# The uranium industry in Namibia

2015 European Year for Development

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Earthlife Namibia

our world
our dignity
our future

# Earthlife Namibia (ELN)

- Non-governmental, non-profit, voluntary organisation concerned with environmental and social justice
- Launched in 1990
- Tackles controversial issues, which are always highly political
- Main topic is uranium mining
- ELN is a founding member of AUA which won the "Nuclear Free-Future Award for Resistance" in 2010

# Namibia in a nutshell

- gained independence in 1990
- huge country with small population (2,2 mill)
- 1/3 is desert or semi desert
- driest country in sub-Sahara with constant water shortage
- has a wealth of mineral deposits, mainly exploited by foreign companies

- unemployment rate about 30%
- poverty is widespread
- labour is cheap and mostly unskilled

# The nuclear fuel chain

The term nuclear energy is generally linked to nuclear reactors.

They are only a small part of the entire process.

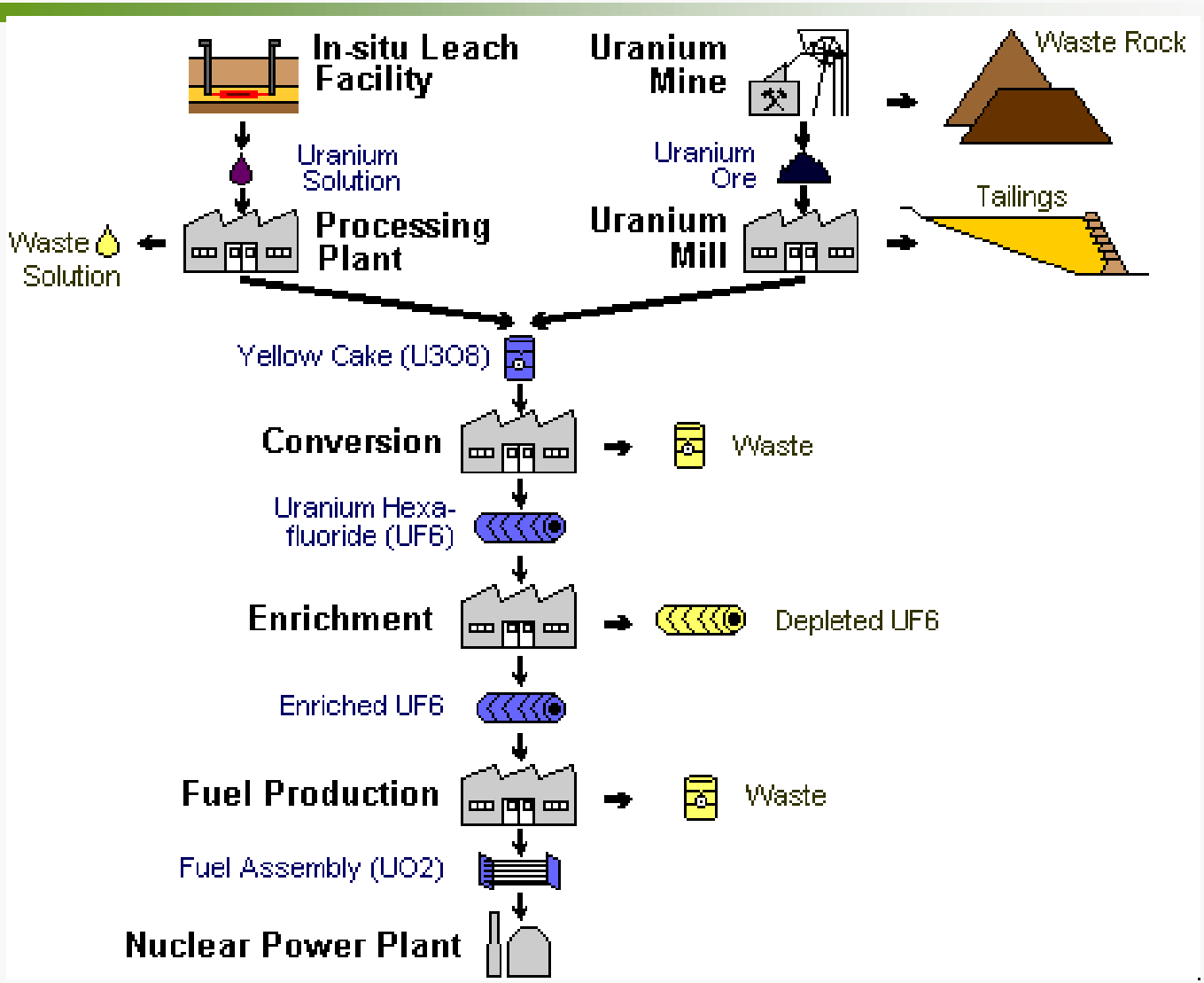
Where does the fuel come from?

