Orano’s mining activities

Contact:
Marie-Laure LEFEBURE
+33 (0)1 34 96 66 91
marielaure.lefebure@orano.group
Orano transforms nuclear materials so that they can be used to support the development of society, first and foremost in the field of energy.

In 2018*

€3.6 billion in revenue

55% of revenue generated internationally

€31.8 billion in the order book

TOP 3 in its 6 business areas

16,000 employees

* Data produced in accordance with the IFRS 9 standard

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.

Access to competitive energy that makes it possible to combat climate change is at the heart of societal and environmental issues, notably to guarantee an electricity supply in developed countries and support the increase in demand in developing countries.

In Asia, nuclear power is and will remain a key source of energy in the global energy mix.
MINING ACTIVITIES
A leading producer of uranium

Orano’s teams discover, develop and operate a geographically diverse and profitable set of uranium deposits in order to guarantee security of supply for customers.

Orano is counted among the world’s leading producers of uranium, with competitive production costs and cutting-edge extraction techniques put in place in mines in operation in Canada, Kazakhstan and Niger.

Committed to efforts to continuously improve safety and operational performance, its teams carry out their mining activities in a manner that fully respects people and the environment, and contribute to the economic development of local regions and their populations.

In 2018*

1,124 M€ contributing revenue

31% of Orano’s revenue

3,560 employees (permanent and fixed-term)

5 mining sites

7,970 tU** produced in 2018

TOP 3 on the global market

Natural uranium

Natural uranium is a metal found all over the Earth, in rocks as well as in seawater.

Its low level of radioactivity generates the main source of heat that keeps the Earth’s mantle at a high temperature, thereby limiting its cooling.

Thanks to this property, uranium has become the raw material used by the nuclear industry to produce electricity.

* Data produced in accordance with the IFRS 9 standard.

** 7,596 tU. Orano’s financially consolidated share + 384 tU. Orano’s share in COMINAK (34%).
Present at every stage of the mining process

Orano’s mining activities cover the exploration, development of mining projects, production and commercialization of uranium from different types of deposit across the world.

The Mining BU covers almost 25 job specialisms worldwide

**UNIQUE SKILLS THROUGHOUT THE WHOLE CYCLE**

Orano is committed to promoting employee well-being and skills development on a daily basis: it has a career path dedicated to technical expertise (with 3 levels and 53 experts in 2018) and nearly 30 training courses are offered by the Mining College in all mining disciplines.

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**Discovery**

- Large-scale exploration

**Decision to mine**

- In-depth exploration and studies
  - Resources
  - Reserves

**Detailed studies, procurement and construction**

**EXPLORATION LICENSE**

- 10 - 20 years
- 5 years

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**EXPLORATION**

**MINING PROJECT**
URANIUM TRADING

Fully owned by Orano, Urangesellschaft GmbH (UG) manages the trading – purchasing and sale – of uranium on the various international markets.

UG is one of the biggest uranium traders in the world and counts the main players in the uranium sector among its customers, including nuclear power utilities, uranium producers, converters and enrichers, and other traders.
Orano’s mining activities

**Exploration**

Its portfolio of reserves and resources allows the group to guarantee security of supply for its customers over the long term, with 20-year production visibility.

**Orano allocates significant resources to the search for new deposits. For several years, its exploration budget has been the largest in the uranium industry.**

**EXPLORATION PROGRAMS**

- **CANADA**: in the Athabasca Basin
- **MONGOLIA**: in the provinces of Dornogobi and Sukhbaatar
- **KAZAKHSTAN**: in southern Kazakhstan with the South Tortkuduk project
- **NIGER**: the search for an extension around operational mining sites

**In 2018**

187,060 tU of mineral reserves held by Orano

142,552 tU the volume of indicated and measured resources

**THE EXPLORATION PROCESS**

The exploration process to confirm a new deposit takes place over several years, from the discovery of the very first indicators during *prospecting*, to exploration by *drilling*, up to the confirmation of a *resource* with the potential for mining.

This exploration process continues throughout the mining cycle to try to identify additional resources near the initial deposit.
Industry experts are looking to the future of the uranium industry in the Athabasca Basin.

Athabasca Basin, Canada

The highest known uranium concentrations – with the uranium content of the ore exceeding 20% – are located in the Athabasca Basin in the north of Saskatchewan province, where most of Orano’s exploration activities take place. Although the historical deposits are found close to the surface, our current targets are buried several hundreds of meters underground.

