

Orano Mining

Corporate social responsibility report

Edition 2017





CHAPTER

PROFILE

Extract from Responsible Development report 2017
on Orano Mining activities.

The complete report is downloadable on:
www.rse-mines.orano.group



ORANO MINING
Corporate Social Responsibility Report
2017

ORANO



Orano transforms nuclear materials so that they can be used to support the development of society, first and foremost in the field of energy.

The group offers products and services with high added value throughout the entire nuclear fuel cycle, from raw materials to waste treatment. Its activities, from mining to dismantling, as well as in conversion, enrichment, recycling, logistics and engineering, contribute to the production of low-carbon electricity.

Orano and its 16,000 employees bring to bear their expertise and their mastery of cutting-edge technology, as well as their permanent search for innovation and unwavering dedication to safety, to serve their customers in France and abroad.

Corporate Social Responsibility

Orano has embarked on a proactive sustainable development initiative by making strong commitments in matters of corporate social, environmental and societal responsibility. These commitments are deployed and periodically updated through the policies that the group implements in a number of areas – human resources, diversity, nuclear safety, health, occupational safety and the environment – as well as through its code of ethics. These different policies and the code help organize the company's operations in compliance with human rights and in the interest of environmental protection and the laws that govern them. Orano's efforts target continuous improvement in performance in all fields, particularly nuclear and occupational safety, and take into consideration the expectations of all stakeholders concerned by its activities.

Orano subscribes to the United Nations' Global Compact and, on the occasion of the 21st United Nations Climate Change Conference, reaffirmed its commitment for its activities, in particular to:

- halve industrial emissions of CO² in Orano's nuclear cycle facilities by 2020 compared to 2004;
- achieve at least an 80% reduction in the total energy used throughout the group's facilities by 2020 compared to 2004.

In addition, Orano is pursuing its proactive continuous improvement initiative in its mining operations based on best international practices for corporate social responsibility, in particular through the ten principles of the International Council on Mining and Metals (ICMM).

MINING ACTIVITIES

Constituting 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.

Thanks to a **presence spanning four continents**, Orano Mining can guarantee its customers a sustainable supply of uranium for their electricity production needs while maintaining a responsible attitude towards people and the environment.



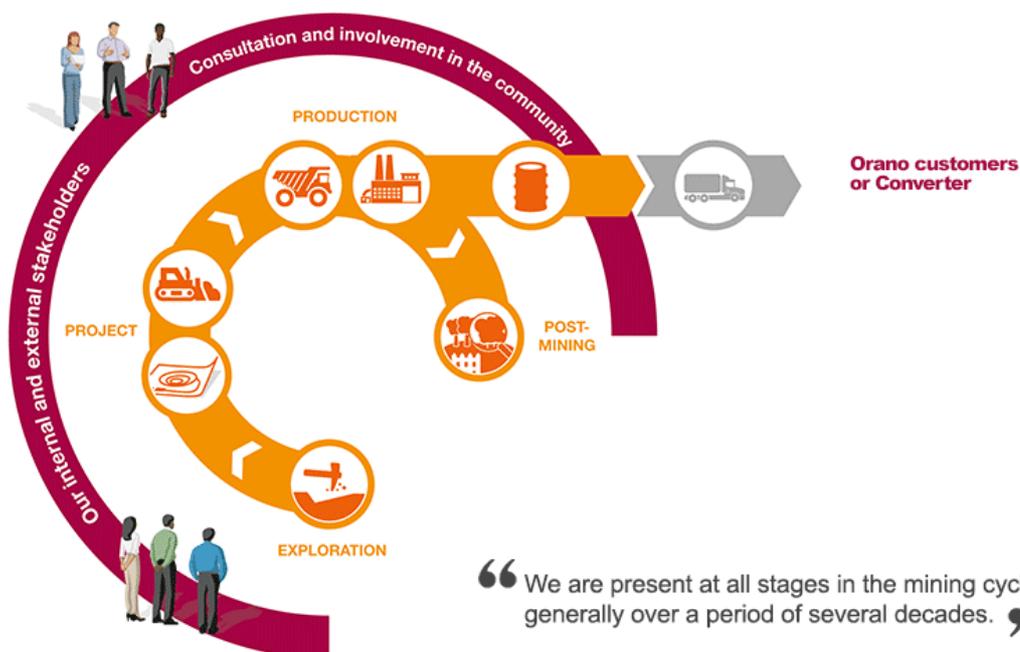
KEY FIGURES FOR 2017

- Contribution to Consolidated Revenue of 1,294 M€ (33% of Orano revenue) ;
- 3 857 employees* ;
- 5 operating sites in 3 countries ;
- 10,531** metric tons of uranium ;
- 14% worldwide market share.

* All employees managed by Orano Mining (fixed-term + permanent contracts) without taking into account Orano's financial participation in mining joint-ventures.

** Consolidated financial share including 453 metric tons from COMINAK, whose accounts are deconsolidated in accordance with accounting rules.

THE MAIN STAGES IN THE MINING CYCLE



■ Exploration – 10 years in average

Exploration involves finding new uranium deposits. Prospecting is carried out in successive steps: geological study of the region, interpretation of aerial or satellite photos, geophysical techniques, ground radioactivity measurements and studies of soil and water chemistry.



■ Mining project – from 8 to 12 years

The development phase determines the technical, economic and environmental viability of a mining project. It involves confirming the resources identified by geologists and characterizing the deposit and its ore. During this stage, the industrial pilot, which allows the extraction and ore-processing methods to be established, is set up. The infrastructures needed for mine operation are built. Studies are also performed to assess the societal and environmental impact of the project.

■ Extraction and processing - from 12 to 50 years

Ore is extracted from open-pit or underground mines, or using in situ recovery. Orano's mining experts also regularly test and apply innovative techniques, which improve the performance of existing operations and increase personnel safety.

The main ore processing operations include crushing and grinding, dissolving, purification, calcination and concentration. The ore of uranium is transformed into a solid concentrate referred to as "yellow cake" (due to its appearance and color).



■ Post-mining: closure, remediation, monitoring and value development - more than 10 years

This stage covers the dismantling, remediation and vegetation of sites at the end of mining operations, carried out in compliance with the applicable environmental standards, coordinated with the competent authorities and in consultation with local populations. Orano Mining also performs radiological and environmental monitoring at these sites for at least 10 years.

Orano Mining's initiative to develop and valorize land assets in France on post-mining sites is focusing on renewable energy usages. Together with other project sponsors, Orano Mining is promoting the set-up of photovoltaic farms on former mining and tailings disposal sites. As at today: 3 farms in operation and 12 projects ongoing.



PRESENCE OF MINING ACTIVITIES AROUND THE WORLD



UPDATE ON OUR ACTIVITIES IN 2017

Canada

Orano Mining has been present in Canada for more than 50 years with different mining operations. Orano Canada's production comes from the McArthur River and Cigar Lake mines, operated by Cameco Corporation. These sites are located approximately 700 kilometers north of Saskatoon in Saskatchewan Province.



Orano Canada is continuing to conduct a major exploration program in this uranium-rich province, where it also holds majority interests in several deposits:

- a 70% interest in McClean Lake,
- a 50.9% interest in Shea Creek,
- a 69.2% interest in Midwest,
- and a 64.8% interest in Kiggavik.

■ Cigar Lake

Cigar Lake is owned by a joint-venture consisting of Cameco Corporation, Orano Canada Inc, Idemitsu Uranium Exploration Canada Ltd and TEPCO Resources Inc.

This deposit, the richest of its kind in the world, is operated by Cameco. The ore is processed in the McClean Lake mill, operated by Orano.

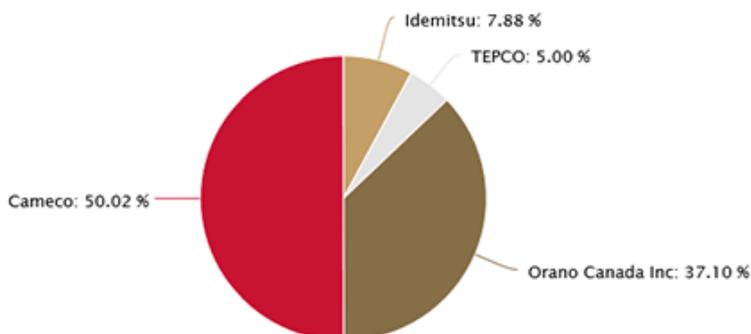
Orano discovered the deposit in 1981 and helped develop the mining method.

Given the deposit's location 450 meters beneath fractured, porous and water-saturated rock, and its high content, the deposit cannot be mined using conventional methods.

Freezing techniques are used to strengthen the ground and prevent water infiltration. The selected mining method involves removing the ore by high-pressure jet boring. The infrastructure galleries (equipment, boreholes for freezing and jet boring) are all located in the stronger rocks under the deposit.

The Cigar Lake mine and the McClean Lake mill have reached their full capacity with the production of 6,925 tU in 2017 (18 million lbs of U3O8).

Composition of the Cigar Lake joint venture

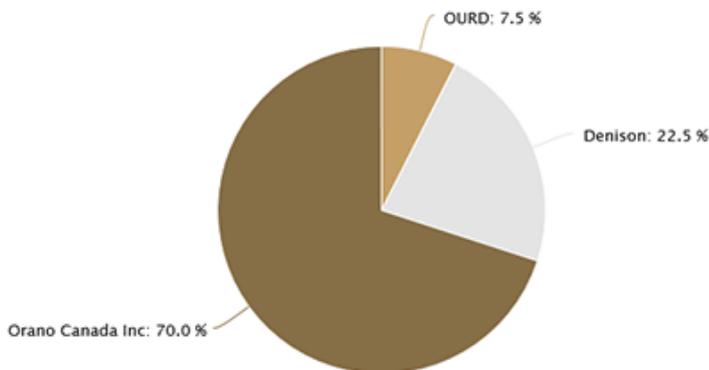


■ McClean Lake

Orano Canada Inc operates McClean Lake and is a 70% owner alongside Denison Mines Ltd and Ourd (Overseas Uranium Resources Development Company Ltd of Japan).

Since 2014, the McClean Lake mill has been processing all of the ore from Cigar Lake. Designed to process very high-grade ore (> 15%), in 2016, the mill obtained a regulatory permit to increase annual production capacity to 24 million pounds (9,200 metric tons).

Composition of the McClean Lake joint venture



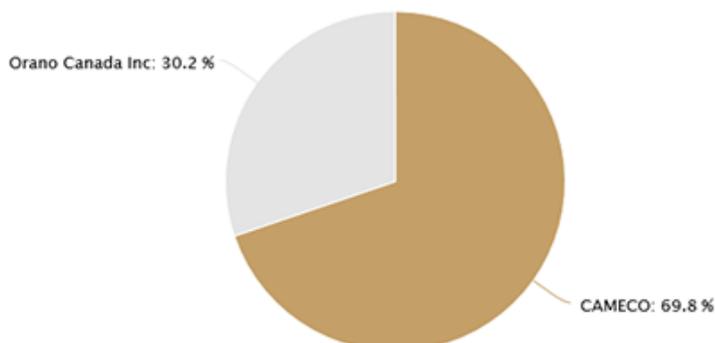
■ McArthur River

McArthur River is operated as a *joint venture* by Cameco Corporation. The McArthur River mine has, with Cigar Lake, the world's largest production capacity.

The deposit was discovered in 1988 and mining began in December 1999. Located more than 600 meters below the surface, and in view of the very high grade uranium it contains, the deposit cannot be mined with conventional methods.

The miners are protected from direct contact with the ore by the use of special mechanical mining methods (raise boring and long hole stoping), and the ground is frozen to prevent water infiltration. The mined ore is processed at the Key Lake mill, about 80 kilometers south of the deposit.

Composition of the McArthur River joint venture



The Key Lake mill is operated by Cameco Corporation, which holds an 83.33% interest (Orano Canada holds 16.67%). McArthur River and Key Lake have a capacity of 7,200 metric tons of uranium per year (18.7 million pounds of U₃O₈). In 2017, production reached 6,203 metric tons.

Since the end of January 2018, activities at the McArthur River mine and the Key Lake mill have been temporarily suspended due to the continually low price of uranium.

Find out more: <http://www.oranocanada.com>

On social networks:

- Facebook: @oranocanada
- Twitter: @oranocanada
- LinkedIn: @oranocanada
- Youtube: youtube.com/oranocanada

■ France

In France, the main activities are related to those of the head office and managing the remediated former mining sites.

Today a total 234 sites are under Orano Mining's responsibility for monitoring.

Spread out over 25 departments, these sites were in operation between 1948 and 2001. Jouac, the last mine, closed in 2001. A number of activities were carried out at these former mining sites: exploration work, underground and open-pit mines, dismantled ore processing plants and 17 storage areas for uranium ore processing residues.



■ Gabon

Gabon, the Compagnie des Mines d'Uranium de Franceville (COMUF), of which Orano Mining is the operator and principal shareholder, exploited uranium deposits in the region of Mounana until 1999. From 1999 to 2006, all of Mounana's mining and industrial sites, the quality of which has been approved by the International Atomic Energy Agency (IAEA), were completely remediated. Since then, COMUF has been responsible for their environmental monitoring, remediation and oversight of usage restrictions.



Kazakhstan

Katco was established in 1996 to develop and mine the Muyunkum and Tortkuduk deposits in southern Kazakhstan, approximately 250 kilometers north of Shymkent. The shareholders are Orano Mining and the Kazakh company KazAtomProm, the national producer of natural uranium.



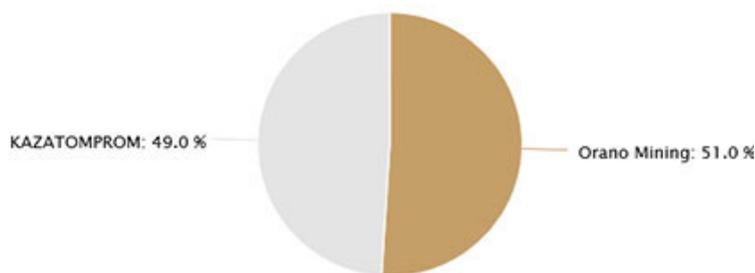
Composition of the KATCO joint venture

Development of the two mining sites, located approximately 40 kilometers apart, started in April 2004 after the signature of agreements between the two shareholders. The technique selected was in situ recovery, in which the uranium is dissolved directly inside the rock.

In 2008, Katco obtained permission to level which was reached in 2013 (3,519 metric tons produced in 2017).

Follow us on social networks:

- Facebook : KATCO JV LLP



Mongolia

For more than 15 years, Orano Mining has successfully conducted mineral exploration operations in the Sainshand Basin at two sites, Dulaan Uul and ZuuvcH Ovoo.



Since June 2017, the State of Mongolia, through the state-owned company Mon-Atom – under the supervision of the Commission of State Properties –, has taken a stake of 34% in the capital of Badrakh Energy. 66% of the shares are held by AREVA Mongol (itself a subsidiary 66% owned by Orano SA and 34% owned by Mitsubishi Corporation).

Badrakh Energy holds the mining licenses awarded in July 2016 for the Dulaan Uul and Zuvch Ovoo deposits – discovered by Cogegobi, a 100%-owned subsidiary of Orano Mining – and in 2017 launched the pilot for Zuvch Ovoo 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.

The Group is pursuing exploration and development work in the Sainshand basin on the Dulaan Uul and Zuvch Ovoo sites.



Site pilote Zuvch Ovoo

The shareholders of AREVA Mongol are CFMM (100%-owned by Orano Mining) which holds a share of 66% and MITSUBISHI Corporation which holds a share of 34%.

Find out more:

- <http://badrakh-energy.com>

■ Namibia

In Namibia, Orano Mining Namibia owns the whole of the Trekkopje deposit, as well as the Erongo water desalination plant with a capacity of 20 million m³/year, both located in the Swakopmund region. The worsening of conditions on the uranium market led Orano Mining Namibia to mothball the Trekkopje project in October 2012. The desalination plant is operating at 65% of its capacity and sells its production to the Namibian water corporation Namwater, which supplies water to the existing mines and to meet the needs of local communities.



■ Niger

Exploration teams from the Commissariat à l'énergie atomique (CEA, the French atomic energy commission) detected uranium in Niger at the end of the 1950s. The uraniumiferous area is located west of the Air granitic body. Close to 1,800 people work at Somair and Cominak, excluding subcontractors. Along with jobs, the operating companies provide health, social and educational services to the local communities in this isolated area.

Cominak and Somair have delivered uranium to their customers without interruption since operations began in the 1970s.

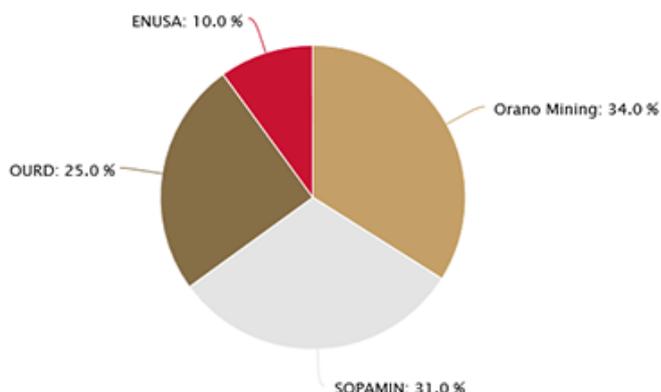
IMOURAREN SA also owns the Imouraren project, one of the world's largest deposits (with 174,196 metric tons of uranium in reserves after application of the ore yield with a grade of 700 ppm).

■ COMINAK

Cominak (Compagnie Minière d'Akouta) is 34% owned by Orano Mining, which operates it. The other shareholders are Sopamin of Niger (31%), Ourd (25%), and Enusa Industrias Avanzadas SA of Spain (10%).

The ore, extracted underground, is then processed in the site's mill, with a production capacity of approximately 1,400 metric tons of uranium per year (1,332 metric tons produced in 2017), given the current characteristics of the ore processed.

Composition of the COMINAK joint venture

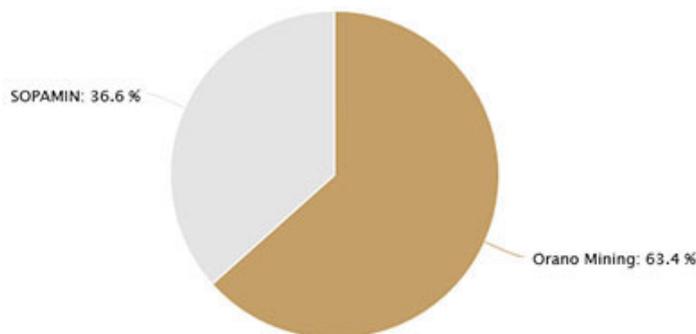


■ SOMAÏR

Société des mines de l'Aïr (Somaïr, the mining company of the Aïr) was established in 1968. The company is operated by Orano Mining, which owns 63.4% of the share capital; the remaining 36.6% is held by Société du patrimoine des mines du Niger (Sopamin, the Nigerien government's mining company).

Somaïr has operated several uranium deposits near the town of Arlit since 1971. The ore is extracted from open pit mines and heap leached or processed mechanically at the head end of the Arlit mill.

Composition of the SOMAÏR joint venture



Given the current characteristics of the ore processed, the plant's production capacity is approximately 2,000 metric tons per year. (2,116 metric tons produced in 2017).



■ IMOURAREN project

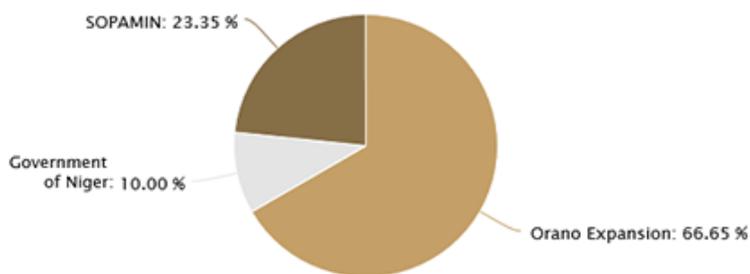
Located 80 kilometers south of Arlit, this deposit was discovered in 1966 and constitutes one of the largest deposits in the world today (reserves of 174,196 metric tons of uranium after recovery).

The Imouraren SA mining company was established, with Orano Expansion (86.5% CFMM and 13.5% KIUJ) holding a 66.65% interest, and Sopamin, owned by the government of Niger, holding the remaining 33.35%.

In view of the current conditions on the uranium market, production startup work has been suspended.

The project will restart when uranium market conditions permit. A strategy committee set up by the State of Niger and Orano regularly reviews these conditions. Studies are currently in progress to see how the project can be optimized.

Composition of the IMOURAREN SA joint venture





In this document, the terms "Orano SA" or the "Company" mean the public limited company Orano, having had New AREVA Holding as its company name until January 22, 2018, and which was also known as NewCo, pending the change of name. The terms "group" or "Orano" refer to the group formed by Orano SA and all of its subsidiaries and equity interests held directly or indirectly. Subsidiaries are referred to by their new company names.

Orano SA, head of the Orano group, is a French "société anonyme" with a Board of Directors. The Board of Directors sets the directions for Orano's business and ensures they are implemented.

FIND OUT MORE ABOUT ORANO



■ Governance combining oversight and transparency

Since January 8, 2015, Orano SA has had a single governance structure, comprised of a Board of Directors with a Chairman and a Chief Executive Officer.

The Board of Directors is in particular responsible for defining strategy and ensuring that it is implemented. Its activities are governed by internal rules. The Board of Directors meets as often as the interest of the company requires it and at least six times a year.

The role of the Specialized Committees is to gather and provide the Board of Directors with the additional information it needs, as appropriate, and to facilitate decision-making.

Based on the principle of subsidiarity, the management system combines decision-making and decentralized operations through the operational departments and global coordination by coordination and steering committees.

■ Orano EXCOM

Orano includes all of the fuel cycle activities and related central departments.

Its goal is to be a leader in the recycling of nuclear materials, waste management and dismantling.

It will develop its activities in mining, uranium chemistry (conversion and enrichment), used fuel recycling, logistics, dismantling and fuel cycle engineering.

ORANO MINING

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

The Mining Business Line is managed by M. Jacques Peythieu (since July 1, 2016). He chairs the Mining Business Unit Management Committee which includes the operational directors and directors of support functions involved in mining activities.

■ Board of Directors

Orano Mining is a business corporation with Board of Directors (Société Anonyme avec Conseil d'Administration). 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 Jacques Peythieu 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:

- 4 appointed at the proposal of Orano SA;
- 1 state representative;
- 1 appointed at the proposal of the French state;
- 3 elected staff representatives (first election held in February 2013).

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

In accordance with the statutes, the Chairman is an executive administrator and has no right of veto. Representatives do not receive any remuneration or advantages from the companies controlled by Orano Mining SA.

50% of the Members of the Board of Directors are women. 55,5% of its Members are between 30 and 50 years of age and 44,5% of its Members are over 50 years of age.

■ 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 after-mining 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 Jacques Peythieu.

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.

■ 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 signed with staff representatives. In this way, since its creation, over twenty agreements have been negotiated and signed by all the representative union organizations at company level. 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 both our sites in France.

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 France, the Health, Safety and Working Conditions Committee (CHSCT) is both a consultative body and a proactive forum for making proposals. It plays an important role in prevention within Orano Mining. It contributes:

- to the protection of the health, hygiene and safety of the employees of the entity and of employees made available by outside companies, including temporary workers,
- and to the improvement of working conditions.



FIND OUT MORE

In 2017, Orano invested in a new digital HR platform. The brand new application called OPUS embodies the group's willingness to transform, to work differently and more efficiently, and in this case to build better collaborative systems to foster the development of all its employees. OPUS is conducive to the simplification of processes and offers new services and features that tie in with the Group's overall digital strategy.

At the end of 2017, the first step in the deployment of OPUS was launched with the "Annual Review" module. The platform will include six other modules: Compensation, Training, Skills management, People Review, Recruitment and Mobility.

The tool is intended to promote transparency of data and give managers more autonomy.

Public financial assistance received

the financial consolidation scope have received public financial assistance for the financial year 2017. 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.

In 2017, these were: France, Gabon, Niger, Namibia, Kazakhstan, Mongolia and Canada.

As at December 31, 2017, the company Orano Mining SA is 100% owned by Orano SA, which is itself 55.56% owned by the French state (including a 5.4% stake through the CEA) and 44.44% owned by the company Orano SA (86.2% of which is directly or indirectly owned by the French state).

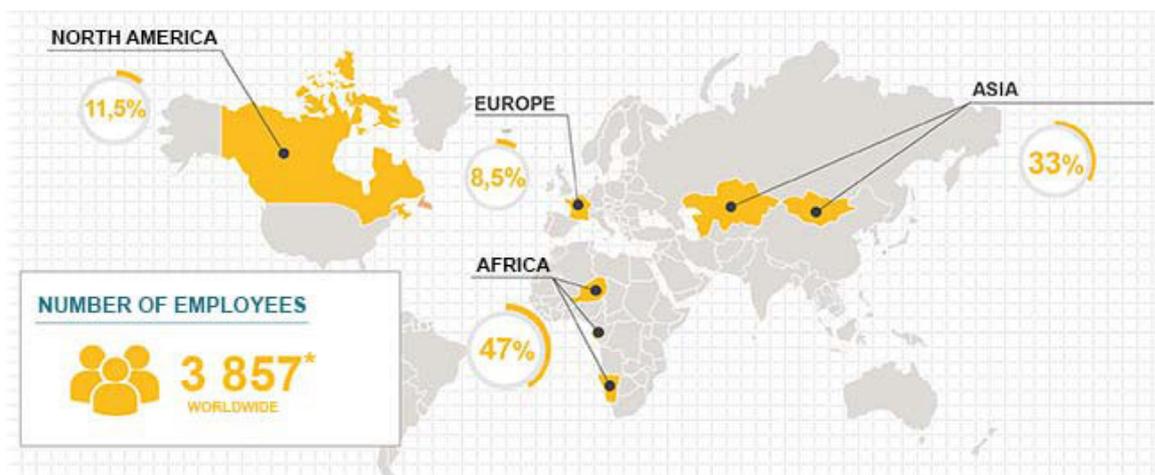
In addition, the following subsidiaries have stock held by a state other than the French state or by companies controlled by a State other than the French state (as at December 31, 2017):



SUBSIDIARY	Country	State or state-owned entity	Percentage ownership
KATCO	Kazakhstan	Kazatomprom company (100% owned by the kazakh State)	49%
SOMAÏR	Niger	SOPAMIN company (100% owned by the State of Niger)	36.6%
COMINAK	Niger	SOPAMIN company (100% owned by the State of Niger)	31%
		ENUSA company (100% owned by the Spanish State)	10%
IMOURAREN SA	Niger	SOPAMIN company (100% owned by the State of Niger)	23.35%
		State of Niger	10%
COMUF	Gabon	Gabonese State	24.75%
BADRAKH ENERGY LLC	Mongolia	Monatom company (100% owned by the Mongolian State)	34%

INTERNATIONAL ACTIVITIES

A presence on 4 continents



*Workforce of subsidiaries operated by Orano

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.

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



CONSUMPTION AND WORLD SUPPLY IN 2017

Uranium supply/demand scenario - WNA 2017 (tU/year)



Uranium Market

The average spot market price - which covers about 10-15% of uranium supplies - stood at \$21.6 per pound in 2017. At the end of 2017, the spot rose slightly to \$23.8 per pound following various announcements on reductions in uranium production. 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.

URANIUM MARKET IN 2017



In an unfavorable market context, Orano 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 74,600 tU in 2017 (source: UxC Q1 2018), slightly up (+4%) from 2016, led in particular by demand in Asia.

Supply worldwide consists of:

- mining production, which amounted to approximately 59,200 metric tons of uranium, down 6% compared with 2016: since 2016, and in response to falling market indicators, the main producers (Orano, Cameco and KazaAtomProm) have announced closures, mothballing of mines and reductions in production.
- secondary resources estimated to a total of 19,720 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.



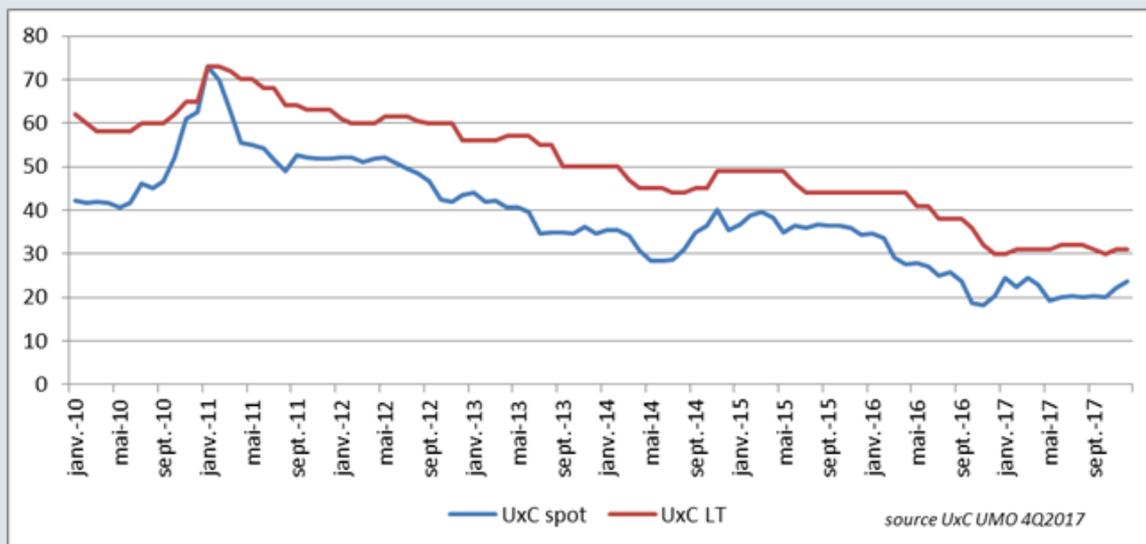
IN 2017...

