Please note: the substantive content of the 2026 NRI Roadmap Survey begins at Question 20 (with prior questions dealing with administrative and other information).

As such all submissions that are published include the responses submitted from Question 20 onwards only.

Q20.

Part 2: Research themes

2.1 NRI comprises the assets, facilities and associated expertise to support leading-edge research and innovation in Australia and is accessible to publicly and privately funded users across Australia and internationally. We are seeking your input on possible directions for future national-level investment - i.e., where the requirements are of such scale and importance that national-level collaboration and coordination are essential.

The 2021 Roadmap used a challenge framework to support NRI planning and investment. With this in mind, consider likely future research trends in the next 5 - 10 years, and with respect to one or more of the 8 challenge areas identified in the 2021 Roadmap as listed below:

- describe emerging research directions and the associated critical research infrastructure requirements that are either not currently available at all, or not at sufficient scale and
- describe current national infrastructure requirements that you anticipate will no longer fit the definition of NRI in 5-10 years.

Do not limit your commentary to NCRIS funded capabilities.

Q21.

Resources Technology and Critical Minerals Processing

Q22.

Food and Beverage

Q23.
Medical Products

Q24.
Defence

Q25.
Recycling and Clean Energy

Q26.
Space

Q27.
Environment and Climate

Climate change remains one of the most significant ecological and societal problems facing our nation. It is critically important that we have the best information about future change in weather, climate, sea level and oceanic conditions to be able to both prepare for long-term changes and cope with short-term emergencies. The only information we have on such future challenges comes from the software used to model future climate. The next decade will see the emergence of climate models that (a) operate at high resolution, giving much more detail, and (b) encompass additional components (ice sheets, carbon cycle processes), greatly enhancing our ability to predict (and adapt to) future weather, climate and ocean states. These advances depend critically on the curation and development of specialised software, created by highly skilled scientists and software engineers. They also rely on the capability to store and share output data and our capability for High-Performance Computing. These three factors (research software, data and compute) are essential research infrastructure that rely upon both physical infrastructure and the skilled workforce to optimise uses. Future advances in climate prediction also depend upon maintenance and expansion of existing programs to measure critical variables (such as sea level, carbon fluxes, atmospheric composition, ocean circulation). Such measurement programs remain a key part of our national research infrastructure framework. It's important that we make the most of long-term datasets being collected by research organisations, PFRAs and state/federal government programs in an integrated fashion.

Q28.

Frontier Technologies and Modern Manufacturing

Q29.

2.2 The 2024 statement of National Science and Research Priorities (NSRPs) includes outcomes linked to each priority to assist in identifying critical research needed in the next 5 to 10 years.

Consider the priority statements and, with respect to one or more of the 5 priority areas as listed below:

- describe emerging research directions and the associated critical research infrastructure requirements that are either not currently available at all, or
- not at sufficient scale and describe current national infrastructure requirements that you anticipate will no longer fit the definition of NRI in 5-10 years.

Do not limit your commentary to NCRIS funded capabilities, and where relevant, refer to the underpinning outcomes and research identified in the NSRPs document.

Q30.

Transitioning to a net zero future

Transitioning our energy system to make optimal use of renewables will be a key part of our pathway towards net zero. This transition will require advanced software that needs research and development for Australian conditions. The development of this software will interface with weather and climate models (for generation capacity and system load). This is an emerging area that will benefit from future infrastructure support. Another key component of our net zero future will be the capture of carbon on land (e.g. by agriculture) and in the sea. The efficiency of this carbon capture process is an ongoing research question. For example, if we absorb carbon in the ocean, how long will it stay there for? These questions create the imperative for climate modelling systems to include carbon capture within the context of existing natural sources and sinks of carbon. This is a research field that will expand in the coming decade, and will require the Earth system software and data environments that enable such calculations to be conducted reliably.

Q31.

Supporting healthy and thriving communities

Q32.

Elevating Aboriginal and Torres Strait Islanders knowledge systems

Q33.

Protecting and restoring Australia’s environment

Climate projections are an essential component of understanding Australia’s environmental future. While projections of temperature have a high level of certainty, there is less certainty in other key variables (e.g. variations in humidity, the intensity of rainfall and wave climate, to name a few). The future of climate projection is to be able to simulate regional scale processes which control such variables – the research to gain this understanding will depend upon delivery of enhanced national infrastructure including optimised software and compute/data facilities.

Q34.

Building a secure and resilient nation

A resilient nation is one that has advanced knowledge of future climate change. As noted above, enhancements in such knowledge depend upon improved software and compute infrastructure, along with the data systems and observations to make that knowledge available to stakeholders.

Q35.

2.3 The case for a new NRI capability, or enhancements to existing capabilities, typically emerges through advocacy from research communities clustering around rigorously identified needs and goals. Such a concept could respond to a requirement for novel or expanded capacity within a domain, or across domains, and must be such that it could only be made available with national-level investment.
If you have identified such a requirement, briefly describe the need, the proposed infrastructure capability, the medium-term goals, impacted research communities, and the timeframe over which you advocate its establishment. Your response can include links to relevant existing reports.

Q36.

Part 3: Industry perspectives

This section is seeking input specifically from industry-based respondents. Other respondents can skip this section.

Recommendation 6 of the 2021 Roadmap related to improvements in industry engagement with NRI. To complement work on this topic that has occurred since then, we are seeking additional advice on NRI requirements as perceived by current or potential industry-based users.

Q37.

3.1 Have you (or your organisation) interreacted with or used Australia's NRI?

- ◯ Yes
- ◯ No

Q38.
3.2 If so, please briefly outline the NRI capabilities you (or your organisation) have interacted with or used. Do not limit your response to NCRIS capabilities.

This question was not displayed to the respondent.

Q39.
3.3 Please indicate your (one or more) primary reasons for interacting with NRI:

This question was not displayed to the respondent.

Q40.
3.4 If you answered no, please indicate your (one or more) primary reasons:

This question was not displayed to the respondent.

Q41.
Part 4: Other comments
4.1 Please elaborate on any of your above responses or add any other comments relevant to the development of the 2026 Roadmap. Your response can include reference or links to existing reports that you recommend be considered during the 2026 Roadmap development process.

Q49.
4.2 Optional Document Attachment.
Note: Our strong preference is that answers are provided against the relevant questions in the survey. However, this file upload option is available for submissions in file format, where needed. Please ensure the document includes your name or organisation.