THE NATURE AND EXTENT OF UNIVERSITY ENGAGEMENT WITH INDIAN HIGHER EDUCATION INSTITUTIONS

Brigid Freeman
2017
OVERVIEW OF FINDINGS

This paper complements A Report on Australia’s Engagement with India’s Higher Education System by providing additional data and analysis regarding the nature and extent of university engagement. The report has been prepared by the Australia India Institute for the Commonwealth Department of Education and Training. The key findings presented are as follows:

1. Indian higher education institutions are interested in engaging with foreign higher education institutions in research-intensive (North America, UK, Europe, East Asia) and emerging research (Africa, Middle East and other Asian) regions. The extent and nature of government, system level and institutional engagement varies, spanning science diplomacy, academic and research collaboration, university association level commitments and formal institutional agreements. Bilateral engagement is supported by Government of India agreements with over 50 countries, university association-level commitments, and institutional agreements and collaborative ventures.

2. India’s higher education internationalisation agenda is reflected in government commitments and the Science, Technology and Innovation Policy 2013, while the new National Education Policy is yet to be finalised. The current regulatory environment supports academic collaborations under the University Grants Commission Promotion and Maintenance Standards of Academic Collaboration between Indian and Foreign Educational Institutions and All India Council for Technical Education Regulations for Entry and Operation of Foreign Universities Imparting Technical Education.

3. Interest in engaging with India is high. Foreign governments and higher education institutions invest intellectually and financially in their relationship with India’s higher education system. Investments include funding for collaborative research; faculty, professional staff and international student scholarships; faculty exchanges; market intelligence and research regarding the Indian higher education system; professional development for Indian institutional leaders and professional staff; and support for alumni networks. India’s outward facing efforts and engagements are also evident in their area studies, Asian studies and language programs. Various recognition schemes and cross-cultural training programs also celebrate and facilitate India’s growing international engagements.

4. The Indian government’s interest in visiting faculty is evidenced by the introduction of funding schemes such as the Global Initiative of Academic Networks (GIAN). International collaboration is also facilitated by the inclusion of foreign faculty as partner investigators in Indian government funding schemes available to academic staff at the Indian Institute of Science (IISc) and Indian Institutes of Technology (IITs) for collaborative research. This includes Uchhatar Avishkar Yojana (UAY) and the Impacting Research Innovation and Technology, referred to as the IMPRINT India Initiative.

5. Other than in a few leading institutions, institutional level plans and policies, staffing and international office structures are yet to be replicated throughout India’s higher education system, and this is particularly problematic given the...
complexity of India's higher education system. Indian higher education institutions are introducing more structures and policies to support international engagement. The recently launched Indian Network for Internationalisation of Education (INIE) should facilitate further developments.

6. The mutual recognition of qualifications represents an ongoing challenge for international student mobility, academic collaboration and graduate employability. The Government of India has committed to progressing this complex issue with Australia and competitor countries.

7. Australian universities are well placed to engage internationally as they already have high levels of co-authorship in international scientific journals. While Indian higher education institutions produce fewer such journal articles, the leading Indian higher education institutions represent notable exceptions and suggest that research activity growth can be expected. Indian higher education institutions publish more documents with faculty in competitor countries (United States, United Kingdom, Germany, South Korea, France, Japan) than Australia. Faculty at Australian universities will need to better position themselves and increase their exposure in India to secure collaborations with faculty in Indian higher education institutions. Such engagements may increasingly be multilateral (i.e., India, Australia, third country).

8. Australian universities are committed to engagement with foreign higher education institutions, and this is reflected in the large number of memorandums of understanding (MOUs) in place. The majority of these MOUs are with international partners in emerging China and research-intensive countries (United States, Japan, Germany, United Kingdom and France). MOUs with Asian higher education institutions reflect Australian university's interest in China's increasingly dominant contribution to global science, and the ongoing research-intensity of Japan. Australia’s engagement with India can be strengthened and this is anticipated given that growth in the number of agreements with Indian higher education institutions has been faster than that reported for any other country over the period 2003 to 2016.

9. Most Australian universities have formalised MOUs with Indian higher education institutions, with Deakin University and RMIT having the largest number of individual agreements. Australian university's engagement is concentrated in the National Capital Territory (NCT) of Delhi, Maharashtra, Tamil Nadu and Karnataka, where India's population and infrastructure are heavily concentrated. While a third are longstanding, two thirds were only established recently. Over one quarter of all MOUs are with India’s leading higher education institutions, including the Indian Institute of Science (IISc), Indian Institutes of Technology (IITs), Indian Institutes of Management (IIMs), and elite universities (e.g., University of Delhi, Jawaharlal Nehru University). As such, a surprisingly large proportion (three quarters) of Australian university's MOUs are with tier 2 and tier 3 specialist institutions, comprehensive universities, and other Indian higher education institutions.

10. MOUs between Australian universities and Indian higher education institutions vary with respect to their disciplinary coverage, from multi-disciplinary, to STEM disciplines (predominantly engineering and technology, information and
computing sciences, medical, health and biological sciences, other sciences),
social science disciplines (management, and law and legal studies) and the
humanities (communications and culture, creative arts).

11. There are several key differences between Australian universities and Indian
higher education institutions that can inform decision-making regarding
potential engagements. These differences relate to discipline mix; student
population; the proportion of postgraduate students; teaching, scholarship and
research roles; complexity; and the place of English.

12. Indian international student flows contribute significantly to Australia’s export
education market, while the flow of students into India from Australia remains
low. Recent shifts in Australia’s immigration policy will likely impact both
Australia’s export education market and opportunities for engagement with
India.

13. Australian university engagement with India in relation to transnational
education (TNE) is currently low, and this area can be expected to expand,
particularly as research training-based engagements progress. Expansion in
TNE joint doctoral training would appear to provide good opportunities for
Australian universities to engage with Indian higher education institutions. In
relation to other TNE opportunities (e.g., undergraduate and postgraduate
coursework programs), Australian universities will be positioned well for
strengthened engagement should the Government of India prioritise academic
collaborations with the top 200 universities globally.
Indian higher education institutions are interested in engaging with foreign higher education institutions in research-intensive (North America, UK, Europe, East Asia) and emerging research (Africa, Middle East and other Asian) regions. Government, system and institution level engagement is illustrated by government science diplomacy efforts, academic and research collaboration, university association level commitments and institutional MOUs.

**Variations in scale:** The scale of engagement with Indian higher education institutions varies, influenced by the number of:

- higher education institutions and faculty (e.g., the North American and Chinese higher education systems are comparatively large);
- academic engagements, including:
  - transnational education programs;
  - international students (e.g., the flow from India to the United States is the highest, whereas the flow to India is highest from developing countries);
- research collaborations and propensity for publication co-authorship (e.g., the United States, United Kingdom, Germany and China produce the largest numbers of collaborative research publications);
- partnerships with Indian companies (e.g., British Council MOUs with leading Indian businesses including members of the TATA group of companies, Wipro, Kotak Mahindra and Infosys);
- partnerships with industrial research and development laboratories such as the Indian Council of Scientific and Industrial Research Laboratories;
- Indian nationals having completed international study programs; and
- Indian diaspora (e.g., there is a large number of Indian IIT graduates in the Silicon Valley).

**Government science diplomacy:** Government science diplomacy provides a framework for institutional and industry engagement, and international student mobility. Bilateral government-to-government commitments are well illustrated by:

- dialogues (e.g., India-United States Higher Education Dialogue, Canada-India Partnership Summit and Japan-India Summit Meeting);
- strategic partnership agreements (e.g., South Korea-India Joint Statement for Expansion of Strategic Partnerships); and
- research collaboration agreements (e.g., Canada-India Science and Technology Agreement, 2005, South Korea-India’s Cooperation in Science & Technology, Outer Space and IT, 2014 and Japan’s Agreement on Cooperation in the field of Science and Technology, 1985).

In many instances these bilateral agreements represent an extension of government policy regarding the internationalisation of higher education (e.g., German *Strategy for the Internationalisation of Education, Science and Research*). In some instances, formal mechanisms are trilateral (e.g., Japan-Australia-India Trilateral Dialogue Senior Officials Meeting).

---

Government migration policy: Some competitor countries have established extended temporary residency and permanent residency migration pathways for Indian international students completing postgraduate programs. For example, the French government's ‘Autorisation provisoire de séjour’ provides a 12 month temporary residency permit for eligible foreign students. The German government's EU Blue Card enables eligible university graduates to remain in Germany (in the first instance, for four years, with pathways to permanent residency after 33 months).

Recognition of qualifications: There are a number of Indian authorities involved in matters relating to qualifications recognition, including the University Grants Commission, National Accreditation and Assessment Council, AICTE and National Board of Accreditation. In regulated industries, professional councils play a lead role including the Institute of Engineers, Indian Council for Agricultural Research, National Council for Teacher Education, Pharmacy Council of India, Medical Council of India and Bar Council of India. Each of these authorities and councils has some interest in the recognition of higher education qualifications achieved by Indian nationals through international education undertaken abroad. At system and professional council level, the recognition of qualifications represents an ongoing challenge for international student mobility, academic collaboration and graduate employability. Challenges relate to:

- recognition of courses with varying duration to India's undergraduate and masters degrees (i.e., three years and two years respectively, full time, in most instances);
- recognition of some forms of study undertaken by Indian international students abroad (e.g., pathways or foundation programs where credit transfer is gained towards an undergraduate degree);
- forms of certification required to attest to completion of degrees involving credit transfer from another higher education provider (e.g., amended transcript, Australian Higher Education Graduation Statement);
- requirements of Indian professional councils for professional degrees (i.e., engineering, medicine, pharmacy, nursing, law and architecture);
- recognition of various delivery modes (i.e., flexibly delivered programs);
- precedents in recognising differences between Australian and Indian post-secondary education systems (e.g., credit transfer towards higher level qualifications delivered by different providers);
- complexity of Indian and foreign government and institutional authorities with responsibility for recognition arrangements.

The Government of India has identified the issue of qualifications recognition as important. Some inputs for draft National Education Policy 2016 indicates that "the government will initiate a dialogue with the countries who have put in place a rigorous, robust and credible system of approval / recognition / accreditation / quality assurance of the HEIs and programmes of studies. An attempt will be made to form a group of such countries which would recognise in their respective countries all qualifications awarded by accredited higher education institutions in member States of this group". This reflects longstanding international discussions regarding reciprocal recognition arrangements that could underpin and facilitate increased student mobility into and out of India. The MOU agreed between India and Australia in 2015 acknowledges the need for "improving credit transfer

---

2 MHRD, 2016a, pp. 37-38.
arrangements and work towards qualifications recognition between Australia and India.\(^3\)

Recent developments, including the introduction of India’s National Skills Qualification Framework and extension to higher education qualifications\(^4\) will go some way to progressing international mutual recognition.

Competitor countries and professional accreditation bodies are seeking to progress the mutual recognition of qualifications.

- In some instances, structures have been established to progress this matter. For example, the UK-India Education and Research Initiative aims to "develop policies/framework to support mutual recognition and equivalence of learning and achievement [and the] development of joint doctoral and masters programs between India and the UK."\(^5\)

- In some instances bilateral trade agreements incorporate umbrella principles regarding mutual recognition of qualifications. For example, the Canada-EU Comprehensive Economic and Trade Agreement provides for the mutual recognition of licences and certifications (e.g., architecture).\(^6\)

- In at least some instances, agreements regarding education qualification recognition for the purpose of university admission have been negotiated under broader economic cooperation agreements (e.g., Comprehensive Economic Cooperation Agreement between the Republic of India and the Republic of Singapore).

- Some countries have broadly prioritised the mutual recognition of qualifications (e.g., China’s Guidelines on Works in Opening Up the Education Sector in the New Era).

- Some regulated professions have international accreditation schemes. For example, in relation to engineering education, ABET Inc., a non-profit United States organisation accredits university and college engineering programs, while in the United Kingdom, the Engineering Council accredits engineering programs.

**University association level commitments:** Indian university associations also have an interest in engaging with other systems globally. The Association of Indian Universities (AIU) has MOUs with university associations in Australia, the United Kingdom, Canada and Europe, including France and The Netherlands. MOUs have also been signed with the Foundation for International Cooperation in Higher Education, Taiwan, the Tertiary Education Commission, Mauritius and the German Rector’s Conference. These agreements commit to cooperation regarding the mutual recognition of qualifications, faculty and student exchanges, staff development, collaborative research and publication, and infrastructure sharing.

**Memorandums of Understanding:** At system level, the Ministry of Human Resource Development supports international collaboration and has signed Educational Exchange Programme (EEP) / MOUs with over 50 countries (Table 1).

---

\(^3\) Government of Australia and Government of India, 2015, p. 2.

\(^4\) Varghese, n.d.

\(^5\) British Council, n.d.

\(^6\) Boscariol, Glasgow & Potter, 2017.

\(^7\) See Marsh, 2017.
At the institutional level, many Indian higher education institutions are interested in international collaboration and have established MOUs with a number of foreign higher education institutions. Higher education institutions in research-intensive economies (e.g., the United States, United Kingdom, Germany, Japan and Canada) are reportedly favoured by Indian higher education institutions for international engagement. Indian management institutions are also interested in partners located in Brazil, China and South East Asia.8

Some elite foreign higher education institutions already have well-established or emerging relationships with Indian higher education institutions (e.g., Harvard, the University of Cambridge, MIT, the University of Tokyo, the University of Toronto, the University of Paris-Sud and the National University of Singapore). This is particularly the case with India’s leading institutes and universities, including the IISc, IITs, IIMs, JNU, the University of Delhi, the Central University of Hyderabad, the TATA Institute of Social Sciences (TISS) and Banaras Hindu University.

However, relationships more commonly involve second or third tier foreign higher education institutions from research-intensive economies and developing countries partnering with a range of Indian higher education institutions, including leading and specialist institutions, comprehensive universities, and second or third tier Indian institutions. In some instances, relationships have been established with Indian colleges. The British Council's reports on The Indian states (2014; 2016) provide numerous examples of such relationships.