8,031 metric tons of uranium
(Orano equity share corresponding to 10,078 metric tons of financially consolidated share).

NB: 1 metric ton of natural uranium ~ 2,599 pounds of U3O8.



2010-2017 TREND PRICE INDEX OF URANIUM (IN CURRENT DOLLARS)



ORANO PRODUCTION IN 2017

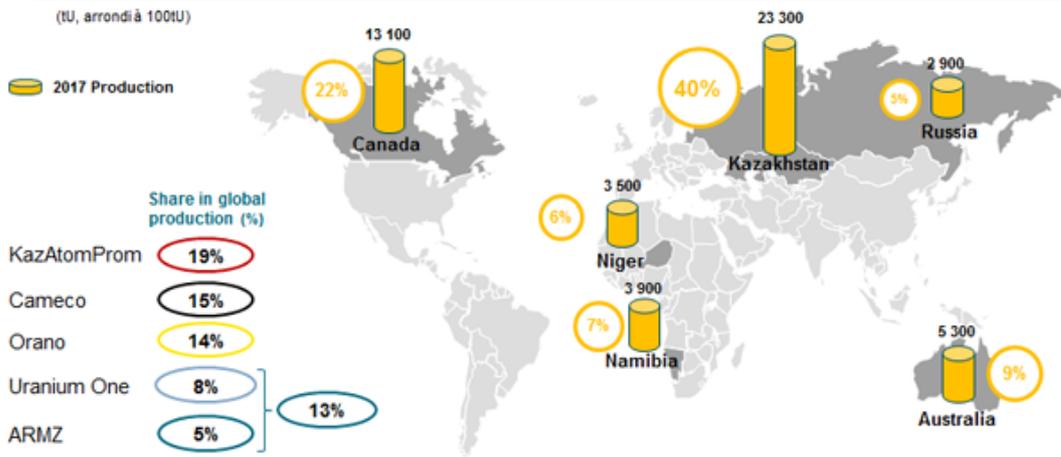
Backlog

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 Uranium 2017

(tU, arrondi à 100tU)



Source: Orano analysis based on available data

■ 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 2017, despite the persistence of low prices.

- Somaïr produced 2,116 metric tons of uranium (on a 100% basis), for an Orano share of 63.4 %;
- Cominak produced 1,332 metric tons of uranium (on a 100% basis), for an Orano share of 34 %;
- KATCO produced 3,519 metric tons of uranium (on a 100% basis), for an Orano share of 51 %;
- McArthur River/Key Lake produced 6,202 metric tons of uranium (on a 100% basis), for an Orano share of 30.2 %;
- Cigar Lake produced 6,925 metric tons of uranium (on a 100% basis), for an Orano share of 37.1 %.



COUNTRY	Sites	Financial consolidation 2017	Type ¹
		tU	
CANADA	McArthur River	1 873	UG
CANADA	Cigar Lake	2 569	UG
TOTAL	Canada	4 442	
KAZAKHSTAN	Katco	3 519	ISR
TOTAL	Kazakhstan	3 519	
NIGER	Somaïr	2 116	OP
NIGER	Cominak ²	-	UG
TOTAL	Niger	2 116	
TOTAL		10 078	

¹ Type of operation: ISR In-Situ Recovery, OP: Open-Pit, UG: Underground, n.d.: not defined.

² Cominak has been consolidated under the equity method since January 1, 2014. Source: Orano.



CHAPTER

CSR APPROACH

Extract from Responsible Development report 2017
on Orano Mining activities.

The complete report is downloadable on:
www.rse-mines.orano.group



ORANO MINING
Corporate Social Responsibility Report
2017



*Orano Mining, a socially responsible,
committed and forward-looking
Mining company*

JACQUES PEYTHIEU, CEO, ORANO MINING



Competitiveness, Development and Responsibility
- the three pillars of our strategy

Our group's transformation, which began several years ago, ended by refocusing of our business on the uranium cycle within a new company, Orano, launched in January 2018.

Orano owns all the technological, human and financial resources needed to ensure its own development and deliver a low-carbon energy that makes the nuclear industry a competitive industry for the future, with an active role to play in the fight against climate change.

Orano Mining - in an increasingly difficult uranium market - is honoring its commitments and pursuing its ambitious and socially responsible policy to sustainably guarantee supplies to its customers.

Maintaining our performance through careful management of our exploration and production capacities, operational excellence and innovation

To tackle the deteriorated market conditions' challenges, we had to reduce our production and our workforce. The completion of the voluntary employee departure program in France, the implementation of social plans in Namibia and Gabon in 2017, and the plan initiated at SOMAÏR at the beginning of 2018 are difficult but unavoidable steps in this market adaptation process.

We are also strengthening the support and development we offer our teams, in particular via training courses at the Orano School of Management, and at the Orano Mining College for our core competencies: geology, mining and ore processing.

Thanks to our hard work and strong operational management, Orano Mining produced 10,500 tons of uranium in 2017, making us the third largest producer worldwide, with a turnover of € 1,294 million, representing 33% of Orano's overall revenue. The operating income totaled 111 million euros.

To guarantee our production capacity, we are particularly focused on exploration and innovation. The agreement signed with KazAtomProm to obtain a new mining license on South Tortkuduk underlines our long-term commitment to and presence in Kazakhstan. We are investing in a major multi-sites exploration program in Canada, and we have begun construction of a pilot test on the Zuuvch Ovoo deposit in Mongolia to assess and improve the technical and economic conditions of this major project.

The operational excellence program is also contributing to delivering the performance levels required for our development. Shared and adopted by everyone within the company, it has enabled us to exceed our objectives set under the 2014-2017 competitiveness plan by 40%.

Being a responsible mining company is an everyday commitment for all Orano Mining employees

The fundamental principles of our policy are managing risk and ensuring the occupational health and safety of our employees and subcontractors. Despite an improved accident frequency rate in 2017, with a LTIFR of 0.67, we deeply regret the fatality that occurred in the COMINAK underground mine in Niger earlier this year.

In response, we are stepping up our awareness-raising activities, especially with local management, and introducing specific training to improve safety culture. In addition, one of my key concerns has been to make sure that we have systematic lessons-learned and feedback sharing processes in place for accidents and incidents with high severity potential, to allow us to really improve safety standards and behaviors.

Observance of international standards and regulatory compliance, as enshrined in our policy, were particularly important this year, with training programs focused on Orano's new Code of

Ethics and the provisions of the new French Compliance and Anti-Corruption legislation (Sapin II Act). Orano Mining has also strengthened the mapping of social and environmental risks related to our activities and those of our subcontractors, again with a view to fulfilling our *duty of care*.

Our commitment to social responsibility also means reducing our environmental footprint. Over the past 10 years, we have been able to reduce GHG emissions by 25% in our production processes. We are furthering this effort with the launch of energy efficiency diagnostics at all of our operational sites.

We are strongly engaged in a permanent dialogue with our stakeholders to ensure the acceptability of our projects at each stage of the mining cycle. An update of the stakeholder mapping exercise was conducted in Mongolia and Niger in 2017 and will be deployed in Kazakhstan and in France in 2018. We have invested € 3.6 million in projects to benefit local communities in the essential areas of health, education, access to water and energy, and economic development.

For example, in Niger, the IRHAZER project to develop irrigation and agricultural activities was expanded in 2017 with € 1.6 million euros earmarked for the development of new hydro-agricultural project areas.

Our engagement is for the long term and this is clearly seen in the way we implement, monitor, reclaim and improve mine-closure projects in France, Niger and Gabon. In 2017, we stepped up the development of solar projects at our former french mining sites in order to reach a target of at least 15 renewable power plants on our sites by 2022, contributing additional renewable energy generating capacity to the grid, equivalent to the consumption of 70,000 households.

It is with the commitment, mobilization and expertise of the Orano Mining teams, and with the trust of our customers and partners that we are forging ahead, developing our mining activities for the years to come.

I hope that the information in this report demonstrates our determination to succeed in our vision and path.



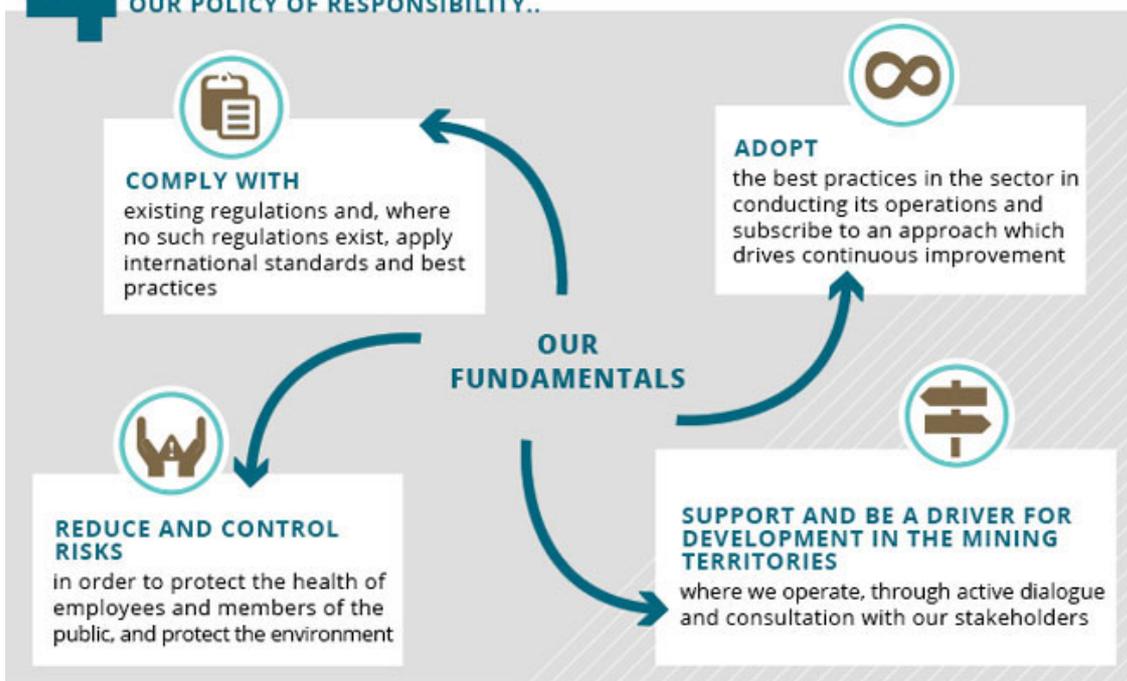
Orano Mining wants to be a leading and exemplary player in driving the development of its mining activities. The goal as a responsible mining company is to ensure sustainable, concerted and balanced development towards meeting the social, environmental, societal, technical and economic challenges involved in the Mining BU's activities at each stage of the mining cycle.

OUR DEFINITION: "BEING A RESPONSIBLE MINING COMPANY"



Gilles RÉCOCHÉ Vice President for Safety and Sustainable Development

4 PILLARS TO STRUCTURE OUR POLICY OF RESPONSIBILITY..



Our actions in the area of corporate social responsibility are structured and formally defined by our commitments and our governing bodies.

In 2016, we set out 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.

A CSR committee, a body on the same level as the Mining BU's Management Committee, has been set up and met for the first time in April 2017. Its purpose is to approve the goals and the progress made with regard to CSR policy on an annual basis.

OUR STAKEHOLDERS: "IDENTIFYING AND MEETING EXPECTATIONS"

Dialogue and consultation with our stakeholders are among the fundamentals of our approach.

Our teams at headquarters and/or on site are their primary interface.

A number of both voluntary and regulatory approaches help us facilitate these relationships and identify groups interested in our activities.



STAKEHOLDERS GROUPS INTERESTED IN OUR ACTIVITIES



AT LOCAL AND NATIONAL LEVEL: Communities, authorities, associations, local business,...

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 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 such as the Works 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:
Non-governmental organizations and the
United Nations**

At Mining BU headquarters level, two departments generally act as the first interface with these organizations: the CSR (Corporate Social Responsibility) Department and the Communications Department.
At country level, organizations set up by the group companies are the direct interface with NGOs and local stakeholders.
The arrangements and the mechanisms for dialogue 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 (the purchasing department, for instance), or directly with the entities of the group. Governance mechanisms are deployed to manage these exchanges.

■ Frameworks and tools for identifying stakeholder expectations

- Regulations in force, whether national or international. These may designate, depending on the type of mining project, the stakeholders to be consulted as part of a clearly established dialogue and consultation process: e.g. the Site Monitoring Committee in France for after-mining remediation and monitoring projects. Other groups to be consulted may include stakeholders such as (but not limited to) the authorities, residents' associations or staff representative bodies.
- 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" and 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.
- Local bodies for dialogue with stakeholders. Bodies such as the Bilateral steering committee (CBO - Conseil Bilatéral d'Orientalion, Niger), which bring together local elected officials, relevant authorities and civil society, alongside Orano Mining, serve to elicit local stakeholder expectations.

OUR OBJECTIVES: "IDENTIFYING AND OVERCOMING CURRENT AND FUTURE CHALLENGES"

Mining is an industrial activity that can have environmental impacts.

Uranium has specific physical, chemical and radiological properties.

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).

Our mining operations are international, and their contexts vary from one country to another, from an environmental standpoint as much as on political, economic, social and cultural levels.

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 on our part, both from a regulatory and a voluntary standpoint.

Building and maintaining trust is a constant challenge.

Numerous factors also have an impact on the production of Yellow Cake (uranium oxides): ore prices, national and international energy policies, the safety environment, regulatory requirements, stakeholder expectations, industry best practices, etc.

Our teams have to deal with constantly changing environments while ensuring a high level of safety and risk prevention over the long term.

Environment
Biodiversity Health Radiation
protection Remediation Water Air
Soil People
Safety Waste
Emissions

Multi-cultural
Local purchasing
Native populations Communities
Stakeholders Trust Dialogue
Consultation Local development
Redistribution EITI
Access to water Education Health
Environment

Fuel cycle
Transport Logistics Financial
Customers Partners Investors
States Authorities General public
Safety ICMM Risks

OUR ACTIONS: "MOBILIZING OUR DISCIPLINES AROUND OUR POLICY OF SOCIAL RESPONSIBILITY"

We are working hard to appropriate the concept of Corporate Social Responsibility (CSR) and extend it across the entire scope of our activities.

We seek to be coherent with our corporate culture and at the same time receptive to related developments: extra-financial reporting, materiality, mapping and inclusion of stakeholders in our processes, community involvement, etc.

Our responsible approach is best defined through the commitment of our teams to identify and apply best industry practices.

Orano is a member of the International Council on Mining and Metals (ICMM) and its undertaking to adopt the principles and positions of the organization dates back to 2012. As such our delegation, composed of specialists and managers, is involved in its various working groups. The goal is to share our practices and lessons learnt with our peers. Members of our top-level management also sit on the ICMM Council.

We have defined three main areas where we are determined to progress continuously.



1. DEDICATED STRUCTURE AND PROCESSES

Orano mining's CSR Department was created in 2012. One of its missions is to assist our teams for the scope of the Mining BU, its support & operational business functions in incorporating these responsibility commitments.

We develop the associated **tools and improvement processes**: CSR audits on site and at headquarters, materiality assessment exercises, self-assessment, participation in external working groups, etc.

Our goal is to achieve better prioritization of our CSR challenges and work out with our teams how to act on the areas for improvement that we identify.



2. MOBILIZE OUR TEAMS

Our teams constitute the primary interface with our stakeholders. They conduct many concerted local initiatives to identify and address expectations.

They are key to the prevention of risks on a day-to-day basis and over the long term through research and development programs.

They are engaged in external working groups both for knowledge building and for sharing of best practices.

They are constantly seeking to improve their business practices in the course of "business as usual" or through targeted initiatives such as innovation competitions.



3. REPORTING & AUDITS

Certain subsidiaries in countries which adhere to the Extractive Industries Transparency Initiative (EITI) declare revenues and amounts paid to governments within the framework of this process.

Since 2010, we have been producing this annual CSR document to report on our responsible development performance and commitments in accordance with the Global Reporting Initiative guidelines.

Since 2013, we have had external third party CSR audits carried out, both at headquarters and on mining sites, as per the ICMM Assurance Procedure and AA1000 principles.

We are following the new version of the GRI in this 2017 CSR report.



We are identifying and evaluating solutions for optimizing our activities and reducing their impacts throughout the lifecycle of the mine, in terms of environmental, social and economic aspects, with the aim of preventing risks as far upstream as possible for the benefit of our employees and the general public.



Nuclear safety and risk prevention are supported at the highest management levels of our organization. This constitutes Orano's number one strategic pillar.

We are establishing many mechanisms for identifying, managing, monitoring and alerting to risks, reducing and eliminating risks in the long term, as well as preparing for emergency situations.

SCOPE

The CSR report on Orano's mining activities covers workstation risks, health risks, industrial and environmental risks.

Each of our commitments presents the mechanisms in place more comprehensively.

Risks relating to security situations in the countries, as well as financial risks, are outside the scope of this reporting. Management and coverage of global risks are addressed in Orano's annual activity report on the basis of the Business Risk Model to which Orano Mining is a contributor.



AREAS FOR ACTION

RISK MAPPING Assessing Health - Safety - Environment risks



Risk mapping is a monitoring tool based on 11 themes

- leadership,
- management of regulatory compliance and repositories,
- projects and control of changes,
- crisis management,
- 3SE culture - safety, health, security and environment,
- health and safety,
- control of nuclear and radiation protection risk,
- transport of hazardous materials on public roads,
- control of technological and accidental risks,
- hazardous substances,
- control of long-term (chronic) risks and impact on the environment.

Our head office and onsite teams, and in all the countries in which we have a presence, participate in the process of evaluating Health, Safety, Radiation protection and Environmental risks, so that we can carry out risk mapping.

The aim of this mapping process is to identify the major risks encountered on sites in different areas, so that we can assess the degree of control and define priority action plans to implement.

Monitoring of this mapping process is carried out through inspection programs as part of a continuous improvement process.

HAZARD STUDIES Reducing technological risks



In order to reduce both technological and natural risks, hazard studies are regularly conducted upstream of new industrial projects and whenever there is a change of process at our "yellow cake" (U_3O_8) production sites, or during the project study phases (HAZID/HAZOP review).

These aim to identify major risks and the preventive and protective barriers to be implemented to minimize them.

They are also an opportunity to demonstrate the good practices employed by the teams and promote the sharing of experiences.

In 2017, a number of industrial investments have been made in this direction. For example, in Kazakhstan, at KATCO, a new chemical product unloading facility has been set up to take into account developments of the technology and of risk prevention systems.

Similarly, in 2016 the firefighting equipment at KATCO's facilities was improved and enhanced through the introduction of automatic extinguisher systems on certain installations. This optimization was carried out subsequent to an update to the American NFPA fire risk management codes.

In 2014, a leach solution pipe running between the South Torkuduk and North Torkuduk sites had also been replaced. This change followed feedback after an environmental event and a strengthening of our pipeline design and construction standards to prevent accidental spills.

In 2013, during preparation work for the restart of the McClean Lake mill located in northern Saskatchewan, Canada, the team of metallurgy experts established an updated assessment of risks.

With the help of the operational and engineering teams, and an outside consultant, a new design was proposed and implemented in 2014.

This assessment was also updated during the production ramp-up between 2014 and 2015, along with the associated action plan, in order to bring the level of identified risks within acceptable limits, in accordance with best practices, thus making the process safer.

CRISIS EXERCISE
Preparing for emergency situations



Exercises to prepare for emergency situations are regularly performed at a local level, and emergency response plans are regularly updated. 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
- 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.

In 2017, a level 3 crisis exercise was carried out at the KATCO site in Kazakhstan. Its aim was to test the crisis organization put in place to deal with an industrial accident situation.

This exercise took place overnight and lasted 8 hours. It was managed locally with the collaboration of the teams at the Almaty headquarters and at Orano Mining in Paris, involving the activation of three crisis control centers.

In 2018, one level 3 crisis exercises will be conducted, one at the Bessines site in France.

These exercises also provide an opportunity to train the various stakeholders (internal and external) and foster their skills and experience, test structures, procedures and equipment, and define new areas for improvement.

R&D PROGRAMS
Developing and sustaining multidisciplinary expertise to assess and minimize our environmental footprint throughout the life of our mining sites.



The scientific work for our R&D programs is performed by our onsite teams, as well as with numerous research partners. The work aims above all to:

- understand, prevent and model the migration of chemical and radiological substances over the long term;
- identify the issues relating to water management and treatment;
- be proactive with regard to regulatory changes and the requirements of the authorities;
- develop new tools for sampling and analysis, to improve our knowledge of environmental impacts.

In order to support Orano Mining in tackling scientific challenges, a number of academic partnerships have been set up.

These partnerships enable our R&D teams to enhance their work through contributions of skills and offer prospects for development.

Academic partnerships also provide a guarantee of published results and add to the R&D teams' own legitimacy and visibility.

Our partners include Université Paris VI, Université Paris VII, Ecole des Mines de Paris, Université de Poitiers, Université de Bruxelles, the University of Manchester, the University of Granada, the CEA, Ecole Polytechnique Fédérale de Lausanne, CREGU, the University of Wisconsin.

CODE OF ETHICS

Orano's Code of Ethics was updated in 2016, superseding the Values Charter in force since 2003. 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.

It is complemented by a Compliance Policy which 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), 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.

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 provide 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. 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.

ETHICAL REPORTING

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.

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.

SYSTEM FOR ALERTING AND ISSUING COMPLAINTS IN CASE OF DISCRIMINATION

Discrimination is unequal treatment based on grounds prohibited by law. French law recognizes twenty grounds or criteria of discrimination: age, gender, origin, family status, sexual orientation, gender identity, customs, genetic features, belonging or not to an ethnic group, nation, race, or given religion, physical appearance, disability, health status, pregnancy, family name, political opinions, trade union activities, place of residence (twentieth criterion, in the Law of February 21, 2014 on Planning for Cities and Urban Cohesion).

It is different from a discriminatory behavior or act, which is a discriminatory gesture or action of one employee towards another, based on one of the twenty grounds of discrimination.



FIND OUT MORE

A system for alerting and issuing complaints in case of discrimination has been in place since February 2013.

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 2017, 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, in one case discussions are in progress with those involved, one case led to a resignation, and in the last case the person responsible could not be identified but employees potentially involved have been made aware of the issue.



Regulatory compliance and enforcement is a prerequisite in our business and lies at the heart of group policies and standards.

We also attach great importance to adopting international good practices in order to continuously improve our approaches and guarantee sector monitoring in terms of sustainable development.

THE INTERNATIONAL COUNCIL ON MINING AND METALS (ICMM)

Since May 2011, Orano has been a member of the International Council on Mining and Metals (ICMM). This initiative is a reflection of Orano's desire to be part of a dynamic of continuous improvement and to share its know-how more effectively with its peers.



Top tier management, together with experts and specialists are actively involved in the working groups and processes associated with the development of ICMM sectoral good practices. As such, activities shall be in line with the following commitments:

- Incorporate into our policies and practices the 10 principles of sustainable development and the position statements of the ICMM (e.g. Indigenous peoples' rights) . In accordance with our internal policies and commitments, we are applying these principles in the development of our Responsible Commitments Plan. They enable us to better understand the issues faced by the mining sector and act as a support in prioritizing the materiality of associated themes.
- Provide our stakeholders with an annual non-financial report in accordance with the international reporting guidelines of the Global Reporting Initiative (GRI Standards).
- Have our statements and practices, presented in the Corporate Social Responsibility Report on Orano's Mining Activities, reviewed annually by an independent assessor (as per ICMM audit procedure and AA1000 accountability principles).

■ Understanding the 10 ICMM sustainable development principles

The ten fundamental principles of the ICMM (and their complementary documents in the form of "position statements") take inspiration from other global standards such as the Rio Declaration, the Global Reporting Initiative, the OECD Guidelines for Multinational Enterprises, the World Bank's Operational Policies, Conventions 98, 169 and 176 from the International Labour Organization and the Voluntary Principles on Security and Human Rights.

For further information on each of the ten fundamental principles and the different "position statement" commitments, see www.icmm.com.



THE 10 PRINCIPLES

<p>1 Implement and maintain ethical business practices and sound systems of corporate governance.</p>	<p>2 Integrate sustainable development considerations within the corporate decision-making process.</p>
<p>3 Uphold fundamental human rights and respect cultures, customs and values in dealings with employees and others who are affected by our activities.</p>	<p>4 Implement risk management strategies based on valid data and sound science.</p>
<p>5 Seek continual improvement of our health and safety performance.</p>	<p>6 Seek continual improvement of our environmental performance.</p>
<p>7 Contribute to conservation of biodiversity and integrated approaches to land use planning.</p>	<p>8 Facilitate and encourage responsible product design, use, re-use, recycling and disposal of our products.</p>
<p>9 Contribute to the social, economic and institutional development of the communities in which we operate.</p>	<p>10 Implement effective and transparent engagement, communication and independently verified reporting arrangements with our stakeholders.</p>

THE EXTRACTIVE INDUSTRIES TRANSPARENCY INITIATIVE

Since 2003, by lending its support to the Extractive Industries Transparency Initiative (EITI), Orano has demonstrated its commitment to greater transparency in payments made to States, in relation to the management of mining resources.



Niger, Mongolia and Kazakhstan, countries in which the group is engaged in mining activities, are members of EITI. Niger, however, has announced its withdrawal in November 2017. In these countries, our mining subsidiaries participate in the local multi-party process and declare payment of taxes, mining rights and taxes on profits, royalties, and fees using specific declaration forms, with national governments obliged to report revenues from payments received.

The statutory auditors of these subsidiaries carry out an audit which results in a certificate of compliance in accordance with the IFAC (International Federation of Accountants) ISRS 4400 international standard on related services.

Furthermore, Orano's mining activity entities assess their involvement in the EITI process by means of self-assessment forms.

The French State has been a permanent supporter of the EITI since 2005.

NIGER

- Decision to withdraw in November 2017; renewed discussions resumed with the EITI secretariat.

HEALTH OBSERVATORIES

The Health Observatories deployed in Gabon (Health Observatory of Mounana - OSM) and Niger (Health Observatory for the Region of Agadez - OSRA), were set up to carry out post-professional monitoring of retired employees of COMUF, 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 Gabon and 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 Observatories.



THE OBSERVATORIES IN FIGURES...

At the end of 2017, in total more than 4,390 post-professional monitoring consultations have been carried out for former employees of COMUF in Gabon and SOMAÏR and COMINAK in Niger.

Between 2010 and 2015, the OSM organized annual medical consultations in all regions of Gabon: A total 1,158 consultations for 667 former COMUF employees were recorded during this period; 245 files were studied by the Medical Committee; 57 files were selected for further examinations. Out of all the cases handled by the teams and by independent medical experts, no occupational illnesses related to ionizing radiation were detected. Since January 2015, the OSM has not conducted any consultations owing to a disagreement between the different stakeholders of the Observatory.

The OSRA (Agadès Regional Health Observatory) created at the end of 2011 continues its activities with 877 consultations conducted in 2017, including 324 SPP3. By the end of 2017, OSRA had conducted a total of 3,234 consultations.

As of the end of 2017, no occupational diseases related to exposure to ionizing radiation have been declared.

OTHER VOLUNTARY INITIATIVES

■ Committee for Strategic Metals (COMES)

The French committee for strategic metals (Comité pour les Métaux Stratégiques - COMES) was created in January 2011 by the French authorities, giving rise to a forum for discussion and coordination between government departments, public agencies and professional associations three doctors, all experts in pathologies linked to ionizing radiation, analyze the health data sent by the Observatory doctor from the extractive industries.

To protect the national economy, COMES provides strategic steering of mineral resources with the aim of safeguarding the procurement of these raw materials needed to supply the country's industry.

Given this objective, the activities carried out by COMES are organized into five critical areas:

- 1. Analysis of the demand of domestic industry.
- 2. Exploration initiatives and assessment of existing resources.
- 3. Waste management.
- 4. Vulnerability with regard to international circumstances.
- 5. Research and innovation

■ Minerals, Ores and Metals Alliance (Alliance des Minerais, Minéraux et Métaux - A3M)

The Minerals, Ores and Metals Alliance (Alliance des Minerais, Minéraux et Métaux - A3M) is the result of the alliance between the FEDEM (Federation of Ores, Industrial Minerals and non-ferrous metals - Fédération des Minerais, Minéraux Industriels et Métaux Non Ferreux) of which Orano Mining is a member, and the French steel federation, the FFA. The alliance was created in 2013 and started operating in January 2014. Its aim is to improve visibility, representativeness and effectiveness in all areas of shared interests and particularly in two areas:



- 1. Economic performance and competitiveness.
- 2. Safety and community investment

A3M contributes to safeguarding the supply of the raw and secondary materials that are necessary for French industry to function properly, especially in key sectors with the greatest needs (construction, defense, automotive, aerospace, engineering), while implementing all the appropriate practices for meeting stringent regulatory requirements.

A3M also took part in discussions for the drafting of the new French mining code with the French Ministry for Ecology, Sustainable Development and Energy.

