

Call to Action based on Key Findings of the AMSI-MATRIX Research Investment Report 2024

Significant Lack of Investment in Mathematical Sciences Research in Australia

Critically Low Level of HERD Expenditure on Mathematical Sciences

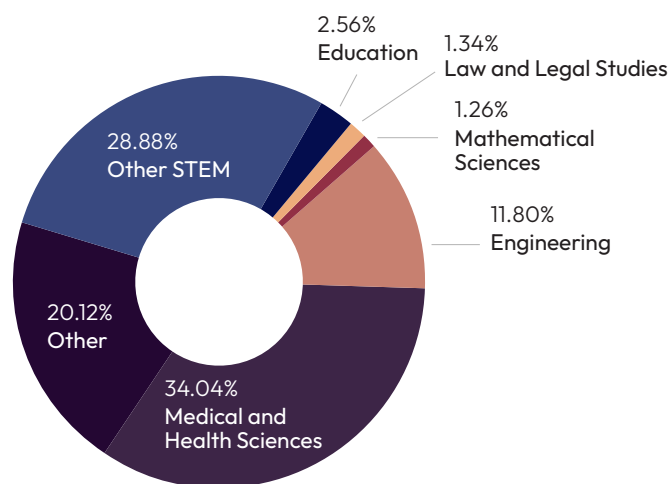


Figure 01 Percentage of Total HERD Expenditure by Field in 2022

Declining HERD Expenditure on Mathematical Sciences

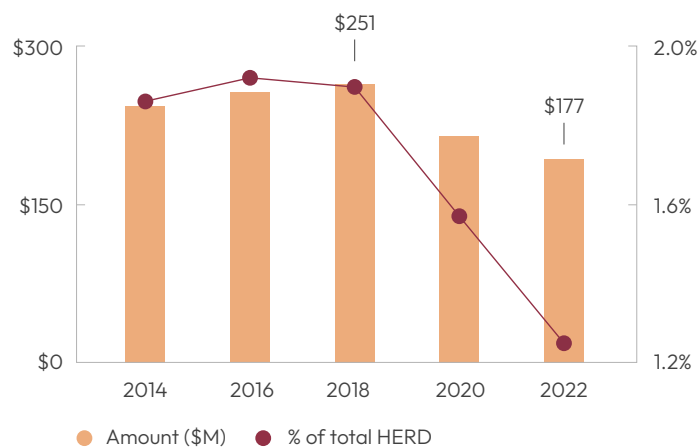


Figure 02 HERD Expenditure on Mathematical Sciences from 2014 - 2022 (\$M)

Key Findings:

- HERD expenditure on Mathematical Sciences (1.26%) is minimal compared to Medical and Health Sciences (34.04%), Engineering (11.80%), and other STEM fields (28.88%).
- Notably, HERD expenditure on Mathematical Sciences (\$177 million) was lower than on Law and Legal Studies (\$187 million) and Education (\$358 million), and only slightly higher than on Creative Arts and Writing (\$115 million).

Key Findings:

- The percentage of total HERD expenditure dropped from 1.85% during 2014-2018 to 1.26% in 2022.
- HERD expenditure on Mathematical Sciences has significantly declined, with a \$74.5 million reduction in real terms compared to 2018.

Excessive Focus on Applied and Translational Research

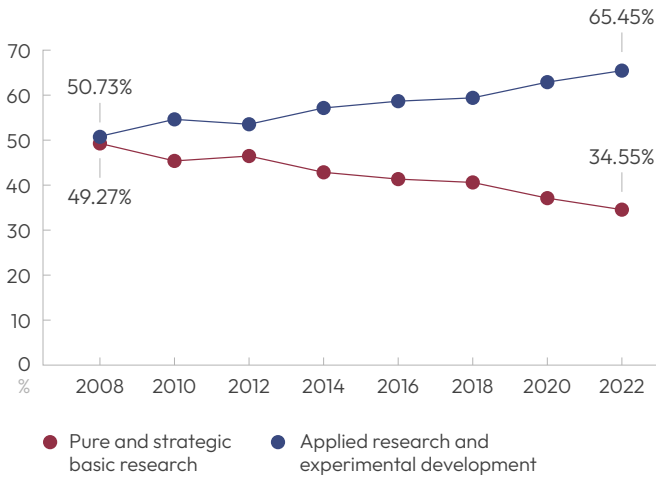
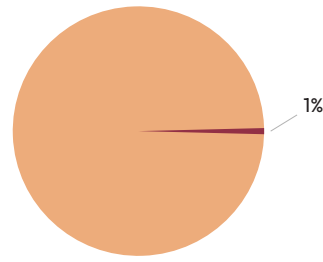


