

Orano Mining

Corporate Social Responsibility Report

Edition 2018



orano

2018 Key Figures

1,124 M€

revenue
(31% of Orano revenue)

3,560

employees*

7,970

tons of uranium **

TOP 3

worldwide in its businesses



5

operating sites in 3 countries

3 M€

community investments



78%

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

95%

of our employees are from the host
country



* Global workforce of sites operated by Orano (regardless of Orano's stake in mining joint venture), Permanent and Temporary contracts
** 7,586 tU, Orano's financially consolidated share + 384 tU Orano's share in COMINAK (34%)

Nicolas Maes

CEO Orano Mining



Contributing in a responsible and sustainable way to the fight against global warming

Providing a reliable and responsible supply of natural uranium to nuclear electricity producers around the world to produce low-carbon electricity: this is our mission. Thus, we are participating in the fight against global warming and involved in

this global issue, which also affects our producing countries even if they do not have nuclear power plants on their territory.

Being a responsible miner in the current uranium market presents several long-term challenges, not only economically but also in the dialogue and trust relationship with our stakeholders.

Economic resilience

In an uranium market in decline for more than 15 years, mines profitability is a major challenge that we are responding to through a comprehensive approach.

First, **we are maintaining a relationship of trust with our customers** who are supporting us during difficult times. We guarantee them diverse sources of supply and transparency in our practices to help them meet their responsible sourcing challenges.

Like other market players, **we have adjusted production** while respecting the employees affected by these downturns.

To support our cost reduction efforts, we are relying on **innovation and new digital technologies**. In Kazakhstan, for example, our teams are using 3D modeling of our deposit, and in Niger, they are developing the use of connected probes to better select the ore or using drones to improve topographic surveys.

On a daily basis, we continue to roll out the tools and methodologies of **Operational Excellence**, with significant progress to date in Kazakhstan and Niger.



message from

Nicolas Maes
CEO Orano Mining

Through all these actions, we can continue to **invest for the future** by **maintaining a budget for exploration and development**, particularly in Canada, an historic region for Orano Mining, as well as in Mongolia.

Safety, a mainstay of our performance

Our safety and radiation protection action plans are bearing fruit: the year 2018 ended without a fatal accident, which is our main objective. In terms of radiation protection, there was no exposure beyond the most demanding international regulations (20 mSv/year) among our employees and subcontractors.

Our safety approach focuses on the detection and thorough management of situations that could lead to serious accidents, and on training our employees. More than 1,200 people have been trained in Safety Culture. Thus, our SOMAÏR mine in Niger is the first African mine and one of the first in the world to have obtained the "Health and Safety at Work" ISO 45001 certification.

The mining industry was impacted by two major industrial disasters related to tailings dams in less than four years. The control of these facilities - in working mines as well as in remediated mines - is a permanent concern. We publish a report containing the list of our largest tailings storage facilities, their dimensions, characteristics, and monitoring practices.

Developing dialogue and trust

Establishing constructive and trusting relationships with all of our stakeholders is part of our values, whether with our employees, customers, suppliers, NGOs, or civil society. We are particularly committed to these relationships as we are the only major uranium miner no longer operating in our home country.

This means respecting ethics and transparency at all levelsof the company. We are reinforcing our procedures to guarantee the **duty of vigilance**, in compliance with the French Sapin II law related to honest practices, and we are training our teams in our new Code of Ethics.

In addition, consistent with our long-standing support to the EITI, in this report we are publishing payments made to governments or authorities, in two formats: those required by French law, and those required by the EITI or countries which are currently implementing it.

Finally, the structures for engaging with our communities are part of our commitment to dialogue and transparency. The mapping of our stakeholders in Kazakhstan and France has been updated; local committees for exchange, dialogue and orientation meet regularly, following a practice that is now well established.

Acting as a responsible mining company

The COMINAK mine in Niger, of which we are operator and 34% shareholder, will reach the end of its operation at the beginning of the next decade, and it is, without a doubt, the biggest social and societal challenge that we will have to face in the coming years. Our experience in the field, in France, Canada, Gabon and the United States, as well as our participation in the development of the ICMC mine closure guide, allow us to approach this phase with the appropriate tools. This report presents many of our practices in site remediation and monitoring.

The preparation for the closure of COMINAK is being carried out in close consultation with the State of Niger and local communities. We are committed to reporting on the progress of this matter in future CSR reports.

Fulfilling our mission by ensuring that our operations also benefit the communities in which we operate, and by responding responsibly to the global warming challenge - from exploration to remediation of facilities - is a profound motivation for all the Orano Mining teams. This report is an illustration of their dedication. It is evident to me that it also shows their unwavering daily commitment, for which I thank them all sincerely.

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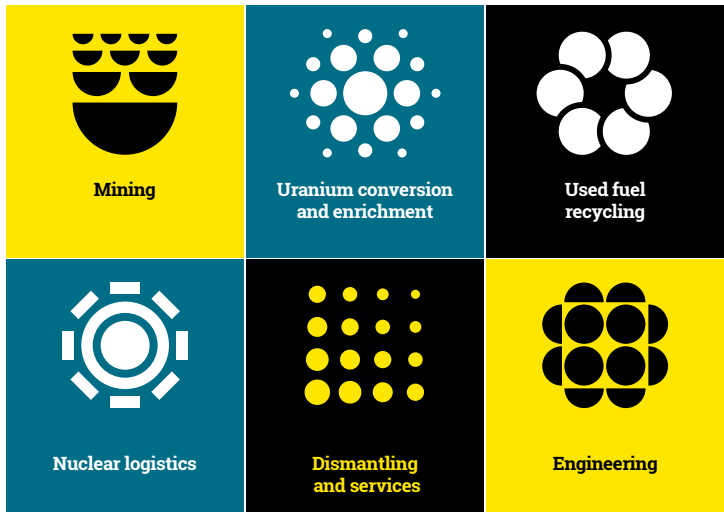
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The Orano Group

OUR MISSION: transform nuclear materials so that they can be used to support the development of society

The Group offers high value-added products and services for the entire nuclear fuel cycle, from raw materials to waste processing. Its activities, ranging from mining to decommissioning and including conversion, enrichment, recycling, logistics and engineering, contribute to the production of low-carbon electricity.

Orano and its 16,000 employees place their expertise, their continuous search for innovation, their mastery of advanced technologies and their absolute requirements for safety and security at the service of their customers in France and worldwide.



ORGANIZATION

Orano's governance is supported by a Board of Directors, an Executive Committee and four specialised committees that issue opinions and recommendations. The Board of Directors is chaired by Philippe Varin. Philippe Knoche is the Group's Chief Executive Officer.

More information on Orano annual report



Mining activities



Being the first link in the nuclear fuel cycle, Orano's mining activities cover uranium exploration, production and commercialization throughout the world.

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

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

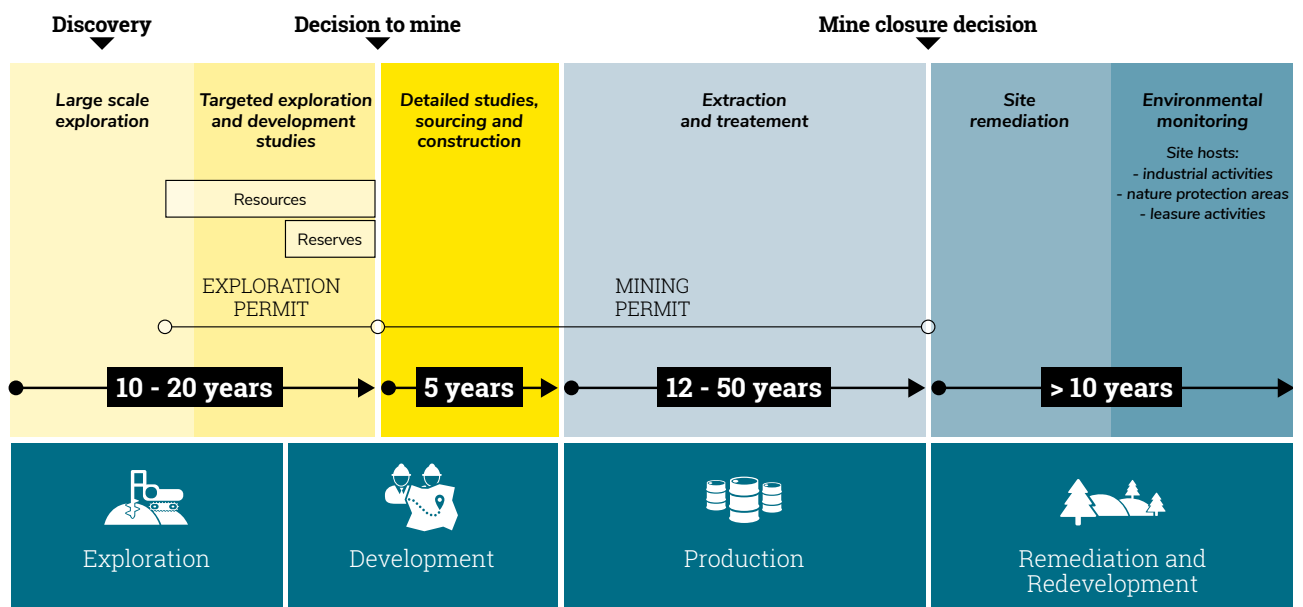
More information on **Orano Mining innovation**



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

The production of the same amount of electricity from coal would have resulted in the release of 300 million additional tons of GHG.

MINING LIFE CYCLE





More information on our mining technologies



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

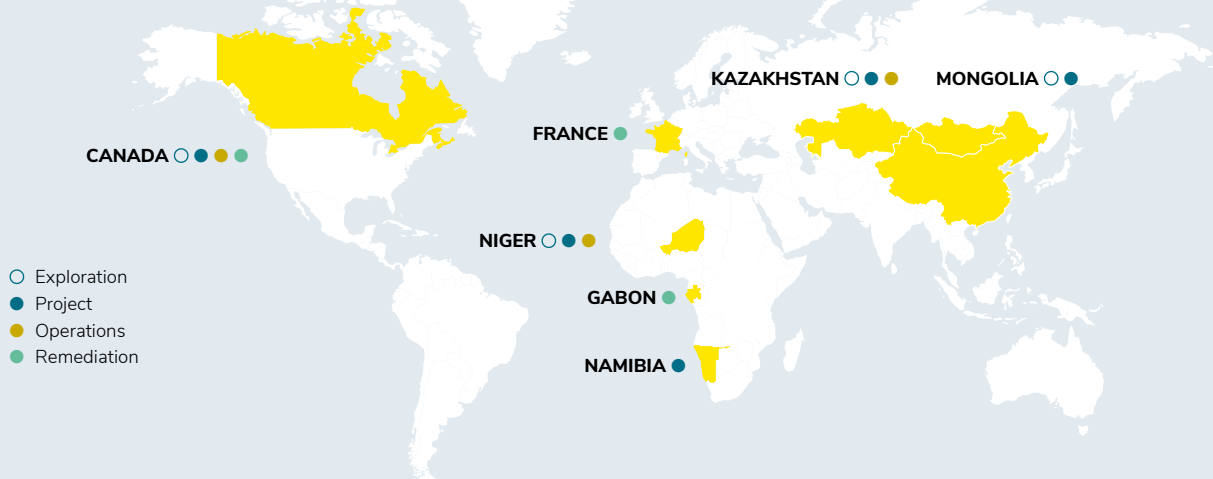
ORANO MINING ORGANIZATION

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

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

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

OUR MAIN MINING SITES



BOARD OF DIRECTORS

Orano Mining is a business corporation with Board of Directors. Its primary function is to ensure operational consistency in mining activities carried out in France and internationally. Orano's CEO, Philippe Knoche, is the Chairman of Orano Mining and Nicolas Maes is the CEO.

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

The head office of Orano Mining SA is at the Tour AREVA (Courbevoie). Orano Mining has another site at Bessines-sur-Gartempe (Limousin).

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

The Board of Directors comprises 9 administrators and includes 4 women:

- 4 appointed at the proposal of Orano SA
- 1 state representative
- 1 appointed at the proposal of the French state
- 3 elected staff representatives

A state inspector and a government auditor also attend board meetings, along with the secretary of the Central Works Council.

MANAGEMENT COMMITTEE

The Mining Business Unit is run according to a decentralized operating model, based around a head office that performs overall management and oversight functions, and structures that carry out mining operations in France and internationally. "Mining operations" covers exploration, project, production, remediation and mine closure monitoring activities.

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

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

The Management Committee is made up of directors from the operational departments (Geoscience, Operations and Projects, and Safety and Community Involvement) and the functional departments (Human



Resources, Communications, Finance, Legal, Uranium Materials Management, Strategy and Development).

20% of the Members of the Management Committee are currently women. 30% of its Members are between 30 and 50 years of age and 70% of its Members are over 50 years of age.

OCCUPATIONAL SAFETY COMMITTEE

On September 1, 2013, **in line with Orano's Health and Safety Policy and as part of the associated Mining Business Unit Roadmap**, an Occupational Safety Committee was set up. It is made up of members of the Mining Business Unit Management Committee, Site Directors and the Safety Team. It is chaired by Nicolas Maes.

Its aim is to promote a **safety culture within mining operations**, establish and validate related objectives and ensure that the group's Health and Safety Policy is respected, along with its associated commitments.

More information:
www.orano.group



STAFF REPRESENTATIVE BODIES

Orano Mining's Human Resources Policy, in accordance with current regulations, is based on the principles of discussion and consultation. A responsible social dialogue, one that is both constructive and innovative, is considered to be a vital element in the healthy running of the company.

Agreements are regularly discussed and signed with staff representatives. Regular discussions have been held to keep representatives up-to-date with the latest developments concerning the company both via representative bodies and also at informal meetings organized on all of our sites.

The Works Committees and union representatives form the representative bodies which engage in social dialogue in the various countries in which the Orano group is present.

Regarding collective bargaining, agreements can be signed with union representatives (trade union coordinators) at group level and also in each of the companies that make up the group.

The Orano group has chosen to formally and responsibly underpin its social policy with the signature of a number of group agreements which establish the foundations of this policy.

To date, several agreements have been signed at group level in France and the construction of social policy continues.

Every year, in France, the mandatory annual negotiations are organized with the staff representative bodies.

These in particular relate to wages, gender equality goals on careers and pay levels in the company, as well as measures to achieve them.

On its production sites, Orano Mining also organizes meetings on a monthly or quarterly basis with staff representatives on a variety of topics such as wages, safety, training, quality of life at work, recruitment, etc.

In France, 100% of employees are covered by a collective bargaining agreement.

In Niger, all employees are covered by an inter-professional collective bargaining agreement.

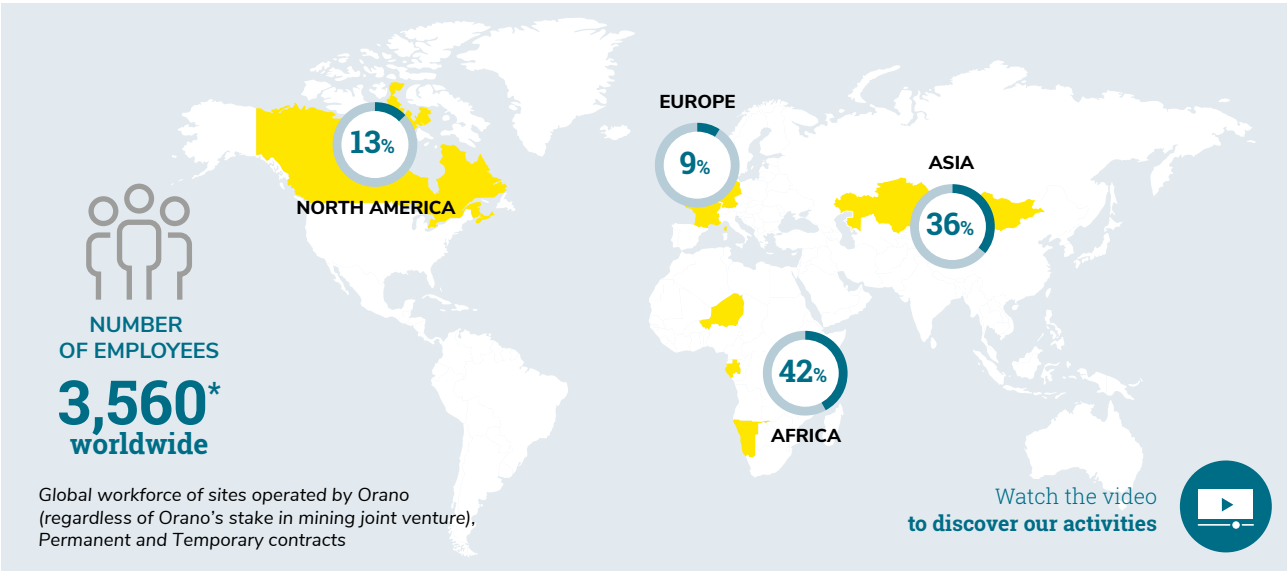
In Canada, workers are covered by a collective bargaining agreement and all other employees are covered by the Canadian Labour Standards Acts.

Finally, **in Kazakhstan**, an agreement covering employees has been signed for a period of 3 years (March 2015-2018).

In 2019, agreements are under negotiations in Canada and Kazakhstan.

A PRESENCE ON 4 CONTINENTS

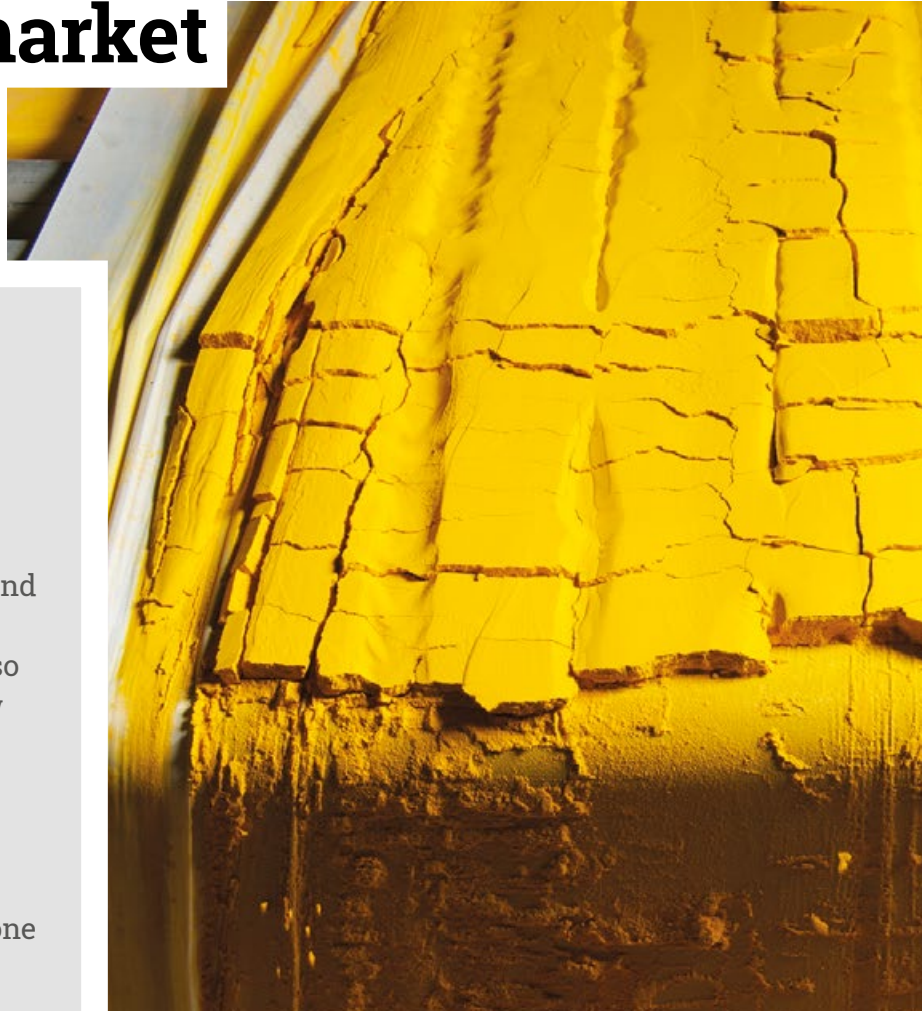
Mining employees are present in various countries. There are uranium production sites in three Orano Mining countries: Canada, Niger and Kazakhstan.



Uranium market in 2018

Programs to reduce production helped to rebalance the market in 2018, resulting in a slight increase in the spot price from the summer of 2018. Orano's Mining's objective is to continue to optimize the competitiveness of existing sites, and to maintain its project portfolio by conducting the necessary studies so as to be in a position to launch new investments to renew and extend production for the years to come.

In this way, Orano Mining aims to consolidate its position on the uranium market while remaining one of the most competitive producers.



