1. What is your occupation?

- Researcher
- University Staff
- Business / Industry
- Government
- Higher Education Peak Body
- Industry Peak Body
- None of the Above

2. Are you responding as an individual or an organisation?

- Individual
- Organisation
- None of the above

3. What organisation do you work for?

National Committee for Earth Sciences

4. Are the recommendations appropriate to the current NRI environment?

Yes, the eight recommendations presented in the National Research Infrastructure Roadmap 2021 Exposure Draft are appropriate to the current NRI Framework and we support their implementation.

We also support a principles-based approach to NRI investment as well as the recognition in Recommendation 2 that the NRI's require funding continuity and long-term support to foster and develop the valuable human capital that supports their operation.

We strongly support the recognition that the existing NRI provide enormous value and support to the national research effort, provide employment for a highly skilled workforce and create significant national and international impact. We endorse the recommendation that funding to NRI's be increased and long-term in nature.

We also recognise the value in the formation of a proposed NRI Advisory Group and applaud the inclusion of the development of a Workforce Strategy in the workplan. We note that such activities represent a very significant amount of work, and so suggest that this group would need to be appropriately funded and have a very broad membership with representation from all stakeholder groups or discipline areas.

5. Do the principles articulate the vision and key elements required of NRI, including investment?

Yes. The National Committee for Earth Sciences commends the EWG for providing a clear and well-articulated set of principles.

The NCES also broadly supports the challenge framework approach and we consider the identified challenges to be appropriate.

Fundamental research is identified in the Roadmap as being important. We agree that fundamental research can lead to step change and often has very high but sometimes longer-term impact. We believe that it is critical to not lose our ability to support the highest quality fundamental research. However, the overall focus of the Roadmap is on supporting applied projects with short term impacts. We believe that a more explicit recognition of the value and long-term impact of fundamental research, and the role of NRI in supporting these activities is warranted.

It is worth noting that some of the instrumentation considered important to the Resources/critical minerals challenge (pp27), is in many ways similar to that used:

(I) to support the food and beverage challenge (through the increasingly important need for authentication of products and protection of 'Brand Australia'' also a potential commercialization opportunity or at least was to engage end users)

(ii) the 'medical products' through supporting pre-clinical and clinical research (pp30)

(iii) the 'defence' challenge where they mention 'monitoring and characterisation of waste products and related infrastructure development in both radioactive and non-radioactive environments' (pp34).

(iv) the environment and climate challenge where they mention 'Marine, coastal, freshwater and atmospheric monitoring and observation infrastructure' (pp36).

6. The NRI Roadmap has a clear focus on identifying the NRI investments required to support Australian research over the next 5 to 10 years. Are there any national research infrastructure needs missing in the draft Roadmap?

There are some omissions in the proposed NRI investments aligned with the identified principles. These gaps will directly influence the nation's ability to guarantee domestic supply of critical minerals, sustainably manage our nations significant groundwater resources in the context of a changing climate.

Geophysics data acquisition and monitoring is not mentioned explicitly in the Roadmap. Geophysical datasets are critical to understanding the architecture of the Australian crust and its mineral, energy and groundwater resources. Geophysical monitoring also allows us to predict how the crust responds to anthropogenic activity and to understand better risks posed to our society by natural hazards including earthquakes, mass erosion and floods.

Geohazards research plays a critical role in reducing risk to the Australian community. As recent large earthquakes in Victoria and shore erosion on the northern beaches in NSW shows geohazards are a significant underestimated risk factor in Australia relevant to the potential for developing long-term subsurface waste storage and infrastructure projects. Geohazard research is under-represented in the roadmap.

Groundwater remains one Australia's most crucial and poorly understood resources. Understanding how our groundwater resources respond to changing climate will be particularly important to regional and rural development over the next century. Whist mentioned in a number of recommendations, we believe that groundwater research is not given the level of importance it should have in the recommendations.

7. A key priority for Australia is to enhance research translation. The 2021 NRI Roadmap identifies some reforms and investments to achieve this. What other reforms would help deliver this priority?

The reforms proposed in the Roadmap are good and we strongly agree that research translation should be the highest priority for all NRI's and structuring NRI funding to enable this is appropriate.

We feel that it is important to recognise that the existing NCRIS capabilities all have established strong relationships with numerous industry partners, and many have significant experience in translational research delivery.

8. The Roadmap proposes that Australia could make landmark investments to drive step changes in research and innovation over the next 10 to 15 years. Do you agree with the assessment of potential areas for investment in the report? What other areas do you consider might fit the definition of landmark investment?

Landmark investments are a critical component of the NRI landscape. Increased investment in deep drilling programs that provide researchers with direct access to the subsurface would have enormous impact in relations to critical mineral exploration, seismic hazard monitoring, stress state, geothermal, groundwater, emissions, waste storage, understanding the evolution of the Australian Plate and marine environments.

The full suite of large-scale investments identified as critical buy the National Committee is described in some detail in the Decadal Plan for Geosciences that was released in 2019.

https://www.science.org.au/supporting-science/science-policy-and-sector-analysis/decadal-plans-science/australian-geoscience

9. Please add any other comments you would like to provide to the Expert Working Group.

The value of indigenous knowledge is identified a number of times in the Roadmap. We support the value in this and would like to point out that for a number of the geoscience disciplines work across indigenous managed lands and we recognise the significant opportunities that may be provided by directly supporting respectful and mutually beneficial collaborative engagements between these groups.

10. If you have a PDF (.pdf) or Word document (.doc or .docx) to share as part of your feedback, you can upload your file here. Please keep documents brief.