for managing its former mining sites in France. It is structured around the “5Cs” of Orano’s roadmap: Climate, Competence, Community, Customer Growth and Cash.**

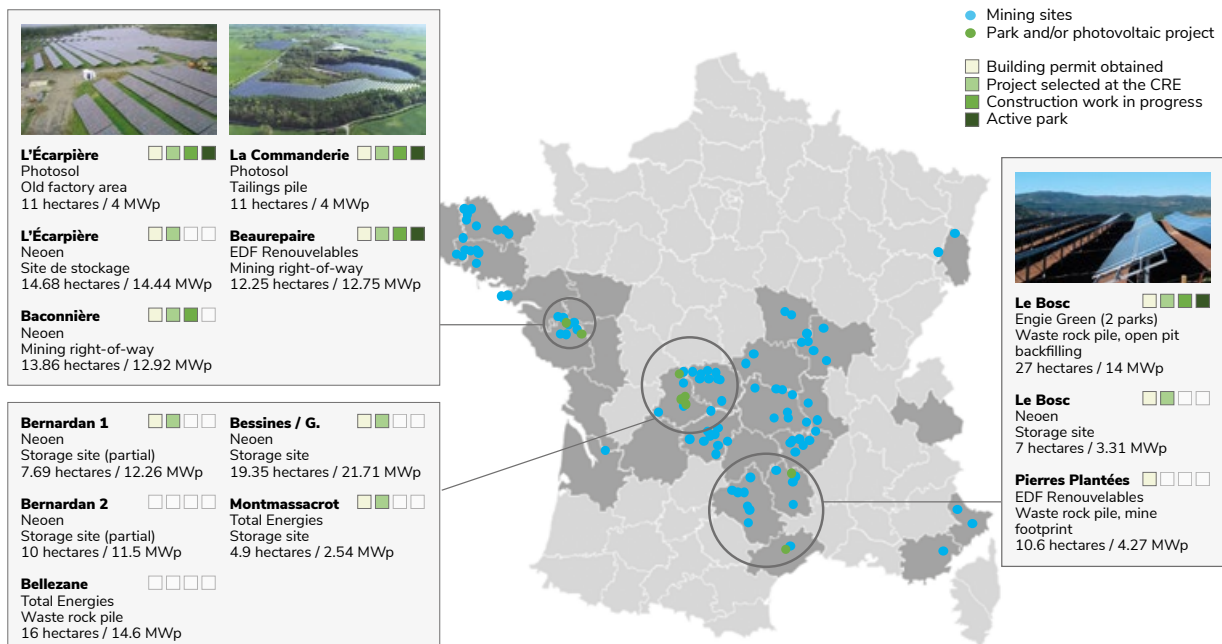
**Climate:** Mining Closure France (AMF) participates in the avoid-minimize-offset approach and goes beyond regulatory requirements. For example, AMF has committed to long-term, sustainable management of its forests and woods: 1,400 hectares are impacted by this voluntary approach, with fosters local biodiversity. As part of the program to optimize water treatment stations, the focus is on reducing the chemicals used, water and electricity consumption, and road transportation.

**Communities:** CartOmines is an internet site, accessible to the public, that enables anyone interested to obtain information on French former uranium mines ([More information](#)). AMF also participates in various trade shows, seminars and visits open to the public, such the Science Days that took place on October 14 and 15, 2022 (*for more information, see the inset below*), to promote exchange and provide information about its activities. Four Site Monitoring Committees were also organized in 2022.

**Competencies:** AMF employees undergo regular training in the best available techniques to continuously improve their work. Particular attention is paid to training on facility risks, which safely optimizes work.

**Customer Growth:** The second life of former mining sites is studied case by case to find technical solutions for them and respond to any requests by local stakeholders. For example, January 2023 saw the inauguration of the la Prée photovoltaic power plant, near the town of Beaurepaire (western France). Managed by EDF Renouvelables, this photovoltaic farm exceeds the footprint of the former mining site since it is partially built on town land. It fully meets the needs of local elected officials as expressed in the “greening” project of the Herbiers federation of towns. (*See specific section, p.82*).

**Cash:** Through the research & development program on water treatment stations, Orano Mining is simultaneously decreasing the transportation of treatment products and optimizing its water and electricity consumption, making it possible to reduce both its operating costs and its climate footprint.







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 Performance chapter 6.3, p.101 .

## 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 added annual effective dose (DEAA) to be assessed annually relative to the local background level (radiological impact) for populations living close to the sites. This dose must be less than 1 mSv/year. Orano Mining applies this principle in all countries where it operates, notably in those where regulations are different or less strict.

## 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).

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. In 2022, our Orano Mining teams actively participated in two work groups focused on water treatment and the stability of tailings storage encircling dike structures. The work group's final report on assessing the resistance of the encircling dike structures for uranium ore tailings storage was published on January 30, 2023.

Orano Mining is committed to continuing its active participation in the work groups concerning it, with a view to ensuring the transparency of its activities. The program is being developed in collaboration with all participants.

## EXAMPLES

### **Information and transparency, one of the after-mine pillars**

Mining Closure France is pursuing its visit and discovery actions at former mine sites, targeting a varied public.

In 2022, around twenty visits to remediated former sites were organized. The visits, intended for the general public, local elected officials, the administration, universities and foreign delegations, were organized at the remediated sites.

During Science Days on October 14 and 15, 2022, Orano Mining opened the Bellezane and Puy de l'Age sites, in southwest-central France, to the general public as part of specific visits organized by the association Énergies Limousines.


In September 2022, Mining Closure France also hosted a delegation made up of the mayors of Arlit, Timia, Iférouane, Gougaram and Danat (Niger) at the Bosc site near Lodève (southern France). This delegation was hosted as part of the remediation plan for the COMINAK site and to exchange best practices. The discussions addressed social and societal management during the shutdown of operations as well as the site's second life. In addition, the delegation visited the activity complex and two photovoltaic power plants. An initial visit by elected officials and representatives of the Nigerien authority had already taken place in France in 2019 at the Bessines site.

### **Drones for the purpose of collective memory**

A program around maintaining the memory of French former mining sites, initiated in 2022 with the survey of the Bosc site near Lodève (southern France), will continue at other sites in the coming years.

This campaign enables comparing the current situation after remediation with the impact of surface mining works when the mine was operating.

This "before - after" will serve as a training tool for presentations to all our stakeholders.

Orano Mining thus plans to survey, between 2023 and 2024, around 20 sites throughout the metropolitan France. Photographs will be accessible to the public at the CartOmines site at the end of this campaign ([More information](#) ).

### **A second life for former mining sites**

#### **Commissioning of the Beaurepaire photovoltaic power plant (western France)**



Located in the town of Beaurepaire, within the region's bocage, the La Prée site was the location of an open-pit mine that was operated in 1979 and 1980. With a surface area of 14 ha, this mine was remediated in 1991 by filling in the pit and fostering revegetation. Today, Orano Mining operates a passive water treatment station there that uses lagooning on limestone drains.

The photovoltaic farm project was initiated in 2016, with the first discussions launched by the city of Beaurepaire as part of a regional project around positive energy for green growth (TEPCV), set in motion by the French Ministry of the Environment.

In this context, Orano Mining, the town of Beaurepaire and EDF Renouvelables joined forces in January 2018. After 3 years of studies and 1 year of work, the photovoltaic farm was commissioned at the end of 2022. With a surface area of around 12 hectares, it has power of 14 Mwc, equivalent to the consumption of 7,500 households. Its expected operating life is 30 years.

[For more information](#)



Three other projects with a total power of 45.66 Mwc are progressing through collaboration with the company Neoen at the following sites: Baconnière (Roussay, western France), Écarpière (Gétigné, western France) and Bessines (southwest-central France). Work is set to end in 2023.

These projects are part of developing a second life for former mining sites, which AMF is leading.



# 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
- More than 51,200 tU produced in total since 2006
- Mine in operation with production of 2,564 tU in 2022

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

- Continuing the R&D program on rehabilitating aquifers by natural attenuation
- In 2021, the remediation estimate was re-estimated to confirm the “liquidation fund” amount
- Financing mine closure: progressive development of a liquidation fund

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

### EXAMPLE IN NIGER

#### SOMAÏR site

- Open-pit mining of uranium deposits and facilities for ore processing (dynamic and static)
- Cumulative production of 79,610 metric tons of uranium since 1968, with a production of 2,000 tU in 2022



- Planned date of end of operations in 2042
- Updating of the site's remediation study and the associated costs, taking into account the new mining plan in 2023
- Progressive ramp-up of physical uranium disposal facility making it possible to cover the future remediation costs

## Anticipating remediation right from the feasibility study phase

### EXAMPLE IN MONGOLIA

#### Mining project

- Dulaan Uul discovered in 2002 and Zoovch Ovoo in 2010
- Successful finalization of tests on the pilot (extraction + processing)
- Annual capacity of 2500 tU/year for 30 years
- 2022 - 2023 Negotiation of the Investment Agreement

#### 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
- Funding of mining site closure using equity cash
- 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
- 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)



## Conducting monitoring and oversight of remediated sites

### EXAMPLE IN GABON

#### 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
- Funding the mine's closure via a European fund, SYSMIN (fund to stabilize income from ore product exportation)

### Remediation and Monitoring

- Ensuring environmental monitoring and the safety of the site, which has been closed since 1999
- Submission of the final report for the Mounana 200 project - Reconstruction finished for 201 dwellings for local populations following the inspection of radiologically marked dwellings in the former mining compound, conducted with the Gabonese government.
- Meeting of the Prefectorial Committee to allocate the newly built dwellings
- Renovation of sports equipment for the entire population of Mounana

## Providing a second life for a rehabilitated site

### EXAMPLE IN FRANCE

Successfully remediate the former mining site in an economic context allowing the implementation of new projects.

#### Rehabilitated site of Beaurepaire

The Beaurepaire mining site, rehabilitated since 1991, is currently a photovoltaic farm operated by EDF Renouvelables.

- Located in Vendée (western France) and operated from 1979 to 1980, with remediation completed in 1991
- Open-pit mine
- 420,000 metric tons of extracted ore, 170 metric tons of uranium produced
- Environmental monitoring by the Mining Closure France team
- A passive treatment station for water at the site, with lagooning on limestone drains
- A photovoltaic farm on the former site operated by EDF Renouvelables

Project initiated in 2016 by the town of Beaurepaire, as part of the TEPCV project.

With a surface area of around 12 hectares, it has 14 MWc of power, equivalent to 7,500 households, which corresponds to 300% of the population of Beaurepaire and 25% of the population of the Herbiers federation of towns.



# Closure 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-Iférouane 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

## 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

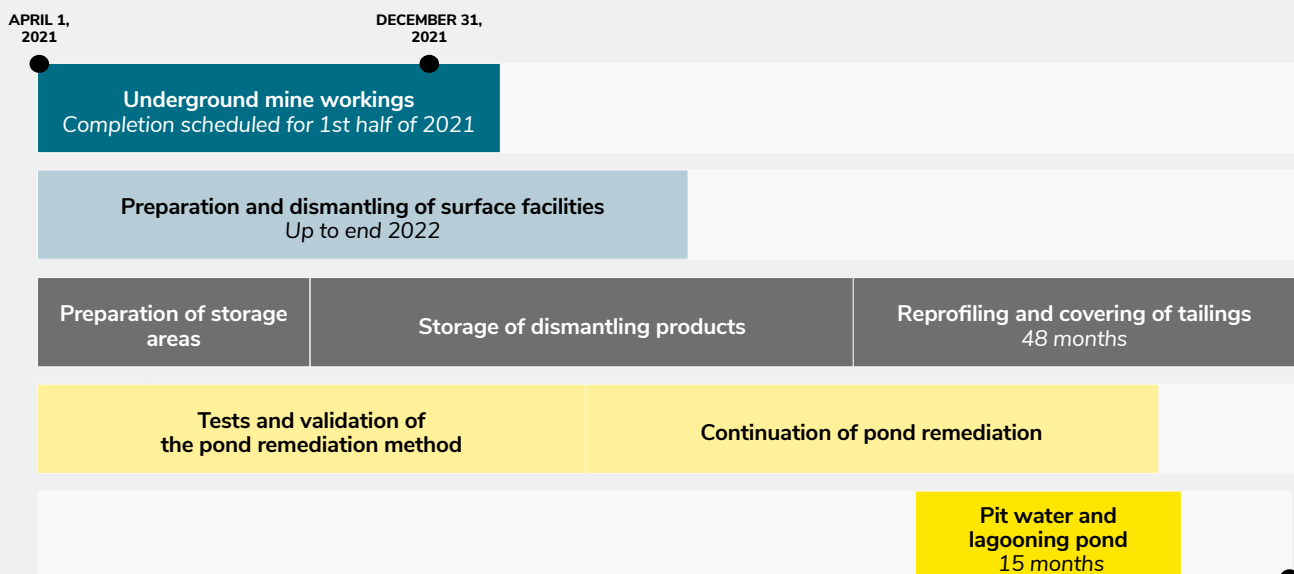
### Mixed (COMINAK + administration):

- 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

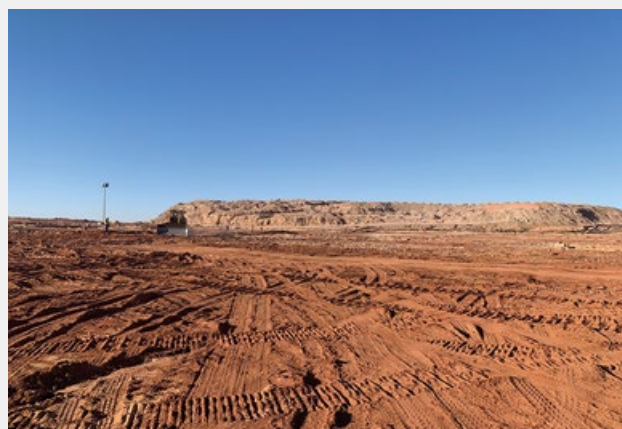
## SCHEDULE OF REMEDIATION PHASES



2032

# 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 12/31/2022
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 2022, more than 200 samples were taken
Comply with a total annual added effective dose below or equal to 1 mSv for the public	Less than 1 mSv/year	On 12/31/2022, all checks indicate 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 counter plan, 100% of the buildings in Akokan underwent diagnostics in 2021
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 buildings	Following the investigation campaigns, 40 locations in total with a projected added dose greater than 0.85 mSv were identified. Eighteen of these locations deemed to be high priority were treated, or 45% of contaminations to date. The treatment of residual contamination is ongoing with an estimated end in 2023
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)	Stripping in IZs, reprofiling the muck pile and arranging the disposal zones are underway according to schedule
Guarantee for the mine the stability of remediation works open to the surface	100% of large holes blocked off and ramp being blocked off Ground collapse (after 5 years x%)	Solution validated for the 2 large remaining holes Access to the mine was blocked off and the pit completely backfilled By April 2023, all surface/bottom links will be remediated
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
Implement an ambitious program to use subcontracting and local and national labor for remediation works across the entire project by 2032	90% of worked hours are carried out by local subcontractors	At the end of 2022, 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.



