Climate impacts, implications and adaptation options for the uranium supply chain in South Australia

Jessica Pizarro Loza, PhD student
Supervisors: Professor Ros Taplin (UNSW-ACSMP)
Dr. Jane Hodgkinson (CSIRO)
Dr. Barton Loechel (CSIRO)

Uranium mining industry in Australia

Uranium mining has been an important economic activity in Australia for over three decades. Australia has 31% of the total global reserves of Uranium (AUA, 2014). In 2013 Australia exported 7488 tonnes of yellowcake (\(U_3O_8\)) (WNA, 2014). South Australia has two of the three currently operating Australian uranium mines and uranium has been mined there since 1930.

This potential increase in uranium demand will pose new challenges for the industry such as:

- Sustainability impacts on uranium mining and processing, together with the supply chain e.g. provide a healthy and safe environment for workers.
- Optimization of allocation of economic resources in order to reduce operational costs.
- Cope with extreme weather events produced by climate change.

Background information

A growing academic literature draws on evidence that there are risks to mining companies caused by extreme weather events and climate change e.g. heat waves, flooding and droughts. Evidence suggests a lack of action by many mining companies in undertaking adaptation strategies. This might be due to the lack of understanding and awareness of potential risks; as well as lack of assessment of the expected costs and benefits of corresponding adaptation strategies (Loechel et al., 2013; Mason and Giurco, 2013; Acclimatisation, 2010). Furthermore, some barriers to adaptation have been identified in the mining industry, such as uncertainties in climate projections and cost of adaptation (Loechel et al., 2013; Acclimatisation, 2010) but also some opportunities have been identified such as: better stability of electricity supply in winter or an increase in water availability (Loechel et al., 2013).

If uranium demand increases as suggested in the 2013 World Energy Forecast (IEA, 2013), this potential increase in uranium demand and consequently higher export income could be beneficial for the Australian economy. However, environmental and sustainability impacts including climate change impacts could be detrimental. Therefore, there is a need to research and assess how climate change would affect the chain of activities associated with uranium mining in South Australia from pit to port and how climate change may affect them in the future.

Expected contribution

This PhD research should:

- Provide a climate change vulnerability and adaptation options assessment of the uranium supply chain in South Australia, not considered to date.
- Carry out an analysis of the impacts of extreme weather events across the uranium supply chain to assess potential costs, benefits and risks of vulnerability and adaptation actions to identify cost effective adaptation options.
- Recommend adaptation strategies for uranium mining in South Australia from a sustainable mining practices perspective that takes into account the economy, environment, safety, efficiency and community (Laurence, 2011).

References