

# Uranium mining in Namibia creates environmental and social problems

Bertchen Kohrs, *Earthlife Namibia*

## Keywords:

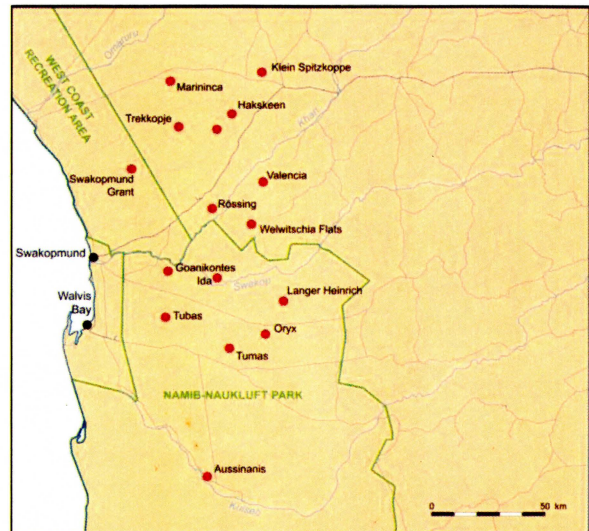
Namibia  
Uranium mining  
Conflicts  
Impacts

## Uranium mining in Namibia

With an export of about 5 200 tons of uranium oxide ( $U_3O_8$ ) in 2010, Namibia is presently number four on the global uranium market. Exploration and mining of uranium has developed into a “uranium rush”. The Ministry of Mines and Energy (MME) has granted 78 Exclusive Prospecting Licences (EPLs) and five Mining Licences (MLs), most of them in the Namib Desert of the Erongo region, partly in the protected Namib Naukluft Park and in the recently proclaimed Dorob Park.



Distribution of uranium occurrences in Namibia  
Source: [www.mme.gov.na](http://www.mme.gov.na)



Sites of uranium mining and exploration in the Erongo region  
Source: MME

Currently two uranium mines are operational, Roessing Uranium by British-Australian Rio Tinto (since 1976) and Langer Heinrich by Australian Paladin Energy (since 2006). Trekkopje by French Areva is still in the preparation phase and plans to go into full production in 2013. The reserves at Trekkopje are high; however the grade is low averaging 150ppm. Two more MLs have been granted to Canadian Forsys Metals for the Valencia project and Australian Extract Resources for the Husab project.

Roessing Uranium is the third largest open-pit-hardrock uranium mine worldwide with a production of about 4 000 tons of  $U_3O_8$  annually. The average uranium content in the ore is about 350ppm. The final depth of the pit of 390m has been reached; Roessing opened a new pit about 4km east of the current one.



The Roessing pit is 3km long, 1,5km wide and about 390m deep. The pit will not be refilled. Plans are to turn it into a museum after closure.

Source: LaRRI

In 2007, MME declared a moratorium on EPLs until a management plan for the uranium rush is in place. The result is a Strategic Environmental Assessment (SEA) conducted in 2008/2009. SEA investigated different scenarios ranging from four to 12 uranium mines operational in the Erongo region by 2020. Present output might five-fold under the highest-growth scenario. The study states that the worst case scenario would be when all the mines close abruptly and in a disorganised way.

The recommendations of SEA are presently reviewed and transformed for implementation by the committee of SEMP (Strategic Environmental Management Plan) under the auspices of Geological Survey of MME.

The reasons foreign companies find uranium mining in Namibia so attractive are several:

- lack of legislation on the nuclear industry, especially with regard to environmental issues
- politically stable country
- good infrastructure (roads, harbour, port)
- uranium deposits located close to the surface allowing cheaper open- cast mining versus underground mining,
- low uranium content in the ore making it less dangerous to mine
- low settlements near the mining areas
- high unemployment and cheap labour

The Managing Director of Paladin Energy, John Borshoff, brought it to the point:

*“The Canadians and the Australians have become oversophisticated in their environmental and social concerns over uranium mining. The future of uranium is in Africa.”*

### Conflicts and impacts

There are a number of conflicting issues which include water supply and water contamination, power supply, environmental destruction and loss of biodiversity, health issues, infrastructure, social infrastructure, land use conflicts, and mine closure.