## Monitoring commitments of social component

Commitments	Indicators/objectives	Results on 12/31/2022
Advise each employee concerning career change	90% de solutions actées pour l'ensemble des anciens salariés	Au 31 décembre 2022, 86% des anciens salariés de COMINAK ont une solution actée (préretraite, retraite, auto-entreprenariat, reclassement externe, mobilité au sein du groupe)
Set up support measures adapted to each employee		
Support employees and subcontractors in eligible and viable entrepreneurial projects		
Ensure former employees exposed to ionizing radiation have free post-professional medical monitoring through OSRA (health observatory of the Agadez region)	Maintien du budget dédié à l'OSRA par COMINAK	100% des anciens salariés de COMINAK ayant été sur un poste de travail exposé aux rayonnements ionisants sont intégrés dans le dispositif OSRA

## 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) and driver's license training (120 people) underway since the month of May 2021

# 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:

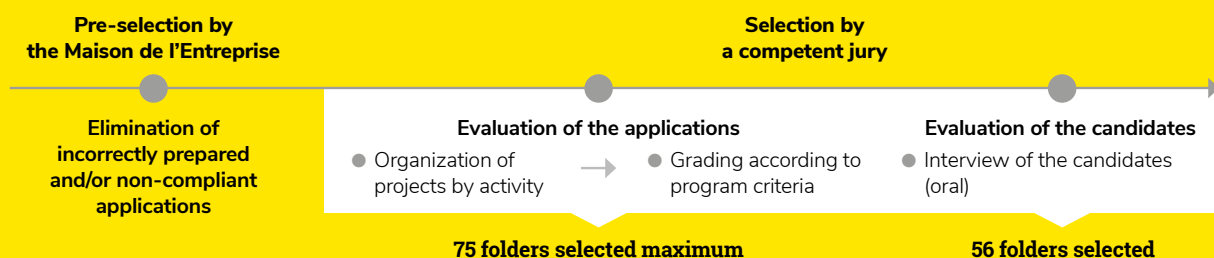
- Involving local and international actors in the decision-making process upstream of closure and in monitoring the site remediation work
- Transferring critical infrastructure to the Nigerian government:
  - Ultimately, the COMINAK mining compound will be transferred to the Nigerian ministry in charge 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 Iférouane 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 Iférouane regions.

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

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





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 Iférouane.

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 12/31/2022
<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>	<ul style="list-style-type: none"> <li>- 3 visits by the national monitoring committee</li> <li>- 2 visits by the local committee</li> <li>- 1 visit by town councilors</li> <li>- 1 informational meeting with the local committee</li> <li>- 1 visit by the Minister of Mines</li> <li>- 24 visits by the Departmental Division of Mines</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 2022</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, 100% of housing in the compound had been transferred to companies in charge of water distribution in Niger (SEEN)
<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)
<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	<ul style="list-style-type: none"> <li>- Hospital classified as a district hospital</li> <li>- Continued training of civil service medical personnel by COMINAK teams over 3 to 5 years</li> </ul>
<b>Transfer the COMINAK hospital to the government over 3 to 5 years and ensure support for 5 additional years</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 was demolished

Commitments	Indicators/objectives	Results on 12/31/2022
<b>Limit socio-economic and environmental impacts and participate in developing economic reconversion projects and economic development projects</b>	<ul style="list-style-type: none"> <li>- Report on the socio-economic impacts of COMINAK's closure and the economic reconversion conducted by the government via the Gold project</li> <li>- Support structural projects in the region of Arlit and Iférouane in the amount of 4 billion FCFA</li> </ul>	<ul style="list-style-type: none"> <li>- Selection of priority projects for economic aid proposed by the Technical Committee (prefects and mayors of Arlit, Timia, Gougaram, Dannat and Iférouane): market gardening identified as a priority sector</li> <li>- Identification of 10 sites that will make up phase 1 of the project</li> <li>- Technical studies and advanced preliminary design for remediation of the sites (installation of an irrigation system, solar pump equipment, etc.)</li> </ul>
<b>Support the maintenance and, if possible, the development of market gardening activities in the city of Akokan</b>	3 wells transferred on 12/31/2022	<ul style="list-style-type: none"> <li>- 5 wells transferred to market gardeners</li> <li>- 5 storage tanks</li> <li>- 5 solar installations with a capacity of 155 kW</li> <li>- Seed and fertilizers made available for the 2022-2023 campaign</li> </ul>
<b>Promote career change for people economically impacted by the closure via support for entrepreneurship</b>	Selection and aid for funding 50 entrepreneurial projects Establishment of the Chamber of Commerce	<ul style="list-style-type: none"> <li>- Continued work to support the Chamber of Commerce for project backers - Implementation of a subvention agreement with project backers</li> <li>- 38 working promoters benefited from the support of the Chamber of Commerce at the end of 2022</li> </ul>



## 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.

## Economic reconversion project

Mitigating the socio-economic impacts that ending activities could have is one of COMINAK's main commitments.

**COMINAK has budgeted 4 billion FCFA for this project**

Based on the impact mapping carried out by COMINAK and the conclusions of studies conducted by the Nigerien



government, notably the impact study funded by the GOLD project, the prefects of the Arlit and Ifrouane departments, accompanied by the 5 mayors of the towns, completed a process in July 2022 to prioritize the 20 projects submitted for the call for structural projects launched in April by COMINAK.

The market gardening sector was identified as revenue-generating. The economic reconversion steering committee, which brings together representatives of COMINAK, Orano and the Nigerien Ministry of Mining, validated this prioritization and decided to allocate 90% of the budget for economic reconversion to market gardening. The remaining 10% will be attributed via the pre-selection of the prefectorial committee to some micro-projects.

The first step of this program consists in upgrading the 9 pilot market gardening sites selected by the 5 towns. A series of technical studies was conducted by an agronomics consulting firm, which will make it possible to initiate preliminary works (installation of an irrigation system, solar pump equipment, etc.) in the second quarter of 2023, then to start a training program on improving the agricultural techniques of producers and to offer seed support for 2023-2024.

## 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 (2 newsletters released in 2022)

[Visit the website](#)



### 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. Four students were selected in September 2021 and 6 in 2022. They will be supported throughout their higher education studies.

**165 million FCFA** 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.

To access the program, students must meet the following selection criteria:

- Be a student in one of the establishments in the Arlit or Ifrouane departments
- Hold a general secondary school diploma with a grade of "satisfactory" or above
- Hold a primary school diploma (BEPC) with a minimum grade of "satisfactory"
- Have the best school orientation average as defined by the Nigerien Ministry of Secondary and Tertiary Education, Research and Technology
- Select one of the training programs defined in the agreement:
  - Agriculture/animal husbandry
  - Environment/waste management
  - Healthcare
  - Energy/renewable energies

## 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 (International Council on Mining and Metals), 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 site 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.

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. In 2021, using environmental modeling studies approved by the authorities, McClean teams optimized the processing of tailings and the treatment of effluents before discharge in response to the trend toward increased arsenic in the ore to be processed.

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.78 ).

## 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, the populations around the SOMAÏR and COMINAK sites are supplied by the network of water operators in Niger (SEEN), which draws on the groundwater of Teloua and Tarat. The Tarat groundwater is also used by the sites to supply drinking water for industrial and urban areas via dedicated pumping wells. From a chemical and radiological as well as a quantitative viewpoint, groundwater is monitored by dedicated teams and the results are presented to local information committees (CLI) or during caravans.

To limit sampling in these fossil groundwaters, some effluents from treated domestic wastewater are recovered with local communities for watering market gardens.

When the COMINAK site was closed, wells supplying drinking water formerly operated by the mine were transferred to the market gardeners to make up for the lack of treated wastewater for watering the crops due to the end of operations. These pumping wells are electrically supplied using solar panels. Local communities now have additional wells to support their activities over the long term.

## Methodology

Orano Mining annually assesses the level of water stress on all its ten sites worldwide using the "Aqueduct Water Risk Atlas" tool of the World Resources Institute (WRI).

The assessment of the tool indicates the following situation:

- Two sites are experiencing low water stress (<10%) (Gabon and Canada)
- The Bessines sur Gartempe site (France) is located in a zone with medium to high water stress (20-40%)
- One site is subject to high water stress (40-80%) (Namibia: Trekkopje site and the Erongo desalination plant°)
- The rest of our sites are classified as "arid and low water use" (Kazakhstan, Mongolia, Uzbekistan and Niger)

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

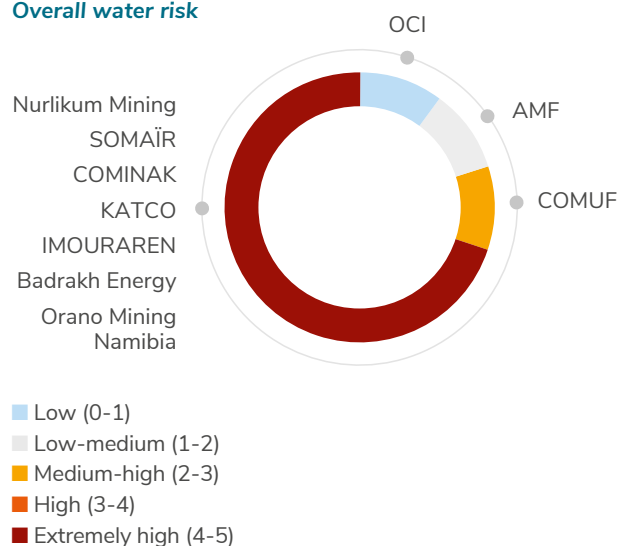
This assessment distinguishes between:

- 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



Site	AMF / Bessines-sur-Gartempe / France	COMUF / Gabon	Nurlikum Mining / Uzbekistan	Orano Mining Namibia / Namibia	OCI / Canada	Badrakh Energy / Mongolia	COMINAK / Niger	SOMAÏR / Niger	IMOURAREN / Niger	KATCO / Kazakhstan
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

### Risque global hydrique et stress hydrique (classification WRI)

Site	AMF / Bessines-sur-Gartempe / France	COMUF / Gabon	Nurlikum Mining / Uzbekistan	Orano Mining Namibia / Namibia	OCI / Canada	Badrakh Energy / Mongolia	COMINAK / Niger	SOMAÏR / Niger	IMOURAREN / Niger	KATCO / Kazakhstan
Physical risks quantity	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)
Physical risks quality	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)
Regulatory and Reputational Risk	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)
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)





General information										
Site	AMF / Bessines-sur-Gartempe /	COMUF	Nurlikum Mining	Orano Mining Namibia	McClean	Badrakh Energy	COMINAK	SOMAİR	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-artic	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 2022	Reagents preparation for mining water treatment	Sanitary use	Sanitary use	Sanitary water use, dust control	Uranium processing, production of sanitary and drinking water	Sanitary use production, elution process	Dust control, production of drinking and sanitary water	Dewatering, dust control, ore processing, and production of drinking and sanitary water	-	Production of sanitary water, elution process, drillings
Water consumption patterns	-	Sanitary use, process losses	Sanitary use	Evaporation, sanitary use	Process losses, sanitary use	Sanitary use	Evaporation, 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)

## Water resource challenges 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 study made it possible to propose adaptation actions, considered necessary in the short, medium or long terms, to respond to the identified vulnerabilities. In addition to regularly updating the management plan for the sites studied in 2022, the study will be extended in 2023 to future mining projects (Mongolia, Uzbekistan).

## 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. Since 2021, a cross-disciplinary group involving site and central teams has 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.

The trajectory of water consumption by producer sites is reassessed every year by the teams and presented at Central Orano Mining, making it possible to anticipate changes in requirements and impacts, inform decision-making and optimize resource management. In this way,

## 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 its specific issues, risks and regulatory requirements, and sets suitable objectives that are compatible with the objectives set by Orano Mining (see performance/commitments: -10% of global consumption and -10%/tU in 2025).

## 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 (run-off water, intermittent pumps, etc.) 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. In 2022, the conducted pumping tests used saline tracers; this water is thus accounted for as consumed water and not diverted water.

### 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.



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

## Changes in indicators

Quantities of sampled, consumed and diverted water - in m <sup>3</sup>	2020	2021	2022	2021-2022 trend
Volume of water sampled in surface water (including rainwater)	339,841	450,274	499,529	+11%
Volume of water sampled in the distribution network	34,798	64,225	31,117	-52%
Volume of pit water sampled	6,700,352	4,726,361	3,925,327	-17%
Volume of water sampled in groundwater via pumping wells	3,810,968	4,019,771	4,014,372	- 0.1%
Transfer to other group sites or to third parties	2,628,652	2,606,816	2,670,562	+2.45%
Volume of water sampled for the site's needs	8,257,307	6,653,815	5,799,784	-13%
Volume of diverted water	6,805	6,805	0	-100%
Volume of consumed water	8,250,502	6,647,010	5,799,784	-13%
RATIO of consumed water to metric ton of U produced (m <sup>3</sup> /tU)	850	674	503	-25%
Volume of discharged water - ICMM	1,560,574	1,709,399	1,630,716	-4.6%
Volume of consumed water - ICMM	6 689 928	4 937 611	4 169 068	-15.6%

## VOLUME OF WATER FROM THE ACIDIFIED ORE BODY

The deposits mined by Orano with the ISR technique are located in deep aquifers. The quality of the water, generally very saline and naturally high in uranium and other metals, rules out its usage by the local population.

During the step to prepare a block before it is mined, the volume of water present in the pores of the ore body is pumped to acidify it. It is then reinjected in the ore body at the level of this same block. This process is repeated in a loop until a pH is obtained that enables selective uranium dissolution. This water is central to the ISR process and is not reported under the indicator of "consumed water."

Orano Mining nonetheless decided to calculate the volume of acidified water necessary for extracting uranium using ISR.

