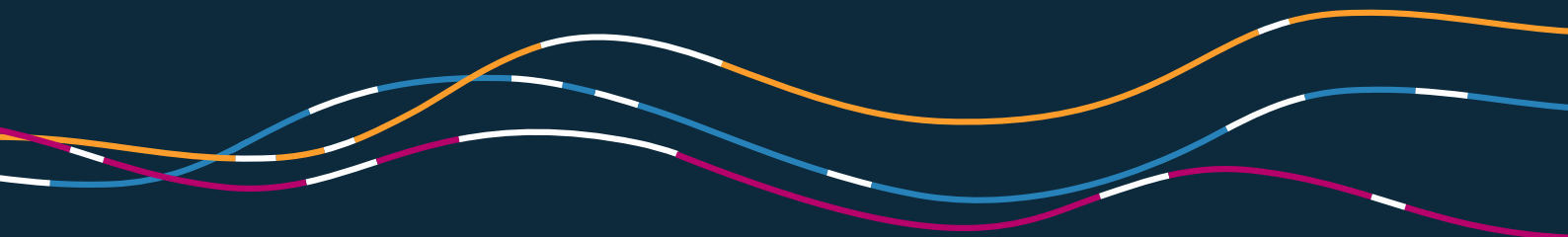


# 2021 NRI ROADMAP CONSULTATIONS

## INDUSTRY FINDINGS



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# OVERALL METHODOLOGY

## **Phase 1 for the NRI consultation program**

The 2021 NRI Roadmap Survey was built to collect a broad cross-section of views on NRI needs, trends and challenges as they are currently perceived by stakeholders across a range of disciplines, sectors, and organisations.

## **OVERALL METHODOLOGY**

### **Stakeholders were asked to assign themselves to one or more of the following occupational categories:**

- NRI Staff
- Researchers
- Industry
- Policy Makers
- Academia

### **Additionally, stakeholders were asked to assign themselves to one or more of the following stakeholder groups:**

- Private / Commercial Business
- Academia / Universities
- Industry Representative Groups
- SMEs
- National Research Infrastructure
- Publicly Funded Research Agencies
- Commonwealth Government
- State or Territory Government
- Independent Researcher
- Chief Scientists
- Other

### **The survey was in the field for two weeks:**

16 June – 1 July 2021

### **Survey promotion/recruitment was carried out via:**

- 2021 NRI Roadmap website (2021nriroadmap.dese.gov.au)
- Emailed to 635 contacts on the 2021 NRI Roadmap eNewsletter database
- Targeted requests to industry (e.g. SMEs) and research networks
- DESE and DISER communication channels
- Current NCRIS program networks

Given the nature of recruitment, those surveyed are assumed to have a stronger association with NRI/DESE than a general sample.

## INDUSTRY SAMPLE DEFINITION & CAVEAT

The following document represents feedback and responses related to the interactions of Industry with NRI.

The responses have been filtered to represent respondents who described themselves as belonging to one or more of the following stakeholder groups: Small and Medium Enterprises (SMEs), 'Industry Representative Groups', 'Private / Commercial Business.'

**Of the 2,936 completed surveys, n=329 identified themselves as belonging to one or more of the stakeholder groups specified above.** This group, henceforth referred to collectively as the 'industry sample', had a high overlap with respondents who described themselves as belonging to academia/universities.

## RECRUITMENT

The industry sample represents just over 11% of total survey respondents. This compares to recent estimates, published by the CSIRO, that business and industry researchers make up only 2% of all NCRIS facility users.

Recruitment activities targeting the industry sector were limited, and the majority of respondents in the industry sample have a dual role in research and academia. The following report therefore represents a sample of industry that is more likely than the general industry population to have had some interaction with NRI.

This represents a potential bias however, given the higher propensity of the sample to have knowledge of or interactions with NRI (vs. general industry), their feedback and opinions are valuable.

# THE INDUSTRY SAMPLE

## STAKEHOLDER GROUPS

The largest stakeholder group among industry respondents was 'private / commercial business' (62%) followed by 'academia / universities' (56%), industry representative groups (46%) and SMEs (33%). As shown in Figure 1, there is a high overlap across stakeholder groups, in particular with Academia / Universities and National Research Infrastructure. Many of those that identified themselves as National Research Infrastructure were suppliers / providers / enablers of NRI.

**Which of the following best describes the stakeholder groups that you/your organisation, agency or institution belongs to?** Please select all that apply. (NB: Respondents were able to select multiple responses).