Billions of tons of waste rock are dumped a few 100m away from the Khan River. The area is freely accessible for every-one. No fences and no warning signs are set up.

Source: Author



Tailings pumped into dams contain radioactive and toxic substances and pose a threat to the environment and the groundwater resources.

Source: SEA

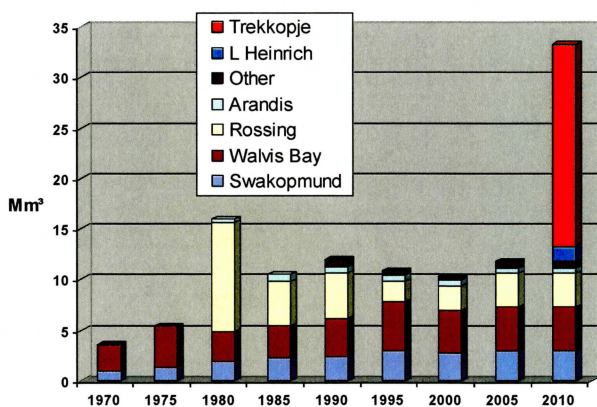
## Water

Namibia is an arid country experiencing constant water shortage. The Erongo region, also called "the uranium province", receives an average rainfall of 5 to 70mm annually. There are no perennial rivers or other fresh water resources. The most possible scenario of seven uranium mines would require about 50Mm<sup>3</sup> of fresh water per annum. Since the groundwater resources have already been overexploited, the only way to produce fresh water is sea water desalination. Areva

has built a desalination plant with a capacity of 20Mm<sup>3</sup>/a of which presently only 5Mm<sup>3</sup>/a is utilised. NamWater, the national bulk water supplier, is negotiating an acceptable price for Areva's surplus water to sell to the Swakopmund municipality. We believe that higher water tariffs for coastal residents can be expected, although Swakopmund municipality denies this.

Local geologists recommended building a second desalination plant. Experience shows that this is not without risk to the marine life. In May 2010 just after Areva started desalinating ocean water, a huge number of sea mussels and crabs died and were washed onto the beach.

Of greatest concern is the possible and irreversible contamination of underground-water of the Swakop, Khan, Omaruru and Kuiseb rivers, all ephemeral rivers carrying water only after good rainfalls in the catchment areas.



Actual & projected water consumption for the coastal area in mill m<sup>3</sup>. Since Trekkopje is not yet fully operational, this scenario will only apply in 2013.

Source: Roan News

## Power

Demand of power supply by the uranium mines will be between 150 to 200MW (SEA). Government plans to build a 350MW coal-fired power plant, probably north-east of Arandis near Roessing Uranium and even considers the construction of a nuclear power plant. It should be noted that Namibia has plenty of potential for renewable energy with good wind conditions at the coast and approximately 340 days of sunshine per annum.

### **Environmental destruction and loss of biodiversity**

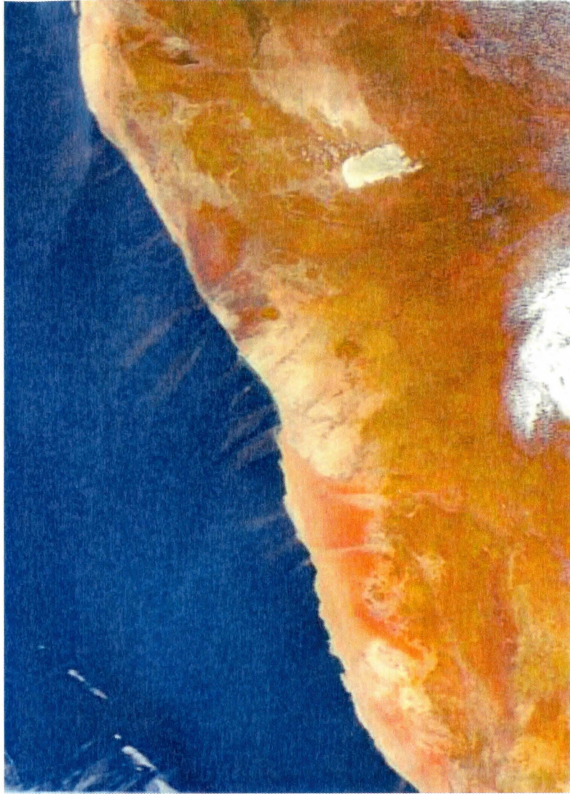
The mining site and all infrastructure associated with it (roads, water pipes, electricity lines) scar the fragile ecology of the Namib Desert causing impacts on the fauna and flora during exploration, mining operation and long after mine closure.