**Investment in engagement:** Many foreign higher education institutions make an intellectual and financial investment in their relationship with the Indian higher education system, for example:

---

8 British Council, 2016.
- **Intellectual investment** through faculty exchanges, lectures (e.g., United Kingdom Science and Beyond lectures), seminars (e.g., British Council seminars with the National University of Educational Planning and Administration) and collaborative research and publication (see section below). Many foreign universities also have India centres dedicated to India studies and research (e.g., see the European Association of India Study Centres). Many of these intellectual investments are longstanding (e.g., 40 years of United States - India disease research and treatment into TB, HIV, rotavirus and non-communicable diseases).

- Funding for **collaborative research**, which may prioritise science, technology, engineering and mathematics (STEM) disciplines, focus specifically on the humanities, arts and social sciences (HASS) disciplines, or include interdisciplinary projects. Notable examples include:
  - North American funds (e.g., the US-India 21st Century Knowledge Initiative, the US-India Science and Technology Endowment Fund, the Canadian Science and Technology Partnerships Program, and the India-Canada Centre for Innovative Multidisciplinary Partnerships to Accelerate Community Transformation and Sustainability, Canada-India Research Centre for Excellence, and Canadian Shastri Partnership Seed Grant);
  - United Kingdom funds (e.g., the UK-Indian government’s Newton Bhabha Fund, and the UK India Educational and Research Initiative);
  - European schemes (e.g., the Indo-German Partnerships in Higher Education Programme and the Indo-Norwegian Cooperation Programme); and
  - Middle East schemes (e.g., the Indo-Israel Joint Research Programme).

- Funding for **faculty, staff and international student scholarships** (e.g., the United States Fulbright-Nehru scholarships for students, faculty and professional staff).

- Funding for **international student scholarships**, including:
  - government scholarships (e.g., the Japanese Monbukagakusho MEXT Scholarships, the Taiwanese Huaya Enrichment Scholarship program, the Chinese government graduate student scholarship, and the Czech Republic graduate student scholarships);
  - scholarships supporting international student movement to India (e.g., the Indian Council for Cultural Relations scholarships for foreign applicants, the Indian Scholarship Programme for Diaspora Children for foreign applicants, various European scholarship schemes such as those for Hungarian nationals and the Canadian Shastri Student Internship Project program); and
  - scholarships supporting the international movement of Indian nationals (e.g., the South Korean government scholarships).

- Funding for **faculty exchanges or early career researchers** to India (e.g., US India Study Program, American Institute of Indian Studies Junior Research Fellowship, and Ontario-Maharashtra-Goa Exchange Program) and from India (e.g., German Academic Exchange Service-DAAD scholarships).

- Funding for **market intelligence and research** regarding the Indian higher education system and regulatory frameworks (e.g., see the British Council’s reports, including *Transnational Education: A Guide for Creating Partnerships in India* and *The Indian States: Opportunities for International Higher Education Collaboration*).

- Funding for **professional development** of Indian higher education institution leaders and professional staff (e.g., USIEF annual Fulbright-Nehru International Education

---

9 See British Council, 2017.
Administrators seminars, US-India Higher Education Cooperation community college development in India project, Association of US Academic Programs in India administrator annual conferences, and the Canadian University Partnerships in Cooperation and Development).

- Support for alumni networks.

**Recognition of partnerships:** Examples of recognition and reward schemes include the UK-India Year of Education, Research and Innovation (YERI), held in 2016, the British Council science communication competition, FameLab India, the India-UK Excellence Awards administered by the British Council and Confederation of Indian Industry and the Trilateral Research in Partnership (TRIP) awards.

**Area studies, Asian studies and language studies:** India's outward facing engagements are also evident in their area studies, and foreign language programs. Area and Asian studies programs and foreign language studies enhance knowledge, understanding and connections between people in India and other countries. In India, the Maulana Abul Kalam Azad Institute of Asian Studies in Kolkata is an emerging centre of excellence with particular emphasis on the five former Soviet Union Central Asia republics, Turkey, Iran, Bangladesh and Afghanistan. Other Indian higher education institutions deliver area studies focused on Asia, the Middle East, Africa, Europe, Latin America, America and Canada. JNU, the University of Delhi, and the University of Hyderabad have centres of excellence in languages and linguistics. Many Indian higher education institutions offer foreign language programs, while foreign higher education institutions have Indian Studies departments and programs (e.g., Korean universities) and offer Indian languages (e.g., Hindi).

**Mutual understanding and cultural awareness:** There are numerous examples of initiatives that aim to increase mutual understanding and cultural awareness. For example, the US-India Educational Foundation (USIEF) promotes mutual understanding, while India Fortune coordinates familiarisation tours for Korean parliamentarians, officials and CEOs.

**ACADEMIC ENGAGEMENT**

**Models of engagement:** Internationalisation of higher education involves a number of models of academic (teaching and learning, and related) engagement, broadly including the following elements:

- **teaching:** teaching international students (inbound, and preparation for outbound), transnational education including twinning programs, dual and joint degree programs, franchising and validation, branch campuses, and flexible modes of delivery (including MOOCs), preparation for medium of instruction (English-language/other languages), program pathways, articulation and advanced standing;

- **curriculum:** internationalisation of curriculum (content, graduate attributes), cultural awareness/literacy, curriculum development (niche markets), languages;

- **quality and risk management:** course accreditation, assessment and certification, provider regulation and performance monitoring, student retention, strategies for students at-risk, student surveys, professional development (faculty and professional staff), sustainable funding models;
- **student experience:**
  - inbound international students (visa processing, orientation, first year experience, scholarships, work integrated learning/workplacement, internship, peer mentoring, employment opportunities and facilities, including library, information technology, residential accommodation and teaching infrastructure);
  - outbound international students (preparation, co-ordination);
  - student safety and security;
- **marketing:** brand, marketing and promotions; and
- **partnerships and relationships:** institutions, government (Austrade, embassies and consulates), alumni networks, industry.

**TRANSMATIONAL EDUCATION**

**Transnational education:** Transnational education involves delivering education where “the learners are located in a country different from the one where the awarding institution is based”. Transnational education encompasses twinning programs; dual and joint degree programs; franchising and validation; branch campuses; and flexible modes of delivery. The United States, United Kingdom, Canadian and Australian institutions dominate delivery of twinning programs. In 2012, over 100 foreign programs were offered in India, some outside the regulatory frameworks. Private Indian universities located in metropolitan areas are the most likely to partner with foreign higher education institutions for transnational education purposes, particularly wealthier areas such as Delhi and Mumbai. Demand for transnational education opportunities in India is projected to grow given the high levels of unmet demand for quality higher education throughout the country. However, such offerings will remain subject to price sensitivities, and constrained to some extent by India’s complex regulatory environment. Similarly, interest in the supply of transnational education in India is forecast to increase, “subject to continuing legislative uncertainties and artificial barriers to market entry”.

Australia’s leading partners for joint and double degrees are based in China, Singapore and Indonesia. A small number of Australian universities partner with Indian higher education institutions to deliver transnational education programs for students in India. These initiatives have all been established in the last decade (Table 2). Only two of these transnational education programs involved joint degrees (i.e., Monash University, and University of Sydney).

---

11 Chopra, 2016.
12 Redden, 2011; Dhar, Bhushan & Kemp, 2008.
Table 2: Transnational education involving Australian universities and Indian higher education institutions, 2016

<table>
<thead>
<tr>
<th>Australian university</th>
<th>Indian higher education institution</th>
<th>Program</th>
<th>First intake</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of New South Wales</td>
<td>LV Prasad Eye Institute (LVPEI)</td>
<td>Master of Community Eye Health</td>
<td>2009</td>
</tr>
<tr>
<td>RMIT University</td>
<td>IICT-Hyderabad</td>
<td>Doctor of Philosophy</td>
<td>2010</td>
</tr>
<tr>
<td>University of Sydney</td>
<td>TATA Institute of Social Sciences</td>
<td>PhD (Cotutelle) (joint degree)</td>
<td>2012</td>
</tr>
<tr>
<td>University of Southern Queensland</td>
<td>Centurion University of Technology and Management</td>
<td>Master of Business Administration, Master of Information Systems, Master of Project Management, Master of Professional Accounting</td>
<td>2012</td>
</tr>
<tr>
<td>University of Sydney</td>
<td>St Xavier’s</td>
<td>Off-shore Unit of Study</td>
<td>2015</td>
</tr>
</tbody>
</table>

Source: Derived from Universities Australia, 2017.

COLLABORATIVE RESEARCH AND CO-AUTHORED PUBLICATIONS

Collaborative research and co-authored publications arguably contribute both to increased quality illustrated by higher citation rates, and greater capacity to explore multidisciplinary grand challenges and wicked problems that extend beyond national borders. The level of collaborative research is a function of research system capability and size, and propensity for collaboration. Countries with the largest number of collaborative research articles include the United States, United Kingdom, Germany and China.17

Models of engagement: Models of engagement include:

- research students: supervision of inbound international higher degree by research students, joint PhD supervision, double badged PhD programs;
- building relationships: one- and two-way faculty exchanges, public lectures overseas;
- research: international research collaboration, international data collection and fieldwork; financial support (scholarships and grants);
- publishing: international journals, international co-authorship, peer review;
- networking: conference attendance, workshops.

Australian university faculty journal co-authorship: Australian universities are well placed to engage internationally, particularly with respect to co-authorship of publications in international scientific journals. The CWTS Leiden Ranking 2017 reports the number and proportion of STEM and HASS international journal publications from 25 Australian universities that involve international co-authorship. Over 50% of the publications from 16 Australian universities involved international collaboration in the period 2012-2015, with the University of Melbourne, University of Sydney and University of Queensland recording the highest numbers of publications. The Australian National University (59%), University of Western Australia (56%) and Swinburne University of Technology (55%) recorded the highest proportion of publications involving international co-authorship (Figure 1). The proportion of international scientific journal

publications involving industry is low (ranging from 2% to 5% for this sample of Australian universities).\(^{18}\)

**Figure 1: Number and proportion of Australian university international scientific journals (STEM/HASS) involving international collaboration (2012-2015)**

<table>
<thead>
<tr>
<th>University</th>
<th>P</th>
<th>P(int collab)</th>
<th>PP(int collab)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Univ Melbourne</td>
<td>24861</td>
<td>12529</td>
<td>50.4%</td>
</tr>
<tr>
<td>2. Univ Sydney</td>
<td>23053</td>
<td>12526</td>
<td>53.3%</td>
</tr>
<tr>
<td>3. Univ Queensland</td>
<td>22286</td>
<td>11346</td>
<td>50.9%</td>
</tr>
<tr>
<td>4. Monash Univ</td>
<td>19895</td>
<td>9832</td>
<td>49.4%</td>
</tr>
<tr>
<td>5. Univ New S Wales</td>
<td>18558</td>
<td>9316</td>
<td>50.2%</td>
</tr>
<tr>
<td>6. Univ Western Australia</td>
<td>13336</td>
<td>7465</td>
<td>56.0%</td>
</tr>
<tr>
<td>7. Univ Adelaide</td>
<td>10837</td>
<td>5463</td>
<td>50.4%</td>
</tr>
<tr>
<td>8. Australian Natl Univ</td>
<td>10729</td>
<td>6354</td>
<td>59.2%</td>
</tr>
<tr>
<td>9. Curtin Univ</td>
<td>6981</td>
<td>3824</td>
<td>54.8%</td>
</tr>
<tr>
<td>10. Griffith Univ</td>
<td>6576</td>
<td>3220</td>
<td>49.0%</td>
</tr>
<tr>
<td>11. Deakin Univ</td>
<td>6245</td>
<td>2907</td>
<td>47.5%</td>
</tr>
<tr>
<td>12. Queensland Univ Technol</td>
<td>6165</td>
<td>3096</td>
<td>50.2%</td>
</tr>
<tr>
<td>13. Univ Newcastle</td>
<td>5862</td>
<td>2771</td>
<td>47.3%</td>
</tr>
<tr>
<td>14. Macquarie Univ</td>
<td>5652</td>
<td>2914</td>
<td>51.6%</td>
</tr>
<tr>
<td>15. Univ Wollongong</td>
<td>5478</td>
<td>2750</td>
<td>50.4%</td>
</tr>
<tr>
<td>16. Univ S Australia</td>
<td>4953</td>
<td>2260</td>
<td>46.6%</td>
</tr>
<tr>
<td>17. Univ Tasmania</td>
<td>4672</td>
<td>2437</td>
<td>52.3%</td>
</tr>
<tr>
<td>18. Univ Technol - Sydney</td>
<td>4633</td>
<td>2491</td>
<td>53.8%</td>
</tr>
<tr>
<td>19. Flinders Univ</td>
<td>4570</td>
<td>2010</td>
<td>44.0%</td>
</tr>
<tr>
<td>20. James Cook Univ</td>
<td>4364</td>
<td>2250</td>
<td>51.6%</td>
</tr>
<tr>
<td>21. La Trobe Univ</td>
<td>4115</td>
<td>1594</td>
<td>38.7%</td>
</tr>
<tr>
<td>22. Univ Western Sydney</td>
<td>4022</td>
<td>2087</td>
<td>51.9%</td>
</tr>
<tr>
<td>23. RMIT Univ</td>
<td>4006</td>
<td>1926</td>
<td>48.1%</td>
</tr>
<tr>
<td>24. Swinburne Univ Technol</td>
<td>2709</td>
<td>1492</td>
<td>55.1%</td>
</tr>
<tr>
<td>25. Murdoch Univ</td>
<td>2215</td>
<td>1084</td>
<td>48.9%</td>
</tr>
</tbody>
</table>

Source: Leiden University, 2017.

**Indian higher education institution faculty journal co-authorship:** By contrast, Indian higher education institutions produce fewer international scientific journals, involving less co-authorship overall. There are, however, some notable exceptions. The IISc published 1,710 publications in the period 2012-2015, followed by the University of Delhi (1,358) and IIT Bombay (1,269). International co-authorship for these leading institutions ranges from one fifth (21%) to less than one third (32%). Higher education institutions with a high proportion of co-authorship include Aligarh Muslim University (40%) and Panjab University (39%). Most of the Indian higher education institutions considered in the Leiden Ranking report international collaboration for between 20-35% of their international scientific journals (Figure 2). The proportion of international scientific journal publications involving industry is low (ranging from less than 1% to 4% for this sample of Indian higher education institutions).\(^{19}\)

---

\(^{18}\) Leiden University, 2017.