BASE: Industry Sample	Responses	
Private / Commercial Business	62%	203
Academia / Universities	56%	185
Industry Representative Groups	46%	150
SMEs	33%	107
National Research Infrastructure	31%	103
Publicly Funded Research Agencies	31%	103
Commonwealth Government	24%	79
State or Territory Government	23%	77
Independent Researcher	18%	60
Chief Scientists	12%	39
Other (please specify)	4%	13

Figure 1: 2021 NRI Roadmap Survey respondents, by stakeholder group

## RESEARCH INDUSTRY AREAS

When asked about their areas of research expertise, or the areas they most commonly work in, the top responses from industry respondents were:

- Biomedical clinical sciences (32%)
- Biological sciences (28%)
- Engineering (34%)
- Environmental sciences (25%)
- Earth sciences (24%)
- Agricultural, veterinary and food sciences (23%)
- Health sciences (23%)
- Physical sciences (22%)
- Chemical sciences (17%)
- Information and computing sciences (16%)

# INDUSTRY INTERACTIONS WITH NRI

## REASONS FOR INTERACTING WITH EXISTING NRI

Bearing in mind the sample skew towards respondents with dual roles in industry and academia / research, 62% of the non-NRI industry sample indicated they currently interact with Australia's NRI, as shown in Figure 2.

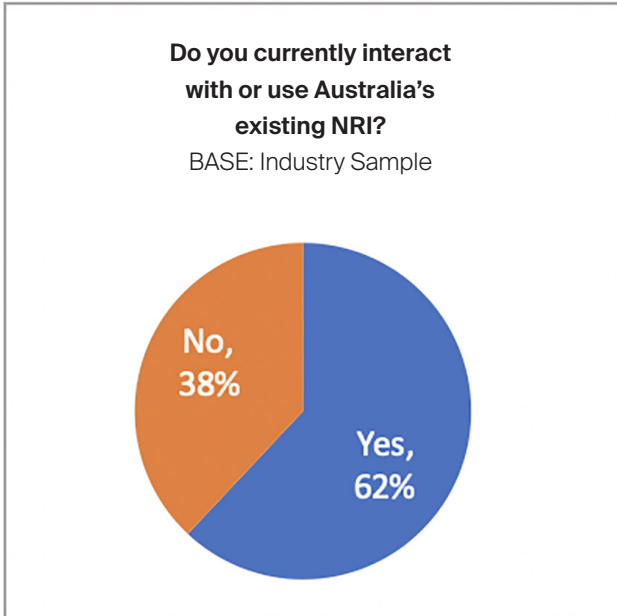


Figure 1: 2021 NRI Roadmap Survey respondents, by stakeholder group

Their reasons for using NRI are represented in Figure 3 below. Three responses stood out above all others: access to *Expertise or advice* (54%), access to *Research resources/products* (48%) and access to *Equipment/kit* (40%).

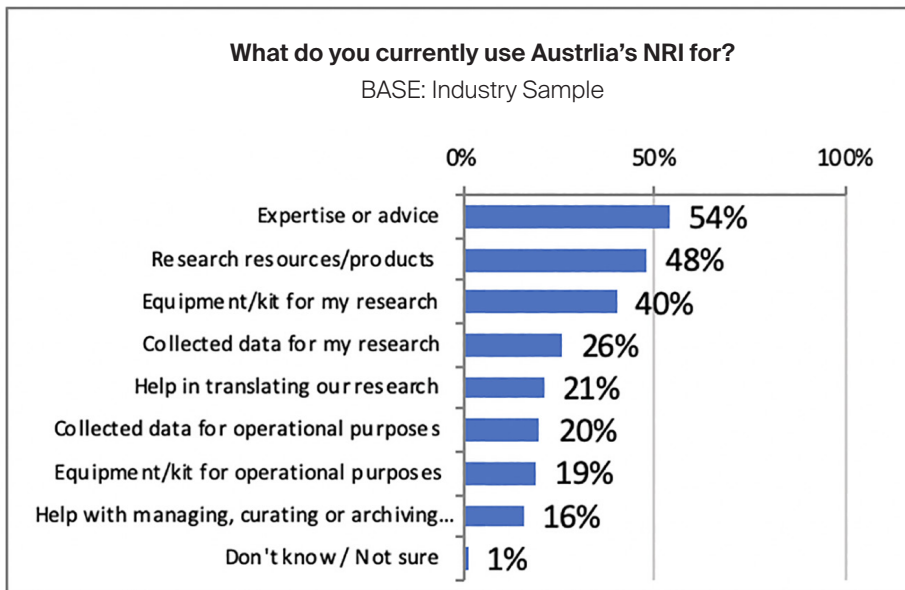


Figure 3: Non-NRI industry sample respondents who currently interact with or use Australia's national research infrastructure most commonly access NRI for access to expertise or advice, research resources and products, and research equipment or kit.

