



Namibian
Uranium
Association

THE RESURGENCE OF NAMIBIA'S URANIUM SECTOR

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NAMIBIAN URANIUM INSTITUTE

**MINING
EXPO**
& CONFERENCE
CHAMBER OF MINES OF NAMIBIA

22

**Windhoek
Show Grounds**

**31 August &
1 September
2022**



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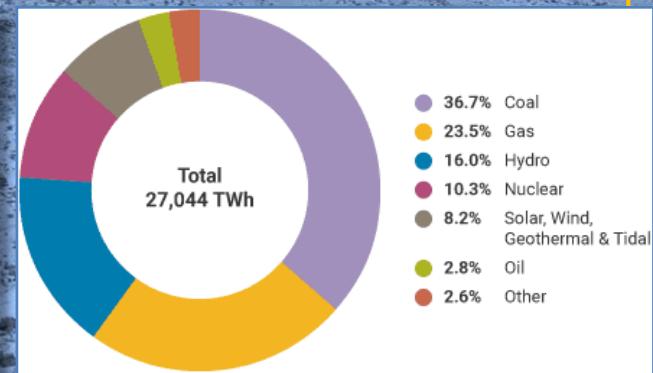
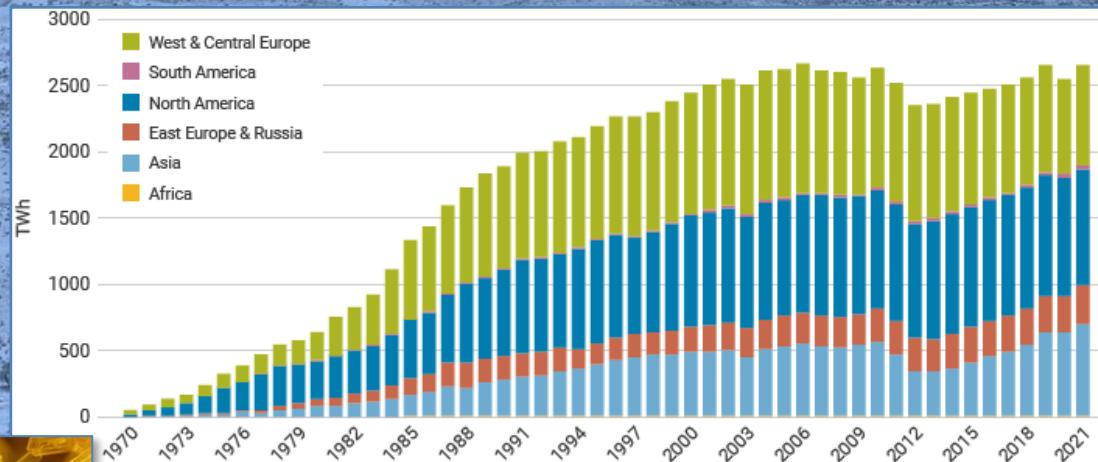


Why do we talk about a resurgence?



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- Today about 10% of the world's electricity is generated by some 440 nuclear power plants in 32 countries
- Some 55 more reactors are under construction, equivalent to approximately 15% of existing capacity
- Nuclear is the world's second largest source of low-carbon power after hydro-power, and produces about 28% of all low-carbon power
- In 2021 nuclear supplied 2653 TWh of electricity (2553 TWh in 2020)
- During the pandemic, only nuclear power had the flexibility to respond to changes in electricity demand