\(^{19}\) Leiden University, 2017.
Indian higher education institution faculty publish more documents with competitor countries (United States, United Kingdom, Germany, South Korea, France and Japan) than Australia (Figure 3). Faculty at Australian universities will need to better position themselves to collaborate with faculty in Indian higher education institutions. This may involve working with multilateral groups (i.e., India, Australia, third country).
Business research collaboration and commercialisation: In addition to export education, which contributed $24 billion into Australia’s economy in the 2016 financial year, research commercialisation represents another avenue of engagement for Australian universities. Unlike competitor countries in East Asia, Europe and North America, industry investment in research and development in India and Australia remains comparatively low. This is illustrated by the low proportion of researchers based in business enterprises in both India (26%) and Australia (28%), compared with Korea (80%), Japan (73%), the United States (71%) and China (63%). At the same time, business enterprises in many other countries contribute a greater proportion to gross expenditure on research and development (GERD), including Japan (78%), Korea and China (75%) and Germany (66%).

Table 3: Total number of researchers (full time equivalent), and percentage based in business enterprise, selected countries

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>695,062</td>
<td>1,118,698</td>
<td>1,210,841</td>
<td>1,619,028</td>
<td>63%</td>
<td>75%</td>
</tr>
<tr>
<td>United States of America</td>
<td>983,359</td>
<td>1,101,105</td>
<td>1,198,777</td>
<td>1,351,903</td>
<td>71% *</td>
<td>64%</td>
</tr>
<tr>
<td>Japan</td>
<td>647,572</td>
<td>680,631</td>
<td>656,032</td>
<td>662,071</td>
<td>73%</td>
<td>78%</td>
</tr>
<tr>
<td>Germany</td>
<td>257,874</td>
<td>272,148</td>
<td>327,996</td>
<td>357,538</td>
<td>57%</td>
<td>66%*</td>
</tr>
<tr>
<td>Republic of Korea</td>
<td>108,370</td>
<td>179,812</td>
<td>264,118</td>
<td>356,447</td>
<td>80%</td>
<td>75%</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>170,554</td>
<td>248,599</td>
<td>256,585</td>
<td>289,330</td>
<td>38%</td>
<td>48%</td>
</tr>
<tr>
<td>India</td>
<td>115,936</td>
<td>154,827</td>
<td>192,819</td>
<td>282,994</td>
<td>26%</td>
<td>n/a</td>
</tr>
<tr>
<td>France</td>
<td>172,070</td>
<td>202,507</td>
<td>243,533</td>
<td>267,308</td>
<td>61%</td>
<td>56%*</td>
</tr>
<tr>
<td>Canada</td>
<td>107,900</td>
<td>136,700</td>
<td>158,660</td>
<td>159,190</td>
<td>56% *</td>
<td>45%*</td>
</tr>
<tr>
<td>Australia</td>
<td>66,001</td>
<td>--</td>
<td>100,414</td>
<td>--</td>
<td>28% &gt;</td>
<td>62%*</td>
</tr>
<tr>
<td>Netherlands</td>
<td>42,194</td>
<td>47,854</td>
<td>53,703</td>
<td>76,977</td>
<td>59%</td>
<td>49%</td>
</tr>
<tr>
<td>Denmark</td>
<td>--</td>
<td>28,179</td>
<td>37,435</td>
<td>42,425</td>
<td>58%</td>
<td>59%</td>
</tr>
<tr>
<td>Finland</td>
<td>34,847</td>
<td>39,582</td>
<td>41,425</td>
<td>37,516</td>
<td>57%</td>
<td>55%</td>
</tr>
</tbody>
</table>


Australian universities also have few linkages to India’s key industrial R&D agency, the Council of Scientific and Industrial Research (CSIR). There are, however, a number of examples of partnerships between Indian and Australian higher education institutions linking with industry. For example, in the engineering and technology sectors, the IIT Bombay Monash Research Academy is a joint venture through which PhD students and researchers from IIT Bombay and Monash University undertake research relevant to global enterprises, particularly those based in India and Australia. In the medical sciences sector, many Indian higher education institutions are engaged in global research, and partnerships with industry. For example, the MS Ramaiah College of Arts, Science and Commerce in Bangalore partners with Covidien, Convatec and the Himalaya

---

20 Hare, 2017.
21 India and Australia also have a comparatively small total number of researchers (full time equivalent), compared to countries such as China (1.6 million), the US (1.4m), Japan (662,071) and Germany (357,538) (UNESCO Institute for Statistics, n.d.).
22 Barlow, 2014.
Drug Company for medical science-related research and innovation. Increased education-industry engagement is encouraged at government level. For example, the Tamil Nadu government is seeking to facilitate institution-industry linkages to promote entrepreneurship and encourage increased joint research and development.

Some Indian higher education institutions are advanced in relation to research commercialisation (see the Indian Agricultural Research Institute and the Indian Institute of Chemical Biology). These institutions have identified opportunities in specialist areas such as agriculture and pharmaceutical sciences. Research commercialisation for Australian universities engaged with India will remain limited until Australian industry and universities in partnership become more involved in sustained research and development in India.

**INDIA: FRAMEWORK FOR INTERNATIONALISATION**

**Policy and regulation:** India’s regulatory environment governing higher education internationalisation is emerging as the new National Education Policy is developed. The new policy will replace predecessor governing documents including the first National Education Policy, issued in 1968, and the second issued in 1986 (and modified in 1992). Formal policy inputs, such as the Themes and Questions for Policy Consultation on Higher Education, and Some Inputs for Draft National Education Policy 2016 by the Ministry of Human Resource Development recommend increasing internationalisation through a range of policy initiatives. This includes inviting leading universities to establish footprints in India, recruiting foreign faculty, attracting research students, and promoting research, innovation and new knowledge in part through international collaborations. This approach to internationalisation aims to improve system quality and capacity, position India globally, and contribute to the country’s broader development objectives.

Prioritisation of collaborations with the top 200 universities positions many Australian universities well for strengthened collaboration. Depending on which international university rankings are used, many Australian universities would be considered to meet these criteria. For example, in the 2016 exercises, the Academic Ranking of World Universities (ARWU) ‘top 200’ includes all of the GO8 universities: University of Melbourne (40), University of Queensland (55), Australian National University (77), Monash University (79), University of Sydney (82), University of Western Australia (96), University of Adelaide (101-150), and University of New South Wales (101-150).

Internationalisation is also supported in the Ministry of Science and Technology’s Science, Technology and Innovation Policy 2013, which encourages participation in international consortia models, as well as interdisciplinary research. While internationalisation is broadly supported at government level, the Foreign Educational Institutions Bill (Regulation of Entry and Operations Bill 2010) stalled, limiting the capacity of foreign higher education institutions to establish stand-

---

alone, in-country campuses. However, academic collaborations can proceed under two other regulatory frameworks:

- Firstly, the University Grants Commission (UGC) issued the *Promotion and Maintenance of Standards of Academic Collaboration between Indian and Foreign Educational Institutions* regulations in 2016. UGC regulations apply to all Indian universities established by central and state/UT legislation.²⁶ These regulations facilitate twinning arrangements between foreign higher education institutions and leading Indian universities and colleges other than technical institutions. The regulations define a ‘twinning program’ as “a programme of study whereby students enrolled with an Indian Educational Institution may complete their programme of study partly in India, complying with relevant UGC regulations, and partly in the main campus of a Foreign Educational Institution in its home country in which it is primarily established or incorporated.”²⁷

- Secondly, the All India Council for Technical Education (AICTE) *Regulations for Entry and Operation of Foreign Universities Imparting Technical Education*²⁸ came into effect in 2003, and were subsequently amended. AICTE requirements are outlined on the AICTE webpage, *Collaboration & Partnerships between Indian and Foreign Universities / Institutions in the field of Technical Education, Research and Training*²⁹ and in the AICTE Approved Process Handbook. AICTE regulations apply to all Indian technical education institutions with subject areas including engineering and technology, architecture, management and business, applied arts and crafts, hotel management and catering, and computer applications. These regulations apply to academic collaborations between foreign higher education institutions and Indian technical institutions, including IITs.³⁰ They allow foreign higher education institutions to affiliate to an Indian university to deliver degrees collaboratively.³¹

The position of states/UTs with respect to internationalisation policy is increasingly important following recent reforms, particularly for government-funded higher education institutions. The National Mission for Higher Education, referred to as the Rashtriya Uchchatar Shiksha Abhiyan (RUSA) devolved higher education sector governance, regulation and funding from central to state/UT governments. While RUSA does not specifically relate to internationalisation, devolution should enable state/UT governments to allocate funds for internationalisation initiatives.³²

State/UT government policy regarding internationalisation of higher education varies in terms of level of formality, substance, and intent. For example, the Gujarat government is actively promoting internationalisation including Indian faculty exchange and development, recruitment of foreign faculty for short term programs, and collaborations to enhance the vocational-orientation of higher education to increase graduate employability. The Karnataka government, while not having explicit internationalisation policy, supports student exchange programs that facilitate employment in foreign countries, faculty development

---

²⁶ IITs and national institutes of importance (NITs) have been given degree awarding powers as institutions of national importance, rather than universities. IIMs, while not recognised as a university or awarded degree awarding powers, can confer postgraduate diplomas which have equivalency with a postgraduate degree (e.g., MBA).
²⁹ All India Council of Technical Education, 2014a.
³⁰ All India Council of Technical Education, 2014b.
focused on pedagogy best practice, and research collaborations focused on STEM including information technology, nanotechnology and medicine. The Andhra Pradesh government has prioritised “dual-degree and twinning programmes, communication and soft skills, engagement through MOOCs, student exchange programmes, faculty development and collaborative research, joint curriculum design [and] incubation centres.” In the National Capital Territory of Delhi, graduate employability and skill development have been prioritised, and plans developed to establish education-industry knowledge hubs housing a Science and Technology Park.

**India Rankings:** The National Institutional Ranking Framework (NIRF) administered by the Ministry of Human Resource Development, and resulting India Rankings signal potential Indian partner higher education institutions to foreign parties. This is particularly important given the absence of Indian institutions currently from the world university rankings (e.g., ARWU, Times Higher Education, QS world university rankings).

**Financial support:** Some Indian government funding schemes provide for collaboration with foreign researchers and industry, for example:

- the Uchhatar Avishkar Yojana (UAY) scheme for eligible IITs is industry oriented and promotes manufacturing and design industry innovation. International collaborators can participate in UAY funded projects where they partner with faculty from eligible IITs.
- the Impacting Research Innovation and Technology (IMPRINT India Initiative) supports higher education research in the IISc and IITs in identified STEM priority areas. International collaborators can participate in IMPRINT funded projects where they partner with faculty from the IISc and eligible IITs.
- the Global Initiative of Academic Networks (GIAN) supports faculty from foreign higher education institutions visiting to teach in Indian higher education institutions including the IISc, IITs, IIMs, central universities, Indian Institutes of Science and Research (IISERs) and National Institutes of Technology (NITs).

**Institutional international structures, formal instruments and staffing:**

Institutional elements supportive of internationalisation include structures (e.g., international committees, international offices), formal instruments (e.g., policies and plans, memorandums of understanding, workload planning models) and staffing (e.g., responsible senior faculty; professional staff; international offices; foreign faculty recruitment and support; faculty exchange). In some instances institutional internationalisation endeavours are supported by state government structures. For example, the Tamil Nadu State Council for Higher Education (TANSCHE) International Relations Centre aims to facilitate engagement with foreign higher education institutions.

While India’s higher education system draws on British traditions and has a history of outward international student mobility, at the institutional level internationalisation represents a relatively recent strategic objective. Institutional level plans and policies, staffing and international office structures are yet to be

---

replicated throughout India’s higher education system. The British Council found
that “most Indian [higher education institutions] do not have international offices,
an internationalisation strategy or resources to back plans”, recommending that
“It would be useful in the long run for countries interested in engaging with Indian
institutions to offer some support to get [Indian higher education institution’s]
systems, processes and skilled human in place for internationalisation”.

The recently launched Indian Network for Internationalisation of Education
(INIE) should help build institutional internationalisation capacity in Indian
higher education institutions. Some states (e.g., Maharashtra) have revised public
university legislation to oblige state universities to establish Deans responsible for
international linkages. Some leading Indian higher education institutions have
made an institutional commitment to internationalisation and established
international offices (e.g., IISc, various IITs, TISS and some universities such as
Bangalore University and Symbiosis International University). Increasingly,
international offices will provide a focal point for:

- foreign faculty seeking to undertake exchanges;
- foreign higher education institutions seeking to establish MOUs to partner for teaching
  and learning/academic, research training and research collaborations; and
- inbound international students including short-term programs such as summer
  schools, and undergraduate/postgraduate programs.

Private higher education institutions, frequently less risk adverse and having
higher levels of institutional autonomy, may more actively pursue international
engagements than government central and state institutions.

Access to Indian academic offerings: India’s higher education programs are
becoming increasingly accessible internationally with the introduction of open
access courses (e.g., SWAYAM platform for Indian massive open online courses, or
MOOCs), the work of the Indira Gandhi National Open University (IGNOU)
Overseas Study Centres and the Pan African E-Network.

Associations: India’s associations supporting various elements of
internationalisation play a role in encouraging this agenda. For example, India’s
national chapter of the International Association for the Exchange of Students for
Technical Experience (IAESTE), based at Manipal University, encourages
international student exchange for technical work experience.

AUSTRALIAN UNIVERSITIES’ GLOBAL ENGAGEMENT

Australian universities increasingly international: Internationalisation of higher
education in Australian universities is reflected in the growing number of formal
institution-to-institution agreements reached with international partners. These
agreements govern and facilitate internationalisation initiatives including student
and staff exchanges, study abroad arrangements, and teaching and research
collaborations. Importantly, data regarding these agreements is only indicative of
internationalisation activity as recently approved, aspirational or lapsed

37 British Council, 2016, p. 70.
agreements overstate effort, while formal agreements understate effort as they fail to capture existing people-to-people links.