48 exploration projects in Athabasca, of which 26 are being run by Orano.

DID YOU KNOW?

Prospecting is carried out in successive steps:
- Geological survey of the region
- Interpretation of remote sensing images
- Underground survey using geophysical methods
- Radioactivity measurements on the ground
- Soil and water studies
- The conducting of surveys to acquire geophysical data in situ
- Analysis of samples taken during the survey

Core storage: Lake Moffat, McClean Lake, Canada
The mining project

The project phase determines technical, economic and environmental viability.

It involves increasing the knowledge of the deposit and characterizing the ore. It is during this phase that an industrial pilot may be set up to establish the most suitable extraction and ore processing methods.

In parallel, studies are performed to assess the societal and environmental impact of the project, and prepare the remediation plan.

Orano works according to the characteristics of each deposit to develop mines with optimum profitability, while minimizing their impact on the environment.

According to the WNA (World Nuclear Association), the market is expected to grow, with demand in 2025 predicted to be 25% higher than in 2015, notably driven by the restarting of Japanese reactors and the growth in reactor requirements for the Chinese fleet.

Rising demand is expected to raise market prices and enable new projects to be launched.

ZUUVCH OVOO PILOT IN MONGOLIA

Badrakh Energy, the Orano subsidiary in Mongolia, is preparing to test the ISR mining method selected for the recovery of uranium at the Zuuvch Ovoo deposit in the Gobi Desert.

Over a two-year period, the pilot will cover all uranium production stages, from extraction to the processing of the recovered ore, and the drumming of the concentrate produced.

Approximately 20 metric tons of uranium is expected to be produced during this test period.

• IMOURAREN* in Niger
• ZUUVCH OVOO in Mongolia
• MIDWEST and McCLEAN in Canada
• TREKKOPE MINE* in Namibia

* Production startup work was suspended in 2013 and 2014 respectively, owing to the market context.
Orano’s mining activities

Badrakh Energy in figures

- **3 shareholders:** Orano Group, MonAtom, Mitsubishi Corporation
- **3 mining licenses** for the Dulaan Uul/Umnut and Zuuvch Ovoo deposits
- **54,640 t of resources classified** for the Zuuvch Ovoo deposit
- **Number 1 uranium mining development project** in Mongolia
- **2 years** of operating tests to be performed at the Zuuvch Ovoo mining site
- **80 employees, 96% originate** from Mongolia

DID YOU KNOW?

Uranium content can vary from 220 g per metric ton of ore for deposits in Mongolia, to 200 kg per metric ton for deposits in Canada.
Production

The technical and economic feasibility of a project determines the method of extraction to be employed.

EXTRACTION

Orano runs three types of mine:
- Open-pit mines, for shallow deposits
- Underground mines, for deeper deposits
- In-situ recovery (ISR) for low-grade deposits where the ore is located between impermeable layers of rock

SOMAÏR and COMINAK in Niger: more than 140,000 tU in total produced in 2018

KATCO in Kazakhstan, the largest ISR uranium mining operator: more than 40,000 tU produced since 2006

CIGAR LAKE mine (operated by Cameco)/McClean Lake mill (operated by Orano) in Canada: more than 25,000 tU produced since 2014

McARTHUR RIVER mine*/Key Lake mill* (operated by Cameco) in Canada

* Production at the McArthur River mine and its Key Lake mill in Canada was suspended by Cameco in 2018.
PROCESSING

When the ore is removed from the mine, it is crushed and ground. The uranium is then leached (dissolved using chemical reagents).

- **Heap leaching** is used for low-grade ores. Once the ore is prepared, it is stacked on an impermeable pad and sprayed with a suitable chemical solution (e.g. SOMAIR, in Niger).

- **Dynamic leaching** is used for high-grade ores. It takes place in a liquid medium in tanks at the facility (e.g. COMINAK, in Niger, and McClean Lake, in Canada).

The uranium is then extracted from the solutions using a precipitation process. It is purified, dried and calcined to obtain the final product, natural uranium concentrate: **yellow cake (800 kgU per metric ton)**.

Uranium can be produced in different forms. However, the standard form on the stock market is **U₃O₈**. Uranium prices are quoted in dollars per pound of **U₃O₈**.