MARKET AND COMPETITIVE

POSITION

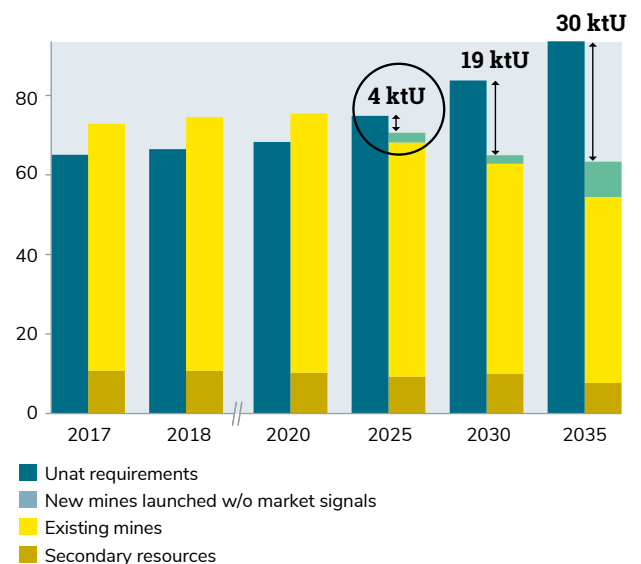
Reactor demand stood at around 74,200 tU in 2018 (source: UxC 01 2018), stable compared to 2017.

Supply worldwide consists of:

- **mining production**, which amounted to approximately 51,800 metric tons of uranium, down 12% compared with 2017: since 2016, and in response to falling market indicators, the main producers (Orano, Cameco, Paladin and KazaAtomProm) have announced closures, mothballing of mines and reductions in production
- **secondary resources** estimated to a total of 18,500 metric tons of uranium, according to UxC, coming from materials from used fuel recycling, marketing of uranium inventories of the US (DOE) and Russian governments, re-enriched depleted uranium, and low-enriched uranium.

Uranium supply/demand scenario

WNA 2017 (tU/year)



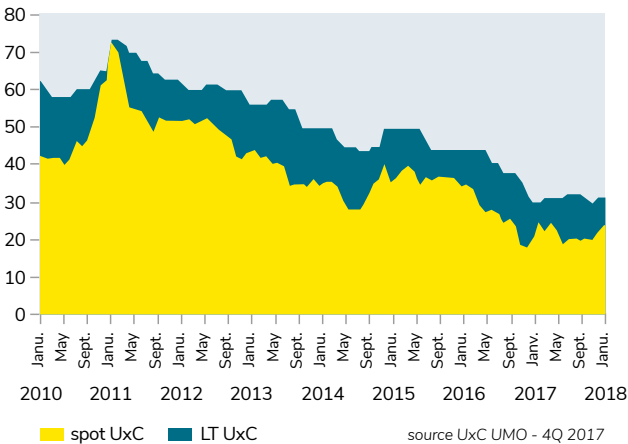


URANIUM MARKET

The average spot market price stood at \$24.7 per pound in 2018. Since summer 2018, the spot rose slightly to \$28.5 per pound (versus \$23.8 per pound in 2017). The long-term indicator stabilized around \$30 per pound.

Over the long term, according to the WNA (World Nuclear Association), the market is still forecast to grow, with demand by 2025 predicted to be 25% higher than in 2015. The key drivers for this are the restarting of Japanese reactors and growth in requirement for the Chinese reactor fleet. Rising demand is expected to raise market prices and enable new projects to be launched.

2010-2017 trend price index of uranium (in current dollars)



Production of Orano mining sites in 2018

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.

PRODUCTION OF MINING SITES

Through effective control over its production costs and its level of capital expenditure, the Mining business turned in good operating and financial performance in 2018, despite the persistence of low prices.

- SOMAÏR produced 1,783 metric tons of uranium (on a 100% basis), for an Orano share of 63.4%;
- COMINAK produced 1,128 metric tons of uranium (on a 100% basis), for an Orano share of 34%;
- KATCO produced 3,212 metric tons of uranium (on a 100% basis), for an Orano share of 51%;
- McArthur River/Key Lake produced 60 metric tons of uranium (on a 100% basis), for an Orano share of 30.2%;

- Cigar Lake produced 2,573 metric tons of uranium (on a 100% basis), for an Orano share of 37.1%.

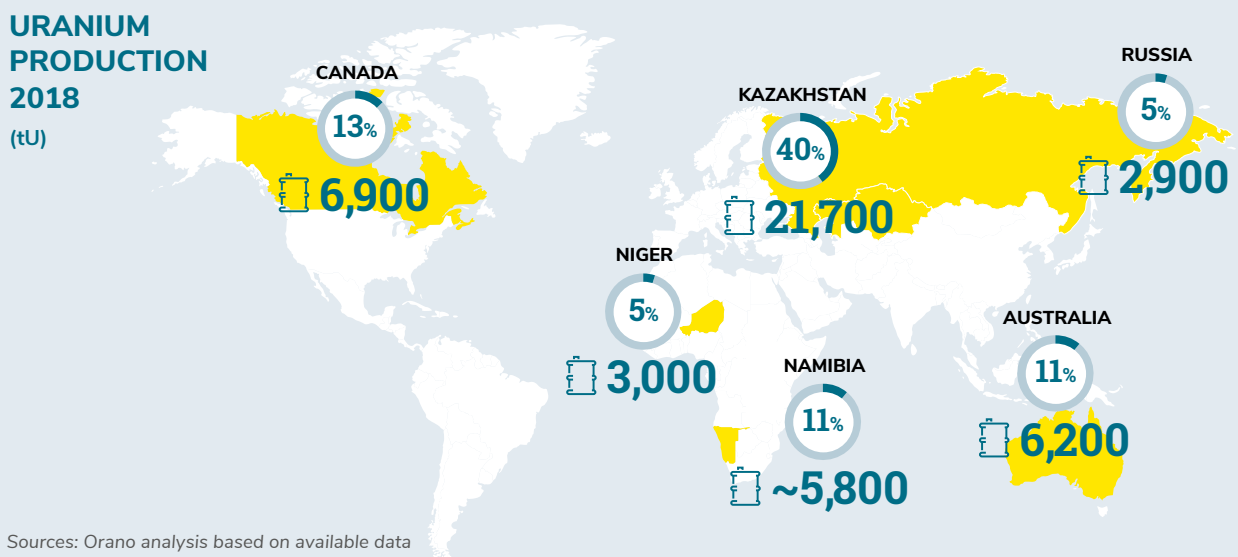
Orano mines production in 2018 (tU)

Country	Sites	Financial consolidation 2018 tU	Type*
Canada	McArthur River	18	UG
Canada	Cigar Lake	2,573	UG
Canada total		2,591	
Kazakhstan	KATCO	3,212	ISR
Kazakhstan total		3,212	
Niger	SOMAÏR	1,783	OP
Niger	COMINAK**	384	UG
Niger total		2,167	
Total		7,970	

* Type of operation: ISR In-Situ Recovery; OP: Open-Pit, UG: Underground, n.d.: not defined.

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

URANIUM PRODUCTION 2018 (tU)



CSR Approach



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Orano Mining, a responsible mining company

Orano has embarked on a proactive sustainable development initiative by making strong commitments in matters of corporate social, environmental and societal responsibility.



OUR STAKES

Mining is an industrial activity that can have environmental impacts.

We therefore adopt stringent and statutorily demanding practices for the protection of people and the environment.

These are preoccupations that are taken into account at all stages of the mine's lifecycle over a number of decades: control the impact of liabilities and safeguard against long-term risks (over 50 years).

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



OUR VISION

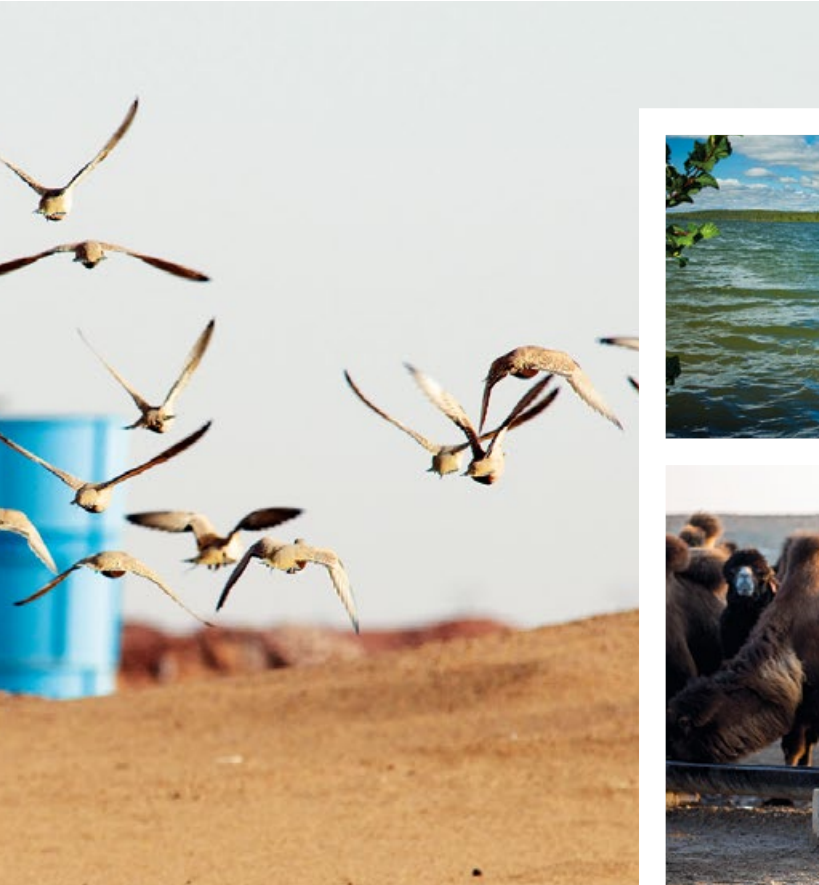
In its corporate strategy, one of Orano Mining's stated priorities is to be a leader in the industry in terms of health and safety at work, community involvement, environmental and ethical practices.

As a responsible mining company, our goal is to ensure sustainable, concerted and balanced development towards meeting the social, environmental, societal, technical and economic challenges at each stage of the mining cycle in the countries where we operate.

CSR GOVERNANCE

Our **CSR policy**, which was drawn up in consultation with the various different sites and departments of the Mining BU Mines, then approved by the Management Committee and signed by the Senior Executive Vice President of the Business Unit, defines the following actions:

- Anticipation and Prevention
- Pertinent local response
- Regulatory compliance and adherence to international standards



Watch the video of **Gilles Récoché: Orano, a responsible mining company**



- Information, dialog and concertation with stakeholders
- Transparency and code of ethics

The CSR policy lends a precise framework to our social responsibility approach 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).

In order to ensure its deployment, a **CSR committee** has been set up in April 2017 and the Mining Social Committees of Orano Mining created in 2013 have evolved to adapt to this new governance.

- The **CSR Committee** is a body made up of the Orano Mining management committee, the site directors, as well as representatives of the Remediation, Social Responsibility and Communication department. Its role is to review the main current and future CSR issues for the various subsidiaries and to ensure the consistency of the actions undertaken with regard to the Orano Mining CSR policy.

- The **Mining Social Committees** (CSMs) of Orano Mining are tasked with putting its 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

They bring together the managing directors of subsidiaries, the local social responsibility leaders, and the coordinating and support teams from head office. Meetings are held more or less frequently depending on the country and depending on needs. The Mining Social Committees cover the whole scope of Orano Mining: Canada, Gabon, Kazakhstan, Namibia, Niger and Mongolia.

Our stakeholders



Our stakeholders are persons or groups of persons upon whom our activities have had or are having an impact.



IDENTIFYING STAKEHOLDER

EXPECTATIONS

From a responsible mining perspective, it is essential to understand the environment in which we operate in order to be able to adapt our actions as effectively as possible.

- **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 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 plan are then defined.** In 2018, in France, on site remediation and it was launched in Kazakhstan.

- **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.
- **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, serve to elicit local stakeholder expectations.

WHO ARE OUR STAKEHOLDERS?

AT LOCAL AND NATIONAL LEVEL: Communities, authorities, NGOs, local businesses...

The directors of our companies or sites, as well as the business teams involved, are in touch with many local stakeholders.

They interact through a number of dialogue and consultation mechanisms, the format and process of which depend either on the regulatory framework (e.g. public hearings in the course of the environmental impact assessments) or more ad hoc, voluntary frameworks (for instance a multi-party body for funding of societal projects).

EMPLOYEES: Employees and staff representatives

This may be our employees and staff representatives on our various sites in France and abroad. Our HR teams are their primary interface. Their expectations and concerns may be expressed and shared through bodies as the Work Committees or the Health, Safety and Working Conditions Committees (CHSCT).

MEDIA

Relations with the media are primarily established by the Orano Press department, the Communications Department of the Mining Business Unit and its subsidiaries.

The Senior Executive Vice President of the Mining Business Unit, the directors of Operational Departments,

subsidiaries and sites, as well as technical managers meet with the media on a regular basis for interviews or at specific events.

INTERNATIONAL ORGANIZATIONS: Nongovernmental organizations and the United Nations

At Mining BU headquarters level, the D2RC (Corporate Social Responsibility, Remediation and Communications Department) acts as the first interface with these organizations.

At country level, organizations set up by the group companies are the direct interface with NGOs and local stakeholders.

The arrangements and mechanisms vary according to the nature of their expectations.

INVESTORS AND ECONOMIC STAKEHOLDERS: CUSTOMERS, SHAREHOLDERS, SUPPLIERS, TRADE ASSOCIATIONS,

These stakeholders interface with our teams at Orano Mining headquarters (eg. the Sales department for our customers) or directly with entities of the Group (eg. the purchasing department for our suppliers).

Governance mechanisms are deployed to manage these exchanges.

MATERIALITY

The materiality matrix that allows us to prioritize the main CSR issues with regard to company priorities and stakeholder expectations, was updated at the end of 2018. This involved a process of questioning Orano Mining management.

Regular stakeholder mapping also allows us to update our understanding of the expectations of external stakeholders.

This matrix is based on feedback from the mapping exercises conducted in 2016 in Namibia, in 2017 at Niamey, and in 2018 in Mongolia and in France, as well as on the annual opinion survey in Canada. Questionnaires sent to a panel of NGOs, suppliers and customers and published online through previous CSR reports online in the "Participate" section were also fed into the feedback from the various stakeholders. Finally, the mapping conducted in 2019 in Kazakhstan will be included for the 2019 report.

The identification of priority issues enables us to better address to the real expectations of stakeholders, target our actions more effectively and define the most relevant topics to cover in the context of our CSR reporting.

PRIORITY AREAS SELECTED:

- Transparency
- Environmental footprint
- Health/safety
- Risk management
- Remediation / Mine closure
- Community involvement
- Ethical business
- Our employees

SUSTAINABLE DEVELOPMENT

GOALS (SDGs)

Of the 17 SDGs, Orano Mining contributes significantly to 11 of the goals.

To help visualize the relationship between Orano Mining's activities and the SDGs, icons placed at the beginning of each commitment will highlight the goals to which Orano Mining contributes.

The materiality analysis explained previously has allowed Orano Mining to identify the 5 most relevant goals corresponding to its activities and the areas in which the company has the most impact.

✱ OUR CONTRIBUTION



More information on [SDGs](#)



Partner organizations we voluntarily joined:

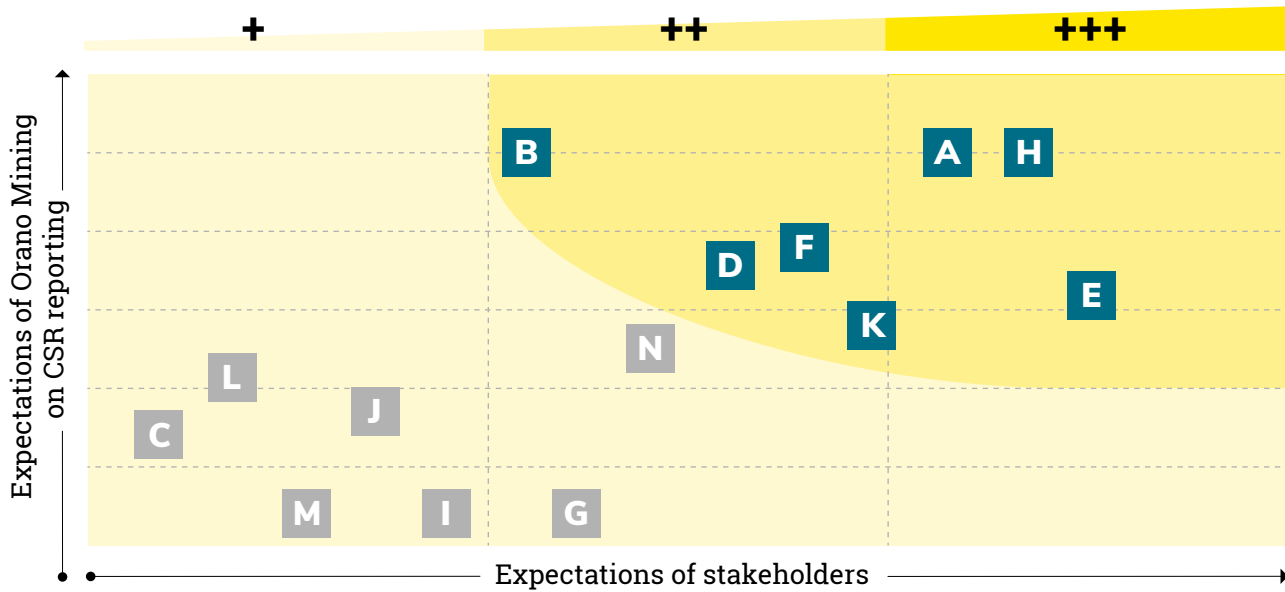


United Nations
Global Compact



IAEA
International Atomic Energy Agency





A TRANSPARENCY

Share with stakeholders in a relevant, accurate and accessible manner, non-confidential information relating to decisions or activities having an impact on the economy, the general public or the environment.

B ETHICAL BUSINESS

Adopt and maintain ethical business practices in order to avoid incidents of corruption or bribery.

C RESPONSIBLE PURCHASING

Manage the supplier and product procurement chain in compliance with criteria conducive to protecting the environment, to social progress, to human rights and to economic development.

D RISK MANAGEMENT

Reduce, analyze and assess industrial risks liable to lead to health and safety consequences for employees, or to harmful consequences for the general public and the environment.

E COMMUNITY INVOLVEMENT

Contribute to meeting local socio-economic and healthcare needs, respecting fundamental human rights and the culture and heritage of indigenous peoples, throughout the lifecycle of the mining activity and in cooperation with stakeholders.

F HEALTH AND PROTECTION OF EMPLOYEES

Protect the health and safety of employees and keep the radiation impact on neighboring communities to a minimum.

G LABOR RELATIONS

Facilitate and safeguard dialogue between employees and general management (e.g. through staff representative bodies and internal communications).

H ENVIRONMENTAL FOOTPRINT

Monitor and assess quality of air, water, soils and the food chain, and optimize consumption of resources (water, energy, etc.) and raw materials (reagents, etc.).

Bring to the minimum the environmental impact.

I BIODIVERSITY

Keep footprint to a minimum and preserve the flora and fauna in proximity to mining activities.

J CLIMATE CHANGE

Help combat climate change by keeping greenhouse gas emissions to a minimum (CO₂ et VOCs).

K REMEDIATION - MANAGEMENT OF LONG-TERM IMPACT

Prepare for the end of life phase of the mine as far upstream as possible, in compliance with environmental, social and societal principles and the regulations in force.

L OPERATIONAL PERFORMANCE

Ensure production is conducted on time, on budget and in accordance with Orano values.

M SHIPMENTS AND TRACEABILITY OF URANIUM

Guarantee the inspection and tracking of uranate concentrates, as well as the safety and security of shipments to converters.

N R&D AND INNOVATION

Provisions implemented by the entity to enable teams to generate ideas, projects and patents aiming to contribute to the continuous improvement of activities.

Our commitments





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D1

TRANSPARENCY AND CONSULTATION

WHY?

Building and maintaining trust is a constant challenge.

The acceptability of our mining activities (our “social license to operate”), the contribution we can make to local development and the consultation of stakeholders are key areas of commitment for Orano Mining, both from a regulatory and a voluntary standpoint.

OUR APPROACH

Establishment of forums for dialogue and sharing in each country where Orano Mining operates.

OUR RESULTS IN 2018

About 100 meetings were organized with the external stakeholders close to our sites

Dialogue with our stakeholders



A STRUCTURED DIALOGUE

Dialogue and consultation with our stakeholders are among the fundamentals of our approach. Our teams at headquarters and/or on site are their primary contact. Meetings of bodies to maintain dialogue in labor relations (internal to Orano Mining and intended for employees) are organized both on sites and centrally. A similar process is also deployed to maintain social dialogue with our external stakeholders.

The objective of this process of entering into dialogue and discussion with stakeholders and meeting with them on a regular basis is to maintain a constructive relationship with our stakeholders to understand their expectations and explain our activity to them. It is an approach which is essential in order to get to know each other better. We thus adapt our frameworks for dialogue depending on the stakeholders (authorities, local population, NGOs, media, Orano Mining employees).

These formal exchanges may take the form of face-to-face discussions, public meetings, or communication in writing and are adapted to the environment in each of the countries in which we are based. The topics most frequently addressed are those relating to the environment and the economy. The frequency with which we enter into dialogue depends on the results of the stakeholder mappings carried out on a regular basis.

DEDICATED DIALOGUE BODIES

Here are some of the different types of dialogue and consultation bodies and events in the main areas in which we work.



CANADA

Athabasca Joint Engagement and Environmental Committee (AJES)

Since 1993 this body has been made up of representatives of the mining companies Orano Canada Inc. and Cameco Corporation and of six communities in the north of Saskatchewan province.