Source: WNA



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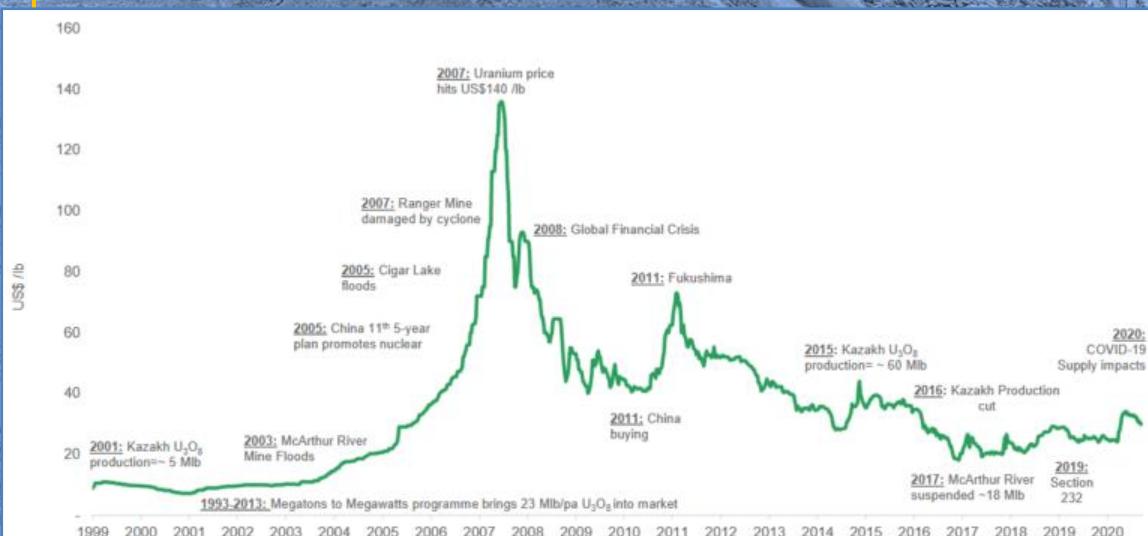


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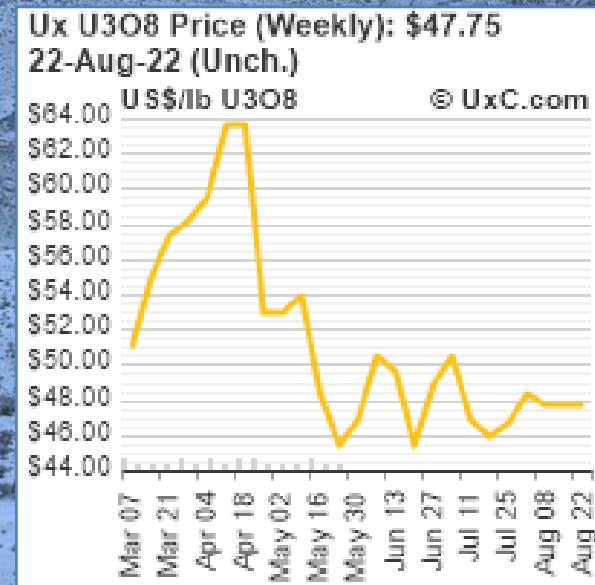


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- At the beginning of 2021, the uranium spot price stood at US\$ 30.20, and started a steep increase to above US\$ 50.00 in September
- On 15 April 2022, the price reached US\$ 64.50
- Today, it is US\$ 48.50
- Since the post-Fukushima low of US\$ 18.00 in October 2016, this is an increase of 164%.



Source: Fundamentals First



Source: UxC

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- ⌚ In June 2021, leaders of the G7 countries committed to an overwhelmingly decarbonized power system by the 2030s
- ⌚ They pledged to accelerate deployment of so-called zero emissions energy, which includes nuclear energy
- ⌚ The G7 agreement undertakes to fast-track progress on nuclear power in countries opting to use it as part of a technology-driven transition to Net-Zero
- ⌚ Climate Ministers reaffirmed that countries with nuclear in their energy mix recognize its potential to provide affordable low carbon energy and contribute to the security of energy supply as a baseload energy source

Source: Standford Daily



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- In November 2021, the COP26 conference proved to be a landmark event for the industry, with nuclear given a higher profile than ever before
- At the conference, the Director General of the International Atomic Energy Agency delivered the message that nuclear power is and will be part of the solution to produce low carbon energy
- COP26 provided a clear platform to highlight the crucial contribution that nuclear power can make to climate change mitigation, energy security, and a just energy transition
- It was announced that nuclear energy will play an important role in decarbonizing the energy sector in the United States, United Kingdom, France and China, as well as in countries transitioning away from coal like Romania, and developing countries such as Ghana