**DID YOU KNOW?**

**Physical, radiological and chemical properties of U₃O₈**

Uranium oxide (U₃O₈) is a stable, non-combustible, water-insoluble and non-corrosive powder. Radiologically, it is a material with a low level of radioactivity.

In the form of U₃O₈, uranium can be stored in optimum safety conditions, in an environmentally friendly way.
Orano’s mining activities

FOCUS Non-conventional mining techniques

JET BORING

Located 450 meters below the surface in unstable, waterlogged rocks, the Cigar Lake deposit (Canada) required the development of new technology that involves freezing the ground and extracting the ore with high-pressure jets of water.

This method, developed by Orano engineers, is called jet boring.

It is suitable for deposits with a very high uranium content as miners handle the ore remotely.

IN-SITU RECOVERY (ISR)

The principle of in-situ recovery consists in injecting a leaching solution into the deposit via wells. The solution (dilute acid and water) dissolves the uranium as it passes through the deposit and is then pumped to the surface. The solution, loaded with uranium, is then transported by pipeline to the plant, where the uranium is extracted and fixed on ion-exchange resins.

The solutions are enriched with acid and reinjected into the wells in a closed circuit. This technique is only used when the ore is located between impermeable layers of rock, as in Kazakhstan and Mongolia.

12%
Average ore content at the Cigar Lake mine, the second highest-grade ore deposit in the world

48%*
of the world’s uranium is produced using ISR

* Source: WNA

South Tortkuduk site, Kazakhstan
# At a glance: Orano’s main mining assets

<table>
<thead>
<tr>
<th>Mine</th>
<th>Status</th>
<th>Ownership</th>
<th>Mine type</th>
<th>Processing type</th>
<th>Average grade*</th>
<th>Production, tU, 2018**</th>
</tr>
</thead>
</table>
| SOMAÎR, deposits near Arlit, Niger | In operation since 1971 | • Orano, operator: 63.4%  
• SOPAMIN, Niger: 36.6% | Open-pit mine | Lixiviation dynamique et lixiviation en tas | 1.13 kgU per metric ton (1.13‰) | 1,783 |
| COMINAK, deposits near Akouta, Niger | In operation since 1978 | • Orano, operator: 34%  
• SOPAMIN (Niger): 31%  
• OURD (Japan): 25%  
• ENUSA (Spain): 10% | Underground mine | Dynamic leaching | 3.95 kgU per metric ton (3.95‰) | 384*** (total production: 1,128) |
| McArthur River mine/ Key Lake mill, Canada | In operation since 1999 | Mine:  
• Cameco Corporation, operator: 69.8%  
• Orano: 30.2%  
Mill:  
• Cameco, operator: 83.3%  
• Orano: 16.7% | Underground mine | Dynamic leaching | 58.6 kgU per metric ton (5.86‰) | 18 (total production: 60) |
| Cigar Lake mine/ McClean Lake mill, Canada | Start of mill operation in 1999  
Restarted in 2014 to process Cigar Lake ore | Mine:  
• Cameco, operator: 50.03%  
• Orano: 37.1%  
• Tepeco: 7.875%  
• Idemitsu: 5%  
Mill:  
• Orano, operator: 70%  
• Denison Mines: 23%  
• OURD: 7% | Underground mine | Dynamic leaching | 123 kgU per metric ton (12.3%) | 2,573 (total production: 6,935) |
| KATCO, Tortkuduk and Muyunkum deposits, Kazakhstan | In operation since 2006 | • Orano: 51%  
• Kazatomprom: 49% | In-Situ Recovery (ISR) | In-Situ Recovery (ISR) | 0.96 kgU per metric ton (0.96‰) | 3,212 |

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* Average grade, based on ore already extracted.
** Orano’s financially consolidated share.
*** Due to changes in accounting standards, COMINAK has no longer been consolidated financially since the beginning of 2014.
Remediation and Post-Mining

Taken into account from the exploration phase, site remediation responds to economic, societal and environmental challenges.

