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

Health and Medical Research Emerging Research Directions: Personalised Medicine: Research aimed at tailoring medical treatments to individual genetic profiles. Infectious Disease Preparedness: Continued focus on understanding and combating emerging infectious diseases, building on lessons from the COVID-19 pandemic. Critical Research Infrastructure Requirements: Genomic Sequencing Facilities: Expanded genomic sequencing capabilities to support personalised medicine. Biosecurity Labs: Enhanced biosecurity labs for studying infectious diseases and developing vaccines.

Q24.
Defence

Q25.
Recycling and Clean Energy

Energy Storage Solutions: Developing advanced energy storage technologies to address the intermittency of renewable energy sources. Critical Research Infrastructure Requirements: Renewable Energy Research Centres: Building facilities dedicated to the research and development of renewable energy technologies. Energy Storage Labs: Establishing labs focused on improving battery technologies and other energy storage solutions.

Q26.
Space

Q27.
Environment and Climate

Environmental and Climate Research Emerging Research Directions: Climate Change Mitigation and Adaptation: Research focused on developing technologies and strategies to mitigate climate change impacts and adapt to new environmental conditions. Biodiversity and Ecosystem Services: Studies on preserving biodiversity and maintaining ecosystem services in the face of environmental changes. Critical Research Infrastructure Requirements: Long-Term Ecological Research Sites: Expanded networks of ecological research sites to monitor environmental changes over time. Climate Modelling Centres: Advanced facilities for climate modelling and prediction.

Q28.

Frontier Technologies and Modern Manufacturing

Advanced Manufacturing Emerging Research Directions: Additive Manufacturing (3D Printing): Innovations in 3D printing technologies for creating complex and customized products. Sustainable Manufacturing: Research on sustainable manufacturing processes that reduce waste and energy consumption. Critical Research Infrastructure Requirements: Advanced Manufacturing Hubs: Facilities equipped with state-of-the-art manufacturing technologies. Materials Research Labs: Labs focused on developing new materials for use in advanced manufacturing Digital Transformation Emerging Research Directions: Artificial Intelligence (AI) and Machine Learning (ML): Continued advancements in AI and ML will drive innovation across various sectors, including healthcare, finance, and manufacturing. Quantum Computing: Research in quantum computing will likely accelerate, aiming to solve complex problems that are currently intractable for classical computers. Critical Research Infrastructure Requirements: High-Performance Computing (HPC): Enhanced HPC facilities to support large-scale simulations and data processing. Quantum Research Facilities: Specialised labs and equipment for quantum experiments and development.

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

Emerging Research Directions: Advanced Renewable Energy Technologies: Innovations in solar, wind, and hydrogen energy production to increase efficiency and reduce costs. Carbon Capture and Storage (CCS): Developing scalable and cost-effective methods for capturing and storing carbon emissions. Energy Storage Solutions: Researching new battery technologies and other storage methods to address the intermittency of renewable energy sources. Critical Research Infrastructure Requirements: Renewable Energy Labs: Facilities for testing and developing new renewable energy technologies. CCS Pilot Plants: Experimental setups to test and refine carbon capture and storage techniques. Energy Storage Research Centres: Labs focused on improving battery technologies and other energy storage solutions.

Q31.

Supporting healthy and thriving communities

Supporting Healthy and Thriving Communities Emerging Research Directions: Personalized Medicine: Tailoring medical treatments to individual genetic profiles through advancements in genomics and biotechnology. Mental Health Research: Developing new treatments and interventions for mental health conditions. Public Health Preparedness: Enhancing strategies to prevent and respond to pandemics and other public health emergencies. Critical Research Infrastructure Requirements: Genomic Sequencing Facilities: Expanded capabilities for genomic research to support personalised medicine. Mental Health Research Centres: Facilities dedicated to studying and improving mental health treatments. Public Health Data Platforms: Systems for collecting and analysing health data to inform public health strategies.

Q32.

Elevating Aboriginal and Torres Strait Islanders knowledge systems

Emerging Research Directions: Indigenous Knowledge Integration: Research on incorporating traditional knowledge into modern scientific practices. Cultural Heritage Preservation: Studies focused on preserving and revitalizing Indigenous languages, traditions, and cultural practices. Critical Research Infrastructure Requirements: Indigenous Knowledge Research Centres: Facilities dedicated to studying and integrating Indigenous knowledge systems. Cultural Heritage Archives: Repositories for preserving Indigenous cultural artifacts and records. Current Infrastructure That May Become Obsolete: Conventional Research Models: Traditional research models that do not incorporate Indigenous perspectives may need to be restructured to be more inclusive.

Q33.

Protecting and restoring Australia’s environment

Protecting and Restoring Australia's Environment Emerging Research Directions: Biodiversity Conservation: Strategies to protect endangered species and restore ecosystems. Climate Resilience: Research on adapting to climate change impacts, such as extreme weather events and sea-level rise. Sustainable Agriculture: Innovations in farming practices that reduce environmental impact and enhance food security. Critical Research Infrastructure Requirements: Ecological Monitoring Networks: Systems for tracking changes in biodiversity and ecosystem health. Climate Adaptation Labs: Facilities for developing and testing climate resilience strategies. Sustainable Agriculture Research Stations: Experimental farms to trial and refine sustainable farming techniques. Current Infrastructure That May Become Obsolete: Conventional Agricultural Research Facilities: As sustainable practices become more prevalent, traditional agricultural research facilities may need to be updated or repurposed.

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.