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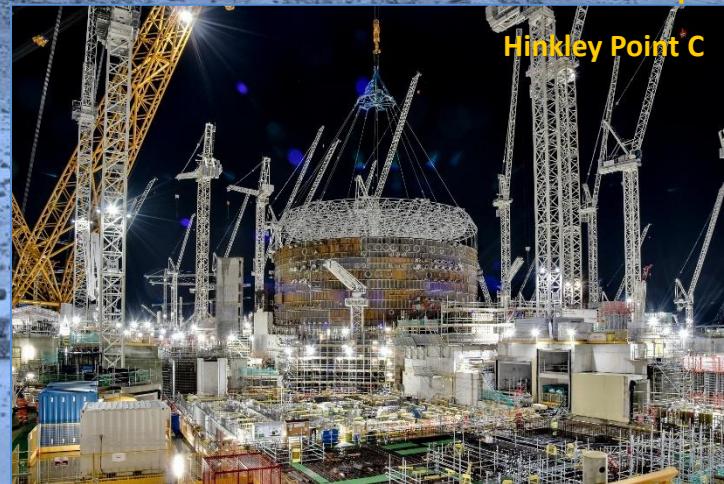
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- ◉ China announced a plan to build 150 nuclear reactors in the next 15 years
- ◉ China has singled out nuclear power as the only energy source with specific targets in its 14th Five Year Plan, indicating the importance of nuclear power to China's goal of carbon neutrality by 2060
- ◉ The US Congress passed the “Civilian Nuclear Credit Programme” to prevent premature retirement of existing nuclear power plants to the tune of more than US\$ 6 billion
- ◉ The UK continued its clean energy transition towards nuclear power, with the Minister for Energy, Clean Growth and Climate Change announcing that the UK Government is on “a mission for fission”

Source: Energy Facts



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- ⌚ The French President announced a programme to demonstrate Small Modular Reactor technology and mass production of hydrogen from nuclear
- ⌚ The French President also declared that France will build new conventional reactors to aid the nation's goal to meet carbon emission targets
- ⌚ The European Parliament has voted to include nuclear in the EU Taxonomy of sustainable activities, paving the way for increased investment in a bid to meet climate change goals
- ⌚ 62 new reactors were built in the last 9 years, and 55 are currently under construction
- ⌚ The number of new built exceeds by far the number of lost reactors in Germany and Japan



Source: Global Energy World



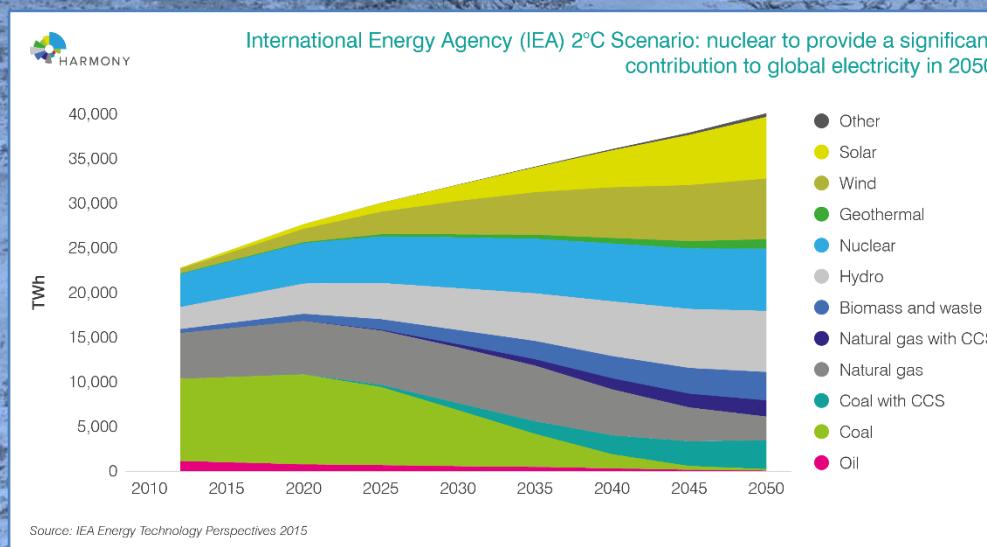
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Why do we talk about a resurgence?



- Throughout COP26, the benefits of nuclear were highlighted, for example when International Energy Agency (IEA) Executive Director Fatih Birol said: "Nuclear power generation needs to double if we are to reach our energy and climate goals."
- Furthermore, nuclear energy was confirmed as having the lowest lifecycle carbon emissions of any energy source, including renewables, by the United Nations Economic Commission for Europe in a report published in 2021.