REMEDIATION

Mines remediated by Orano and its subsidiaries:

- **The CLUFF LAKE mine** in Canada (in operation from 1980 to 2002)
- **The MOUNANA mining site** in Gabon (in operation from 1961 to 1999)
- **236 mining sites in France** (in operation from 1948 to 2001)
REMEDIATION

Undertaken on a sound scientific and technical basis, remediation must:

- Ensure lasting stability in terms of public health and safety
- Minimize the residual impact of previous activities
- Limit the area of land subject to restrictions on use
- Ensure landscape integration and preserve biodiversity
- Allow good social and societal management and encourage reconversion

All post-mining work is carried out in strict compliance with the environmental standards in force and in consultation with local populations. The majority of remediation activity takes place when mining operations cease due to depletion of resources or for economic reasons.

POST-MINING: FRENCH EXPERTISE

In accordance with commitments made to the French government, Orano manages almost all the former uranium mining sites in France (236 out of 247 in total), which includes sites in addition to those operated by the group and its subsidiaries for nearly 60 years.

The team in charge of mining site remediation, based in Bessines-sur-Gartempe (Limousin), manages the redevelopment projects, performs environmental monitoring, ensures that there are no impacts on health or the environment, monitors the operation of water treatment plants, manages the historical databases, enhances the value of Orano’s land assets and invests in research and development projects. All this work is done while maintaining a constant dialog with the general public and the authorities.
The development of projects that will give a new lease of life to former mining sites is integral to Orano’s goals of making the most of its land assets in France, promoting local socio-economic activity and helping maintain a healthy environment.

The reconversion plan is drawn up after consultation with the different local stakeholders concerned. It is based on the sustainable development principles of economic, environmental and societal balance. It guarantees a future for former mining sites and their integration into the region through the development of economic or leisure activities, or the conservation of areas of special environmental interest.

In France:
- More than 63% of former mining sites now accommodate an industrial facility, agricultural activities or photovoltaic power stations
- 4 photovoltaic power plants installed, supplying the needs of 12,000 households, and 12 projects in planning
- More than 35% of former sites are ecological and/or forest areas
- More than 20% are used for leisure activities (fishing, hunting, etc.)

**La Commanderie site (Vendée, France):**
- In operation from 1955 to 1990
- Remediated between 1977 and 2003
- Reconversion from 1994
- **11-hectare photovoltaic power plant**, supplying the equivalent of 1,500 households
- **Irrigation**: artificial lake used for agricultural operations and neighboring industries
- **Industrial estate**: Ixapack, a company that designs and manufactures packaging machines
- **1 project** to construct a photovoltaic power plant under way in the regional business and industrial park (PRAE) opened in 2010
Orano’s mining activities

A FORWARD-FACING SITE

Orano is demonstrating its desire to promote innovation and technological excellence at the Bessines-sur-Gartempe industrial platform. Four projects to modernize and extend the facilities have been launched, with the work due to continue until the end of 2020.

- CIME: construction of a laboratory measuring 8,300 m² so that all its activities, from studies to semi-industrial pilots, can be hosted in a single, cutting-edge facility
- Lavaugrasse Storage Unit (USL): creation of a unique storage center for the sludges generated by water treatment at the Haute-Vienne former mining sites
- Maurice Tubiana Laboratory: work to double the current laboratory area (+400 m²) to increase its lead-212 production capacities
- Extension of the depleted uranium storage facilities: construction of two additional hangars

Bessines-sur-Gartempe site (Haute-Vienne, France)

- In operation from 1955 to 1993
- Remediated between 1993 and 2000
- Site area: 159 hectares

A LEADING INDUSTRIAL PLATFORM

The former mining site of Bessines-sur-Gartempe has become a leading industrial complex with a 140-strong workforce.

6 areas of expertise:

- Geosciences: studies on thousands of ore samples from all around the world
- Center for Innovation in Extractive Metallurgy (CIME): development of ore treatment and recovery processes
- Maurice Tubiana Laboratory: production of lead-212, needed to develop innovative treatments for cancer
- Post-Mining: oversight of remediation work and environmental monitoring
- Interim storage of depleted uranium: this uranium, a by-product of the enrichment of natural uranium, represents a valuable source of energy
- Urêka, the mining museum: information about the great uranium mining adventure

+€40 million invested in 4 major projects

50% to 80% of the work performed by local companies, depending on the worksite
Innovation and digital transformation are at the heart of Orano’s mining business, to create value, maintain the profitability of operations, better control environmental impact and develop new extraction methods.

Innovation covers all stages of mining, from exploration to remediation, including the modernization of workstations, measures to improve the reliability of processes, the optimization of resources and industrial processes, predictive maintenance and site remediation.