The nuclear fuel chain starts with exploration, mining and milling of uranium.

This happens in Namibia.

Generally little is known about uranium mining and its massive impacts.

# The nuclear fuel chain



# Uranium mining in Namibia

Uranium is mined in Namibia since 1976 by nuclear giant Rio Tinto.

The ore is of very low concentrate (100-300ppm uranium).

To produce 1 ton of $U_3O_8$, about 15 000 tons of earth, rock & ore have to be moved.

In 2007/2008, the price of uranium increased drastically resulting in a ‘uranium rush’.

Suddenly up to 12 mines were planned, mostly in the protected National Naukluft Park in the Namib Desert.

Three more mines were constructed of which one - owned by Areva - never started production.

After the Fukushima accident the price dropped and did not yet recover.

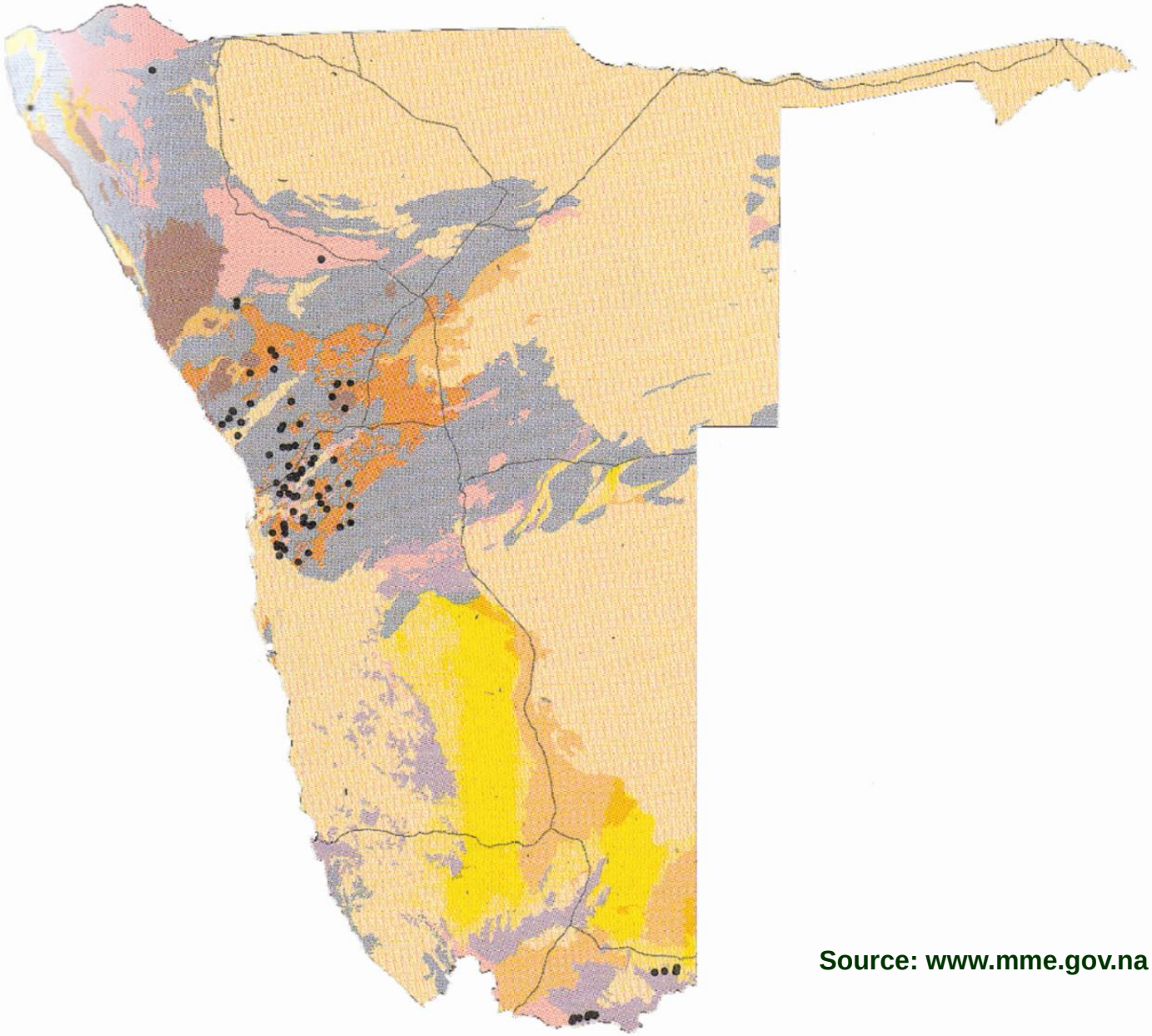
The other planned mines were put on hold.