## REASONS FOR NOT INTERACTING WITH EXISTING NRI

Conversely, 38% of the non-NRI industry sample indicated they do not currently interact with NRI. Of those, close to half (43%) said they did not use NRI because they did not know about it. Other key reasons for not using Australia's existing NRI are represented in Figure 4.

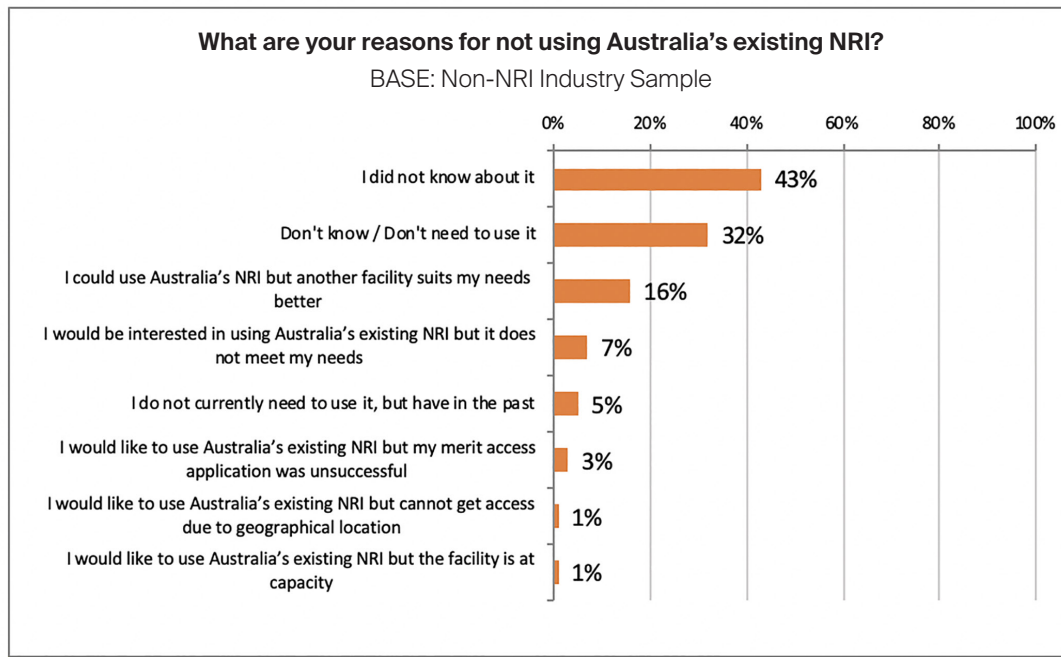


Figure 4: Close to half of all non-NRI industry sample respondents who do not currently interact with or use Australia's national research infrastructure report that they do not know about NRI.

## **BARRIERS TO ENGAGING WITH NRI (INDUSTRY VIEW)**

Industry respondents were asked about the specific barriers they face when it comes to engaging with NRI. 83 responses were provided. The key themes expressed by industry with regard to barriers to NRI-engagement were as follows:

### **1. They do not understand the NRI (22% / 18 mentions)**

Respondents cited a lack of understanding of the NRI offering and capabilities for industry and how to access it. This theme is also correlated with industry not knowing about NRI overall (which had 15 mentions).

### **2. Funding (20% / 17 mentions)**

'Reducing cost' was the most commonly mentioned item within the theme of 'funding'. Additionally, there were suggestions that changing funding models to meet industry cycles/needs may also be helpful.

### **3. They do not know about the NRI (18% / 15 mentions)**

Respondent cited a general lack of awareness of NRI.

### **4. Cultural barriers (17% / 14 mentions)**

Lack of transparency, lack of collaboration, and a sense of competition are commonly mentioned within the theme of 'cultural barriers'. Industry suggestions for breaking down these barriers include fostering a more inclusive and collaborative culture through open discussions, standardised frameworks for collaboration and dealing with industry, and the establishment of data cooperatives and collaboratives.

### **5. Cannot get access to facilities (13% / 11 mentions)**

Some respondents felt that NRI was a closed network and not available to them, while others cited university gateways as a barrier. Suggestions for improvement include consider formalised, dedicated gateways and application processes for industry to access NRI.