Figure 03 Percentage HERD Expenditure by Type of Activity 2008 – 2022 – All Fields of Research



On average, 1% of total funded STEM ARC Linkage Projects were allocated to projects with a primary FoR 49 code for mathematical sciences

Figure 04 STEM ARC Linkage Projects Funded from 2011 - 2022

Key Findings:

- In 2022, only one third of all university research was classified at the basic end, down from half in 2008.
- There has been a significant shift towards applied research driven by a focus on immediate applications and commercial outcomes at the expense of long-term knowledge creation and public benefit.
- ARC Linkage scheme is ineffective for supporting mathematical science research.



Call for Action:

1

Restore HERD Funding:

Universities to increase investment in mathematical sciences research and support discovery with significant long-term impact.

2

Support Pure and Basic Research:

Government to reinforce the importance of funding pure and basic research including ARC programs.

3

Commercialisation Goals:

Ensure that research translation and commercialisation objectives do not overshadow fundamental research priorities.

Transformative Impact

Mathematical sciences research lies at the heart of many modern innovations that reshape the world. The return on investment has never been higher.

The current decline of national investment in mathematical sciences research needs to be reversed to enhance career choices and develop new capacity, as well as enhance Australia's sovereign knowledge base.

Absence of Research Infrastructure Support for the Mathematical Sciences in Australia

ARC LIEF Scheme not well set up to support Mathematical Sciences Research Infrastructure

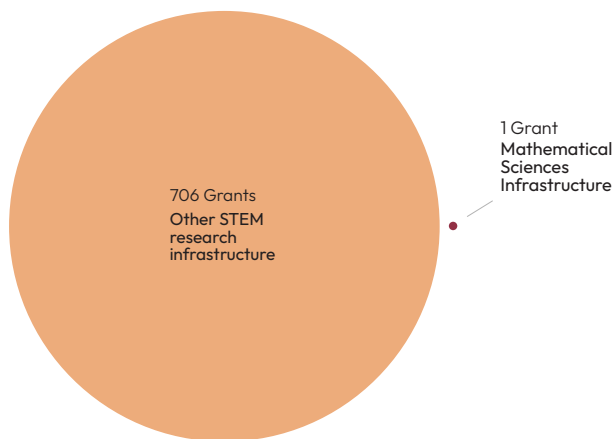


Figure 05 Number of ARC LIEF Research Projects Funded from 2011 - 2022



No Funding Allocated Through NCRIS for Mathematical Sciences

The recent MATRIX-AMSI report shows that NCRIS (National Collaborative Research Infrastructure Strategy) supports data management and computing in application domains but completely ignores mathematical sciences research, despite an anticipated \$4 billion investment between 2018 to 2029.

The 2021 National Research Infrastructure Roadmap remains completely silent about infrastructure needs for the mathematical sciences.

Key Findings:

- Between 2011 and 2022, only 1 grant was awarded to support mathematical sciences infrastructure through the ARC LIEF scheme, compared to 706 grants for other STEM fields.

Key Findings:

- No mathematical sciences projects funded through NCRIS despite a \$4 billion investment from 2018 to 2029.
- The 2021 National Research Infrastructure Roadmap does not address the research infrastructure needs for mathematical sciences.



Call for Action:

1

Support for Research Infrastructure:

Government and Universities to allocate dedicated resources to develop and maintain research infrastructure for mathematical sciences, including ARC LIEF scheme and NCRIS.

Transformative Impact

A national residential research institute is key research infrastructure and positions Australia as a focal point for research in the mathematical sciences, and offers:

- a vibrant, dedicated location for breakthrough research;
- the opportunity to import otherwise inaccessible IP from international visitors;
- increased opportunities for women, minority groups and students, especially from disadvantaged backgrounds;
- the opportunity to develop new, high value spin-offs and to develop industry collaborations; and
- confidence that products and services developed by industry partners will benefit from the best mathematical techniques available.