Source: WNA



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Why do we talk about a resurgence?



- ⌚ The launch in 2021 of the Sprott Physical Uranium Trust, the world's largest fund investing in physical uranium has also driven price increases, they currently hold 25 000 t U₃O₈
- ⌚ The World's largest and lowest cost uranium producer, Kazatomprom has produced less than budgeted due to supply chain issues caused by the pandemic, production was curtailed even before the pandemic
- ⌚ Canada's McArthur River Mine is still under Care and Maintenance, albeit scheduled to resume production by 2024
- ⌚ Australia's Ranger Mine owned by Rio Tinto was already only processing stockpile material since 2012, but processing also stopped in January 2021
- ⌚ Orano's Cominak Mine in Niger ceased operations due to the depletion of the ore in March 2021
- ⌚ The 2021 world production of 58 000 t U₃O₈ accounted for only 67% of the market demand of 87 000 t U₃O₈



Source: Mining Technology



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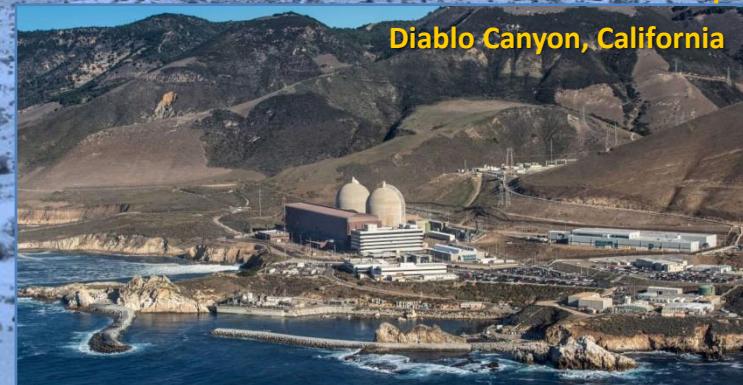
Most Recent Developments



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- ◉ On 16 August 2022, US President Biden signed the Inflation Reduction Act, providing declared support to existing nuclear infrastructure and new built
- ◉ On 12 August 2022, the newly appointed Japanese Economy Minister pledged to push for the restart of more than 10 reactors, and for government support to secure local support for restarts
- ◉ Also on 12 August 2022, the California Governor has authorized a US\$ 1.4 billion loan to extend the life of the Diablo Canyon nuclear plant scheduled to close down in 2025
- ◉ On 08 August 2022, an opinion poll released shows that 68% of the German public is in favour of keeping the country's 3 remaining nuclear reactors running for up to another five years and even to construct new reactors in order to secure energy supplies in the face of gas shortages due to the war in Ukraine