Currently, the KATCO site (Kazakhstan) is the major contributor to this indicator, but the extraction pilots of the Zuuvch Ovoo (Mongolia) and South Djengeldi (Uzbekistan) sites are also accounted for when they are brought into production.

In 2022, the volume of water acidified for the operating needs of ISR was 514,158 m<sup>3</sup>.

## Our results

In 2022, the "consumed water" indicator (Orano) fell 13% compared to 2021. The ratio of water consumption at all Orano Mining sites to metric ton of produced uranium is 503 m<sup>3</sup>/tU, representing a decrease of 25% compared to 2021.

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. In 2022, the site's activities consisted in remediation, which only required water for dust control, materials preparation and for the domestic and drinking water for residual installations. In 2021, the mine had been in operation for a quarter, and 2021 consumption still included 3 to 4 months of pit water and ore processing. This explains that the drop in water consumption continued between 2021 and 2022. The end of mining operations at COMINAK alone represented a drop in consumption of 2.6 Mm<sup>3</sup> between 2020 and 2022.

The second factor is related to the normal resumption of production after two years of a public health crisis. Over these two years, a large proportion of water was used to keep the facilities operational and carry out in-depth maintenance. In 2022, resumption of production, notably



at McClean Lake, along with COMINAK's closure, contributed to a decrease in the ratio of consumption relative to the 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

In 2022, the Orano Mining work group focused on water continued with actions to reduce and optimize water consumption, while working to ensure compliance with the ICMM reporting standard.



### 2022 RESULTS

Ensure the reliability of maps and water measurements at sites and supplement the action plans for the SOMAÏR, KATCO and Orano Canada sites	
Develop ecodesign recommendations in relation with Orano work groups (water + ecodesign**)	



\* 2019 as reference year

\*\* For more information about ecodesign, see chapter 8.1

## 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 recognized good practice, to minimize 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
- 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.

## Encircling dike structures for tailings storage

### 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 independent expert review	Safety factor*	Internal and external monitoring	Is there a remediation plan?
Bois Noirs Limouzat	St Priest la Prugne (42)	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)	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)	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)	Closed	1958/1978	Cycloned sands / Vertical	36/1,400	7.5	2020	3.38	Inspection, maintenance, topo, piezo / expert review (5 years)	Already remediated / Solid cover
Montmassacrot	Bessines sur Gartempe (87)	Closed	1987/1990	Cycloned sands / Vertical	20/200	0.7	2020	1.49	Inspection, maintenance, topo, piezo / expert review (5 years)	Already remediated / Solid cover
Bernardan	Jouac (87)	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)	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)	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)	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	1,34**	Inspection, maintenance, topo, flows / expert review (5 years)	Already remediated / Water cover (20 ha)
SOMAÏR	Arlit (Niger)	Operating	1971	Waste rocks / banco / Vertical	5 to 11/ 3,500	23	-	>1.5	Inspection, pond levels	Yes - by reprofiling and cover
COMINAK	Akokan (Niger)	Operating	1978/2021	Waste rocks / banco / Vertical	5 to 11/ 1,400	18	-	1.7	Inspection, pond levels	Yes - by reprofiling and cover
Cluff Lake	Saskatchewan (Canada)	Closed	1980/2002	Waste rocks / Vertical	6.5/1,240	5	2022	2.36	Inspection	Already remediated / Solid cover
McClellan Lake	Saskatchewan (Canada)	Operating	1999	Waste rocks / Vertical	9.5/546	2.3	2022	> 1.3	Inspection, piezo	Yes - cover

\* Safety factor (according to the geotechnical recommendation > 1.5)

\*\* 1.2 required


## 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 work group was created as part of the National Plan for the Management of Radioactive Materials and Waste (PNGMDR). It is led by the French Ministry of Ecological Transition and the Nuclear Safety Authority (See p.81 ) , and brings together various experts including Orano Mining experts and those of associations. In 2022, this group continued its work and the final report on assessing the resistance of the encircling dike structures for uranium ore tailings storage was published on January 30, 2023.

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).


## 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
- SOMAIR: 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 5 (see COMINAK chapter, p.86 )

In recent years, there has been a significant effort at sites to improve the monitoring of structures in operational and organizational terms.

## Orano mining commitments for 2030



- Shift towards passive management of mining tailings storage at new mining sites

## EXAMPLES

### Remediate a mining site in collaboration with stakeholders: example of the Bois Noirs Limouzat dam

The Bois Noirs Limouzat site is situated in the Loire department (southeast-central France), within the Monts du Forez.

Characteristics:

- Located in Loire and operated from 1954 to 1980, with remediation completed in 1988
- Open pit mines and underground mining works
- 7,000 metric tons of produced uranium, which is 8% of the total French national production
- Environmental monitoring performed by a specialized and trained local service provider
- Two treatment stations for the site's water
- A tall category A dam and a uranium ore tailings storage structure under a body of water

### A new arrangement project

1.4 million metric tons of tailings are stored in the site's large pond. In 1984, when the site was remediated, the decision was made with IPSN (French Institute for Protection and Nuclear Safety) and government entities to keep the tailings under water.

The tailings are contained under a body of water 2 to 7 m in depth behind a dike, classified as a large dam (category A structure under French dam classification system). This structure has the advantage in terms of radiation protection of being an effective natural screen against radon gas emissions.

However, this tall dam requires regular maintenance and monitoring.

A technical-economic study conducted in 2018 and 2019 showed that, while the current solution was

the best in the short and medium terms, it was not sustainable enough over the long term in the absence of monitoring and maintenance. For these reasons and following a request by the French administration through a prefectorial order issued in June 2022, Orano Mining is studying solutions for implementing a solid cover.

### A project based on collaboration

In this context and to earn the trust and support of local stakeholders, Orano Mining is launching a collaboration study with the backing of an independent organization. The objective is to gather the opinions, needs and any questions of the local stakeholders to respond to them in the technical design of the long-term project.



## FOCUS: EXPERT ASSESSMENT OF THE TAILINGS STRUCTURE AT MOUNANA (GABON)

The global industrial standard on managing ore tailings storage structures was implemented in 2022 for the storage of uranium ore tailings at the remediated COMUF site at Mounana in Gabon. In the classification matrix for the consequences of a failure, the Mounana structure is classified in the 2nd "significant" category out of a total of 5.

For more information about the global standard on managing ore tailings storage structures



This storage structure is under water and encircled by a dike measuring 200 m long and around 10 meters high and damming the Ngamabougou valley.

Built in 1997, this structure consists in an upstream recharge in laterite and a downstream recharge in riprap with protections of upstream and downstream walls in riprap. The slope of the upstream wall is 3/1 and that of the downstream wall is 2/1. The structure is equipped with a concrete spillway.

It is regularly monitored and maintained.

Implementing the global industrial standard included some additional technical studies, including:

- Updating the hydrology by incorporating rainfall data for recent years and integrating climate change based on the 2050 projections of the IPCC
- Determining the levels reached by reference flooding for these two situations
- A stability analysis under static and earthquake conditions

- A pre-analysis of the consequences in case of the structure's failure, determining return values for flooding and earthquakes to be considered in an operating situation and where monitoring and maintenance are absent.

The studied failure modes are:

- Overall stability
- Failure by hydraulic uplift of the downstream base
- Failure by overflow
- Failure by internal erosion
- Failure by liquefaction under dynamic stress

In normal operating situations, the structure has satisfactory stability conditions. In a situation of flooding and earthquake with a return period of 1000 years, the structure remains stable. For an earthquake with a return period of 10,000 years, the safety factor is slightly lower than the required value, but the structure remains stable (FS > 1). Stability has been checked for other failure modes.

Governance was set up with, in particular, a local team that ensures the structure's monitoring and maintenance with supervision by Orano Mining/Mining Closure France and a monitoring visit carried out every five years by a specialized external design office.





## 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

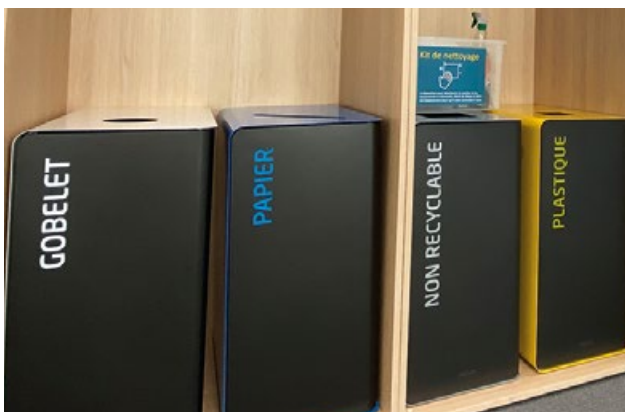
Environmental events are fed back at group level via a dedicated internal digital platform named "AHEAD". The Orano group has also developed a severity classification scale for environmental near-misses and events, ASSESS, in order to promote operating experience feedback and sharing within the group.

During 2022, we did not have any environmental events with a major impact on the environment. We were not subject to any penalties or legal proceedings with regard to regulations.



### 2022 RESULTS

Expert assessment of Mounana structure	●
Stability study of Bernardan (France)	●
At the SOMAÏR, Orano Canada and Mining Closure France sites, implementation of governance according to Orano Mining's dike standard	●



## 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	2020	2021	2022
Conventional waste	2,641	3,934	3,032
Hazardous waste*	1,012	1,536	1,739
Non-hazardous waste**	1,628	2,397	1,793
Hazardous conventional waste recovered	229	436	293
Non-hazardous conventional waste recovered	719	1,432	739

	2020	2021	2022
Share of recovered waste	36%	48%	34%

For all the mining activities where Orano Mining is the operator, the tonnage of conventional waste globally decreased by 23% between 2021 and 2022. In 2021, our waste production was exceptionally high due to the large-scale maintenance work at the McClean Lake site in Canada and to the start in Niger of the dismantling of the COMINAK plant.

Conditions returned to normal in Canada and at COMINAK where the dismantling phase generating the largest volume of waste is completed. In 2022, KATCO dismantled several units for distributing solutions on the well field. The teams reused equipment and materials wherever possible, but this dismantling activity nonetheless increased the volume of conventional waste.

The proportion of recovered waste is 34%, a decrease compared to last year, which saw an exceptional level of recycling of material at COMINAK, which was in a dismantling phase.

### RADIOACTIVE WASTE

Our mining waste (excluding tailings from ore processing) only contains naturally occurring radionuclides and is classified as very low-level waste (VLLW).

\* Hazardous waste generated by our sites mainly consists in: used oils, fuel filters, anti-freeze and unnecessary batteries. They are placed in containers designed and transported for internal or external recycling. Empty drums and other vessels that contained products such as oils, anti-freeze or grease are returned to suppliers or processed via specialized recycling routes.

\*\* Our most significant non-hazardous waste includes scrap metal, used tires, internal industrial waste and organic waste. Wherever possible, our operational sites implemented recycling programs for materials such as paper, plastic, pallets and glass.



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	2020	2021	2022
<b>Total mass of radioactive waste linked to operation, recovered or disposed of via approved routes</b>	879	647	671

In 2022, 671 metric tons of radioactive waste were produced by mining entities where Orano is the operator, which represents a 3.7% increase compared to 2021. This slight change is linked, in the same way as described in the conventional waste chapter, to dismantling units for distributing solutions on the KATCO well field, but also to a treatment campaign (reducing volume) for legacy waste stored at CIME (Extractive Metallurgy Innovation Center).

## 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)**

## 2022 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 waste work group continued actions to reduce waste and favor recovery.

For example, as part of a benchmark around plastic recovery techniques, representatives of the town of Arlit and neighboring towns visited a startup in the Paris region, RECNOREC. They were presented with a process for transforming plastic into an ecological and non-putrescible material that can be used in the same way as wood. The representatives were very interested in the process and in a potential partnership. This solution could be developed locally.



## 2022 RESULTS

<b>Consolidate our approach to recovering plastic bottles at KATCO</b>	
<b>Identify the possibility of developing a recycling route in Arlit</b>	
<b>Reduce our non-recycled waste production (-25% by 2030):</b> <ol style="list-style-type: none"> <li>1 By making our conventional waste measures more reliable</li> <li>2 By supplementing action plans at the major sites (KATCO, OCI, SR)</li> <li>3 By defining waste management recommendations for new projects</li> </ol>	

## 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**



**Waste must be sorted at the source by the waste producer before being transported to specific areas for appropriate elimination.**

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



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 recognized 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.

Watch the ICMM Climate Change Statement video: Our commitment to net-zero by 2050 or sooner



In the medium term, Orano has set an objective to reduce by 20% its total emissions for scopes 1, 2 and 3 by 2030 compared to 2019. To reach this objective, our teams are working in parallel on scopes 1 and 2 and on scope 3. Scope 3 assessment and reliability enhancement started in 2020.

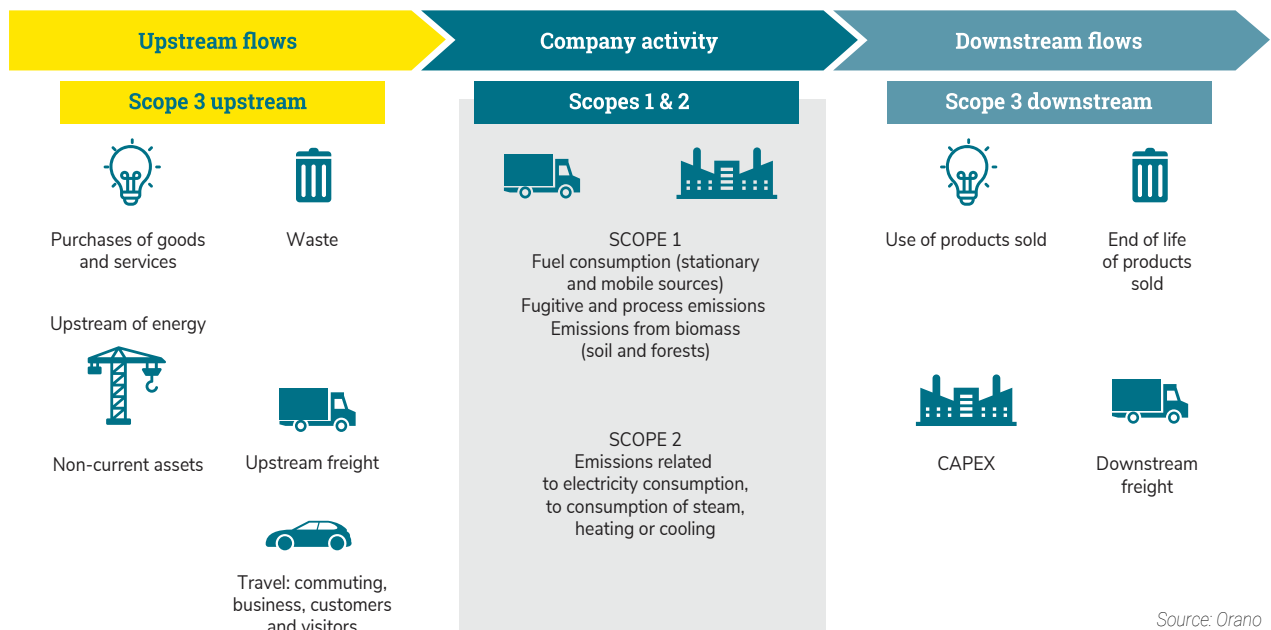
## Governance

The Orano Board of Directors ensures that the group’s strategy takes into account climate issues. Enhancing the reliability of the assets portfolio so as to reach decarbonization objectives is the subject of an annual analysis during the updating of the Industrial Master Plans of the sites. This process is well established for scopes 1 and 2, and for scope 3, and its reliability is being enhanced.