2018 saw discussions focused, on the one hand, on supporting the Cluff Lake remediation projects and, on the other hand, on the acceptability of our exploration activities among the communities involved. Our Orano Mining Canada teams took part in more than 60 events around these topics.

GABON

Local information committee

The local information committee (or CLI - Commission Locale d'Information) is one of the bodies acting as a vehicle for dialogue in Gabon.

During their latest CLI meeting on July 25, 2018, as part of the "Mounana 200" project, COMUF announced the start of construction of another series of 69 housing units in 2019.

For the record, this project consists in building 201 homes to replace those identified by the AGSSN as being radiologically contaminated as validated by a technical committee made up of the various different stakeholders.



The construction of the first 24 housing units started in June 2016. Earthworks and work on the elevations of the houses are now complete and the roof structures and roofs are in place. People will be able to move into the new homes once work on the roads, infrastructure and mains networks has been completed

FRANCE

Site Monitoring Committee (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 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, on an annual basis, the operator presents the different environmental outcomes and the work to be carried out to improve monitoring of former mining sites.

In 2018, there were 7 committees held across France. Visits to former mining sites were also organized for local officials and the press, and an Open Day was held for employees and their families.



MONGOLIA

Local Cooperation Councils

In 2018, dialogue continued within the framework of "Local Cooperation Councils" which met on 8 occasions, bringing together representatives of the Soums and Bags of Ulaanbadrakh and Zuunbayan, and representatives of Badrakh Energy.

These councils offer a forum for sharing information with the local communities in the areas where Badrakh Energy is present. At these meetings, our specialists present studies and review the state of progress on the programs currently underway: the cultivation of saxauls, the rebuilding of herds, wells being created or needing repair, etc.

Other actions scheduled through the year, such as the Open Days on the pilot site and a monthly program of visits for the families, also help to maintain the dialogue with our stakeholders.

2018 was marked by the signing of a Cooperation Agreement establishing a formal framework for dialogue and discussion between the teams of Badrakh Energy (joint venture between Orano Mongol LLC and Mon-Atom LLC) and the communities.

This agreement sets out, for duration of the "Operating Pilot" test phase, an organization for governing relations between Badrakh Energy, the local authorities and local citizens.

- Areas for cooperation are specified in the agreement and these are the environment, employment and the development of community projects.
- The agreement provides for a shared governance framework between Badrakh Energy and community representatives through the establishment of a "Relationship Committee" and an "Implementation Committee".
- The contribution to be allocated to the community projects is programmed for the duration of the Agreement. Projects are structured around seven pillars of commitment: access to water, human health, animal health, education, culture, access to energy and economic development.

KAZAKHSTAN

Various bodies involved

In Kazakhstan, this ongoing dialogue with stakeholders varied in 2018, from monthly meetings with the Akimat of Sozak District, to participation in public hearings and events organized by the communities, representing some 15 operations altogether.

NIGER

Bilateral steering committee (CBO - Conseil Bilatéral d'Orientation)

This body was set up in May 2006 to help strengthen the local governance of social projects of benefit to the community.

The CBO counts local elected officials, relevant administrations and representatives of civil society alongside Orano Mining. They define local development policies, identify priority areas for intervention, issue opinions on projects and ensure financing for the latter.

EXAMPLE IN NIGER

A Local Information Committee (CLI - Commission Locale d'Information) in Niger

In Arlit, the latest CLI organized at the very beginning of 2019 brought together representatives of the administrative authorities, local elected officials, the mayors of Arlit and those of the rural districts within the departments of Arlit, traditional chiefs, members of the civil society, representatives NGOs, and representatives of the SOMAÏR and COMINAK mining companies.

During this meeting of the Local Information Committee, discussion among the stakeholders focused on occupational safety, health and radiation protection matters.

Another hot topic of the day was Mining Closure. The stakeholders discussed the major issues of remediation, decommissioning of industrial facilities and site monitoring, and the need to take into account social, societal and economic aspects. On this last point, the participants identified alternatives, such as the promotion of agricultural activities and the development of processing centers for farming and livestock products.



Discover our brochure:
10 years of social involvement in Niger
 (available only in French)



Revenue transparency in the extractive sector

Orano Mining demonstrates its commitment to greater transparency in payments made to governments in relation with the management of mining resources, by publishing in this CSR 2018 report, for the first time, a list of declarations made by Orano Mining subsidiaries, according to the following reporting methods: French law, EITI (Extractive Industries Transparency Initiative) or ESTMA (Extractive Sector Transparency Measures Act).

For more information, see:



Fact sheet:

- Description of applicable French law, EITI and ESTMA
- List of declarations per subsidiary
- List of declarations per reporting method



The Orano report on payments made to governments in accordance with Article L 225-102-3 of the French Commercial Code



The EITI website



The ESTMA website

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 2018. Items not considered as public assistance for the purposes of this statement include incentives, in particular fiscal incentives, automatically applied to all mining operators, as expressly provided for by the legislation, including mining legislation, of the countries concerned.

Mining activities include exploration, development, mining projects, production of uranium concentrates, and remediation of mining sites. In 2018, these operations

were performed in the following countries: France, Gabon, Niger, Namibia, Kazakhstan, Mongolia and Canada.

At December 31, 2018, the company Orano Mining SA is wholly owned by Orano SA, which is 80% owned by the French state (50% directly and 30% indirectly of which 20% through AREVA SA and 10% through the Caisse des Dépôts et Consignations (the French public deposits and consignments office).

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, 2018).

Subsidiary	Country	State or State-owned entity	Percentage ownership
KATCO	Kazakhstan	KAZATOMPROM company (85.08% owned by the Kazakh State)	49%
SOMAÏR	Niger	SOPAMIN company (100% owned by the State of Niger)	36.6%
COMINAK	Niger	SOPAMIN company (100% owned by the State of Niger)	31%
		ENUSA company (100% owned by the spanish State)	10%
IMOURAREN SA	Niger	SOPAMIN company (100% owned by the State of Niger)	23.35%
		State of Niger	10%
COMUF	Gabon	Gabonese State	24.75%
BADRAKH Energy LLC	Mongolia	MONATOM compay (100% owned by the Mongolian State)	34%

02



COMMUNITY INVOLVEMENT

WHY?

At every stage of our mining projects, our social actions are conceived to respect the rights, interests, aspirations, culture and livelihoods of the local communities.

Beyond mitigation measures, our actions aim to promote sustainable responses in terms of economic development and growth for the communities involved in our projects.

OUR APPROACH

Our social involvement is structured around the following pillars:

- Access to water
- Human health
- Education
- Culture
- Access to energy
- Economic development

OUR ACTIONS IN 2018

3 million euros were invested to meet our stakeholders expectations in the areas listed above.

Community investments in 2018

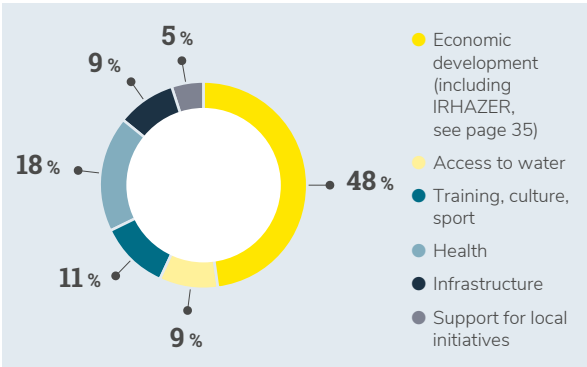


Given the diversity of contexts, past events within our activities and the nature of our projects, our aim is to promote a trusting dialogue and long-term partnership with our stakeholders.

OUR STRATEGY

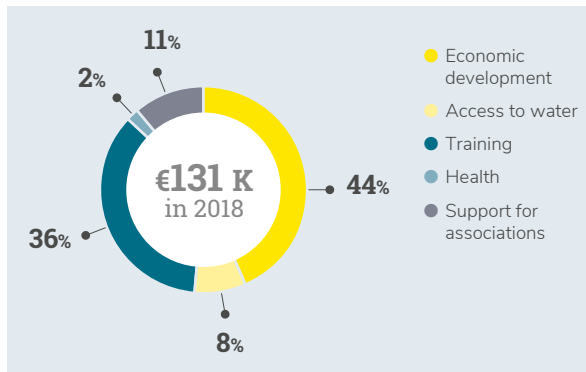
We define community investments as the setting up of project and actions with the aim of meeting both the expectations of our stakeholders and the operational goals of Orano Mining in the following fields: health, access to water, training and economic development.

Type of investments



The funds for community investments are allocated by the subsidiaries, and by the CSR Department of Orano Mining.

MONGOLIA: €131 K



- **Health:** provision of a pump for Bag Nuden wastewater, design of the Ulaanbadrakh domestic water heating and centralized sewerage system;
- **Education, training:** training of officials and equipment of training room, cooperation with the Alliance Française, works for schools;
- **Support for herders' activities:** purchase of local meat, funding of a cattle bath, repair of 4 nomadic wells;
- **Culture:** support for local associations and activities of cultural centers, audio equipment;
- **Infrastructure:** support for the interior and exterior renovation of 29 apartments in Zuunbayan.



EXAMPLE IN MONGOLIA

FXB Village, renewal of the program for additional 3-year period

The program was launched in the rural province of Dornogobi in January of 2016, with funding from the AREVA Foundation.

It aims to get people out of extreme poverty by accompanying them on a sustainable path of economic autonomy. The areas of intervention are as follows:

- strengthen the economic capabilities of 100 vulnerable families;
- consolidate the food security of beneficiaries of the program and eradicate child malnutrition;
- improve the families' access to adequate medical care, and improve living conditions and conditions of hygiene for participants;
- facilitate access to education for children and young people;
- enable adults to become self-sufficient.



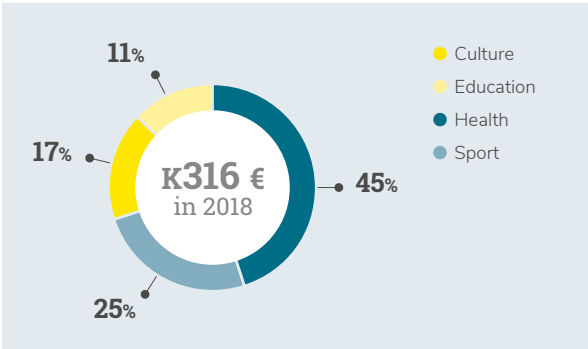
These objectives have been achieved in particular through the development of micro-economic projects for the 100 beneficiary families: professional training, allocation of starting capital for the start-up of microenterprises, psychological support, creation of youth clubs, establishing of relations between the families and services available locally.

Given the success of this first operation, Orano Mining has decided to renew the project with its partner FXB from 2019, for a period of 3 years for the benefit of 100 additional families in the province of Sainshand.



CANADA*: €318 K

* outside scope of collaboration agreements



- **Culture:** support for many important cultural gatherings for the indigenous peoples;
- **Education:** a special focus on early childhood education initiatives and on science and technology;
- **Health:** among key initiatives supported in 2018 was the La Loche youth wellness center, located in one of Saskatchewan's northernmost communities, and support for making an outdoor play area accessible for children in wheelchairs;
- **Sport:** in 2018, sponsoring of the Special Olympics in La Ronge, offering children of all levels a chance to participate in sports activities.

EXAMPLE IN CANADA

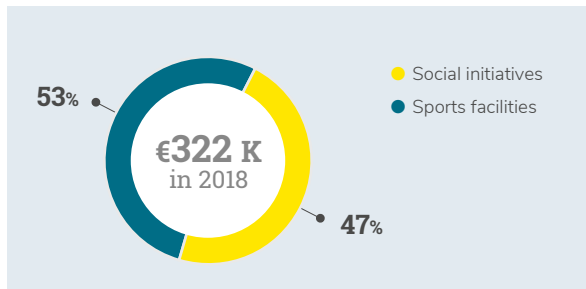
Involvement of our stakeholders in the assessment of our societal investments

2018 saw the deployment of the system to assess the performance of our societal investments. The aim is to precisely measure the correlation between an investment in a community and its impact on its immediate environment. This collaborative assessment and scoring work is the outcome of an exchange between all the stakeholders involved in carrying it out (town hall, users, suppliers, technical services, and local CSR team).

Seven topics (around twenty questions) are addressed as part of an assessment interview process: meeting the needs of users and local authorities, management of the project schedule, local development aid, supplier relations, respect of human rights, respect of the labor rights of the employees involved in the project, project governance.

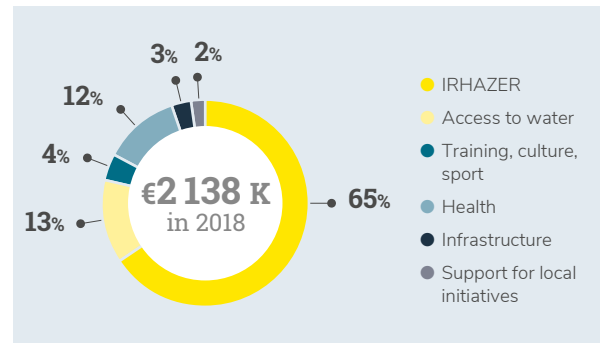
In 2018, assessments were conducted by the teams with our stakeholders in Mongolia for the FXB project, in Kazakhstan on sports infrastructure projects and in Niger on hydraulic projects.

KAZAKHSTAN: €322 K



- **Education:** purchases of school supplies for children;
- **Access to water:** repair of water pipes for villages in the Sozak district and cleaning of artesian wells;
- **Access to energy:** supply of coal / fuel to the communities;
- **Sponsorship:** celebration of various events in the communities;
- **Health:** construction of 5 outdoor football pitches and a children's playground for the 5 communities of the Sozak district: Tasty, Shu, Kumkent, Sholakkorgan, Zhartytobe.

NIGER: €2,138 K



13 projects as part of the CBO, including:

- **5 hydraulic projects:** livestock well equipment, sinking of wells, extension of a drinking water network...
- **5 projects in the field of education** including the construction of classrooms, training actions to prepare students for exams, etc.
- **2 projects in the field of health** with the construction of an Integrated Health Center and a hospital ward

CBO, towards a reorientation of funding actions?

The year was also marked by the initiation of thinking around a repositioning of CBO's work. The CBO is today facing a decline in its funding resources from the mining companies. This decrease is related in particular to the ongoing depreciation of uranium prices. In the future, the CBO will have to be open to new forms of partnerships.

It will have to diversify its support work. This work is currently focused on the development of community infrastructures (classrooms, health centers, wells and boreholes). The actions do meet a need in the communities. But a shift towards more actions on promoting economic development, in areas such as market gardening and livestock farming, needs to be negotiated.

This process of reflection will be amplified in 2019 so that it can be deployed as early as 2020.

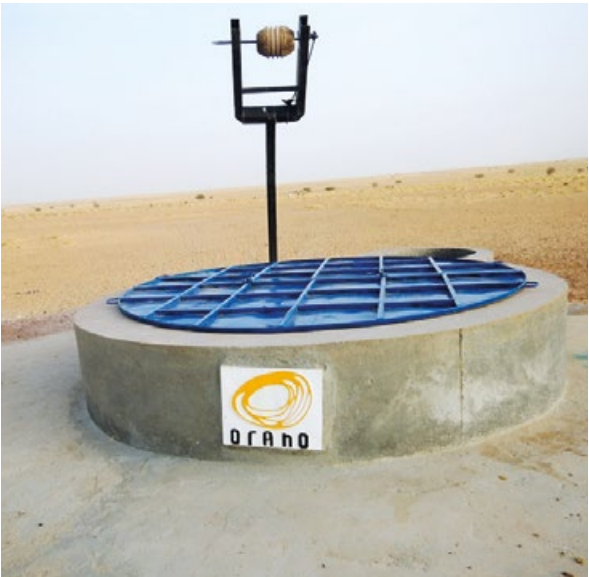
Discover the **CBO 2018 video**
(available only in French)



EXAMPLES IN NIGER

“The Desert Wells”

"The Desert Wells" (LPDD - Les Puits du Désert) is an association that was founded in 2000 and is active in Niger in the region of Agadez, together with the NGO Tidène, working for the most disadvantaged nomadic and sedentary populations. It is made up of men, several Tuareg chiefs born in the Tidène valley, and women who have decided to take their future into their own hands. It aims to help the populations in northern Niger in the field of rural development by improving access to water, health, education, and promoting economic initiatives. It is recognized for the importance and the quality of its achievements, its openness and the way it reaches out to the local populations, which has given it great legitimacy with the various local stakeholders.



A first partnership with Orano Mining in 2014 led to the construction of a village well in the village of Tafadek in the Tidène Valley. On the strength of this first experience, a second, more substantial project resulted in 2017 in the construction of 5 village wells in the villages of In Tédéiné, Gadambo, Intichikit, Inwadenan and Tinnougouran, as well as 3 market gardening wells in In Tedeiné.

The partnership was renewed in 2018 for a further three years. Over the last year it focused on the village of Intawagré. Achievements included the construction of a permanent classroom building to improve the children's schooling, a store for school supplies and equipment, the teacher's dwelling, and the sinking and cementing of a well.

IRHAZER

Funded by Orano and developed in partnership with the State of Niger, the Irhazer agro-pastoral project aims to contribute to sustainable food security by developing irrigation systems in the desert areas of the Agadez region.

The total project represents over 11 billion CFA francs (€ 17 million) of investments with a test phase from 2013 to 2015, then a development phase from 2015 to 2021. It aims to directly reach, by 2021, 5,000 households and 35,000 beneficiaries.

In 2018, despite a significant delay in implementing the program related to external factors, the year was characterized by significant investments in community irrigation. New installation works have been conducted. Measures to secure land and develop the irrigated areas have also emerged. Program outcomes also include improvement and support for animal health.

Results: 22 hectares are under development, 12 of which are now cultivated, 23,500 animals vaccinated.

It is noteworthy that the project has started up the process of promoting private irrigation initiatives and private livestock in several communes of the sector.



Local purchases for goods, works and services

Purchasing by the Mining BU breaks down into five main categories: energy, logistics, materials, services and reagents. The Mining BU works with some 2,500 suppliers in the countries where it operates.

The fact that preference is given at equal competencies to local suppliers during the bidding process enables the creation of a network of companies and numerous jobs in the region where the mining site is located. **In 2018, 78% of our purchasing volume came from the countries in which we are based.**

It is not always easy to define the meaning of "local", and the term varies depending on the country, its stage of economic development and the population density around the site. Orano has therefore implemented specific purchasing policies in the countries in which it has mining sites.

For 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 the community living in northern Saskatchewan. Service contracts such as site catering or monitoring, which require a large workforce, have only been awarded to suppliers from this region

Similarly, in Kazakhstan, preference is given to local suppliers where skill levels are comparable. Katco thus now purchases its tubes locally, which it initially imported from Europe.

International suppliers which work for our sites are also committed to CSR approaches. For example, the catering company CIS in Niger, which is developing an area in the municipality of Arlit for the cultivation of vegetables, with the assistance of an agronomist, for the benefit of two communities of women living in particularly precarious circumstances.

Local recruitment of our employees

Orano Mining's social policy expresses a commitment to promoting the local recruitment of our employees. Over 95% of our employees on our sites are from the host country.

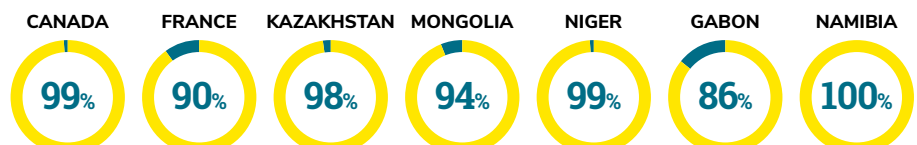
We also pay particular attention to indigenous communities, to facilitate their access to our employment opportunities. This situation exists in Canada, for

example, in North Saskatchewan, a region that has seen numerous initiatives to promote access to employment and select local entrepreneurs as a preference. This is also true in Mongolia and in Kazakhstan.

Currently, across all the countries in which we work, the majority of employees (at all levels of the organization) are of local nationality.



PROPORTION OF LOCAL EMPLOYEES, BORN LOCALLY OR WITH LEGAL PERMANENT RESIDENCE



03



ETHICS

WHY?

As a socially responsible mining company, we are committed to operating ethically and with integrity and to establishing and following processes and behaviors that support this commitment.