TOWARDS THE DIGITAL MINE...

3D MODELING
Used in the context of ISR extraction, HYTEC is a simulator that helps model the mining of a deposit all the way up to environmental remediation.

It can be used to simulate the acidification of the deposit and the way in which uranium is dissolved and transported, and thereby to better evaluate uranium recovery over time.
**CONNECTED MINING EQUIPMENT**

Data from sensors positioned on trucks is used to increase the productivity of the mining cycle, as well as to enable predictive maintenance to be carried out on the equipment.

**DRONES**

Drones can be used in a range of applications, such as photogrammetry, for obtaining a topographical survey in order to estimate ore volumes.

Drones can also carry radiometric waves for geophysical exploration work, improving precision and saving time.

**FOCUS**

**Center for Innovation in Extractive Metallurgy (CIME)**

Orano runs a recognized Center for Innovation in Extractive Metallurgy (CIME). Located in the Limousin region in France, it works to improve the performance of ore treatment processes and create new processes for Orano group subsidiaries, as well as for customers external to the group.

The Center has been the source of many innovations that have been successfully introduced at the group’s mining sites.
A RESPONSIBLE MINING COMPANY
Our principles

Our mining activities fully support the group’s threefold ambition of achieving profitable, socially responsible and environmentally friendly growth.

Driven by the belief that the ongoing success of mining activities depends on responsible, transparent management that respects people and the environment, Orano joined the International Council on Mining and Metals (ICMM) in May 2011.

Alongside the other ICMM members, Orano contributes to discussions and the implementation of the sector’s top priorities in terms of sustainable development.

The 10 principles of sustainable development drawn up by ICMM are based on best practices in the sector. They form the foundation of Orano Mining’s responsible approach.

Orano Mining actions in the area of corporate social responsibility are structured and formally defined through commitments and governing bodies.

- Orano Mining adopted a CSR policy in 2016.
- The CSR Committee, which sits at the same level as the Management Committee of Orano’s mining business, has the task of approving CSR goals and progress once a year.

OUR PRINCIPLES OF ACTION

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

Orano maintains a health and safety management system and is strengthening its safety culture at all levels of the organization.

Orano is committed to ensuring the prevention and control of all risks inherent in its activities for its employees and external stakeholders by:

- Involving managers in strengthening the safety culture of teams on a daily basis
- Deploying applicable safety standards throughout the group
- Systematically evaluating the risks linked to all our activities using a shared methodology
- Involving all employees in the detection, elimination and control of dangerous and risky situations
- Collecting and exchanging best safety practices
- Sharing the lessons learned from accidents with group entities and our industrial partners

ATTENTION: HIPOS

Identifying, analyzing and acting on the causes of accidents and events with a high potential for severity (HIPOs) is one of our priorities.

SAFETY MONTH

For several years now, June has been an opportunity for Orano and its mining business to raise awareness about safety among employees and subcontractors. Each mining site organizes a Safety Day to share best practices and lessons learned. These Safety Days are also a chance for everyone to reconfirm their commitment to safety.

1,500 field managers trained in safety culture between 2017 and 2019.

FOCUS

Health observatories

The creation of health observatories is an independent, multi-party initiative that aims to monitor former workers to detect potential cases of disease linked to exposure to ionizing radiation.

Since these health observatories were launched in Gabon in October 2010 and Niger in December 2011, they have provided post-professional monitoring for 2,599 former miners, with a total of 5,018 consultations.

The medical check-ups performed to date have not detected any symptoms of occupational diseases related to exposure to ionizing radiation.
The natural radioactivity of uranium ore means that measures must be taken to protect workers from ionizing radiation and monitor their working environment by measuring ambient conditions.

Radiological protection refers to:
All activities that aim to prevent and control any risk of exposure of these workers to ionizing radiation by guaranteeing appropriate and relevant dose rate monitoring in all circumstances at our exploration and production sites.

