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

Australia is one of the countries most severely affected by climate change and expected to continue to be among the countries most severely affected by climate change. The frequency, extent and intensity of heatwaves, droughts, bushfires, rising sea levels, land erosion, floods and storms as well as general changes in rain and temperature patterns will continue to impact on communities in Australia. However, to date, the focus on research surrounding climate change impact has been on agricultural and environmental impacts and impacts on physical structures, such as buildings and roads. Issues of mental health, community resilience and disaster management have also been given some attention commonly influenced by population health framing. Insurance industries have focused on forecasting financial risks from destructions of assets. Given the progressing stage of climate change there currently appears to be a significant lack of research activity to develop an understanding of the impacts and likely impacts of climate change on forms of social organisation - migration and settlement patterns, social capital and social infrastructure, housing and labour markets, patterns of physical activity and socialising, demographic and spatial patterns of drug use, crime, family violence etc – broadly social impacts. A more holistic understanding of these matters, embedded in the social sciences, will be imperative to support healthy and thriving communities as well as building a secure and resilient nation. There are sound reasons for NCRIS funding to support holistic approaches to infrastructure that will aim to mitigate climate change impacts. This should be a part of a broader strategy of supporting research and research infrastructure within a broader discipline of social sciences where: • Social climate change impact research is regularly funded and supported by dedicated infrastructure • Social climate change impact is represented by a national research institute that leads research and advocacy in this area • Custom-built research degree and vocational qualification programs in social impacts from climate change and social solutions are offered in all jurisdictions of Australia The current social science project supported through the NCRIS funding via the Australian Research Data Commons (ARDC), the Social Science Research Infrastructure Network (SSRIN) provides one of the foundational blocks for building dedicated research infrastructure in the social sciences. SSRIN focal areas include data integration, and leveraging integrated administrative data, and on capacity building, and research workforce training, which provide foundational building blocks to tackle the complex issues around climate change and its environmental impacts.

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

Australia's research infrastructure has supported significant advancements in healthcare. However, expanding research infrastructure, and importantly connecting the key elements of existing infrastructure will enhance researcher's capabilities to tackle complex, multidisciplinary complex, including supporting healthy and thriving communities, which sit at the intersection of health and social sciences. One of the SSRIN's activity stream is looking to develop new linkages between the health and social science data, crossing disciplinary boundaries. However, the existing infrastructure landscape will benefit from enhancing connections between existing NCRIS-funded and other facilities, and better integration between research infrastructure and research facilities, including the ARC-funded Centres of Excellence. SSRIN is already actively collaborating with a number of projects under the ARDC HASS&I umbrella, including the Improving Indigenous Research Capabilities (IIRC), Language Data Commons of Australia (LDaCA) and the Australian Internet Observatory (AIO). Capability could be further enhanced by creating tangible connections between the activities undertaken under the ARDC HASS&I umbrella, and other NCRIS facilities, including AURIN and PHRN. Furthermore, addressing the complex challenges facing healthy communities requires an interdisciplinary research workforce. It is also vital to support systems for learning from research and evaluation - in-built translation systems. Investment in training programs—such as those being developed within the Social Science Research Infrastructure Network (SSRIN)— could be further expanded though additional investments to include training in systems science, spatial and longitudinal modelling, and the integration of diverse data sources for policy evaluation.

Q32.

Elevating Aboriginal and Torres Strait Islanders knowledge systems

Elevating Aboriginal and Torres Strait Islander knowledge systems is crucial for the social sciences because it enriches the discipline with diverse perspectives and methodologies. Indigenous knowledge systems, developed over thousands of years, offer deep insights into community practices, ecological stewardship, kinship structures, and holistic wellbeing These insights can promote more equitable and ethical research practices, ensuring that research is relevant and respectful to all communities, particularly those who have historically been marginalised. Incorporating Aboriginal and Torres Strait Islander knowledge systems into social science research requires significant shifts in research infrastructure. Institutions need to build culturally safe and supportive environments that recognise and respect Indigenous intellectual sovereignty. This involves not only diversifying research teams and leadership but also embedding cultural protocols and ethical guidelines that align with Indigenous ways of knowing and being. For example, ethics frameworks should prioritise community consent, Indigenous data governance and sovereignty, and benefit-sharing, moving away from extractive research practices. Social Science Research Infrastructure Network (SSRIN) includes an Activity Stream dedicated to developing Indigenous Data User Guidelines in the context of government administrative data. Under the guidance of an Indigenous Steering Committee, and working with key government agencies, the project aims to develop guidelines that will help researchers to better understand Indigenous data and the context in which they are collected and maintained in administrative datasets. The guidelines will also provide good practice advice to researchers on how to handle Indigenous data in administrative datasets in culturally appropriate ways. While the Activity Stream within SSRIN offers an important step towards better governance of Indigenous data in the context of government administrative assets, continued funding will be needed to expand the focus of this work. It is important to note that funding models and research assessment criteria may need to adapt to more explicitly recognise and support Indigenous-led research and methodologies, and the timelines associated with using those in ways that are consistent with Indigenous practice. This might include developing funding streams, creating partnerships with Indigenous organisations, and offering training programs to build technical and cultural capacity among both Indigenous and non-Indigenous researchers. Investing in these areas will help transform research practices, ensuring that dedicated research infrastructure contributes meaningfully to reconciliation, social justice, and the amplification of Indigenous voices within academia and broader society.