These objectives are applied within Orano Mining and at its sites. All new projects, from exploration through to remediation of mining sites, as well as changes in existing facilities, are assessed in terms of potential GHG impact, and are subject to eco-design studies to anticipate and minimize this impact. Orano Mining’s carbon trajectory is regularly reassessed by teams on site and the Central BU, and all progress areas, whether around energy, processes, or organization, or linked to the value chain, are studied.

In addition, as a member of ICMM, Orano Mining is committed to implementing the requirements set forth in the climate change principles and in the performance expectations.

### Breakdown of the accounting for greenhouse gases according to the 3 scopes



Source: Orano

#### Greenhouse gas emissions scope (according to the GHG protocol)

**Scope 1:** direct emissions resulting from the combustion of fossil fuels (gas, oil, coal), direct emissions of refrigerant gases, direct emissions of CO<sub>2</sub> not resulting from combustion.

**Scope 2:** indirect emissions related to the consumption of electricity, heating, or steam required for the activity.

**Scope 3:** other emissions not resulting from the items described above.

\* Reference year: 2019

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 adaptation and attenuation solutions at our sites, while taking account of local opportunities and challenges and of the future consequences of climate change.

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.

We are also working to improve the environmental performance of our sites by monitoring global emissions related to the metric ton produced, but in terms of climate impact, total emissions are what count. We will thus concentrate our efforts on reducing our global greenhouse gas footprint.

## Extension of the GHG calculation scope to scope 3

Since 2020, a work group across Orano's business units has been working on the quantification and characterization of greenhouse gas emissions under scope 3, starting from the reference year: 2019. During 2021 and 2022, a significant effort was made to enhance the reliability of this accounting and to ramp up the skills of the teams. It will continue in 2023 because scope 3 represents more than 70% of the total GHG footprint of Orano Mining.

Enhancing the reliability of the scope 3 emission mapping and identifying drivers are a primordial challenge given the significance of the scope 3 footprint. The main emission components for Orano Mining include the supply of chemical reagents, the upstream and downstream of energy supply, and investments.

For this purpose, several work areas have been organized and will continue into the years to come:

- Continue to make progress on emissions linked to scope 3 by improving the collection of specific emission factors of our major suppliers and by collecting physical rather than monetary data whenever possible
- Train our buyers and specifiers and work jointly with our partners to minimize the footprint of their activities, notably via the use of contractual GHG

criteria or support partnerships with our energy suppliers

- Anticipate the footprint of future projects and implement ecodesign
- Participate in internal and external work groups and carry out regulatory and technological watch on this subject

## 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:

- Consuming electricity supplied on national grids in countries where we work; the equivalent footprint is calculated from site consumption and consumption factors of the concerned countries, regions and power companies.
- 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)
- Change in the impact on soils and the related disappearance of carbon storage capacities. These emissions are calculated by assigning the surface areas annually cleared by each site to carbon storage equivalence factors relative to each subregion, supplied by the Orano group

## 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.

Concerning scope 1 emissions, although it remains difficult to act on emissions related to decarbonization of ore, which are dependent on the geology of mined areas, Orano Mining is conducting innovative studies to limit GHG emissions associated with ore processing. In 2022, the SOMAÏR site finalized the modification of its ore processing by reducing consumption of the carbonates used in the re-extraction process. In 2022, recycling of a condensate flow in the McClean mill made it possible to limit steam production and thus the associated propane consumption, but also freshwater sampling for the process in which the condensates are reinjected.

A particularly significant challenge for our sites is access to low-carbon energy since most of them are located in countries where the electricity mix is high-carbon. We are focusing our efforts on scope 2, because by working on the electricity mix then on a greater electrification of our facilities, we can act on our scopes 1 and 2 at the same time.

Our work areas for decarbonizing our footprint include:

- Improving energy performance (see p.110 
  - Seeking opportunities for own-consumption of renewable energies (solar arrays, using turbines at acid plants, etc.)
  - Finding investment opportunities in renewable energy projects in the countries where we work
  - Technological watch, notably via the work groups around ICMM's Innovation for Cleaner and Safer Vehicles and Climate Change

Currently, two major projects are underway to decarbonize our activities and contribute to low-carbon electricity: an 8 Mwc photovoltaic power plant that will cover part of the electricity needs of the SOMAÏR mining site (Niger), and a 4.6 Mwc photovoltaic power plant that will supply the Erongo desalination plant near Trekkopje (Namibia). Discussions are also underway with the electricity supplier in Saskatchewan (Canada) to help develop renewable capacities in the provincial mix.

Since the challenge of a low-carbon electricity supply is particularly pronounced in mines using ISR, analyses are ongoing at the KATCO site (Kazakhstan) to invest in renewable electricity projects. In addition, the Badrakh Energy mining project is currently planning for electricity own-consumption via a cogeneration unit at the site's future acid plant.

The emission factors for electricity production vary as a function of location and the activities of each site. As set out in the Orano baseline, they are mostly the result of the latest update to the Carbone ADEME v.22 base.

The factors applied by Orano Mining to calculate GHG emissions are:

Site	Country	FE <sub>elec</sub> (in tCO <sub>2</sub> e/MWh)			
		2019	2020	2021	2022
KATCO <sup>(1)</sup>	Kazakhstan	0.766	0.766	0.766	0.766
Badrakh Energy <sup>(1)</sup>	Mongolia	1.492	1.492	1.492	1.492
Nurlikum Mining <sup>(1)</sup>	Uzbekistan	0.734	0.734	0.734	0.734
Orano Mining Namibia <sup>(1)</sup>	Namibia	0.197	0.197	0.197	0.197
Orano Mines Niger <sup>(3)</sup>	Niger	0.990	0.990	0.990	0.990
COMINAK <sup>(3)</sup>	Niger	0.990	0.990	0.990	0.990
SOMAÏR <sup>(3)</sup>	Niger	0.990	0.990	0.990	0.990
COMUF <sup>(1)</sup>	Gabon	0.383	0.383	0.383	0.383
Orano Canada Inc. <sup>(2)</sup>	Canada / Saskatchewan	0.657	0.657	0.657	0.657
Orano Mining headquarters, Bessines and Mining Closure France <sup>(1)</sup>	France	0.0418	0.0407	0.0407	0.038

With:

(1): Carbone ADEME, v22 base

(2): Source: emissionfactors.com for Saskatchewan (Province / Saskatoon identical).

(3): Sonichar data

### 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
Domestic fuel	0.845	42	0.0755	0.272	3.171	2.68
Pure diesel	0.845	42.6	0.0756	0.272	3.221	2.68
Pure gasoline	0.747	44	0.0742	0.267	3.265	2.44
Aviation turbine fuel	0.800	44	0.0719	0.259	3.164	2.53

These emission factors (related to fuel combustion only) are either from the ADEME v22.0 carbon base of June 2022 or from the national inventory report, OMINEA 16th edition, May 2019, or calculated by the Orano group using energy equivalences, DGEMP/EO of May 2002.

Emissions for the years 2019, 2020 and 2021 have been updated to incorporate corrections of inconsistent values identified post-hoc. The changes are of minor importance (less than 500 tCO<sub>2</sub>e).

Emissions (tCO <sub>2</sub> e)	2020	2021	2022	Delta 2022 vs 2021
<b>Direct GHG emissions - scope 1</b>	<b>146,367</b>	<b>125,332</b>	<b>125,219</b>	<b>-0,1%</b>
CO <sub>2</sub> emissions from processes	45,834	33,517	21,828	-34,9%
Direct GHG emissions linked to fossil energies - scope 1	90,463	82,340	81,975	-0,4%
<b>Indirect GHG emissions - scope 2</b>	<b>200,458</b>	<b>175,708</b>	<b>161,772</b>	<b>-7,9%</b>
Emissions of ozone-depleting gases	30	18	6	-66,2%

In 2022, the scope 1 emissions of Orano Mining remained relatively unchanged overall, even though, site by site, the results are mixed. The resumption of normal activities at McClean Lake after two years of partial interruptions due to the public health crisis increased scope 1 emissions, but this was offset by the absence of

activity mining at COMINAK (in 2021, since the site was operational during the 1st quarter before its closure). Improving the accounting accuracy for emissions related to refrigerants at SOMAIR made it possible to decrease the scope 1 footprint in 2022.

By contrast, GHG emissions related to electricity consumption (scope 2) significantly decreased in 2022, mainly due to the closure of COMINAK, whose electricity consumption represented a significant portion of Orano Mining's scope 2 emissions. However, there was an increase in scope 2 at the SOMAIR site linked to a larger quantity of ore processed in 2022, and thus an increase in the plant's electricity consumption.

Orano Mining's overall activity led to a total GHG emissions figure (scopes 1+2) of 286,990 tCO<sub>2</sub>eq, a decrease by nearly 5% compared to 2020, and nearly 20% compared to 2019.







Emissions (tCO <sub>2</sub> e)	2019	2020	2021	2022	Delta 2022 vs 2021	Delta 2022 vs 2019*
<b>Direct and indirect GHG emissions (scopes 1+2) in tCO<sub>2</sub>e</b>	357,767	346,825	301,041	286,990	-4.7%	-19.8%
<b>Total greenhouse gas emissions (scope 3) in tCO<sub>2</sub>e</b>	779,212	707,702	729,071	763,735	+5%	-2%
<b>Total greenhouse gas emissions (scope 1+2+3) in tCO<sub>2</sub>e</b>	1,136,979	1,054,527	1,030,112	1,050,725	+2%	-8%

The decrease observed for scope 3 between 2019 and 2022 is mainly explained by improved calculation accuracy, notably the greater proportion of physical data and the search for specific emission factors. In addition, the lower figures observed in 2020 and 2021 are due to two factors: the production shutdown related to the COVID 19 health crisis at the Canadian sites (CAMECO and McClean Lake), (less reagents purchased, smaller investment footprint), and the shutdown in 2021 of the crisis at the Cigar Lake (CAMECO) and McClean Lake sites in Canada (fewer reagents purchased, smaller investment footprint), and the shutdown of the COMINAK operation in 2021.

These figures bring the intensity ratio of direct and indirect GHG emissions to 24.91t CO<sub>2</sub> equivalents per metric ton of uranium produced, or a decrease compared to 2021 and a clear improvement compared to 2019.

The closure of COMINAK led to a decrease in electricity consumption, in hydrocarbons, and in process emissions, which reflects a decrease in associated direct and indirect GHG emissions. The associated decrease in uranium production was offset by increased production at other sites, more efficient in terms of carbon footprint.

Ratio (tCO <sub>2</sub> e/tU)	2020	2021	2022	Delta 2022 vs 2021
<b>GES scope 1</b>	15.08	12.70	10.87	-14.4%
<b>GES scope 2</b>	20.66	17.81	14.04	-21.2%
<b>GES scopes 1 + 2</b>	35.74	30.51	24.91	-18.4%

## Orano Mining commitments for 2025



- Reduce the emissions of CO<sub>2</sub> equivalent from activities as operator in scope 1 and 2 (-20%)\*
- 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.



\* Reference year: 2019

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. In 2022, an adaptation plan was co-developed for the following sites: SOMAÏR (Niger), KATCO (Kazakhstan) and McClean Lake (Canada), and for the after-mine sites in France. They each include objectives for the short and longer terms, to take into account the priorities, the maturity level of the solutions and the investments to be made.

In 2023, Orano will continue this vulnerability study by extending it to its mining projects in Central Asia (Mongolia, Uzbekistan). The adaptation plans for the sites, already under study, will also be supplemented and integrated in the risk models for the sites.



## 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 work 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.

At the scale of Orano Mining, a work group focused on sobriety and energy efficiency was set up. It draws on energy specialists at each site in operation, who coordinate with operational teams, projects and HSE to establish energy trajectories for the sites, contribute to the energy performance action plan, and anticipate impacts and opportunities for future projects.

Each year, the energy trajectory of the sites is reviewed at the central level of Orano Mining and by Orano during strategic reviews and in industrial master plans. These reviews make it possible to integrate the energy challenge (and GHG) in Orano Mining's strategy and to make decisions.

## 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, were initiated in 2022 for production sites. They should supplement Orano's efforts to reach its energy consumption reduction objectives (10% reduction by 2025 compared to 2019) (see Orano's annual report, chapter 4.1.2, p.94 ).

Finding the right drivers requires understanding the sources of consumption. Among these cross-cutting actions, a significant effort was thus made to improve the mapping of energy flows and their measurement. For 2023, some sites in production planned to launch the deployment of energy performance software, called EMSs (Energy Management Systems) on part of their scope. A new energy audit should be launched at SOMAÏR, and KATCO is working to model electrical flows on its well fields (current deposits or those in the project phase). Alternative methods for ore processing that consume less energy are also under study.

The ecodesign of new projects will enable incorporating, from the design phase, the operating feedback of sites currently in production.

The consumed energy amounts to 562,733 MWh for 2022, 2.5% lower compared to 2021, and 17.5% lower compared to 2019, the reference year. This lowers the consumed energy intensity ratio to 48.8Mwh per metric ton of uranium produced by Orano Mining (vs 52 MWh/tU in 2019).