Source: CNBC

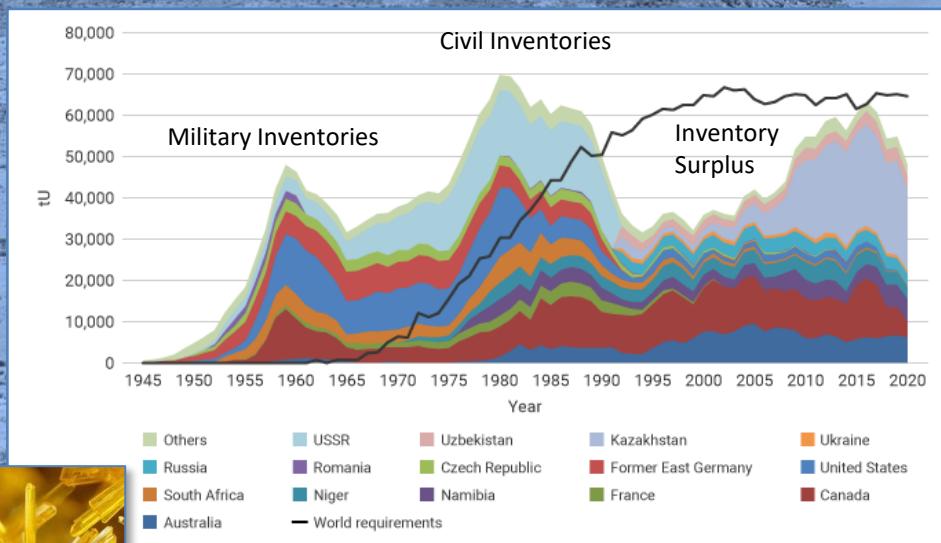


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Uranium Over Time



- ⌚ In 2021, mines supplied some 58 000 t U₃O₈, equivalent to 77% of the utilities' annual requirements
- ⌚ The balance was made up from secondary sources including stockpiled uranium held by utilities
- ⌚ Looking ten years ahead, the market is expected to grow
- ⌚ The Reference Scenario of the WNA's 2021 Nuclear Fuel Report shows a 27% increase in uranium demand between 2021 and 2030
- ⌚ Demand thereafter will depend on new built – Reference Scenario shows 38% increase in uranium demand for the decade 2031-2040



⌚ With electricity demand potentially increasing by about 50% from that of 2019 by 2040, there is plenty of scope for growth in nuclear capacity in a World concerned with limiting carbon emissions



Source: WNA

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Rössing Uranium



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- ⌚ The Rössing Uranium Mine has been in operation for 46 years
- ⌚ It is the largest and longest operating uranium open cast mine in the World
- ⌚ In 2021, Rössing exceeded budgeted production targets by a significant margin, as the 2 882 tonnes of U_3O_8 produced during 2021 represent a 16% increase compared to 2020
- ⌚ Also in 2021, an All Injury Frequency Rate of 0.29 was achieved, the best performance since the start of operations in 1976
- ⌚ A feasibility study to extend the life-of-mine beyond 2026 is currently under way, and MME has already extended the ML to 2036
- ⌚ Based on the study, new investment may be considered from Q3 2023 onwards and contemplate several aspects such as pit and TSF extension, plant refurbishment and infrastructure upgrades



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Swakop Uranium - Husab



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- ◉ At full production, Swakop Uranium's Husab Mine has a designed annual mining capacity of more than 100 million tonnes
- ◉ The ore is fed to a processing plant with a nameplate capacity of 15 million tonnes of ore per year and an annual output of 6 000 tonnes U_3O_8
- ◉ In 2021, the mining operations recorded the highest production since inception of the mine
- ◉ In 2021, almost 103 million total tonnes were mined from the Zone 1 and Zone 2 pits, which represents a 44% increase above the 2020 production
- ◉ The mine produced 3 902t U_3O_8 in 2021
- ◉ Husab is therefore on an accelerated path to reach nameplate capacity



Husab



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Langer Heinrich Uranium



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- 🕒 Over 10 years of historical production delivering >43Mlb of U_3O_8
- 🕒 The operation was placed on Care and Maintenance in 2018 due to low uranium prices
- 🕒 The restart project to the tune of about N\$ 1.25 billion has commenced in 2021 with target production for the 1st quarter of 2024
- 🕒 Restart scope of work focuses on:
 - general repairs and refurbishment required to return the existing process plant to operational readiness
 - delivery of process upgrades to increase throughput capacity and operational availability
- 🕒 Current activities include:
 - completion of detailed engineering and design for process upgrades
 - purchase of project materials and equipment
 - the commencement of plant refurbishment and upgrade works