Q33.

Protecting and restoring Australia's environment

As noted earlier in the survey, it is likely that shifts in environmental factors, including weather patterns that trigger heat waves, floods, storms and coastal erosions will impact communities to an extent that cannot be protected or corrected by infrastructure and services interventions or adaptations to housing materials, crops etc. It is likely that climate change will inevitably, profoundly and increasingly affect regional economic and life opportunity structures in Australia. One of the pressing infrastructure needs in this space involves capability building in researchers to be able to tackle the complex and multidisciplinary problems. As previously noted, the current social science project supported through the NCRIS funding via the Australian Research Data Commons (ARDC), the Social Science Research Infrastructure Network (SSRIN) provides one of the foundational blocks for building dedicated research infrastructure in the social sciences. Specifically, SSRIN includes an Activity Stream on training and capacity building, which is an example of activities critical for developing skilled research workforce. The Activity Stream will develop a comprehensive training program in quantitative and qualitative methods, data analytics, and digital tools for domain researchers in alignment to academic and research software engineering (RSE) career frameworks. It will promote professional development opportunities through workshops, seminars, and online courses, and will encourage interdisciplinary learning and collaboration to broaden researchers' skill sets. While a social science lens is instrumental to develop effective solutions to address the impacts of the climate change, there are significant gaps in training and the required research capacity within the social sciences. This is because researching social climate change impacts, and developing solutions to tackle them, is methodologically complex, and needs to combine spatial, environmental and social domains of research and planning, which are not commonly combined in research training. This will require developing and implementing interdisciplinary research training including work experience programs that facilitate developing capabilities that can integrate understandings of climate change patterns, social planning frameworks, regional economics, urban and regional planning and skills in spatial and longitudinal modelling, data integration, data use and others. The outputs from the SSRIN's Activity Stream on training and capacity building would provide a solid foundation to build on when developing such a multidisciplinary research training program tailored specifically to addressing the impacts of the climate change.

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.