The main explanation for this decrease in total energy consumption and in the ratio of consumed energy per metric ton of uranium is the closure of the COMINAK site at the end of the first quarter of 2021. In 2019, this site still represented nearly 20% of Orano Mining's energy consumption, with a large proportion related to ventilation and pit water, which meant that the site consumed the most energy per metric ton of uranium produced.

In addition, the sites in operation had saved significant amounts of energy since 2019, which made it possible to compensate for the power ramp-up of some exploration projects (Mongolia, Uzbekistan).



Energy (MWh)	2020	2021	2022	Delta 2022 vs 2021
<b>Energy consumed</b>	627,358	576,936	562,733	-2.5%
<b>Fossil energy consumed</b>	345,870	315,976	315,588	-0.1%
<b>Electricity consumed</b>	281,546	260,961	247,145	-5.3%
<i>Electricity from non-renewable sources consumed</i>	281,541	260,955	247,138	-5.3%
<i>Electricity from renewable sources consumed</i>	5	6	7	+16.7%
<b>Ratio of energy consumed/tU</b>	64.7	58.5	48.8	-16.5%

100% of the fossil energies currently consumed by our sites are non-renewable. All our mining sites are located in isolated areas in which no energy supply networks based on heat, cold or steam are available. The consumption of heat, cold or steam externally sourced by Orano Mining is thus zero.

## 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 2022, Orano Mining and its subsidiaries worldwide did not identify any cases of non-compliance with environmental legislation and/or regulations leading to 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.





According to the recommendations of impact studies, 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.

It also enables us to check on the efficiency of the measures that are implemented.

For more information, see biodiversity chapter p.118



### 2022 RESULTS

At the end of 2022, a secured portfolio of CO <sub>2</sub> equivalent emissions equivalent to 35% of the targets set for 2025	
By ensuring technological and country/region policy watch (emission factor)	
By launching technical studies for building the PV power plant at SOMAÏR	
By looking for opportunities for electricity supply from renewable sources (KATCO, Namibia, etc.)	



# Conservation of biodiversity

## MINING PRINCIPLE

Contributing to the conservation of biodiversity and integrated approaches to land-use planning.





## PRINCIPLE 7.1

**Neither explore nor develop new mines in World Heritage sites, respect legally designated protected areas, and design and operate all new operations or changes to existing operations to be compatible with the value for which such areas were designated.**

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.

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

### Our commitments



- Since 2021, all new remediation plans are to include a biodiversity component
- 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

The application of the principles is controlled and monitored during the relevant steering committees

In 2022, Orano has deployed a Group-wide biodiversity strategy, based on an approach commensurate with the challenges associated with the various activities. This initiative serves to reinforce the Group's engagement for the protection of biodiversity:

Building on this continuity and with a view to continuous improvement, Orano Mining has decided to significantly expand the scope of reporting by:

- Broadening its reporting frameworks and including protected areas as classified by the IUCN
- Targeting a survey of UNESCO sites around our sites over a distance consistent with our operations

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.

IUCN (Dudley, N. (2008) - Guidelines for applying protected area management categories. Gland, Switzerland: IUCN. 96pp) defines protected areas as any clearly defined geographical space, recognized,





dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values.

In the context of new projects, biodiversity studies are systematically carried out on key areas.

The UNESCO World Heritage Sites around our mining operations are listed within a 100 km radius of our sites. There are 25 in total: 24 in France and one internationally.

More information, see the sheet and visit the UNESCO website



For more information, read the IUCN report



Orano mining site (exploration, operation, post-mining)	Country	
KATCO	Kazakhstan	Western Tien Shan (transnational mountain range)
All Mining Closure France sites	France	Mont Saint Michel and its bay
		Basilica and hill of Vézelay
		Prehistoric sites and decorated caves of the Vézère valley
		Roman Theatre and its Surroundings and the "Triumphal Arch" of Orange
		Arles, Roman and Romanesque Monuments
		Cistercian abbey of Fontenay
		Place Stanislas, Place de la Carrière and Place d'Alliance in Nancy
		Abbey of Saint-Savin sur Gartempe
		Pont du Gard (Roman Aqueduct)
		Historic Fortified City of Carcassonne
		Strasbourg, Grande-Île and Neustadt
		Bourges Cathedral
		Routes of Santiago de Compostela in France
		Historic Site of Lyon
		Jurisdiction of Saint-Emilion
		The Causses and the Cévennes, Mediterranean agro-pastoral Cultural Landscape
		Bordeaux, Port of the Moon
		Episcopal city of Albi
		The Climats, terroirs of Burgundy
		Decorated cave of Pont-d'Arc, known as the Grotte Chauvet-Pont-d'Arc, Ardèche
		Chaîne des Puys - Limagne fault tectonic arena
		Nice, Winter Resort Town of the Riviera
		Vineyard Landscape of Piedmont: Langhe-Roero and Monferrato
		La Chaux-de-Fonds / Le Locle, Watchmaking Town Planning



## PRINCIPLE 7.2

Assess and address the risks and impacts to biodiversity and ecosystem services by implementing the mitigation hierarchy, with the ambition of achieving no-net-loss of biodiversity.

Our central and operational teams work together to “avoid - minimize - remediate/restore - offset” and preserve ecosystems. Specific actions are taken at each site in accordance with regulatory requirements and local practices. To do so, they rely on the recommendations of recognized experts in the field, but also on internal expertise and operating experience feedback.

They share best practices used by mining companies that are members of the ICMM.

**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)

This approach is integrated beginning with the impact study which is performed by multidisciplinary teams of experts who assess the impacts and propose actions to avoid, minimize, restore, and – where necessary - offset.

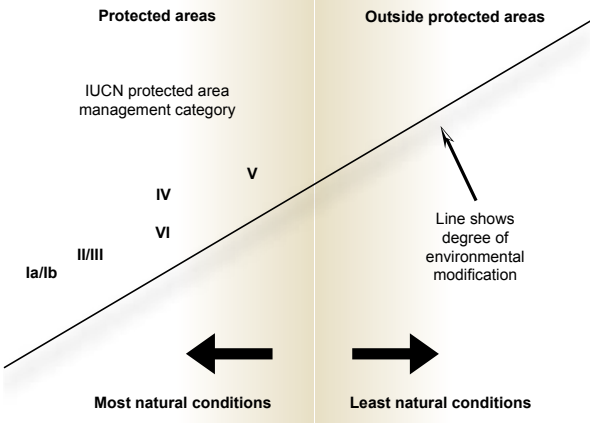
Steps have also been taken to raise awareness among employees regarding biodiversity and the associated issues. In Kazakhstan, for example, employees launched a photo competition in 2020, which allowed them to show the diversity and wealth of the flora and fauna near the site. The snaps were displayed and shared on social media networks, and the winners received prizes.

**IUCN protected area management categories**

IUCN categories	Management
<b>Category I</b>	1a Nature Reserve
	1b Wilderness Area
<b>Category II</b>	Ecosystem conservation and protection
<b>Category III</b>	Ecosystem conservation and protection
<b>Category IV</b>	Conservation through active management
<b>Category V</b>	Landscape/seascape conservation and recreation
<b>Category VI</b>	Sustainable use of natural ecosystems

**Naturalness and protected area categories**

Per Dudley, N ; 2008.





## Taking action to protect biodiversity

Certain mining sites are located close to zones which are rich in biodiversity. In 2022, 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 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.

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 process, a tree nursery has been set up on the territories of our Zuuvcch Ovoo license. A large number of trees and shrubs have already been planted, and we expected 12,500 by the end of 2022.



## FRANCE

### Four-star habitats for the birds of Bessines



Lorraine Charpentier, an ornithologist with Fox Consulting, is working on the Orano site at Bessines-sur-Gartempe as part of a wildlife mission.

Her work consists in particular in setting up bird nesting boxes in the new woodlands located to the east and west of the site. Here we can find, for example, robins, great tits and blue tits, green woodpeckers, nuthatches, etc.

The nesting boxes will allow the birds in search of nesting to settle in habitats adapted to their species.

The nesting boxes are positioned two to three meters above the ground, facing south or southeast, which allows them to benefit from good sunlight.

In addition, Mining Closure France currently manages 1,400 hectares of forest under a simple management plan, which focuses on sustainable management using local species to maintain a balanced biodiversity.

Consult the thematic sheet on forest management



# EXAMPLES

## CANADA

### In Canada, in the Athabasca Basin region

There are no areas of high biodiversity value in the immediate vicinity of the McClean mill (Orano Canada Inc.).

Wood Buffalo National Park (whose status has been recognized since 1922) is located more than 400 km from our ore processing operation. This site is in a different biome from McClean Lake (biomes being terrestrial or aquatic ecosystems characteristic of large biogeographic zones subject to a particular climate). This site, classified in 1983 as a UNESCO World Heritage Site, is very representative of the Northern Great Plains Prairies ecosystem. It is classified as a category II IUCN Green Zone and as a RAMSAR site, recognized as a Whooping Crane nesting area, since 1982.

The Athabasca region is also home to numerous provincial parks and ecological reserves (IUCN category 1a), including Colvin Lake Provincial Park, Pike Lake and Perry Lake Reserves, and the Misaw Lake Special Management Area, all located within 150 to 200 kilometers of the McClean Lake mill.

At the end of 2021, our Canadian teams consolidated a set of wildlife inventories conducted in the region. This work focused specifically on vertebrate species. The results show that the McClean Lake area is part of the habitat of three animal species considered threatened with extinction:

- Among mammals, the little brown bat (*Myotis lucifugus*) listed as Endangered and the reindeer (*Rangifer Tarandus*) listed as Vulnerable
- Among the birds, the Rusty Blackbird (*Euphagus Caralinus*) is classified as Vulnerable

In 2022, the perimeter was expanded to include the Midwest region. Within this expanded boundary (McClean Lake and Midwest), habitats for five animal species considered to be in danger of national or global extinction were identified.

- Among the mammals:
  - The Little brown bat (*Myotis lucifugus*) recognized as Endangered in both the national and global classification.

- The reindeer (*Rangifer tarandus*) classified as Vulnerable at the global level and threatened at the national level
- Among the birds:
  - The Rusty Blackbird (*Euphagus carolinus*) classified as Vulnerable globally and Threatened nationally
  - The Snowy Owl (*Bubo scandiacus*) classified as globally vulnerable
  - The Barn swallow (*Hirundo rustica*) classified as threatened at the national level

In this same area, we can potentially find 3 species of plants with Vulnerable status, namely:

- The Athabasca armeria (*Armeria maritima* ssp. Interior)
- The meadow cardamine (*Cardamine pratensis* var. *pratensis*)
- An orchid with the vernacular name of Sparrow's-egg lady's-slipper (*Cypripedium passerinum*)

In parallel, our Canadian team also completed the Environmental Protection Assessment (EPA) and Ecological Risk Assessment (ERA) verification for the McClean Lake operational plant.

The results show that the immediate environment and the local population remain protected. The above-mentioned sensitive species are considered in regular ERA reviews to ensure that our operations do not adversely affect their populations.

With the goal of "zero loss" of biodiversity, our management practices strive to minimize the impact of operations on the habitat of the most sensitive species listed below.

The table shows the current number of species potentially observable in the area around McClean Lake, as classified by the IUCN Red List.

	Species threatened with extinction			Other categories	
	CR	EN	VU	NT	LC
<b>Reptiles and amphibians (herpetofauna)</b>					2
<b>Birds (avifauna)</b>			2	2	113
<b>Mammals</b>		1	1		22
<b>Fish</b>					13
<b>Plants</b>			3	1	67



## 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 and in IUCN category 2 management. 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.

## KAZAKHSTAN

Orano's mining licenses are located in the Sozak district, a region whose main economic activity is mining (uranium, gold, silver, coal and salt).

The landscape units surrounding the uranium deposit areas are managed according to the principles of IUCN category 6.

In the vicinity of this area, the mountain system is home to the Karatau Nature Reserve (category 1a) and the Syrdarya-Turkestan Regional Park (category 2).

The latest inventory of fauna and flora was conducted in the period 2020/2021 in the operating territories Tortkuduk, Tortkuduk South and Muyinkum South by a team of experts in botany and animal biology (mammalogy, herpetology and ornithology). Photographs taken by employees during a previous KATCO internal photo contest on the biodiversity of the site were also considered in this work.

The methodology used for this survey allowed us to list the species actually observed on KATCO territory, whereas previous inventories had been based in part on bibliographic research. This field study allowed us to update the inventory of the site.

The table opposite shows the number of species observed in the Tortkuduk, Tortkuduk South, and Muyinkum South areas and listed in the IUCN Red List at the international level.

KATCO	EN	VU	NT	LC
Reptiles and amphibians (herpetofauna)		1		7
Birds (avifauna)	1	1		47
Mammals		1		12
Plants		3	1	67

According to the experts, analysis and comparison with the results of previous inventories have led to the conclusion that over the last ten years of mining activities, there has been no significant impact on animal and plant species in the region. Even animal species such as birds of prey (including the steppe eagle, classified as VU), which are considered the most sensitive to human activities, have been preserved in the KATCO area.

The study also made a number of recommendations that will lead to an action plan dedicated to biodiversity.

A study carried out in collaboration with CIRAD resulted in the drawing up of an inventory of eco-systemic service provisions in the sandy area of Muyumkum, according to the CICES (Common International Classification of Ecosystem Services), which highlights provisioning, cultural, regulating and supporting services.

Provisioning service	Herd grazing (providing livestock products for humans)
	Access to groundwater
	Mineral substance for energy
Regulating and supporting services	Erosion control
	Support for populations (fauna/flora) and habitats
Cultural services	Recreational activities, well-being and health
	Life value of biodiversity
	Bequest value of local biodiversity and natural landscapes

## 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.

Based on interviews with local stakeholders in the Sozack region (Kazakhstan), a first inventory of existing ecosystem services was established. In a second step, the perception and level of acceptance of an ecological offset project was assessed and correlated with the ecosystem needs expressed by the population. An equivalent assessment will be conducted in 2023 on the Dornogobi (Mongolia) using the same methodology. 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 2022, in order to facilitate access to information, our teams transferred the flora inventories prepared in recent years to a management database. 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
Pierres Plantées	Lozère (48)	1	4	11
Le Sapet	Lozère (48)	1	3	10

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

## MONGOLIA

### Protection of saxauls and inventories of animal species in proximity to our project

On the boundaries of the Zuuvch Owoo 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). Les réserves naturelles de Burdene Bulag à l'est et de Arvannaiin Bogd Uul à l'ouest (catégorie 4, UICN) également protégées se trouvent dans un rayon d'une centaine de kilomètres autour des licences de Dulan Uul et de Zovch Owoo.