### **6. Differing expectations / priorities (13% / 9 mentions)**

Some respondents have a perception that NRI is focused on academia, to the perceived exclusion of industry. Others felt that NRI does not match the scale/scope required by industry. There was a strong correlation between the 'differing expectations' theme and the theme of 'cultural barriers'.

### **7. Other barriers**

Ranging from 3-6 mentions, the following were also identified as other barriers for industry:

- Risk too high for industry (7% / 6 mentions)
- Time constraints (6% / 5 mentions)
- Infrastructure is not up to date / up to standard (5% / 4 mentions)
- Differing timeframes (5% / 4 mentions)
- Cannot get access to experts (5% / 4 mentions)
- Better commercial options (4% / 3 mentions)
- Paperwork / bureaucracy (4% / 3 mentions)



# NRI MEETING INDUSTRY NEEDS

## INDUSTRY-SPECIFIC NEEDS (INDUSTRY VIEW)

The 62% of the non-NRI industry sample who are currently using or interacting with NRI were asked if it was meeting their needs. Their responses were largely positive, with 93% reporting that it met some to all of their research needs, as depicted in Figure 5. corporate hierarchy and rules were all mentioned within the theme of 'bureaucracy'.

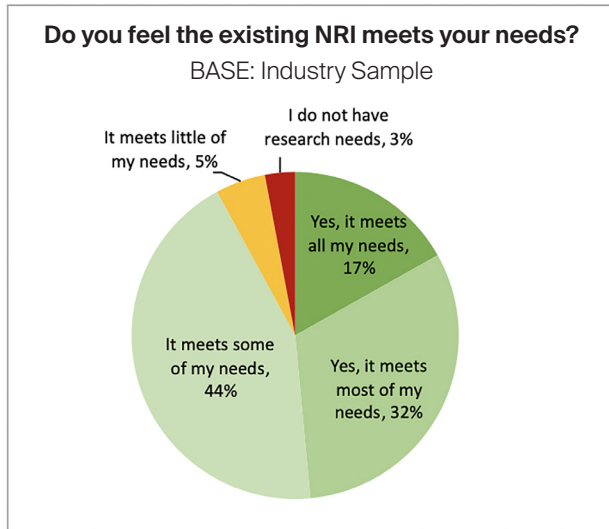


Figure 5: The majority of non-NRI industry sample respondents reported that NRI was meeting some, most or all of their needs.

More than 4 in 10 (42%) of the non-NRI industry sample agreed that 'NRI has enabled outcomes' for their industry that 'would not have been possible without it'. When asked to specify these outcomes, a wide range of responses were provided, many of which were specific to disciplines / industry areas.

## INDUSTRY-SPECIFIC NEEDS (NRI VIEW)

Respondents connected to NRI facilities or services were asked to identify the industry-specific needs they had observed. A total of 66 provided responses, as represented in Figure 6.

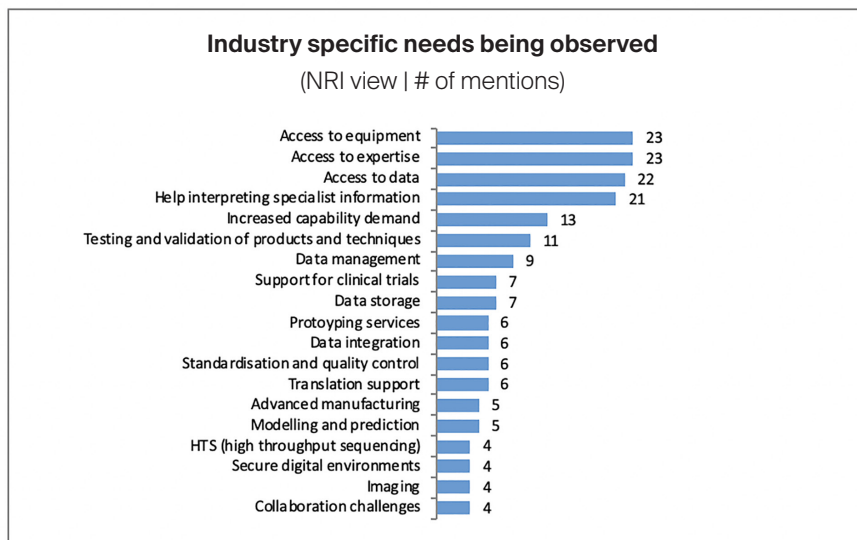


Figure 6: Industry-specific NRI needs observed by 2021 NRI Roadmap Survey respondents connected to NRI facilities or services.