OUR APPROACH

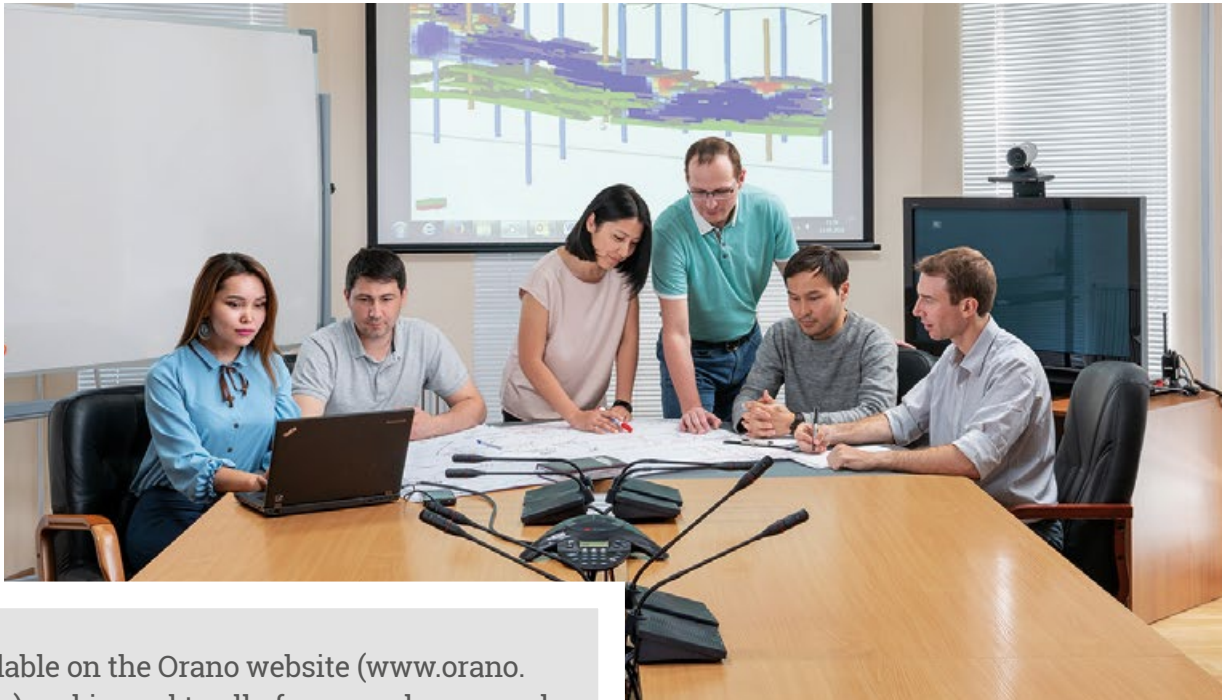
Orano has taken a proactive approach in developing its own Code of Ethics and Anticorruption Code of Conduct and communicating these to all its employees.

OUR RESULTS 2018

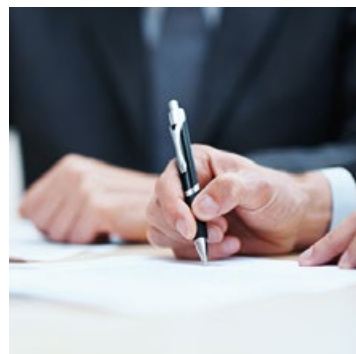
Application of our requirements in relation to the Sapin II Act, updating of our Anti-corruption Code of Conduct and incorporation into the internal regulations of Orano Mining and its subsidiaries.

Design of **an e-learning course** developed on the basis of the Orano Code of Ethics **and intended for all employees.**

Code of Ethics



Available on the Orano website (www.orano.group) and issued to all of our employees and industrial partners (subcontractors, suppliers, business partners, customers), the Orano Code of Ethics sets out the Orano's ethical commitments to its stakeholders, as well as what it expects from its employees and its suppliers or subcontractors and business partners; it specifies the rules of conduct which everyone must follow at all times.



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. In order to pursue 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) and in particular a number of complementary processes have been launched and will continue in 2018, such as the updating of **the anti-corruption code of conduct** and its incorporation into the internal regulations of Orano Mining and all its subsidiaries, the design of an e-learning

course specifically developed on the basis of the Orano Code of Ethics, and its deployment to all employees, the systematization of the partner compliance verification process according to level of risk, and the reinforcement of the formalization of certain controls, especially regarding accounting transactions. In 2018, the corruption risk has been assessed on all our sites

According to the Code of Ethics, it is a reflex and a duty for each and every one of us to immediately raise the alert if any blatant incident or breach of a statutory or regulatory obligation or violation of this code of ethics or compliance policies and procedures is observed. There are no hierarchical barriers to the internal circulation of

information required to ensure the smooth running of Orano, nor any requisite rank for anyone alerting their superiors or a compliance manager forthwith. This applies with the full force of legal protection provided for under the Sapin II Act concerning whistleblowers acting in good faith.

The rules of conduct of the Code of Ethics deal with the action we take in terms of the following: compliance with international treaties (international mechanisms in force with regard to non-proliferation); conflicts of interest; insider trading; corruption, gifts and unfair advantage, and influence peddling; payments and relations with third parties; relations with commercial intermediaries; advocacy and lobbying and political funding; philanthropy, sponsoring, donations, humanitarian work; competition; protection of people and assets; ethics alert and the primacy of the Orano Code of Ethics.

At group level, the Orano Board of Directors has set up four specialized committees including the **Audit and**

Ethics Committee. Its mission includes overseeing group compliance with the best international ethical practices, reviewing the Code of Ethics and its updates and where appropriate making recommendations to the Board of Directors.

More specifically, it conducts the review of the annual internal control campaign INCOME after the internal audit assessments, as well as the review of the Group's risk mapping and action plans with follow-up of the audits carried out with validation of annual audit plan.

The role of **Compliance Officer within the Mining Business Unit** is held by the General Counsel for our activities, in contact with the Senior Vice President for Compliance of the Orano Group on the Group Audit and Ethics Committee.

Find out more:
[Orano Code of Ethics](#)



Ethical report

Orano Mining, like all the group's business entities, conducts an internal ethical reporting process on the proper application of the Code of Ethics, any infringements observed, and action plans put in place to remedy such breaches.

Each campaign opens with a letter from the Senior Executive Vice President of Orano Mining, in application of the letter of instruction from the Orano group CEO. 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).

This reporting 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 goes against the Orano Code of Ethics, they are entitled not to comply and must report the matter to group management immediately.

The nature of corrective actions proposed varies depending on the severity of the failure to comply with the Code. These actions may range, for example, from training to dismissal of the personnel concerned. This exercise also enables our teams on all our sites to have a better qualitative understanding of the situations that bear risks with regard to the rules of conduct and the Code's values: corruption, conflict of interest, forced or child labor, etc.

All members of the Orano Mining Management Committee have followed or will follow training in ethics and human rights. Similarly, all of our subcontractors and suppliers, in subscribing to our General Purchasing Conditions, make a contractual undertaking to uphold the Code of Ethics.

Since 2016, monitoring of ethical incidents has been conducted within the Orano Mining Management Committee at least twice yearly.

System for alerting and issuing complaints in case of discrimination

A system for alerting and issuing complaints in case of discrimination has been in place since February 2013. It guarantees the confidentiality and protection of whistleblowers acting in good faith. A description of the system and how it works is available on the Orano intranet. Since April 2, 2019, a dedicated, secure external web platform for collecting alerts has been implemented to strengthen the system.

Orano
ethical
alert
system



Our employees can use this system or else raise any issue with the human resources teams, their managers, their staff representative, or the network of compliance officers.

In 2018, the system was used five times within the scope of mining activities. All these cases were substantiated and in each case an internal investigation was conducted. In two cases, a reminder of the procedures was issued. One case is under investigation and in another case, it led to a resignation and to the implementation of an awareness action plan.

Indigenous peoples' rights



The right of indigenous peoples to decide on the basis of prior and informed free consent is one of the undertakings necessary for the acceptability of our activities and for building a constructive dialogue over the long term.

More specifically, in Mongolia and in Canada, we seek to establish respect for these fundamentals at the earliest possible stage in the life cycle of mining activities.

The way in which we approach and deal with the questions surrounding this complex issue in concrete terms is currently being examined by our different functions. As part of this process we are involved in an ICMM working group and we situate this important initiative as one of our continuous improvement priorities.

Our responsible purchasing process



Mining BU purchases are compliant with Orano's Purchasing and Supply Chain process.



Suppliers are assessed and monitored as regards their reliability, quality, compliance, financial strength, competitiveness, health, safety, security, environmental performance, and ability to provide products/services that are compliant with the specified needs and requirements. They have to meet the benchmarks such as ISO 9001, ISO 14001, OHSAS 18001

The Purchasing Manager must factor in the economic and ethical aspects, as well as fair competition practices, specifically by promoting competition, plurality of responses, and the emergence of alternative offers, without discrimination. When identifying needs, they must factor in the local situation, the impact on jobs and the local economy (see chapter *Community involvement* p 31).

The Orano group has made provision for project monitoring and operational oversight to make sure that health-safety-environment and sustainable development requirement are properly managed by subcontractors.

The various documents and processes making up the Supply Chain Management System (Code of Ethics, GTCP, Sustainable Development Commitment, etc.) take into account:

- risk analyses by Purchasing market and by country. These analyses will be reinforced by the deployment of a compliance questionnaire;
- the plan for mitigating the associated risks before awarding the contracts (through supplier selection criteria and qualification audits, and monitoring programs during contract fulfillment);
- supplier performance metrics and the required improvement plans;
- the Ethics and Sustainable Development Commitment aspects in contract clauses, in compliance with the French Sapin II and Duty of Care Laws; and
- studies performed by the group's Economic Intelligence Division, specifically for all SOC suppliers, systematically.

In 2019, a systematic supplier assessment process, adjusted to risk level (compliance, corruption, duty of care) will be deployed in coordination with the Compliance Department.

D4

RISK MANAGEMENT

WHY?

Maintaining the highest level of nuclear safety has always been an absolute imperative for Orano. The Group's Nuclear Safety Charter states the Executive Management's undertaking regarding the priority to be given to risk management and establishes the pertaining principles of organization and action.

OUR APPROACH

An risk identification and assessment campaign is conducted annually using a Business Risk Model (BRM). This is used to adjust and update the action plans implemented to manage the risks.

OUR ACTIONS IN 2018

Integration of requirements on due diligence and bribery and trading in influence in the Orano BRM.

- **Level 3: crisis exercise** conducted at the Bessines site in France
- **Level 2: 5 crisis exercises** conducted at Orano Canada, KATCO in Kazakhtan and COMINAK in Niger
- **Level 1: More than 50 crisis exercises** across the sites
- **1 exercise** conducted with other mining companies in Namibia



The Business Risk Model (BRM) lists annually all the risks that may impact on the health and safety of the staff, the environment, operations, strategy or financial results of the group, its compliance with current regulations, as well as its reputation or image.

Details on risk mapping and the risk management policy and the cross-reference table of the data required in the statement of non-financial performance and those required by the French Corporate Duty of Care Law can be found in Appendix 8.9 of the Orano annual activity report.



Focus on industrial risks



Nuclear safety is applied across the complete life cycle of facilities, throughout design, construction, operations, shutdown and decommissioning phases.



As an extension of the Nuclear Safety Policy, the Safety and Environmental Policy formalizes priorities as regards nuclear safety, industrial safety and environmental protection for the 2017 to 2020 period.

The objectives pursued by the policy are:

- sustainable assurance of a high level of safety for our facilities, our products and our services;
- strengthened operational discipline, a daily concern of operational management and all parties involved;
- inclusion of the risk prevention and the environmental protection as priorities in each of the processes implemented to conduct of our activities.

Find out more: [Nuclear Safety Charter](#) and [Nuclear safety and environment policy 2017 - 2020](#)



Within the Mining BU, 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 works, by means of hazard studies or ad hoc analyses.
- mapping of major industrial risks encountered on our sites, an estimation of the degree of control of these risks via preventive and protective barriers implemented to eliminate or mitigate these risks.

Action plans are set up and regularly updated. These action plans are part of a broader process of risk reduction and continuous improvement.

- a crisis management organization: each operating entity sets up an organization to manage emergency situations as part of the Group's overall crisis organization. The implementation of this organization in each entity provides for strong analytical and decision-making capability so all necessary measures can be taken in the event of an emergency or crisis situation to make safe facilities, 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.

In 2018, the actions focused on:

- the Mining BU's operational sites, where a review of industrial risks, with prioritization of barriers in relation to accident scenarios, progressed the implementation of Risk Management Measures sheets ("MMR" sheets).



- risk analysis during the study phases of the South Tortkuduk project in Kazakhstan and the Zoovch Ovoo project in Mongolia.
- a level 3 crisis exercise was organized at the Bessines site in France, as well as 5 level 2 crisis exercises and more than 50 crisis exercises were organized on our sites.
- as a complement to external specialist training, the creation of a first level in-house course in Industrial and Environmental Risk.

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.

RISK MANAGEMENT SYSTEM

Work to prevent professional risks is carried out at most of our mining sites using a management system that meets the requirements of standards **OHSAS 18001** (for occupational health and safety) and **ISO 14001** (for the environment). **SOMAÏR is the first African company to have achieved ISO 45001 certification** (superseding OHSAS18001).

These systems set up processes and procedures to control the main risks encountered on sites, prioritize them, monitor them, take corrective action and make improvements.

05



ENVIRONMENT

WHY?

Our environmental responsibility is an ongoing commitment firmly rooted in Orano's core values.

As such, our actions seek to reinforce mitigation of the risks and management of the environmental footprint of our activities, and to ensure that mining sites are well integrated into their environment.

This is a legitimate expectation on the part of our stakeholders.

OUR APPROACH

We build precise and scientific knowledge of impacts on the environment, take the appropriate mitigating measures, invest in research and development to improve our practices, and to take account of issues identified and knowledge gained by our stakeholders, as well as of societal aspects directly related to the environment of our sites.

OUR RESULTS 2018

- Water Consumed: **+ 3.2%**
- Energy Consumed: **- 5.5%**
- Greenhouse Gases: **- 3.7%**
- Conventional waste: **- 27%**
- Very Low Level Radioactive Waste: **1.10%**

Our Policy

The group's Safety & Environment policy applies to all entities of Orano Mining, both in France and abroad. Each operational entity deploys it in the form of action plans in accordance with the following commitments:

- Prevent the technological and environmental risks of our operational activities by means of a pro-active approach;
- Minimize our environmental footprint;
- Improve management of environmental liabilities;
- Interface effectively with members of the

- environment/industrial risk network;
- Ensure that environmental standards are taken into account at every stage in the mining cycle;
- Maintain, or implement, an environmental management system.

Consult the **Orano Safety and Environment Policy 2017-2020**



The commitment of Orano Mining's activities is shaped by the Orano group's Safety & Environment policy for 2017-2020. Our teams therefore base their work on meeting current regulatory practices, international standards and the sharing of experience.

Our environmental performance

Throughout the life of the mine, the extraction and processing of uranium ore entail a need for raw materials and natural resources (water, energy, etc.). Our main challenge therefore consists in optimizing consumption and waste over time, and, in looking for possible ways of recovering waste, for a fluctuating uranium production level and taking account of a changing regulatory framework.

The environmental objectives are adjusted depending on: changes in the mapping of risks, the expectations of stakeholders, internal and external best practices, environmental reporting and dialogue with operational entities.

Reporting for the various different environmental indicators presented in this section is carried out using the Orano group's dedicated application. The methods used for the calculation of environmental indicators, as well as the associated reporting procedures are formally



set out a "Sustainable Development and Continuous Improvement" measurement and reporting protocol. This protocol, which is updated every year, is sent out to everyone involved in the preparation and reporting of data.

The scope of the reporting encompasses all activities of the Mining Business Unit and all those for which Orano Mining is the operator.

The Mining Business Unit recorded good operational performance in 2017 with the production of 13,425 metric tons of uranium (total tonnage produced by mines where Orano is the operator). This tonnage is used as a basis for calculations for the assessment of our environmental performance in 2018.



RESPECTING THE ENVIRONMENT: AN EXAMPLE WITH KATCO

In Kazakhstan, the company actively involves its employees in environmental protection work and is building a culture of environmental risk prevention.

Very regularly, waste is collected from production sites (maintenance days). In 2016 and 2018, on the occasion of the worldwide Earth Day, some 1,000 saplings were planted by company employees in the living compound area.

“ To date, more than 100,000 saxauls have been planted in the territories near our facilities to help safeguard the environment. ISMAGULOVA Ainagul, KATCO's environmental manager.

In the compound, wastewater treatment systems are installed and treated water is used to water the trees.

Waste management is also a concern: sorting bins by waste type are in place throughout the company. Plastic and paper waste is sent to specialized companies in the Turkestan region for recycling.

In order to promote awareness of environmental protection among the local population, KATCO cooperates with schools in the Sozak District where the company operates. Every year, as part of Environment Week, experts from the Environment Department visit schools and colleges in the region to teach the younger generations the importance of protecting nature.

After the presentations, the students plant trees, accompanied by company representatives.



2018 results



WATER

A precious natural resource, management of water is one of the Orano's core environmental and social concerns. Mining activities have a significant impact on water resources, not only in terms of quantity, but potentially on their quality too. This is why the question of water is the subject of constant attention at Orano Mining, in order to minimize our footprint in this respect.

The pumping of groundwater is essential to allow access to the deposit in the open-pit and underground mines in Niger. In another way, it also allows uranium to be put into solution so it can be retrieved from In Situ Recovery mines, like those in Kazakhstan. Whatever the site under consideration, the processing of uranium ore is always carried out by wet process. Moreover, the sprinkling of sites also allows dust to be controlled, and thus to limit the atmospheric and radiological impact to the maximum extent possible, particularly in desert areas. Last but not least, Orano Mining is committed to providing all of its employees with access to good quality drinking water and appropriate sanitary facilities.

The management of water resources is an even bigger challenge given that the majority of sites in operation or undergoing exploration are located in desert areas (Niger, Kazakhstan, Mongolia, Namibia), where water is a rare resource and has to be managed in close consultation with local populations. These sites could indeed be affected by increasing scarcity of water due to climate change in the future.

On other sites in operation like those in Canada, or former sites which have been remediated (in France and in Gabon), the preservation of water as a resource mainly involves ensuring its quality is maintained, and, by extension, protecting related ecosystems. Indeed, a specific feature of these sites is that they discharge mining or process water into the natural environment, after having been treated if necessary.

Depending on their needs, sites use two qualities of water: drinking water and industrial water. The water used for our industrial and mining processes comes from various sources and the proportion varies depending on the site under consideration: surface water (lakes, rivers,



More information on **Orano Mining activities**: refer to p8 of the report



the sea, etc.), groundwater (aquifers) and mine drainage water (pit water), recycled industrial water. Quantities of water abstracted are measured by flowmeters; however, some points of abstraction cannot be equipped with a flowmeter, in which case the quantity is estimated or simulated based on models.

Due to the many different contexts and processes employed on each of our sites, the management of water resources is not guided by performance objectives set at group level, but rather by a specific management plan defined by each site. A common policy of compliance with regulatory requirements and standards concerning the taking of samples and discharges into the environment is one of the prerequisites of such a management plan, and all the sites comply with these requirements.



The management of water resources is then guided by an assessment of risks and possible impacts in order to identify the solutions which are best adapted to the context. This assessment is carried out with external and internal stakeholders. On some sites in areas of water stress, like in Niger, a regional hydrogeological study program is being conducted to improve

knowledge of the water footprint of the COMINAK and SOMAÏR sites. In this way, these sites have been able to set objectives to reduce water consumption which are adapted to the challenges they face, and to decrease their water footprint. On sites where there are aqueous discharges into the environment (former mining sites in France, in Gabon and in Canada), in addition to rigorous monitoring of water quality, regular ecosystem studies are carried out to prove that the quantity and quality of aquatic ecosystems is not affected by the activities.

The water resource management plans of sites are presented to and discussed with stakeholders on a regular basis, by site monitoring committees, management committees, and, for certain sites, by participatory monitoring.

Orano Mining is committed to sustainable, transparent and inclusive management of water resources, and adheres to the ICMM's position statement on water stewardship.

The volume of water consumed in 2018 remained globally constant compared to 2017. It is worth remembering that

Volume of water taken (by source)	2016	2017	2018	Trend 2017-2018
Volume of water taken from surface waters	483,485	490,078	566,501	+15%
Volume of water taken from the distribution network	79,746	63,781	30,856	-51%
Volume of pit water taken	6,256,782	6,414,391	6,688,835	+4.3%
Volume of groundwater taken via pumping wells*	5,544,477	4,347,386	3,984,973	- 8.3%
Abstracted water	8,408,190	8,129,651	8,443,216	+3.8%
Volume of pit water used on site - m ³	4,711,519	4,351,385	4,331,590	-0.4%
Total volume of water consumed - m ³ **	6,862,927	6,066,645	6,085,971	+0.3%
Water returned	-	-	-	0%

*This indicator includes water taken from the underground, for whatever use: industrial water supply, drinking water supply, pumping for hydraulic containment, passive treatment. This water may be put to another subsequent use, on or off-site, to meet industrial needs or for the supply of water for consumption. This indicator excludes pitwater. 50% of the decrease in this indicator is related to the cessation of activities in Niger (Imouraren project)
 ** total volume of water consumed = water abstracted – water returned – pit water taken + pit water used.

in previous years, serious efforts have been undertaken to reduce our consumption, with in particular initiatives to recycle and optimize water consumption, as well as thanks to a new approach to water management for the towns that have grown up around mining in Niger.

The sharp decrease in consumption of water taken from the distribution network is to be correlated with the reduction in personnel on our site in Namibia which has been mothballed. In contrast, the increase in the volume of water taken from surface waters is linked to an exceptional rainy period during the summer of 2018 on the McClean Lake site in Canada.

In accordance with ICMM recommendations, in 2018, Orano Mining launched a plan to improve its knowledge of and expertise in water resources on its sites, which in particular involves construction of a water balance. This is work in progress, and will be presented in the next CSR report.