According to the Universities Australia (UA) International Links Data Survey, Australian universities had 9,171 agreements with international partners in 2016. The majority of these international partners were located in rapidly emerging China (15%) and research-intensive countries including the United States (11%), Japan (6%), Germany (6%), the United Kingdom (6%), and France (5%). Australian universities that have most actively pursued internationalisation through formal agreements with foreign partners in 2016 include:

- half of the GO8 universities:
  - Sydney University: over 700;
  - the Australian National University: 300-400;
  - the University of New South Wales: 300-400; and
  - Monash University: 300-400;
- a majority of the five Australian Technology Network (ATN) universities:
  - RMIT University: 400-500;
  - Queensland University of Technology: 400-500; and
  - the University of Technology Sydney: 300-400;
- one Innovative Research University (IRU) (Griffith University: 400-500); and
- one non-aligned university (Macquarie University: 300-400).

Australian university’s engagement with Asia, illustrated by the number of formal agreements in 2016, has concentrated on China (1,237 agreements) and Japan (568) rather than India (341). This reflects Australian university's interest in China’s increasingly dominant contribution to global science, and the ongoing research-intensity of Japan's higher education system.

AUSTRALIAN UNIVERSITIES’ ENGAGEMENT WITH INDIA

Engagement with Indian higher education institutions: Most Australian universities (33) have formalised MOUs with Indian higher education institutions. In 2016, the number of MOUs reached 341. Growth in the number of agreements with Indian higher education institutions has been faster than that reported for any other country over the period 2003 to 2016, albeit from a low base. Deakin University (39 agreements) and RMIT (36) were clear leaders, with nearly twice as many MOUs with Indian higher education institutions as other Australian universities. The University of Western Australia, Sydney University, Swinburne University and Queensland University of Technology were also well represented numerically in 2016 (Figure 4).

---

39 This total (9,171) includes 8,641 active agreements (Universities Australia, 2016a, p. 3).
40 Universities Australia, 2016a, p. 4.
41 Universities Australia, 2013.
42 Universities Australia, 2016a, p. 11.
43 In addition to formal MOUs between Australian universities and Indian higher education institutions, the Department of Education and Training has identified 454 collaborations more broadly involving Australian universities and Indian partners (Department of Education and Training, 2016a).
44 Universities Australia, 2016b.
Geographical distribution: While India’s higher education sector is exceptionally large and institutions are widely disbursed, Australia’s higher education engagement is geographically concentrated in the National Capital Territory (NCT) of Delhi, the western state of Maharashtra, and the southern Indian states of Tamil Nadu and Karnataka. These states accommodate India’s largest tier 1 cities (i.e., Delhi, Mumbai, Chennai and Bangalore respectively), and are home to large populations and concentrations of leading and specialist higher education institutions. These states also have comparatively large enrolments in higher education, and large numbers of universities and colleges accredited by the National Assessment and Accreditation Council (NAAC).\textsuperscript{45} Within these states, Australian universities have a number of MOUs with the following Indian higher education institutions (Table 4).

\textsuperscript{45} British Council, 2014.
### Table 4: Location of leading Indian partner institutions in the NCT, Maharashtra, Tamil Nadu and Karnataka, 2016

<table>
<thead>
<tr>
<th>State/Union Territory</th>
<th>Indian higher education institution</th>
<th>Enrolment in higher education (m)</th>
<th>Number of universities and colleges accredited A by NAAC / total number of HE institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maharashtra</td>
<td>IIT Bombay</td>
<td>3.4</td>
<td>216 / 4,703</td>
</tr>
<tr>
<td></td>
<td>Narsee Monjee Institute of Management Studies (NMIMS)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Symbiosis International University</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TATA Institute of Fundamental Science</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TATA Institute of Social Sciences</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>University of Mumbai</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tamil Nadu</td>
<td>Anna University</td>
<td>3.2</td>
<td>166 / 2,555</td>
</tr>
<tr>
<td></td>
<td>Christian Medical College and Hospital</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IIT Madras</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PSG Institutions (including PSG College of Technology)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sri Ramaswamy Memorial (SRM)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>University of Mysore</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vellore Institute of Technology (VIT) University</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Karnataka</td>
<td>Indian Institute of Management Bangalore</td>
<td></td>
<td>128 / 3,244</td>
</tr>
<tr>
<td></td>
<td>Indian Institute of Science (IISc)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Manipal University</td>
<td></td>
<td></td>
</tr>
<tr>
<td>National Capital</td>
<td>Amity University (in NOIDA)</td>
<td>0.8</td>
<td>10 / 212</td>
</tr>
<tr>
<td>Territory of Delhi</td>
<td>IIT Delhi</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Jawaharlal Nehru University</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>TERI University</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>University of Delhi</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Data derived from Universities Australia, 2017; British Council, 2014.

The highest number of MOUs between Australian universities and Indian higher education institutions is with the IIT Madras (13), JNU (12), Manipal University (11), Vellore Institute of Technology (VIT) University (10), the IISc (8) and Anna University (8).

**Year of agreement:** Two thirds (67%) of active MOUs between Australian universities and Indian higher education institutions were signed in the period 2011-2016 (Figure 5). Given the importance of partnership longevity with management and faculty in Indian higher education institutions, those Australian universities that have been actively engaged for some time will have a distinct advantage.
Figure 5: Data of active MOUs between Australian universities and Indian higher education institutions (n=336)


**Engagement with leading institutions:** Over one quarter (28%) of the MOUs in 2016 between Australian universities and Indian higher education institutions are with the IISc, IITs, IIMs and select leading higher education institutions identified below. India’s leading higher education institutions are likely to be interested in engaging with Australian and other foreign institutions in programs involving joint PhD supervision and faculty exchanges (e.g., Chair professorships or fellowships).46

**Indian Institute of Science and Indian Institutes of Technology:** India’s leading institutes, the IISc and the IITs are globally recognised for their research output and international collaborations.47 These institutes also have well-established connections with industry. Only 20% of all Australian universities are formally connected through MOUs with India’s leading institute, the IISc. This includes five GO8 universities (i.e., the University of Melbourne, the University of Queensland, the University of Sydney, the University of Western Australia and UNSW), as well as Deakin University, the University of South Australia and the University of Technology Sydney. These MOUs, half of which were signed in 2012 or later, largely concentrate on academic/research collaboration.48

More Australian universities are engaged with IITs, with nearly half (19) having at least one MOU with IITs in Bombay, Chennai, Delhi, Guwahati, Hyderabad, Indore, Kanpur, Kharagpur, Madras, Mumbai, Roorkee and Ropar. This includes seven GO8 universities (i.e., the Australian National University, the University of Melbourne, the University of Queensland, the University of Sydney, the University of Western Australia, UNSW and Monash) and all five Australian

---

48 Universities Australia, 2017.
Technology Network (ATN) universities (i.e., Curtin University, the University of South Australia, RMIT University, the University of Technology Sydney and Queensland University of Technology). In addition, seven non-affiliated universities have MOUs with IITs (i.e., Charles Darwin University, Deakin University, La Trobe University, Macquarie University, Swinburne University of Technology, the University of Wollongong and Western Sydney University). These MOUs concentrate on academic/research collaboration, and also seek to facilitate staff and student exchanges. Two thirds of these MOUs were signed in 2012 or later.49

**Indian Institutes of Management:** The IIMs, most particularly the longstanding ones in Ahmedabad, Bangalore and Lucknow, are recognised as elite management higher education institutions. At least six Australian universities have MOUs with IIMs in Ahmedabad, Bangalore, Kolkata and Indore, including four GO8 members (i.e., the Australian National University, the University of Melbourne, the University of Sydney and the University of Queensland), Deakin University and Queensland University of Technology. These MOUs concentrate on academic/research collaboration and student exchanges. All but one of these MOUs were signed in 2012 or later.50

**Other leading Indian higher education institutions:** Other Indian universities are recognised globally for specialist disciplinary strengths. For example, the University of Delhi, JNU, Jadavpur University and the Central University of Hyderabad have recognised strengths in the humanities51 (but Australian universities are not linked to all of these institutions). The University of Delhi, JNU52 and the Tata Institute of Social Sciences (TISS) have recognised strengths in the social sciences. India’s first three universities following the hybrid British model (i.e., Bombay, Calcutta and Madras) also have international reputations. At the college level, well established, exemplar colleges include Sri Ram College of Commerce (SRCC), Lady Shri Ram College, St. Stephen's College Delhi, Jai Hind College Mumbai, and St Xavier's College Mumbai. Again, Australian universities do not have formal connections with all of these institutions. In addition to the institutions already identified, the NIRF India Rankings 2017 highlight Banaras Hindu University, the JNU Centre for Advanced Scientific Research and Anna University.53

---

49 Universities Australia, 2017.
50 Universities Australia, 2017.
51 India Foundation for the Arts, Bangalore, 2010; Quacquarelli Symonds Limited, 2017.
Table 5: Australian universities with MOUs with other leading Indian higher education institutions, 2016

<table>
<thead>
<tr>
<th>Indian higher education institutions</th>
<th>Australian universities with MOUs with these Indian higher education institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jawaharlal Nehru University</td>
<td>University of Sydney, Australian National University, Curtin University, Monash University, University of Adelaide, University of Melbourne, University of Queensland, University of South Australia, University of Technology Sydney, UNSW, University of Sydney, University of Western Australia</td>
</tr>
<tr>
<td>Anna University</td>
<td>Curtin University, Macquarie University, Swinburne University, University of Sydney, University of Western Australia, University of South Australia, University of Technology Sydney, UNSW</td>
</tr>
<tr>
<td>University of Calcutta</td>
<td>Queensland University of Technology, University of Western Australia, University of Wollongong, Western Sydney University</td>
</tr>
<tr>
<td>University of Madras</td>
<td>Australian National University, RMIT University, University of South Australia,</td>
</tr>
<tr>
<td>TATA Institute of Social Sciences</td>
<td>University of Sydney, University of Technology Sydney</td>
</tr>
<tr>
<td>University of Bombay (Mumbai)</td>
<td>Deakin University, University of Western Australia, UNSW</td>
</tr>
<tr>
<td>University of Delhi</td>
<td>University of Melbourne, UNSW, University of Queensland</td>
</tr>
<tr>
<td>Banaras Hindu University</td>
<td>Deakin University</td>
</tr>
<tr>
<td>Lady Shri Ram College</td>
<td>La Trobe University</td>
</tr>
<tr>
<td>St Stephens College Delhi</td>
<td>University of Melbourne</td>
</tr>
<tr>
<td>St Xavier's College Mumbai</td>
<td>Western Sydney University</td>
</tr>
<tr>
<td>Central University of Hyderabad</td>
<td>-</td>
</tr>
<tr>
<td>Jai Hind College Mumbai</td>
<td>-</td>
</tr>
<tr>
<td>JNU Centre for Advanced Scientific Research</td>
<td>-</td>
</tr>
<tr>
<td>Sri Ram College of Commerce</td>
<td>-</td>
</tr>
</tbody>
</table>

**DISCIPLINARY FOCUS OF COLLABORATIONS WITH INDIAN HIGHER EDUCATION INSTITUTIONS**

**India’s research strengths:** Partnerships with Indian higher education institutions recognise India’s research strengths in the STEM disciplines, notably medicine (232,767 research documents in 2015), engineering (215,550), chemistry (176,897), physics and astronomy (169,208) and materials science (150,208).\(^\text{54}\) While these disciplines have a reasonably high level of research output, they generally involve a low level of international collaboration.

Indian diaspora actively lead technology development, founding over 15% of Silicon Valley startups, and developing innovations such as the Pentium chip, fiber optics and noise cancelling headphones.\textsuperscript{55} India also has capacity in disciplines traditionally less visible through bibliometrics, including social sciences (31,185 documents), business, management and accounting (18,736), and arts and humanities (7,355).\textsuperscript{56} Many other Indian higher education institutions have niche areas of specialisation that represent the foundation for mutually productive collaborations.

Disciplines with the highest proportion of international collaboration include nursing (35%), psychology (32%), earth and planetary sciences (31%) and physics and astronomy (26%) (Table 6).

\textsuperscript{55} The White House, 2017.

\textsuperscript{56} SCImago Jounal & Country Rank, 2016.