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Process Upgrades



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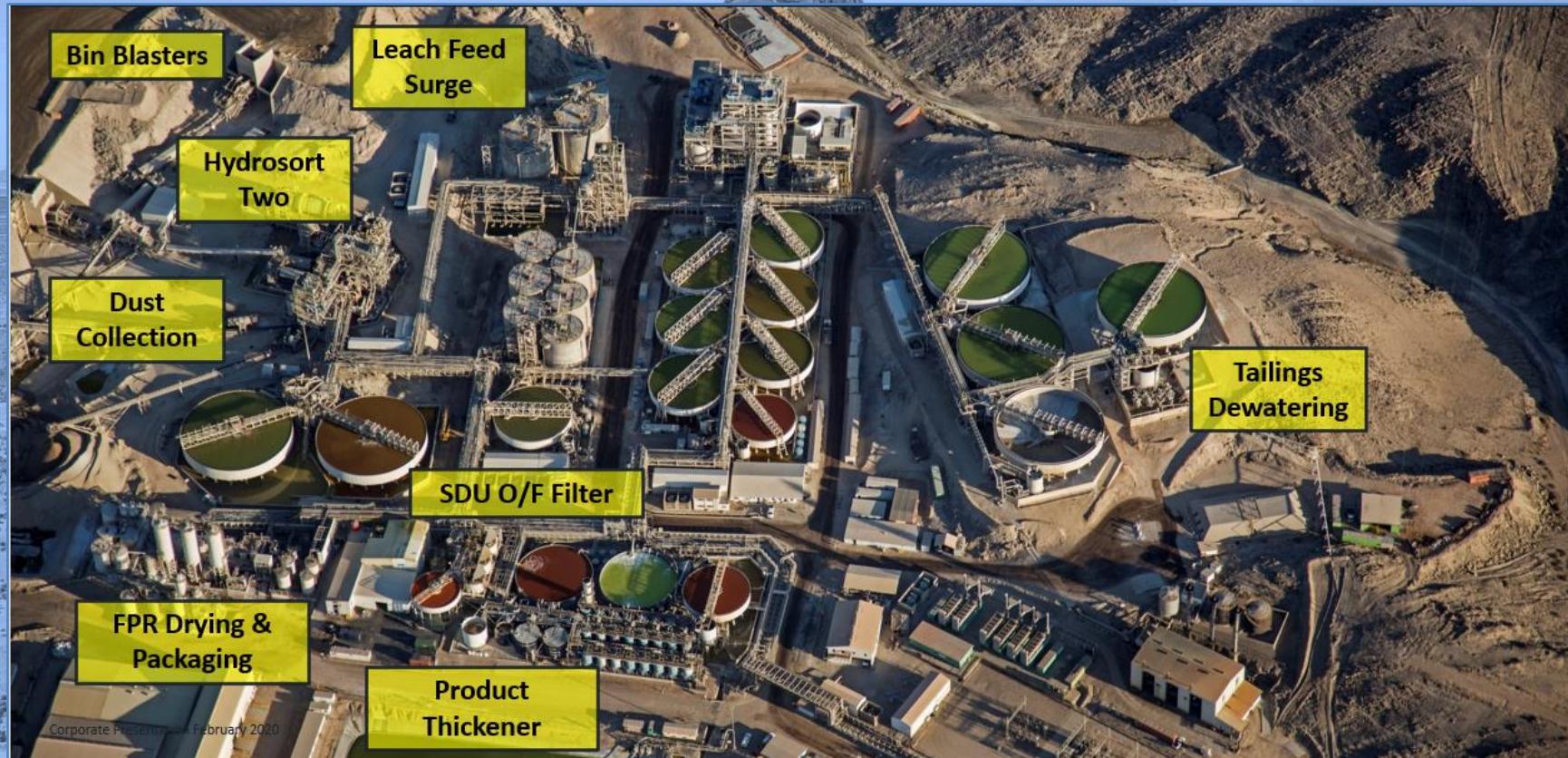


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New Equipment



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Orano - Trekkoppje



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- ◉ Orano Mining Namibia's Trekkopje Mine remains under Care and Maintenance
- ◉ However, Orano will be able to exploit the Trekkopje deposit once the recovery in the uranium market materializes at the required level
- ◉ Supported by the fact that 80% of the investments to develop the mine have already been made
- ◉ In addition, advanced processing knowledge acquired through metallurgical testing has realized further potential for efficiency improvements



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Energy efficient desalination



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- The Erongo Desalination Plant (EDP) is an important contributor to the supply of potable water in the Erongo Region, providing a substantial portion of the supply of Swakopmund, the uranium mines and other industries
- During 12 years of continuous operation there was not a single lost time injury (LTI)
- Orano Mining Namibia is committed to reduce the carbon footprint of the Erongo Desalination Plant (EDP) by making it more energy efficient
- Orano entered into an agreement with InnoSun Energy Holdings to provide solar power from a 5 MW plant
- Orano will hence provide water to the Erongo Region from a green electricity source, which is also more cost-effective in the long term
- The Orano Group has a policy to lower its carbon footprint and increase the share of low-carbon electricity at its operations worldwide
- In 2021, the EDP set a new record by producing 12.7 million m³ of fresh water. The cumulative production since 2013 has now reached over 80 million m³
- EDP's environmental management system adheres to the highest standards as confirmed by ongoing testing by independent third parties