■ International Atomic Energy Agency (IAEA)

Orano Mining is one of France's representatives in the Uranium group of the International Atomic Energy Agency (IAEA), in collaboration with the OECD's Nuclear Energy Agency, the organization responsible for publishing the biennial report "The Red Book". This report collects all the mining statistics on the uranium of member countries.



All member countries contribute to the data for mining exploration activities, for the industrial activity of uranium production, on mining resources and reserves, and basic data on nuclear power generation.

Orano Mining, with its international expertise and knowledge of the uranium business and disciplines, contributes to the analysis of collected data in order to produce a baseline report to serve the international nuclear community.

■ World Nuclear Association (WNA)

The World Nuclear Association (WNA) is an organization created in 1991 that evolved out of the Uranium Institute. Today it counts more than 170 members throughout the global nuclear industry:



- 1. all the players across the fuel cycle (uranium, conversion, enrichment, fuel);
- 2. all the builders of nuclear power plants;
- 3. most of the engineering, construction and nuclear waste processing companies.

Its mission is to promote nuclear energy as a sustainable source of electricity production, through the organization of working groups and plenaries, and by producing benchmark technical or strategic analyses for the industry.

The organization thus enables its members to share expertise, the best practices in the industry, and to gain a thorough understanding of their markets.

Orano is an active member of the WNA.

■ Nuclear Energy Institute (NEI)

The Nuclear Energy Institute (NEI) is an American organization created in 1994 through the merger of several legacy organizations, devoted to promoting the nuclear energy industry. The institute currently has 350 members.

The aim of the organization is to inform and raise awareness on the role of nuclear energy.

The NEI uses its expertise to develop policies adapted to the specific issues facing the nuclear industry (economy, environmental, health issues, etc.), in order to ensure sustainable development and public acceptance of the industry.



■ The OECD

On 4 May 2010, the governments of the 42 OECD and non-OECD countries adhering to the OECD Declaration on International Investment and Multinational Enterprises updated their Guidelines to reflect changes in the landscape for international investment and multinational enterprises.

These Guidelines aim to ensure that the operations of multinational enterprises are in harmony with government policies, to strengthen the basis of mutual confidence between enterprises and the societies in which they operate, to help improve the foreign investment climate and to enhance the contribution to sustainable development made by multinational enterprises.



■ The Global Compact

These are ten universal principles relating to human rights, rights at work, the environment and anti-corruption:



■ Human rights

- 1. Businesses should support and respect the protection of internationally proclaimed human rights; and
- 2. Make sure that they are not complicit in human rights abuses.

■ Labour

- 3. Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;
- 4. The elimination of all forms of forced and compulsory labor;
- 5. The effective abolition of child labour; and
- 6. The elimination of discrimination in respect of employment and occupation.

■ Environment

- 7. Businesses should support a precautionary approach to environmental challenges;
- 8. Undertake initiatives to promote greater environmental responsibility; and
- 9. Encourage the development and diffusion of environmentally friendly technologies.

■ Anti-Corruption

- 10. Businesses should work against corruption in all its forms, including extortion and bribery.

Sustainable Development Goals (SDGs)

The Sustainable Development Goals (SDGs), adopted in September 2015 by 193 countries at the United Nations, are a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity.

These goals, which are universal, inclusive and interconnected, have the essential aim of involving all stakeholders in order to establish a common language. The SDGs are an extension of the Millennium Development Goals and are a means of raising awareness about corporate responsibility, a source of economic opportunity, but also a lever for multi-stakeholder collaboration to act.

In order to achieve this transition, these 17 SDGs are accompanied by 169 targets, addressed to all the actors, and which make it possible to adapt the objectives according to each actor's own activities.



[Click here to find out more on United Nations website](#)



Our objective:

"provide you with meaningful and comprehensive reporting on our policy of social responsibility, as associated with our principal short and long term challenges."

Our challenge:

"allow you to express your expectations in terms of disclosure either through this web report or locally through our teams on the mining sites".



MATERIALITY

Materiality consists in identifying the CSR performance topics on which the Orano Mining Business Unit should report annually.

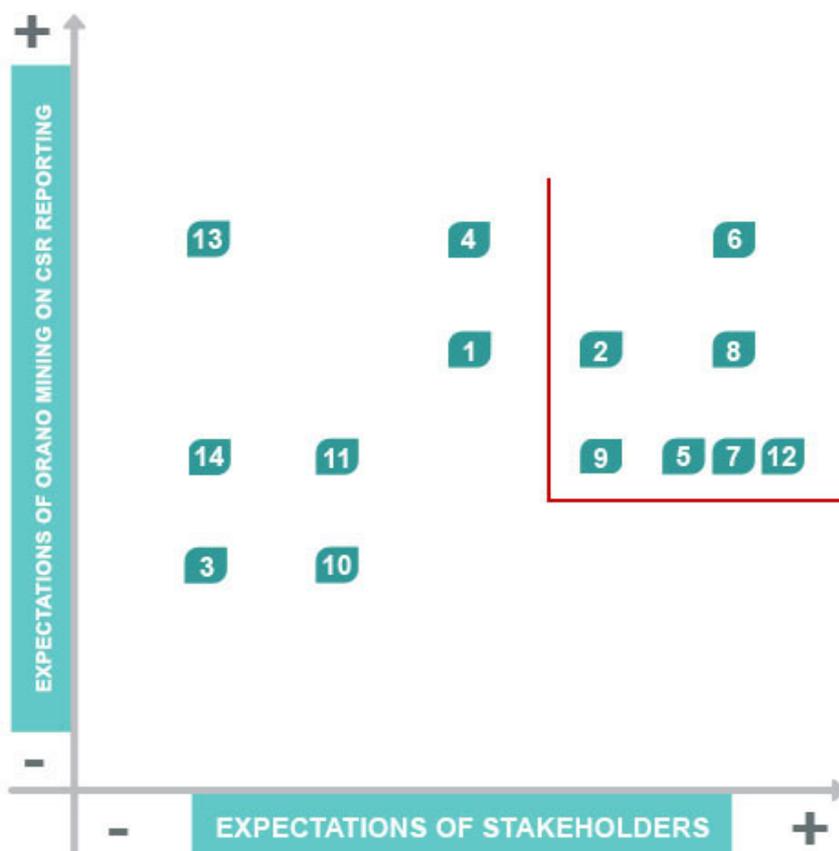
To carry out this exercise, we must consider two types of input data:

- Prioritization of issues to be conducted by the stakeholders in our mining activities;
- Prioritization of issues from an internal perspective (management and disciplines).

The materiality criteria to be assessed were defined on the basis of Orano Mining's internal policies and on the ten sustainable development principles of the International Council on Mining and Metals (ICMM).

1. TRANSPARENCY	2. ETHICAL BUSINESS	3. RESPONSIBLE PURCHASING	4. RISK MANAGEMENT
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.	Adopt and maintain ethical business practices in order to avoid incidents of corruption or bribery.	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.	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.
5. COMMUNITY INVOLVEMENT	6. HEALTH AND PROTECTION OF EMPLOYEES	7. LABOR RELATIONS	8. ENVIRONMENTAL FOOTPRINT
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.	Protect the health and safety of employees and keep the radiation impact on neighboring communities to a minimum.	Facilitate and safeguard dialogue between employees and general management (e.g. through staff representative bodies and internal communications).	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.).

9. BIODIVERSITY	10. CLIMATE CHANGE	11. EMISSIONS AND WASTE	12. REMEDIATION – MANAGEMENT OF LONG-TERM IMPACT
Keep footprint to a minimum and preserve the flora and fauna in proximity to mining activities.	Help combat climate change by keeping greenhouse gas emissions to a minimum (CO ₂ et VOCs).	Control all liquid, solid and gaseous discharges and emissions, as well as waste and processing tailings, liable to have an impact on the environment.	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.
13. OPERATIONAL PERFORMANCE	14. SHIPMENTS AND TRACEABILITY OF URANIUM		
Ensure production is conducted on time, on budget and in accordance with Orano values.	Guarantee the inspection and tracking of uranate concentrates, as well as the safety and security of shipments to converters.		



At the end of 2016, we re-updated the exercise conducted in 2014, re-using the same criteria and putting questions to certain of our external stakeholders.

A wide variety of stakeholders, from Niger, Namibia, Canada and France were consulted, as part of mapping processes carried out in Namibia and to some extent in Niger; opinion surveys carried out in Canada and questionnaires sent out in France or in Niger. The feedback from questionnaires filled out online in the "Participate" section of the CSR report website were also used to gain a fuller picture of the expectations of stakeholders.

This update made it possible to confirm 7 criteria as being priority areas for reporting:

- Health and protection of employees
- Environmental footprint
- Ethical Business
- Community involvement
- Labor relations
- Remediation – Management of long-term impact
- Biodiversity

We have therefore decided to give readers of the Corporate Social Responsibility Report access to the information on these seven criteria through the CSR Approach governance section which presents the main transverse subjects of interest to our stakeholders (ethics and human rights, risk management, etc.) and to our six major commitments on mining activities: occupational safety, health and radiation protection, environment and biodiversity, community engagement, commitment to employees, post-mining, innovation.

Next Steps:

It is necessary to confirm the issues identified as being of material significance in 2016, in particular as far as business expectations are concerned. To this effect, in line with a continuous improvement approach and in order to ascertain more fully the wishes of the various stakeholders, a consultation of Mining BU subsidiaries and departments in 2018 will serve to check for any changes in CSR expectations within Orano Mining. With regard to external stakeholders, certain categories not consulted in 2016 will need to be approached, including suppliers and customers for example.

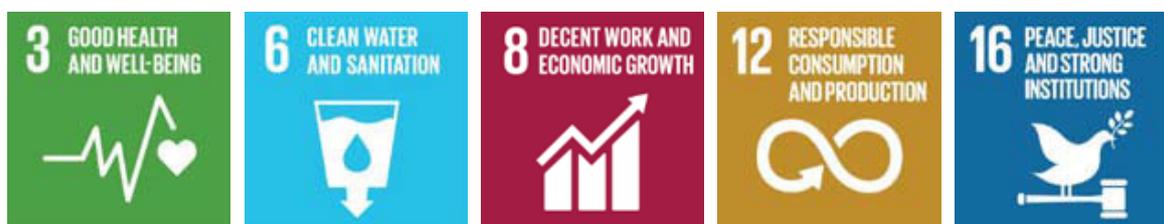
Furthermore, additional mapping operations in Mongolia, at Niamey in Niger, and in France, will make it possible to provide greater reassurances that the expectations of external stakeholders are being met, supplementing the questionnaire available online as part of this report which gives readers the chance to express their views on CSR issues.

■ Sustainable Development Goals (SDGs)

The involvement of business and civil society in this process is as important as that of governments. Orano Mining has therefore decided to build the Sustainable Development Goals into its CSR strategy. 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.



■ 2017 Results

The new 2017 CSR report seeks to meet these expectations by following the guidelines of the GRI Standards – core level.

Canada and the two Nigerien companies SOMAIR and COMINAK draw up their own reports, while Mongolia and Kazakhstan published their first reports in 2015 and 2017 respectively. The ambition for the coming years is to compile all these reports based on the same GRI 4 template, every two years as a rule.



CHAPTER

COMMITMENTS

Health, occupational safety and radiation protection

Extract from Responsible Development report 2017
on Orano Mining activities.

The complete report is downloadable on:
www.rse-mines.orano.group



ORANO MINING
Corporate Social Responsibility Report
2017



Our employees may be exposed to several risk factors that could affect their health, whether on industrial sites, in offices or during business trips to the various countries in which Orano's mining activities are based.

In the course of our activities, a great number of information and prevention actions are undertaken in order to maintain a high level of occupational health and safety. 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, of our operatives from outside companies, and of everyone living in close proximity to our sites.

OUR FUNDAMENTALS IN HEALTH, OCCUPATIONAL SAFETY AND RADIATION PROTECTION



Orano's Occupational Health, Safety and Radiation Protection Policy 2017-2020

The Orano Group's Occupational Health & Safety and Radiation Protection policy, which has been overhauled for the period 2017-2020, aims to continuously improve the results in this area and to reinforce prevention. This policy has been signed off by the CEO and distributed throughout the group.

Developing primary prevention in health, safety and radiation protection is a matter of concrete measures: it involves assessing and gauging risks before taking action, and reinforcing a culture of risk anticipation at all levels of the company.

That is why this policy includes three key areas:

- primary prevention,
- control of operations,
- feedback and sharing of experience.

Orano undertakes as follows:

- to secure appropriate medical surveillance for all its employees, through:
 - the definition and application of international standards for medical surveillance of occupational risks;
 - reinforced governance of health actions and increased vigilance on the quality of life at work, particularly with regard to prevention of psychosocial risks;

- continued deployment of the group occupational health service in France;
- systematically addressing the specific nature of expatriation in our employee medical surveillance;
- ensuring, in the field of occupational safety, prevention and control of all industrial risks connected with our activities for employees and external operatives.

The new, proactive Health, Safety and Radiation Protection policy, was launched by the group from early 2017 to drive down its lost-time occupational accident frequency rate by 2020.

Each group entity has appropriated and applied this policy, adapting it to the risks related to its activities and identified in the risk assessment file known as the “document unique” in France (legally-required document providing a record of workplace and occupational health risks and preventive measures in place), or its equivalent internationally, taking into account the feedback from accidents or events that have occurred within its scope.

■ Health-safety and radiation protection roadmap for mining activities

In terms of occupational health & safety and radiation protection regulations, employees are the responsibility of their entity of origin and are subject to national legislation. These regulatory considerations are incorporated into our operating policies and practices.

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:
 - Strengthen safety governance by fostering interaction in the field between management and employees, a day dedicated to safety on all sites, a safety committee to meet at the highest level of the Mining BU, a health, safety & environment and radiation protection action plan for each site.
 - Raise awareness on occupational health and safety on all sites: targeted actions concerning subcontractors, communication campaigns, mobilization to encourage initiatives, participative safety visits and feedback.
- Organization and skills: clearly define roles and responsibilities to ensure the right person is at the right post and identify key people, develop HSE (Health, Safety & the Environment) skills among managers and employees, set individual safety targets, conduct audits of medical structures, organize and optimize health schemes, etc.
- Standards and procedures: implement the 12 standards common to the whole of the Orano group, harmonize practices and implement procedures specific to mining activities, strengthen management systems on sites, expatriate health procedures, health recommendations in contracts with subcontractors, etc.
- Risk analysis and prevention : assess risks at workstations and industrial and health risks, set up a documented crisis system, take suitable prevention measures and update risk assessments when necessary.



Each local action plan is challenged by Orano Mining's Health, Safety, Environment and Radiation Protection (HSE-RP) team (to examine feasibility in terms of coherence, resources, leadtimes, etc.).

Risk factor prevention

Our employees are exposed to different categories of health risk, including the injuries that may occur following an accident in the workplace mainly on an industrial or mining site, but also the exposure to ionizing radiation, that is intrinsic to uranium ore mining and the production of uranium oxides (U3O8 – Yellow Cake). Our employees may also be exposed not only to psycho-social risks, but also to other risks as well, principally those such as exposure to noise, to dust, or to chemical substances which may potentially lead to occupational illnesses. Other factors may be directly linked to risks that are endemic in the country.



The prevention of risks that may affect the health of our employees takes place at several levels in the deployment of Orano Mining's health policy.

HEALTH

Our fundamentals in terms of 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, as well as providing support 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:

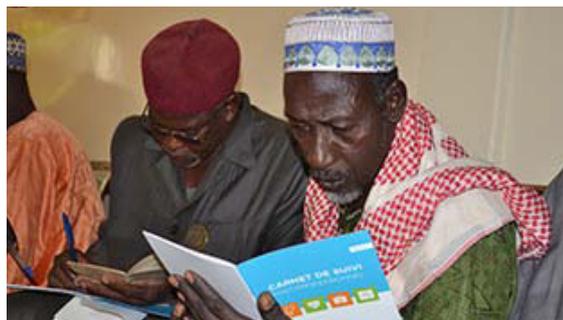
■ Medical monitoring

Occupational medicine:

- Each site has set up an organization for the medical monitoring of staff, starting with a pre-recruitment medical examination and continuing with periodic check-ups (whose frequency is determined by the risks associated with the post), always in compliance with the regulations of the country in question.
- 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.

EXAMPLES OF ACTIONS CONDUCTED IN 2017

Performance of audit assignments in regional and national hospitals in Mongolia and Kazakhstan in order to update the medical evacuation schemes and procedures.

Conduct of a "noise and impacts" survey on the sites in production.

Organization of a preventive health working group on the subject of air pollution in the city of Ulaan Baatar.

MAKING OCCUPATIONAL SAFETY A PRIORITY

- Our objectives: 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 operatives, 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 bests practices in occupational safety;
- sharing the experience feedback from our accidents among the entities of the group and with our industrial partners.





SAFETY STANDARDS

Since 2012, the Orano group has been running a program specifically aimed at establishing an occupational safety culture. Its purpose is to develop a safety culture that involves all our employees and subcontractors.

Our commitment to safety is based on 12 standards applicable on all group sites. These 12 standards are not a substitute for local regulations, standards or rules of best practice, but serve to complement them whilst also complying with them.



■ A specific Governance structure

Safety governance takes the form of a safety committee. Both think-tank and executive body, this committee meets 2 to 3 times per year. It is made up of the main directors of the Mining Business Unit.

“ Prevention, Rigor & Vigilance

“One single ambition: to aim for zero accidents”

Safety means prevention and attention on a daily basis and every minute. As long as our colleagues continue to suffer injuries at work, we have to keep working to strengthen our safety culture and be rigorous in the implementation of preventive actions. We must all conduct ourselves in an exemplary manner in all matters relative to safety. I expect the following from each and every one of you:

Strict compliance with standards, rules and instructions. There can be no compromise when it comes to safety.

A questioning attitude, as well as rigor and not wavering attention performing your everyday tasks and activities.

Responsible and attentive behavior : know how to engage with a colleague who is putting himself/herself into a hazardous situation or is not following the rules; intervene where necessary; know how to handle feedback from one of our colleagues who alerts us about a hazardous or non-compliant situation.

Alert others and stop work when the situation requires.

I know I can count on the commitment of each and every one of you.

*Commitment and message from
Jacques Peythieu, Senior Executive Vice President of the Mining BU.*

The Safety committee is responsible for the planning of courses of action (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 present, 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 achieving the goal of zero accidents, the safety committee of the Mining BU sets intermediary objectives, which apply to everyone.

■ 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.
- Improve and reinforce feedback with systematic sharing of High severity POtential (HIPO) events at site level.
- Continue the rollout of safety culture improvement training with a focus on supervisors / team leaders.
- Apply the pre-job briefing safety standard on the sites.
- Conduct an assessment of the condition of lifting gear.

LTIFR / TF1 (Lost Time Injury Frequency Rate): Fatalities, and lost time accidents
TRIR / TF2 (Total Recordable Injury Frequency Rate): Fatalities, and accidents with and without lost time
AIFR including first aid / TF3 (All Injuries Frequency Rate): Fatalities, and accidents with and without lost time (including medical care and first aid)



4 PRIORITY ACTIONS FOR 2017

In 2017, 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 : Establish a standard for mining for the Pre-Job Briefing.
- Action N°4 : Finalize the experience feedback on 2015 and 2016 SIFs (Serious Injuries and Fatalities) and identify ways forward for improvement.

Each site has prepared its own roadmap based on these five priority actions.

Each local action plan is challenged by the Health, Safety, Environment and Radiation Protection Department (to examine its feasibility in terms of coherence, resources, leadtimes, etc.).

■ 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).

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



LOCATION OF OUR SITES	CERTIFICATION STATUS ON DEC. 31, 2017 - OHSAS 18001 & ISO 14001
CANADA (Orano Canada)	Certified
FRANCE (Bessines)	Certified
KAZAKHSTAN (Katco)	Certified
NAMIBIA (Orano Mining Namibia)	Integrated management system compliant with OHSAS 18001 et ISO 14001 standards but not certified
NIGER (SOMAÏR et COMINAK)	Certified
MONGOLIA (Badrakh Energy)	Non-certified

2017 results

In 2017, the safety objectives of the Mining BU were not met. A fatal accident occurred at COMINAK during an underground mining operation.

Nevertheless, the commitment to safety at all levels of the organization allowed us to achieve a lost-time accident frequency rate equal to (LTIFR = 0.68), corresponding to 11 lost-time occupational accidents for the year in total and 1 fatal accident. Since 2011, the frequency rate has included the safety results of our subcontractors.



FEEDBACK ON THE COMINAK ACCIDENT

On Wednesday, August 23, 2017, Mr Mamane Bachir Brah, aged 38 years, a Mining Foreman at Cominak, lost his life following an accident caused by a rockfall in the underground mine.

The Management of Orano Mining expressed its deep regret, as did all the Orano group teams, for this tragic incident.

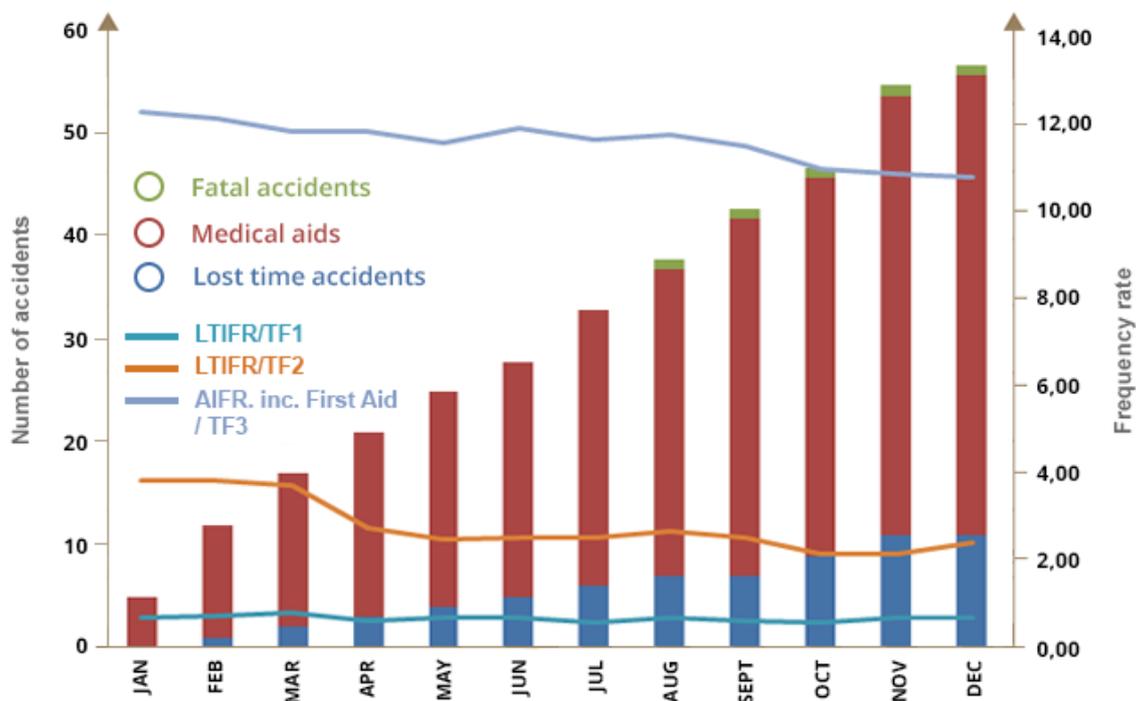
On the Friday following the accident, a minute's silence was observed by all the teams at each Orano Mining site, in remembrance of Mr Mamane Bachir Brah.

The teams from COMINAK analyzed the underlying causes of this accident by studying the organizational and human factors that may have contributed to it.

Beyond the immediate actions taken, a prevention action plan has been implemented involving:

- continuation and reinforcing the safety culture training commenced in 2016 and targeting all members of line management and teams,
- an external geotechnical appraisal,
- more robust addressing of organizational and human factors and a strengthening of the pre-job briefings.

■ ORANO MINING ACCIDENTS AND FREQUENCY RATES

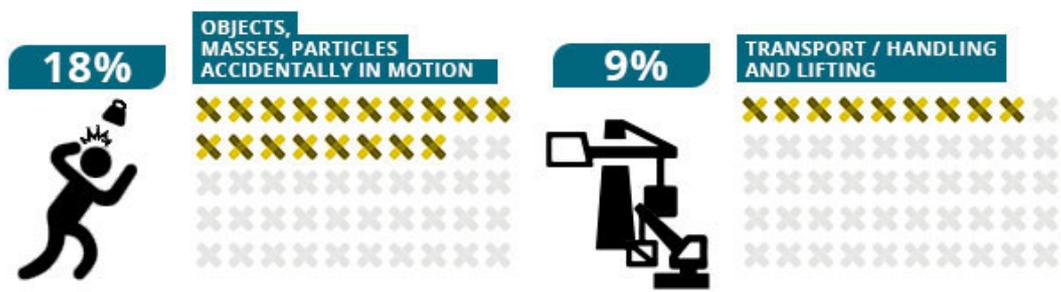


Reminder of definitions

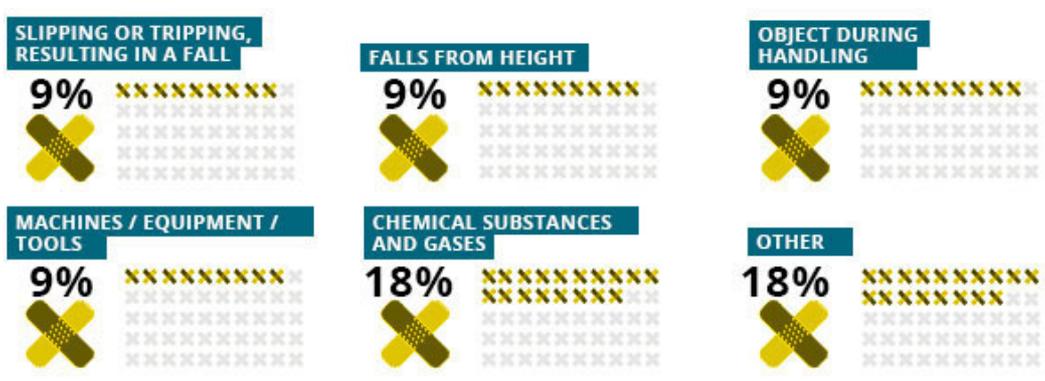
- LTIFR / TF1: Fatalities, and lost time accidents x 1 Million / hours worked over a rolling 12-month period
- TRIFR / TF2: Fatalities, and accidents with and without lost time x 1 Million / hours worked over a rolling 12-month period
- AIFR including first aid / TF3: Fatalities, and accidents with and without lost time (including medical care and first aid) x 1 Million / hours worked over a rolling 12-month period

Main risks of lost-time occupational accidents

MAIN RISKS OF ACCIDENTS ARE:

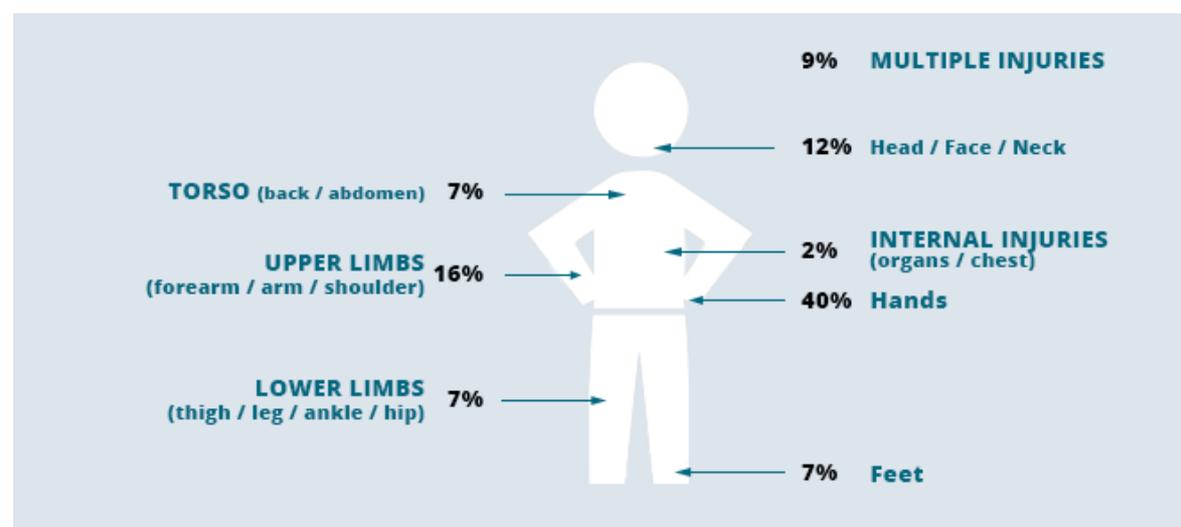


OTHER RISKS ARE:



Injuries associated with occupational accidents

2017 RESULTS: injuries due to occupational accidents (lost time injuries, medical aids) for employees and subcontractors



RADIATION



Radiation protection of employees

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.

Within this framework, Orano is committed to applying a threshold, in countries with less stringent legislation, of 20 mSv/yr (over a rolling 12-months) as the maximum individual dose received by workers exposed to ionizing radiation in its facilities. This is based on ICRP (International Commission on Radiological Protection) recommendations.

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.

Following this, during normal operation, risk analyses are conducted at workstations and the exposure of workers is monitored using suitable dosimeters.

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.

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

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.

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



FIND OUT MORE

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.

