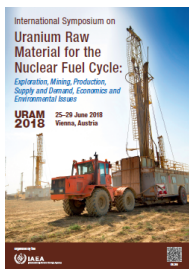


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SOCIETAL BARRIERS TO URANIUM MINING: A CASE STUDY FROM BRAZIL

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INTRODUCTION

Attitudes of different communities against uranium mining can cause severe constraints in uranium mining operations, eventually leading to insuperable barriers to project implementation and development.

Some studies have investigated the public opinion on uranium mining in different countries. One of these studies in Australia revealed that just under half of the public support the mining of uranium, while 36% opposes it [1]. The study also informed that over the previous decades, public support for nuclear energy in Australia has declined, while support for uranium mining has remained relatively stable. In Canada a study prepared by Areva Resources [2] indicated that “the uranium mining and uranium mining companies continue to hold a place of importance in the minds of Saskatchewan residents. Support remains high among survey respondents, both province-wide and in the North...“as the result of the perception...“that the primary companies operating in the industry operate safely and responsibly, and contribute positively to the province”

A study developed by the University of Eastern Finland, Joensuu [3] indicates that public opinion was more critical of uranium mining operations in comparison to other types of mining activities e.g. metals and industrial minerals. Only 1 to 4% of the interviewed individuals considered these activities not acceptable while in the case of uranium mining this level was determined as being between 38 to 51%. Six variables were examined in the study: Environmental attitudes, Perceptions of the disadvantages and benefits, knowledge of the mining, Trust, Trust in officialdom and Acceptability of foreign mining companies. Familiarity with operations correlated strongly with the acceptance. Drawbacks have a stronger impact in the acceptability than have the benefits. Trust in the authorities and legislation is strongly and positively correlated with acceptance. Finally, it was seen that the people that are more willing to accept foreign mining companies were also those more inclined to accept uranium mining.

Regarding Africa’s situation the place of the continent in the global nuclear market was examined [4]. The paper considers international and African tools that either exist or are being set up to improve the governance of uranium mining in Africa. It concludes that improvement requires attention to strengthening government capacity and ensuring wider consultative processes.

PERSPECTIVES FROM THIS WORK

In the scope of this work over one hundred entries in the internet that captured individual views on uranium mining

The Quebec Mineral Exploration Association (AEMQ) and Quebec Mining Association (QMA) wrote an open letter pro

A report released by NEA/OECD in 2014 [6]. The publication reveals that public perception of uranium mining is largely based on the adverse health and environmental impacts resulting from past practices i.e. those that took place during an essentially unregulated early phase of the industry.

The work from Brugge and Goble (2002) [7] points out that federal government in the USA “deliberately avoided dealing with a health disaster among Navajo uranium miners”. The authors indicate that even af

ter two decades after the harmful effects of uranium mining were known, the implementation of protective measures have not been implemented.

No doubt that what makes uranium mining even more sensitive to public scrutiny than other mining activities or...

THE CONTEXT IN BRAZIL

In Brazil the only ongoing uranium mining and processing operation was started in 2000 and is located at Caetité

Since the beginning of the mining operations in Caetité, accusations involving workplace accidents, tailing spills, potential soil and water contamination, and uncertain risks (e.g. cancer) to the health of the workers and the population which lives in the surrounded area of the mine have taken place. In April 2008, a team of Greenpeace collected eight samples of groundwater (allegedly used for human consumption) in an area within a circle of 20 km diameter centred in the uranium facility. It has been reported that two of these samples presented uranium concentration "far above" the guideline proposed by the World Health Organization (WHO). The report, entitled "Ciclo do Perigo - Impactos da produção de Combustível Nuclear no Brasil - Denúncia: Contaminação da Água por Urânio em Caetité Bahia". (Cycle of Danger: Impacts of Nuclear Fuel Production in Brazil. Complaint: Contamination of Water by Uranium in Caetité, Bahia), was then released.

The report refers to some publications that are intended to support the hypothesis that undesired health effects allegedly caused by the uranium operations in the region are being observed. The Greenpeace report in page 17 states that in one of studies the uranium incorporation rates by inhabitants of Caetité were 25 times higher than those presented in a control region. The referenced study was indeed a M.Sc. Dissertation that was subsequently published in a peer review journal [8]. In the journal the information is presented in a different way i.e. "uranium concentrations in teeth from residents of Caetité are about 8 times higher than those from the control region". The article also reveals that from a total of 41 tooth samples collected in the Bahia state, 17 came from the city of Caetité and only 2 from the city of Lagoa Real area where the mine is located. The results are not depicted in tables, rather in graphics. It can be seen thought that the two samples came from an individual of around 17 and another one of 31 years old. While the first sample presented uranium concentration of something around 5 ng.g⁻¹ the other one showed a value 10 times higher. Based on these results the authors infer that higher values could correspond to overexposure cases potentially due to food and water ingestion. As a conclusion and based on the data set mentioned above the article suggests that "uranium body levels in residents of Caetité are also much higher than the worldwide average and because of that daily ingestion of uranium in Caetité, from food and water, is equally high. Finally, it is proposed that "The populations of the studied localities, and Caetité' in particular, are subject to radiobiological risks much higher than those for populations living in other regions of Brazil or abroad".

It is recognised that few data are available that adequately describe the dose-response toxicity of uranium aft...

IAEA RELATED ACTIVITIES IN CAETITE

The IAEA organised - in 2010 - one mission of the Uranium Production Site Appraisal Team (UPSAT) to review the u...

Between 2012 and 2015 the IAEA supported Brazil - under the Agency's Technical Cooperation Programme - in imple...

Taking into consideration the many concerns of the population related to the contamination of the environment a...

DISCUSSION AND CONCLUSION

The survey confirmed that the dissemination of inaccurate information is very intensive. While public opinion...

Opinions formed based on what is perceived as reliable scientific investigations indicate that cases of cancer...

As a conclusion the perception that the official organizations and local authorities are not "protecting" the local population gives room for NGO's from outside the region to fill this gap. By adopting an anti-nuclear discourse and emphasizing the risks related to the mining operations, these organizations end up aligning side by side with the population. They get the trust of residents and, by providing concerted information suggesting the inappropriateness of the operations, lead the population to stand against the development of INB operations in the region. In this regard it can be clearly seen that the arguments put forward by the NGO's in the different channels of communication end-up being reproduced by members of the community in their interviews.

The analysis of this situation suggests that INB does not have or does not sustain a consistent communication/e...

THE PATHFORWARD

Due to the many concerns expressed by the population of Caetite about environmental contamination (more specif...

INB should have a more proactive attitude in terms of communication with the different stakeholders, not only w...

IRD on its part should hold joint public meetings including INB, CNEN, IBAMA, and other relevant organizations

It must be ensured that that the aims/ethics of science are cleared understood, and the consequences, lessons l

Beyond the project scope, educational material on environmental and natural background radiation for different

A last point to be carefully considered refers to the expectations of the local communities on the social role t

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Country or International Organization

IAEA

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