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Bannerman Resources



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- ◉ Bannerman Resources' Etango-8 Definitive Feasibility Study (DFS) is progressing to plan
- ◉ Flow sheet design and process plant geotechnical field work is completed
- ◉ The target for the completion of the DFS is the 4th quarter of 2022
- ◉ Environmental clearance for the proposed Etango Mine and associated linear infrastructure is in place
- ◉ The ECCs are based on extensive environmental and social impact assessments and management plans
- ◉ A Mining License application has been made to MME on the 4th of August 2022
- ◉ The world class deposit is expected to deliver over 3.5 million lbs U₃O₈ per annum over an initial 15-year operating life with upside potential from future life extension and/or scale-up expansion



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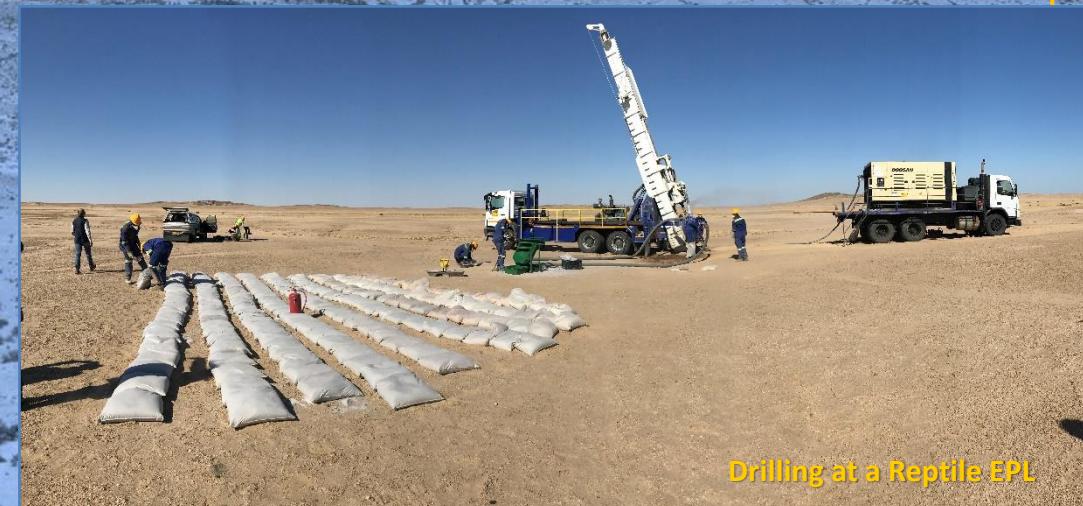


Reptile Mineral Resources & Exploration



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- Reptile Mineral Resources & Exploration is currently busy with the Definitive Feasibility Study (DFS) for the Tumas project
- The DFS is expected to be completed in the latter half of 2022
- Intensive resource upgrade drilling in support of the DFS resulted in an ore reserve increase for Tumas, and increased the life-of-mine from some 11.5 to 26 years
- A Mining Licence application has been submitted to MME
- Work on the Environmental Impact Assessment is at near final stage
- Drilling is also carried out exploring for basement related uranium targets both on the wholly owned licences, and on those owned in joint venture with JOGMEG of Japan



Drilling at a Reptile EPL



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Elevate Uranium



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- Elevate Uranium is also actively exploring in the Erongo Region
- Drilling has been ongoing since mid-2020 and continues
- An airborne survey was completed in the Namib Area during 2021 and the Central Erongo Project Areas in 2022
- These surveys aim at locating palaeo-channels potentially containing calcrete hosted uranium deposits, suitable to apply the company's patented *U-pgrade™* process
- Drilling completed at the Koppies Project in 2021 and early 2022 produced the maiden resource estimate of 20 million pounds
- Elevate Uranium also holds the rights for the Marenica uranium deposit under a Mineral Deposit Retention Licence



Geophysical Exploration at an Elevate Uranium EPL



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Other Exploration Activities