■ Means of exposure to ionizing radiation

Two modes of exposure to ionizing radiation are possible:

■ External exposure:

In the case of external exposure, the radioactive source is outside the organism. If the whole of the organism is affected, this is referred to as global exposure; if only part of it is affected, then it is a case of partial exposure.

In the case of external "remote" exposure, exposure stops as soon as the person is sufficiently far away from the radioactive source or if a screen (shielding) is placed between the person and the source.

When radiation is emitted by radionuclides present by being deposited on the surface of the skin, in direct contact with the person, we also talk about "external contamination".

■ Internal exposure:

The radioactive source has penetrated inside the organism. This is referred to as "internal contamination".

This can happen if a person inhales radioactive particles present in the air or ingests food that is contaminated with radioactive particles, or if there is direct contact with the skin or a wound (in this case we talk about "external contamination" that becomes "internal contamination").

When contamination occurs, exposure to radioactive particles continues as long as the source remains inside or in contact with the body.

■ Radiation protection principles

Through radiation protection, we implement all the preventative measures that limit the exposure of teams and populations to ionizing radiation.

In order to avoid or reduce the associated risks, radiation protection follows three main principles: justification, optimization and limitation of doses.

- The justification of activities that carry the risk of exposure to ionizing radiation;
- The optimization of exposure at the lowest level reasonably achievable. This is the **ALARA** precautionary principle (As Low As Reasonably Achievable) ;
- The limitation of doses of individual radiation exposure so as not to exceed the regulatory limits.

These three fundamental principles are taken from the recommendations of the ICRP (International Commission for Radiation Protection) and are enshrined, in France, in the French Public Health Code (Code de la santé publique).



MORE INFORMATION

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.

It is with a view to achieving this objective that, in the underground mine at COMINAK (Niger), fixed equipment has been installed to monitor the activity concentration of radon with audible and/or visual alarms. 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. The indication of "hot points", in other words areas with higher dose rates, by means of radioactive symbols in reflective paint on suspended signs is another optimization initiative which helps to make it easier to identify zones of risk.

Radiation protection was given pride of place at the AREVA Awards 2015, a challenge the main purpose of which is to reward teams at the origin of projects and accomplishments of an outstanding innovative nature. The Quick Change Pumps to reduce the exposure of workers at the McClean Lake mill (Canada) was chosen as one of seven winners from among the 24 finalists. This project, initiated by employees of AREVA Resources Canada (ARC) in charge of maintenance, has made it possible to shorten the time required to carry out pump replacements in the ore pulp reception and storage areas, by introducing standardized pumps. This initiative has delivered a significant reduction in repair times and therefore in exposure to gamma radiation, from 4 hours to 10 minutes. This results in a direct improvement in the radiation protection and safety of workers thanks to a reduction in exposure time.

At Katco (Kazakhstan), major preventive maintenance actions were conducted in 2016 at the plant for the activities 400 and 500. They are helping to contribute to the necessary optimization initiative. Maintenance of the calciner has made it possible to prevent leaks from the powder network. Similarly, at the crystallizer, the expected benefits are a decrease in clogging incidents and a decrease in the quantities of materials deposited on its walls. These anticipatory actions have thus made it possible to reduce the number of interventions and the time necessary for repair and maintenance operations. The expected results include reduced intervention times in the event of production incidents and lower ambient dose rate values around the crystallizer.

Renovation work on the calciner building on levels 9 m and 11 m have also made it possible to improve the surface of the floors to avoid the accumulation of dust and facilitate cleaning and decontamination. The benefit obtained as a result is a decrease in the time for which operators have to be present and better management of ambient dust in the building.

These initiatives are considered best practices with regard to international standards.

Radiation protection culture

Continued action to foster a culture of radiation protection.

Actions to foster the culture of radiation protection are conducted at Orano group level through the Health, Safety and the Environment Department (Direction Sûreté, Santé, Sécurité et Environnement – DHSE) or at Mining BU and site level.

The experience of participants in the area of radiation protection culture has made it possible to define criteria to assess the development of radiation protection culture under normal and post-accident conditions. The objective is to encourage a practical dialogue and allow everyone to make sense of measures and information relating to radiation protection, to provide a wider variety of sources of information that are more pluralistic and take account of local challenges, to promote a global approach to radiation protection issues, and encourage the development of networks to bring those actively involved and experts in radiation protection together.

Examples of actions taken:

- Development and dissemination of communication materials, such as the thematic information sheets for the "Are you sure?" ["Etes-vous sûr ?"] initiative on failure to wear dose measurement equipment in regulated areas or checking that Personal Protective Equipment (PPE) is being worn correctly.
- Promotion of the participatory safety visits (Visites Sécurité Participative – VSPs) and checks to ensure that all those involved are following radiation protection rules correctly.
- Training courses: in addition to the training required by French regulations on workers subject to dosimetric monitoring, a number of training sessions are available on the fundamentals of radiation protection for employees at the different Mining BU sites.



Group following a training session on the fundamentals of radiation protection in Mongolie (July 2017)

■ Regulations governing radiation protection

■ Regulatory limits per country

REGULATORY LIMIT SET FOR EMPLOYEES AND SUBCONTRACTORS	CUMULATIVE ANNUAL DOSE OVER A ROLLING 12-MONTH PERIOD FOR EXPOSED WORKERS
CIPR RECOMMENDATIONS	100 mSv over 5 years, without exceeding 50 mSv per year
EURATOM COUNCIL DIRECTIVE 2013/59/ OF 5 DEC. 2013	20 mSv per year
NIGER	20 mSv per year
CANADA	100 mSv over 5 years, without exceeding 50 mSv per year
KAZAKHSTAN	100 mSv over 5 years, without exceeding 50 mSv per year
FRANCE	20 mSv per year
NAMIBIA	100 mSv over 5 years, without exceeding 50 mSv per year
MONGOLIA	100 mSv over 5 years, without exceeding 50 mSv per year
GABON	100 mSv over 5 years, without exceeding 50 mSv per year

The Sievert (Sv) is a unit used in radiation protection which is expressed in "equivalent dose" and takes into account the characteristics of the radiation and of the irradiated organism. On average, the annual exposure of a member of the public in France is 4.5 mSv.

■ Definition of occupational diseases related to ionizing radiation

A disease can be recognized as an occupational disease if it is included in one of the tables appended to the French Social Security Code (Code de la Sécurité sociale).

Disorders caused by occupational exposure to ionizing radiation are dealt with in table 6 (general social security scheme) and table 20 (agricultural scheme) of occupational diseases. Each table has the following features:

- the symptoms or pathological lesions the affected person must present;
- an exhaustive list of these symptoms or pathological lesions, in the left-hand column of the table;
- reporting time limits, i.e. the maximum period between the end of the worker's exposure to the risk and when the condition is observed. This time limit varies depending on the clinical signs or symptoms presented by the affected person;
- the jobs likely to cause the condition in question, given in the right-hand column of the table.

Any condition that meets the medical, occupational and administrative criteria even in the lists is systematically "presumed" to be occupational in origin, without any proof being necessary.



CHAPTER

COMMITMENTS

Environment and biodiversity

Extract from Responsible Development report 2017
on Orano Mining activities.

The complete report is downloadable on:
www.rse-mines.orano.group



ORANO MINING
Corporate Social Responsibility Report
2017



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.



FUNDAMENTALS



■ Orano's Safety & Environment policy

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.

At every stage in the lifecycle of a mine, from exploration to site rehabilitation, the objectives of Orano's Safety & Environment policy are monitored by the Mining BU.

■ Performance in our management of the environmental challenges:

- Develop the technical and managerial skills of the management and strengthen the presence of operational managers in the field;
- Reaffirm and highlight the value of the role of the independent safety sector (Filière Indépendante de Sûreté – FIS) at each level of responsibility, and as close to the ground as possible;
- Deploy training initiatives, taking into account the results of assessments of skills and of the safety & environment culture of the participants involved;
- Reinforce operational discipline by improving recourse to reliability enhancement practices and paying attention to ensure that HOFs are being duly taken into account when conducting activities.

■ Operational safety:

- Strictly apply the defined standards and operating procedures both in common situations and non-routine situations, including transport activities;
- Tighten up control over sub-contracted activities both at the purchasing process stage, as well as in the monitoring of services provided;
- Firmly anchor the sharing of experience in our practices, by paying attention to ensure in particular that the associated improvement plans are implemented and that feedback is provided to design;
- Produce safety reports and environmental assessments that are relevant and robust, and which are in step with changes to regulatory requirements.

■ Safety of facilities:

- Sustainably ensure a high level of safety that takes account of environmental challenges, by means of programs to design, construct and modernize industrial facilities;

- Guarantee the compliance with regulations and with their reference standards of systems for the management of risks;
- Prevent or limit the impact of our industrial activities on the environment, including on biodiversity, in particular by managing waste appropriately;
- Conduct programs for the dismantling and remediation of sites by ensuring that the defined objectives are met, and by ensuring a future industrial usage which is compatible with the envisaged final condition.

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.

■ Certified environmental management system

Work to prevent professional and environmental risks is carried out at most of our mining sites using a management system that meets the requirements of standards ISO 14001 (for the environment) and OHSAS 18001 (for occupational health and safety).

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

The systems are audited every year by an external third party.

In 2016, an audit for renewal of the ISO 14001 (Environment) and OHSAS 18001 (Occupational Health and Safety) certifications was conducted on the Bessines facilities.

The auditors noted a strong improvement in operational control through the good standard of upkeep of the facilities as well as the effective compliance with environmental and occupational health and safety requirements.

The auditors expressed their confidence in the Integrated Management System at Bessines and will therefore be proposing to AFAQ-AFNOR to renew its dual certification to standards ISO14001 v.2015 and OHSAS 18001 v.2007.



LOCATION OF OUR SITES	CERTIFICATION STATUS ON DECEMBER 31, 2017 - ISO 14001
CANADA (Orano Canada)	Certified
FRANCE (Bessines)	Certified
KAZAKHSTAN (Katco)	Certified
NAMIBIE (Orano Mining Namibia)	Integrated management system compliant with ISO 14 001 standards but not certified
NIGER (SOMAÏR and COMINAK)	Certified
MONGOLIE (Badrakh Energy)	Non-certified

■ 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 scope of environmental objectives is 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.

For the financial year 2017, the main developments regarding scope are the following:

- The Mining Business Unit recorded good operational performance in 2017 with the production of 10,531 metric tons of uranium (total tonnage produced by mines where ORANO is the operator).

2017 RESULTS

■ Water

A rare natural resource in certain countries where Orano Mining is present, management of water is one of the company's core environmental and social concerns. From the monitoring of the volumes of water taken per source and the optimization of consumption through to monitoring of groundwater quality, the question of water is the subject of constant attention.

There are two distinct qualities of water needed by sites: drinking water and industrial water. The water used for our industrial and mining processes comes from various sources: surface water (lakes, rivers, the sea, etc.), groundwater (aquifers) and mine drainage water (pit water), recycled industrial water. Quantities of water sampled are measured by flowmeters; however, certain points of sampling cannot be equipped with a flowmeter, in which case the quantity is estimated or simulated based on models.

The volume of water consumed has decreased by 11 % compared to our consumption for 2016. This decrease is related, on the one hand, to projects to recycle and optimize water consumption, in particular in Kazakhstan, an area for improvement in which we have been making a sustained effort for several years now; and, on the other hand, to a decrease in activity on some of our sites (Gabon, Namibia) and especially thanks to a new water management system for the towns of Akokan and Arlit.



Indeed, in Niger, the Authorities have developed a new water supply network for the towns of Akokan and Arlit. Just a few months ago, the entire community only used water from the Tarat groundwater, via the catchment and distribution network of the mining companies SOMAÏR and COMINAK. The Nigerien State water company.

The SPEN (Société Patrimoine Eau du Niger), has excavated new wells in the Téloua water table to supply the town that has grown up around the mines with water. This approach allows the towns to be independent of the mining companies for their water supply, and also makes it possible to reduce the amount of water taken up from the Tarat water table.



QUANTITY OF WATER TAKEN BY SOURCE - M ³	2015	2016	2017	TREND 2016-2017
VOLUME OF WATER TAKEN FROM SURFACE WATERS (including rain water)	394 349	483 485	490 078	+1 %
VOLUME OF WATER TAKEN FROM THE DISTRIBUTION NETWORK	98 756	79 746	63 781	-20 %
VOLUME OF PIT WATER TAKEN	6 214 265	6 256 782	6 414 391	+2.5 %
VOLUME OF GROUNDWATER TAKEN (via pumping wells)*	5 717 849	5 544 477	4 347 386	-21 %
ABSTRACTED WATER	8 428 647	8 408 190	8 129 651	-3 %
VOLUME OF PIT WATER USED ON SITE - M ³	3 826 732	4 711 519	4 351 385	-7 %
TOTAL VOLUME OF WATER CONSUMED - M ³	6 041 114	6 862 927	6 066 645	-11 %
WATER RETURNED	0	0	0	0

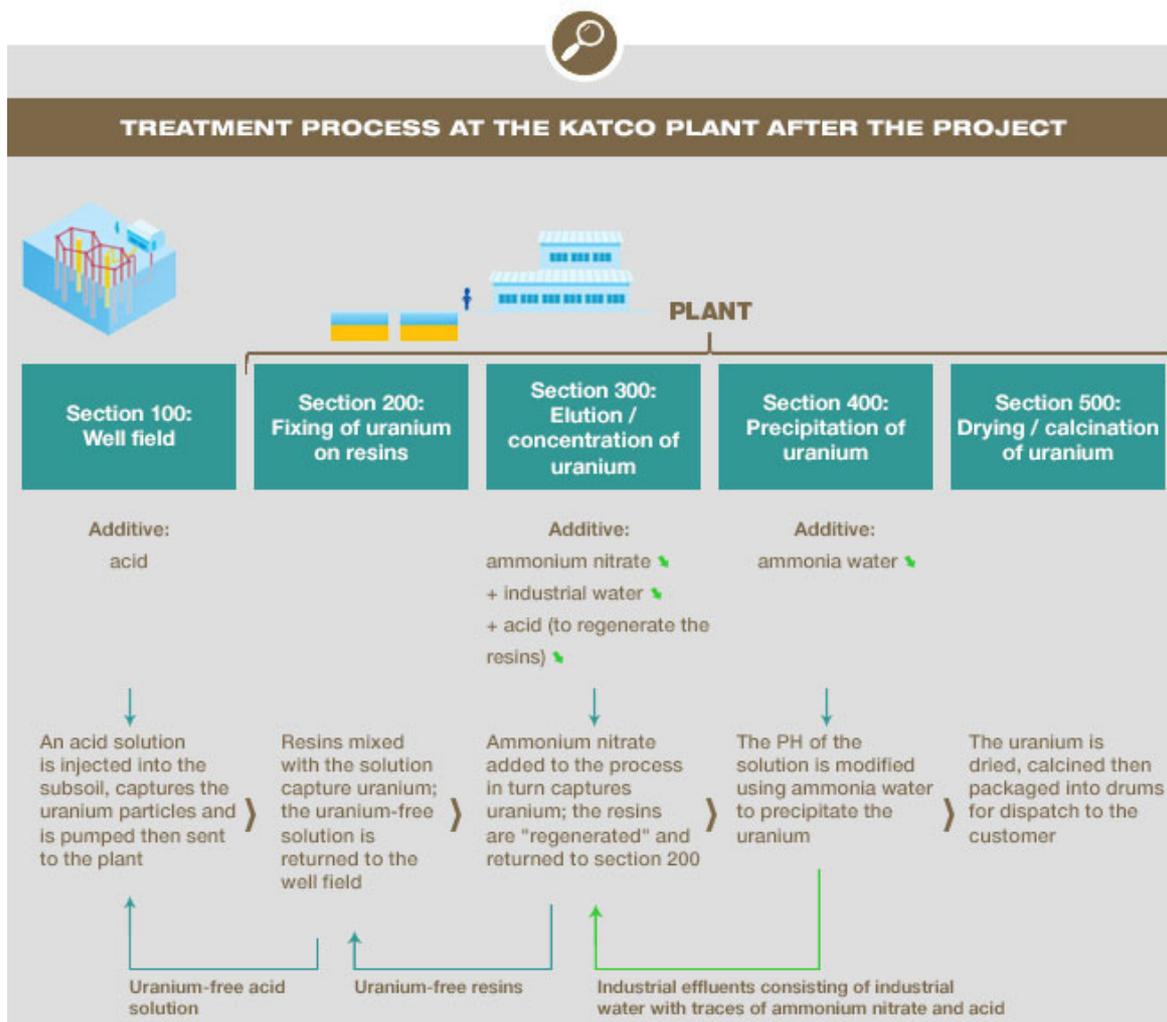
* This indicator includes water taken from groundwater, for whatever use: industrial water supply, drinking water supply, pumping for hydraulic containment, passive treatment. This water may be put to another subsequent use, on or off-site, to meet industrial needs or for the supply of water for consumption.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

Note: the wells may be located on or off-site.

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

■ 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).



KATCO INDICATOR	2015	2016	2017
VOLUME OF WATER CONSUMED (excluding volume used for geothermal processes and volume reinjected into ground water)	595 555	625 033	554 198

Since this process has been implemented, we have seen a downward trend in water consumption at the KATCO site. There has been a reduction of 15 % compared to 2014, even though 2016 was a year of exceptional maintenance work at the plant which generated high water consumption.

■ 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 construct 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 2017, the working group continued its work, carrying out:

- regional monitoring of the impact of our activity on groundwater on behalf of the mining companies,
- monitoring of the drinking water network,
- centralization of all hydrogeological data and appraisals in order to monitor changes in the water resources,
- support for the coordination of the societal initiatives conducted by the mining companies for the sampling and conditioning of water samples on newly drilled boreholes for the benefit of the local population in the communes of the department of Arlit.

An example of a concrete plan of action put into practice at SOMAÏR

SOMAÏR's objective for 2017 was to decrease consumption of drinking water from the urban water supply by 10 % compared to 2016 and to decrease the consumption of industrial water at the plant by 3 % compared to 2016.

In the urban area, an analysis of leaks from pipes and water ducts, as well as more frequent water consumption readings, made it possible to achieve a reduction of 7 %.

In the industrial area, the optimization of dynamic processing made it possible to achieve an 18 % reduction in water consumption.



RATIO	2016	2017	TREND 2016-2017
WATER CONSUMED (M ³ /tU)*	486	436	-10.04 %

* 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.

Overall, energy consumption has stabilized over the last two years, with a ratio of 54 MWh/metric ton of uranium, even if the climatic conditions in 2017 made reductions harder to achieve, in particular in Canada (low temperatures, number of days of heating, etc.).



	2015	2016	2017
ENERGY CONSUMED IN MWh	792 140	752 708	752 225
FOSSIL energy (MWh)	569 365	527 686	513 385
ELECTRICITY consumed (MWh)	222 775	225 022	238 840
Electricity consumed from non-renewable sources (MWh)	222 063	224 336	238 412
Electricity consumed from renewable sources (MWh)	711	686	428

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, SOMAIR and COMINAK.

These assessments have resulted in improvement actions being taken.

For example, at SOMAIR in Niger, actions have been conducted to raise personnel's awareness of energy consumption and a number of organizational measures have helped to reduce the energy consumption in 2017 in various facilities at the plant (compliance with requirement to eliminate needless running of facilities for any stoppage of more than 30 minutes, elimination of precipitation workshops operating at below normal cadence, etc.).

In Canada, the installation of numerous meters on different energy sources (compressed air, steam, gas) has made it possible to achieve a significant reduction in the steam consumption of the industrial wastewater treatment station. Similarly, the activation of systems to preheat the air in buildings by recycling hot air (leaving the buildings) promises significant reductions in the consumption of propane.



RATIO	2016	2017	TREND 2016-2017
ENERGY CONSUMED (MWh/tU)*	53.3	54.2	+1.8 %

* 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:



CO ² EMISSIONS FACTORS BY FUEL			
FUEL	tCO ² / GJ PCI	tCO ² / MWh PCI	tCO ² / tonne
NATURAL GAS	0.057	0.2052	...
PROPANE GAS / LP GAS	0.064	0.23	2.944
HEAVY FUEL	0.078	0.2808	3.12
DOMESTIC FUEL / DIESEL	0.075	0.27	3.15
MOTOR GASOLINE	0.073	0.2628	3.212

- 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:

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

Fuel and process related emissions are calculated automatically in the reporting package STAR partly from programmed data and partly from data entered by the sites.

Emissions from refrigerant fluids are calculated and entered by the site from on-site data and protocol data.



GREENHOUSE GAS EMISSIONS (Metric Tons CO ² equivalent)	2015	2016	2017
DIRECT GREENHOUSE GAS EMISSIONS (GHG) - SCOPE 1	187 460	183 525	182 888
DIRECT EMISSIONS OF GREENHOUSE GASES (GHG) LINKED TO THE TRANSPORTATION OF FREIGHT AND PERSONNEL - SCOPE 1	14 218	9 176	9 650
CO² EMISSIONS FROM PROCESSES AND FACILITIES, INCLUDING CO² EMISSIONS FROM ON-SITE WASTE INCINERATION (Tons of CO²)	32 162	39 349	45 367
DIRECT EMISSIONS OF GREENHOUSE GASES (GHG) LINKED TO FOSSIL ENERGIES - SCOPE 1	148 404.04	137 204	133 058
INDIRECT GREENHOUSE GAS EMISSIONS (GHG) - SCOPE 2	171 624	144 626	143 774
EMISSIONS OF OZONE-DEPLETING GASES	53.08	56.29	31



RATIO	2016	2017	TREND 2016-2017
GREENHOUSE GASES - SCOPE 1 (T CO²/tU equivalent)*	12.98	13.17	+1.42 %

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

Even though the quantity of fossil energy has slightly decreased, a slight increase in the ratio (+1.42 %) is to be seen due to a change in the ores processed, which have a higher carbonate content on a number of sites.

For emissions of ozone-depleting gases, a decrease of 55 % is to be seen compared to 2016, mainly thanks to Somair, in Niger, which has taken a number of different actions to decrease the consumption of refrigerant gases for machinery with the acquisition of a freon gas recycling station, a campaign to service the AC systems on its entire fleet of machines and a preventive maintenance program.



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 increased by 63%. This increase is mainly related to works to dismantle former monitoring wells on our site in Canada.



	2015	2016	2017
QUANTITY OF CONVENTIONAL WASTE - METRIC TONS	6 939	6 353	10 368
QUANTITY OF HAZARDOUS WASTE*	3 535	3 302	7 214
QUANTITY OF NON-HAZARDOUS WASTE**	3 405	3 051	3 154
QUANTITY OF HAZARDOUS CONVENTIONAL WASTE RECOVERED	109	47	34
QUANTITY OF NON-HAZARDOUS CONVENTIONAL WASTE RECOVERED	1 432	1 460	1 105

* Hazardous waste generated by our sites are: used oil, filters of fuel, unnecessary antifreeze agent and superfluous batteries. They are collected in indicated containers and transported for the internal or external recycling. Empty barrels or canisters which contain typically the residue of products as oil, antifreeze agent and grease are returned to the suppliers for the 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 (%)	2015	2016	2017
MINING BU	24.75	23.7	10.9

Example in Niger, on the SOMAÏR site

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.

In 2017, 408 metric tons of radioactive waste was produced by mining entities where Orano 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	2015	2016	2017
TOTAL MASS OF RADIOACTIVE WASTE FROM OPERATIONS EITHER RECOVERED OR ELIMINATED THROUGH APPROVED CHANNELS OR PENDING (INTERIM STORAGE)*	848	976	405

* All the waste evacuated in authorized sector are to be taken into account, including if it is about specific storage. It is for example the case of waste of regular maintenance and 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 for elimination, as well as reporting of any quantity lower than 100 kg or 100 liters.

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.

Its 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

Certain mining sites are located close to zones which are rich in biodiversity. In 2017, we undertook studies and actions to preserve sensitive zones with third parties, such as local communities, consultancy firms, university specialists or nature conservation bodies.

For example, in Mongolia, we have launched a project to replant saxauls in collaboration with a consultant who is an expert in the field.



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-EN14, deemed particularly relevant today for monitoring the potential impacts of our activity on biodiversity. GR-EN 14 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.

■ UICN categories for the Red list

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

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.

A number of the results of monitoring of these new indicators are available in the Case Studies – Environment and Biodiversity section and below for our Kazakhstan, Mongol, Canadian and Namibian sites.

As an example, here are two cases, one in Kazakhstan, the other in Canada :

- 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
Aquila chrysaetos	Animal	Least Concern
Circaetus gallicus	Animal	Least Concern
Otis tarda	Animal	Vulnerable, observed by employees

In Kazakhstan, no sites are listed in UNESCO's World Heritage List.

- A habitat classification study was conducted covering approximately 100,000 square kilometers

Exemple in Canada, in the Athabasca Basin region

The exploitation of this inventory resulted in a list of animal species potentially present in the basin area. These have been classified according to the IUCN red list. This gives: 26 animal species in the Least Concern category, one species recognized as Vulnerable and one species Endangered.

Habitat classification and conservation data allowed us to establish that 38 plant species classified of Least Concern and one classified as Vulnerable have the potential to occur in the local assessment boundary (watersheds). Seven plants in the Least Concern category were found in the local assessment area during flora surveys.

Field observations have also been conducted on a perimeter bounded by the watershed, and therefore including the McClean Lake site. These observations found one species in the Vulnerable category and one in the Least Concern category.

All these studies done under the Canadian Species at Risk Act (SARA) protocol result in 7 Special Concern Plants plus 1 Endangered, 3 Threatened, 5 Special Concern Animals with the potential to occur in the regional or local assessment boundaries neighboring the license zones. Surveys have found only two animals of Special Concern in the local assessment boundary (watersheds) and no plants classified under SARA.

Located more than 400km away from our surface lease, the Wood Buffalo National Park was classified, in 1983, as a UNESCO world heritage site because of its great concentrations of migratory wildlife; the large inland delta, salt plains, and gypsum karst which are internationally significant natural phenomena; ecologically complete example of the North American Great Plains-Boreal Grassland ecosystem.

■ 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:

SOMAIR:

- The PETRUS project (PETRUS = Pérennisation du traitement des Rejets Usine, or sustainable processing of plant discharges), the objective of which is to optimize the storage of effluent and solid waste.
- Technical studies to improve method for the breaking down of nitrous vapors during the dynamic processing of ore.
- Geotechnical study: gain a more precise understanding of the possible ways in which liquid circulates underground in order to take measures to prevent any pollution of the groundwater used. Geophysical measurements were also made in the zone where the ponds are located to ensure that no infiltration could be detected.
- Waste study, in particular concerning used vanadium (catalyst used in the manufacturing of sulfuric acid) with a view to the possibility of recycling.

Canada:

- Selenium speciation studies
- Baseline study on selenium concentration in fish tissue
- Methylated arsenic studies
- Tailings consolidation studies
- Tailings deposition study (sub-aqueous deposition instead of injection)
- Testing new air samplers for monitoring PM10 and PM2.5 particulate
- Long-term studies about tailings evolution

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.

■ Regular environmental monitoring of our sites

To verify that there is no pollution on its sites, the Mining BU monitors many different parameters in the air, water and ground. With only one objective: to be 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

To minimize mining remediation work downstream as well as exposure limits, everything is done upstream to reduce the risk of soil pollution (whether by radionuclides or hazardous chemical products). Systematic monitoring allows identification of abnormal zones. If such zones are pinpointed, soil decontamination measures are applied to restore the zone to regulatory levels. Typically, soil sampling is annual, but if necessary the frequency can be increased.

■ 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.

In 2017, we had no environmental events that had an impact outside our sites. A few accidental spillages (effluents, acid solution) have occurred during our operations. They remained within the sites concerned and had no major environmental consequences and no impact outside our sites. Corrective clean-up measures were taken at the sites. This type of incident is subject to feedback and a lessons learned process which helps us improve our procedures and our practices.



CHAPTER

COMMITMENTS

Social involvement

Extract from Responsible Development report 2017
on Orano Mining activities.

The complete report is downloadable on:
www.rse-mines.orano.group



ORANO MINING
Corporate Social Responsibility Report
2017



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.

FUNDAMENTALS: STRATEGIC ORIENTATIONS



Cultural subsidy granted to local communities in Saskatchewan (Canada)

The priority actions defined in Orano Mining's CSR policy for the social domain are:

- The acceptability of our activities;
- Ethics and transparency of payments with risks of corruption;
- Labor relations, environmental and social issues being taken into account by our suppliers and subcontractors: responsible purchasing and local roots.

To meet these objectives, we are adopting an approach in France, Canada, Niger, Namibia, Gabon, Kazakhstan or Mongolia, based on working on the following areas:

Governance:

- Ensure by way of the CSR Committee (body consisting of the Mining BU management committee, site directors, as well as the Safety and Community Involvement Department (Direction Sécurité et Intégration dans les Territoires – DSIT)) that actions taken across the whole scope of the Mining BU are consistent with regard to CSR policy;
- Define by way of the Mining Social Committees of each site, the major challenges, priority projects, the outlook in terms of local development and engagement with stakeholders;
- Identify and define our partnership frameworks in consultation with stakeholders.

Prevention of risks thanks to our commitment to our stakeholders:

- Update our knowledge base regarding the regions in which we work, notably through societal impact studies and the updating of stakeholder maps. After Canada and Namibia in 2016, Mongolia and Niger (Niamey) updated their maps of local stakeholders in 2017;
- Formalize our social lessons learned, particularly those learned from after-mining, both in France and on an international level;
- Update our tools for risk mapping and materiality assessment analysis. A materiality exercise was conducted at the end of 2016 and allowed us to confirm [the expectations of our stakeholders](#).