⇒ Concrete actions to reduce our water consumption and monitor groundwater quality

EXAMPLES

In Kazakhstan

Since 2013 the recycling of effluents has been rendered sustainable at the KATCO plant. The main idea was to recycle a part of the effluents in the process at section 300 (the uranium elution process area) in order to capture the residual reagents present in the solution and to reuse them in the process before returning them to the wellfield: the project therefore makes it possible to limit the addition of new reagents and industrial water and thereby reduce the environmental footprint of the uranium extraction process (less industrial water used).

Since this process has been implemented, we have seen a downward trend in water consumption (15% decrease between 2013 and 2018) at the KATCO site.

In Niger

Since 2003, for Niger, a Mining BU working group called "Aman" has been carrying out periodic additional monitoring campaigns on a wider scale than those conducted by site operators. The working group is mainly composed of geologists and mining

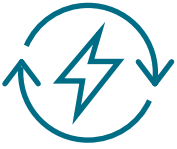
hydrogeologists, with the support of environmental specialists. Its aim is to build a model of the water resources, to refine our understanding of the regional hydrogeology and guarantee the quality of supply to sites and nearby towns.

In 2018, the water consumption of all sites of the Mining BU can be expressed as a ratio of 453 m³ of water consumed per metric ton of uranium produced.

Ratio* (m ³ /tU)	2016	2017	2018	Trend 2017-2018
Water consumed	486	436	453	+3,2%

* Ratios are calculated on the basis of total production from all sites in operation





ENERGY

Whether it originates from fossil fuels or renewable sources, the energy consumed by the different Business Unit Mines' sites is monitored on a constant basis. The goal: to continue to reduce consumption.

Improving the energy efficiency of sites and reducing GHG emissions and therefore our impact on climate change is a priority for the Mining BU. This is among the commitments taken at the highest level.



An energy efficiency project was launched 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 and KATCO sites, in 2016 and 2017 on the sites of Orano Canada, SOMAÏR and COMINAK.

Improvement actions resulting from these assessments have been taken.

For example, at SOMAÏR, in Niger, actions to raise awareness among personnel of energy consumption issues continued to be pursued. As a result of an energy performance assessments, several modifications were made in the plant to reduce consumption of fuel and electricity (modernization of equipment, installation of low-consumption lamps, installation of equipment to avoid losses of heat). New performance management actions have also made it possible to involve teams more closely, to monitor consumption items more accurately, and, ultimately, to deploy more effective action plans. **SOMAÏR was thus able to successfully decrease its electricity consumption by 6% between 2017 and 2018.**

The Mining BU's energy consumption is down once again in 2018, by around 8.6% compared to 2017, which brings the ratio down to 51.2 MWh/metric ton of uranium.



in MWh	2016	2017	2018
Energy consumed	752,708	752,225	687,661
Fossil energy	527,686	513,585	442,997
Electricity consumed	225,022	238,840	244,664
from non-renewable sources	224,336	238,412	244,281
from renewable sources	686	428	383

Ratio* (MWh/tU)	2016	2017	2018	Trend 2017-2018
Energy consumed	53.3	54.2	51.2	-5.5%

* Ratios are calculated on the basis of total production from all sites in operation.



GREENHOUSE GAS EMISSIONS

The main source of global warming, greenhouse gases are subject to global monitoring by Orano, whether produced directly by mining activities, or resulting from the consumption of energy necessary for the proper running of the company.

Direct greenhouse gas emissions are mainly due to:

- The burning of fossil fuels: the quantities of CO₂ emitted are deduced from the quantities consumed and the corresponding CO₂ emission factors:

Fuel	tCO ₂ / GJ PCI	tCO ₂ / MWh PCI
Natural gas	0.057	0.2052
Propane gas	0.064	0.23
Heavy fuel	0.078	0.2808
Domestic fuel / Diesel	0.075	0.27
Motor gasoline	0.073	0.2628

- Decarbonation during phases involving the chemical leaching of ore using acid, and reagents

(containing carbonates) put into contact with acid solutions. The quantities of CO₂ emitted (corresponding directly to greenhouse gas emissions) can then be calculated based on the quantities of carbonate contained in the ore and the quantities of reagents used

- Emissions of HFCs (hydrofluorocarbons) resulting from the use of refrigerating fluids. The greenhouse gas emissions are deduced from the quantities of the different refrigerating fluids consumed and their associated GWP* (Global Warming Potential).

Note: The Global Warming Potential values used are defined in the group's reporting protocol.

The unit of measurement for GHG emissions is the metric ton CO₂ equivalent (tCO₂e). The method of calculation is shown below:

$$\text{Direct_GHG_emissions} = \text{Fuel_GHG_emissions} + \text{Process_GHG_emissions} + \text{Fluids_GHG_emissions}$$

Greenhouse gas emissions	Unit	2016	2017	2018
Direct greenhouse gas emissions (GHG) – Scope 1		183,525	182,888	169,440
Direct Greenhouse gas emissions (GHG) linked to the transportation of freight and personnel – Scope 1		9,176	9,650	9,380
CO ₂ emissions from processes and facilities, including CO ₂ emissions from an on-site waste incineration (tons of CO ₂)	T equivalent CO ₂	39,349	45,367	48,314
Direct Greenhouse gas emissions (GHG) linked to fossil energies - Scope 1		137,204	133,058	114,974
Indirect Greenhouse gas emissions (GHG) scope 2		144,626	143,774	148,531
Emissions of ozone-depleting gases	Kg equ CFC111	56.29	31	26.25

Ratio* (T equivalent CO ₂ /tU)	2016	2017	2018	Trend 2017-2018
GES Scope 1	12.98	13.17	12.68	-3.7%

* Ratios are calculated on the basis of total production from all sites in operation.

Globally, in 2018, a slight decrease in greenhouse gas emissions was observed:

Similarly, **for emissions of ozone-depleting gases, a decrease of 15% is to be seen compared to 2017**, in particular thanks to replacement of part of the mining machinery fleet.

To successfully reduce greenhouse gas emissions, several levers are being employed by sites, such as the replacement of existing equipment by HFC-free equipment and the optimization of consumption of fossil fuels.

It nevertheless remains difficult to have an effect on emissions related to decarbonation of ore, which are dependent on the geology of the zones mined.



ORANO MINING AND CLIMATE CHANGE

As a member of the International Council on Mining and Metals (ICMM), Orano Mining supports the ICMM's position on climate change. In conducting its mining activities, Orano Mining undertakes to limit greenhouse gas emissions in accordance with the environmental policy of Orano Mining and to carry out social projects and take action to conserve water and biodiversity in order to meet the challenges faced due to the consequences of climate change.



WASTE

Orano Mining assumes responsibility for its waste, whether it is conventional or radioactive waste. The company must therefore ensure that waste is traceable through to its definitive disposal or recovery.

Conventional waste

Conventional waste is related to normal activity (as part of normal production) or exceptional activity (e.g. as part of works, projects, etc.) and falls into two categories:

- hazardous waste (e.g. asbestos, batteries, packaging for toxic substances, electronic waste, etc.),

- non-hazardous waste (e.g. household waste, rubble, scrap metal, tires, plastic, etc.).

In Kazakhstan, at KATCO: nearly **78% of conventional waste is recycled** – 100% of hazardous waste and 74% of non-hazardous waste.

For all mining activities where Orano is the operator, **the tonnage of conventional waste decreased by 27% in 2018 in relation to 2017**. This variation is mainly explained by the carrying out in 2017 of exceptional works to dismantle old equipment on our site in Canada.



Tons	2016	2017	2018
Quantity of conventional waste	6,353	10,368	7,526
Quantity of hazardous waste*	3,302	7,214	4,749
Quantity of non-hazardous waste**	3,051	3,154	2,777
Quantity of hazardous conventional waste recovered	47	34	71
Quantity of non-hazardous conventional waste recovered	1,460	1,105	1,449

*Hazardous waste generated by our sites are: used oil, filters of fuel, unnecessary antifreeze agent, surplus batteries. They are collected in indicated containers and transported from the internal or external recycling. Empty barrels or canisters which contain typically the residue of products as oil, antifreeze agent and grease are returned to the suppliers for recycling.

**Our most significant non-hazardous waste includes scrap, used tires, inerts industrial waste and the organic waste. All our scrap and a part of tires are recycled. Many of our operational sites implemented recycling schemes of the equipment as the paper, the plastic, the pallets, the glass and some implemented programs of composting for organic waste.

Share of recovered waste due to normal activity (%)	2016	2017	2018
Mning BU	23.7	10.9	20.2

EXAMPLE

On the SOMAIR site, in Niger

Recycling actions are performed for all recyclable waste. For example, used oils are recovered to be centrifuged and reused as fuel instead of diesel for the drying of ore prior to grinding. The wood from clean pallets is reused to make positioning stakes for the topography team. Drums for the packaging of solvents, oils, etc. are reused to make garbage cans.

Recyclable waste may also be reused externally after undergoing a radiological inspection to certify that it is not contaminated.



Radioactive waste

Mining waste is classified as Very Low Level Waste (VLLW) and only contains naturally-occurring radionuclides.

Such Very Low Level Waste is either put into specific surface storage, or, possibly after processing, is rendered safe for disposal via normal channels, when it is below the release thresholds defined by national regulations (if applicable).

Directives sent out to each of the operational units likely to produce radioactive waste remind them of objectives and specify the resources to be deployed in terms of organization and performance to ensure such waste is managed safely. In particular, they take action in the following areas: the strict separation of conventional and radioactive waste, the exhaustive management of such

waste, the taking into account of improvements, risks related to transport, the use of any final disposal channels.

These directives are in particular based on local regulations, supplemented where necessary by IAEA guides and standards.

In 2018, 772 metric tons of radioactive waste was produced by mining entities where Orano Mining is the operator. This figure corresponds to the normal activity of mining operations, without any exceptional works carried out.

Quantity of radioactive waste - metric tons	2016	2017	2018
Total mass of radioactive waste from operations either recovered or eliminated through approved channels or pending (interim storage)*	976	698**	772

* All the waste evacuated in authorized sector are to be taken into account, including if it is about a specific storage. It is for example in the case of waste of regular maintenance or muds, stored in an authorized mining dependence. The reporting of the quantities lower than 1 ton or 1 m³ is optional for waste having at least a stream of elimination, as well as reporting of any quantity lower than 100 kg or 100 liters.

** Correction of tonnages for 2017 related to the error for Orano Mining Canada



BIODIVERSITY

As a responsible mining company, Orano Mining attaches a great deal of importance to the protection and conservation of biodiversity. This is why, right from the exploration stage, Orano Mining takes action to minimize its impact on biodiversity as much as possible.

For example, in Mongolia the road network is optimized to ensure that the number of tracks used is kept to a strict minimum. These tracks are maintained on a regular basis to reduce the dispersal of dust which may collect on vegetation by the side of the road. Access to them is now sealed off when they are not necessary, to allow vegetation to grow back.

In the same way, the entire drilling process has been improved to reduce its impact on the ecosystem, by

installing optimized platforms, avoiding the need to cut down trees or at least allowing the number of trees cut down to be reduced. The drilling process itself is currently being improved to reduce consumption of natural resources, and of water in particular.

Migration routes of animals and livestock are also taken into account in the exploration program.

⇒ Taking action to protect biodiversity

Some mining sites are located close to zones which are rich in biodiversity. In 2018, we undertook studies and actions to preserve sensitive zones with third parties, such as local communities, consultancy firms, university specialists or nature conservation bodies.

In Mongolia, we are pursuing our project to replant saxauls, shrubs which are an iconic feature of the Gobi desert, in collaboration with a consultant who is an expert in the field.

In France, on a former uranium mining site located in the Cantal, preparations to make an old mining gallery safe revealed the presence of bat hibernation dens. The



decision was then taken to secure access to the site by installing a reinforced gate, which still allows the bats to pass through and enables the gallery to be preserved as a hibernation den.

Since 2016, Orano Mining has decided to include new indicators related to biodiversity and world heritage.

Thus, among the GRI's list of indicators, we have selected GR-304-4, deemed particularly relevant today for monitoring the potential impacts of our activity on biodiversity. GR-304-4 reports 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) and whose habitats are situated in areas affected by our activities, classified by level of risk of extinction:

- critically endangered;
- endangered;
- vulnerable;
- near threatened;
- least concern.

In the same way, we list UNESCO World Heritage sites around our sites and the actions we take to preserve them, especially when they are in close proximity to our sites.

These two indicators allow us to determine whether our activities are liable to pose a threat to certain plant and animal species or to World Heritage sites and to take the necessary measures to avoid harming them and to prevent their degradation.



IUCN categories for the Red list

Extirpated species	Species threatened with extinction	Other categories
EX: Extinct worldwide	CR: Critically endangered	NT: Near threatened (species close to threshold of threatened species or which could be threatened if specific conservation measures are not taken)
EW: Extinct in the wild	EN: Endangered	LC: Least concern (species for which the risk of extinction is low)
RE: Regionally extirpated	VU: Vulnerable	DD: Data deficient (species for which evaluation could not be carried out due to insufficient data)

⇒ An inventory was carried out in 2010 to cover the scope of our licenses

EXAMPLE

In Kazakhstan, in the KATCO subsidiary

The table below lists the species present in these the zones and listed in the IUCN Red book. We note that since then, employees of the company have spotted the great bustard (Otis tarda), a bird that was not observed during the 2010 inventory but is classified as Vulnerable on the IUCN Red list.

Name of species	Type	IUCN classification
Saiga tatarica	Plant	Critically endangered
Selevinia betpakdalensis	Animal	Deficient of data
Felis manul	Animal	Near Threatened
Gazella subgutturosa	Animal	Vulnerable
Mustela (Putorius) eversmanni	Animal	Least Concern
Circaetus gallicus	Animal	Least Concern
Otis tarda	Animal	Vulnerable, observed by employees

In Kazakhstan, there are 3 cultural heritage sites and 2 natural heritage sites on UNESCO's World Heritage List. The closest of these sites is located nearly 200 km from our surface leases.



⇒ A habitat classification study was conducted covering an area of approximately 100 000 km²

EXAMPLE

Canada, in the Athabasca Basin region

Located more than 400km away from our surface lease, the Wood Buffalo National Park was classified, in 1983, as a UNESCO world heritage site. One of the most ecologically complete examples of the North American Great Plains-Boreal Grassland ecosystem, it is home to a great concentration of migratory wildlife and an important wild bison population, as well as being a breeding habitat for the endangered whooping crane. Its landscapes, the large inland delta, salt plains, and gypsum karst are natural phenomena representative of their kind.



The survey of habitats which was carried out on the basis of the IUCN Red List and on a regional scale across the Athabasca Basin (100,000 km²) brought the inventory to 26 animal species classified as of Least Concern, 1 one species recognized as Vulnerable and one species as Endangered; but also 38 plants in the Least Concern category and one plant species classified as Vulnerable which may potentially grow in the region. At local level, within the perimeter of McClean Lake, including our surface leases, 1 Vulnerable animal species and one species of Least Concern were observed, as well as 7 plants of Least Concern. Within the perimeter of our surface leases themselves, very few of these species were actually observed.

The same inventories done under the Canadian Species at Risk Act (SARA) protocol indicate the potential presence of 7 Special Concern Plants plus 1 Endangered, 3 Threatened, and 5 Special Concern Animals. Surveys have found only two animal species of Special Concern in the local assessment boundary (watersheds) and no plants classified under SARA.



ENVIRONMENTAL STUDIES

The Mining BU conducts environmental studies throughout the life cycle of the mining and industrial projects, whether in response to regulatory requirements or voluntarily in order to better understand the impact of our activities.

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 must be submitted for public consultation to be approved by the local authorities.

These studies make it possible to map the impacts generated by a new project, improve understanding of the associated environment (e.g. biodiversity inventory), identify preventive or mitigating measures and offset measures to reduce risks at the source and define preventive measures to be incorporated into our facilities.

Though this is not an exhaustive list, a few examples of studies conducted across our different sites is provided below:

EXAMPLES

Niger, SOMAÏR

- VNOx (or nitrous vapors) project: after a feasibility study, new facilities have been built into the plant to improve the circuit for the retrieval and recycling of nitrous vapors. **This project, once implemented, made it possible to achieve a reduction of 6.7% in emissions of nitrous vapors compared to the previous year.**
- Study of technical optimization of conveyor to reduce emanation of dust in the leaching workshop.



Canada, McClean Lake

- Survey of vulnerable species and nesting bird populations
- Selenium and arsenic speciation studies
- Modeling of the accumulation of selenium in the tissues of fish populations
- Continuation of organic arsenic studies
- Tailings Management Facility (TMF) optimization studies (geotechnical, sedimentological, and geochemical modeling, planning)

Canada, remediated Cluff Lake site

- Update of the hydrogeological model around the former Claude open-pit mine and tailings storage
- Impact studies on the quality of sediments, on beaver dams, and on water quality
- Update of the site's detailed post-remediation monitoring plan



Mongolia, Badrakh Energy

- Census and study of movements of populations of mammals and ungulates
- Detailed survey on the density and habitat of mammal populations
- Detailed survey on the density and habitat of bird populations
- Third party study of the environmental monitoring program

Kazakhstan, KATCO

- Impact study of the Tortkuduk South mining project in progress



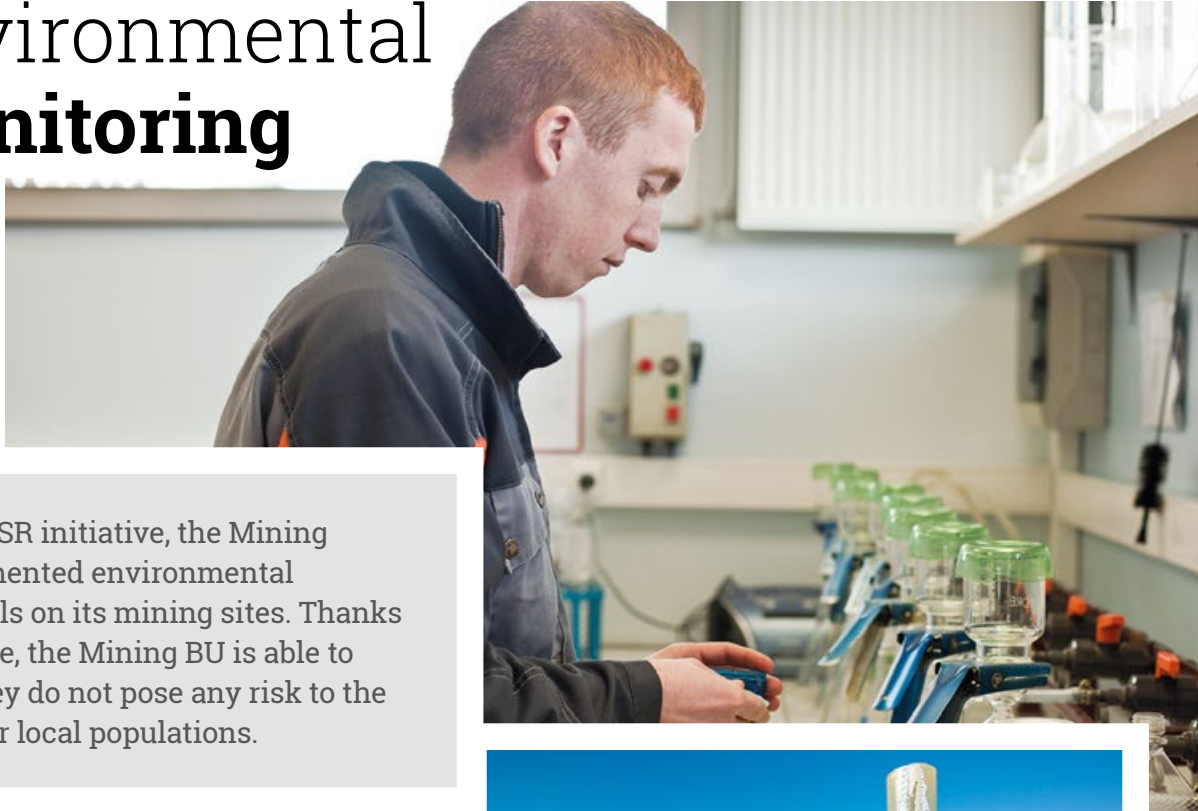
PROTECTING THE HABITAT OF BATS

The former mining galleries of the underground mines at Loubaresses and Anterieux in the Cantal are known for being bat dens. They are also used for hibernation by certain amphibians.

These galleries are part of the 246 former uranium mining sites in France for which Orano Mining conducts environmental monitoring. While carrying out preparatory works to make an old mining gallery safe, the decision was to preserve the bats' den and secure access to the site by installing a reinforced grille, sized and adapted to allow the bats to pass through. These measures first required the walls and slopes in a forest environment to be made safe with the installation of geotechnical wire nettings to contain any detachment of rocks.

This project carried out by our teams illustrates the complexity of mine remediation, which requires the safety of workers to be guaranteed while carrying out works, as well as ensuring the ongoing safety of the general public at all times, whilst protecting a rich and indispensable biodiversity.

Environmental Monitoring



As part of its CSR initiative, the Mining BU has implemented environmental monitoring tools on its mining sites. Thanks to this initiative, the Mining BU is able to ensure that they do not pose any risk to the environment or local populations.

Many different parameters are monitored in the air, water and ground. With the objective of ensuring that impacts of the activity on the environment are properly managed and being ready to act in response to even the slightest alert.