Today Namibia is no 5 on the global market with 7% of world uranium production.
Envisaged is production of 10 000 tons/annum by 2016, putting Namibia at second place.
A new mine run by a Chinese company will start production early 2016.
It will be the largest open-pit mine for uranium worldwide.

Uranium presently represents 16,5% of Namibia’s exports and contributes about 14% to the country's GDP
(18% for all mined products).

Taxes are at 37.5%, royalties are at 3-6% (negotiable).

# Distribution of uranium occurrences



**Source: www.mme.gov.na**


Have a Safe Journey
THE GOAL IS
zero
HARM
Rio Tinto
01.11.2013

# Rössing today

Roessing Uranium mine is owned to 69% by Rio Tinto
and to 15% by the government of Iran

Any transfer of nuclear material to Iran is prohibited by UN charter.
Millions of US$ of dividends to Iran are blocked by the Bank of Namibia.

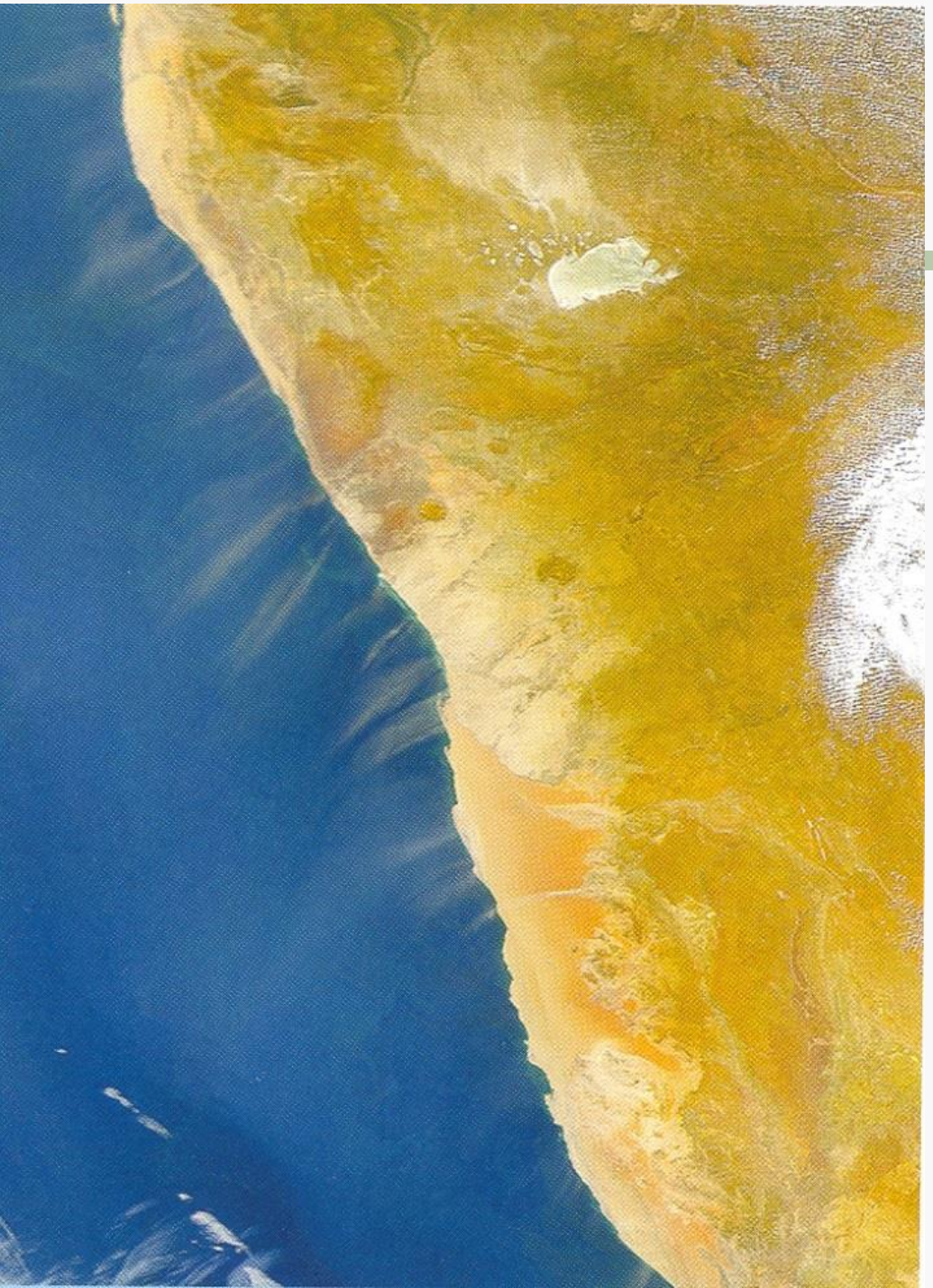
Rössing reassured the US government  that it did not and will not deliver uranium oxide to Iran and that it had frozen dividend payments.

# Blasting

Blasting generates lots of radioactive and toxic dust.

Wind directions and weather conditions during blasting are not considered.

Far away from blasting point



Dust plumes are blown from the central Namib out to the sea for hundreds of kilometers with frequent eastern berg winds carrying radioactive and toxic substances.

What is the accumulated impact on the health of the coastal residents?

