

Australian Uranium Industry Climate Change Vulnerability Assessment

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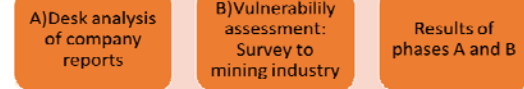
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Background information

- Australia has 31% of the world's known uranium reserves, and supplies 12% of world uranium demand (MCA, 2016).
- In this research the industry was considered represented by the two main uranium mines: Ranger and Olympic Dam.
- Australian uranium industry has been affected by extreme weather events such as heavy rain, flooding, cyclone activity, droughts, and heat waves.
- Uranium has been put forward as low GHG pollutant to produce electricity compared with other sources e.g. Coal (WNA, 2012).
- Uranium demand is expected to continue growing in the future (NEA and IAEA, 2016) although the impulse has been damped after Fukushima Daiichi accident (Hayashi and Hughes, 2013; AG, 2016).

Methodology

- An analysis of public domain company reports (full annual reports and sustainability reports over 10 years) from both the Ranger mine, and Olympic Dam was conducted in order to identify how they have been affected by climate risks.
- A vulnerability assessment using a survey of mining industry participants was conducted to carry and in depth study of how they have been affected in the past and how they might be affected by future climate change.



A) Results: Climate impacts over Ranger mine (only)



These impacts lead to financial impacts such as

- Decreased production (actual versus planned) with an associated loss of revenue e.g. in 2011 they required purchase of 2126 tonnes of uranium in the market to fulfil contract obligations.
- To face these climate impacts with reactive adaptation measures and implement proactive adaptation, the capital expenditure increased some years (Figure 1).

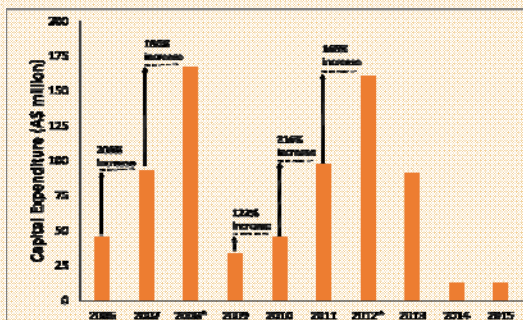


Fig. 1: Capital expenditure at Ranger mine 2006-2015

B) Results: Survey

The bottom-up approach was used to assess the vulnerability of the industry. The survey was fully designed for this purpose and it contains 25 questions.

Some results of the survey were:

- Intense rainfall/flooding was identified as the most influential climate risk for the industry.
- Factors that can increase the future vulnerability revealed by survey were: the geographical location, frequency of climate events, the age and design of assets, labour force availability, and productivity.
- Additional impacts such as supply of essentials (water, energy, and telecommunications) labour availability, transportation of the product, and quality of production were also revealed by the survey.

Conclusions

- The estimated total cost of climate related impacts at Ranger mine is A\$514.5 million over 10 years (2006-2016) plus a total loss of revenue of A\$ 403 million. This represents a lower bound in the estimation of costs for the industry.
- It is very plausible that the demand for resources (e.g. water, energy, labour, and others) would increase in the future in light of climate change.
- Adaptive capacity is present but limited in the industry.

References

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