Huge amounts of rock need to be moved to produce yellow cake, depending on the depth and the grade of the deposit. Roessing moves almost 15 000 tons of rock for the production of 1 ton of U<sub>3</sub>O<sub>8</sub>.

Radioactive waste is produced in the milling process and pumped into tailing dams, which have to be maintained for more than 100 000 years. Thorium-230, one of the decay products of uranium, has a half-life of 80 000 years. Radon-222, another ionising decay product, is an invisible and tasteless gas and can cause lung cancer when inhaled or digested over a long period of time.

Radioactive and toxic substances and dust from the tailings dam is easily dispersible by wind and water. They can be taken up by the vegetation and animals and contaminate the food chain.

With each new uranium mine, radioactive and toxic dust accumulates, reaching the surrounding farms and settlements and the coastal towns.



Satellite image showing dust plumes from the central Namib blowing out to sea on seasonal berg winds.  
Source: Roan News

By conducting an Environmental and Social Impact Assessment, each mine focuses on its own mining area not considering the cumulative impacts on the environment. Water, soil, air, light and noise pollution as well as massive and irreversible disturbance to the landscape and loss of biodiversity increase with each new mine. The beautiful and unique scenery of the Namib Desert is irreversibly scarred.



This was once a picturesque landscape (Source: SEA)

### ***Land use conflicts***

Tourism significantly contributes to the country's economy providing many job opportunities and attracting many foreign visitors. Especially the desert area with the picturesque Namib Naukluft Park is a favourite tourism destination. Uranium mining clashes harshly with tourism interests. Surrounding farms suffer from massive extraction of groundwater and fear contamination of land and grazing. Some uranium exploration areas which may develop into uranium mines are located on communal land; traditional communities will lose their land that is used for grazing and is their main income source.

### ***Health issues***

Uranium mine workers are exposed to radiation and toxicity. According to a health study performed in 2008 by LaRRI (Labour Resource and Research Institute), numerous mine workers complain about cancer and many other diseases. Workers employed by Roessing since early years of operation, when no safety measures were applied, claim they are seriously ill and several of their former colleagues have passed away due to occupational exposure.

Mining management denies any link to occupational exposure and contributes the bad health condition of workers to unhealthy lifestyles.

### ***Infrastructure***

Pipelines, power lines and roads criss-cross the fragile desert, since each mine is planning and constructing its own infrastructure. It is feared that more mines have been built before the Strategic Management Plan is ready to be implemented.

### ***Social infrastructure***

An influx of approximately 20 000 people into the coastal area can be expected. This puts the already stressed services such as water supply, housing, schooling, medical care, waste removal, recreation facilities etc. under enormous pressure.

## Mine closure

Uranium is a finite resource and mine closure is foreseeable. Circumstances like decreasing uranium price might also force mining companies to shut down earlier than planned.

After the Fukushima nuclear accident, Japan, Germany, Switzerland, Austria and Italy decided to phase out nuclear power generation. The price for yellow cake dropped and reached a critical level for some mining companies to continue uranium mining. It is feared that the foreign companies leave the country without proper environmental rehabilitation and maintenance of the tailings dams.

In Namibia many mining sites have been abandoned not being properly rehabilitated.

Currently efforts are undertaken to enforce effective mine closure legislation.

## Public awareness

Being poorly informed about the danger uranium mining causes to the environment and the health of its people, Namibia's civil society shows little interest in this matter. After many decades of Apartheid the country endured under the former South African regime, there is still a culture of fear to speak up and confront authorities.