Will the food-chain of the terrestrial and the marine life be effected?

We don’t know!

# Rössing's tailings dam

Tailings are the liquid waste generated after uranium is leached from the ore.

This tailings dam is 40 years old. Possible leakage poses a great threat.

Measurements done by Earthlife and radiation experts from France show that radioactive material contaminates the soil  as far as 2km away from the tailings.


Tailings are the most toxic part of the entire process of uranium mining. About 85% of the original radiation is still contained in the sludge, which can be dispersed by wind.

- GRN has granted 65 Exclusive Prospecting Licenses (EPL) to 21 foreign companies without having a strategic management plan in place.
- A total of 5 Mining Licenses (ML) have been issued.
- In 2007, a moratorium was put on EPLs till proper legislation would be in place.
- Meanwhile a Strategic Environmental Assessment (SEA) on the nuclear situation has been done, followed by a Strategic Environmental Management Plan (EMP) and is presently being implemented.

# Public protest during ground breaking ceremony of a new uranium mine

# Langer Heinrich Uranium mine owned by Australian Paladin Energy

# Trekkopje Mine 100% owned by Areva
(mothballed before it started operation)

# The Husab Uranium Project

The Husab project is owned by the Chinese company Taurus Minerals Ltd.

The project is located in the protected National Namib Naukluft Park adjacent to the Khan river which provides water for farming residents.