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- ◉ Zhonghe Resources (Namibia) Development's activities focus on the evaluation of their resource, a diamond drilling programme was completed in May 2022, and a series of geological and geophysical surveys is carried out on some anomalies
- ◉ The parent company CNNC is currently implementing a 20 000 m drilling programme on Zhonghe's mining license area, as well as on the neighbouring RUL mining license area.
- ◉ Forsys' has a definitive feasibility study and a mining licence in place for the Valencia uranium deposit, and is therefore construction-ready once the uranium price reaches the required level.
- ◉ The company is presently busy to define the viability of the larger Norasa project, which comprises Valencia and the neighbouring Namibplaas uranium deposits.
- ◉ Application will be made for an inclusive Norasa mining licence.
- ◉ Core drilling of more than 39 000 m was done on the licences of Headspring Investments in the south of the country, where the company is looking for in-situ leaching opportunities
- ◉ In addition, more than 9 800 samples were taken for analysis
- ◉ A Pre-Feasibility Study and Mineral Resources Estimate reports were submitted to the Ministry of Mines and Energy



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Economics (2021)



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Company	Production	Current Life of Mine	Royalties	Local Procurement
Rössing	2882 t U ₃ O ₈	2026	N\$ 111.2 million	N\$ 1.815 billion
Langer Heinrich	(2700 t U ₃ O ₈)	17 years		N\$ 20.1 million
Swakop Uranium	3902 t U ₃ O ₈ (6000 t)	2036	N\$ 216 million	N\$ 2.927 billion
Orano	(3800 t U ₃ O ₈)	8 years		N\$ 29.0 million
Bannerman	(1500 t U ₃ O ₈)	15 years		N\$ 4.693 million
Valencia	(2400 t U ₃ O ₈)	15 years		
Reptile	(1600 t U ₃ O ₈)	26 years		N\$ 19.0 million
Elevate Uranium				N\$ 13.5 million
Zhonghe				N\$ 1.5 million
Total	6784 t U ₃ O ₈ (20882 t U ₃ O ₈)		N\$ 327.2 million	N\$ 5.830 billion

Figures in brackets are potential production



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Economics (2021)



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Company	Employees	Contractors	Expats
Rössing	919	589	10 (0.7%)
Langer Heinrich	15	24	0 (0%)
Swakop Uranium	1628	1181	59 (2.1%)
Orano	17	40	1 (1.8%)
Bannerman	4	4	0 (0%)
Valencia	1	0	0 (0%)
Reptile	33	15	0 (0%)
Elevate Uranium	1	18	0 (0%)
Zhonge	5	0	3 (60%)
Total	2623	1871	73 (1.6%)



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NUA and Uranium Stewardship



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- ◉ It has been recognised by all players in the Namibian uranium sector, that there is a collective responsibility to advocate for product stewardship
- ◉ Namibian uranium explorers and miners therefore came together under the umbrella of the Namibian Uranium Association (NUA)
- ◉ In cooperation with the Namibian Government, NUA championed a Strategic Environmental Assessment of the Namibian Uranium Province, and is jointly implementing a Strategic Environmental Management Plan
- ◉ This approach has ensured that Sustainable Development principles are followed
- ◉ As part of the Sustainable Development commitment the industry also embraces social best practices, and is therefore committed to Corporate Social Responsibility
- ◉ This is best achieved in a coordinated way with the interaction of all players involved, and the NUA has become the vehicle of choice to do so



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"They have put spacecraft beyond the orbit of Pluto but pollute their environment because they believe they cannot engineer safe nuclear reactors....."

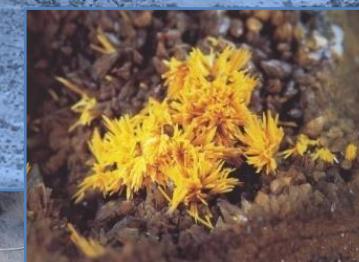
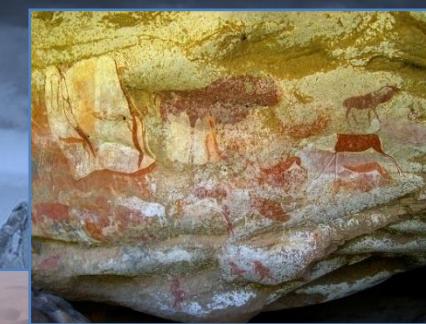
We are currently seeing a turning point when it comes to the reluctance to use nuclear power, and this will certainly support the resurgence of the Namibian uranium sector.



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