Pour partie sur le périmètre de nos licences d'origine, 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 Owoo 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.

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. Dans cette dynamique, une pépinière a été érigée sur les territoires de notre licence de Zuuvch Owoo dès 2019. Depuis le début de projet de compensation écologique, 12 500 arbres ont été plantés par Badrakh Energy.

[Watch the video](#)





# Responsible production

## MINING PRINCIPLE

Facilitate and support the knowledge-base and systems for responsible design, use, re-use, recycling and disposal of products containing metals and minerals.









## 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.

### Governance


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. The Orano group's objective to eco-design, i.e. "to address environmental aspects right from the very outset of a project", all projects is already being implemented for all projects over 5M€ .within Orano Mining.

Eco-design involves thinking about all the environmental impacts of a project, including greenhouse gas emissions, waste, water, energy and raw material consumption. All new large-scale projects are assessed as early as the conceptual study phase to identify possible environmental issues and anticipate areas of concern and focuses for future work. This approach is taken further at each new project phase, using eco-ideation sessions to identify the most relevant solutions in a collegial manner. The involvement of all departments helps to develop an eco-design culture within the group.

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.94 [↗](#) , and p.108 [↗](#)).

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, notably through eco-design sessions (For more information, chapter 4.1, p.60 ) ,

## Challenges

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 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. This approach also requires less water for the preparation of the reagents.

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.

The production of sulfuric acid (used in the extraction and processing of ore) generates a lot of heat. On our new projects, we systematically study the possibility of recovering this fatal heat to produce electricity and power our sites.

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.

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 25% by 2030 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.

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. The project known as RECYVABAT (Recycling and Recovery of Batteries) is aligned with the concept of the circular economy, giving a second life to recoverable battery materials.

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 Mining 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.



## 2022 RESULTS

100% of projects worth + €5M eco-designed



## PRINCIPLE 8.2

**Assess the hazards of the products of mining according to UN's Globally Harmonized 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. The products purchased are sourced from approved vendors and are delivered with the appropriate labeling and safety data sheets.

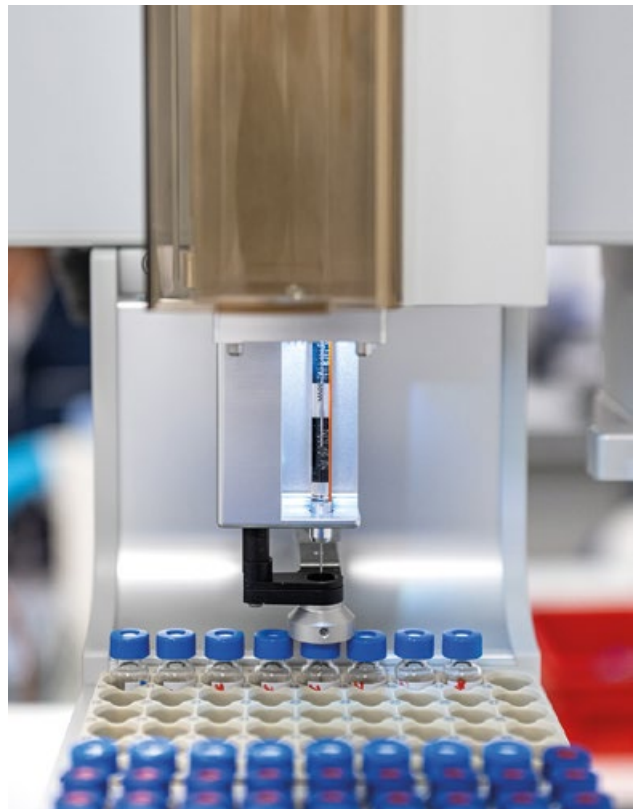


They are then inventoried as soon as they arrive at our sites. All hazardous substances are regularly inventoried, labeled appropriately and stored correctly. Safety data sheets are systematically available and regularly checked. The regular review and management of these products and the integration of risk assessments into site HSE management plans is governed by the site integrated management systems, ISO 4500, ISO 14001 (operations and post-mining) or equivalent (planned sites). Once used, the waste is categorized, sorted and stored in dedicated cells according to its hazard level. It is recycled and recovered whenever appropriate channels exist.

For more information on waste management, Mining principle 6.4, p.105



Based on operating experience feedback from the fire at the Lubrizol warehouses in France in 2019, Orano has issued several procedures in 2022 to strengthen the monitoring of stored materials. The management guidelines for chemical products to prevent accidental chemical risks are based on reference texts such as the European Union directives on the classification and labeling of hazardous substances and preparations, the regulations in place in the United States applicable to workplaces, consumers and pesticides, the Canadian regulations applicable to workplaces, consumers and pesticides, etc.





The implementation of this procedure is underway at Orano Mining sites. The recommended frequency for updating the status of stored materials is at least quarterly. It is carried out by the HSE officers of the sites. During site visits and inspections, a verification is made by the head office teams.

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.

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.



# Social performance

## MINING PRINCIPLE

Pursue continual improvement in social performance and contribute to the social, economic and institutional development of host countries and communities.







## 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 Mining 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 2022, a new mapping was launched in Kazakhstan to update KATCO's engagement plan with local people, suppliers and NGOs.

Orano is a committed member of trade associations in its field, including:



More information on Orano annual report



Orano supports:



## Be involved in local structures and social projects

Orano Mining is involved in the life of the communities near its operations in France and abroad. Orano Mining'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.

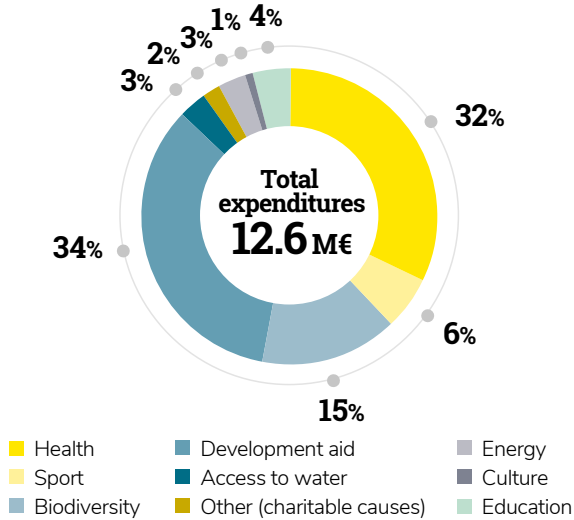
More information about the remediation of COMINAK, p.86







**Breakdown of expenditures on social actions**



Societal expenses more than doubled in 2022 compared to 2021 (€5.1M). This is mainly due to the integration of certain projects in the field of:

- Health in Niger with, for example, the Health Observatory (OSRA), taking into account medical care provided by the SOMAIR hospital to the local population, the training of hospital staff for the transfer of the COMINAK hospital to the State of Niger, etc.
- Biodiversity in Kazakhstan with the "Green belt" ecological compensation project

For more information on biodiversity, p.118



**Some examples of projects supported by Orano Mining and its subsidiaries in 2022**

**CANADA**

**Collaboration Agreements**

Orano Canada is a signatory, alongside Cameco, of three collaboration 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.

In addition to the collaboration agreements, Orano Canada strives to contribute to the social and economic wellbeing

of communities throughout northern Saskatchewan. Below are some examples of our community investments throughout 2022.

**EXAMPLES OF 2022 COMMUNITY INVESTMENTS**

**Support Indigenous Students Entering STEM Pathways**

In 2022, Orano Canada signed a donation agreement with the University of Saskatchewan to contribute CAD \$60,000 over three years, to Indigenous Student Achievement Pathways (ISAP) programing.

ISAP welcomes Indigenous students with academic and social programming developed in consultation with Indigenous students, faculty and communities. Undergraduate students have the option of enrolling in ISAP to access smaller class sizes, peer mentorship, and culturally responsive instructors and advisors.

The donation will help Indigenous students at the University of Saskatchewan build skills for success as they enter university, and enable the ISAP team to offer new math and digital literacy programming. The expanded services will help prepare Indigenous students for STEM (science, technology, engineering and math) degree paths.

**Victoria Hospital Foundation – NICU for the North**

Orano Canada has donated \$250,000 to the Victoria Hospital Foundation in support of the Malhotra neonatal intensive care unit (NICU) for the north, located in Prince Albert Saskatchewan. The Malhotra NICU recently expanded to meet the increased need for neonatal care, and Orano Canada's donation has helped equip the new space. The expanded facility will offer state of the art healthcare for northern Saskatchewan's newborns and their families, while allowing them to stay closer to home.

**KAZAKHSTAN**

**Completion of the construction of the emergency medical center**

In July 2022, KATCO teams inaugurated the medical center in the presence of the Turkestan region authorities.

Designed to provide timely and quality medical assistance to sick and injured people, this 3 millions euros center is located in the city of Turkestan. By the end of December 2022, 19 ambulances were operational out of the 25 planned and the installation of the ventilation system

was being finalized. This center, which opened in early 2023, contributes to the socio-economic development of the region and provides access to care 24 hours a day, 7 days a week.

### **KATCO partners with National Geographic to promote science in schools**

Education is a major issue in Kazakhstan. Each year, KATCO supports educational projects to meet the needs of local residents in the Sozak district. In 2022, KATCO renewed its partnership with the National Geographic magazine to promote interest in science in schools. Seminars, videos, and interactive workshops were conducted to introduce rural school children to geography, natural science, and space exploration.

## MONGOLIA

### **Mongolia: "FXB village"**

Since 2018, Orano has partnered with FXB in programs to support the poor people of Dornogobi to:

1. Strengthen the economic capacities of 100 vulnerable families and promote inclusion
2. Provide educational support to children and teenagers
3. Improve the living conditions and hygiene of participants
4. Provide psychosocial support to families



Renewed in 2022 for one year, this new program has allowed 93 families to integrate and benefit from the association's support. During the year, more than 500 visits were made by the teams in the field to support, exchange and accompany the selected families. 4 Facebook groups were also created to communicate with them on the different themes of the program.

From June onwards, 30 training sessions, either face-to-face or online, on hygiene, gardening, health and education were organized and 27 families were able to start an income-generating activity (livestock, culture, handicrafts) from September 2022.

The closing meeting of this 3rd FXB project took place in mid-September at the association's premises in the presence of the families, Badrakh Energy and local authorities. A total of 289 families have benefited from the "FXB Village" program since 2018.

In 2023, the program will be renewed with an after-school support project on top.

### **Study grants, a multi-year program in Mongolia**

Since 2010, grants are being provided to young disadvantaged people or orphans living in Zunbayan and Ulaanbadrakh districts to fund their studies over a period of 4 to 6 years

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.

Since the start of this program, 72 studies have benefited from grants to complete education, medical or engineering studies. In 2022, 32 students have completed their studies and 14 of them returned to work as teachers, professors, or medical assistants with the Zunbayan and Ulaanbadrakh districts. In anticipation of the industrialization of the site, this year 9 new students were selected for the beginning of the school year in September with the objective of developing skills related to our activities in the region. To anticipate the industrialization of the site, 9 new students were selected for the beginning of the school year in September in 2022 with the objective of developing skills related to our activities 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.

This year, 4 herders from Zumbayan and 2 from Ulaanbadrakh have benefited from this program. Since its creation, the “live stock project” has allowed 122 herder families to exchange their livestock and to keep their activity alive. This project should continue until 2024.

## NIGER

### IRHAZER project

The IRHAZER project contributes to sustainable food security in Niger. Initiated in 2011 between Orano and the State of Niger, this project is part of the “Nigériens nourrissent les Nigériens” (Nigériens feed Nigériens) initiative and will contribute to the “Zero Hunger” program objective by 2035, set by the government. With a total budget of 17 million euros, this is the largest social project supported by Orano internationally.

Currently, 390.5 ha of the 750 ha of the project are exploited and divided between community and private farms. Irhazer has created 780 jobs and 6,338 people have benefited from its economic spin-offs. More than 3,900 tons of cereals and vegetables have been produced. 220 market gardeners are working in the area to produce cereals and vegetables or to raise their herds. The development of the remaining areas will take place over the next 2 years.

In 2022, 6 additional irrigation points were built to meet the growing demand for water, bringing the total to 41 water points compared to the 20 initially planned. At the same time, in accordance with the initial plan, all the community farms spread over 164.5 ha have been transferred to ONAHA (Office national des Aménagements hydro-agricoles), which is now in charge of ensuring the continuity of the actions undertaken within the framework of the project.

Following the feasibility study initiated in 2021, the extension of the project to private farms located near Arlit has begun. 20 market gardeners have been selected according to specific criteria to be able to grow crops on 10 ha supplied with water via drip irrigation.

A pilot project for a more responsible and self-managed agriculture has been implemented. This extension hosts 2 basins with a capacity of 2,400 m<sup>3</sup> of water and a solar field to power the pumps and distribute the water. Private water meters have also been installed to allow farmers to better manage their water consumption and reduce waste. This is the first time such a system has been deployed in the region.

The first seeds will be planted in early 2023.

Irhazer won the “Coup de Cœur” award from the women of Orano's management committee and was awarded a prize at the Orano Awards 2022 (Orano's internal prize for the group's most innovative projects).

### Renewal of the partnership with “Les Puits du Désert”

In 2022, in partnership with the association “Les Puits du Désert”, Orano Mining financed a project to fight against the marginalization of women living in villages located on the outskirts of Agadez, close to the region where we operate.

Solar dryers and equipment were installed for them. Thanks to this support, 8 women's cooperatives have been created to produce, process, package and market vegetables and fruits.

This project will be renewed in 2023 in the villages to continue training women and girls who have dropped out of school.

[For more information on Puits du Désert](#)



### 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 Iférouane and Arlit over a period of five years.

In 2022, for this second year, 6 scholars have been selected: 3 young people are studying in the medical field, 1 in agriculture and 2 in electrical and solar engineering. A total of 10 students are currently benefiting from this program.

## GABON

### Promoting sports and culture

In 2022, the steering committee of the Local Development Plan of the city of Mounana, composed of local authorities and representatives of civil society, voted to refurbish the stadium in the district named Rénovation.

This large-scale project, with a budget of more than €700,000 is dedicated to the people and youth of Mounana. It marks the end of the Mounana 200 project. The stadium required major refurbishment and modernization work (grandstand, structure, locker rooms, fencing, creation of a handball court, etc.). The keys to the new sports complex were handed over

to the Mayor of Mounana during the inauguration on October 21, 2022, in the presence of the Governor and the representative of the Minister of Sports.