ORANO MINING'S SOCIAL COMMITTEES: OUR GOVERNANCE TOOL

Since 2013, the Mining Social Committees of Orano Mining have had the task of putting its social policy into practice at 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 sustained 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, local social leaders, and coordination 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.

DIALOGUE WITH OUR STAKEHOLDERS

Who are our stakeholders?

We define our stakeholders as persons or groups of persons upon whom our activities have had or are having an impact. As part of a responsible approach, it is absolutely necessary to have an understanding of this environment in order to be able to adapt our actions as effectively as possible.

We break our stakeholders down into four main groups:

- internal participants: managers, employees, trade unions, etc.;
- the authorities: Government Ministries, Prefects, Mayors, etc.;
- national and international NGOs;
- the media and representatives of the general public.

We are called upon to establish dialogue with all of these groups of stakeholders.

The methodology used to identify and qualify our stakeholders was updated in 2015 and has since been applied to the territories where we are operationally active.

This methodology is based both on internal feedback from experience and on benchmarking of performance outside the Orano group.

The criteria retained to qualify their representativity are their geographical proximity to our operations, the level of impact of our activity and their possibilities for engagement with stakeholders.

The working method is broken down into 4 distinct steps:

- 1. Preparatory phase
This includes the validation of the method with internal stakeholders, the creation of information gathering tools (interview guide) and the delimitation of the zone and of stakeholders, in particular as far as state and local structures, NGOs/Associations, Suppliers, the Media, etc. are concerned.
- 2. Information gathering phase
This phase includes the conducting of interviews and documentary research.

- 3. Data analysis and processing phase
This involves the transcription of interviews, the exploitation of documentation, the production of graphs and comments on them, and the drawing up of the plan of action.
- 4. Phase of feedback to Stakeholders and of deployment of the plan of action

■ Framework for dialogue

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, associations, 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 present. 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; in Canada and Namibia in 2016, in Niger and Mongolia in 2017 and, during the course of 2018, in Kazakhstan and France, on post-mining issues.

2017 saw the launch of a system to assess our performance in terms of social 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 results in an exchange between all the stakeholders involved in carrying it out (town hall, users, suppliers, technical services, local CSR team).

7 topics (around twenty questions) are addressed as part of the assessment interview: 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.

21 operations with an impact on water management, health or education conducted in Niger in 2016 have been assessed accordingly in 2017.

The initial outcome of these assessments is encouraging, both with regard to the involvement of stakeholders in this exercise and with regard to the results. This assessment system is thus to be extended to other sites such as those in Mongolia and Kazakhstan in 2018.

■ 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 Working Group (AWG)**
 - Created in 1993, this body is composed of members of the mining companies (Orano Canada Inc. and Cameco Corporation) and six communities in the north of Saskatchewan province.
 - In 2012, these stakeholders began the renegotiation process for the "Impact Management Agreement", an agreement that since 2001 has covered all aspects relating to the impact of mining activities on the region: employment, training, environmental protection.
 - In 2016, negotiations with the Communities of Athabasca gave rise to the signature of a new Partnership Agreement on June 10, 2016. This Agreement deals with McClean Lake and supersedes an Impact Agreement dating from 1999. It is structured around 5 pillars for cooperation: local workforce development, economic development, community engagement, the environment and community investments.

Company executives from Orano Canada and its partner Cameco Corporation meet with leaders of indigenous communities from the Athabasca Basin in Northern Saskatchewan each year.



From left to right: Chief Louis Mercredi, Chief Corrine Sayazie, Vincent Martin (CEO of Orano Canada), Tim Gitzel (CEO of Cameco) and Chief Bart Tsannie.

In October 2017, Orano Canada received an award for its involvement in the community from the Saskatchewan Chamber of Commerce in Saskatoon obtaining one of the best rankings in a study concerning the level of partnership of the 500 largest companies with their local economy.



Vincent Martin, President and Chief Executive Officer of Orano Canada receiving the award from the Saskatchewan Chamber of Commerce.

Orano Canada Inc took part in the first joint sessions allowing stakeholders to engage with representatives of the government and organizations from local indigenous communities. The challenge was to ensure that the meetings with stakeholders were targeted and relevant for the local communities. The meetings were held at Hatchet Lake on January 24, 2017, at Black Lake the following day and at Fond du Lac on January 26. Throughout these three days, Orano Canada was able to discuss and respond to questions raised by the communities, their leaders and secondary school students in a friendly atmosphere.

Community meetings



Jobs Forum organized for young people from remote communities in Northern Saskatchewan.

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, associations, etc.). Their aim is to inform the public about the effects of waste processing facilities on health and the environment. The introduction and organization of CSS, formerly CLIS, now known as CSS, was strengthened by the circular of July 22, 2009, which calls for the development of this policy of openness and transparency.
- The Prefect can set up a CSS for each waste processing facility for which a permit is requested, and is obliged to set up a CSS for all storage facilities for the collection of final waste or special industrial waste, or where a request is made by one of the municipalities located within the area covered by the public enquiry.
- Through these committees, Orano Mining presents the different environmental outcomes and the work to be carried out to improve monitoring of former mining sites, in consultation with committee members.
- At least once a year, the operator provides the committee with a summary of site activities, focusing on environmental monitoring and risk prevention.
- In 2017, there were 9 committee meetings across France.

■ GABON – Local information committee

- The most recent meeting of the Local Information and Oversight Committee (Commission Locale d'Information et de Surveillance – CLIS) was held in Mounana in Gabon in March 2017. This meeting provided an opportunity to take stock of the actions taken by COMUF since the last Local Information and Oversight Committee (CLIS) meeting held in November 2015, in particular including progress on the Mounana 200 project, an assessment of the results of the action plans for 2013-2015 and 2016-2017 related to remediation, validated by the Gabonese Nuclear Safety and Security Agency (Agence gabonaise de sûreté et de sécurité nucléaires – AGSSN), the maps of site usage restrictions, and the social initiatives completed or in progress.
- The results of environmental monitoring for the last five years concerning the areas on and around former mining sites –carried out under the supervision of the AGSSN – were also commented on: "As in previous years, the results of the various inspections do not show any impact on health or the environment", confirms an expert from the Department of Safety and Community Involvement, Mining BU.

- Concerning the Mounana 200 project, to build 201 homes to replace those identified by the AGSSN as being radiologically affected and validated by a technical committee made up of the various different stakeholders, COMUF launched the construction work of the first phase of 124 houses 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 highway, network and mains infrastructure has been completed.

■ KAZAKHSTAN – Local communities

- KATCO, a joint venture between Orano and KAZATOMPROM, has developed labor relations and social initiatives in the region of Suzak (South Kazakhstan), where its production sites are located, as part of an ongoing process of dialogue with representatives of local communities: Shu, Tasty, Sozak, Sholakorgan and Taukent. All the projects are the outcome of the parties working together, as part of consultation sessions with these different communities.

■ MONGOLIA – Local cooperation councils

- There has been a formal framework for dialogue and discussion between teams from AREVA Mongolia, Cogegobi and local communities in place since "Local Cooperation Councils" were set up in 2013. Three or four times a year, representatives of the Sums and Bags of Ulaanbadrakh and Zuunbayan meet with representatives of AREVA Mongolia;
- The Local Cooperation Councils allow information to be shared with the local community in the areas where AREVA Mongol LLC is present;
- At these meetings, our specialists present studies and review the state of progress on the programs currently underway: the cultivation of saxaouls, the rebuilding of herds, a veterinary project, wells being created and wells to be repaired, etc.;
- These meetings also provide Community representatives with the opportunity to pass on their requests.
- In 2017, AREVA Mongolia pursued its objective of ensuring the transparency of the activities it conducts and of improving mutual understanding with local populations. Before exploration operations commenced, meetings were organized with the families living in their summer and fall farming locations, to inform them in advance about our operations and to listen to their demands. After establishing the movements and migration of the herders' families, modifications were made to the drilling operations, thus avoiding any disruption to their nomadic way of life.
- Other meetings are also organized: participation in meetings and festivals organized locally, organization of site visits, etc.





MAPPING OF LOCAL STAKEHOLDERS FOR OUR EXPLORATION ACTIVITIES IN THE REGION OF SAINSHAND

2017 was marked by the deployment of a major stakeholder mapping operation making it possible to expand our knowledge base of stakeholders and understand how they perceive our activities. This consisted of several steps:

- the conducting of a survey at national, provincial and sum level, involving at least 120 people (representatives of the government, the scientific community, the media, internal stakeholders, shareholders, NGOs, etc.) by means of interviews;
- the deployment of a perception survey in the Dornogobi, with 1,200 people interviewed (local government authorities and populations, herders, etc.).

This includes the implementation of action plans, with these stakeholders, which will be deployed during the course of 2018.

■ NIGER – Bilateral steering committee (CBO)

- Created in May 2006 to help strengthen the local governance of societal projects for the benefit of populations;
- Brings together local elected officials, relevant administrations and civil society alongside Orano. They define local development policies, identify priority areas for intervention, issue opinions on projects and ensure financing for the latter;
- Orano's mining entities in Niger make an annual contribution of 450,000 euros to the CBO.



10 YEARS OF SOCIAL INVOLVEMENT

To mark these 10 years of partnership, in 2017, the mining companies SOMAIR, COMINAK, IMOURAREN SA and Orano Mining published a brochure to raise awareness of the ongoing efforts being made in the areas of education, health, access to water, economic development and tackling food insecurity.



MAPPING OF STAKEHOLDERS IN NIAMEY

Started in 2016, mapping of stakeholders continued in 2017 for Niamey. The aim is to find out more about how they perceive Orano, and to establish priorities on environmental, labor relations, social, economic and governance-related questions.

The stakeholders concerned were state structures, NGOs/associations, suppliers and journalists. All of their expectations were catalogued.

An action plan will be deployed in 2018. Its aim will be to highlight the actions we are taking through indirect exchanges (organization of field visits, social networks, scientific and social meetings) and actions taken in partnership to exchange and share information (develop and highlight the actions we are taking with regard to social aspects of our areas of intervention: the environment, health, education and economic development).

CONTRIBUTION TO LOCAL DEVELOPMENT

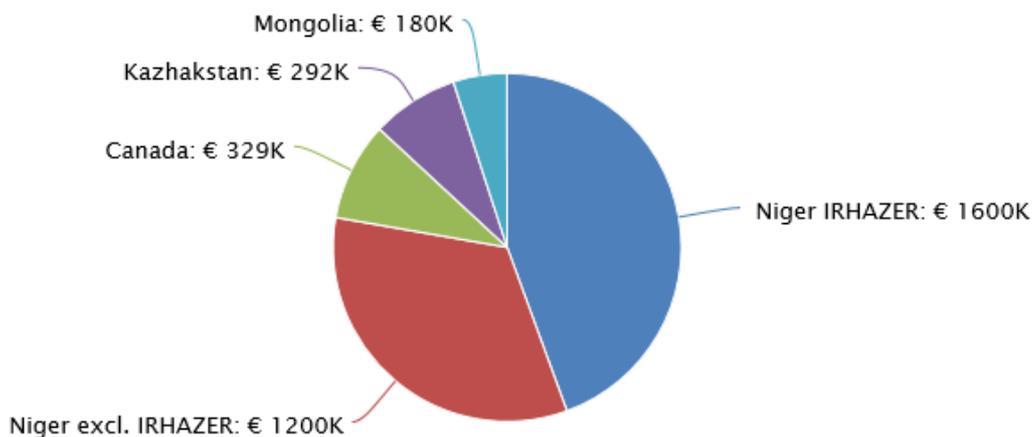
Community investments

Community investment 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 this sense, these projects differ from a purely corporate sponsorship-based initiative which is "a voluntary undertaking (...) which does not seek to have any impact on its (the company's) activities" (corporate sponsorship charter – ADMICAL).

Funds spent for Orano's mining activities in 2017: € 3,600 K

By country

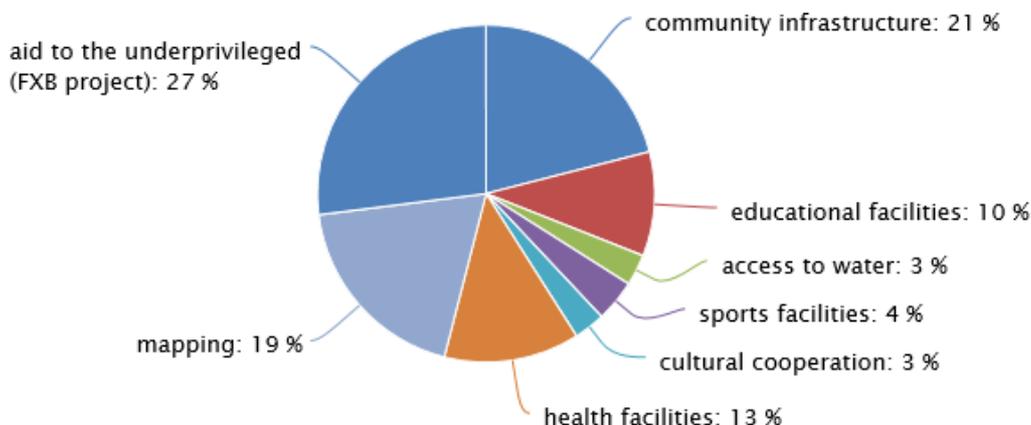


The funds for community investments are allocated by the various different subsidiaries, by AREVA SA and by the CSR Department of Orano Mining.

Examples of social projects supported by Orano Mining's mining activities



MONGOLIA – € 292K



FXB Village

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

It aims to bring about improvement in all aspects of the participants' lives: nutrition and food diversity, health, education, hygiene, protection of children's rights and sustainable economic self-sufficiency. Simultaneous actions being taken by NGOs in all these areas of everyday life are making it possible to break the vicious circle of poverty in a way that is sustainable.

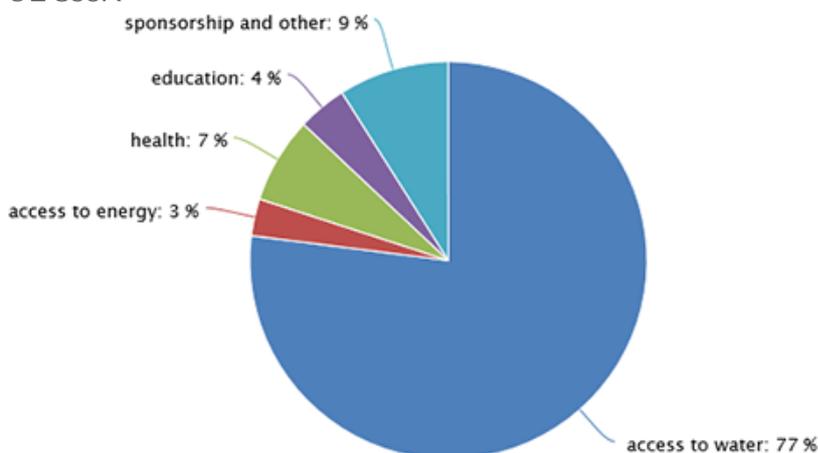


The objectives are to:

- strengthen the economic capabilities of 1,000 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.

In this way, in 2017, the families taking part received individual aid for Income Generating Activities (IGAs). Nearly half of the participating families raise livestock, while for the other half of beneficiaries, IGAs are mainly commercial activities such as fast food, the sale of used clothes, grocery, craft production, etc.. FXB also encourages saving. Each family starting an IGA is thus required to open a bank account and save money on a regular basis.

NIGER – € 2 800K



Projects supported by the Bilateral steering committee (Conseil Bilatéral d'Orientation – CBO)

20 projects out of the 21 approved by the CBO at the start of 2017 have been completed and accepted during the course of the year, corresponding to a completion rate of > 95%. Notable projects include improving access to water with the creation of livestock wells, education with the construction of new classrooms, latrines, and bringing electricity to a healthcare center, etc..

The municipality of Arlit received 41% of the funds, followed by the municipalities of Timia, Iférouane and Gougaram.



Village well

3 years of partnership with "Les Puits du Désert"

The partnership is located in the region of Agadez, in the Tidène valley. The objective is to provide access to water, facilitate economic development and improve the food situation and security of inhabitants in the Air Massif.

The actions focused on the construction of 5 village wells to provide drinking water in the following 5 villages: In Tédeiné, Gadambo, Intichikit, Inwadenan and Tinnougouran, the construction of 3 wells for horticulture in gardens to guarantee food security for the populations and the purchasing of seeds for the gardeners.

Around 16,000 people (women, children, head of families, former soldiers, etc..) have benefited from the program. Today, waterborne diseases are on the decrease thanks to the 5 village wells in operation.

In view of these results, a new project for a partnership with Les Puits du Désert is being studied.



Health: improving conditions of treatment for kidney diseases

Take action to address the considerable increase in the number of cases of chronic kidney disease by providing support to the dialysis center at the Hôpital de Lamordé in Niamey.

The strengthening of its technical equipment should eventually make it possible to provide correct treatment for impaired kidney function by means of the technique of hemodialysis and thus reduce the number of health evacuations that have to be made to other countries.

A first installment of funds was made available for the purchase of equipment in 2016, to be followed by further installments in 2018 and 2019.



Hôpital Lamordé, Niamey

IRHAZER: 2017, a year of renewed activity

IRHAZER is a hydro-agricultural and pastoral development project in northern Niger, its main objective is to contribute to sustainable food security by the development of irrigated agriculture, thanks to measures to improve and accelerate the development of a 1,000-hectare area.

The objective over the longer term is to make the sites used self-sufficient so that they become profitable and sustainable.

The project is planned to be executed in three main phases:

- 2011-2012: Feasibility study.
- 2013-2015: Pilot phase. This allowed the possible systems of production (plant and animal) to be tested and the investment models for the development phase to be validated.
- Since July 2015: Phase for development of the models validated in the pilot phase. The cultivation of alfalfa introduced within the framework of the project provides an opportunity for Niger to cover its needs for livestock fodder which are currently not met.



Irhazer project: visit to a farming operation

2017 saw:

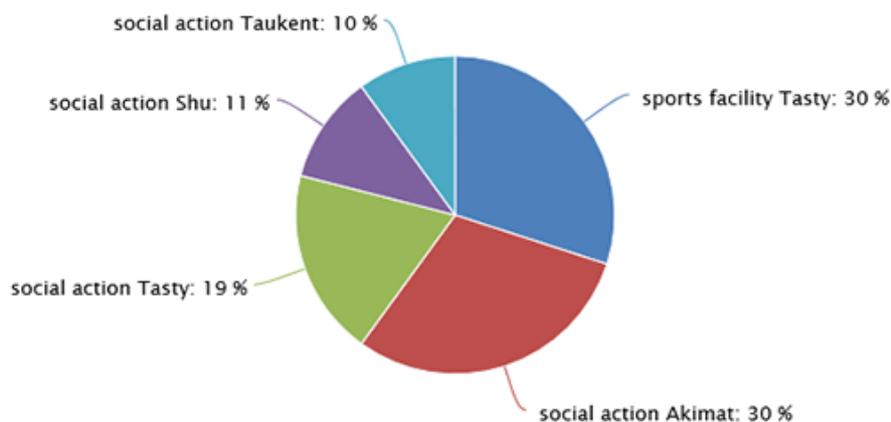
- the resumption of investments on new community sites and the equipment of developed sites with hybrid (solar-thermal) energy supply systems;

- the deployment in conjunction with the Nigerien office responsible for hydro-agricultural developments of actions to encourage the self-sufficiency of sites;
- drawing up and validation with all stakeholders of the strategy for involvement in the private sector.

The next steps:

- Partial financing of private initiatives in the Aïr and the Irhazer:
 - in the area of the development of irrigated agriculture, the projects are classified as small private irrigation projects (Petite Irrigation Privée – PIP) for existing family farms, and as large private irrigation projects (Grande Irrigation Privée – GIP) for farms of more than 5 hectares, shared between several beneficiaries, and requiring a large investment. The contribution made of the project may amount to as much as 70% of the overall investment.
 - in the area of pastoral development, through the financing of a private pastoral urban farm in Agadez. These private farm models have seen more sustainable development in the region than the community models initiated in the pilot phase.
- promotion of the value chain: All those parties involved and measures which can contribute added value to an unprocessed product, in particular through transformation, packaging, storage, transport or distribution.

KAZAKHSTAN – € 180K



Annual support for local communities

Community initiatives have an effect on the life of local people by providing support for the organization of various festive events, helping to acquire communications tools, as well as offering support for the education of children (kindergarten for 50 children in Tasty, school for 200 pupils in Sholakkorgan), for underprivileged families (distribution of coal), for people in need (sewing workshop for handicapped persons in Sholakkorgan) and for herders.



Delivery of coal

Focus on sport

In 2017, the communities expressed the desire to develop sports infrastructures for the benefit of young people.

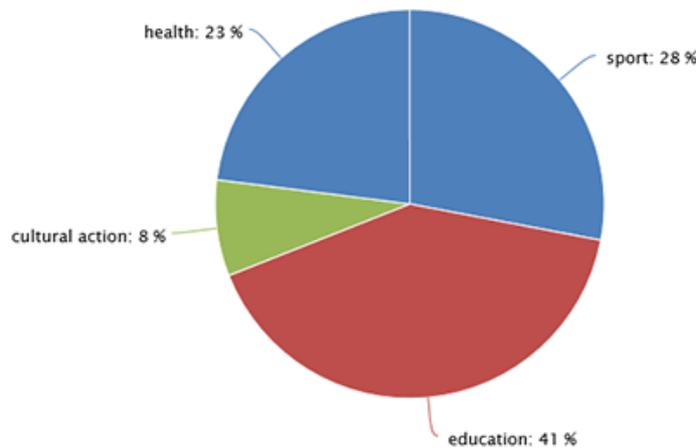
An initial project for a sports field was financed in 2017.

It is to be followed up by four similar projects in 2018.



Sports equipment in Tasty

CANADA – € 290K



Orano Canada (OC) gives priority to community initiatives which we run in the regions in which we operate, namely in the north of the province of Saskatchewan (where Aboriginal peoples make up 80% of the population) and Saskatoon. Teaching and literacy initiatives, cultural events, healthcare and community development programs are central to the contributions made by OC. In 2017, OC made grants available to 9 students residing in remote communities in Northern Saskatchewan to enable them to pursue courses of further education. A further 82 students from colleges and secondary schools in Northern Saskatchewan received a prize accompanied by a grant from OC in recognition in particular of their excellent results in mathematics and the sciences. Furthermore, OC granted 10 bursaries to students of the Gabriel Dumont Institute which specializes in studies and teaching programs specifically for the Métis community . Lastly, OC also made a contribution (accounting for a third of the amount) to bursaries granted to 17 post-secondary school students originating from communities in the Athabasca Basin closest to the McClean Lake mining site.



Community program for schools

Cultural subsidy: the Alex Robertson library serves three communities in Northern Saskatchewan · Orano Canada Inc upgraded all the computers, printers and servers to ensure that everyone (especially people on low incomes) has access to the internet and to computers to apply for jobs, take e-learning courses, carry out data research, etc.

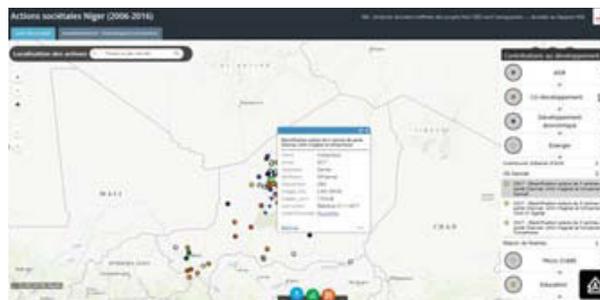
Health: distribution of free milk and meals served at a local community center. Support for the most vulnerable groups in Saskatoon, and children in particular. Food distributed in this way makes it possible to ensure that they get at least one full meal a day. These donations are made in favor of three communities in the remote regions of Northern Saskatchewan.



A CSR web application

To provide better traceability of social data, in 2017 teams from CSR deployed their own web support application. Based on graphical data, this internal platform provides access to the monitoring of investments made since 2006. It identifies, saves and provides access to a history of information and gives the user access to project information sheets.

Initially deployed for operations funded in Niger, it is gradually to be extended to cover all sites.



CSR web application

■ Transparency of revenue in the extractive sector

Through our support for the Extractive Industries Transparency Initiative (EITI), Orano Mining has continued to demonstrate its commitment to greater transparency in payments made to states in relation to the management of mining resources.

Niger, Mongolia and Kazakhstan, countries in which the group is engaged in mining activities, are members of the EITI, except for Niger which announced its withdrawal from the initiative in November 2017.

In these countries, our mining subsidiaries participate in the local multi-party process and declare payment of taxes, mining rights and taxes on profits using specific declaration forms. The total revenue is presented officially on the EITI website.

IMPACT OF OUR PRESENCE IN THE REGIONS

Focus on Orano in Niger

Present in Niger for over 50 years, the Société des Mines de l'Air (SOMAÏR), in which Orano Mining is the major shareholder alongside the Nigerien State company SOPAMIN – and the Compagnie minière d'Akouta (COMINAK) operate two mining sites in the Arlit region, in the north-east of the country, over 1,200 km from the capital, Niamey. The group which also developed the Imouraren project (one of the largest uranium deposits in Africa), has had to mothball it while awaiting more favorable market conditions.

Each mine has its own ore processing plant. Since they were founded in the late 1960s, the two mining companies have, to the end of 2017, extracted more than 131,400 metric tons of uranium.

The impact of Orano Mining's activity in Niger can be judged through various indicators:

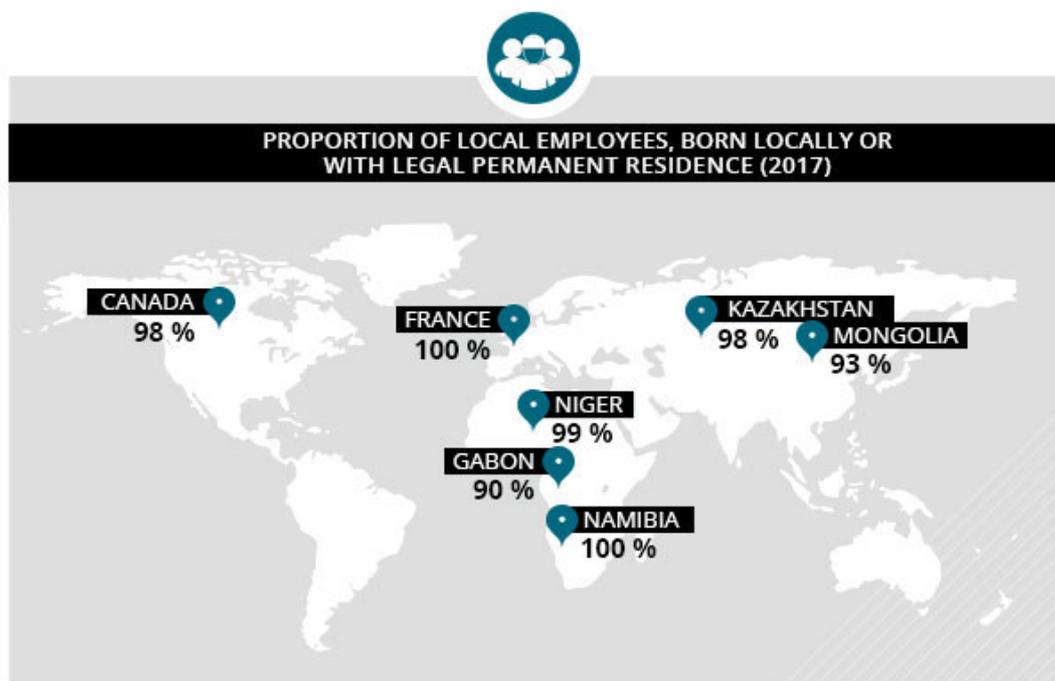
- 800 million euros have been invested in the Imouraren project,
- 62.0 million euros paid to Niger in taxes and royalties in 2016,
- an average of 100 million euros per year in local purchases,
- 4,000 direct and indirect jobs: 98% of direct jobs (=Orano Mining employees) are held by Nigerien nationals,
- the mining companies provide free medical care to employees and their families, the hospitals are open to the rest of the population. The hospitals budget is more than 4 million euros per year 45% of overall expenditure devoted to non-employees of the group,
- the mining companies make community investments targeting the following priority areas:
 - education (building classrooms, scholarships, etc.),
 - health (construction of health infrastructure, training, medical equipment, etc
 - access to water (drinking water wells, wells for horticulture, livestock wells, etc.),
 - provision of infrastructure (infrastructure for the municipalities and cooperatives, developments for agriculture or sanitation, etc.),

in 2017, 2,8 million euros were spent to community investments in Niger.
- the mining companies contribute to the maintenance of the Tahoua-Arlit road through an annual allocation to a maintenance fund for the road in an amount equivalent to 1% of their turnover.

Local recruitment

Recruitment of employees

Orano Mining's social policy expresses a commitment to promoting the local recruitment of our employees. Over 98% 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.

Purchasing

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 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 2017, 73% 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, which it initially imported from Europe, locally.

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.



CHAPTER

COMMITMENTS

Commitment to employees

Extract from Responsible Development report 2017
on Orano Mining activities.