Air monitoring

Air monitoring chiefly consists in measuring exposure to ambient radioactivity, but gaseous discharges from ore processing operations are also monitored. Measurements are taken, depending on the site, of concentrations of gas either in the air or at the outlet of chimney stacks. Measurements of radioactivity are taken continuously, both at the site and in the nearby area, using specific dosimeters.

Water monitoring

We are running campaigns to monitor the quality and quantity of aquifers and surface waters using a piezometric monitoring system upstream and downstream of our activities.

Hydrological and hydrogeological studies are performed at all sites, well before mining operations begin. These studies allow a better understanding of the environment type and the composition of the natural water so that



we can adapt our projects accordingly. At all sites where it is necessary, the water is first sent through a treatment station before being released back into the environment in conformity with the environmental and health standards in force. Our experts are also studying the various water treatment methods to improve the environmental efficacy of the processes applied.

Monitoring of plants and the food chain

Sampling and analysis are regularly carried out in the food chain and on plants, including aquatic and land fauna, aquatic flora, the fruit and vegetables produced in nearby gardens, and the milk supplied by animals that have grazed in meadows near sites or drunk from receiving water courses.

Soil monitoring

Soil monitoring allows any zones where there are anomalies to be identified. If such zones are pinpointed, soil decontamination measures are applied to restore the zone to levels which comply with regulations.

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.



MONITORING OF ORANO MINING

STRUCTURES

Two types of structures are taken into consideration: Uranium tailing facilities dams and effluent storage ponds

Uranium tailing facilities dams

IN FRANCE

There are 9 structures of 15 to 65 m in height and 110 to 1,700 m in length but only one with the presence of a cover water (Bois Noirs Limouzat site). All these sites are remediated ones.

The structures are constructed using sand from the cycloning of tailings, or mining waste rock. Only the Bois Noirs structure (H max.: 42 m, L: 508 m) is considered to be a type A dam subject to internal monitoring and regulatory monitoring.

The other structures in France are subject to internal monitoring by Orano and are inspected by an external expert every 5 years.

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) Max. height/ length	Stored tailings tonnage (Mt)	Date of the last independant expert review	Safety factor*	Internal and external monitoring	Is there a remediation plan?
Bois Noirs Limouzat	St Priest la Prugne (42)	Closed	1958/1980	Waste rocks / Vertical	42/508	1.3	2018	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	2015	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	2015	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	2015	2.76	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	2015	1.69	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	2015	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	-	Inspection, maintenance, topo, flows / expert review (5 years)	Already remediated / Water cover (20 ha)
SOMAÏR	Arlit (Niger)	Operating	a/c 1971	Waste rocks / banco / Vertical	5 to 11/ 3,500	23	-	-	Inspection, pond levels	Small water cover and drying crust
COMINAK	Akokan (Niger)	Operating	a/c 1978	Waste rocks / banco / Vertical	5 to 11/ 1,400	18	-	-	Inspection, pond levels	Small water cover and drying crust

* According to geotechnical recommendation > 1.5



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

In addition, within the framework of the French national plan for the management of radioactive materials (PNGMDR), a working group defines the criteria to be taken into account to conduct a study of their long-term stability (3,000 years and sensitivity study up to 30,000 years).

INTERNATIONALLY:

In Canada and Niger, the structures, made of waste rock, are lower in height. In Gabon the remediated site is the only dam with a cover water. All these structures meet regulatory requirements and are subject to internal monitoring by the group, with certain structures undergoing inspection by an external expert.



Effluent Ponds

To store effluents, ponds are constructed as superstructures. They are subject to regular monitoring, on a daily or weekly basis, depending on the case concerned.

- **KATCO:** 3 ponds constructed out of sand, a material present on the site, and of around 5 m in height.
- **SOMAÏR:** 4 ponds are in operation, constructed out of waste rock of around 7 m in height.
- **COMINAK:** 6 ponds are in operation, constructed out of waste rock of around 7 m in height.

Internal audit

Since 2014, the Internal Audit Department of Orano has conducted two studies and issued recommendations concerning the organizational measures to be implemented for the monitoring of structures.

A notable effort has been conducted in recent years on sites to improve their monitoring in operational and organizational terms. The general state of structures is satisfactory.

Subsequent to the recent events which occurred in Brazil and in accordance with ICMM commitments, we provide details below of information concerning Orano Mining's structures and dams.

ACCIDENTAL SPILLS

Preventing accidental spillages is something our teams in the Mining BU have been working on for several years. Thanks to their efforts and the sharing of experience, these spillages are limited and are handled very swiftly and safely.

Environmental events are fed back at group level via a specific electronic tool known as AHEAD. The Orano group has also developed a new severity classification scale for near-events and environmental events which has been tested in the Mining BU.

During the course of 2018, accidental spillages (effluents, acid solution) related to our operations took place. They remained within the sites concerned and had no significant environmental consequences and no impact outside our sites. Corrective clean-up measures were taken at the sites.

One accidental spill occurred outside the perimeter of our sites, during a shipment of mining effluents from the COMINAK site in Niger to the port of Cotonou in Benin.

The spill was immediately brought under control with the support of teams from the site. This event did not have any impact on the environment.

This type of incident is subject to feedback and a lessons learned process which helps us improve our procedures and our practices.

INNOVATION SERVING

THE ENVIRONMENT

While our mining activities comply with regulations in force and follow the best practices in the sector under a continuous improvement approach, it is also our responsibility to implement scientifically-proven innovative solutions that are in line with the expectations of our stakeholders (authorities, associations/NGOs, employees, governments, the scientific community, etc.).

More specifically, the environmental issues on which research efforts are focused include:

- issues relating to water management and treatment,
- understanding, predicting and modeling contaminant migration over the long term,
- anticipating regulatory changes and the requirements of the authorities,
- developing new sampling and analysis tools to effectively manage environmental impacts.

Our expertise, applied on site through close collaboration with operating teams, has been developed thanks to our international teams of researchers and our college of experts, and in partnership with external bodies from academia and the professional world (the universities of Poitiers, Paris VI, Paris VII, Granada, Brussels, Manchester

FIND OUT MORE

Since 2014, actions relating to the circulars of July 22, 2009, and August 8, 2013 (the completion of environmental assessments and inventories of mining waste rock reused outside mining sites), and to the French National Plan for the Management of Radioactive Materials and Radioactive Waste (PNGMDR) (regarding the stability of dikes, water treatment, the effectiveness of coverings with respect to radon, waste rock stockpile surveys and the study of sedimentary accumulations downstream of sites) have been ongoing, resulting in a number of reports being submitted to the public authorities.

and Washington, and the Ecole Polytechnique Fédérale de Lausanne, as well as the CEA, CREGU and NAGRA).

“Envir@Mines” PROGRAM

Our teams of researchers and experts are currently working in the following fields under our “Envir@Mines” research and development program:

- the long-term future of processing waste in France, Niger and Gabon,
- the environmental footprint of waste rock in France under the French National Plan for the Management of Radioactive Materials and Radioactive Waste (PNGMDR),
- water treatment, notably in preparation for regulatory changes in France,
- understanding the long-term rehabilitation of aquifers used for in situ recovery in Kazakhstan and Mongolia,
- the development of new measurement technologies.



13 collaborative partners

9 theses defended

1 Accreditation to Supervise Research (HDR)

131 scientific communications

13 public reports

3 patent applications filed

Consult **the list of scientific studies published by our teams**



06



HEALTH, SAFETY AND RADIATION PROTECTION

WHY?

Our strength lies in the men and women who make up Orano. Our priority is to protect their physical and mental health. The success of group development plan relies on it.

OUR APPROACH

Our employees may be exposed to several risk factors that could affect their health, whether on industrial sites, in offices or during business trips where Orano Mining operates.

To maintain a high level of occupational health and safety, a great number of information and prevention actions are undertaken. The Orano group aims for excellence in occupational safety. Our permanent goal ultimately is to achieve zero lost-time accidents and zero impact of our activities on the health and safety of our employees, external staff and everyone living close to our sites.

OUR RESULTS IN 2018

2.8 mSv/year occupational radiation exposure for employees
0 employees exposed to a dose exceeding 20 mSv/year
 Lost Time Injury Frequency Rate: **1**

Health, Occupational Safety and Radiation Protection of Mining activities



The Mining BU has proactively appropriated and applied the 2017 - 2020 Orano policy to ensure the health and safety of its employees.

Refer to our **Safety Security Radiation Protection Policy 2017 - 2020** (available only in French)

The objective of the Mining BU is to harmonize our practices as much as possible and to apply international standards in the field, whilst rolling out the Orano group policy with the aid of the following four pillars:

Leadership and safety culture

To strengthen safety governance, we foster interaction in the field between management and employees and we organize a day dedicated to safety on all sites. We have a safety committee to meet at the highest level of the Mining BU and we implement a health, safety & environment and radiation protection action plan for each site.



In order to raise awareness on occupational health and safety on all sites, we have targeted actions concerning subcontractors, communication campaigns, mobilization to encourage our employees initiatives and participative safety visit.

We learn from our successes and from our errors by stepping up the analysis and sharing of operating experience and best practices.

Risk prevention

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

Compliance with fundamentals

We are implementing the 5 safety anchors and 7 safety standards common to the whole Orano group, and we are harmonizing practices. We are also implementing procedures specific to the mining business, and strengthening management systems at the sites. At the same time, dedicated projects are implemented for the most accident-prone activities (health, safety and industrial risks).

Organization and skills

We develop Health, Safety, Environment and Radiation Protection skills among managers and set individual safety targets.

Audits of medical facilities are also conducted to better organize and optimize health schemes.

Each local action plan is challenged by the team from Orano Mining's Health, Safety, Environment and Radiation Protection Department to ensure coherence, resources, leadtimes etc.

RISK FACTOR PREVENTION

Our employees are exposed to different categories of health risk, including conventional risks that may occur on an industrial or mining site, but also the exposure to ionizing radiation. They can also be exposed to ionizing radiation which is intrinsic to uranium ore mining and the production of uranium oxides (U3O8 - Yellow Cake).

Our employees may also be exposed to psycho-social risks, noise, dust, or chemical substances that may potentially lead occupational illnesses.

This is why risk prevention is among our priorities.

Other factors may be directly linked to risks that are endemic in the country.

Conventional risks

(handling operations, working at height, driving, electrical risks, etc.)

Exposure to ionizing radiation

Psycho-social risks

Chemical risks

Medical event
(sun, heat, cold, endemic diseases, etc.)



Health and Radiation Protection



OCCUPATIONAL HEALTH

We deploy, through our health policy, a health service in all the countries where we operate by ensuring **prerequisites for occupational health and healthcare**. We also provide support for for medical evacuations for local people and expatriates.

In the course of our activities, a range of provisions are designed to maintain a high level of occupational health

Medical monitoring

Occupational medicine

- Each site has set up an organization for the staff medical monitoring, starting with a pre-recruitment medical examination and continuing with periodic check-ups (whose frequency is determined by the risks associated with the job), always complying with the regulations of the country
- Immunization monitoring is organized according to the country regulations.

- Employees receive regular first aid training and refresher courses.

Healthcare

- Each site has its own health organization, with medical standards. The healthcare process is defined, with procedures and flow diagrams for medical evacuations.

Preventive health is also conducted, through permanent health surveillance, regular communications (country health sheets, pathology data for endemic diseases, medical alerts). A quarterly "Advice for travelers" training session is organized for staff leaving on international missions.

Workstation **risk assessments** are taken into account on each site in accordance with local country regulations and the Orano health, safety and radiation protection policy. Special attention is also paid to psycho-social risks.

Health Observatory

The Health Observatory deployed in Niger (Health Observatory for the Region of Agadez - OSRA), were set up to carry out post-professional monitoring of retired employees of SOMAÏR and COMINAK likely to have been exposed to ionizing radiation in the course of their activities.

The Health Observatory is a transparent, independent initiative run on a multi-party basis (involving the mining companies, the states and civil society in Niger). Were cases of occupational illnesses attributable to exposure to ionizing radiation to be brought to light, care provision would be provided by the competent body of the country in question or, failing that, by the Health Observatory.

The medical consultation that forms part of this post-professional monitoring is organized every 2 years and includes an interview with a doctor, a clinical examination, a chest x-ray and a blood test. It is carried out by independent doctors whose services are provided to the Observatory.

At the end of 2018, in total more than **3,862 post-professional monitoring consultations have been carried out for former employees of SOMAÏR and COMINAK** in Niger and no occupational diseases related to exposure to ionizing radiation have been declared.

EXAMPLES OF ACTIONS IMPLEMENTED IN 2018

Kazakhstan:

- Review of our health organization, of medical evacuation procedures and support to our subcontractors

France:

- Deploying the addiction detection policy on our sites in France and assessment on our sites abroad.

For more information: **Safety Security Radiation Protection Policy 2017 - 2020**
(available only in French)



CANADA

In October 2018, Orano Canada received an award from the Chamber of Commerce in the Canadian province of Saskatchewan for its sustained efforts in psychosocial risk prevention.

In Canada, psychosocial problems are a topical issue. They are one of the causes of work disability that increases absenteeism and leads to significant financial loss.

« *For Orano Canada, this is an important issue, because of the isolation of the residents of northern Saskatchewan who represent 52% of employees at the McClean Lake site. For them access to care services is very limited* », commented Ian Pollock, Senior Training Advisor.

To address the situation, Orano Canada has adopted a proactive and preventive approach since 2017. An assessment of the situation has been carried out with the support of a specialized service provider. In parallel, awareness sessions were organized during Safety Day and a survey conducted with employees has helped to better understand the situation and initiate an action plan.

In 2018, several prevention initiatives were implemented: 50 people were trained to be able to identify the warning signs of unwellness, and to have the tools enabling them to support an individual with a remedial approach upstream of a crisis. In addition, some 300 employees took part in courses organized on stress management, the foundations of well-being and self-help methods.

In 2019, other broader topics related to mental health will be addressed through training (intercultural training, the power of language in the workplace), and awareness-raising will be increased on the use of the family assistance program for Orano Canada employees. To date, 227 employees at the McClean Lake site have participated in a respectful workplace communication course which is also part of this approach to psychosocial issues and about respecting and taking care of ourselves and each other at work.

Through these actions, **Orano Canada has demonstrated its commitment and determination to recognize and invest in the prevention of psychosocial risks and well-being at work.**

EMPLOYEES RADIATION

PROTECTION

In terms of radiation protection, as stated in the group's nuclear safety charter, Orano is committed to a proactive approach and emphasizes the priority it places on risk management based on the environmental safety and health, safety and radiation protection policies.

Orano is committed to keeping personnel exposure to ionizing radiation in its facilities as low as reasonably achievable in application of the ALARA principle (As Low As Reasonably Achievable), and has adopted a continuous improvement program to that effect.

OUR RESULTS IN 2018

0 employees exposed to a dose exceeding 20 mSv/year

2,8 mSv/year occupational radiation exposure for employees

16.6 mSv maximum radiation exposure within the Mining BU

2.5 mSv/year occupational radiation exposure for sub-contractors

French regulations - dose limit applied on all sites over a rolling 12 month period

** Timeframe 07/2017-06/2018*



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.



In countries with less stringent legislation, Orano is committed to apply the International Commission on Radiological Protection recommendations which sets a limit of 20 mSv/yr (over a rolling 12-months) as the maximum individual dose received by workers exposed to ionizing radiation in its facilities.

Radiation protection is taken into account from the design phases of projects. Facilities are built to limit exposure at workstations. Zoning, ventilation and structural components are the most important factors for sound design.

In the uranium mining sector, as in other sectors, such as the nuclear industry, some fields of medicine, veterinary medicine or research, ionizing radiation are an integral part of an employee's everyday work.

Exposure to ionizing radiation is a form of occupational risk like any other, such as exposure to noise or risks of falls from height. It does however have a number of features which make it specific, in particular that of being an invisible risk that requires high-performance equipment to measure individual exposure to it.



The radiation protection of workers includes the whole coherent set of activities with the purpose of preventing and controlling any risk of exposure of workers to ionizing radiation by guaranteeing adapted and relevant dose rate monitoring under all circumstances.

Therefore it is necessary not only to assess occupational risks of a radiological nature and to improve working conditions to optimize the exposure of personnel, but also to foster a culture of radiation protection by offering training and expertise.

ALARA

ALARA is the acronym for "As Low As Reasonably Achievable". It is one of the three main fundamental principles of radiation protection. The purpose is to reduce worker exposure to the lowest level possible, taking into account technical, economic, and social factors. The group adheres to this approach and applies this principle throughout its facilities.

Following a change in the duration of underground mining shifts introduced since April 2018, impacts on the radiation protection of the workers have been studied. Thanks to sustained efforts on the control of atmospheric radon, dust and ambient gamma, dose targets for underground work have been met, in this demanding operational context.

EXAMPLES OF ACTIONS IMPLEMENTED IN 2018

Niger:

- In the underground mine at COMINAK (Niger), equipment has been installed to monitor the activity concentration of radon. This ensures that workers are directly made aware of the presence of radon in the atmosphere and makes it possible to intervene as rapidly as possible should the ambient conditions deteriorate.



Kazakhstan:

- At KATCO, several significant radiation protection measures conducted in 2018 have contributed to the necessary optimization process and made it possible to reduce average and maximum dose values. Measures have included the intensification of meter plans and the strengthening of preventive maintenance on the most radiologically sensitive mill components.





Canada:

- Despite the significant uranium content of the ore processed, the radiation protection measures have made it possible to achieve very low dose levels.



These initiatives are considered as best practices regarding international standards.

For more information on

-  Ionization radiation
-  Radiation protection

 **KAZAKHSTAN**

At KATCO, preventive maintenance helps to further limit operators' exposure to ionizing radiation.

Since 2016, KATCO, Orano's joint venture in Kazakhstan, has been implementing a preventive maintenance program at its Tortkuduk plant, focusing on equipment which is strategic for the uranium treatment process, such as the calciner, crystallizer and the packing unit.

Not only does this program improve the overall performance of operations, but it has also proven very beneficial in reducing the exposure of operators to radiation.

Even though exposure of KATCO staff is at a low level thanks to the ISR extraction method used (average exposure of a KATCO employee in 2018 was 1.5 mSv and the maximum dose at end-2018 was 3.05 mSv), the downstream part of the process where employees carry out the precipitation, drying, calcining and conditioning of the uranium are the areas where the radiological challenges are the most significant.

It was therefore important to reduce the number of interventions and their duration in order to reduce exposure in the plant. Furthermore, the calciner building has been modernized to better control the accumulation of dust on the ground and facilitate decontamination services. The procedures followed by the operators have also been revised to contribute to the increased radiological cleanliness of the area.

In this way, between 2016 and 2018, KATCO reduced operators' average radiation dose by 30% and the maximum dose by 45%.



Occupational Safety



A COMMITMENT AT ALL LEVELS

WITHIN THE COMPANY

The occupational safety objectives of Orano Mining are to ensure the prevention and control of all industrial risks related to our activities, both for our employees and our external staff, through:

- daily involvement of our managers in strengthening the safety culture of our teams;
- deploying applicable safety standards in all entities;
- evaluating risks in all our activities using a gradual approach and a common methodology;
- involving all employees in the detection and the elimination of dangerous and risk-prone situations;
- collecting and exchanging best practices in occupational safety;
- sharing the experience feedback from our accidents among the entities of the group and with our industrial partners.

A SPECIFIC GOVERNANCE

STRUCTURE

Meeting 2 to 3 times a year, it is both a think-tank and an executive body. A safety committee has been created. It is made up of the main directors of the Mining Business Unit.

The Safety committee is responsible for planning actions (roadmap), the supervision of their application, as well as for monitoring them and ensuring continuous improvement in safety results.

The safety representatives of Orano Mining are responsible for deploying these actions in the territories where it is based, with the assistance of managers and all employees who are responsible for their implementation. This occupational safety policy applies to everyone, including employees of Mining BU subsidiaries, sub-contractors or visitors.

Every year, with a view to achieving continuous progress towards the goal of zero accidents, the safety committee of the Mining BU sets intermediary objectives, which apply to everyone.

In 2018, the Orano Mining Safety Committee established four priority actions:

- **Action N°1:** Deploy the safety culture improvement training with a focus on supervisors / team leaders
- **Action N°2:** Improve and reinforce feedback with systematic sharing of High severity POtential (HIPO) events.
- **Action N°3:** Implement the Pre-job Briefing.
- **Action N°4:** Conduct an assessment of lifting/handling operations.

MAIN ACTIONS IN 2018

- + 1, 200 employees were trained to safety culture
- The pre-job briefing safety standard applied on the sites
- Strengthening of the application of LOTO procedures
- Follow-up of action plans resulting from the processing of HIPOs with more than 80% closed out



THE TARGETS ASSIGNED FOR 2018:

0 fatal accidents.

LTIFR < 0.7 i.e. no more than 10 lost-time occupational accidents.

TRIR < 3.5 i.e. no more than 43 accidents without lost time.

SAFETY PILLARS AND STANDARDS

In 2018, the Orano group has updated its program devoted to safety culture, involving all employees and subcontractors.

The graphic illustrates the safety pillars and standards. It features a large '5' for 'anchors' and a large '7' for 'standards'. The anchors include: Safety Equipment Worn, Protected Mechanical Handlings, Secured Workers at Height, Pedestrian and Vehicle Traffic Secured, and Safe LOTO (Lock Out - Tag Out). The standards include: 7 standards (represented by a rule or best practice), 5 minutes safety, and 5 (represented by a rule or best practice). The Orano logo is at the bottom right.