# What makes Africa's uranium so attractive?

John Borshoff, former MD of Australia's mining company Paladin Energy, rought it to the point:

*"The Canadians and the Australians have become over-sophisticated in their environmental and social concerns over uranium mining. The future of uranium is in Africa."*

# And why uranium from Namibia?

- Lack of proper legislative framework on the nuclear industry
- Lack of monitoring through government;
  mining companies are self-regulating
- Uranium deposits generally located close to surface (open-pit mining)
- Most other countries don’t allow mining in protected areas
- Politically stable country; good infrastructure
- High unemployment, cheap labour
- Very little resistance by civil society

# Environmental implications of uranium mining (a case study)

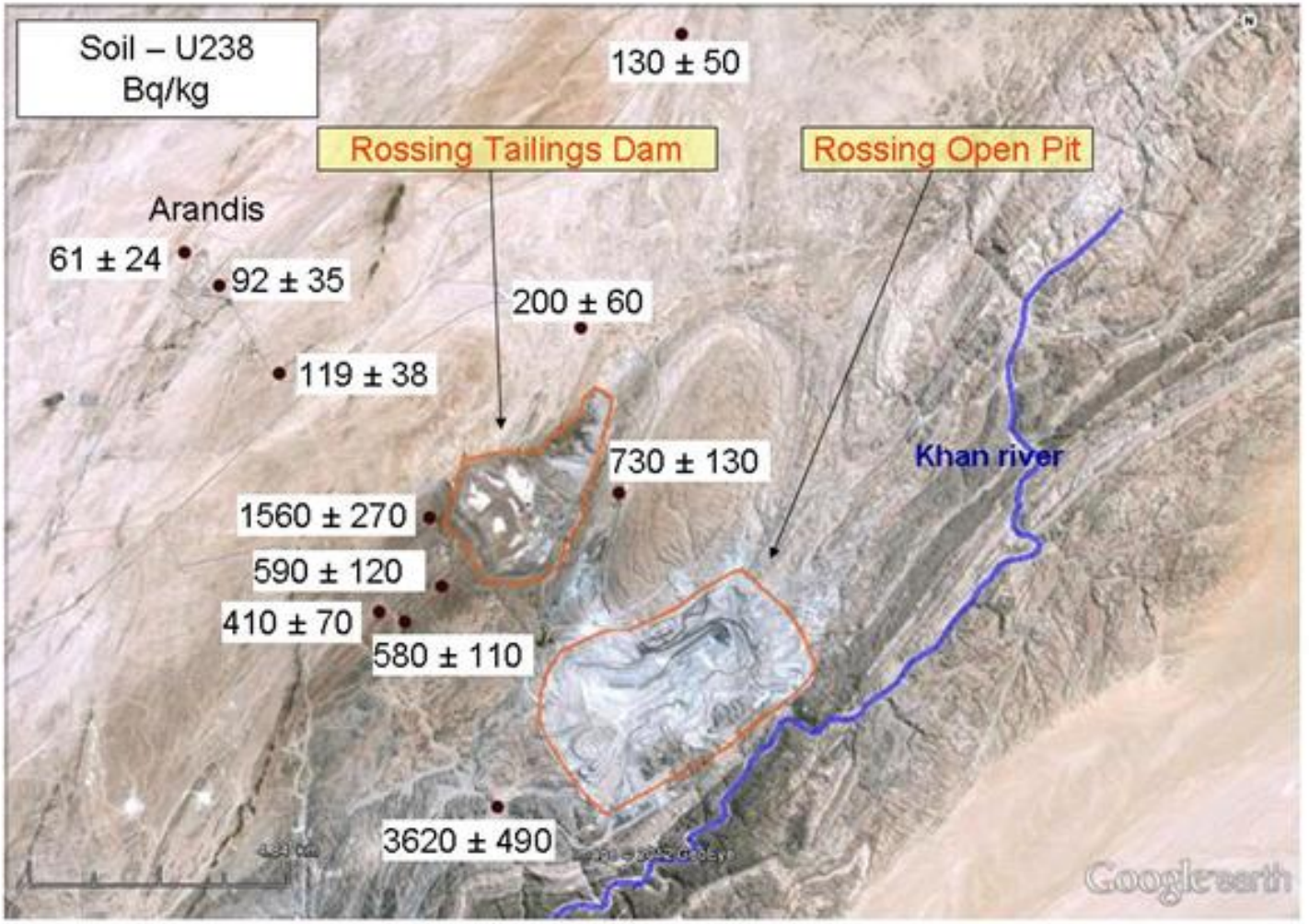
This study is based on onsite radioactivity measurements and laboratory analysis of soil, sediments and water samples taken in the vicinity of the Roessing Uranium mine owned by Rio Tinto.