The complete report is downloadable on:
www.rse-mines.orano.group



ORANO MINING
Corporate Social Responsibility Report
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Our commitment to employees in 2017 within the scope of mining activities saw on-going commitment to the implementation of policies to improve quality of life at work, in areas related to work-life balance, psycho-social risks and support for people with disabilities.

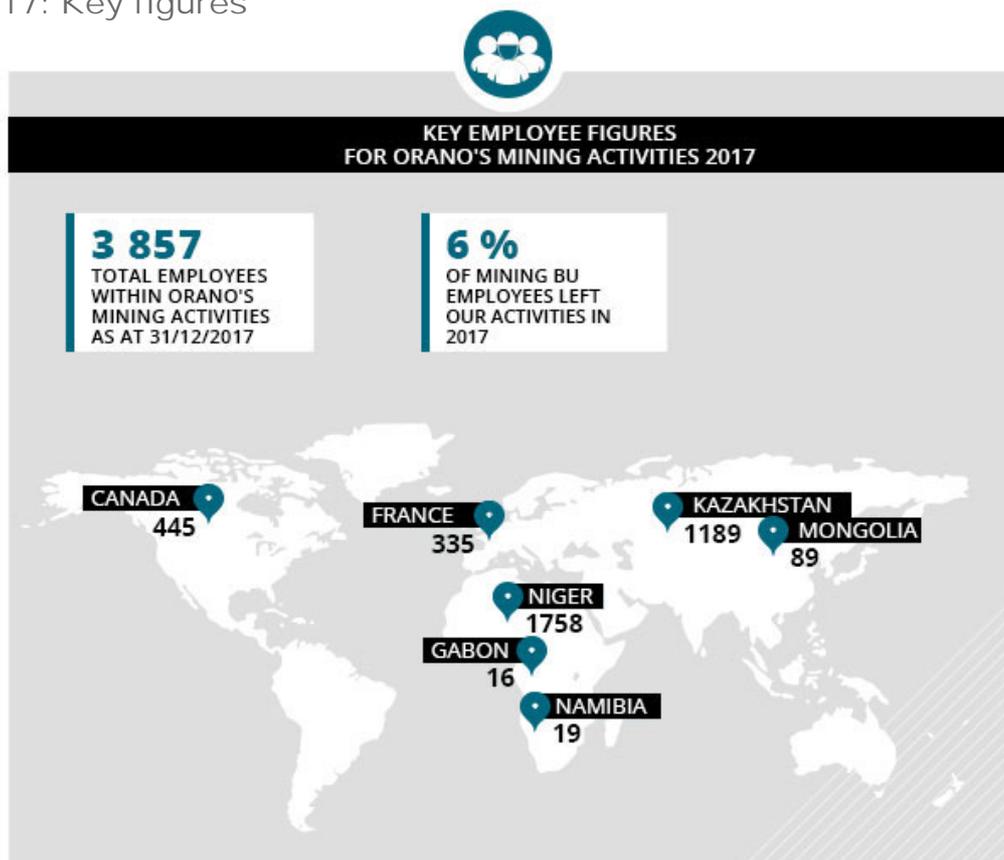
ROADMAP: STRATEGIC ORIENTATION 2017-2018



People

"People" constitutes one of the pillars of the group's strategic plan. This strategic area aims to anticipate future needs in terms of skills, promote mobility within the group and offer a wide range of professional training, as well as ensure progress is made towards the successful implementation of our pro-diversity policy.

2017: Key figures





**TOTAL NUMBER OF EMPLOYEES BY EMPLOYMENT CONTRACT
(permanent & temporary) BY REGION**

REGION	PERMANENT		TEMPORARY	
	Women	Men	Women	Men
EUROPE	111	205	14	10
NORTH AMERICA	103	309	11	22
ASIA	211	1 022	14	32
AFRICA	96	1 585	4	108
TOTAL	521	3 121	43	172
OVERALL TOTAL	3 642		215	

■ Turn Over

In a very difficult market context in 2017, controlling employee numbers (20 recruitments in France) and making several adjustments at production sites (49 employees recruited for Katco, 41 in Canada, 35 for Cominak and 73 for Somair) has enabled Orano Mining to adapt the workload while maintaining and developing skills.



COUNTRY	RECRUITMENT	DEPARTURES	TURN OVER
CANADA	41	50	1.18 %
FRANCE	20	35	0.71 %
KAZAKHSTAN	49	125	2.26 %
NIGER - Cominak	35	80	1.49 %
NIGER - Somair	73	104	2.29 %
MINING BU	228	399	8.13 %

Roadmap

Subsequent to the reorganization of the Group, a new agreement on "Quality of life at work" is going to be negotiated in 2018. This agreement will in particular include measures protecting the right to disconnect and guidance on new working methods such as teleworking. This agreement will have a direct impact, demonstrating the commitment of Orano Mining's management at the highest level.

■ Gender balance in the workplace

With regard to gender balance in our teams, 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, some work remains to be done to improve the overall numbers of women in our mining activities abroad (10%), by ensuring that women are promoted at all levels of the organization, and particularly in Management Committees, to reach Orano's target of 25%.

■ Knowledge transfer

We aim to rigorously manage our technical know-how and expertise, ensuring knowledge is transferred. We do this by paying particular attention to the Orano Mining pool of experts, maintaining and consolidating our work-study figures to contribute effectively to the professional integration of young people, and preparing for the future.

■ The employment of people with disabilities

Currently, people with disabilities make up 4.66% of the workforce. We seek to recruit and include all talents by favoring skills, and raise awareness about disability among employees and management.

The Human Resources Department working together with the occupational health authorities has made it possible for 2 employees to have their status as disabled workers recognized this year.

■ Social, ethnic and cultural diversity

We aim to develop local skills and promote mobility in order to reflect the international and multicultural dimension of our mining activities.

MANAGING SKILLS

Between November and February, employees benefit from:

- a performance review, which looks back over the year and sets objectives for the coming year;
- a development objectives are also set, with a training and development plan being drawn up (covering areas such as techniques, management, expertise, industrial performance, etc.).

In 2017, a performance review was held for 98.8% of managerial and non-managerial staff in France.

KNOWLEDGE TRANSFER



■ Access to training

Training is a key factor in skills development and career advancement. It also help to improve performance. In France, Niger and Kazakhstan, a training plan is drawn up for each employee every year.




TOTAL NUMBER OF HOURS OF TRAINING PER EMPLOYEE FOR MEN AND WOMEN BY EMPLOYEE CATEGORY IN FRANCE IN 2017			
ENGINEERS & MANAGERS		ADMINISTRATIVE STAFF, TECHNICIANS AND SUPERVISORS	
Women	Men	Women	Men
27.38	32.29	16.62	41.52

■ 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.

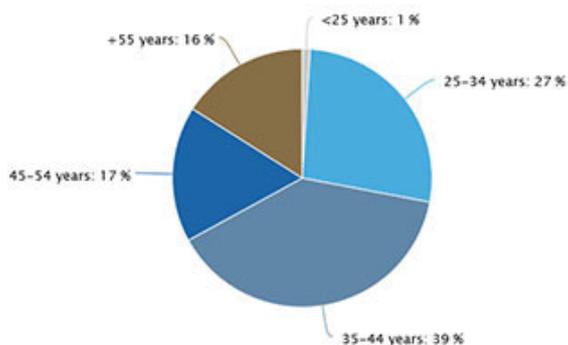


THE MINING COLLEGE HAS...

- 23 training courses provided in 2017 (18 in France and five at subsidiaries) to 239 trainees
- 30 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

Breakdown of employees by age in 2017



Age pyramid (world employees)

Our policy with regard to older employees aims to harness the value of our most experienced workers by ensuring knowledge is transferred. These employees benefit to manage their careers more effectively, in a context in which people are now working longer and planning is needed to fulfil future skills requirements.

With regard to young people, since 2005 the group has been committed to promoting work-study programs, offering annual apprenticeship and vocational training opportunities to young people and jobseekers in France. Over the period from 2017 to 2019, the Group aims to take on 5% of work-study trainees.

QUALITY OF LIFE AT WORK

Programs for work-life balance

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.

Teleworking

The introduction of teleworking will be negotiated with the "Quality of life at work" agreement in 2018. As of the end of 2017, 18% of Paris employees work remotely for one day a week (55% women/45% men).

Part-time work

Among the staff engaged on permanent contracts, 27 are part-time: 8 men, 19 women.



TOTAL NUMBER OF PERMANENT CONTRACT EMPLOYEES WORLDWIDE
BROKEN DOWN BY JOB TYPE (full-time / part-time) AND BY GENDER

JOB TYPE	Women	Men	Total
FULL-TIME (100 %)	456	3 076	3 532
PART-TIME	19	8	27
TOTAL	475	3 084	3 559

■ 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.

Any organizational changes are made with the participation of staff representative bodies (within varying notice periods enshrined in a collective bargaining agreement), and a presentation is given to the Site Committee. In 2017, for example, 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 who so wish.

■ 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 life insurance, medical care, disability coverage and a pension scheme. Only the parental leave and shareholder plans are unique to French sites.

■ Parental Leave

All employees have the right to take parental leave, with their job being kept open for them on their return.

A salary supplement is paid by Orano Mining for maternity, paternity and adoption leave.

In the case of maternity and adoption leave, a pre- and post-leave review is carried out.

Employees are also entitled to take leave to look after a sick child. This applies to women and men.

There is a 100% employee retention rate following parental leave, across all three types of leave.

EQUAL OPPORTUNITIES



Promoting diversity is vital to be able to guarantee respect for the cultures and differences of all our employees. This is a multi-faceted commitment that simultaneously covers the development of gender balance in the workplace, support for employees with disabilities, and diversity in terms of age and social, ethnic and cultural background. As part of this commitment, in 2014 Orano's mining activities underwent an audit for 4 years to renew its Diversity Label certification at its French entities.

■ Gender equality in the workplace



Agreement on gender equality and parenting

The agreement on gender equality and parenting dated July 1, 2013, aims to guarantee the following provisions within the French entities of Orano's mining activities:

- Equivalent remuneration levels for men and women;
- Neutralization of the impact of maternity or adoption leave when assessing the performance of managers for their variable share (bonus) and for individual raises;
- Pre- and post-leave reviews for maternity/adoption/parental leave;
- Adjustments to working conditions and hours during pregnancy;
- Use of the leave entitlement ("bank") account (CET) to finance full-time parental leave;
- Reconsideration of working hours.

Equality of remuneration provision

An equality budget of 0.03% allows salary adjustment in the event of a discrepancy for women and older employees.



RATIO OF WOMEN'S BASIC SALARY to that of men by employee category in 2017* (France)	Technicians	Administrative staff	Supervisors	Engineers & managers
		1.03	1.19	1.06

* Source: Comparative report completed in first half for 2017

A presentation is given to union organizations as part of the obligatory annual negotiations.

In France, the total compensation is broken down into:

- Basic salary: basic salary, seniority pay, etc;
- Variable compensation related either to the job (premiums for constraints, on-call duty, etc.) or to individual performance (bonus/variable portion or premium);
- Benefits: health cover, death and invalidity insurance, same as for all companies in France;
- Incentive and profit-sharing schemes, which use certain criteria to remunerate collective performance.

Remuneration depends on the branch agreements and collective agreements. Every year, negotiations are held with the trade union organizations to determine the budget allocated to changes in remuneration.

■ Provisions for people with disabilities

A "disability" agreement is currently being finalized and is close to being signed at Orano group level. The agreement covers the recruitment, integration and training of employees with disabilities, as well as support for the supported employment sector, awareness-raising actions and employee retention measures.



CHAPTER

COMMITMENTS

Mine-closure

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ORANO MINING
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Mining site remediation is an integral part of the mining cycle which comprises: exploration, development, mining and post-mining (monitoring and reconversion). Remediation is taken into account right from the exploration and development phases of the mining 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 cease due to depletion of resources or for economic reasons. It is followed by a monitoring phase to guarantee that the site does not have any negative impact on the environment. In the mine closure process, beyond the technical parameters, it is also essential to address social and societal aspects, with a view to mitigating the socio-economic effects of the closure. Finally, whenever it is possible to do so, Orano Mining is particularly attached to reconverting former mining sites to give them a new lease of life.

OBJECTIVES OF MINE REMEDIATION



In the mine remediation phase, the main obligation incumbent on the operator is to limit the impact of the former mining site on the environment and population to a level that is as low as reasonably achievable. All the actions taken as part of a remediation plan are implemented in accordance with the environmental standards in force, in coordination with the competent authorities and in consultation with local populations.

The main challenges of mine remediation are:

- stability of the mining works and dikes;
- the residual impact of the site on the environment, and on water management in particular;
- management of tailings and waste rock from mining;
- social acceptability;
- sustainable monitoring;
- achieving an economic optimum.

The main objectives of a remediation plan are as follows:

- ensure long-term stability in terms of public health and safety;
- reduce 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;
- support the reconversion of the site or its opening up to other surface activities;

- inform of and share remediation options with stakeholders.

All Orano Mining's mining sites are covered by a specific remediation plan.



CLUFF LAKE

The Cluff Lake mining site, located in the North-West of the State of Saskatchewan in Canada, operated for 22 years (1980/2002) and produced 23,500 metric tons of uranium. It consisted of 4 open-pit mines, 2 underground mines, and an ore processing plant with storage of tailings. The site underwent remediation from 2004 to 2006: filling-in of open-pit mines, rendering secure of underground mining works, demolition of the plant, coverage of tailings and revegetation of the entire site. The site continues to be monitored. The environmental results of this monitoring are compliant with regulatory requirements meaning a transfer of responsibility for the site to the State of Saskatchewan can now be envisaged.



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 account of 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.) making it possible to prepare a remediation plan and draw up a proposal to be submitted to the Authorities and forming a basis for dialogue with the stakeholders. Field tests may also be conducted during the operation phase to test out and refine assumptions in the remediation plan.

■ Mining works

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

For underground mines, the aim is to ensure the stability of the works and to seal off access to all pit bottom to ground level connecting structures: pits, cross-cuts, ascending and descending shafts. Stability calculations are done for works close to the surface and, depending on their results, reinforcement works may be conducted. If safety cannot permanently be assured, safety perimeters may be set out on the surface, established physically in the form of enclosures, within which usage restrictions may apply; specific monitoring of upwelling of waters and potential points of emergence is planned for in advance, with particular attention devoted to an improvement in water quality. Hydrodynamic and hydrogeochemical modeling studies aid in the forward planning of additional measures such as water treatment for example.

Open-pit mines may be either filled in with available waste rock and tailings or transformed into water features after partial filling-in. The chosen option depends on the commitments made (for example within the framework of requests for mining permits), the configuration of the site, the availability of materials, a specific request on the part of a local authority, and costs, whilst of course treating the safety of local residents as a matter of top priority. Waste rock stockpiles are remodeled and revegetated depending on the local context.

In the case of ISR (in situ recovery) operations, particular attention is paid to the quality of the water table in which the mined deposit is located. In general, regulations require that water quality be restored to a level close to its original level. It is worth noting that the initial quality of these waters (waters that may be naturally saline and radioactive due to the local geological context) is such as to prevent anything other than industrial use. There are several methods of restoring these water tables, such as the pumping out of waters, treating them in a surface facility and reinjecting them, or alternatively the injection of reagents enabling the treatment of waters in situ. The preferred method is natural attenuation: naturally-present or newly-formed minerals "trap" the pollutants by adsorption. Numerous studies are currently being carried out to gain a better understanding of this phenomenon and to see how it can be speeded up.

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



Puy de l'Age (Limousin) – before/after remediation

■ Ore processing facilities

To extract the uranium, the ores are processed by static or dynamic leaching depending on their uranium content (0.03 to several percent) in accordance with the following process: crushing, grinding, leaching with acid or base chemicals, extraction, purification and precipitation. At the end of the process, uranium is put into solid form, known as "yellow cake" with a uranium concentration of around 750 kg/t. The solutions with uranium content pumped out as part of ISR mining operations are processed using the same extraction and purification processes.

When mining activity comes to an end, these facilities, specific to the processing of uranium ore cannot be reused, except for a similar purpose. They are dismantled and demolished. The materials resulting from dismantling and demolition are stored on site (see storage of processing residues).



WASTE ROCK

Waste rock is made up of earth, sand or rocks containing little or no uranium ore. It still needs to be extracted, however, to access the mineable ore itself. These substances present no radioactivity or very low levels of radioactivity. This waste rock is mostly used for the remediation of former mining sites, or stored in piles in the immediate vicinity of where the works were carried out.

Under the PNGMDR, Orano has conducted sampling campaigns on several remediated sites to characterize the evolution of waste rock storage and its potential impact for the natural environment. A multi-year study is ongoing to develop predictive models of the migration of uranium from the rock piles to the environment.



MINING TAILINGS

Tailings are the part of the finely crushed ore which does not contain uranium, or only contains very little, and is produced following the separation of rock and uranium in the ore processing plant (production of uranium concentrate). They are in the form of clayey sand and contain still 70% of initial radioactivity. They are stored near the processing plants. Their storage and inspection make up a considerable portion of remediation and monitoring operations.

Under the PNGMDR (Plan National de Gestion des Matières et Déchets Radioactifs - French National Plan for the Management of Radioactive Materials and Waste), Orano is required to continue the study of the evolution over time of ore tailings stored in France. This action must ultimately be accompanied by the development of models to predict the long-term impact of the tailings, taking into account both normal and degraded scenarios.



WASTE ROCK AND TAILINGS

Philippe Crochon, Remediation and Environment Expert within the Mining BU, talks about the difference between waste rock and tailings. He also explains how the remediation of former mining sites requires a broad range of know-how in particular in geology, hydrogeology and radiometry.

Mining sites remediation explained by ORANO Experts



WASTE ROCK AND MINING TAILINGS

■ Storage of tailings

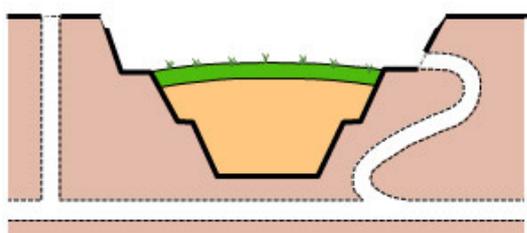
Tailings are the solid part that is left over and unusable after the uranium has been put into solution when the ore is processed. Tailings from dynamic leaching take the form of fine clay sands with the same mineralogical composition as the original ore, along with various other additional chemical precipitates, and contain approximately 5% of the initial uranium content and most descendants of the decay chains of uranium. Their level of radioactivity is around 70% of that of the original ore. Tailings from static leaching are of a coarser grain size (10 to 100 mm) and have a uranium content of several tens to hundreds of ppm. All these tailings are thus naturally radioactive (total radioactivity of several hundred Bq/g) and have a long lifetime.

They are stored in former open-pit mines, in ponds enclosed by containment dikes or behind a dike 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.

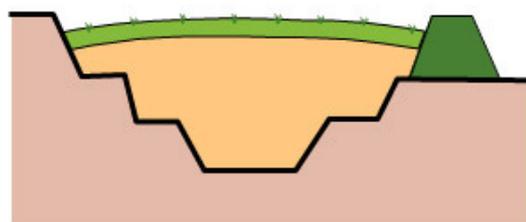
The remediation of tailings storage areas: given their dimensions and the tonnages involved, the storage areas formed during the operating period of plants are kept in place at the end of operations. A cover, generally in solid form, is placed over the tailings to form a geo-mechanical and radiological 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. When tailings from static leaching are present on site, they can either be put in the primary layer, which means it is possible to put all the different types of tailings together in one place, or be remediated in the same way as tailings from dynamic leaching. Depending on the climatic context, a final covering layer of topsoil is added to allow the site to be revegetated. 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.

Storage areas can also be covered by a layer of water, which offers considerable radiological protection, in particular with regard to air quality. Certain sites are enclosed by dikes, while others may be classified as "large dams" ["grands barrages"] in the regulatory sense of the term. Stability studies are conducted and reprofiling or reinforcement works may be undertaken if necessary.

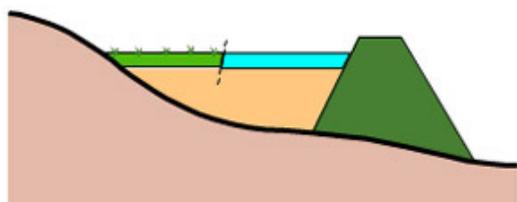
DIFFERENT TYPES OF REMEDIATION FOR TAILINGS STORAGE AREAS



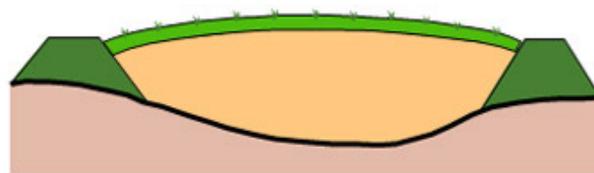
OPEN-PIT MINE (+ UNDERGROUND PIT WORKS)
COMPLETE OR PARTIAL FILLING



OPEN-PIT MINE + DIKE
COMPLETE FILLING



THALWEG BLOCKED BY DIKE
COMPLETE FILLING



TROUGH + BARRIER OR CONTAINMENT DIKE
COMPLETE FILLING

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.

■ 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 treatments carried out are of a physical-chemical nature (addition of reagents, resins) or sometimes passive methods may be used (limestone drains, wetlands).



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. It should be noted that the main factor leading to exposure is generally radon. It is difficult to determine the origin of radon, whether it is of natural or industrial origin, bearing in mind that sites are located in areas where concentrations can be naturally high (areas of granite or with the presence of naturally occurring veins of rock in situ). To adapt to the specificities of each site, measurement stations are installed which are not subject to any influence from mining activity, in an area with similar geological and topographical context to the site being monitored. The results obtained provide a benchmark for the "natural environment", and thus make it possible to reliably assess the potential impact of the site on its environment.



NIGER: PLANNING AND UNDERTAKING REMEDIATION OF THE MINING SITES THAT HAVE BEEN IN OPERATION FOR 50 YEARS

For around 40 years, SOMAIR and COMINAK have exploited the uranium deposits in the department of Arlit, using open-pit mining techniques in the case of SOMAIR and underground mining techniques for COMINAK, and practically the same ore processing technique to produce the Uranate concentrates for the market.

In accordance with the existing regulations, the mining companies have each prepared a master plan for the remediation of their operated sites and a surveillance network to monitor the effectiveness of the measures.

The objectives of a remediation plan are as follows:

- Ensure long-term stability in terms of public health and safety
- Reduce 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
- Support the reconversion of the site
- Inform of and share remediation options with stakeholders
- Comply with the regulations in force

These master plans are regularly reviewed as mining operations evolve.

In 2017, the remediation plans, including definition of the remediation options and a cost assessment, were drawn up taking into account the known development plans for the mines over the coming years.

These plans have been presented to and discussed by the Technical Committee, whose members include representatives of the different shareholders and the authorities in charge of these areas of expertise.

ENVIRONMENTAL MONITORING IN FRANCE

Monitoring the environment involves checking all the ways in which uranium and its decay products may be transferred at former mining sites and in the surrounding area. This mainly means monitoring water, the atmosphere, the food chain and plants. This monitoring is carried out within the framework of prefectural orders, specific to each of the sites and covered by reports submitted to the Government authorities on a regular basis and presented to Site Monitoring Committees.

Each year, over 30,000 analyses are performed on the air, water, sediments and the food chain.

■ Air monitoring

This monitoring chiefly consists in measuring exposure to ambient radioactivity, namely ionizing radiation and the air inhaled. Measurements are taken continuously, both at the site and in the nearby area, using specific dosimeters.

■ Water monitoring

Hydrological and hydrogeological studies are performed at sites, allowing better understanding of the environment type and the composition of local water. On certain sites, where necessary, the water undergoes treatment before being released into the natural environment to ensure it meets the environmental standards in force. Our experts design the water treatment processes which are then applied and optimized. One process they have implemented, for example, is so-called "passive" treatment using limestone drains, by adsorption into beds of sludge or turf, and they have also optimized the physical-chemical treatment method, which is currently the method most frequently used.

- Monitoring of plants and the food chain

In addition, sampling and analysis are regularly carried out on plants and other components of the food chain, 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.

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

Following the mining of the uranium ore, mining sites are remediated to limit the residual impact of the past activities both for safety reasons and to preserve the environment.

The remediation and monitoring of these sites falls within a demanding and evolving regulatory framework. We also see this as an opportunity to draw on and promote an area of expertise mastered by our teams covering the major steps of the remediation and post-mining cycle.

This phase must be prepared as far upstream as possible, from the exploration phase. It requires the mobilization of specific scientific expertise as well as technical, economic and social know-how.



We would like to offer you the opportunity to gain insights into the major challenges related to these activities, and to come with us around the world to better understand the main environments in which we work. The principal challenges we encounter in our scope of work relate to:

- Management of waste rock and tailings
- Water management
- Stability of the mine and dikes
- Social acceptability
- Sustainable monitoring and long-term prospects
- Radiological impact
- Achieving an economic optimum

■ Preparing for remediation from the feasibility studies phase

Example in Mongolia

Challenges	Identity card of the mining project
<ul style="list-style-type: none"> ■ Environmental and societal acceptability of uranium deposit exploration and mining projects ■ Optimization of ISR (In Situ Recovery) technology 	<ul style="list-style-type: none"> ■ At end 2017: 11 exploration licenses and 3 mining licenses (Umnut, Dulaan Uul and Zoovch Ovoo) ■ 54,640 tU of resources registered in 2013 for the Zoovch Ovoo deposit and 4,750 tU registered in 2016 for the Dulaan Uul deposit ■ 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

Remediation Plan – Starting Point



- 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

■ Planning for the remediation of a mining site in operation for 15 years

Example in Kazakhstan

Challenges	Identity card of Katco site
<ul style="list-style-type: none"> ■ Start remediation while mining operations still in progress ■ Management of waste generated by mining operations ■ Model the overall behavior of aquifers under remediation 	<ul style="list-style-type: none"> ■ 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 3,500 tU in 2017

Mine in operation and remediation work on site



- Study for dismantling of the well fields and processing facilities
- Feasibility study to restore the site to its primary use (forestry)
- R&D program to confirm and speed up the remediation of the aquifers tested on-site, mainly through natural mitigation

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

Example in Niger

Challenges	Identity card for the SOMAÏR site in Niger
<ul style="list-style-type: none"> ■ 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 	<ul style="list-style-type: none"> ■ Site mined since 1971 ■ Mining of uranium deposit in Open-Pit Mines then dynamic and static processing plant ■ Aggregate production of some 70,000 metric tons with annual target of 2,100 tU in 2017

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

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

Example in the USA

Challenges	Identity card of the American mines
<ul style="list-style-type: none"> ■ Transfer of a remediated site to the U.S. Department of Energy (U.S DOE) 	<ul style="list-style-type: none"> ■ 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

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

Challenges	Identity card of the COMUF remediated mine
<ul style="list-style-type: none"> ■ 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 	<ul style="list-style-type: none"> ■ 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

Monitoring



- Remediation of the site from 1999 to 2004, validated by the IAEA
- Parameters monitored:
 - Water: 17 sampling points
 - Air: 13 dose rate measurement stations and 6 radon measurement points
 - Food chain: 8 sampling points for kassava and fish
 - Stability of the dike (topographical measurements)
- Independent environmental inspections performed by the Gabonese Nuclear Safety and Security Agency (Autorité de sûreté et de sécurité gabonaise – AGSSN)

■ Providing a second life for a remediated site

Example in France

Challenges

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

Identity card of the remediated 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:
 - Expected to be 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



Solar power plant of Lodève (Le Bosc)



Le Bosc Zone for artisanal activities situated on the site of the former plant



CHAPTER

COMMITMENTS

R&D and Innovation

Extract from Responsible Development report 2017
on Orano Mining activities.

The complete report is downloadable on:
www.rse-mines.orano.group

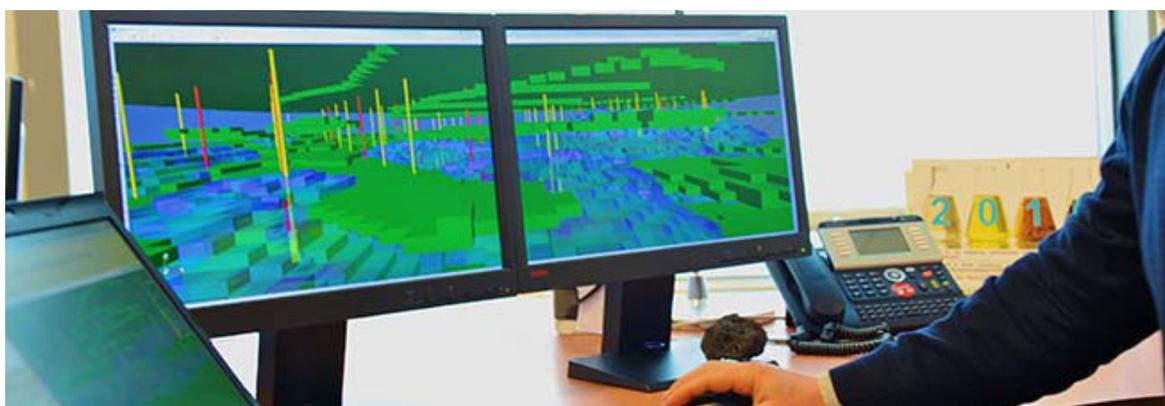


ORANO MINING
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R&D is a strategic element for Orano Mining, enabling us to discover new deposits, improve the profitability of our operations and better control their environmental impact. Within Orano Mining, the R&D and Innovation department is charged with promoting innovation to serve business performance. Currently, R&D and Innovation is conducting work on a portfolio of around 80 individual studies is currently being developed, covering both short-term topics and long-term topics to prepare for the mines of the future.