Radiological protection requires:
- The evaluation of the radiological occupational risks for each work station
- The continuous improvement of working conditions, with a view to minimizing exposure
- The promotion of a radiological protection culture by providing training and expertise

**FOCUS**

Radioactivity and the general public

- **1 mSv/year**: the annual exposure limit from industrial activities for the general public, set by French and European regulations
- **2.9 mSv/year**: the exposure (average French value) of the general public to natural radioactivity: radon, cosmic rays, ground radiation
- **4.6 mSv/year**: the overall exposure (average French value) of a member of public: natural radioactivity + added radioactivity, e.g. medical exposure, air travel

**EMPLOYEE EXPOSURE IN 2018**

The additional dose* limit applied for our employees and subcontractors cannot exceed 20 mSv over a rolling 12-month period, in accordance with French regulations.

- **0 workers exposed to more than 20 mSv in 2018**

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**Dose limit under French regulations applied at all sites**

- **20 mSv**

**Maximum dose** recorded for Mining BU employees (COMINAK mine in Niger)

**Average dose** for Mining BU employees

**Average dose** for Mining BU subcontractors

* Actual additional annual dose: the sieverts (Sv) to which a person is exposed in addition to natural background radiation.

** Average dose between July 2017 and July 2018.
Environment

Environmental responsibility is an ongoing commitment firmly rooted in our values. As such, our actions seek to strengthen risk prevention and our control of the environmental footprint of our activities.

THE ENVIRONMENT IS TAKEN INTO ACCOUNT THROUGHOUT THE MINING CYCLE

Environmental impacts and risks are constantly assessed, all the way from exploration to site redevelopment, as well as during the project and mining phases.

**Environmental monitoring** (monitoring of the atmosphere, aquatic and terrestrial environment, and groundwater), as well as associated preventive measures, is also carried out at each stage of the cycle.

**Environmental impact studies** are performed for each new mining project and whenever a major modification of our industrial facilities is anticipated. They meet the regulatory requirements in force, and must be submitted for public consultation and be approved by the local authorities.

In addition to strict compliance with the regulations in force in each country, Orano has set out a common approach to all sites to better anticipate the risks and limit the ecological footprint of its activities.

All of Orano’s mining sites, as well as the Bessines-sur-Gartempe industrial platform, have gained **OHSAS 18001** and **ISO 14001** certification.

R&D SERVING THE ENVIRONMENT

Orano invests in research and development to improve its knowledge of the potential impacts of its activities and find innovative solutions to reduce their consequences.

Our R&D experts make use of fundamental research tools to characterize the carriers of radionuclides with an environmental impact.

FOCUS

**Best practice: participatory monitoring**

In Mongolia, since 2013, representatives of the authorities and local communities, independent experts and schoolchildren have been regularly invited to accompany the teams taking samples for environmental monitoring.

More than 15 participatory monitoring campaigns organized since 2014.
WATER:

“Aman” working group in Niger

Since 2003, for Niger, a working group called “Aman” (or “water” in Tamachek) has been carrying out additional periodic monitoring campaigns on a wider scale than those conducted by site operators.

The working group is composed of geologists, mining hydrogeologists and environmental specialists. Its aim is to improve the water resources model, refine our understanding of the regional hydrogeology and guarantee the quality of supplies to sites and nearby towns.

Recycling effluents in Kazakhstan

Since 2013, a process has been in place at our mining site in Kazakhstan to recycle plant effluents, which has reduced the use of new reagents and industrial water.

Since this process was introduced, water consumption at the KATCO site has fallen by 15%.

FOCUS

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Biodiversity:

Compensation project in Mongolia

As part of the preparation of the Zuuvch Ovoo ISR pilot site, the detailed environmental impact assessment determined that the destruction of a certain number of saxauls, an iconic shrub of the steppe, would be unavoidable. Orano’s subsidiary in Mongolia, Badrakh Energy, has opted for a unique compensation scheme.

Upstream of the project, the majority of the facilities will be built outside areas with a high density of saxauls, and Badrakh Energy will ensure that roads are strictly managed.

The company has offered to replant saxauls over a surface area equivalent to that affected by the pilot. The compensation measures will be carried out in an area close to the pilot and compatible with the sustainable regrowth of the trees, in a location chosen in agreement with stakeholders and in accordance with local traditions. In this way, in order to create a positive societal and environmental dynamic, the stakeholders will be encouraged to take part in the compensation process, as the work will be carried out by local companies and professionals specializing in biodiversity compensation schemes and in the replanting of trees in arid regions.

29% of Orano Mining investments in communities were dedicated to water access in 2018
Economic and social development

Mining activities are drivers of sustainable economic development in the regions in which they are based.