The samples were collected and analysed by CRIIRAD (Commission for Independent Research and Information on Radiation), a laboratory in France.

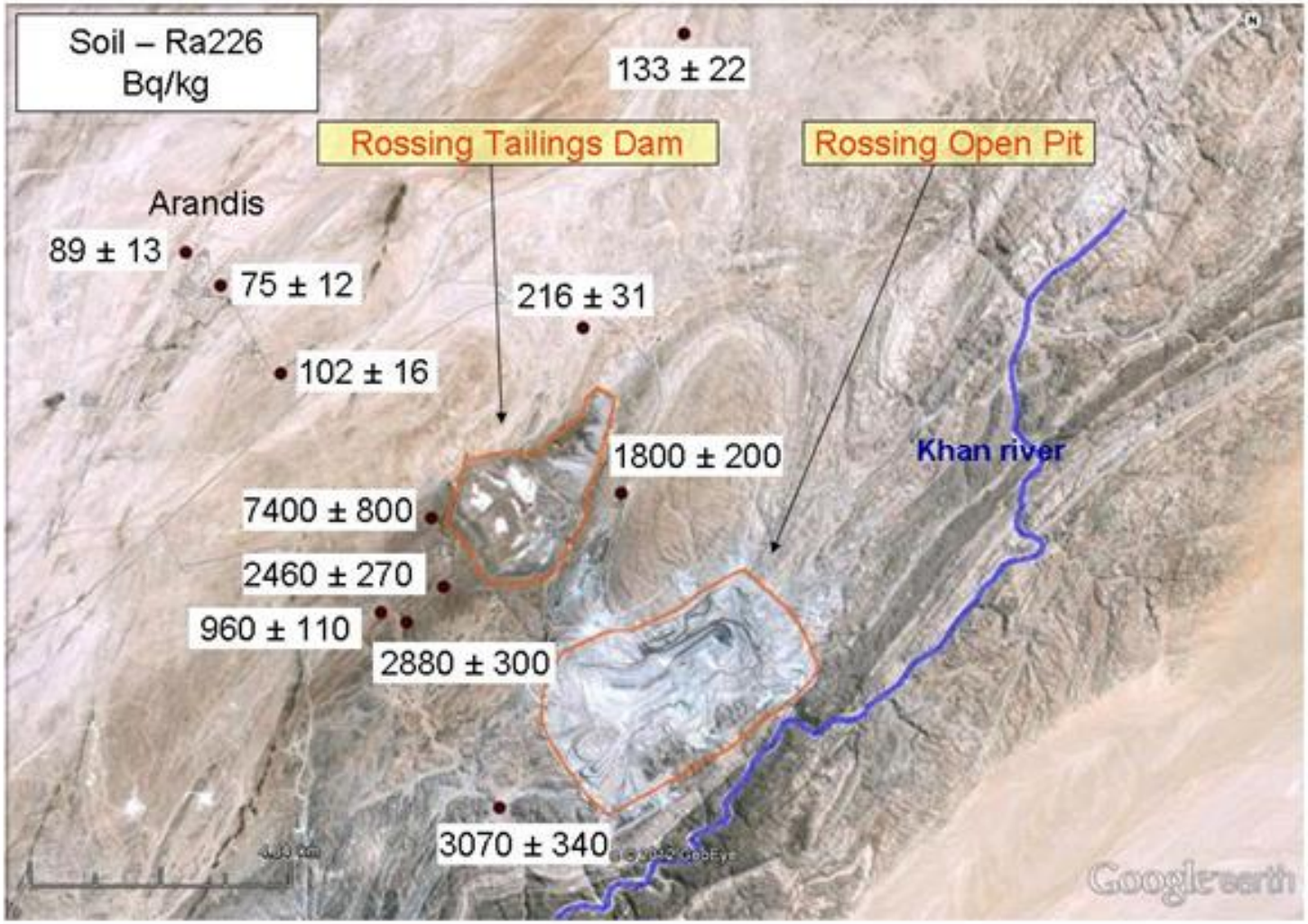

CRIIRAD


CRIIRAD

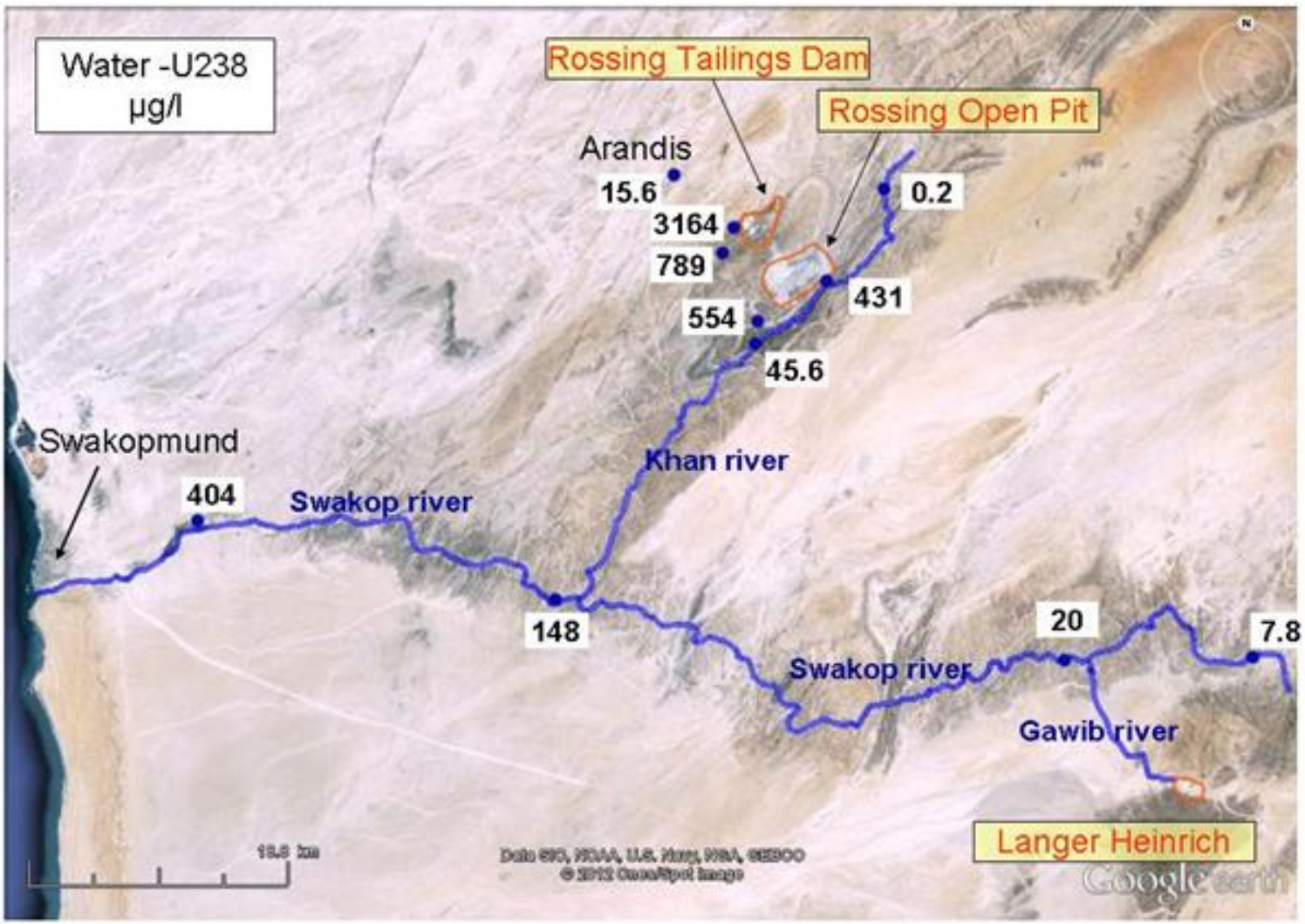
# Findings
# Uranium 238 activity in top soil samples



# Radium 226 activity in top soil samples



# Uranium 238 concentration in groundwater samples




Billions of tons of radioactive waste rock are dumped about 100 meters away from the Khan river. Uranium is water soluble and can get washed into the ground by rain. The area was freely accessible. A fence was put up only after Earthlife's findings were made known and insisted.