---

**Table 6: Number of internationally indexed research publications (2015), and proportion involving international collaboration (2000-2015), India**

<table>
<thead>
<tr>
<th>Subject area</th>
<th>Number of documents (2015)</th>
<th>Proportion involving international collaboration 2000</th>
<th>Proportion involving international collaboration 2015</th>
<th>Increase (+) or decrease (-)</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEM</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medicine</td>
<td>232,767</td>
<td>11%</td>
<td>18%</td>
<td>+</td>
</tr>
<tr>
<td>Engineering</td>
<td>215,550</td>
<td>14%</td>
<td>12%</td>
<td>-</td>
</tr>
<tr>
<td>Chemistry</td>
<td>176,897</td>
<td>13%</td>
<td>21%</td>
<td>+</td>
</tr>
<tr>
<td>Physics and astronomy</td>
<td>169,208</td>
<td>25%</td>
<td>26%</td>
<td>+</td>
</tr>
<tr>
<td>Materials science</td>
<td>150,208</td>
<td>16%</td>
<td>21%</td>
<td>+</td>
</tr>
<tr>
<td>Biochemistry, genetics and molecular biology</td>
<td>142,441</td>
<td>17%</td>
<td>18%</td>
<td>+</td>
</tr>
<tr>
<td>Computer science</td>
<td>122,005</td>
<td>21%</td>
<td>13%</td>
<td>-</td>
</tr>
<tr>
<td>Agricultural and biological sciences</td>
<td>109,949</td>
<td>10%</td>
<td>19%</td>
<td>+</td>
</tr>
<tr>
<td>Pharmacology, toxicology and pharmaceutics</td>
<td>99,301</td>
<td>6%</td>
<td>10%</td>
<td>+</td>
</tr>
<tr>
<td>Chemical engineering</td>
<td>71,796</td>
<td>18%</td>
<td>18%</td>
<td>no change</td>
</tr>
<tr>
<td>Environmental science</td>
<td>71,218</td>
<td>11%</td>
<td>19%</td>
<td>+</td>
</tr>
<tr>
<td>Mathematics</td>
<td>64,615</td>
<td>23%</td>
<td>22%</td>
<td>-</td>
</tr>
<tr>
<td>Earth and planetary sciences</td>
<td>46,378</td>
<td>27%</td>
<td>31%</td>
<td>+</td>
</tr>
<tr>
<td>Energy</td>
<td>33,146</td>
<td>27%</td>
<td>16%</td>
<td>-</td>
</tr>
<tr>
<td>Immunology and microbiology</td>
<td>32,817</td>
<td>20%</td>
<td>25%</td>
<td>+</td>
</tr>
<tr>
<td>Veterinary</td>
<td>20,444</td>
<td>11%</td>
<td>10%</td>
<td>-</td>
</tr>
<tr>
<td>Neuroscience</td>
<td>12,169</td>
<td>15%</td>
<td>22%</td>
<td>+</td>
</tr>
<tr>
<td>Dentistry</td>
<td>8,105</td>
<td>11%</td>
<td>10%</td>
<td>-</td>
</tr>
<tr>
<td>Health professions</td>
<td>4,915</td>
<td>13%</td>
<td>26%</td>
<td>+</td>
</tr>
<tr>
<td>Nursing</td>
<td>4,216</td>
<td>11%</td>
<td>35%</td>
<td>+</td>
</tr>
<tr>
<td>SOCIAL SCIENCE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social sciences</td>
<td>31,185</td>
<td>13%</td>
<td>17%</td>
<td>+</td>
</tr>
<tr>
<td>Business, management and accounting</td>
<td>18,736</td>
<td>8%</td>
<td>16%</td>
<td>+</td>
</tr>
<tr>
<td>Decision sciences</td>
<td>8,733</td>
<td>31%</td>
<td>19%</td>
<td>-</td>
</tr>
<tr>
<td>Economics, econometrics and finance</td>
<td>9,556</td>
<td>21%</td>
<td>16%</td>
<td></td>
</tr>
<tr>
<td>Psychology</td>
<td>3,332</td>
<td>26%</td>
<td>32%</td>
<td>+</td>
</tr>
<tr>
<td>VISUAL AND PERFORMING ARTS AND HUMANITIES</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arts and humanities</td>
<td>7,355</td>
<td>12%</td>
<td>20%</td>
<td>+</td>
</tr>
<tr>
<td>OTHER</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multidisciplinary</td>
<td>21,089</td>
<td>9%</td>
<td>12%</td>
<td>+</td>
</tr>
<tr>
<td>ALL SUBJECT AREAS</td>
<td>1,140,717</td>
<td>15%</td>
<td>16%</td>
<td>+</td>
</tr>
</tbody>
</table>

Source: Based on SCImago Jounal & Country Rank, 2016.
Disciplinary coverage: There is considerable variation with respect to the disciplinary coverage of agreements between Australian universities and Indian higher education institutions. The Universities Australia links data and Commonwealth Department of Education and Training Higher Education Collaboration Register together provide a comprehensive snapshot of formal MOUs and other agreements between Australian universities, Indian higher education institutions and collaborating industry partners.57

Many agreements span multiple disciplines (i.e., STEM, HASS); however, this may refer to many STEM disciplines, many HASS disciplines, or both STEM and HASS disciplines. Notable Indian higher education institutions with agreements with Australian universities spanning multiple disciplines include the IISc, various IITs (including Bombay, Chennai, Delhi, Kharagpur, Kanpur and Madras) and universities (e.g., Anna University, Manipal University, JNU, IGNOU, Delhi, Hyderabad, Calcutta, Mumbai and Madras). In a few instances, collaborations spanning multiple disciplines have been established with women’s universities and colleges (e.g., Lady Sri Ram College for Women, Shreemati Nathibai Damodar Thackersey Women's University). In addition to these agreements spanning multiple disciplines, many agreements are discipline specific (Table 7).

Table 7: Disciplinary focus of agreements

<table>
<thead>
<tr>
<th>Disciplinary focus of collaborations</th>
<th>Prominent Indian higher education institutions and others with agreements with Australian universities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple disciplines</td>
<td>IISc; IITs (including Bombay, Chennai, Delhi, Kharagpur, Kanpur, Madras); Anna University; Manipal University; JNU; IGNOU, other leading universities (Delhi, Hyderabad, Calcutta, Mumbai, Madras).</td>
</tr>
<tr>
<td>Engineering and technology</td>
<td>Specialist engineering and technology universities, institutes and companies such as the IISc and IITs, TATA Institute of Fundamental Research, The Energy and Resources Institute (TERI) University, Vellore Institute of Technology (VIT) University, the Indian School of Mines; and companies (e.g., Bharat Forge).</td>
</tr>
<tr>
<td>Information and computing sciences</td>
<td>IITs; TATA Institute of Fundamental Research; IT-specific companies, universities and institutions; and comprehensive universities.</td>
</tr>
<tr>
<td>Medical, health and biological sciences</td>
<td>Indian health authorities; Indian Council for Medical Research; medical universities and colleges (e.g., Jagadguru Sri Shivarathreeshwara University); centres; hospitals; and medical science and pharmaceutical companies (e.g., Biocon).</td>
</tr>
<tr>
<td>Physical, chemical, earth and environmental sciences</td>
<td>IISc, TATA Institute of Fundamental Research, national science centres and science institutes (e.g., National Centre for Radio Astrophysics), and comprehensive universities (e.g., Ahmedabad University)</td>
</tr>
<tr>
<td>Agricultural sciences</td>
<td>Agricultural research institutes (e.g., Indian Agricultural Research Institute), agricultural universities (e.g., Tamil Nadu Agricultural University) and comprehensive universities (e.g., Bangalore University, Jadavpur University Kolkata).</td>
</tr>
<tr>
<td>Management, and law and legal studies</td>
<td>Law universities and institutes (e.g., National Academy of Legal Studies and Research, NALSAR University); management institutes (e.g., IIMs including Bangalore, Calcutta, Ahmedabad; Indian School of Business); and comprehensive universities and other higher education institutions (e.g., Symbiosis International University).</td>
</tr>
<tr>
<td>Communications and culture</td>
<td>Languages, film, media and television institutes (e.g., Whistling Woods International Mumbai).</td>
</tr>
<tr>
<td>Other</td>
<td>National Institute of Design, Rajagiri International School for Education and Research (RISER), TATA Institute of Social Sciences.</td>
</tr>
</tbody>
</table>


57 Department of Education and Training, 2016a.
STEM:
Apart from agreements that span multiple disciplines, most agreements between Australian universities and Indian higher education institutions focus on STEM disciplines, including engineering; technology; information and computing sciences; physical, chemical, earth and environmental sciences; agricultural sciences; medical and health sciences, and biological sciences, as follows:

Engineering and technology: Many Australian universities have engineering and technology-focused collaborations with the IISc, IITs and Indian universities with active internationalisation agendas, such as Vellore Institute of Technology (VIT) University. Some Australian universities also have engineering and technology-based collaborations with Indian engineering authorities and companies (e.g., National Thermal Power Corporation, Thejo Engineering, Scigenom Labs, Bharat Forge and TATA Steel) and engineering and technology higher education institutions such as the Indian School of Mines, Banaras Hindu University and the University of Pune. A small number of other Indian universities are also involved in engineering and technology-focused collaborations, notably including environment, or energy focused collaborations (e.g., Bangalore University, Manipal University, VIT University, TERI University, IndianOil R&D Centre, Institute of Chemical Technology Mumbai and DBT-IOC Centre for Advanced Bionenergy Research).

Information and computing sciences: Many Australian universities have information and computing sciences-focused collaborations with IITs, and a couple with the TATA Institute of Fundamental Research. Australian universities also have disciplinary-specific collaborations with information and computing science companies (e.g., IBM Indian Research Centre, Hindustran Computers Ltd. and Infosys Ltd.), and information technology higher education institutions (e.g., Centre for Development of Advanced Computing and Jaypee University of Information and Technology). Australian universities also have one-on-one, disciplinary-specific collaborations with predominantly comprehensive Indian universities (e.g., Amity University, Lovely Professional University, Manav Rachna International University, Nirma University, Rajagiri International School for Education and Research, Sharda University, Sri Ramaswamy Memorial University, Thapar University and University of Hyderabad).

Natural and physical sciences: Several Australian universities have natural and physical sciences-based collaborations with the IISc and a couple with the TATA Institute of Fundamental Research (Pune and Mumbai). Australian universities also have one-on-one, disciplinary-specific collaborations with national science centres and science institutes (e.g., National Centre for Radio Astrophysics, National Chemical Laboratory Pune, National Geophysical Research Institute, International Centre for Materials Science Bangalore, Indian Institute of Chemical Technology Hyderabad), and several predominantly comprehensive Indian universities (e.g., Ahmedabad University, Manav Rachna International University, SASTRA University and Shalom Global University).

Agricultural sciences: Several Australian universities have agricultural sciences-focused collaborations, which most frequently include one-on-one, disciplinary-
specific partnerships with agricultural research institutes (e.g., Indian Agricultural Research Institute, Indian Council of Agricultural Research, International Centre for Genetic Engineering and Biology and International Research Institute of the Semi-Arid Tropics) and agricultural universities (e.g., Kerala Agricultural University, Kerala Veterinary and Animal Sciences University, Tamil Nadu Agricultural University, Orissa University of Agricultural Science). Some comprehensive Indian universities are also involved in agricultural science-based collaborations (e.g. Bangalore University, Jadavpur University Kolkata, Jagran Lakecity University, Manipal University, University of Hyderabad and University of Madras).

Medical and health sciences, and biological sciences: Many Australian universities have medical, health and/or biological sciences-focused collaborations with the IISc, Indian health authorities and foundations (e.g., Indian Council of Medical Research, All India Institute of Medical Sciences, Public Health Foundation of India and INCLEN Trust International) and centres (e.g., Centre for Cellular and Molecular Biology and Centre for Health Policy in India). Some Australian universities also have medical, health and/or biological sciences-focused collaborations with Indian medical universities, colleges and hospitals. A small number of other specialist universities and institutes are also involved (e.g., Jagadguru Sri Shivarathreeshwara University, Jamia Millia Islamia University, Sri Ramachandra University, People’s Education Society (PES) University, Ansal Institute of Technology, INSCOL Academy, SRM University, Chennai), as are medical science companies (e.g., Biocon, Laila Pharma, Max Healthcare Ltd). One collaboration specifically focused on exercise science (Padmashree Dr D Y Patil University).

Social sciences:
While collaborations are dominated by the STEM disciplines, a number of Australian universities and Indian partners have collaborations that are social sciences-based, predominantly in law and legal studies, and management disciplines. Leading partners for several Australian universities include TISS, the Institute of Development Studies Mumbai, the Indian Council of Cultural Relations, and JNU. Australian universities have also established social science-focused, one-on-one partnerships with comprehensive universities such as Alagappa University, Amrita University, Christ University Bangalore, Kannur University, Madras Christian College, Madras University, Somaiya Vidyavihar Mumbai and the University of Calcutta.

Law and legal studies: Several Australian universities have one-on-one, disciplinary-specific, law and legal-studies-based collaborations with law universities and institutes (e.g., Jindal Global Law School, National Law School of India, National University of Advanced Legal Studies, National Academy of Legal Studies and Research [NALSAR] University and National Law Institute University), management institutes (e.g., SP Jain Institute of Management and Research and TA Pai Management Institute) and comprehensive and other Indian universities,

---

58 This includes Narayana Nethralaya, Bangalore, King George Medical University, Datta Meghe Institute of Medical University, Maharashtra University of Health Sciences, Christian Medical College Vellore, Apollo Medical College and Hospitals, Hyderabad, RUHSA at Christian Medical College, Vellore, National Institute of Pharmaceutical Education and Research.
institutes and colleges (e.g., Presidency College, MITSOM College, Gian Jyoti Institute and Symbiosis International University).

**Economics, commerce, management, tourism and services:** Several Australian universities have one-on-one, disciplinary-specific, management and commerce-based collaborations with Indian Institutes of Management, other management institutes (e.g., Bombay Stock Exchange Institute, Chennai Business School, Indian Institute of Foreign Trade New Delhi, Institute for Chartered Financial Analysis India, Institute for Human Development, Management Development Institute, Welingkar Institute of Management Development), and comprehensive Indian universities (e.g., TERI University, Symbiosis International University, Nirma University). A small number of collaborations are focused on policing and security (e.g., Indian Police Service, Sardar Vallabhbhai Patel National Police Academy). Very few collaborations are focused on the built environment and design, education, or psychology and cognitive sciences\(^59\) (other than those covered by multi-disciplinary collaborations).

**Humanities and arts:**
A small number of Australian universities and Indian partners have collaborations that are humanities-based, predominantly in communications, and creative arts disciplines. Few collaborations have been identified that focus specifically on literature, history and archaeology, philosophy and religious studies, however, these may be reported in broader collaborations involving multiple disciplines.

**Language, communication and culture:** Several Australian universities have one-on-one, disciplinary-specific, communications and culture-based collaborations with languages and communication institutes (e.g., Central Institute of Indian Languages Mysore, Indian Institute of Mass Communication, Mudra Institute of Communication and Xavier Institute of Communication), and film, television and media institutes (e.g., Deviprasad Goenka Management Institute of Media Studies, Film and Television Institute of India, Pune, MET Institute of Mass Media and Whistling Woods International, Mumbai).

**Studies in creative arts and writing:** A small number of Australian universities have collaborations that are specifically focused on the creative arts, including creative industries institutes (e.g., National Institute of Design, National Institute of Fashion Technology, Whistling Woods International, Mumbai).

**Studies in human society:** A small number of Australian universities have humanities collaborations with the Indian Council for Cultural Relations, and development institutes (e.g., Institute of Development Studies Kolkata).\(^60\)

---

\(^{59}\) The few collaborations included, for example: Built environment and design (Centre for Environmental Planning and Technology Ahmedabad), Education (University of Pune, National Education Society), and Psychology and cognitive sciences (Madras University, Christian Medical College and Hospital, Christ University Bangalore).

\(^{60}\) Universities Australia, 2017; Department of Education and Training, 2016a.
CASE STUDIES

The following provides a brief glimpse into the varied relationships between Australian and Indian higher education institutions.

