

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

An Australian Network for Atmospheric Composition and Chemistry The "Environment and Climate" challenge area demands a comprehensive and integrated approach to understanding and mitigating the impacts of climate change. In the next 5-10 years, research will increasingly focus on the intricate interplay between atmospheric composition, chemistry, and climate dynamics, particularly in the context of Australia's unique environment. High-Resolution Atmospheric Composition Monitoring: to obtain the detailed, real-time spatial and temporal data on key atmospheric constituents like greenhouse gases, aerosols, VOCs, and reactive nitrogen species, research necessitates a national network of advanced atmospheric observatories with cutting-edge instrumentation such as high-resolution spectrometers, lidar, and advanced aerosol analyzers, encompassing ground-based, airborne, and satellite platforms for comprehensive coverage, alongside the development of a standardized data acquisition and management system to ensure interoperability and accessibility, and the deployment of expanded, low-cost sensor networks to enhance data gathering. Atmospheric Chemistry and Aerosol Processes: Understanding the intricate chemical reactions and aerosol formation processes that shape climate, air quality, and ecosystem health is paramount, requiring critical infrastructure such as environmental simulation chambers to replicate realistic atmospheric conditions for studying these processes, advanced computational facilities for high-resolution modeling of atmospheric chemistry and aerosol dynamics, specialized laboratories for analyzing aerosol composition and properties, and significantly increased funding to investigate the specific effects of bushfire smoke and other uniquely Australian aerosol sources. Biogenic Emissions and Land-Atmosphere Interactions: Australia's distinct vegetation and land cover are major contributors to atmospheric composition via biogenic emissions, demanding research to quantify these emissions and understand their climate change responses. This necessitates critical infrastructure including a network of flux towers to measure gas exchange between land and atmosphere, remote sensing capabilities for vegetation mapping and land cover monitoring, and isotopic analysis facilities to trace the sources and sinks of atmospheric constituents. Impact of Extreme Events: Australia's rising frequency of bushfires, droughts, and heatwaves necessitates urgent research into their impacts on atmospheric composition and climate, requiring critical infrastructure such as mobile atmospheric monitoring systems for rapid deployment during these events, integrated datasets combining atmospheric data with other environmental factors like fire behaviour and land surface temperature for comprehensive impact assessments, and improved modelling capabilities to accurately predict the localized atmospheric chemistry changes resulting from these extreme events.

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

Q31.

Supporting healthy and thriving communities

Q32.

Elevating Aboriginal and Torres Strait Islanders knowledge systems

Q33.

Protecting and restoring Australia’s environment

Q34.

Building a secure and resilient nation

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.