At the same time, to complement the media library inaugurated in 2021, a multipurpose room and a recording studio were also opened in April 2022. This project to refurbish municipal buildings for youth and culture represented an investment of approximately €100,000 over the past 3 years.

## NAMIBIA

### Craft projects for adults

Following the feasibility study carried out in 2021 to train artists in the rural community of Spitzkoppe, a two-year contract between Orano Namibia and COSDEF Arts & Craft Center was signed in summer 2022. 20 artists have benefited from training in crafts, marketing and customer relationship management. This project aims to fight against the marginalization of adults in rural areas and contributes to Orano Mining objective to train people who are far from employment. The training provided will improve the living conditions of the community through the development of income-generating activities.



### 2022 RESULTS

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.

By 2025, Orano Mining has committed to maintain a rate of local purchasing of at least 75%.

In 2021, 79% of our purchasing volume came from the countries where Orano Mining operates.

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.

COUNTRIES	SITES	% of goods purchased in the country	% of goods purchased in the region
Niger	SOMAÏR	53	43
	COMINAK	71	
Canada	OCI	97	59
Kazakhstan	KATCO	97	26
France	Bessines	82	
Mongolia	Badrakh Energy	100	
Gabon	COMUF	98	
<b>Total local goods</b>		<b>79</b>	

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.

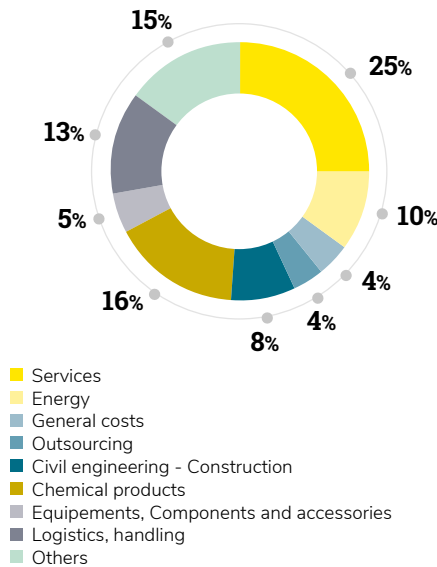
In 2022, Orano Mining placed orders with approximately 1,500 suppliers.



Orano Mining contracts with its suppliers in three ways:

1. The simple order, where the General Purchasing Conditions (GPC) of Orano or the subsidiary are applicable, for recurrent and "simple" purchase.
2. The one-off purchase contract, governed by the amended and/or supplemented GPC, for complex purchases or services. It applies for projects for example.
3. The multi-year purchase contract, for recurring and complex purchases. Long-term services or continuous supplies are often purchased within this framework. The GPC are amended and/or supplemented. These contracts do not exceed 4 years.

2022 Goods purchase split by type



## An example of a local partnership with the Artukhov company in Kazakhstan and Uzbekistan

**Specialized in catering, the Artukhov company has developed new services over the years, including selective sorting and food waste management at KATCO in Kazakhstan.**

KATCO has been working with Artukhov for 18 years and has contributed to the development of this family business. Initially composed of 2 people, it now has 35 employees.

Artukhov has invested in a truck equipped with selective sorting compartments and in the construction of a breeding farm. This farm feeds the animals with vegetable food waste, collected in the restaurant of the KATCO base, thus limiting food waste. The biomass from the livestock is used as fertilizer on the fruit and vegetable plantations (pumpkins, watermelons, corn, etc.) grown by the Artukhov company, creating a virtuous circle.

In addition to Kazakhstan, Artukhov is supporting Orano Mining in Uzbekistan through its subsidiary Nurlikum Mining, to which it provides catering, accommodation and construction services.

All these services are provided by local staff, based as close as possible to Orano Mining's sites.



## Contribute to the development of local companies' skills



**COMINAK has set itself the goal of using 90% local labor for all the remediation work on the site.**

With this in mind, COMINAK has encouraged local companies to join forces with partners who have the expertise and means to respond to the specific markets proposed.

Thus, in the purchasing process, COMINAK has accompanied these companies to create legal forms adapted between the partners guaranteeing the solidarity character of the partnerships, a single local entry point, a guarantee of high local employment and integrating clauses of sustainable development and transfer of skills.



## 2022 RESULTS

Maintain the local purchase rate (75% minimum)



## PRINCIPLE 9.3

**Conduct stakeholder engagement based upon an analysis of the local context and provide local stakeholders with access to appropriate and 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 expressed by third parties impacted by our activities 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 2022. 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.

### Communication

New information campaigns for internal and external stakeholders on our sites took place during the year. These communications were made by email or via the website (Namibia, Canada), by newsletter or other

communication media (France, Kazakhstan), via social networks (Mongolia).

Face-to-face meetings during local information commissions or public hearings have also strengthened communication about this mechanism, with a systematic presentation of the current year's results.

At each site, in accordance with the ICMM definition, the name of the mechanism has also been adapted to the culture of the country. The terms grievances, suggestions or requests are now used by our different sites, allowing a better appropriation of the mechanism by our stakeholders and communities.

## Team awareness and evolution of the mechanism

Prior to the on-site presentations, awareness-raising sessions for local teams took place in the second half of 2022. These sessions were conducted remotely and helped define the actions to be carried out and/or systematized at each site.

## Processing of grievances

Keeping track of and responding to the grievances and complaints of our stakeholders is important.

In 2022, 94% of eligible complaints were handled 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 (personal requests, partnerships requests, etc.).

### LIFTS 2022

In 2022, 21 complaints were identified and reported:

- 3 were treated as proven related complaints with our activities and integrated into reporting.
- 18 were treated but were not taken in account because they did not meet the eligibility criteria (requests unrelated to our activities, remarks, personal requests...).

### Themes of complaints issued

Themes	Number
Environment	2
Access to water	1



**Breakdown by country and entity**

Countries	Gabon	France Direction Après-Mines	Kazakhstan	France Bessines Siège	Niger COMINAK	Niger SOMAÏR	Namibia	Canada	Mongolia
<b>Number of eligible complaints</b>	0	1	1	0	1	0	0	0	0

Since the mechanism was set up in 2020, 53 complaints (or grievances, claims, suggestions) have been reported, of which 16 are eligible.

<b>Access to water</b>	4
<b>Other</b>	13
<b>Economic development</b>	2
<b>Human rights</b>	1
<b>Environment</b>	13
<b>Governance</b>	3
<b>Infrastructures</b>	4
<b>Partnerships</b>	9
<b>Legal</b>	2
<b>Health</b>	2



**2022 RESULTS**

Grievance mechanism: finalize deployment and share results



**PRINCIPE 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 Aïr 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. In 2021, 20 people were able to follow this module, developed by the Arlit Regional Mining Department. In 2022, none of the mining companies - SOMAÏR, COMINAK, or Orano Mining - were asked by the administration in Niger to intervene or support training on artisanal mining.

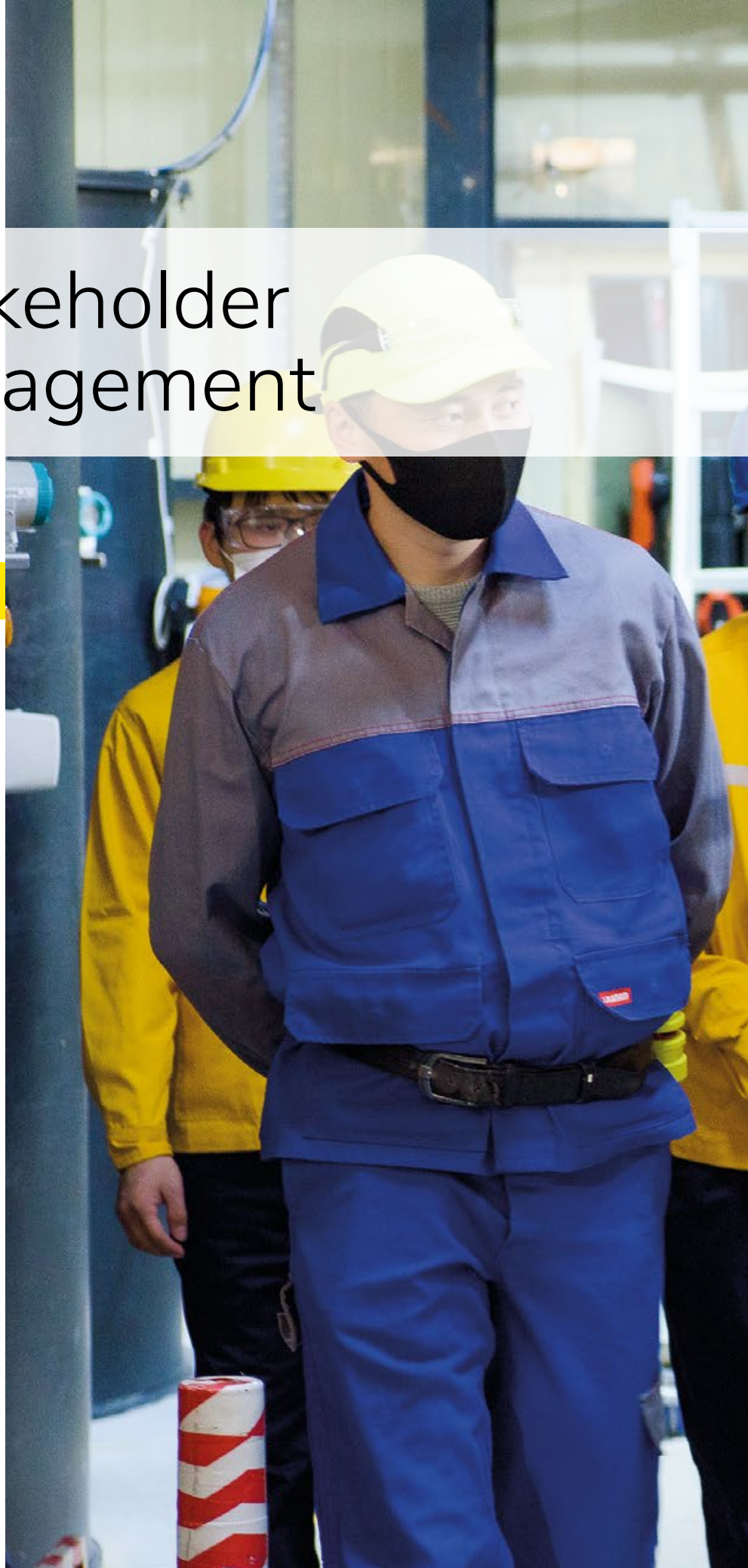
\* Source World Bank: report "extractive industries governance project for local development & Covid-19 Response"



# Stakeholder engagement

## 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.







## 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.17 )
- 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

Within Orano Mining, dialogue and consultation with our stakeholders are among the fundamentals. Our teams at headquarters and/or on site are their primary contact for deploying our dialogue approach.

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 dialogue frequency depends, among other things, on the results of regular stakeholder mappings.

## 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 2022, the subjects most frequently broached with our stakeholders were related to managing the environment, developing labor, and to regulatory approval processes.

### **Community Based Environmental Monitoring Program (CBEMP)**

The Community Based Environmental Monitoring Program (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. It brings together Orano Canada, Cameco Corporation, 4 municipalities in northern Saskatchewan, and representatives of indigenous people.

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
- 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.

### **A meeting took place in March 2022 to discuss the results**

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.

In 2022, the NCQ participated in financing the Mill Operation Training Program run by Orano Canada: 8 people of the Northern Basin of Athabasca were received at the 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 Ya'thi Néné teams in charge of lands and resources 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

**235 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.

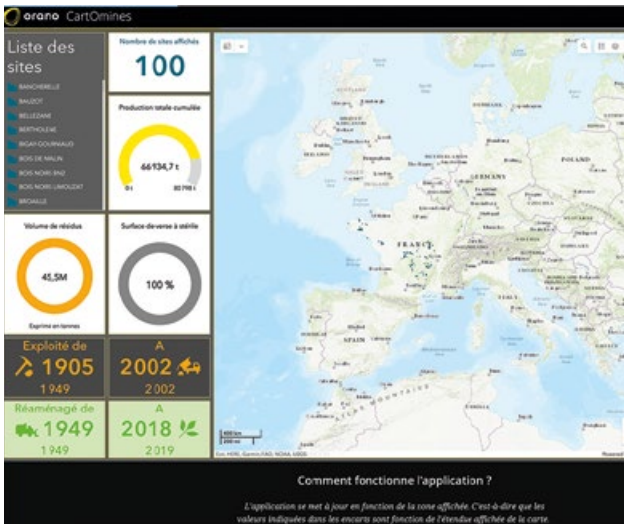
Through these Committees, Orano Mining presents the different environmental outcomes and the work to be carried out to improve monitoring of former mining sites.

In 2022:

- Orano Mining took part in 4 Site Monitoring Committees in the region
- 43 site visits and gatherings were organized for a diverse public

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.78 ).



## MONGOLIA

### Strengthening dialogue and cooperation agreements

The end of health restrictions in early 2022 allowed visits in the field to resume and meetings with local stakeholders. 124 visits to herding operations thus took place and more than 420 visitors, including 200 students, were able to visit the pilot site. These visits to the facilities and the camp made it possible to strengthen dialogue and communication with local populations, authorities, NGOs, and media outlets.

Five Local Information Committees (CLI) were organized between April and November 2022 to share information about social projects, studies performed around the site, and the future of the pilot.

In June, the Implementation Committee and the Relationship Committee met. These are the two decision-making and information bodies of the Cooperation Agreement. The Committee Implementation enables exchanging information on completed projects and validating social projects with local authorities and representatives for the current year. As for the Relationship Committee, its purpose is to serve stakeholders and present the various projects.

The Cooperation Agreement, signed in 2018, defines the framework of dialogue and exchange between

the Badrakh Energy teams and the communities. The contribution to allocate to social projects is planned for the full 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. It will be subject to renewal in July 2023.

To plan what comes after finalization of pilot tests in December 2022, the teams are currently working in collaboration with the Mongolian government on drafting an Investment Agreement. Among other things, this agreement defines the lines of cooperation for the region's economic development.

In 2022, Badrakh Energy was awarded the prize for the best foreign investor by Bloomberg TV Mongolia for its investment in local development.