Deakin University – Two decades of engagement with India

Deakin University’s engagement with India started in 1994 when Deakin joined with the Australian Association of Professional Engineers, Scientists and Managers to offer management programs by distance education. A few years later Deakin established an office in India, well ahead of other Australian universities and competitor countries. Over this extensive period of engagement, Deakin’s collaborative initiatives have included student and staff mobility (e.g., in education leadership and sports management) and teaching and learning partnerships with the IISc, IITs, VIT University, Symbiosis International University, the University of Mumbai, Hyderabad University and Amity University. Deakin also have various research collaborations (e.g., Rajasthan Royals, Reliance Life Sciences, Bharat Forge and the Centre for Cellular and Molecular Biology). They recently jointly established the TERI-Deakin Nano Biotechnology Research Centre, and have partnered with the Tamana School of Hope.

In 2014, Deakin launched the Deakin India Research Initiative (DIRI). Under this model, PhD students are based at an Indian higher education institution with both an Indian institutional supervisor and Deakin supervisor. During their candidature, these PhD students visit Australia for six to eight months. Deakin has invested over $10 million in collaborative research projects with Indian higher education institutions, involving 20 academic partners, 20 research partners, and 15 industry partners. Deakin’s financial investment has included PhD scholarships under various collaborative programs. Deakin’s collaborations focus on shared strengths in advanced materials, nanotechnology, life sciences and health. The leading example provided by Deakin in forging sustainable, successful collaborations has been recognised by awards such as the Governor of Victoria Export Award for Education and Training. 61

Royal Melbourne Institute of Technology (RMIT) University – extensive engagements

RMIT has a large number of MOUs with leading Indian higher education institutions (e.g., VIT University and the University of Madras), the private Manipal University and international institutions (e.g., Symbiosis International University, Rajagiri International School for Education and Research and Manav Rachna International University). They also have agreements with specialist institutions relevant to their broad academic specialisations (e.g., Whistling Woods International Institute of Film, Television and Media Arts, and the National Institute of Design). Two thirds of these formal agreements were established in or after 2012. Most specifically focus on academic/research collaboration. RMIT’s research regarding India spans diverse disciplinary areas ranging from

61 Deakin University, 2014.
engineering, anthropology and development, macroeconomics, and logistics and supply chain management.

For example, the Australia-India Research Centre for Automation Software Engineering (AICAUSE) represents a joint venture between RMIT, the Victorian state government, and the ABB Group. The ABB Group (India and Australia) concentrates on power and automation technologies. The collaborative research centre trains PhD and post-doctoral researchers incorporating internships with ABB Melbourne and India, and work with the Virtual Experiences Laboratory based at RMIT’s College of Science, Engineering and Health. Another collaboration involves faculty from the RMIT School of Engineering partnering with researchers from IIT Madras, the Mahatma Gandhi University and the Tamil Nadu Water Investment Company, supported by an Australia-India Council grant, to reduce global water scarcity. RMIT also coordinates student exchange programs to India through their Work Integrated Learning (WIL) program. For example, construction and project management students have helped construct a school dormitory in Bangaluru, and media and communications students have participated in a cross cultural perspectives study tour.

RMIT’s international student marketing actively targets Indian nationals. They have launched a biotechnology summer school program in India for Delhi-based international high school students, offering participants scholarships to encourage them to continue their studies in Australia at RMIT. RMIT also offers a range of other scholarships targeting Indian nationals (e.g., India Pathways Scholarships for applicants from Manipal University, VIT University, and Cornerstone International College). These examples illustrate RMIT’s rich and varied partnerships with India, ranging from strategies to encourage international student applications to RMIT, incorporate intensive student exchanges, and research collaborations with Indian higher education institutions and businesses.

University of Queensland – Extensive engagements

The University of Queensland has extensive engagements with Indian higher education institutions, faculty and students. With 19 agreements with 16 Indian higher education institutions, including the IISc, IITs (Madras, Kharagpur, Bombay), the IIM Bangalore, universities (JNU, University of Delhi, Manipal University, Amity University, NALSAR), TATA Institute of Fundamental Research and the Indian School of Mines. UQ employs 49 academic staff (including seven professors) with qualifications from Indian institutions. Since 2012, they have enrolled nearly 200 Indian PhD, collaboratively produced over 350 co-publications, and enrolled nearly 200 Indian language and culture course enrolments. Over the period 2012-2017, UQ has had six collaborative research projects with Indian higher education institutions representing significant investment ($2.9m). These projects involve ICRISAT, the Australian Centre for Plant Functional Genomics, and the Max Planck Institute for the Science of Human History, and the International Water Centre. UQ has 21 research projects in relation to India (worth $5.1m).

The collaboration has attracted both Australian government (Australia-India Strategic Research Fund) and Indian funding ($640,000) from organisations including MSSRF, ICRISAT, International Initiative for Impact Evaluation, Green
Gold Seeds, C-Camp and the Global Development Network. Co-published research is predominantly in STEM fields (i.e., public, environmental, and occupational health; materials science, multidisciplinary; genetics and heredity; plant sciences; chemistry; physical sciences). Collaborations have focused on mutual challenges including sustainable energy solutions, crop science and schizophrenia.  

University of Melbourne - Melbourne India Postgraduate Program (MIPP)

The University of Melbourne established a collaborative project with leading Indian education institutions including the IISc, IIT Kanpur, IIT Madras and IIT Kharagpur in 2014. The Melbourne India Postgraduate Program (MIPP) also involves industry, government and non-government organisations. Collaboration elements include joint supervision of graduate research and intellectual investment (i.e., public lectures and seminars to showcase PhD students’ and faculty collaborative research). Students and faculty showcase their collaborative research through national and international conferences. Several institutions have subsequently signed joint PhD agreements with the University of Melbourne.

The MIPP program focuses on the STEM disciplines, most particularly engineering, biosciences, physics, chemistry, mathematics, computing and information systems, and earth sciences. The University of Melbourne has invested over $4 million in PhD scholarships (i.e., stipends and fee exemptions), researcher exchanges and research cooperation. Indian partner institutions have also invested in the collaboration. MIPP has enabled the University of Melbourne to attract leading Indian PhD students to the University of Melbourne who would otherwise have had opportunities in competitor countries such as the United States. MIPP has facilitated STEM-based research collaborations between faculty of participating institutions, and resulted in PhD student and co-authored faculty research publications.

University of Sydney – IIT Madras, ACIAR/ICAG, and SAIFRN collaborations

The University of Sydney has a number of successful collaborations with Indian partners. The University of Sydney – IIT Madras partnership involves a STEM focused research alliance focussing on clinical health, medicine and biomedical engineering. Signed in 2015, the five year, $500,000 agreement supports PhD student mobility, infrastructure sharing and collaborative research on shared priorities. A second collaboration is focused on genomic selection has secured funding from the Australian Centre for International Agricultural Research (ACIAR) and the Indian Council for Agricultural Research (ICAR). A third, longstanding initiative is the South Asia Infant Feeding Research Network (SAIFRN), established in 2007 to facilitate collaboration between South Asian and international research collaborators interested in infant and young child feeding. Sydney University has an Asian Studies program and delivers Indian subcontinental studies.

---

62 University of Queensland, 2017.
63 University of Melbourne, n.d.
64 University of Sydney, 2015.
Partnerships have been established by the University of Sydney Medical School with a number of medical institutions (e.g., Sri Ramachandra University and the Indian Council of Medical Research). These agreements span collaborative research and student exchanges. For example, University of Sydney medical students have the opportunity to visit the Datta Meghe Institute of Medical Sciences and Christian Medical College, Vellore. Collaborative medical sciences research has been supported by the Australia India Strategic Research Fund (AISRF) and Australian Department of Foreign Affairs and Trade (DFAT). The University of Sydney’s collaborations with Indian partners highlight the importance of relationship longevity, research funding, and shared priorities such as food security and medical science.

**Curtin University – numerous engagements and inbound international students**

Curtin University has partnerships with leading Indian higher education institutions including IIT Kharagpur, IIT Madras and the IIT (Indian School of Mines) in Dhanbad, Jharkhand. These Curtin – IIT collaborations involve the delivery of joint PhD programs as well as collaborative research. Curtin also has formal MOUs with JNU, Anna University, international institutions (e.g., Manav Rachna International University, and Shalom Global Academy) and Amity University. Collaborations are based on the principal of reciprocity. In time, these collaborations could lead to intellectual property commercialisation in joint areas of research strength such as resources, energy, health and sustainable technologies.

Curtin University also enrols a large number of Indian nationals, with Indian international students representing their second largest intake (13%), behind China (25%). Key enablers for Curtin University’s engagement with Indian higher education institutions include faculty exchanges to India to determine governing frameworks, joint symposia to identify areas of potential research collaboration, and international visits.

**Group of Eight universities research with Indian partners**

Australia’s GO8 universities partner with many Indian higher education institutions. The new publication, *Excellence in India*, celebrates these research collaborations spanning medical science, climate change, agriculture, water, engineering and social sciences. For example, the University of Adelaide and Haryana Agricultural University are collaborating to explore new rice production systems that conserve water, energy and labour, while the University of Sydney and Indian Agricultural Research Institute have partnered to investigate methods of protecting wheat crops against rust. The University of Adelaide is exploring post-colonial water resource use and management in collaboration with an independent scholar in Darjeeling, West Bengal. The University of New South Wales and Indian Institute of Tropical Meteorology are collaborating to examine large year-to-year variations in Indian and Australian monsoons, with support from the Australian Research Council (ARC). The ARC is also supporting research undertaken by the Australian National University with the Gujarat Institute of Development Research on women’s empowerment in the eastern Gangetic Plains.

---

65 Curtin University, 2016.
A joint PhD student with the Monash University - IIT Bombay Research Academy is researching efficiency of small wind turbines for remote communities, while researchers from the University of Sydney and Christian Medical College, India are undertaking a National Health and Medical Research Council (NHMRC) funded stroke rehabilitation trial involving family caregivers. The NHMRC has also funded a collaboration involving Monash University and the Sree Chitra Tirunal Institute for Medical Sciences and Technology exploring the diagnosis and treatment of high blood pressure in rural regions of India. The Centre for Sustainable Materials Research and Technology (SMaRT@UNSW) at UNSW leads collaborative research regarding sustainability, recycling and waste transformation. These examples demonstrate that GO8 universities have research collaborations with both leading and specialist Indian higher education institutions based on mutual areas of interest, largely in the STEM disciplines. Both Australian and Indian institutions and government ARC and NMHRC funding support these engagements.

University of Western Australia – Attracting Indian international students, and establishing partnerships

The University of Western Australia has formalised MOUs with leading Indian higher education institutions including the IISc, IITs (Delhi, Kharagpur, Madras), JNU, Anna University and VIT University. UWA also have MOUs with established universities (University of Calcutta, University of Mumbai) and private universities (Manipal University, Osmania University), along with specialist agricultural, engineering and veterinary science universities. These partnerships have progressively emerged over the last 15 years. UWA attracts a large number of Indian international students, in part by making available dedicated undergraduate and postgraduate scholarships.

University of South Australia – Longstanding engagement with multiple institutions

The University of South Australia has MOUs with the IISc, IITs (Bombay, Delhi, Madras), JNU, Anna University and the University of Madras. Agreements have also been established with specialist institutions such as the National Law School of India University (NLSIU), the Christian Medical College and Hospital, and Institute of Chartered Financial Analysts India (ICFAI). Unlike most Australian universities, many of these MOUs are longstanding, having been established before 2007.

The University of South Australia’s research collaboration with the IISc is supported by an Australia-India Strategic Research Fund grant, with collaborative research exploring physical chemistry, surface engineering and nanotribology. The partnership with the IIT Delhi involves the University of South Australia’s new Future Industries Institute (FII) focused on engineering, chemical and materials sciences, while the collaboration with IIT Bombay relates to transport systems, civil and water engineering, as well as cognitive neuro-engineering research. The university has also established research collaborations with industry partners such as Waaree Energies Pty Ltd, an Indian solar panel manufacturer.

66 Group of Eight, 2017.
The University of South Australia delivers systems engineering professional development programs at the Defence Institute of Advanced Technology University, while students undertake exchanges with the Management Development Institute, India and Madras Christian College. The Endeavour Asia Postgraduate program and other government student mobility funding supports some of these student exchange and research laboratory projects.  

**Australia-India Strategic Research Fund (AISRF) projects**

The federal government's competitive AISFR scheme funds bilateral research involving Australian and Indian collaborators. The scheme aims to "increase the uptake of leading science and technology by supporting collaboration between Australian and Indian researchers in strategically focused, leading-edge scientific research and technology projects; strengthen strategic alliances between Australian and Indian researchers; and facilitate Australia’s and India’s access to the global science and technology system."  

The booklet, *Australia-India Strategic Research Fund. A decade of successful collaboration* provides case studies of funded projects. The publication highlights several projects undertaken by women in science, technology, engineering, mathematics and medicine (STEMM), including women in STEMM workshops, early career fellowships and the work of Professor Veena Choudhary in processing hazardous electronic waste. The publication also explores a number of medical science projects (injury, tuberculosis, diabetes, HIV/AIDS, hepatitis C, ocular surface disease), astronomy, radio telescopes, biofuels and quantum electronics.

**Lessons from the case studies**

These case studies highlight:
- the importance of longevity in partnerships between faculty and higher education institutions in Australia and India;
- the emergence of Australia-India research centres concentrating on shared research interests and projects;
- collaborations involving multiple academic and other partners;
- the contribution of Indian diaspora in Australian universities to collaborations;
- the importance of both Australian and Indian government funding for research, including dedicated research schemes, and research funds for higher education institutions;
- the availability of institutional scholarship funding, particularly for Indian nationals;
- the large institutional investment in Australia-India engagement;
- emphasis on shared priorities and interests;
- anticipated outcomes (e.g., PhD completions and joint research publications); and
- emphasis on the STEM disciplines, with some notable examples of HASS projects.