THE INNOVATION PROGRAM WITHIN ORANO MINING

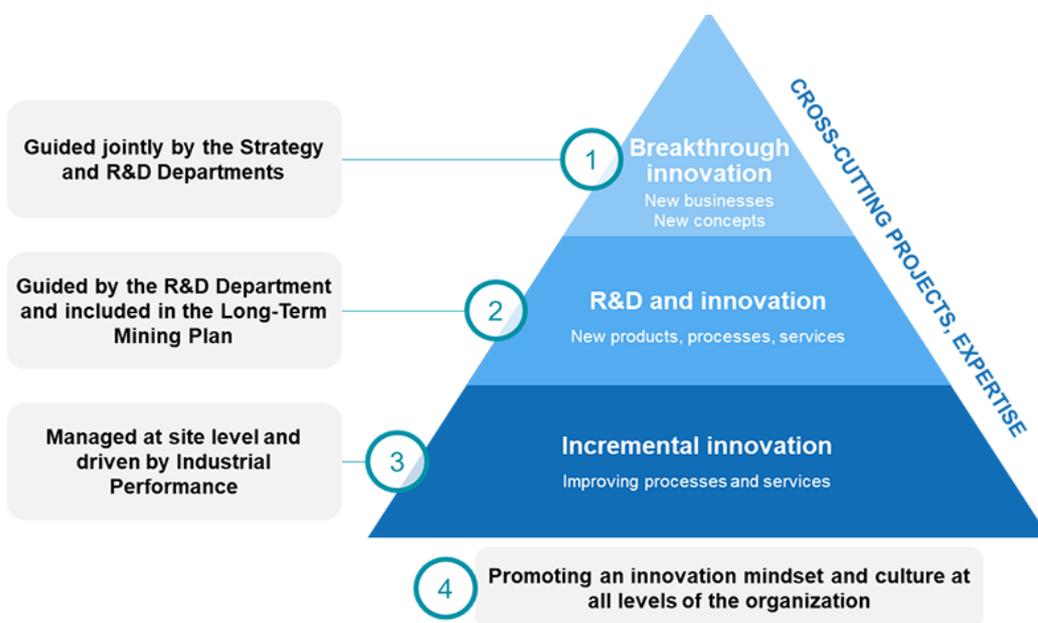


The overall R&D and Innovation program is focused on Orano Mining's three strategic priorities, which are:

- the discovery and operation of new deposits;
- the profitability of our sites;
- acting as a socially responsible mining company.

Innovation at Orano Mining pursues the following goals:

- strengthen the culture of innovation,
- encourage teams to propose innovative ideas, and help them make these ideas a success,
- accelerate the rate at which new solutions are developed and brought to market,
- bring technological breakthroughs and new areas of activity to maturity for Orano Mining.



These goals are underpinned by various categories of innovation:

Incremental innovation, which is concerned with improving how our operations work, and comes primarily from sites. It is driven by Industrial Performance.

These incremental ideas regularly give rise to R&D projects for the development of new products, services or processes, such as those for the use of membrane technologies to separate or extract uranium, or the modeling of drilling rigs to better estimate grades.

Finally, there is breakthrough innovation, which is guided jointly by the Strategy and R&D Departments. The aim is to plan ahead to anticipate new pillars in our production strategy, such as our capacity in the future to extract uranium from phosphates, or to make small high-grade deposits in Canada profitable thanks to the patented SABRE technique.

Orano Mining is rolling out the digital transformation plan launched by Orano, the Digital Innovation program features 3 components:

- connected operator;
- digital mining;
- digital plant.

This Digital Innovation program comes as a complement to the four existing R&D and Innovation programs on:

- geology;
- ISR;
- treatment processes;
- environment (with the Envir@mines program).



EVALUATING AND LIMITING LONG-TERM RISKS

R&D serving the environment

Our mining activities comply with the regulations in force and follow the best practices of the sector as part of a dynamic of continuous improvement. It is our responsibility to control and analyze risks by implementing innovative, scientifically demonstrated solutions in line with the expectations of 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.



INFORMATION

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.

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 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.



"ENVIR@MINES" R&D IN FIGURES

- 13 collaborative partners
- 8 theses defended
- 1 Accreditation to Supervise Research (HDR)
- 122 scientific communications
- 10 public reports
- 3 patent applications filed

OPERATIONAL INNOVATION



"Manager in the Field" training session for the Mining BU Management Committee in Kazakhstan (January 2017)

Through the development of more economical technologies, R&D contributes to improving returns on operations and optimizing mining projects in the portfolio.

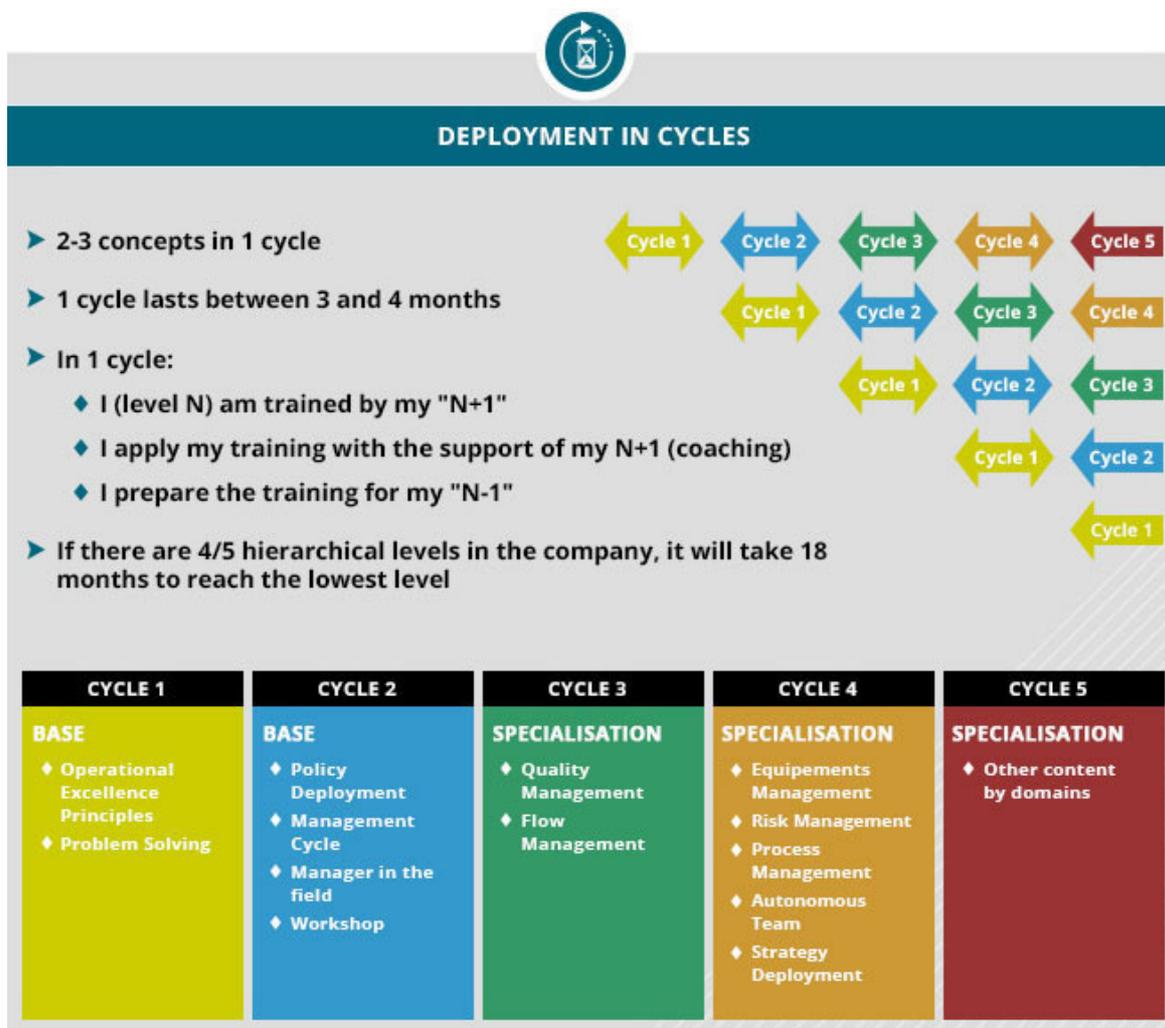
Operational excellence

Integration of Operational Excellence principles, such as standards compliance, continuous improvement, teamworking, management on the ground, and benchmarking, are also enabling Orano Mining to remain one of the lowest cost producers and withstand the current difficult market conditions.



In 2017, Orano Mining continued the deployment of the Orano Excellence System by placing the Manager at the heart of the system. Each of the Operational Excellence training modules is deployed through managerial cascading: supported by Operational Excellence experts, managers deliver training focusing on enabling the teams to build additional competencies and gain in autonomy.

Orano Mining delivered the “Manager in the Field” module firstly to its Management Committee in January 2017 and then to each subsidiary Executive Committee in the course of the year. Managers are trained to set up field visits and observation exercises in order to detect and prevent deviations from the required standards, as well as to encourage a proactive attitude on the part of the teams.



At the production sites and head office, our Operational Excellence Experts are tasked with:

- leading and coordinating the Master Plans (annual improvement action plans per entity) established to ensure that the targets set in the Long-Term Mining Plans (the long-term production plans) are met and contribute to the Mining BU's Master Plan,
- ensuring that the Operational Excellence initiatives are deployed to all Orano Mining subsidiaries, adapting where necessary to local cultural and operational contexts,
- helping sites steer their day-to-day operational performance and identifying new opportunities to make savings and avoid wastage,
- facilitating Orano Mining's Operational Excellence upskilling through training and coaching.

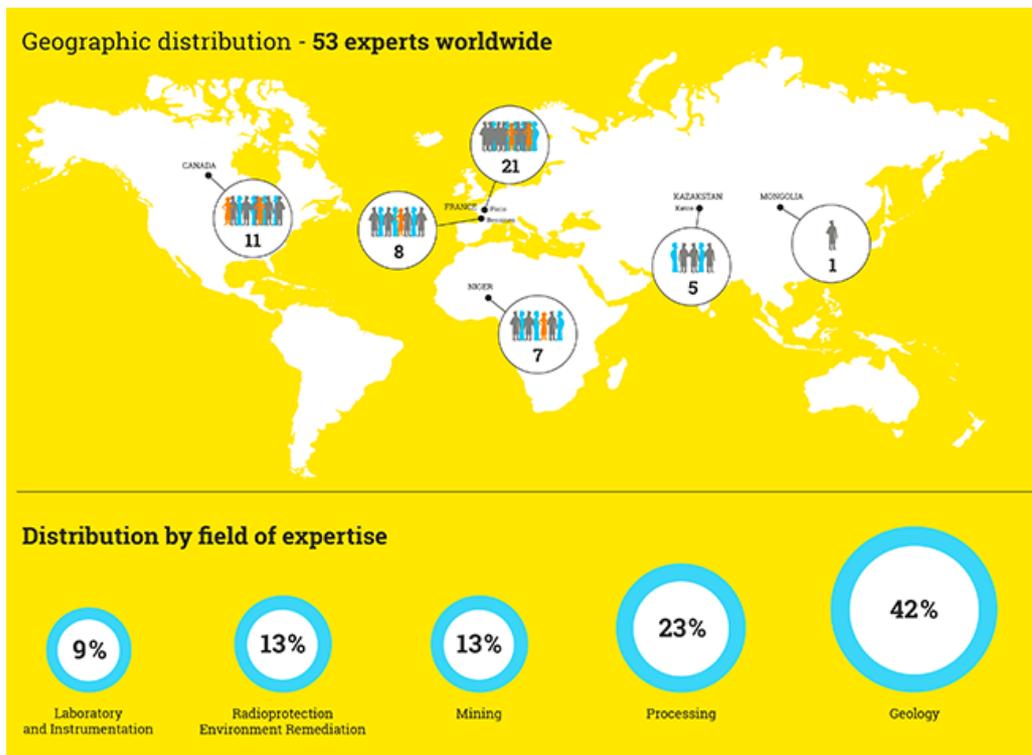
We believe that in order to succeed it is essential to ensure that all our teams are mobilized, and that we are thorough in ensuring our everyday work is carried out in strict compliance with standards, regulations and procedures.

FIND OUT MORE

In 2017, 180 Orano Mining employees received training in the Operational Excellence modules in Kazakhstan, Niger, Canada, Mongolia and France.

OUR TEAMS AT THE HEART OF INNOVATION

College of Experts



Orano Mining intends to mobilize all its expertise to support technological excellence, relying on its experts to achieve this, with a campaign to renew positions every two years. Closely integrated into the operating teams, these experts continually develop their expertise through the conduct of their missions.

The latest campaign was conducted in 2017 and resulted in 53 appointments of experts for Orano Mining scope.

Although the majority of experts are still based in France (55 %), this share is significantly lower than for the previous campaign (69%). Four other countries are now represented: Canada, Niger, Kazakhstan and Mongolia. The experts in our mining activities are specialized in disciplines including geology, mining, processing, radiation protection / environment and medicine.

The results of the last campaign show that representation has improved across our sites and internationally. This is in line with the geographic diversity goal set by Orano Mining to better meet the need for specific local knowledge of sites.

In addition, in order to promote operational know-how more actively, a complementary system of "Specialists" has been created within the Group.



CHAPTER

PERFORMANCE

Extract from Responsible Development report 2017
on Orano Mining activities.

The complete report is downloadable on:
www.rse-mines.orano.group



ORANO MINING
Corporate Social Responsibility Report
2017



*Our approach aims to improve our practices based on **six major responsibility commitments***

For us, "Being a responsible mining company" means identifying key challenges and opportunities while prioritizing our actions.

OBJECTIVES OF RESPONSABILITY

Risk management and prevention form one of the pillars of our day to day management, in particular in the fields of occupational safety and security, radiation protection and the environment. We are continuing the work already begun.

The context of the uranium market has led our teams to focus efforts in the field of industrial performance, to continue to satisfy our customers whilst meeting optimum production costs and maintaining our mining activities in the countries in which we have a presence, in compliance with our corporate responsibility commitments.

Around the world, our practices must be strengthened in the fields of social engagement and post-mining management. This calls for the identification and implementation of a mid-to-long-term strategy, which has now been devised through the CSR policy drawn up with all of our sites in order to be able to integrate the specific features of each country in which the Mining BU operates.

Orano's mining activities respect fundamental human rights and put this respect into practice by complying with the regulations in force, implementing the Orano Values Charter, and managing risks. In 2015 we developed operational tools specific to Human Rights, in 2016 a specific plan for its deployment will be implemented.

Finally, the acceptability of our mining activities is essential, requiring constant dialogue and consultation with our local stakeholders over these key areas of responsibility. We are pursuing these relationships and keeping our commitments in terms of transparency and partnerships.

OBJECTIVES INDEX

Occupational health and Radiation protection

- The Orano Mining operational roadmap includes the objectives of Orano's 2017-2020 Health and Safety policy with a particular focus on prevention actions.

In 2017:

- The operational roadmap of the Mining BU continues to be integrated, both in France and internationally in the countries where we operate.
- No employee has been exposed to a dose exceeding 20 mSv.
- For the scope of the Mining BU's activities, the average does over the 12-month rolling period (July 2016 to June 2017) for Orano employees was 2.73 mSV and for employees of outside companies it was 2.42 mSv.
- Performance of audit assignments in regional and national hospitals in Mongolia and Kazakhstan in order to update the medical evacuation schemes and procedures.
- Conduct of a "noise and impacts" survey on the sites in production.

Occupational safety

- Pursue the implementation of the Orano Mining roadmap, based on four pillars: leadership and culture, organization and skills, standards and procedures, and risk analysis.
- Zero fatal accidents.
- Frequency rate (IR1) of less than 0.7.

Examples of practical implementation in 2017:

- In 2017: the incidence ratio was 0.68, with 12 lost-time accidents and 1 fatal accident.
- All of the mines in operation are OHSAS18001 certified.
- Culture Safety training deployed across multiple production sites with a focus on supervisors and team leaders.

Environment & Biodiversity

- Integrate the goals of the AREVA 2014-2016 Environment policy and improvement plans relating to the results of the Health, Safety and Environment risk mapping into the operational roadmap.

Examples of practical implementation in 2017:

- Under group provisions, the 2017-2020 Safety & Environment policy continues to be rolled out and applied in France and abroad.
- Exercises in preparation for emergency situations are regularly carried out at our sites.
- All of the mines in operation are ISO14001 certified.

Social involvement and relations with our stakeholders

Our goal is to foster our acceptability everywhere, our the 2017-2020 Safety & Environment policy continues to be rolled out and applied in France and abroad.action areas being:

- 1. Improving stakeholder knowledge
- 2. Development of consultation and dialogue
- 3. Governance of societal issues throughout Mining BU scope

Examples of practical implementation in 2017:

- Improving stakeholder knowledge: Deployment of stakeholder mapping in Niger and Mongolia.
- Launch of the CSR Committee (body consisting of the Mining BU management committee and site directors) tasked with ensuring that actions taken across the whole scope of the Mining BU are consistent with regard to CSR policy.
- Through the Mining Social Committees of each site, examine the major societal challenges, priority projects, the outlook in terms of local development and engagement with stakeholders.

Commitment to employees

- Orano's new school of management has made it possible to continue deploying the managerial training cycle across all our entities.
- Diversity commitments: 26% women on the Management Committee, promote mobility for the development of skills between the countries in which we have a presence.
- In addition to the school of management, the Mining College continues to develop the technical skills of our employees in our three core specialties: geology, mining, ore processing.
- The management of critical skills conducted in partnership with the group remains one of Orano Mining's major challenges, in order to maintain a strong talent pool despite the reduction in overall headcount. The population review conducted in 2016 allowed us to identify our new experts in our different countries, and especially to continue to foster the development of our incumbent experts.
- A new unified tool for the whole of the group is being rolled out to facilitate the job of managers in knowing and supporting their teams better in all the day to day HR actions: recruitment, mobility, annual interviews, salary review, population review, training plan, etc.

Examples of practical implementation in 2017:

- Management Training Cycle: the fulfilment rate for performance interviews in 2017-2018 is 99% for managerial categories.
- Over 220 courses were offered at the school of management in 2017.
- For the Mining College, 23 training course were delivered in 2017 (18 in France and five at subsidiaries) for 239 trainees.
- Expertise: As a result of the campaign to renew and identify Orano's population of experts conducted in 2017, 53 experts have been identified or confirmed within the Mining BU.
- OPUS was rolled out at group level in all countries for the annual interview and the people review: 98% of all the employees concerned had their annual interview.

Innovation

- Operational performance: develop our results-oriented culture, improve our productivity and generate gains.
 - Continued deployment of Orano Mining's Operational Excellence program with the Manager in the Field module delivered to its Management Committee in January 2017 and then to each subsidiary MANCO in the course of the year.
- Innovation objectives:
 - make gains in profitability and performance.
 - protect the environment & improve the safety of our teams thanks to our innovations.

Examples of practical implementation in 2017:

- In 2017, the Operational Excellence modules were delivered to 180 Orano Mining employees in Kazakhstan, Niger, Canada, Mongolia and France.
- Continued progress on the Sabre project (Canada): Extraction by hydraulic borehole mining ("jet boring") // possibility of visualizing progress of production in real time.

Ethics & Transparency

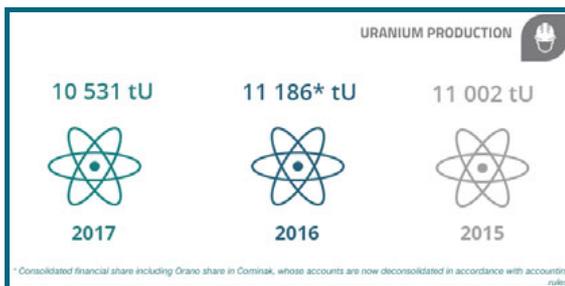
- Deploy the roadmap relating to the improvement of our operational practices in terms of Human Rights.

Examples of practical implementation in 2017:

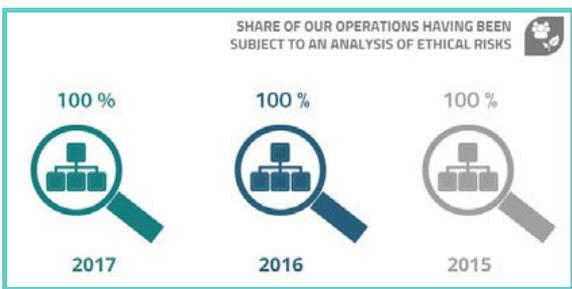
- Human rights module integrated into the Mining BU's CSR training program.
- All members of the Orano Mining Management Committee followed training in ethics and human rights.
- Monitoring of ethical incidents conducted within the Orano Mining Management Committee at least twice yearly.
- This report has been prepared on the basis of the Standard core level version of the GRI guidelines.

KEY INDICATORS

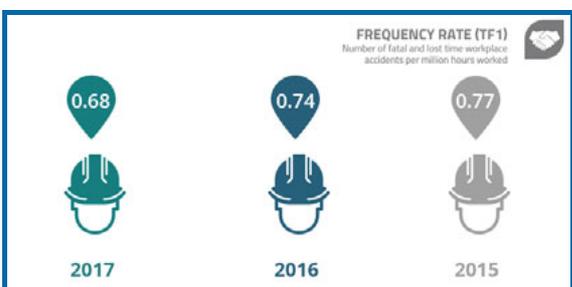
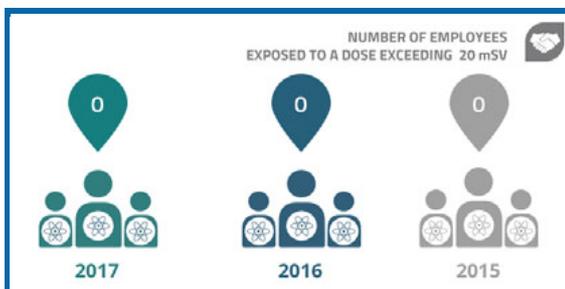
PROFILE

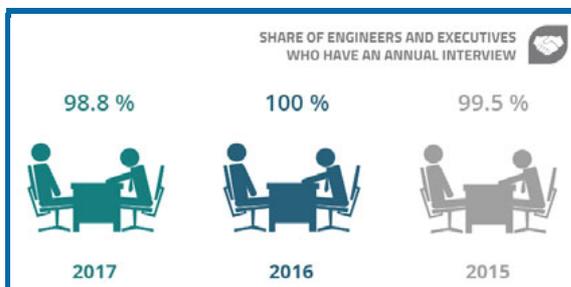
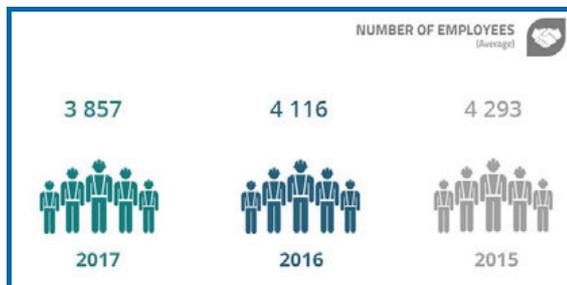
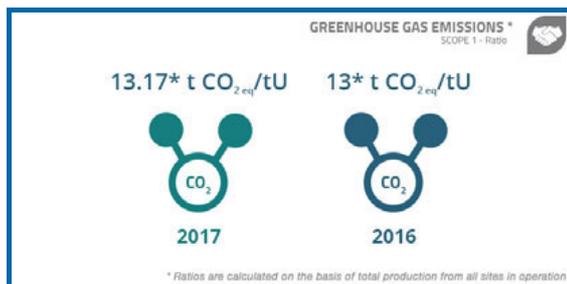
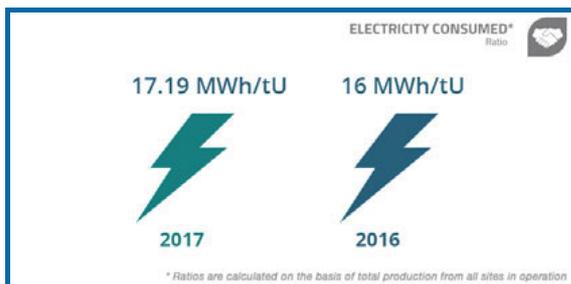
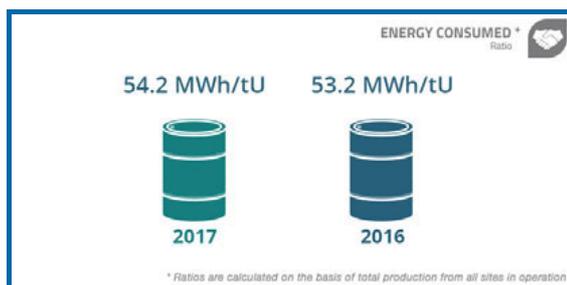
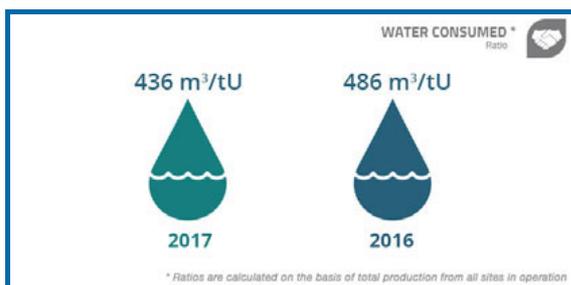


CSR APPROACH



COMMITMENTS





The quantitative data presented is consolidated for all Orano Mining operations unless otherwise stated.

The data provided covers the period up to December 31, 2017. Indicators pertaining to radiation protection and occupational safety cover "our workers", which in this case refers to both employees and sub-contractors.

This list is likely to change over the next CSR Reports if the indicators can cover the entire scope and/or if we have been able to deploy new reporting protocols to justify the presentation of other indicators.



■ "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 a website completely devoted to this annual report, and have discontinued the production of an entire hardcopy version. Our readers can build their own PDF version of the report, targeting subjects of interest to them, in the "Download" [☞](#) section.

Although this report cannot claim to give exhaustive responses to all our stakeholders, we have endeavored to present the most relevant performance data for the period covered.

In order to better meet their expectations, we would like the various groups of stakeholders to become progressively more involved in the preparation of this report. To this end, we offer a "Participate" [☞](#) feature, so that people interested in our activities can point out their principal subjects of interest to us and contribute to a questions forum in the "Contact us" [☞](#) section, which we will answer through our CSR Reports.

■ Reporting period

The 2017 CSR Report is the eighth edition of this annual exercise. The previous reports are available for download in the "Annual report archive" [☞](#) at the foot of each page of the website.

2017 CSR Report is a report with the following characteristics:

- it covers our responsible commitments performance for the year 2017, which means the reporting ran up to December 31, 2017;
- it has been prepared in accordance with the orientations of the materiality exercise realized at the end of 2016;
- it is based on the essentials or core criteria of the Standards version of the GRI;
- we provide our stakeholders with the "Participate" [☞](#) feature to allow them to take part in process of preparing future CSR Reports.

■ Scope of information

In application of Orano's strategy and policies and the orientations provided by our 2016 materiality matrix, this report aims to present the performance linked to the main CSR challenges of the mining activities under six broad families of commitments: health, occupational safety and radiation protection, environment and biodiversity, social commitment, commitment to employees, mining closure, R&D and innovation.

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 to employees chapter).

There are no issues identified outside the organization as relevant.

■ GRI and third party verification

Within the 2017 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. The acknowledgement received from the auditing firm is available 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. The Bessines site in France and the Katco site in Kazakhstan were audited in 2017 and the Mongolia site will be audited in 2018.

■ 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.



CHAPTER

CASE STUDIES

Extract from Responsible Development report 2017
on Orano Mining activities.

The complete report is downloadable on:
www.rse-mines.orano.group



ORANO MINING
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RADIATION PROTECTION

■ Preventive actions to limit the exposure time and level of workers



The goal: major preventive maintenance actions planned and carried out on industrial sites have made it possible to make operations run more smoothly whilst considerably reducing the number of repair interventions that have to be carried out, with a beneficial impact on the radiation protection of those performing interventions.

Major three-yearly maintenance program carried out in 2016 on activities 400 and 500 at the plant:

Maintenance of the calciner

- Impact: decrease in leaks from the powder network
- Improvements obtained: reduction in the frequency and length of interventions for repair and maintenance.

Maintenance of the crystallizer

- Impacts: decrease in clogging incidents and a decrease in the quantities of materials deposited on the walls of the crystallizer
- Improvements obtained: reduced intervention times in the event of production incidents and lower ambient dose rate values around the crystallizer.

Renovation of the calciner building at 9 m and 11 m levels to improve the surface of the floors

- Impacts: elimination of the accumulation of dust whilst facilitating cleaning and decontamination.
- Improvements obtained: decrease in the time that operators have to be present in the building and in ambient dust in the building.

These continuous improvement actions highlight the value of the principle of optimization.

■ Quick change pumps, an innovation to serve radiation protection and occupational



The goal: introducing standardized pumps in the ore pulp reception and storage areas has made it possible to considerably shorten maintenance times, for the benefit of the health and safety of workers.