Measurements taken at Rössing's parking area showed radioactive contamination.

The result indicates that the parking area was built  with tailings material (high Ra-226, low U-238 concentration)

# Health effects on workers of Roessing Uranium mine (case study)

- There is no safe dose of radiation
- Acute health effects such as skin burns or acute radiation syndrome can occur when doses of radiation exceed certain levels
- The risk of longer term effects such as various cancers and many other diseases are such as leukemia, birth defects, infertility, mental retardation, genetic mutations and more
- Health effects after exposure to low-level radiation occur delayed (after 10, 20 or even 30 years)

# Workers in uranium mines are at risk

Our environment has a natural background radiation of about 0.1-0.2µSv/h (depending at which location)

1 mSv/year is the international allowed exposure for the normal public but 20 mSv/year for workers in the nuclear industry and uranium mines

- Workers in uranium mines are exposed to low-level radiation, often over a long period of time
- It is not easy to prove that one particular cancer case is due to a particular exposure
- Only proper epidemiological studies can give a scientific answer but they are difficult to perform and extremely costly

# Study on workers health by low-level radiation

Workers of the Roessing Uranium mine frequently approached Earthlife because they were worried about their ailing health condition.

They experience diseases they never had before.

So we carried out a study on the exposure to low-level radiation on workers of the Roessing Uranium mine.

We wanted to understand the complaints of the workers and getting an answer:

Does uranium mining happen at the expense of the life and health of the mine workers?

The study is based on 50 interviews with current and former workers.

# Findings

About 75 % of workers complained about deteriorating health condition:

High blood pressure, heart diseases, asthma, headache, backache, hearing problems, weakness and tiredness were mostly mentioned.

Especially many older workers being employed for 20 and more years are seriously ill; or died too young

- When Roessing started in 1976, there were no safety & health regulations & no physical protection in place, this only started in the mid 1980s
- All workers know about friends and colleagues who passed away shortly after retirement.

The workers move back to their hometowns where they get ill and die without being statistically recorded.



**Workers say: *"You leave Arandis and you die"*.**

# Many crucial questions remain

- Can we be sure that the exported yellow cake does not fall into wrong hands and gets used for proliferation?
- Does Iran get uranium from Namibia being a 15% shareholder of Rössing Uranium?
- Will one day the nuclear waste come back to be stored in Namibia?
- Does the profit government makes from uranium mining flow back into the environment? And its people? Do Namibians benefit?
- What happens after the mines are decommissioned? Will the companies disappear and leave Namibia with a most dangerous heritage?
- Who will maintain and safeguard the dangerous tailings for the next 10 000 years?


The legacy of a deserted mine in the Namib desert

# Conclusion

- Uranium has undoubted value addition to the Namibian economy, being one of the main exports of the country.
- Weak and scientifically unsound regulations have been designed for the benefit of mining companies to enable uranium extraction at low cost.
- Uranium mining has an adverse effect on human health. Even low doses increase the risk of cancer and many other pathologies.
- The workers pay a high price for the ‘benefit’ of working in an uranium mine.
- Uranium extraction implies a long-term contamination of the environment.
- It creates huge amounts of radioactive waste and nobody knows how to manage it for the long time it needs to be managed (10 000 years).

# Appeal to the Czech public

- Please spread the message!
- Inform people about the massive impacts uranium mining has on the environment and its people
- People know about nuclear power plants, they might agree with them or not
- However, there is hardly any knowledge about the very first and very dirty step of the entire nuclear chain, the production of the fuel uranium
- Resistance against nuclear power plants may increase if the suffering of uranium workers and the damage to the environment is understood

**No nuclear power plants - no uranium mining**

# Solution

The only answer to this dilemma is

**Keep uranium in the ground!**

# Thank you

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