**SYSTEM DIFFERENCES AND INTERSECTIONS**

The research identified six key differences between Australian universities and Indian higher education institutions that could productively inform decision-

---

67 University of South Australia, n.d.
68 Department of Industry and Science, 2015.
making regarding potential Indian partners for teaching- and research-based collaborations.

**Discipline mix:** All Australian universities, with the exception of the University of Divinity, but only some Indian higher education institutions are comprehensive with respect to their disciplinary profile. In Australia, regardless of institutional grouping, sector coverage or curriculum model, universities deliver STEM and HASS programs at undergraduate and postgraduate level. In India, while some higher education institutions are comprehensive, many specialise, particularly in relation to engineering and technology (e.g., IITs), medicine, agriculture, law, management (e.g., IIMs) and languages. Identifying expertise at Indian higher education institutions is both easier (in relation to specialist fields undertaken by specialist institutions) and more complex (in relation to institutions spanning numerous disciplines).

**Student population:** Other than the private Bond University, Australian universities have comparatively large student populations. Only a small number of Australian universities have student populations ranging between 12,000 – 20,000, and the largest, Monash University, has 70,000 students. Eight universities have over 50,000 students, including five GO8 research-intensive universities. As a result, Australian universities have large contingents of academic and professional staff. By comparison, leading Indian higher education institutions most frequently have small student populations, although arguably, many public Indian universities affiliate large numbers of colleges, through which large student populations are encountered. For example, interviewees reported that the University of Mumbai affiliates approximately 750 colleges, the Savitribai Phule Pune University affiliates approximately 600 colleges, and the University of Bangalore, before disaggregating into three separate universities, affiliated approximately 650 colleges.

The student and faculty population size differential is evident most particularly in relation to autonomous research institutions. For example, the leading National Institute of Advanced Studies (NIAS), co-located with the IISc, has a faculty of approximately 40. Neither student population nor faculty size are helpful signals to foreign faculty seeking to identify experts in Indian universities and autonomous research institutions.

**Proportion of postgraduate students:** At most if not all Australian universities, the undergraduate student population is larger than the postgraduate population. By comparison, at leading Indian higher education institutions, the postgraduate student population is larger, and many such institutions only enrol postgraduate students. As noted, undergraduate education is predominantly delivered through colleges affiliated to public universities. Leading Indian higher education institutions are therefore well placed to collaborate at postgraduate level, while collaborations at undergraduate level would necessarily involve leading or specialist colleges as well as universities delivering undergraduate programs.

**Teaching, scholarship and research roles:** Whereas most contract/permanent academic staff at Australian universities engage in teaching and research, faculty at

---

70 Department of Education and Training, 2016b.
the majority of Indian higher education institutions are engaged in teaching and scholarship, rather than research. In part this reflects high teaching workloads, particularly at the college level. While research intensity is slowly increasing along with qualification requirements, faculty at the majority of Indian universities and colleges undertake minimal research. Undergraduate teaching-based collaborations may best be directed at high quality and/or specialist colleges, and postgraduate teaching-based collaborations may best be directed to high quality and/or specialist universities and autonomous research institutes. In terms of research-based collaborations (including research training), these may best be directed to high quality or specialist universities and autonomous research institutes. In all instances, signals such as undergraduate student numbers are poor indicators of research strength and faculty capacity to undertake research and collaborate with international partners.

Complexity: Whereas Australian and Indian universities deliver, assess and confer degrees, public Indian universities also perform other important functions. They are responsible for the development of university and college curriculum (frequently in collaboration with college faculty through university Boards of Studies), establishment of penultimate examinations, and the conferral of degrees delivered by affiliated public and private colleges. As such, there are structurally complex academic and quality assurance-related intersections between India’s various higher education institutions. Navigating this complex system is challenging for those interested in identifying potential Indian partners, but essential to successfully establish and nurture sustainable collaborations.

Place of English: Finally, as a former British colony, English is widely spoken throughout India. Many Indian universities and highly selective institutions use English as the medium of instruction, particularly for research and research training (other than language studies). English is used for “many courses such as Engineering, Medicine, Law, Maths, and Computer Sciences”. However, many higher education institutions use regional languages as the medium of instruction, and emphasise mother tongue (e.g., Hindi, Tamil or Bengali). There is also a wealth of publications in languages other than English, particularly in the humanities where language is frequently integral to scholarship. Faculty based at Australian universities holding only English are at some disadvantage in this environment, whereas Indian diaspora and multilingual faculty are better positioned.

INTERNATIONAL STUDENT MOBILITY

The global flow of students has increased dramatically in the last two decades. Major contributors include China, India, South Korea, Germany, Turkey and France. The lead role of China, India and South Korea in outbound student mobility is projected to continue at least until 2020, with "India ... forecast to be one of the main sources of future growth in outbound tertiary students (+71,000 between 2011 and 2020)". India’s projected growth in outbound student mobility relates to both demographic drivers (i.e., large tertiary age population) and economic drivers (i.e., increasing household income and size of the middle class). Countries such as Australia, the United States and United Kingdom have low

---

outbound mobility ratios where less than one percent of all tertiary students are internationally mobile. Destination countries collectively hosting 60% of all internationally mobile tertiary students include the United States, United Kingdom, Australia, France, Germany, Russia, Japan and Canada. In Asia, the destination role of China, Singapore, Hong Kong, Malaysia and South Korea is growing.74

**Outbound international student flow from India:** India is a lead contributor to the global flow of students. In 2015, there were 233,540 Indian outbound internationally mobile tertiary students studying abroad, second only to China (790,850), and well ahead of third ranked Germany (115,513). The top destination countries for India’s international students are the United States (112,714), Australia (25,562), United Kingdom (19,604), Canada (13,626) and the United Arab Emirates (11,697).75 India’s leading role in outbound international student flows is projected to continue (Figure 5).

![Figure 6: Global outbound mobile tertiary students by origin market (2020)](image)


Foreign mobility schemes (e.g., Erasmus, UMAP, Fullbright) and institutional scholarships strongly attracted Indian nationals. Similarly, influencers include world university rankings and institutional and programmatic reputation, and opportunities for employment and post-study immigration, in part to enable graduates to repay tuition fees. The scope of multilateral trade agreements (e.g., General Agreement on Trade in Services) also influences student destination choice.

---

International student flow into Australia: Inbound international students are enrolled in higher education, vocational education and training (VET), English Language Intensive Courses for Overseas Students (ELICOS) and school-level education. Indian inbound international students represent the second highest intake after China; however, the different market segments attract different cohorts and participation varies accordingly. The VET sector attracts more Indian than Chinese inbound international students, which may reflect Indian students’ aspirations for migration and/or transitions to higher education. More Chinese than Indian inbound international students participate in higher education, school-level education and ELICOS programs (Table 8).

Table 8: Indian and Chinese international students, 2013-2016 (inbound, outbound)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher education</td>
<td>China</td>
<td>85,844</td>
<td>89,066</td>
<td>96,772</td>
<td>112,824</td>
<td>37%</td>
</tr>
<tr>
<td></td>
<td>India</td>
<td>16,626</td>
<td>26,189</td>
<td>35,102</td>
<td>44,646</td>
<td>15%</td>
</tr>
<tr>
<td>VET</td>
<td>China</td>
<td>12,289</td>
<td>12,464</td>
<td>13,155</td>
<td>13,792</td>
<td>7%</td>
</tr>
<tr>
<td></td>
<td>India</td>
<td>28,305</td>
<td>27,430</td>
<td>28,321</td>
<td>27,352</td>
<td>15%</td>
</tr>
<tr>
<td>Schools</td>
<td>China</td>
<td>7,356</td>
<td>8,325</td>
<td>10,264</td>
<td>12,093</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>India</td>
<td>114</td>
<td>196</td>
<td>225</td>
<td>219</td>
<td>1%</td>
</tr>
<tr>
<td>ELICOS</td>
<td>China</td>
<td>27,105</td>
<td>32,322</td>
<td>38,341</td>
<td>41,740</td>
<td>28%</td>
</tr>
<tr>
<td></td>
<td>India</td>
<td>2,877</td>
<td>7,702</td>
<td>7,528</td>
<td>5,344</td>
<td>4%</td>
</tr>
</tbody>
</table>


Indian international higher education students inbound to Australia represent the second largest intake into Australia’s system (44,646 in 2016), behind China (112,824). Australian governments and individual universities actively pursue export education opportunities in India. Strategies include promotion to elite and international schools in tier 1 cities, recruitment involving in-country agents, increasing brand visibility, and in some instances, targeted scholarships. Systemic and institutional factors include a conducive regulatory regime, management support, and established quality assurance mechanisms and institutional policy.

Australia’s export education market is volatile, and Australian university’s approach fragmented; however, projections appear positive particularly in light of the Brexit vote and Trump election. Australian universities could adopt a cohesive, collaborative marketing strategy to promote ‘brand Australia’. In recent years, concerns regarding Indian international student safety have impacted Australia’s export education market. Concerns regarding student safety, ethnic and religious conflict in Australia remain topical in India today. Recent shifts in Australia’s immigration policy will likely impact both Australia’s export education market and

---

77 The British Council (2014) identifies leading international educational consultants operating in India including the Chopras (with 30 offices in India), Edwise (23), IDP Education (17) and Global Opportunities (15).
opportunities for engagement with India. These issues have the capacity to limit increases anticipated from the Brexit and Trump effects.  

**Inbound international student flow into India:** The capacity of most of India’s higher education institutions to enrol inbound international students in undergraduate or postgraduate degree programs is low, but growing. This issue is particularly evident in public higher education institutions with highly competitive admissions systems, small student populations, and high levels of unmet demand. Accordingly, the number of international students flowing into India is comparatively low (38,992). The majority of the inbound international students are from other developing countries including Nepal (8,183), Afghanistan (3,016), Bhutan (2,619), Malaysia (2,264) and Iraq (2,153) (Table 9).

<table>
<thead>
<tr>
<th>Top 9 countries of origin</th>
<th>Number of inbound students into India</th>
<th>Top 9 destination countries</th>
<th>Number of outbound students from India</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nepal</td>
<td>8,183</td>
<td>United States</td>
<td>112,714</td>
</tr>
<tr>
<td>Afghanistan</td>
<td>3,016</td>
<td>Australia</td>
<td>25,562</td>
</tr>
<tr>
<td>Bhutan</td>
<td>2,619</td>
<td>United Kingdom</td>
<td>19,600</td>
</tr>
<tr>
<td>Malaysia</td>
<td>2,264</td>
<td>Canada</td>
<td>13,626</td>
</tr>
<tr>
<td>Iraq</td>
<td>2,153</td>
<td>United Arab Emirates</td>
<td>11,697</td>
</tr>
<tr>
<td>Iran</td>
<td>1,328</td>
<td>New Zealand</td>
<td>10,255</td>
</tr>
<tr>
<td>Nigeria</td>
<td>1,260</td>
<td>Germany</td>
<td>9,896</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>1,126</td>
<td>Ukraine</td>
<td>3,925</td>
</tr>
<tr>
<td>Rwanda</td>
<td>1,123</td>
<td>Russian Federation</td>
<td>2,630</td>
</tr>
</tbody>
</table>


The number of inbound students into India from Australia is low; however, growth is projected. The federal governments’ New Colombo Plan, now in its third year, aims to enhance Indo Pacific Knowledge. The scheme awarded nearly 900 scholarships for Australian undergraduates to undertake internships in India for 2017.  

At least some universities (e.g., University of Mumbai) establish quotas for international student intakes, partly reflecting their capacity to provide residential accommodation. Many international students studying in India receive scholarships (e.g., IISc merit-based scholarships).

Within the context of unmet demand, particularly at leading Indian higher education institutions, it is difficult to imagine large increases in inbound international students, other than in internationally oriented institutions (e.g., Symbiosis International University), private institutions seeking to establish a global reputation (e.g., Manipal University and OP Jindal Global University), or in tier 1 cities with a global reputation (e.g., Bangalore, which attracts the highest number of inbound international students). Despite this, leading Indian higher
education institutions remain interested in student exchanges, joint PhD programs, and international summer schools. In time, the impact of the Clean India Movement (Swach Bharat Abhiyan) may increase international student interest in studying in India.

CONCLUSION

Indian higher education institutions engage with foreign higher education institutions in both research-intensive economies and developing countries. The level of engagement is projected to grow given government and institutional interest. Internationalisation of India's higher education institutions follow global trends by typically incorporating elements such as faculty exchanges, transnational education (e.g., ‘twinning’ and flexible delivery including MOOCs), joint PhD programs and research collaboration focusing on shared areas of interest. As a developing economy, India's research collaborations focus on development objectives as well as grand challenges and shared interests.

Internationalisation’s most visible element – international student mobility – has provided the greatest focus for Australian university’s engagement with developing economies such as India to date. Building on Australia’s success in growing the export education market, Australian universities have established large numbers of MOUs that accommodate forms of engagement such as academic and research collaboration, while continuing to ensure opportunities for Indian nationals to undertake higher education in Australia. While international student mobility projections suggest India’s outbound student population will continue to grow, research collaborations involving Australian and Indian higher education institutions are expected to increase in prominence and substance as partnerships mature. This trend mirrors a global shift from a preoccupation with international student recruitment and revenue generation to more enduring, mutually beneficial forms of bilateral engagement focused on system reform and global challenges.

The number of Australian universities partnering with India’s leading, specialist and tier 2 and 3 institutions is growing faster than any other partner country, indicating that the engagement agenda of Australian universities has shifted as India’s economic position has grown. Extending these emerging collaborations requires addressing two key challenges: locating experts within India’s large and complex higher education system; and building mutually beneficial, sustainable academic and research collaborations in shared priority areas of interest in both STEM and HASS disciplines, and interdisciplinary research.

The shift towards India as a partner of choice in Asia has been underway for some time. With government and institutional support for internationalisation generally, and engagement with India specifically, Australian universities need to position themselves as a bilateral or multilateral partner of choice for India’s higher education institutions.
REFERENCES


Boroohah, V. K., & Sabharwal, N. S. (2017). English as a medium of instruction in Indian education. Inequality of access to educational opportunities. National University of Educational Planning and Administration: Delhi, India.


Universities Australia, 2017. *UA data 2016 links* [data file].