# INDUSTRY/RESEARCHER COLLABORATION

## BARRIERS TO COLLABORATING WITH AUSTRALIAN RESEARCHERS (INDUSTRY VIEW)

Across the industry sample, 42% of respondents reported that they currently face or anticipate facing barriers to collaborating with researchers in Australia. The key issues are outlined below:

### **Lack of funding / support (44 mentions)**

Lack of funding / support was the barrier to collaboration most commonly mentioned by the industry sample. This theme is correlated with the theme of 'Limited time / resources', where cost was cited as a key barrier to engagement.

### **Competitive environment (27 mentions)**

A competitive environment was commonly mentioned as a barrier to collaboration. Many respondents felt the environment was driven by a lack of funding overall, with specific mentions of the competitive nature funding/grant arrangements and the lack of incentives or rewards for collaboration. Issues around protection of intellectual property and perceptions of parochial decision-making by state and territory governments were also mentioned.

### **Lack of appreciation (27 mentions)**

This theme covers underlying attitudes that were mentioned as barriers to collaboration including siloed work ethic, academic mentality, prioritisation, discriminatory biases, pride and ego.

### **Limited resource / time (21 mentions)**

Respondents in the industry sample observed that industry-research collaborations were time-consuming in themselves, and claimed that lack of resources on their part, especially in relation to time and staff, was one of the factors inhibiting collaboration with Australian researchers. Respondents in the industry sample also acknowledged that researchers had other priorities, including teaching and publishing, making it difficult for them to commit time to collaboration.

### **COVID-19 related (19 mentions)**

The impact of COVID-19 was cited by a number of respondents in the industry sample who noted that collaborations with Australian researchers were inhibited by factors including travel restrictions, lack of face-to-face meetings, and overall time delays.

### **Other mentions**

Ranging from 5-14 mentions, the following were also identified as other barriers for industry:

- Lack of communication / networking (14 mentions)
- Pressure not to collaborate beyond one's own institution (11 mentions)
- Lack of shared outcomes (9 mentions)
- Data sharing (9 mentions)
- Regulatory environment (7 mentions)
- IP / confidentiality (7 mentions)
- Bureaucracy (7 mentions)
- Geographical access barriers (6 mentions)
- Data access (6 mentions)
- Access to equipment / infrastructure (6 mentions)
- Privacy / security (5 mentions)
- Pressure to publish (5 mentions)
- Differing timeframes (5 mentions)

## **BARRIERS TO COLLABORATION WITH INDUSTRY (RESEARCHER VIEW)**

A total of 2,265 researchers completed the survey. Of these, 39% reported that they currently face or anticipate facing barriers when it comes to collaborating with industry professionals in Australia. Their key issues are outlined below:

### **Lack of funding (186 mentions)**

Like Industry, Researchers also cited 'lack of funding' as the biggest barrier to collaboration. On top of general mentions of lack of funding and support, researchers also mentioned the cost of university overheads, economic uncertainty, industry's financial pressures and the cost of research within this theme.

### **Lack of communication / networking (143 mentions)**

On top of general lack of visibility and interaction, researchers felt that there was difficulty in knowing how to go about collaborating with industry. For example, there were mentions of not knowing who to collaborate with, not knowing how to get in the door and a lack of organised forums/pathways. This theme was also mentioned by Industry as one of their top six barriers to collaboration. Within the Researcher sample, this theme was correlated with 'Lack of awareness', 'Lack of clarity on industry needs' and 'Lack of shared outcomes.'

### **Lack of shared outcomes (139 mentions)**

The theme of 'Lack of shared outcomes' included differing needs, goals, focus, values, motivations and drivers between academia and industry, causing a divide and what some researchers called a 'conflict of interest'. While this was a top three barrier for researchers, it was ranked 8th amongst the industry sample.

### **Differing timeframes (99 mentions)**

Linked to 'Lack of shared outcomes', researchers acknowledged that often industry requires research turned around at a much faster pace than academia can typically provide. There were similar mentions of slower response-times by academia, and slower internal processes. On the flip side, researchers also felt Industry had a short-term view of research, contributing to the barriers of engagement. Funding cycles were also a factor in timeframe misalignments.

### **Limited resource / time (81 mentions)**

Like industry, researchers commonly mentioned that academic-industry collaborations were inhibited by a lack of resources, including time. Some felt more resources and capacity are required in order to collaborate with industry. The 'Limited resource / time' theme was correlated with the theme around 'Differing timeframes' between industry and researchers.