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

5 anchors:

- Walking safely
- Work at height with protection
- Secure lifting and handling area
- 5 minutes safety
- Smoking only dedicated areas
- Floor free of loose cables

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

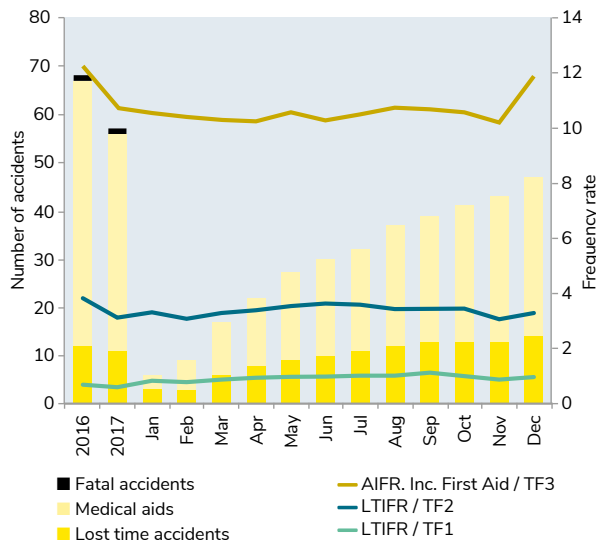
7 standards:

- Safety belt in vehicles
- Alcohol and drug prohibition
- Hold on to handrails
- Pictogram strict compliance
- Safety induction and training
- Personal protective equipment

2018 RESULTS

In 2018, the safety results of the Mining BU show good progress, with no fatal accidents, a TRIR / TF2 on target, a good rate of reporting of near-misses and a severity rate for Orano employees at 0.02. However, the objectives overall were not reached with a lost-time accident frequency **rate of 1** (LTIFR), which corresponds to 14 lost-time accidents for the year.

Orano Mining accidents and Frequency Rates 2018



Main risks of lost-time occupational accidents

The origins of main risks accidents are

- | | |
|---|---------------------------------------|
| 36% Driving light and heavy vehicles | 7% Electrical risk |
| 16% Fire/Explosion | 6% Others |
| 11% Work at height | 5% Moves on an uneven ground |
| 8% Chemical substances | 3% Prickly and cutting objects |
| 8% Mechanical risk and risk of getting crushed | |

DEFINITIONS

LTIFR / TF1: Fatalities, and lost time accidents x 1 Million / hours worked over a rolling 12-month period

TRIFR / TF2: Fatalities, and accidents with and without lost time x 1 Million / hours worked over a rolling 12-month period

AIFR including first aid / TF3: Fatalities, and accidents with and without lost time (including medical care and first aid) x 1 Million / hours worked over a rolling 12-month period



HIPOS: A NEW KPI FOR OCCUPATIONAL SAFETY

Since 2016, Orano Mining has been implementing an innovative indicator for safety monitoring. It provides for systematic analysis of any event with high severity potential, with the aim of anticipating and preventing any accident liable to have serious or fatal consequences.

Thanks to a safety management system focused on continuously reinforcing prevention actions at all levels of the organization, the Mining BU has seen a significant reduction in the number of accidents over the past ten years. Nevertheless, despite a clear improvement in the frequency of occurrence of these accidents, their seriousness persists: the Mining BU suffers a fatal accident almost every year.

« We have surveyed the history of events over several decades to examine their typology and be able to intensify prevention actions, » explains Emilie LACROIX, the BU's Director of the Health, Safety, Environment and Radiation Protection. « We set up a new safety monitoring indicator at the end of 2016. It focuses on identifying and analyzing events with a high potential for severity - HIPO's - that can lead to serious or fatal consequences ».

« This approach supports us in strengthening the safety culture of our operators and managers by focusing on the consequences, the key issues and associated prevention. The main benefit sought is above all human, to protect the health and safety of our employees, but it also contributes to the improvement of operational performance, » underlines Emile LACROIX.

Today, each HIPO event undergoes a root cause analysis (including for Human and Organizational Factors - HOFs) and is subject to an action plan. Particular importance is also attached to systematic sharing of experiences between sites and to the resulting action on prevention. In 2018, the focus was placed on the effectiveness of their implementation in the field within the deadlines set.

07



MINE CLOSURE

WHY?

Mining site remediation and mine closure are integral parts 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.

OUR APPROACH

Remediation is taken into account right from the exploration and development phases of the project. Although some remediation work is carried out while the mine is in operation, and studies are updated throughout the active period, most of the remediation work takes place when mining operations end due to depletion of resources or for economic reasons. In the mine closure process, beyond the technical parameters, it is also essential to address social and societal aspects, to mitigate the socio-economic effects of the closure. To do so, Orano Mining is attached to reconverting former mining sites to give them a new lease of life.

OUR ACTIONS IN 2018

France Mining Closure:

- Regrouping of waste rock: 90% of works carried out to date - completion in 2019
- Site reconversion accelerated: 7 new projects awarded under a Renewable Energies request for proposals
- Brainwork launched on the sustainable and diversified management of the Limousin forest (more than 500 hectares)

International Mining Closure:

- Niger: beginning of the detailed design study for COMINAK remediation
- Kazakhstan: remediation plan review launched to include future installations

OBJECTIVES OF MINE REMEDIATION

The main objectives of a remediation plan are as follows:

- Ensure long-term stability in terms of public health and safety;
- Minimize residual impacts to levels that are as low as reasonably possible (ALARA);
- Limit the land surface subject to usage restrictions;
- Successfully integrate the site into the landscape of its environment in order to preserve local

biodiversity and allow for the site to be reused depending on the level of easements;

- 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.

The different remediation phases from a technical standpoint

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

STUDIES

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

Discover the video **"Remediation, a question of improved forward planning and cooperation"**
- Cluff Lake remediated site



MINING WORKS

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

For underground mines, the aim is to ensure the stability of the works and to seal off access to all pit bottom to ground level connecting structures: pits, cross-cuts, ascending and descending shafts. Stability calculations are done for works close to the surface and, depending on their results, reinforcement works may be conducted.



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

In the case of ISR (in situ recovery) operations, particular attention is paid to the quality of the water table in which the mined deposit is located. In general, regulations require that water quality be restored to a level close to

Watch the video of **Philippe Crochon** on **Waste rock and mining tailings**



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: such as the headframe, loading hoppers, etc. Some buildings (former offices and workshops) may be kept to allow a new activity to be developed on the site.

TAILING STORAGE

They are stored in former open-pit mines, in ponds enclosed by containment dikes or behind a tailing dams blocking a thalweg (valley, former river bed). These storage areas may cover tens of hectares and hold millions of tonnes of tailings. These pose a major challenge when it comes to remediation.

The remediation of tailings storage areas: given their dimensions and the tonnages involved, the storage areas formed during the operating period of plants are kept in place at the end of operations. A cover, generally in solid form, is placed over the tailings to form a geo-mechanical and radiological protective barrier, with a low level of permeability making it possible to limit risks of intrusion, erosion, dispersion, infiltration and radiological exposure of surrounding populations. This cover, of around 2 m thick, is, where possible, made of the materials available on site (waste rock from mining), creating a topography favorable to the proper management of meteoric waters and taking account of risks of future settling of the ground.

A final covering layer of topsoil can be added to allow the site to be revegetated or it can also be covered by a cover water, which offers considerable radiological protection, in particular with regard to air quality.. Tests are carried out before the start of works to check the effectiveness of the chosen materials, optimize the thickness and the geotechnical characteristics of the cover.

It is worth noting that one of the benefits of the ISR method of mining is the absence of tailings to be managed.

Each tailings storage area is monitored in a way which is adapted to the particular challenges of each of the sites concerned. These are ICPE-classified environmentally regulated storage facilities (ICPE = Installation Classée pour la Protection de l'Environnement) and therefore covered by the French Environmental Code.

More information on **waste rocks and mining tailings**



MONITORING OF SITES

The role of the mining operator is to limit the impact on populations and the environment to a level that is as low as possible and in regulatory compliance and to verify this through systematic and regular monitoring. This monitoring involves checking the ways in which uranium and its decay products, as well as various other substances related to mining activities, such as drained-off acid, may be transferred at sites and in the surrounding area. The monitoring network established concerns the checking of water (underground and surface water), the atmosphere (dose rate, radon, dust) on site and in its immediate environment, bio-indicators (sediments, aquatic plant life) and the food chain (samples of vegetables, fruits, milk, and fish taken close to sites). If necessary, waters originating from mining works and storage areas are treated to correct one or more of their radiological and chemical characteristics before being released into the surrounding environment.

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



ENVIRONMENTAL MONITORING IN FRANCE:

+ 6,500 samples & **30,000** analyses are performed on air, water, and bio-indicators.

€ 6 million / year on water treatment, monitoring and maintenance of former mining sites

€ 3-5 million / year for waste rock/radon management projects, the renovation and improvement of water treatment stations, and additional remediation works



PHOTOVOLTAIC POWER STATIONS ARE BEING LOCATED ON FORMER MINING SITES

Orano Mining has been committed to sustainable development for some years now. The Orano group is now highlighting the complementarity between nuclear and renewable energies and contributing to the COP 21 goals, while giving a second life to former mining sites.

By partnering with project sponsors, Orano is promoting the set-up of photovoltaic farms on former mining sites and tailings storage facilities.

Today, 4 photovoltaic power stations are already in production on former mining sites remediated by Orano. In 2018, the Soumont-Le Bosc site in the south of France hosted its second photovoltaic plant over an area of 6 hectares. The total production of the site is today equivalent to the consumption of 9,000 households.

The Group's objective is to have 16 photovoltaic farms in operation in France by 2022, covering an area of nearly 200 hectares, with a maximum power output of 150 MWp and producing the equivalent of the average consumption of around 70,000 households.

In selecting the sites and in order to achieve a rational, diversified and balanced management of its former mining sites, the group rules out the most environmentally sensitive areas.

For the next 12 projects, Orano undertakes to prepare the necessary documentation in conjunction with the project sponsors; This includes drawing up applications for withdrawal from mining regulations (for former mining sites), applications for the establishment of public easements (on facilities classified for environmental protection - ICPEs) technically demonstrating (from a radiological, hydraulic and geotechnical point of view) the compatibility between a photovoltaic project and a tailings storage facility, so as to be able to submit the administrative files requesting the operating modifications for ICPEs, and validating the associated environmental, social and landscape impact studies.

Management of mine closure: **major challenges of today and tomorrow**

We would like to offer you the opportunity to better understand the main environments in which we work and the principal challenges we encounter in our scope of work.



PLANNING FOR THE REMEDIATION OF A MINING SITE IN OPERATION FOR 15 YEARS
Example in Kazakhstan

PLANNING THE REMEDIATION OF A MINING SITE IN OPERATION FOR MORE THAN 50 YEARS
Example in Niger



CHALLENGES

- Start remediation while mining operations still in progress
- Management of waste generated by mining operations
- Model the overall behavior of aquifers under remediation

- Remediate a site with a history of several decades in a desert area
- Social and societal impact of the closure, in particular for the town of Arlit and Akokan



IDENTITY CARD

KATCO SITE, KAZAKHSTAN

- Creation of joint venture between Orano (51%) and KazAtomProm (49%) in 1996
- The first uranium mining operation in the world to use the ISR technique
- Total aggregate volume of more than 35,000 tU produced since 2006
- Mine in operation with production of 3,212 tU in 2018

COMINAK SITE, NIGER

- Site mined since 1978
- Mining of uranium deposits in underground mine workings: depth 250 m, 260 km of galleries) then dynamic and static processing plant
- Aggregate production of some 70,000 metric tons with annual target of 1,128 tU in 2018



ACTIONS

MINE IN OPERATION AND REMEDIATION WORK ON SITE

- R&D program to confirm and speed up the remediation of the aquifers tested on-site, mainly through natural mitigation
- In 2018, startup of a detailed cost assessment

MINE IN OPERATION AND IN-DEPTH REMEDIATION PLAN

- Site subject to environmental monitoring
- Validation by the authorities of the remediation plan with definition of remediation options for each sector of the site
- Preliminary design phase in 2017
- Detailed basic design for remediation in progress with study of technical, labor relations and social aspects



ANTICIPATING REMEDIATION RIGHT FROM THE FEASIBILITY STUDY PHASE

Example in Mongolia



PREPARING THE TRANSFER OF A REMEDIATED SITE TO A SUPERVISORY AUTHORITY

Example in the USA



CHALLENGES

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

- Transfer of a remediated site to the U.S. Department of Energy (U.S DOE)



IDENTITY CARD

MINING PROJECT

- 2018: 3 exploration licenses and 3 mining licenses (Umnut, Dulaan Uul and Zoovch Ovoo)
- 60,809 tU of resources estimated at end-2018
- ISR (In Situ Recovery) pilot conducted in 2010/2011 at the Dulaan Uul site
- Construction and operation of an ISR pilot (extraction + processing) on the Zoovch Ovoo site between 2017 and 2019
- Aim of the pilot: to confirm and improve the technical and economic conditions of the project and, eventually, at the end of the feasibility study, transform our resources into reserves

AMERICAN MINES

- 2 main sites: Lucky Mc & Shirley Basin, mined from 1953 to 1993
- Open-pit mine, underground mining works with processing plant by alkaline leaching (first industrial application in the USA)
- More than 27,000 tonnes produced and 20 million tonnes of tailings



ACTIONS

REMEDIATION PLAN

- Periodic monitoring through a network of piezometers
- Remediation of drilling platforms
- Study for dismantling of the industrial facilities and well fields
- R&D Program: demonstration of natural mitigation in aquifers
- Hydrogeological studies
- Plantation of Saxauls (protected local trees) in remediated areas

MONITORING

- Full remediation and transfer of site to the U.S. Department of Energy (DOE)
- Supervisory authority: US Nuclear Regulatory Commission (NRC), supervising monitoring of the site through the issuing of a license
- Monitoring of the storage of tailings: Lucky Mc (5 boreholes), Shirley Basin (14 boreholes), all analyzed 4 times/year; parameters analyzed: level of water, pH, temperature, heavy metals, uranium, radium and thorium



CONDUCTING MONITORING AND OVERSIGHT OF REMEDIATED SITES

Example in Gabon

- Conducting environmental monitoring of a site closed since 1999
- Reconstruction of 201 dwellings for the local population following inspections and the detection of a radiologically contaminated dwelling in the former mining town, conducted in cooperation with the Gabonese State

COMUF REMEDIATED MINE

- 5 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 tonnes of ore extracted at 3.73%
- Production of Yellow Cake: 26, 600 tons

MINE IN OPERATION AND REMEDIATION WORK ON SITE

- R&D program to confirm and speed up the remediation of the aquifers tested on-site, mainly through natural mitigation
- In 2018, startup of a detailed cost assessment



PROVIDING A SECOND LIFE FOR A REMEDIATED SITE

Example in France

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

REMEDIED MINE OF BOSC-SOUMONT

- Site in Hérault mined from 1959 to 1997, and remediated between 1998 and 2002
- Open-pit mine and underground mining works, ore processing plant
- 5.1 million metric tons of ore extracted
- Production of Yellow Cake: 14,630 metric tons
- Site reconverted into a regional industrial park (Parc Régional d'Activités Economiques, opened in 2010), providing premises for a recycling company and the installation of a photovoltaic facility (commissioned in 2014)

SITE RECONVERSION AND COMMUNITY INVOLVEMENT

- Regional industrial park (Parc Régional d'Activités Economiques Michel Chevalier), located on the area of the former quarry since 2010, with a total surface area of 120 ha, is now home to three companies, working in a variety of industries: packaging, metal industry and laser-cutting of stone
- Inert waste recycling company located in a former Open-Pit Mine
- Photovoltaic commissioned by Engie Green in 2014:
 - 21 hectares
 - Capacity of 9 MWc = the annual electricity consumption of around 6,000 households
- Construction of a second photovoltaic facility by Engie Green currently in progress:
 - Commissioned in 2018
 - 6 hectares
 - Capacity of 5 MWc = the annual electricity consumption of around 3,000 households
- Project for the installation of a third photovoltaic facility by NEOEN to be commissioned in 2022:
 - 8.4 hectares
 - Capacity of 3.5 MWc = the annual electricity consumption of around 1,910 households

08



OUR EMPLOYEES

WHY?

People are on pillar of the group's strategic plan.

OUR APPROACH

Anticipating future needs in terms of skills and developing our employees through mobility between disciplines and countries is the aim of our policy as well as strengthening professional and gender diversity. We also offer high quality training both in the technical and managerial fields.

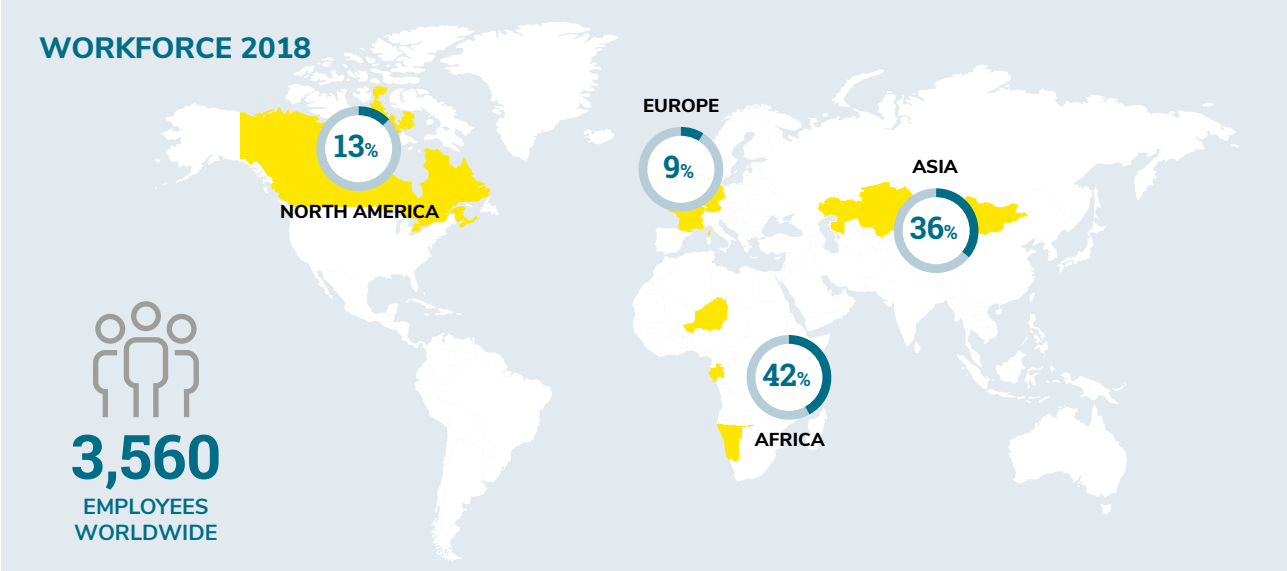
OUR RESULTS 2018

- **3,560** employees
- **Almost 95%** are permanent
- **95%** of our employees are from the host country
- Our Mining College: **32 theoretical and practical training courses delivered**

Management skills



Region	Permanent		Tempory	
	Women	Men	Women	Men
Europe	105	188	12	10
Africa	85	1,354	0	58
Asia	198	1,034	8	65
North America	102	298	13	30
TOTAL	490	2,874	33	163
OVERALL TOTAL	3,364		196	





More information:
www.orano.group



The Master Plan defines the strategy of the Group, the BU and the functions.

The content of this chapter addresses provisions implemented for all Mining Business Unit employees with the exception of points of detail that are specific under the French regulations applicable to Orano Mining as a company governed by French law.

In 2018, its implementation within the human resources function made it possible to ensure that all the key talents and key positions in the organization were given special attention, particularly in terms of training and support.

Each year, every employee benefits from a performance review, and sets objectives for the coming year.

Over the 2018-2019 campaign, a performance review was held for 100% of the staff in France.

Following these interviews, specific meetings called people reviews are organized between managers and HR to examine the potential and career development prospects of their staff. The resulting action plans make it possible to define training pathways and succession plans for "Key Positions" in all the BU's countries, thus safeguarding organizational flexibility over time.

ACCESS TO TRAINING

Training remains one of the main ways of adapting employees to the ongoing requirements of their jobs. In France, Niger and Kazakhstan, a training plan is drawn up for each employee every year.

The managerial and change management training programs were a priority in 2018 and they have been deployed in all the countries where the BU operates. Some courses bring together employees from different sites and countries.

Average number of hours per employee in France

	Women	Men
Engineers and managers	31.15	27.31
Administrative staff, technicians and supervisors	25.59	25

LEARNING PROGRAM

Created in January 2018, this program is aimed at a pool of employees identified as "talents".

Its aim is to strengthen their knowledge of Orano, the Mining Business Unit and its different sites, and to help them boost the development of their internal network. In 2018, two sessions were held, each involving 25 trainees from all countries of the BU.

MINING COLLEGE

The Mining College of Orano's Mining BU offers training courses in technical areas, health, safety and radiation protection, CSR and remediation to employees of Orano Mining and Orano, in France and on our subsidiaries' sites (Canada, Kazakhstan, Mongolia and Niger).