The only public demonstration against yet another uranium mine was organised by the Human Rights Organisation  
Source: Kirsten Kraft, AZ

## Legislation

The Namibian Constitution of 1990 states in Article 95:

*"The State shall actively promote and maintain the welfare of the people by adopting, inter alia, policies aimed at ... maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilisation of natural resources on a sustainable basis for the benefit of all Namibians both present and future; in particular shall provide measures against the dumping or recycling of foreign nuclear and toxic waste on Namibian territory."*

[www.orusovo.com/namcon/](http://www.orusovo.com/namcon/)

Though the constitution makes provision for sustainable development, there is a serious shortcoming of legislation and policies when it comes to the nuclear industry.

A summary of the main mining and nuclear related legislation follows:

- **The Minerals (Prospecting & Mining) Act, No. 33 of 1992**

requires an Environmental Management Plan for all mining projects whilst rehabilitation has to be undertaken only to the discretion of the Minister.

[www.mme.gov.na/pdf/minerals\\_act\\_1992.pdf](http://www.mme.gov.na/pdf/minerals_act_1992.pdf)

- **The Minerals Policy of 2002**

as some provisions on the protection of the environment but not the nuclear industry in particular.

[www.environment-namibia.net/tl\\_files/pdf-documents/policy/minerals%20Policy.pdf](http://www.environment-namibia.net/tl_files/pdf-documents/policy/minerals%20Policy.pdf)

- **The Atomic Energy and Radiation Protection Act 5 of 2005**

has not yet come into force.

<http://faolex.fao.org/docs/pdf/nam7812.pdf>

- **The Environmental Management Act 7 of 2007**, is in force since February 2012.

A number of policies and regulations exist. Applicability depends on the promulgation of the Environmental Management Act but it is

unclear at the moment which became applicable.

Draft regulations for Strategic Environmental Assessment and Environmental Impact Assessment were published in 2008 aimed to set uniform standards for EIAs and to ensure that policies and plans are considered.

[www.lac.org.na/laws/pdf/environmentalact.pdf](http://www.lac.org.na/laws/pdf/environmentalact.pdf)

● **Draft Nuclear Fuel Cycle Policy of 2011**

is in progress with the first draft published in December 2011.

[http://www.google.co.uk/search?sourceid=navclient&ie=UTF-8&rlz=1T4ACAW\\_enNA403NA404&q=Namibia+Draft+Nuclear+Fuel+Cycle+Policy](http://www.google.co.uk/search?sourceid=navclient&ie=UTF-8&rlz=1T4ACAW_enNA403NA404&q=Namibia+Draft+Nuclear+Fuel+Cycle+Policy)

● **Environmental Assessment Policy of 1995.**

Precondition for implementing the policy is to fill the post of an Environmental Officer at the Ministry of Environment & Tourism, which happened in February 2012.

[www.environment-namibia.net/tl\\_files/pdf\\_documents/policy/NA\\_MIBIA\\_Environmental%20Impact%20Assessment\\_policy.pdf](http://www.environment-namibia.net/tl_files/pdf_documents/policy/NA_MIBIA_Environmental%20Impact%20Assessment_policy.pdf)

There is also a Policy for Prospecting and Mining in Protected Areas and National Monuments and a Draft Mine Closure Framework. Both are not binding and cannot be enforced.

● **Namibia's Vision 2030 of 2004**

has the goal of transforming Namibia into an industrialised country by 2030

[www.npc.gov.na/vision/vision\\_2030bgd.htm](http://www.npc.gov.na/vision/vision_2030bgd.htm)

**Conclusion**

Uranium extraction implies a long-term contamination to the environment and creates huge amounts of radioactive and toxic waste. Worldwide there are no safe methods to manage it for the long time it needs to be managed. Weak and unsound regulations enable uranium extraction at low cost.

A long-term epidemiological study on the health of mine workers and other possibly effected people should be conducted by an

independent expert team. An in-depth research should be performed to collect data on water, air and soil contamination and the impacts thereof. Studies of this kind are very costly. Independent organisations such as Earthlife Namibia should be provided with the necessary finances enabling them to carry out such research.

In order to properly review EIAs and legislative framework, Earthlife would need support from legal experts.

Civil Society needs to be properly informed about the impacts of uranium extraction in order to participate in decision making regarding the nuclear industry.

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