### **Other mentions**

Ranging from 20-60 mentions, the following were also identified as other barriers for researchers to engage with industry:

- Lack of interest from industry (60 mentions)
- IP concerns / IP issues (53 mentions)
- Lack of awareness (44 mentions)
- Lack of appreciation (43 mentions)
- Bureaucracy (40 mentions)
- Lack of clarity on industry needs (38 mentions)
- Limited industry in research area (37 mentions)
- COVID related / border closures (34 mentions)
- Privacy / security (33 mentions)
- Data sharing (32 mentions)
- Coordination barriers (27 mentions)
- Pressure not to collaborate beyond one's own institution (25 mentions)
- Cannot meet industry demands / needs (24 mentions)
- No incentive for industry engagement (24 mentions)
- Access to equipment (21 mentions)

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What state are you located in?

Base: Industry Sample	Responses	
VIC	28%	87
NSW	21%	65
QLD	15%	46
WA	11%	35
SA	10%	32
ACT	8%	24
TAS	4%	14
NT	1%	3
Outside of Australia	2%	7
Prefer not to say	1%	3

Are you located in a...?

Base: Industry Sample	Responses	
Capital city	83%	260
Regional centre	11%	35
Rural or remote location	3%	10
Prefer not to say	1%	2
Other (please specify)	2%	6

Which of the following research areas most closely represents your area of expertise, or the area that you work with?

Base: Industry Sample	Responses	
Biomedical and clinical sciences	32%	102
Biological sciences	32%	100
Engineering	27%	84
Environmental sciences	25%	79
Earth sciences	24%	74
Agricultural, veterinary and food sciences	23%	71
Health sciences	23%	71
Physical sciences	22%	68
Chemical sciences	17%	54
Information and computing sciences	16%	51
Education	7%	23
Built environment and design	5%	17
Mathematical sciences	4%	14
Economics	4%	12
Human society	4%	12
History, heritage, and archaeology	3%	10
Indigenous studies	3%	9
Commerce, management, tourism, and services	2%	7
Language, communication, and culture	2%	6
Law and legal studies	2%	5
Psychology	1%	4
Creative arts and writing	1%	2
Philosophy and religious studies	0%	1
Other	9%	27

**Do you currently interact with or use Australia's existing NRI?**

	Responses	
Yes	62%	135
No	38%	82
Skipped		112

**What do you currently use Australia's NRI for?**

	Responses	
Expertise or advice	54%	65
Research resources/products	48%	58
Equipment/kit for my research	40%	48
Collected data for my research	26%	31
Help in translating our research	21%	25
Collected data for operational purposes	20%	24
Equipment/kit for operational purposes	19%	23
Help with managing, curating or archiving data	16%	19
Don't know / Not sure	1%	1

**What are your reasons for not using Australia's existing NRI? Please select all that apply.**

	Responses	
I did not know about it	43%	32
Don't know / Don't need to use it	32%	24
I could use Australia's NRI but another facility suits my needs better	16%	12
I would be interested in using Australia's existing NRI but it does not meet my needs	7%	5
I do not currently need to use it but have in the past	5%	4
I would like to use Australia's existing NRI but my merit access application was unsuccessful	3%	2
I would like to use Australia's existing NRI but cannot get access due to geographical location	1%	1
I would like to use Australia's existing NRI but the facility is at capacity	1%	1

# NRI MEETING INDUSTRY NEEDS

Do you feel the existing NRI meets your needs?

Base: Industry Sample	Responses	
Yes, it meets all my needs	17%	21
Yes, it meets most of my needs	32%	40
It meets some of my needs	44%	55
It meets little of my needs	5%	6
It meets none of my needs	0%	0
I do not have research needs	3%	4



# ENABLES RESEARCHER – INDUSTRY COLLABORATION

Do you currently face barriers, or anticipate facing barriers, when it comes to collaborating with researchers in Australia?

Base: Industry Sample	Responses	
Yes	42%	90
No	50%	107
Not applicable	9%	19

Do you currently face barriers, or anticipate facing barriers, when it comes to collaborating with industry professionals in Australia

Base: Researchers	Responses	
Yes	39%	606
No	43%	664
Not applicable	18%	284

Has NRI enabled outcomes in your industry that would not have been possible without it?

Base: Industry Sample	Responses	
Yes	42%	43
No	58%	60
Skipped		226