LOCAL JOBS

Orano Mining social policy expresses a commitment to the local recruitment of our employees.

- 95% of Orano mining employees come from the host country
- 95% of employees have permanent contracts

Orano pays particular attention to indigenous people and communities to help them access our job offers.

LOCAL PURCHASING

The group contributes to the economies of the countries where it operates mining sites, notably by making significant purchases from local suppliers.

The fact that preference is given to local suppliers during the bidding process allows the creation of a network of companies and numerous jobs in the region. Orano works with 2,500 suppliers in countries where it runs mining activities.

78% of our purchasing volume comes from the countries in which we are based

FOCUS

In Canada: partnership strategy with northern communities

Orano Canada aims to build lasting relationships with subcontractors and service providers in the north of the country by identifying northern companies for the purchase of goods and services. The company helps its subcontractors develop qualified employees from communities in Northern Canada.

In 2018, Orano Canada spent:

- More than $74 million on purchasing goods and services from Saskatchewan-based businesses (more than 60% of total spending)
- More than $48 million on purchasing from indigenous communities and communities in the north of the province
Community investments

Community investments are projects and actions that aim to meet both the expectations of stakeholders and the operational goals of our mining activities.

Orano’s mining subsidiaries make community investments targeting the following priority areas:
- **Education** (building classrooms and kindergartens, providing scholarships, etc.)
- **Health** (construction of health infrastructure, provision of training and medical equipment, etc.)
- **Access to water** (drinking water wells, wells for horticulture, livestock wells, etc.)
- **Infrastructure** (for municipalities and cooperatives, agriculture or sanitation facilities, etc.)

€3 million
community investments in 2018

**FOCUS**

**Niger: Irhazer, a major hydro-agricultural project**

Irhazer is a hydro-agricultural and pastoral development project in northern Niger. It aims to contribute to sustainable food security through the development of irrigated agriculture by improving 1,000 hectares of farmland.

Ultimately, it aims to ensure that sites can operate independently in a profitable and sustainable way.

Orano is financing feasibility studies, the pilot phase and the development phase through investments totaling **11.4 billion CFA francs (about €17 million)** under an agreement signed with the government of Niger on December 1, 2016.

Out of 22 hectares under development, 12 are already cultivated and 23,500 animals have been vaccinated.
Reporting and dialog

Transparency and dialogue are basic principles of corporate social responsibility. Orano runs its business in consultation with all the stakeholders, in accordance with national public policies.

LOCAL COOPERATION COUNCILS IN MONGOLIA

Four times a year, Orano’s subsidiary in Mongolia holds Cooperation Council Meetings with representatives from local communities in Ulaanbadrakh sum and Zuunbayan bag, Dornogobi province. More than 20 meetings have taken place since 2013.

ORANO CANADA: A DIRECT LINK TO LOCAL PEOPLE

In Canada, particular emphasis is given to dialog with northern indigenous communities, through meetings with local leaders, special public meetings and frequent participation in community events.

Thanks to the Northern Affairs Office at La Ronge, Saskatchewan, and its additional liaison officers based in three other communities, the inhabitants benefit from a direct link to Orano Canada.

BILATERAL STEERING COMMITTEE IN NIGER (CBO)

The Bilateral Steering Committee (Conseil Bilatéral d’Orientation – CBO) meets once a year, bringing together the administrative authorities, local authorities, technical services, the general public and representatives of the mining companies to examine development projects for villages in the departments of Arlit and Iférouane, financed by SOMAÏR, COMINAK, Imouraren SA and Orano Mines Niger.

DID YOU KNOW?

Orano has been supporting the Extractive Industries Transparency Initiative (EITI) since 2003. This means that the group informs the EITI about the revenue payments it makes to governments in the countries where it operates mines.
Since 2010, Orano has published a Corporate Social Responsibility report to give details about the performance of the group’s mining activities in terms of sustainable development.

The CSR report is prepared in accordance with the internationally recognized non-financial reporting guidelines of the Global Reporting Initiative (GRI). The 2018 edition of the report was drafted in line with the GRI standards.

The report is also audited by an independent third party to check that Orano’s mining activities comply with the guiding principles of International Council of Mining and Metals (ICMM), including its 10 sustainable development principles.

http://www.csr-mines.orano.group

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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.

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Tour AREVA - 1, place Jean Millier
92400 Courbevoie - France

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