There are several broader issues surrounding data infrastructure that require future funding and action, including expanding and developing new research infrastructure capabilities. The below comments address some of these broader needs, seen from the disciplinary point of view of the social sciences, but carrying relevance for other research disciplines. * Data discovery in a world full of data The production and availability of data are rapidly expanding. Within the field of social sciences, the recently published Decadal Plan for Social Science Research infrastructure from the Academy of the Social Sciences in Australia identifies improved data discoverability as one of the key needs for the sector. Numerous data discovery tools have emerged, offering a range of functionalities. However, most of these tools provide only a snapshot view—presenting a selection of information and links compiled at a specific point in time, with occasional updates. Such tools struggle to keep up with the accelerating speed at which new data are generated and made available. By the time they are released, they may already be outdated. This issue applies not only to new data collections and sources but also to the information these tools provide about existing datasets. Without a robust maintenance model, content and links are unlikely to be sufficiently updated. Additionally, many tools lack comprehensiveness, either in the range of data they capture or in the richness of the metadata they provide, while point-in-time nature of these snapshots also contributes to the lack of comprehensiveness There is therefore a strong case for investing in technology that enables researchers across multiple disciplinary areas to explore the existence, availability, and characteristics of existing data in real time. In the context of the social sciences, this includes providing subject area experts with the data, metadata, and practical information necessary to produce research without having to become experts in state or Commonwealth administrative data systems. Developing such technology will require national infrastructure funding. The Social Science Research Infrastructure Network (SSRIN) project offers a starting point for such an endeavour within the social sciences through its Activity Stream on improving discoverability of public sector social science data. Continued funding would facilitate an automation of the discoverability process implemented in the Activity Stream, and allow for expansion beyond the social sciences. Such dedicated funding could be used more broadly to connect the various NCRIS-funded data discoverability tools and initiatives, ensuring inter-operability and facilitating multidisciplinary collaborations. * Continued data integration initiatives With the proliferation of data there will be an ongoing need for data integration into the foreseeable future. Within the social sciences context, large-scale data integration initiatives have been implemented by various government agencies – usually statistical agencies, health departments and associated health research units. Other, often smaller-scale, data integration projects, whether of a more strategic or one-off-application basis will have been executed in academia, private business and public service. These potentially numerous data integrations, remain largely hidden from the public domain. Data integration is still a very under-researched field. It poses methodological issues that are often not well understood by social researchers. Data linkage agencies are commonly constrained in understanding the limitations of their work due to their unfamiliarity with some of the source data. Further national investments in data integration are urgently needed to: a) Support better research into, and communication of the quality issues associated with data integration processes, especially repercussions for population representation and uncertainty in estimates. b) Develop good-practice data integration guidelines that target the large data linkage providers as well as the many smaller-scale linkage providers including individual researchers who link data rather ad-hoc for their work. c) To develop training programs in data linkage that teach good practice principles of linking data, and treating arising quality issues. d) To develop online tools and associated administrative models for its use that allows researchers to conduct ad-hoc data integration using their data. The Social Science Research Infrastructure Network (SSRIN) project offers some first steps in this direction in the context of social sciences, through its Activity Stream on improving integrated data usability. Working in close collaboration with the Australian Bureau of Statistics (ABS), this activity will deliver a series of key enhancements to some of the key data assets administered by the ABS and the associated documentation. This involves setting up the technical infrastructure and introducing a set of processes for improved delivery of supporting information. *Infrastructure Needs for Policy and Program Evaluation Evaluation plays an increasingly critical role in guiding public investment in Australia; thus, ensuring adequate infrastructure for high-quality, system-wide policy assessment is essential for evidence-informed decision-making. Timely access to high-quality, linked administrative data will improve evaluation of large-scale health and social policies and facilitate the development of data-driven decision tools to enable dynamic policy adaptation and simulation based on real-world evidence. In addition, infrastructure that enables real-time data integration will provide opportunities to complement periodic evaluations (the current status quo) with real-time monitoring and feedback loops to allow for timely adjustments to policy and program implementation. This requires investment in digital platforms and data-sharing agreements across sectors and jurisdictions.

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.

Continued investment in dedicated NCRIS capabilities for HASS and Indigenous researchers and communities is crucial for society. It plays a key role in addressing complex challenges—such as the impacts of climate change and emerging AI technologies—that demand truly multidisciplinary approaches. Australia's research infrastructure landscape would benefit from greater integration and collaboration. SSRIN advocates for such an approach for several reasons. First, unlike many other types of research data, HASS research data can be repurposed across multiple disciplines and communities, enhancing its impact. Second, for Australian HASS researchers to remain internationally competitive, they must be able to work at scale—something only an integrated research infrastructure can provide. Third, a coordinated approach ensures that lessons from past infrastructure projects, both successes and failures, inform future initiatives, leading to more effective and sustainable research infrastructure. Finally, while digital and AI-enhanced tools are often discipline-specific, there are shared needs in capacity building and tool development across HASS and Indigenous research communities. Maximising the potential of HASS research infrastructure also requires collaboration with key research centres, professional bodies, and learned academies. Notable organisations include the Academy of the Social Sciences in Australia (https://socialsciences.org.au), the Australian Academy of Humanities https://humanities.org.au), and ARC-funded Centres of Excellence, such as the ARC Centre of Excellence for Children and Families over the Life Course (the Life Course Centre: https://lifecoursecentre.org.au/) and the ARC Centre of Excellence for Automated Decision-Making and Society (https://www.admscentre.org.au/about-us/) . These partnerships, strengthened by a shared commitment to research infrastructure, have been further supported by the ARDC's HASS&I Research Data Commons https://ardc.edu.au/hass-and-indigenous-research-data-commons/, which provides thought leadership and coordination in this space. Enhancing further integration and collaboration—both within HASS and beyond—will ultimately strengthen Australian research and deliver broader societal benefits.

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.