When it was founded in 2006, the aim of the Mining College was to train and develop the professional skills of engineers newly recruited by Orano Mining

Today, our needs have evolved, and the Mining College supports the maintenance and development of technical skills in our core businesses, and, above all, the mining lifecycle from exploration to mine closure

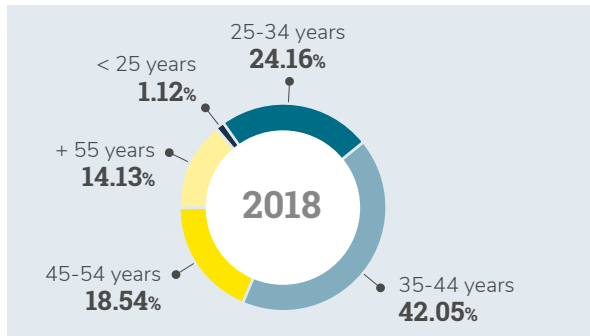
The Mining College is aimed at mining engineers, managers and technicians in both technical and support disciplines who wish to bolster their knowledge.

The mining college has

- 28 training courses provided in 2018 (18 in France and five at subsidiaries) to 246 trainees
- 32 theoretical and practical training courses, organized into 2 levels ("fundamentals" & "advanced"), designed and facilitated by Orano Mining employees, experts and specialists in our activities

AGE DIVERSITY

Age distribution (Worldwide staff)



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

For more than ten years, the group has been committed to promoting work-study programs, offering annual apprenticeship. In 2018, France hosted 20 employees on work-study contracts for periods ranging from 1 year to 3 years.

The Group is committed to a work-study contract rate representing 5% of the total workforce. At the end of 2018, the rate for the Mining Business Unit in France was running at 7.7% of the workforce.

TURN OVER

In 2018, in a difficult market context, the control of employee numbers and the end of the Voluntary Departure Plan in France and Niger have enabled Orano Mining to adapt the workload while maintaining and developing skills.

Countries	Entries	Departures	Turn over
Canada	49	49	11.06%
France	24	40	10.32%
Kazakhstan	91	88	7.50%
Mongolia	27	5	14.41%
COMINAK	9	129	9.62%
SOMAÏR	19	188	14.14%
Total	219	499	10.08%

Turnover rate =
$$\frac{[(\text{number of departures} + \text{arrivals}) / 2]}{\text{Number of employees on January 1}} \times 100$$



YOUNG PEOPLE ARE MORE THAN WELCOME ON OUR McCLEAN LAKE SITE

Orano in Saskatchewan encourages the recruitment of employees living in the communities in the north of the province near the McClean Lake mill site.

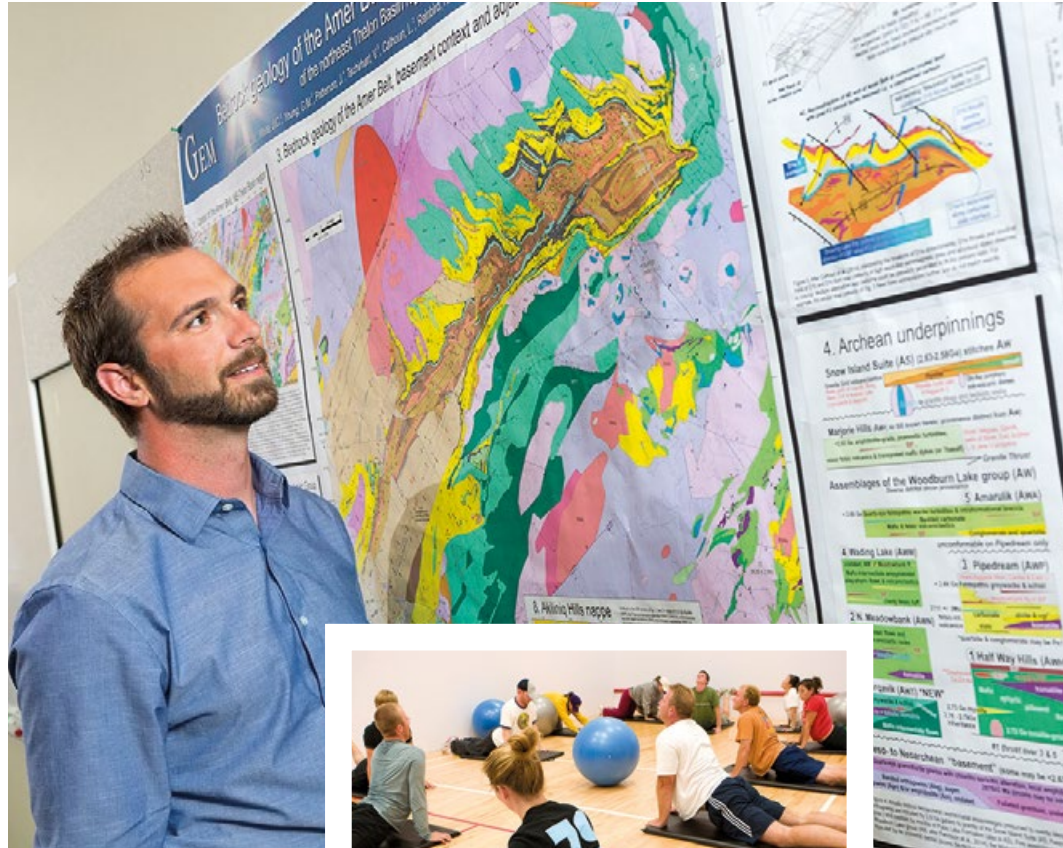
The aim is twofold: to secure recruitment needs, whilst equally playing a positive role in terms of local socio-economic activity.

To achieve this, a major training program was deployed between 2012 and 2018: of the 91 young people trained, 80 were hired at the McClean Lake mill. Today, a new program is in place to enable young people from the Athabasca Basin communities to familiarize with the profession of Environmental Technician. At the end of a one-year practical training period, the apprenticeship continues in a technical institute to validate the environmental diploma. During this time, the apprentice is also taken on by the McClean Lake site for an internship or seasonal work.

The McClean Lake site currently has 11 employees devoted to environmental monitoring and taking water, air, and soil samples from more than 300 locations around the site. The job ideally suits those who love the outdoor life, as is the case for Jennifer Noey, the first apprentice to go through the program. « I enjoy hiking, fishing and camping. Also, working at McClean Lake allows me to spend more time with my brothers, who have also been taken on by the mill ».



Quality of life at work



QUALITY OF LIFE AT WORK

Programs for work-life balance

The work-life balance holds an important place in the Quality of Life at Work agreement. Following the signature in 2008 of the parenting at work charter, several changes have been made: a pre- and post-maternity leave review has been introduced, and pay is continued during paternity leave.

Conventional provisions currently in force within the Mining Business Unit and in the Group favor its development. Provisions on parenting are one example. The exercise of parental responsibility must in no way constitute a barrier to access to certain positions or functions.

In 2018 in France, within the framework of the future removal of headquarters, several agreements aimed at

strengthening measures to support personal services and facilitate childcare were signed.

Home office

In 2019, a new agreement on "Quality of life at work" will be negotiated and should include measures to safeguard the right to disconnect and guidance on new working methods such as teleworking.

In 2018, in France, 26.2% of of the Mining BU work remotely for one day a week (55% women/45% men).

Part-time work

Among the staff engaged on permanent contracts, 48 are part-time: 18 men, 30 women.

In France, in 2018, the percentage of part-time employees reached 1.5%, a 0.6% increase compared to 2017.

Full-time	422	2,825	3,247
Part-time	30	18	48
TOTAL	452	2,843	3,295

Prevention of psycho-social risks during organizational changes

The "Quality of life at work" (QVT) agreement also launched the draft of common guidelines for all Orano group entities to evaluate the human impact of organizational changes, as well as the creation, in France, of a joint national observatory for quality of life at work.



In France, any organizational changes are made with the participation of staff representative bodies (within varying notice periods enshrined in a collective bargaining agreement).

The working of labor relations within Orano Mining France was such that management practiced a one-month notification period between the presentation of documents and the consultation. For individual, significant changes of position, a contract amendment is always offered to the employee;

Any project that requires a significant and major development in working conditions must be given special attention and examined in terms of its psycho-social impact, using an analysis table comprising around 20 elements (e.g. clarity of roles, change management, skills development, etc.);

In Canada and France, there is a program offering assistance to employees in difficulty, whether due to personal or professional problems, with a counseling and support service available for employees.

Employee benefits

The Orano Mining collective agreement signed in 2012 governs the relationship between the company and its employees and demonstrates the joint willingness of the company and union organizations to maintain a good level of employee benefits at its French sites. The agreement deals with all provisions related to union law and management-labor dialog, careers and professional development, working hours (including leave and absences), health and contingency costs, retirement management, etc.

All subsidiaries can take advantage of benefits such as medical care, disability/death coverage and a pension scheme.

Parental Leave

Where there is such provision at national level, the Orano Group pays particular attention to the situation of the employee on parental leave.

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

Number of employees on parental leave in 2018

Country	Women	Men	Total
France	3	0	3
Kazakhstan	34	1	35
Canada	14	6	20
TOTAL	51	7	58

Equal opportunities



GENDER EQUALITY IN THE WORKPLACE

The indicators in our mining activities are encouraging: women make up 30% of the teams in France, and 40% of the Orano Mining Board of Directors. However, we still need to improve the overall numbers of women abroad (10%), and make sure they are promoted at all levels of the organization, particularly in Management Committees, to reach Orano's target of 25%.

Orano Mining sets itself the goal of a promotion rate for women (level change, echelon or position) at parity with that observed for men over the calendar year. 33% of promotions were for women in 2018. Promotions mainly concerned expatriate positions, which are 98% occupied by men.

In 2018, 29% of new hires were women. This fall compared to 2017 (42% in 2017) may be explained in part by the low level of external recruitment (10 external hires in France) and by the geographical location of the expatriate positions.

Gender equality also extends to internships, apprenticeships and professionalization contracts. In 2018, within this population, women hired accounted for 51% of the count (9 female interns out of 17 and 10 female work-study contracts out of 20), a net progression of 38% compared to 2017.

In accordance with the salary agreement of April 27, 2018, a budget equal to 0.03% of the payroll was allocated in 2018 to exceptional and corrective measures within the framework of gender equality within the company.

In France, the 2018 ratio of women's base salary to that of men by occupational category is 1 for Technicians, 1.38 for Administrative Employees, 1.07 for Supervisors and 0.84 for Engineers & Managerial staff.

In 2018, more women than men were awarded an increase during the annual salary review.

Proportion of Men / Women who were allocated a salary increase

Professional category	Engineers & Managerial staff	Administrative employees
Women	74%	51%
Men	59%	37%



PROVISIONS FOR PEOPLE WITH DISABILITIES

In France, the Orano Group Agreement to promote the employment of people with disabilities for 2018-2020 has set up actions aimed at strengthening and developing recruitment of people with disabilities, employability and integration into the work group, job retention and associated measures, training and professional development, awareness raising among managers and employees, and the development of purchases from the protected and adapted sectors and self-employed disabled contractors.

In 2018, the employment rate of people with disabilities in the Mining Business Unit was 4.85% in France, an increase of 0.19 compared to 2017.

Local recruitment

Orano Mining's social policy expresses a commitment to promoting the local recruitment of our employees. Over 95% of our employees on our sites are from the host country.

We also pay particular attention to indigenous communities, to facilitate their access to our employment opportunities.

This situation exists in Canada, for example, in North Saskatchewan, a region that has seen numerous initiatives to promote access to employment and select local entrepreneurs as a preference. This is also true in Mongolia and in Kazakhstan.

Currently, across all the countries in which we work, the majority of employees (at all levels of the organization) are of local nationality.



For more information, refer to our **chapter Commitments - Community involvement** p 36



Reporting parameters

“Paperless”

This annual report, the Corporate Social Responsibility Report prepared by the Corporate Social Responsibility Department of Orano Mining, is the result of the mobilization of all our teams at our headquarters and our sites.

We have created an **interactive report completely downloadable** and have discontinued the production of an entire hardcopy version.

Reporting period

The **2018 CSR Report** is the ninth edition of this annual exercise. The previous reports are available for download in the box **“Annual report archive”**.

2018 CSR Report is a report with the following characteristics:

- it covers our responsible commitments performance for the year 2018, which means the reporting ran up to December 31, 2018;
- it has been prepared in accordance with the orientations of the materiality exercise realized at the end of 2018;
- it is based on the essentials or core criteria of the Standards version of the GRI.

Scope of information

In application of Orano's strategy and policies and the orientations provided by our 2018 materiality matrix, this report aims to **present the performance linked to the main CSR challenges** of the mining activities under eight broad families of commitments: Ethics, Transparency and

Consultation, Community Involvement, Risk Management, Health, Safety and Radiation protection, Environment, Ours employees, Mining Closure.

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 activities **in France, Canada, Niger, Kazakhstan, Mongolia, Gabon and Namibia**. When the scope only covers one given country, this is mentioned (in particular in the commitment “Our employees”).

There are no issues identified outside the organization as relevant.

GRI and third party verification

Within the 2018 scope of mining activities, our teams have applied the guidelines set out in version Standards of the Global Reporting Initiative (GRI), as well as the Mining and Metals Sector Supplement (SSMM).

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.

This year, once again, we have conducted an **independent verification of the content of this report** in compliance with the ICMM Audit procedure and the AA1000 ethical auditing principles *(available only in French)*.



The acknowledgement received from the auditing firm will be available shortly for **“download”**.

Each year the Orano group conducts an audit on a sample of extra-financial indicators as part of the independent verification of the Annual report. As such, a number of our mining sites may be selected for the review of these indicators. Badrakh Energy in Mongolia was audited in 2018 and Orano Mining Paris and Orano Canada Inc will be audited in 2019.

Reporting protocol

For environmental, social, economic and ethical topics, **internal technical protocols** have been available for several years. They enable us to answer to several indicators proposed in the GRI guidelines.

French regulatory constraints do not allow us to report on categories of indicators relating to diversity and covered by other national regulations.

Finally, as far as possible, for all topics on which we do not have or are updating technical protocols, we strive to **take the GRI approach into account** when relevant and applicable to the scope of our activities.

Find out more:
**Orano Mining RCR 2017
Report**



For further information,
please contact:
G-MN-RSE@orano.group



GRI Standards



The Orano's mining activities CSR Report 2017 has been prepared in accordance with the GRI Standards guidelines. The mining and metals sector supplement has also been used (Mining and Metals Sector Supplement, MMSS).

We report primarily on the general standard disclosures called "core". Then the table set out in details the specific standard disclosures called "essentials" and the indicator linked to each identified material aspect. A correspondence with the 10 ICMM principles and duty of care (art L.225-102 of the CC) were added.

GRI Standard	Description	Chapter of the CSR report	ICMM principles	Duty of care
STRATEGY AND ANALYSIS				
GRI 102-14	Statement from the most senior decision-maker of the organization	Statement from the top management	2	
ORGANIZATIONAL PROFILE				
GRI 102-1	Name of the organization	Profile		
GRI 102-2	Primary brands, products, and services	Uranium market		
GRI 102-3	Location of the organization's headquarters	Profile		
GRI 102-4	Company's countries of operation	Profile		
GRI 102-5	Nature of ownership and legal form	Profile		
GRI 102-6	Markets served	Profile		
GRI 102-7	Scale of the organization	Profile		
GRI 102-8	Breakdown of employees	Profile		
GRI 102-41	Percentage of total employees covered by collective bargaining agreements	Profile	3	●
GRI 102-9	The organization's supply chain	Profile Community involvement	5.8	
GRI 102-10	Changes during the reporting period	Profile		
GRI 102-11	Precautionary approach or principle addressed by the organization	Risk Management	1.2	●
GRI 102-12	Externally charters, principles, or other initiatives subscribed	CSR approach	1.2	
GRI 102-13	Memberships of associations and national or international advocacy organizations	CSR approach	1	
IDENTIFIED MATERIAL ASPECTS AND BOUNDARIES				
GRI 102-45	Entities included in the organization's consolidated financial statements	CSR approach Annual Activity Report 2018		
GRI 102-46	Process for defining the report content	CSR approach	10	
GRI 102-47	Material Aspects identified in the process for defining report content.	CSR approach	2.10	

GRI Standard	Description	Chapter of the CSR report	ICMM principles	Duty of care
GRI 103-1	Approach – Aspect Boundary within and outside the organization	CSR approach Reporting parameters	2.10	
GRI 102-48	Restatements of information provided in previous reports	Reporting parameters		
GRI 102-49	Changes from previous reporting periods in the Scope and Aspect Boundaries	Reporting parameters	2.10	
STAKEHOLDER ENGAGEMENT				
GRI 102-40	List of stakeholder groups engaged by the organization	CSR approach	10	
GRI 102-42	Basis for identification and selection of stakeholders	CSR approach	10	
GRI 102-43	Stakeholder engagement	Transparency and consultation	10	
GRI 102-44	Key topics and concerns that have been raised through stakeholder engagement	CSR approach Transparency and consultation	10	
REPORT PROFILE				
GRI 102-50	Reporting period	Reporting parameters	10	
GRI 102-51	Date of most recent previous report	Reporting parameters	10	
GRI 102-52	Reporting cycle	Reporting parameters	10	
GRI 102-53	Contact point for questions	Reporting parameters	10	
GRI 102-54	“In accordance” option the organization has chosen	Reporting parameters	10	
GRI 102-55	GRI index	Reporting parameters	10	
GRI 102-56	External assurance	Reporting parameters	10	
GOVERNANCE				
GRI 102-18	Governance structure of the organization	Profile	1	●
RISK MANAGEMENT				
GRI 102-15	Key impacts, risks and opportunities	Risk Management	4.5	●
GRI 102-16	Organization’s values, principles, standards and norms of behavior	Risk Management	3	●
SPECIFIC STANDARD DISCLOSURES				
ECONOMIC				
GRI 103-1	Explanation of the material topic and its Boundary	Profile	2.10	
GRI 103-2	The management approach and its components	Profile	2.10	
GRI 103-3	Evaluation of the management approach	Profile	2.10	
Economic performance				
GRI 201-4	Financial assistance received from government	Transparency and consultation		
Indirect economic impacts				
GRI 203-1	Development and impact of infrastructure investments and services supported	Community involvement Our employees	9	

GRI Standard	Description	Chapter of the CSR report	ICMM principles	Duty of care
Procurement practices				
GRI 204-1	Proportion of spending on local suppliers at significant locations of operation	Community involvement Our employees	2.9	
ENVIRONMENT				
GRI 103-1	Explanation of the material topic and its Boundary	Environment	6	●
GRI 103-2	The management approach and its components	Environment	6	●
GRI 103-3	Evaluation of the management approach	Environment	6	●
Energy				
GRI 302-1	Energy consumption within the organization	Environment	6	
Water				
GRI 303-1	Total water withdrawal by source	Environment	6	
Biodiversity				
GRI 304-4	Total number of IUCN red list species	Environment	6.5	
Emissions				
GRI 305-1	Direct greenhouse gas (GHG) emissions (Scope 1)	Environnement	6,5	
Effluents and waste				
GRI 306-2	Total weight of waste by type and disposal method	Environment	6.5	
OUR EMPLOYEES				
Labor practices and decent work				
GRI 103-1	Explanation of the material topic and its Boundary	Our employees	2.3	●
GRI 103-2	The management approach and its components	Our employees	2.3	●
GRI 103-3	Evaluation of the management approach	Our employees	2.3	●
GRI 401-1	Number and rates of new employees hires and employees turnover	Our employees		
GRI 401-2	Benefits provided to full-time employees	Our employees	2.3	
GRI 401-3	Return to work and retention rates after parental leave	Our employees	2.3	
Management relations/Labor				
GRI 402-1	Minimum notice periods regarding operational changes	Our employees	2.3	
Occupational health and safety				
GRI 403-3	Workers with high incidence or high risk of diseases related to their occupation	Health, Safety and radiation protection	5	●
Training and education				
GRI 404-1	Average hours of training per year	Our employees	2	
GRI 404-3	Employees receiving regular performance and career development reviews	Our employees	2.3	

GRI Standard	Description	Chapter of the CSR report	ICMM principles	Duty of care
Diversity and equal opportunity				
GRI 405-1	Composition of governance bodies and breakdown of employees per category according to gender, age, minority group membership and other indicators of diversity	Our employees	3	
HUMAN RIGHTS / ETHICS				
GRI 103-1	Explanation of the material topic and its Boundary	Ethics	3	●
GRI 103-2	The management approach and its components	Ethics		●
GRI 103-3	Evaluation of the management approach	Ethics		●
Non-discrimination				
GRI 406-1	Total number of incidents of discrimination and corrective actions taken	Ethics	3	
Human rights assessment				
GRI 412-1	Human rights reviews	Ethics	1.3	
Anti-corruption				
GRI 205-1	% of operations assessed for risks related to corruption	Ethics	1	●
GRI 205-2	Communication and training on anti-corruption policies and procedures	Ethics	1	
COMMUNITY INVOLVEMENT				
GRI 103-1	Explanation of the material topic and its Boundary	Community involvement CSR approach	3	
GRI 103-2	The management approach and its components	Community involvement CSR approach	3	
GRI 103-3	Evaluation of the management approach	Community involvement CSR approach	3	
Local communities				
GRI 413-1	% of operations with implemented local community engagement	Community involvement CSR approach	3	
MINING AND METALS SECTOR SUPPLEMENT				
MM9	Sites where resettlements took place	Not applicable	3	
MM10	Closure plans	Site remediation and mine closure	8.2	



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