Reduced maintenance times

Four hours: that's the length of time that maintenance operators used to spend in the ore pulp reception and storage areas of the McClean Lake mill, when they carried out inspection and repair work on the different pumps. This is a long period of time, because the uranium content of the ore processed at the mill exposes them to around 0.3 mSv* during that period. To reduce the impact of these operations on the operators, the maintenance teams have displayed their innovation by establishing a single model of pump. The innovation has proven to be a genuine industrial success, with operation times falling to around 10 minutes per operation, representing a 96% reduction in exposure of the workers.

Ergonomics completely rethought

The main advantage of these new pumps: their ergonomics. The quick removal system eliminates manual handling operations and enables the use of an electrical device to move the pumps into the maintenance workshop. Injuries and back pain are reduced considerably. Today, operators can replace standardized and interchangeable equipment quickly and safely.

* The Sievert (Sv) is a unit used in radiation protection which is expressed in "equivalent dose" and takes into account the characteristics both of the radiation and of the irradiated organism. On average, the annual exposure of a member of the public in France is 4.5 mSv.

OCCUPATIONAL SAFETY

Introduction and deployment of the DRILLING STANDARD

The goal: ensure that common safety rules are applied for drilling activities in order to avoid accidents

12 safety standards are applicable on all sites belonging to Orano or operated under the direct responsibility of Orano.

Here, a safety standard is understood to be a safety rule for international use, that is simple, clear, not open to interpretation and mandatory, in compliance with local legislations.



Based on this same principle, in 2016, in addition to the 12 Orano standards already in place, Orano Mining deployed a standard specific to its own activity: The drilling standard.

As for the other standards, this means that this standard was brought to the knowledge of every employee of Orano Mining and more specifically of all those who are called upon to be involved in this activity during the course of their professional and functional duties.



WHAT IS DRILLING?

Drilling is the action of digging a "well" into the ground up to depths which can sometimes be very considerable.

The equipment of the well, such as the tubing, and the technical resources used for digging, more generally, vary depending on the size and objectives of the well.

In Orano Mining's activities, we drill in order to:

- prospect and reconnoiter the sub-soil,
- sink hydraulic and piezometric wells,
- allow the aeration of galleries in underground mines,
- extract ore.

■ Why a Drilling standard?

The analysis of accident data from previous years showed that drilling is an activity which generates accidents. It was thus essential to harmonize best practices in this area and to share them with all sites where Orano Mining is operator.

Based on the operating feedback provided from the teams in Kazakhstan and supplemented by operating feedback from our teams on other sites, a standard was drawn up and validated by the Drilling Experts from Orano Mining and the HSE teams.

This drilling standard was then deployed for all employees who have any form of interaction whatsoever with this activity.

This standard brings together different points to which attention must be paid sorted into 6 main families:

- The documentary aspect
- The environment, the installation and layout of equipment
- The equipment to be checked
- Associated lifting activities
- Preparation for emergency situations
- Personal protective equipment

This standard applies to everyone even if it is accompanied by a Check List specific to each site. There may after all be specifications specific to different drilling machines depending on the manufacturer, and these characteristics may mean a specific inspection is required.

To make an analogy with the field of aviation, this means that, whatever the type of aircraft, it is essential to verify that the Check List has been completed prior to take-off. However, the Check List may differ depending on the type of aircraft. The same goes for drilling machines.

Of course, not all the rules and procedures of occupational safety can be replaced by safety standards, but with the drilling standard, the best practices have been formally defined in this safety standard that Orano Mining is deploying and rendering applicable to all of its employees.

It is more than just training, it is an initiative that aims to bring about an effective, pragmatic and lasting improvement in our Safety Culture.

The scope extends to all ORANO Mining's sites (operation and exploration sites), with planned deployment over a 3-year period:

- In 2017, the sites of SOMAIR, KATCO and Orano Mining Niger received training;
- In 2018, it will be the turn of the ORANO INC CANADA, COMINAK and Bessines sites;
- In 2019, our site in Mongolia will also complete this training program.

The deployment will involve the following phases:

- A preparatory phase:
 - Involvement of head office and sites in the preparation of materials with the contractor.
- A deployment phase with training and supervision:
 - Importance of fieldwork component of the training;
 - Involvement of Site Departments and Site Management Teams to promote and support the initiative;
 - Making available by sites of the personnel to be trained;
 - Involvement of sites in the logistical aspects of the training (organization, scheduling, convening, etc.);
 - Perform monitoring beyond the initial phase to ensure our safety culture, and the resulting improvement in it, is made permanent. This monitoring is to be carried out in two stages: after 3 months and after 6 months of training.



Deployment in Niger in 2017

ENVIRONMENT AND BIODIVERSITY

■ Mongolia: Biodiversity offset project



The goal: to take measures to protect biodiversity.

As part of the preparation of the Zuuvc Oovoo ISR pilot site, the Detailed Environmental Impact Assessment (DEIA), conducted in 2015, confirmed that the only species that could be affected in a major way by our works is the saxaul, one of the most important vegetation features of the steppe.

The Zuuvc Oovoo pilot project will not be located in an area where there is a high density of saxauls. Nevertheless, it is inevitable that a certain number of trees will have to be destroyed in order to complete the activities involved in the construction and operation of the Pilot.

The impact reduction measures adopted in the DEIA and implemented by Badrakh Energy LLC are as follows:

- The majority of the facilities will be built outside areas with a high density of saxauls to avoid having to remove them as much as possible;
- The drills and other machinery will be installed, to the extent that it is possible to do so, in areas where the vegetation is sparse to avoid any damage to vegetation and to the saxauls to the maximum extent possible;
- Impacts on vegetation during the course of the works, as well as the transport of equipment, mud and personnel will be minimized;
- Rules for the management of tracks will be established;
- A program to offset the impact on biodiversity by the plantation of young seedlings will be implemented.



Young saxaul seedlings in a plant nursery

The main ecological offset systems identified by the BBOP (Business and Biodiversity Offset Program), which we use as a guide in terms of the best practices to follow, are:

- One-off offsets, implemented on a case-by-case basis;
- Biodiversity banking: offset credit can be purchased from a third party which assumes responsibility for taking the offset measures;
- Offset funds: financial stakes in restoration or conservation programs.

In the case of the Zuuvch Ovoo ISR test, Badrakh Energy has opted for one-off offsetting. Accordingly:

- Upstream of the project, corresponding to the "avoidance" phase, the majority of the facilities will be built outside areas with a high density of saxauls and Badrakh Energy will ensure tracks are strictly managed.
- As the saxaul is the only species to be impacted in a major way, a proposal was made in the DEIA to replant saxauls over a surface area equivalent to that affected by the pilot.
- Offsetting will be measured in a zone close to the pilot and compatible with the sustainable regrowth of trees, in a location chosen in agreement with stakeholders and respecting local traditions.

In this way, in order to create a positive societal and environmental dynamic, the stakeholders will be encouraged to take part in this offsetting process, as the works will be carried out by local companies and by professionals who are specialists in biodiversity offsetting and the re-plantation of trees in arid regions.

■ PETRUS: project to manage solid and liquid discharges resulting from the processing of uranium at SOMAÏR in Niger



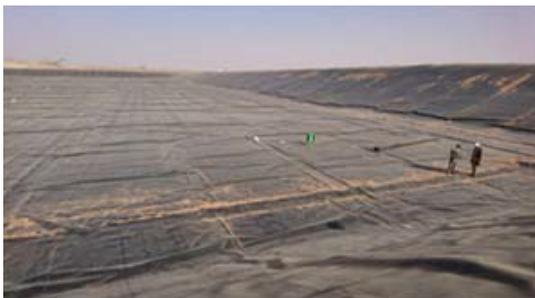
The goal: to increase SOMAÏR's processing tailings storage capacities.

The processing of uranium generates large quantities of solid and liquid discharges. SOMAÏR found itself faced with a lack of storage capacity which risked affecting production.

The PETRUS (PErennisation du Traitement des Rejets USine, or sustainable processing of plant discharges) project was launched in 2014 to find new capacities for the storage of processing tailings.

After several years of studies and various works being carried out, the project has finally arrived at the following solutions:

- for solid tailings: to use the former effluent storage areas adjacent to the processing tailings storage pile after carrying out works to raise the level of the dikes of these ponds to make it possible to increase the storage capacities and installing 680-meter conveyor belt to feed the tailings into these ponds;
- for the effluents, to construct a new effluent pond (pond 11), commissioned in January 2018.



Pond 11, completed and ready to receive liquid discharges from the processing plant



680-meter conveyor belt

■ Electricity savings: our employees get involved by making some simple but effective gestures



Niger

The goal: reduce SOMAÏR's energy costs and make the mining compound energy self-sufficient thanks to solar energy

Since the end of April 2016, 90% of the lamps used for street lighting and collective buildings in the compound are electrically powered by photovoltaic panels installed on the roofs of the houses and the SOMAÏR hospital, resulting in a reduction of more than 50% in installed power for the same level of lighting.

This project with a positive environmental impact also aims to reduce SOMAÏR's energy costs and ensure the compound's energy self-sufficiency in terms of public lighting. Other actions will soon be implemented (blocked regulators on AC, solar water heaters, light detectors for the outdoor lighting of the dwellings, etc.).



■ Canada: setting a selenium adaptive management plan



Canada

The goal: to work towards a better understanding of operational performance and potential technologies.

Orano Canada has continued to study selenium at the McClean Lake Operation throughout 2017. A selenium adaptive management plan was developed in February of 2017 to manage selenium related risks. The main objectives of the plan are to work towards a better understanding of operational performance, potential technologies to supplement existing selenium removal, and risk characterization in the downstream environment.

In 2017, Orano Canada completed scoping level evaluations of two supplemental selenium treatment technologies, should they be needed in the future: zero valent iron, and the BioteQ Selen-IX process. Several sampling campaigns were conducted both to improve the understanding of removal of selenium from treated effluent through existing processes, and to better characterize the selenium through speciation at different points in the effluent chain. Field studies completed in 2017 consisted of sampling to establish a baseline of fish tissue selenium concentrations in the McClean Lake East Basin, which is downstream from our treated effluent release.

■ Survey of protected species on the Bellezane site



The goal: to protect biodiversity in the Limousin region.

In 2011, Orano Mining conducted a study on the Bellezane site, with the objective of identifying flora and fauna present on the site for the protection of species. The former mining site, in operation from 1975 to 1992, was remediated from 1992 to 1996, and is now subject to environmental monitoring.

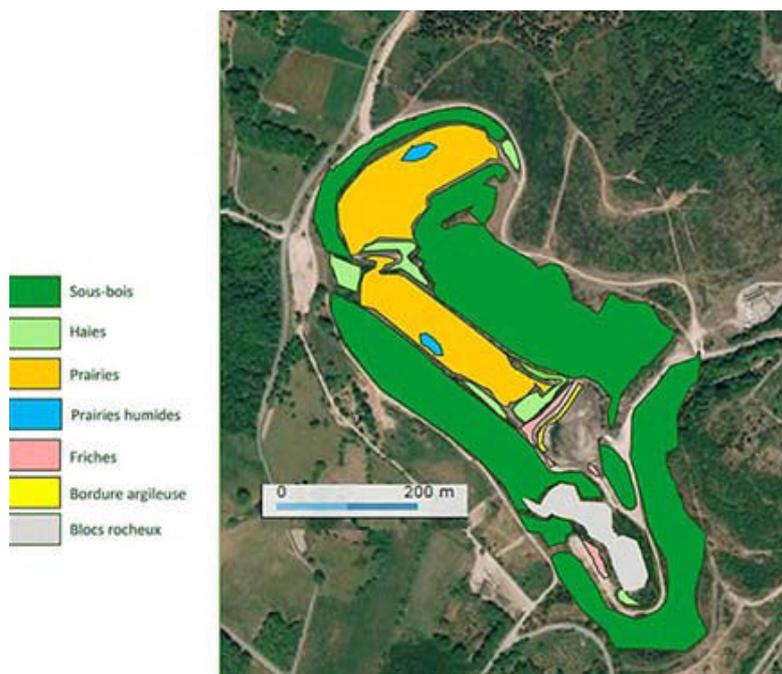
In France, a ZNIEFF (Zone Naturelle d'Intérêt Écologique, Faunistique et Floristique), is a listed natural area of exceptional interest in terms of its ecology, flora and fauna. Here in the remediated zone, the richness and the diversity of the plant and animal species present encourage us to have the site listed as a ZNIEFF. We have begun a process with a view to this.

The flora present on the site studied is of several origins:

- The plantations made in 1997 when the open-cast mines were rehabilitated:
 - Trees: Scots pine (*Pinus sylvestris*), Douglas fir (*Pseudotsuga menziesii*) and Scotch broom (*Cytisus scoparius*) on the hanging terraces between two granite walls;
 - Mixture of grains including: fescues (*Festuca rubra*, *Festuca ovina*), Common Meadowgrass (*Poa pratensis*), bird's-foot trefoil (*Lotus corniculatus*), field clover (*Trifolium campestre*), sundial lupine (*Lupinus perennis*) on the flat areas at the bottom of the open-cast mines.
- Natural colonization by species close to the site, thanks to the wind, insects and birds (this is the case for most of the species encountered);

The import of grains or plants contained in sludges and sediments stored on the site between 2006 and 2010; these plants are typically associated with wet environments (lakes and ponds). With the exception of the granite walls, the landscape of the two open-cast mines resembles that of the mixed woodland and pasture typical of the Limousin region, known as the "Bocage Limousin". It consists of fields, hedgerows and woodland.

The inventoried plants are associated with five distinct environments: undergrowth, hedgerows, grasslands and heathland, wet grasslands and the clayey fringe, as shown on the map below. The most rich and diverse environments are the grasslands, hedgerows and undergrowth.



Map of vegetation

Of the 140 plant species identified on the site in 2011, none is protected under the French Order of January 20, 1982 determining the list of plant species protected over the whole of French national territory, nor under the French Order of September 1, 1989, relating to the list of protected species in the Limousin region, as a supplement to the national list. The plants present on the site are not of heritage interest. They are plants which occur commonly in Limousin and in France.

As for the fauna, 60 protected species belonging to 4 taxa (amphibians, reptiles, birds and chiroptera) were identified on the site. In addition to their strict protection status, several species have an unfavorable conservation status and for this reason appear on different regional, national or European lists (red lists, European Habitats Directive, list of species of determining importance for the creation of a ZNIEFF). On the basis of this information, a heritage index has been assigned to each protected species.

As a result, we identified 4 heritage indices for the 60 protected species in the area studied:

- Very high: 6 species out of the 60 are included in the European Habitats Directive, are species that are "Vulnerable" on the French national red list, or species from the Birds Directive and that are of determining importance for the creation of a ZNIEFF;
- High: 4 species out of the 60 are included in the Birds Directive, or species from the European Habitats Directive which are also of determining importance for the creation of a ZNIEFF and/or which appear on the French national red list as "near-threatened";
- Medium: 14 species out of the 60 are included in the European Habitats Directive, or are of determining importance for the creation of a ZNIEFF, or are species which appear on the French national red list as "near-threatened";
- Low: all other protected species.

■ Environmental monitoring program with the participation of local communities in Mongolia



The goal: to analyze and monitor water samples, in order to produce reports, assessments and recommendations.

Mongolie

In addition to the work conducted on the flora and fauna, Badrakh Energy is maintaining its participatory environmental monitoring program, in order to make its approach open and transparent with respect to the authorities and the local population. This has been successfully deployed since 2013.

The participatory environmental monitoring program was initiated by Badrakh Energy and COGEGOBI in order to make the approach open and transparent with respect to the authorities and the local population. It has been successfully deployed since 2013.



This year again, the Badrakh Energy team has decided to focus on pedagogical training of the local population in various areas of environmental protection, as well as in water monitoring. The team continues to respond positively to requests from herders to analyze the well water they consume.

In line with the program underway, the local population, official representatives and independent experts and scientists, and school children are regularly invited to accompany the teams from Badrakh Energy and COGEGOBI* when they carry out sampling on land in the districts of Argalant, Bayanbogd and Zuunbayan. The samples are sent for analysis to the certified laboratory at the Nuclear Research Center and to the Central Geological Laboratory. The results are then made public.

■ Mongolia: The local commissions assess environmental remediation work positively

Each year, COGEGOBI* submits its environmental monitoring plan to Mongolia's Ministry for the Environment, Green Development and Tourism, for approval. Once the exploration activities are complete, the sites are inspected by the environmental monitoring department and several local commissions.



The results of these inspections carried out in November 2017 demonstrated that the measures taken in the field following the end of the drilling campaign fulfilled 87.8%* (Badrakh Energy) and 80.7% (COGEGOBI)* of the commitments of the environmental monitoring plan. The Commissions commended all of the initiatives undertaken by COGEGOBI and Badrakh Energy in favor of environmental protection: the setting up of a system of flags indicating to the trucks which tracks to take on the drilling sites in order to avoid creating new unnecessary tracks; planting of saxaul seedlings.

Badrakh Energy LLC and COGEGOBI* are making every effort to minimize the impact of their activities on the environment and local communities. The approach of the on-site teams is to apply best practices and international standards while drawing on their own experiences.

**company responsible for exploration work in Mongolia*

SOCIAL COMMITMENT

■ Creating new opportunities locally for developing skills and recruiting skilled employees



Canada

The goal: to meet needs for the recruitment of skilled employees on our sites.

■ Local communities forming a talent pool

One of Orano's objectives in Saskatchewan is to maximize the number of employees who live in the communities of the north of the province in the area where the McClean Lake site is located. To support the recruitment of young northerners, Orano has set up a training program targeting the local communities. The aim is twofold: to secure recruitment needs, whilst equally playing a positive role in terms of local socio-economic activity.

■ Skill-enhancing training initiative

Over recent years, Orano Canada has implemented an extensive training project designed for the isolated communities in the Athabasca basin situated closest to the McClean Lake site in northern Saskatchewan. For the most part aboriginal, these communities have very limited opportunities for employment or skills development.

Since 2012, Orano Canada has developed a number of dedicated training programs with six focus areas:

- Employability: informing and preparing young people from these Northern communities for the world of work;
- Training operators: modules adapted to the very technologically advanced McClean Lake mill;
- Training of supervisors: developing knowledge and skills through mentoring, but also introducing leadership training;
- Training in a range of disciplines or trades, offering learning opportunities on site and in partnership with technical institutes offsite;
- Promoting workplace observation placements for secondary school students;
- Career guidance for opportunities in mining upstream of apprenticeships.



■ Shared benefits over the long term

This program allows the teams at McClean Lake to secure their future recruitment needs and contribute to the economic and social development of the region. With convincing results. Since 2012, 91 young people from the region have completed their operator training and 80 of them have been recruited. 59 of these employees continue to work on the McClean Lake site today. Participants in the program who complete their training and who are not recruited or who have left Orano succeed in finding a job in the region, thus putting their apprenticeship to good use.

As the number of applications continues to increase, more partnerships have been set up with representatives of the local community, educational establishments and financing bodies.



MINE CLOSURE

R&D program relating to the remediation and environmental monitoring of former mining sites



France

The goal: forward planning to remain compliant with regulatory requirements and address social concerns relating to the management of former mining sites as effectively as possible.

The "Envir@mines" R&D program was created in 2010. It aims to meet and plan ahead to maintain compliance with the requirements of the [National plan for the management of radioactive materials and radioactive waste](#) (PNGMDR) on the question of mine closure risks.

Though the Envir@Mines program concerns all the mining sites of the group, here we focus on our actions in France, on mines that have already been remediated. Our goal: to improve knowledge of the environmental footprint of mining sites and offer new technologies to optimize the management and treatment of water.

13 academic partners (Université Paris VI, Ecole des Mines de Paris, Université de Poitiers, Université de Bruxelles, the University of Manchester, the University of Granada, and the CEA, etc.) are working with teams from Orano Mining. Their research work is focused on 3 themes: management of waste rock, management of tailings and management of aqueous discharges. A review of the progress that has been made so far as well as the work currently in progress is provided below.



■ Management of waste rock

Orano Mining has conducted several sampling campaigns on remediated sites to characterize the evolution of waste rock storage and its potential impact on the surrounding environment. A multi-year study is ongoing to develop predictive models of the possible migration of substances from the rock piles to the environment.

■ Management of tailings

Orano Mining is studying the evolution of ore tailings and working on the development of models to better predict their long-term environmental impact, based on a normal scenario and degraded scenarios.

■ Aqueous discharges and bioavailability

The future French standards on the environmental quality of aquatic environments will take into account the bioavailability of contaminants. In order to meet these new requirements, Orano Mining is building its knowledge on the bioavailability of several metals of interest (Uranium, Radium, Barium, Aluminum, Manganese and Iron) and the potential risks they pose for ecosystems.

Gabon: Mounana 200 Project



Gabon

The goal: demolition and reconstruction of 201 affected houses in the municipality of Mounana identified subsequent to a change in the regulatory limit for radiological exposure of members of the public concerning the Annual Actual Dose Added (Dose Efficace Annuelle Ajoutée - DEAA) from 5 to 1mSv, and validated by the Gabonese authorities

At the time when the site was being mined (in the 1970s-1980s), radiologically contaminated products were used in the concretes used in the construction of certain houses in the municipality of Mounana (including the Cité Rénovation).

Subsequent to a change in the regulatory limit for radiological exposure of members of the public concerning the Annual Actual Dose Added (DEAA) from 5 to 1mSv, in 2006 and 2007, the CNPPRI drew up an exhaustive inventory of housing in the Cité Rénovation.

Between 2007 and 2009, the first works were carried out in the municipality of Mounana, leading to the demolition and reconstruction of 18 affected houses in the Cité H.

The inventory was extended, between 2008 and 2011, to the entire municipality of Mounana, and in 2011 Orano Mining made a commitment to rebuild the 201 radiologically affected houses in Mounana, including 124 houses in the Cité Rénovation in the former workers compound and 69 houses in Mounana demolished/and reconstructed in the same place.

The definitive list of the radiologically affected houses was validated by the technical committee (COMUF, CNPPRI, Gabonese State) in 2013. The location for the reconstruction of the houses currently situated in the Cité Rénovation was discussed and validated the same year by the inter-ministerial committee, and was subject to a declaration of public interest (Déclaration d'Utilité Publique – DUP).

Concerning the reconstruction of the 124 houses in the Cité Rénovation, it has been enacted based on an agreement, according to which the State of Gabon will be responsible for the construction of the Roads and Utilities (Voiries et Réseaux Divers – VRD) while the COMUF shall manage the construction, demolition and handover of the deeds of ownership. The project is divided into 3 stages (24, then 48 and 52 houses), in order to allow an economic activity to develop over a period of several years in the municipality of Mounana. The employment of local personnel is thus to be privileged for the entire project.

The first works commenced in June 2016, with the deforestation and earthworks in the areas where the 124 houses are to be located.

Work on the construction of the first 24 houses started in November 2016: work on the elevations has started and this first worksite should be completed in the summer of 2018.



■ Remediation of the mining site of Bellezane



The goal: the environmental impact of a mining site is considered for all stages of the site's life cycle, and that includes in the context of subsequent additional remediation work.

The former open-cast mine at Bellezane (Limousin, France) underwent remediation between 1992 and 1997. It is now used to store residues from the processing of uranium ore, and is an ICPE (Installation Classée pour la Protection de l'Environnement / French classified facility for environmental protection) subject to regular monitoring carried out within the framework of prefectural orders.

A project has been launched to build a new storage capacity, designed to accommodate radioactively contaminated sediments resulting from the dredging of local water bodies. The installation is dimensioned for a maximum capacity of 200,000 m³ and is located above where the processing residues from the ore mined during the mining of the site are stored.

Several environmental studies including inventories of fauna and flora have been conducted and validated by the authorities upstream of the project. Orano Mining has taken additional measures to preserve biodiversity during the construction phase, such as for example:

- Adjustment of the work schedules according to the seasons and the life cycle of animals to limit the impact on wildlife (especially birds: falcons and skylarks)
- Construction of a barrier for amphibians to limit the risk of burial during trenching operations
- The creation of ponds to attract amphibians outside the construction area
- Collaboration with an association and a specialist in bats, to plan work in an old gallery according to the inventories performed.

An independent expert has verified that the actions presented have been implemented and effective.

This new sediment storage capacity is now in use and has already been used to accommodate sediments resulting from the dredging of three local water bodies in the Haute-Vienne.

■ Waste Rock survey campaign



The goal: use of waste rock in the public domain: a large-scale survey

In 2009, the Ministry of Ecology, Energy, Sustainable Development and the Sea entrusted Orano Mining with the public service mission of carrying out a survey of the waste rock from mining present in France in the public domain, and resulting from former mining sites, whether or not operated by Orano Mining. Orano Mining devoted major human and material resources to this project, an initiative that is in line with Orano Mining's CSR approach.

■ Waste Rock from mining

Between 1947 and 2001, 76,000 tonnes of uranium were extracted from French soil, from 237 mining sites located throughout the territory. To access these deposits, it was necessary to remove 187 million tonnes of earth, sand or rock containing no or little uranium.

In accordance with the regulations in force at the time, some of these materials were used in the public domain for backfill. From 1984, Orano Mining set up a register providing traceability of waste rock from mining activities carried out by Orano Mining and its subsidiaries, but this was not the case for other operators.

■ A helicopters and men

Within the framework of this project, in 2009 and 2010, Orano Mining started performing aerial surveys of areas across the country covering a surface area of 3,000km² where waste rock may have been used. This was done via overflights using helicopters equipped with special geophysical measuring apparatus (gamma spectrometers), in all regions where waste rock could have been re-used (Auvergne, Bretagne, Languedoc-Roussillon, Pays de la Loire, Limousin). With the help of specialized independent companies, Orano Mining then conducted analyses and inspections on the ground, between 2011 and 2013, to characterize these zones (in total, 1,348 zones with waste rock).

■ Decontaminating the zones

Of these sites, 58 zones exceeded the reference threshold of 0.6 mSv/year*, beyond which remediation work must be performed, and 216 zones were found to be between 0.3 mSv/year and 0.6 mSv/year, requiring consultation to determine whether an intervention was necessary. Having studied and prepared the areas to be treated, in autumn 2015 the Orano Mining teams started the cleanup work by removing the tailing material. This work is being carried out in agreement with the local authorities, who are allowing them to be stored at sites where studies have shown their lack of impact on the environment and people. The work has now already been completed in Haute-Vienne, in the Auvergne and in the Loire, and will continue in 2018 and 2019 in certain other départements.



** The Sievert (Sv) is a unit used in radiation protection which is expressed in "equivalent dose" and takes into account the characteristics of the radiation and of the irradiated organism. On average it amounts to 2.9 mSv per year in France. This value depends partly on the geological setting and can range from 1 mSv in the Paris basin to 4 mSv in granitic regions (Limousin, Brittany, Auvergne, etc.).*

In accordance with the French Public Health Code, this dose must be less than 1 mSv above the natural background level. The circular of August 8, 2013 describes a generic methodology for the management of areas affected by the presence of mining waste. It sets a guideline value for the added dose, triggering performance of work from a value of 0.6 mSv/year.

R&D AND INNOVATION

■ A tool for environmental R&D studies: DGTs (Diffusive Gradients in Thin Film)



France



Gabon

The goal: based on the principle of the diffusive gradient, this technique makes it possible to pre-concentrate contaminants which are of interest in soluble form (U, 226Ra, Se, As, etc.) for more effective detection.

The technique was developed in 1994 by Hao Zhang and William Davison at the Lancaster Environment Center of Lancaster University in the United Kingdom. Diffusive Gradients in Thin films (DGTs) are mainly used in environmental chemistry to detect elements and compounds in aqueous media in natural waters, sediments and soils. The technique involves using a specially-designed passive sampler that houses a binding gel, diffusive gel and membrane filter. The element or compound passes through the membrane filter and diffusive gel and fixes itself to the binding gel. Post-deployment analysis of the binding gel can be used to determine the concentration of the element of interest in the solution in which the DGT was located.



In 2012, Environmental R&D launched a research program, in partnership with the Université de Bruxelles in order to use the tool primarily for the measurement of the total uranium dissolved in solution, as well as to measure other contaminants of interest. DGTs were tested and optimized in the laboratory under controlled conditions. In a second phase, they were also successfully deployed on several mining sites, for use both in surface waters, as well as in porewaters from sediments.



This system is now operational: it is used for the environmental monitoring of targeted sites, and means that it is no longer necessary to use more limiting methods such as ultrafiltration.



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Life Cycle Greenhouse Gas Emissions from Uranium Mining and Milling in Canada

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Reduction in differences in grade between the Block Model and measurement at the gantry



Niger

The goal: to comply with the grade envisaged in order to improve the productivity of deposits and ensure that SOMAIR can continue to remain in service for its planned operating life. This project has been using the A3 problem-solving methodology, deployed by ORANO and ORANO Mining as part of the Operational Excellence initiative.

This project is based on an analysis of the entire mining process, right through from the cleaning up of blastings to the moment the ore is transferred onto the gantry crane. The result of the actions deployed subsequent to this analysis shows that there has been a considerable reduction in the large negative difference, recorded in 2016 between the grades actually obtained during mining works and the grades envisaged, from -14% in 2016 to around -5% in 2017, corresponding to a change of +9%.



Within a matter of weeks, the teams identified the priority actions to be undertaken (modification of the piping system, adaptation of the pump unit and the pipework...) to arrive at a sustainable solution corresponding to the need. On November 14, 2017, this project was selected from among 15 other competing projects within the group to be awarded the Gold medal in the ORANO group A3 challenge.



INCREASE IN THROUGHPUT IN THE SOLVENT WORKSHOP