## GABON

### Continuous relationship with stakeholders

In February 2022, the keys of the last 24 housing units of the Projet Mounana 200 were given to the governor of Haut-Ogooué. This ceremony marked the end of the Mounana 200 project, the fruit of an agreement signed in 2016 between the Gabon government and COMUF to provide new housing for residents in radiologically marked buildings in the town. Through their mayor, the residents expressed their gratitude for this project that "not only righted a wrong but also enabled the city to be enlarged and enhanced".

The presentation and validation of the final report on the execution of works of the Mounana 200 was carried out by the prefectural committee in October, in the presence of the Prefect, the Assistant Prefect, the mayor of the city, and village leaders.

In April, the Mounana cultural center opened its doors in the presence of the Haut-Oogoué governor. This project adds to the library inaugurated in 2020 with a multicultural room, a wall of historical photos tracing the mining history of the city of Mounana as well as a recording studio for young local artists. As a cultural and educational project, this center enables both remembering the past and supporting young people.

Finally, on October 22, the town's new stadium was inaugurated. This large-scale project, enables the town to have modern sports facilities for young people. Its inauguration was accompanied by numerous sports and musical festivities attended by the population and local authorities (to learn more about the Mounana 200 project, see p.43 ).

## KAZAKHSTAN

### Close relations with stakeholders

Since March, around fifteen meetings onsite or in locations around the site of KATCO took place, bringing together authorities, stakeholders, and local suppliers.

In the Sozak District (villages of Tasty, Shu, Sholakorgan, and Taukent), 4 informational meetings were organized between April and October with the Human Resources Department and the Health, Safety, and Environment Department. The site's activities were presented to the representatives of local populations as well as the changes to the complaint management mechanism deployed by KATCO (to learn more, see *Mining Principle 9.1*, p.136 ).

In the Turkestan region, the technical inauguration of the regional medical center in the Turkesan took place in July, in the presence of the regional deputy and local populations. This emergency center, a major project unlike any other in the region, has a capacity of 25 ambulances and will allow the residents of the city and surrounding populations to be supported by better care.

Finally, a public hearing took place in November with residents of the Sozak district concerning the construction of the South Tortkuduk project and the opportunities and impacts related to its development. As a reminder, South Tortkuduk aims to guarantee KATCO's uranium production for the next fifteen years.

## NIGER

### Dialogue and awareness-raising with local populations

More than 50 gatherings with stakeholders were organized this year, bringing together local authorities, civil society, customary representatives, the population, and associations.

Regular reviews with local stakeholders covered technical, social, and societal progress related to the remediation of the COMINAK site.

As part of this monitoring a study trip in France was organized for the 5 mayors of the municipalities concerned by COMINAK's closure (Arlit, Iferouane, Timia, Dannat, and Gougaram). During their visit, they visited the former rehabilitated mining site of Lodève, the Tricastin site and its relations with municipal communities, and CIRAD, the French Agricultural Research Center for International Development. The issues around market gardening were examined.

Alongside these gatherings, awareness-raising sessions for the Arlit and Akoka communities also took place throughout the year on safety, water consumption, and energy savings.

Finally, in December, as part of the work performed on the IMOURAREN deposit, the project was presented in Arlit to the employees of the 3 mining companies and to local stakeholders.

To learn more about the remediation at COMINAK, see p.86



## UZBEKISTAN

### First meeting with stakeholders

In July, an informational meeting organized by Nurlikum Mining took place at the living compound. A tool for dialogue and transparency, this new session brought together 16 people including the representatives of the villages close to the site, associations, and local authorities.

The visit of the facilities and the exchange with the site's geologists made it possible to respond to the numerous questions posed by stakeholders concerning our activities. There was a presentation of the social projects carried out during the year and a discussion of the prioritization of future projects with everyone present.

This was the first time in Uzbekistan that an extractive company organized a session for communication and sharing information with local stakeholders.



## 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.

[More information on Orano Mining income](#)



[Report on payments made to governments](#)



### Contracts transparency

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.

Orano Mining supports beneficial ownership transparency and is committed to avoid partnering or contracting with companies assessed as high corruption risk that decline to identify their beneficial owners unless appropriate mitigation measures are implemented to reduce corruption risk as per our principles included in our Code of Ethics and business conduct.

[See Orano mining contracts and licenses list](#)



### 2022 RESULTS



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 2022, SOMAÏR and COMINAK benefited from safeguard measures in the form of tax exemptions and/or reliefs for an estimated amount of CFAF 1,544,987,886, 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, mining projects, production of uranium concentrates, and remediation of mining sites. In 2022, they extended over the following geographical areas: France, Gabon, Niger, Namibia, Kazakhstan, Mongolia, Canada, and Uzbekistan.

As part of the RECYVABAT (recycling and reuse of batteries) project, Orano Mining SA benefited in 2022 from European Union subsidies for a total amount of 4,865,319 euros.



Subsidiary	Country	State or State-owned entity	Share percentage
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%
IMOURAREN SA	Niger	SOPAMIN company (100% owned by the State of Niger)	23.35%
		State of Niger	10%
COMUF	Gabon	State of Gabon	24.75%
Badrakh Energy LLC	Mongolia	MONATOM company (100% owned by the Mongolian State)	34%
Nurlikum Mining	Uzbekistan	State of Uzbekistan	49%

As of December 31, 2022, Orano Mining SA was 100%-owned by Orano SA, which is itself 90%-owned by French State.

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, 2022).

reports are still available as downloads at Orano's internet site, "Report Archives".

The 2022 social responsibility report is framed as follows:

- It covers the performance of our responsible commitments for 2022. The reporting periods for the information reused in this report ran up to December 31, 2022
- It is based on the orientations of the materiality exercise performed at the end of 2018

Within the scope of 2022 mining activities, our teams have applied the guidelines set out in the Standards version of the Global Reporting Initiative (GRI) as well as the Mining and Metals Sector Supplement (SSMM).

## PRINCIPLE 10.3

Report annually on economic, social and environmental performance at the corporate level using the GRI Sustainability Reporting Standards.

### Scope of the report

The preparation of this annual report, the Corporate Social Responsibility Report, driven by the Social Responsibility, Engagement and Communication Department of Orano Mining, is the result of the mobilization of all our teams at our headquarters and our sites.

### Reporting period

The 2022 corporate social responsibility report is the thirteenth edition of this annual exercise. The previous

### Scope of information

The CSR Policy section sets out our underpinning commitments.

The data given cover, as did the previous CSR Report, the assets for which Orano Mining acts as operator in uranium mining activities: exploration, project development, production, and remediation.

The consolidated data target the activities present in France, Canada, Niger, Kazakhstan, Mongolia, Gabon, Namibia, and Uzbekistan. When the scope only covers one given country, this is specifically mentioned.

There are no issues identified outside the organization as relevant.

As the application of Orano's strategy and policies and the priorities provided by our materiality matrix., this reports serves to present the performance related to

the main issues around the responsibilities of mining activities according to the 10 main mining principles of the ICMM.

[Learn more about the ICMM's principles](#)



In addition, Orano Mining undertook self-assessments at all its sites in operation (SOMAÏR in Niger, KATCO in Kazakhstan, Orano Canada Inc. in Canada) to check the conformity with the requirements of the International Council on Mining and Metals (ICMM). The methodological note and the result of these self-assessments can be consulted on Orano's website.

[To learn more, consult the methodological note](#)



[To learn more, consult the results of the self-assessments](#)



## Reporting protocol

The indicators published in this report measure the main social, environmental and societal impacts and issues related to Orano Mining's activities.

Developed by a group of experts representing the group's various functions and businesses, they have been built according to the regulatory framework of articles R. 2 25-105, R. 225-105 1, L. 225-102-1 and L. 22-10-36 of the French Commercial Code, and applicable international standards such as the Global Reporting Initiative (GRI) and the GHG Protocol.

During the current campaign, errors identified in previous years' reports are corrected. Changes in published values are mentioned and commented on in case of significant in case of significant variation.

[For more information on the methodology, see Orano Annual Report, Chapter 4.9.1, p.174](#)



**For all requests for information, please contact:**


**[G-MN-RSE@orano.group](mailto:G-MN-RSE@orano.group)**

## PRINCIPLE 10.4

**Each year, conduct independent assurance of sustainability performance following the ICMM guidance on assuring and verifying membership requirements.**

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 non-financial reporting by companies.

Once again this year, we have performed an independent verification of the contents of this report in compliance with the ICMM audit procedure and the AA1000 ethical auditing principles.

The assurance statement issued by the auditing firm is available as a download .

Each year the Orano group audits a sample of extra-financial indicators as part of the independent verification of the Annual Report. As such, a number of our mining sites may be selected for the review of these indicators. SOMAÏR, in Niger, was audited in 2023.



# GRI STANDARDS AND DUTY OF CARE

The Orano Mining's CSR Report 2022 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



Statement of use	Orano Mining has reported in accordance with the GRI Standards for the period 1st January to 31st December 2021
GRI 1 used	GRI 1: Fondation 2021
Applicable GRI Sector Standard(s)	GRI G4 Mining and metals

## MESSAGE FROM NICOLAS MAES, PROFILE AND CSR APPROACH

	GRI Standard
Organizational details	GRI 2-1
Activities, value chain and other business relationships	GRI 2-6
Governance structure and composition	GRI 2-9
Nomination and selection of the highest governance body	GRI 2-10
Chair of the highest governance body	GRI 2-11
Communication of critical concerns	GRI 2-16
Collective knowledge of the highest governance body	GRI 2-17
Evaluation of the performance of the highest governance body	GRI 2-18
Statement on sustainable development strategy	GRI 2-22
Proces to determine material topics	GRI 3-1
List of material topics	GRI 3-2

## Concordance table ICMM Mining principles, GRI Standards, and Duty of care



### MINING PRINCIPLE 1 - ETHICAL BUSINESS

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

GRI STANDARD		DUTY OF CARE
1.1	GRI 2-23 Policy commitments	✓
	GRI 2-24 Embedding policy commitments	
1.2	GRI 2-24 Embedding policy commitments	
	GRI 205-1 Operations assessed for risks related to corruption	✓
	GRI 205-2 Communication and training about anti-corruption policies and procedures	
1.3	GRI 2-24 Embedding policy commitments	
	GRI 2-23 Policy commitments	✓
1.4	GRI 2-24 Embedding policy commitments	
	GRI 2-12 Role of the highest governance body in overseeing the management of impacts	
	GRI 2-13 Delegation of responsibility for managing impacts	✓
	GRI 2-14 Role of the highest governance body in sustainability reporting	
1.5	GRI 415-1 Political contributions	



### MINING PRINCIPLE 2 - DECISION-MAKING

Integrate sustainable development in corporate strategy and decision-making processes

GRI STANDARD		DUTY OF CARE
2.1	GRI 2-14 Role of the highest governance body in sustainability reporting	✓
2.2	GRI 2-24 Embedding policy commitments	✓
	GRI 2-23 Policy commitments	✓
	GRI 205-2 Communication and training about anti-corruption policies and procedures	



### 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 Sites where resettlements took place, the number of households resettled in each, and how their Livelihoods were affected in the process	

3.3	Human rights	✓
3.4	GRI 2-30 Collective bargaining agreements	✓
	MM4 Number of strikes and lock-outs exceeding one week's duration, by country	
3.5	GRI 2-7 Employees	✓
	GRI 2-19 Remuneration policies	
	GRI 2-20 Process to determine remuneration	
	GRI 2-21 Annual total compensation ratio	
	GRI 401-1 New employee hires and employee turnover	
	GRI 404-1 Average hours of training per year per employee	
	GRI 404-3 Percentage of employees receiving regular performance and career development reviews	
3.6	Indigenous People Rights	
3.7	GRI 411-1 Incidents of violations involving rights of indigenous peoples	
3.8	GRI 401-2 Benefits provided to full-time employees that are not provided to temporary or parttime employees	✓
	GRI 401-3 Parental leave	
	GRI 402-1 Minimum notice periods regarding operational changes	
	GRI 405-1 Diversity of governance bodies and employees	



#### 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	Risk assessment	✓
4.2	GRI 2-23 Policy commitments	✓
4.3	Risks controls – Management systems	✓
4.4	Crisis management	✓



#### MINING PRINCIPLE 5 - HEALTH, SAFETY

ICMM company members commit to pursue continual improvement in physical and psychological health and safety performance with the ultimate goal of zero harm.

GRI STANDARD		DUTY OF CARE
5.1	GRI 403-1 Occupational health and safety management system	✓
	GRI 403-2 Hazard identification, risk assessment, and incident investigation	
5.2	GRI 403-3 Occupational health services	✓



### 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	MM 10 Number and percentage of operations with closure plans	✓
6.2	Water	✓
6.3	MM 3 Total amounts of overburden, rock, tailings, and sludges and their associated risks	✓
6.4	Waste	✓
6.5	GRI 302-1 Energy consumption within the organization	
	GRI 302-3 Energy intensity	
	GRI 305-1 Direct (Scope 1) GHG emissions	✓
	GRI 305-2 Energy indirect (Scope 2) GHG emissions	
	305-4 GHG emissions intensity	



### MINING PRINCIPLE 7 - CONSERVATION OF BIODIVERSITY

ICMM company members commit to contribute to the conservation of biodiversity and integrated approaches to land-use planning.

GRI STANDARD		DUTY OF CARE
7.1	GRI 304-1 Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	✓
7.2	GRI 304-4 IUCN Red List species and national conservation list species with habitats in areas affected by operations	✓



### 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	Eco-design	✓
8.2	GRI 417-1 Requirements for product and service information and labeling	
	GRI 417-2 Incidents of non-compliance concerning product and service information and labeling	✓



### MINING PRINCIPLE 9 - SOCIAL 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 2-28 Membership associations	
	GRI 203-1 Infrastructure investments and services supported	

9.2	GRI 204-1 Proportion of spending on local suppliers	✓
9.3	GRI 2-26 Mechanisms for seeking advice and raising concerns	
	GRI 2-29 Approach to stakeholder engagement	
9.4	Not applicable	



**MINING PRINCIPLE 10 - STAKEHOLDER ENGAGEMENT**

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 2-29 Approach to stakeholder engagement	✓
10.2	GRI 201-4 Financial assistance received from government	✓
10.3	GRI 2-2 Entities included in the organization's sustainability reporting	✓
	GRI 2-3 Reporting period, frequency and contact point	
	GRI 2-4 Restatements of information	
	GRI 2-5 External assurance	✓

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!