APPENDIX 1: INTERVIEWS ON HIGHER EDUCATION

IN INDIA

Indian government: Central and state/UT
- Karnataka State Higher Education Council (Dr Thandava Gowda, Administrative Officer) (Bangalore, Karnataka)
- Higher and Technical Education Department, Government of Maharashtra (Mr Sitaram Kunte, Additional Chief Secretary) (Mumbai, Maharashtra)
- Department of Higher Education and Technical Education (Dr Apoorva Palkar, Convenor, Task Force on Globalisation) (Mumbai, Maharashtra)
- Universities Grants Commission (Government of India) (Mr Avichal Kapoor, Joint Secretary) (New Delhi, Delhi)

Indian higher education institutions
- Chellammal Women's College (Dr R Sreelatha, Associate Professor of English & Head) (Chennai, Tamil Nadu)
- VIT University (Dr S Denis Ashok, Professor, Department of Design and Automation, School of Mechanical Engineering, VIT University) (Vellore, Tamil Nadu)
- Indian Institute of Technology (IIT) Madras (Professor R Nagarajan, Dean International and Alumni) (Chennai, Tamil Nadu)
- Anna University (Professor Rajendran, Centre for International Affairs) (Dr Manivannan, Registrar, Periyar University in attendance) (Chennai, Tamil Nadu)
- TATA Institute of Social Sciences, Hyderabad campus (Professor Siva Raju, Deputy Director; Professor Rekha Pappu, Chairperson; Dr Ritesh Khunyakari, and Dr Murah Krishna, Assistant Professors, Azim Prenji School of Education) (Hyderabad, Andhra Pradesh)
- NALSAR (University of Law) (Professor Amita Dhanda and Mr Sidharth Chauhan) (Hyderabad, Andhra Pradesh)
- Indian Institute of Science, Bangalore (Dr Anita Sneh, International Relations Officer) (Ms Annie Santhana, Regional Director – Education, Victorian Government in attendance) (Bangalore, Karnataka)
- National Institute of Advanced Studies, Bangalore (Professor Anitha Kurup, Dean, School of Social Sciences; Dr Shivali Tukedo, Assistant Professor) (Bangalore, Karnataka)
- Government Ramnarayan Chellaram College of Commerce & Management (Dr Sudha) (Bangalore, Karnataka)
- Indian Institute of Management, Bangalore (Professor Sourav Mukherji, Dean of Academic Programmes) (Bangalore, Karnataka)
- Bangalore University (Professor Rajesh, International office) (Bangalore, Karnataka)
- Tolani College of Commerce Mumbai (Dr Vijaya Krishna, Principal; Dr Sachin Pendse, Dr Vasudev Iyer, Ms Shalini Jonnala, faculty) (Mumbai, Maharashtra)
- IIT Bombay (Mr Arnab Das, International Relations Office) (Mumbai, Maharashtra)
- University of Mumbai (Dr Khan, Registrar) (Mumbai, Maharashtra)
- TATA Institute of Social Science, Mumbai campus (Professor Madhushree Sekher, Chair, internationalisation committee) (Mumbai, Maharashtra)
- Indian Institute of Technology (IIT) Mumbai – Monash Research Academy (Professor Murali Sastry, CEO) (Mumbai, Maharashtra)
- PUKAR, Mumbai (Dr Anita Patil-Deshmukh, Executive Director) (Mumbai, Maharashtra)
- Symbiosis International University, Pune (conference) (Pune, Maharashtra)
- Jawaharlal Nehru University (JNU) (Professor Saumen Chattopadhyay, Chairperson, Zakir Husain Centre for Educational Studies, School of Social Sciences) with Dr Karen Barker (New Delhi, Delhi)
- National University of Education Planning and Administration (NUEPA) (Professor Varghese, Director, Centre for Policy Research in Higher Education and faculty: Dr Nidhi Sabharwal, Dr Garima Malik, Dr Jinusha Panigrahi, Professor Mona Khare) (New Delhi, Delhi)
• OP Jindal Global University (Professor Raj Kumar, Vice Chancellor; A/Prof Shaun Star) with Dr Karen Barker (Sonepat, Haryana)
• Ashoka University, Haryana (Ms Rashmi Singh, Office of Student Life; and Ms Aniha Brar, Assistant Dean, The Young India Fellowship) with Dr Karen Barker (Sonepat, Haryana)

**Australian government**
• State Government of Victoria, Australia (Ms Annie Santhana, Regional Director – Education) (Bangalore, Karnataka)
• Australian Consulate-General, Mumbai (Ms Mohaa Vyas, Mr Varun Sainani and Mr Bhavin Kadakia) (Mumbai, Maharashtra)
• Australian Consulate-General, Mumbai (Mr Tony Huber, Consul General) (Mumbai, Maharashtra)
• Australian High Commission (Dr Amanda Day, Counsellor, Education) (New Delhi, Delhi)

**Other**
• World Bank (Mr Francisco Marmolejo, Lead Tertiary Education Specialist and Coordinator of its Network of Higher Education Specialists) (New Delhi, Delhi)
• Australia India Institute-Delhi (AII@Delhi) (Professor Amitabh Mattoo, Honorary Director; Mr Vinod Mirchandani, Deputy Director, Engagement)

**IN AUSTRALIA**

**Australian universities**
• University of Melbourne (Professor Fazal Rizvi, Melbourne Graduate School of Education)
• Australia India Institute-Melbourne (AII) (Mr Jim Varghese, Executive Director, Business Development)
• University of Sydney (Ms Amanda Sayan, Director of Partnerships, Office of Global Engagement*)
• Swinburne University of Technology (Ms Tanya Loh, Associate Director, International Relations*)
• University of Queensland (Mr Michael Holder, Acting Director, Global Engagement*)
• Curtin University (Ms Gillian Ajayi, Regional Recruitment Manager, Curtin International*; and Professor Sambit Datta, School of the Built Environment and School of Electrical Engineering and Computing)
• University of New South Wales (Ms Meherlyn Jussawalla, UNSW International)
• Melbourne South Asia Studies Group (MSASG), University of Melbourne (Dr Surjeet Dhanji)

*emailed responses
# APPENDIX 2: AUSTRALIAN UNIVERSITY ENGAGEMENT WITH INDIA’S LEADING AND SPECIALIST HIGHER EDUCATION INSTITUTIONS

Table 10: Australia’s engagement with Indian higher education institutions, including institutional rankings and number of MOUs

<table>
<thead>
<tr>
<th>National Capital Territory (Capital: Delhi)</th>
<th>Number of MOUs with Australian universities</th>
<th>NIRF India Ranking 2017 (overall, top 35)</th>
<th>THE 2016-2017 (top 800)</th>
<th>Proportion of i/n students (THE 2016-2017)</th>
<th>ARWU top 500 2016</th>
<th>CWTS Lieden Rankings 2017</th>
<th>% international co-authorship (CWTS Leiden)</th>
</tr>
</thead>
<tbody>
<tr>
<td>All India Institute of Medical Science, New Delhi</td>
<td>0</td>
<td>✓</td>
<td>21.1%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indira Gandhi National Open University</td>
<td>1</td>
<td>23</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indian Institute of Technology Delhi (IIT-D)</td>
<td>3</td>
<td>5</td>
<td>401-500</td>
<td>7%</td>
<td>✓</td>
<td>22.9%</td>
<td></td>
</tr>
<tr>
<td>Jamia Millia Islamia</td>
<td>0</td>
<td>20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jawaharlal Nehru University</td>
<td>12</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lady Shri Ram College, affiliated to the University of Delhi</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>St. Stephen’s College, affiliated to the University of Delhi</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The Energy and Resources Institute (TERI) University</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>University of Delhi</td>
<td>2</td>
<td>15</td>
<td>601-800</td>
<td>7%</td>
<td>✓</td>
<td>31.8%</td>
<td></td>
</tr>
</tbody>
</table>

KARNATAKA (Capital: Bengaluru)

<table>
<thead>
<tr>
<th>National Capital Territory (Capital: Bengaluru)</th>
<th>Number of MOUs with Australian universities</th>
<th>NIRF India Ranking 2017 (overall, top 35)</th>
<th>THE 2016-2017 (top 800)</th>
<th>Proportion of i/n students (THE 2016-2017)</th>
<th>ARWU top 500 2016</th>
<th>CWTS Lieden Rankings 2017</th>
<th>% international co-authorship (CWTS Leiden)</th>
</tr>
</thead>
<tbody>
<tr>
<td>International Institute of Information Technology Bangalore (IIT-B)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indian Institute of Science (IISc)</td>
<td>8</td>
<td>1</td>
<td>201-250</td>
<td>7%</td>
<td>✓</td>
<td>(101-400)</td>
<td>26.8%</td>
</tr>
<tr>
<td>Indian Institute of Management Bangalore (IIM-B)</td>
<td>3</td>
<td>25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jagadguru Sri Shivarathreeswara (JSS) University (in Mysore)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>JNU Centre for Advanced Scientific Research (in Jakkur)</td>
<td>0</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manipal Academy of Higher Education - Manipal (in Manipal)</td>
<td>0</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manipal University (in Manipal)</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>University of Mysore</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TAMIL NADU (Capital: Chennai)

<table>
<thead>
<tr>
<th>National Capital Territory (Capital: Chennai)</th>
<th>Number of MOUs with Australian universities</th>
<th>NIRF India Ranking 2017 (overall, top 35)</th>
<th>THE 2016-2017 (top 800)</th>
<th>Proportion of i/n students (THE 2016-2017)</th>
<th>ARWU top 500 2016</th>
<th>CWTS Lieden Rankings 2017</th>
<th>% international co-authorship (CWTS Leiden)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amrita Vishwa Vidyapeetham (in Coimbatore)</td>
<td>2</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annamalai University (in Chidambaram)</td>
<td>0</td>
<td></td>
<td>✓</td>
<td>15.8%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anna University</td>
<td>8</td>
<td>12</td>
<td>✓</td>
<td>20.3%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Christian Medical College and Hospital</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indian Institute of Technology Madras (IITM)</td>
<td>13</td>
<td>2</td>
<td>401-500</td>
<td>7%</td>
<td>✓</td>
<td>25.4%</td>
<td></td>
</tr>
<tr>
<td>National Institute of Technology</td>
<td>0</td>
<td>34</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tiruchirappalli</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SRM University</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tamil Nadu Agricultural University (in Coimbatore)</td>
<td>1</td>
<td>28</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>University of Madras</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VIT University (in Vellore)</td>
<td>10</td>
<td>22</td>
<td>✓</td>
<td>20.1%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

MAHARASHTRA (Capital: Mumbai)

<table>
<thead>
<tr>
<th>National Capital Territory (Capital: Mumbai)</th>
<th>Number of MOUs with Australian universities</th>
<th>NIRF India Ranking 2017 (overall, top 35)</th>
<th>THE 2016-2017 (top 800)</th>
<th>Proportion of i/n students (THE 2016-2017)</th>
<th>ARWU top 500 2016</th>
<th>CWTS Lieden Rankings 2017</th>
<th>% international co-authorship (CWTS Leiden)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homi Bhabha National Institute</td>
<td>0</td>
<td>35</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indian Institute of Technology Bombay (IITB)</td>
<td>7</td>
<td>3</td>
<td>351-400</td>
<td>7%</td>
<td>✓</td>
<td>31.2%</td>
<td></td>
</tr>
<tr>
<td>Indian Institute of Science Education and Research, Pune</td>
<td>0</td>
<td>29</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

81 According to the Centre for Science and Technology Studies, Leiden University (2017) “The Leiden Ranking is based on publications in Clarivate Analytics’ Web of Science database (Science Citation Index Expanded, Social Sciences Citation Index, and Arts & Humanities Citation Index) in the period 2012–2015. Book publications, publications in conference proceedings, and publications in journals not indexed in Web of Science are not taken into account” (n.p.).

82 This indicator represents “The number and the proportion of a university’s publications that have been co-authored by two or more countries” (Centre for Science and Technology Studies, Leiden University, 2017, n.p.).
<table>
<thead>
<tr>
<th>Institution</th>
<th>Rank</th>
<th>City</th>
<th>State</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jai Hind College, affiliated to the University of Mumbai</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Narsee Monjee Institute of Management Studies (NMIMS)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Savitribai Phule Pune University (in Pune)</td>
<td>1</td>
<td>18</td>
<td>601-800</td>
<td>4%</td>
</tr>
<tr>
<td>St Xavier's College, affiliated to the University of Mumbai</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Symbiosis International University (in Pune)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TATA Institute of Fundamental Research</td>
<td>2</td>
<td>601-800</td>
<td>1%</td>
<td></td>
</tr>
<tr>
<td>TATA Institute of Social Sciences</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>University of Mumbai</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whistling Woods International</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ANDHRA PRADESH (Capital: Hyderabad)</td>
<td>1</td>
<td>26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indian Institute of Technology Hyderabad</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indian School of Business (in Gachibowli)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NALSAR University of Law</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>University of Hyderabad</td>
<td>1</td>
<td>14</td>
<td></td>
<td>73.7%</td>
</tr>
<tr>
<td>Sri Venkateswara University (in Tirupati)</td>
<td>0</td>
<td>601-800</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>WEST BENGAL (Capital: Kolkata)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indian Institute of Management Calcutta (IIIMC)</td>
<td>4</td>
<td>501-600</td>
<td>n/a</td>
<td>20.6%</td>
</tr>
<tr>
<td>Jadavpur University</td>
<td>0</td>
<td>501-600</td>
<td>n/a</td>
<td>20.8%</td>
</tr>
<tr>
<td>Calcutta University</td>
<td>4</td>
<td>401-500</td>
<td>n/a</td>
<td>19.7%</td>
</tr>
<tr>
<td>Vivekanand College</td>
<td>0</td>
<td>31</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UTTAR PRADESH (Capital: Lucknow)</td>
<td>0</td>
<td>19</td>
<td>601-800</td>
<td>2%</td>
</tr>
<tr>
<td>Aligarh Muslim University (in Aligarh, Uttar Pradesh)</td>
<td>0</td>
<td>601-800</td>
<td>2%</td>
<td>40.4%</td>
</tr>
<tr>
<td>Amity University</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Banaras Hindu University (in Varanasi, Uttar Pradesh)</td>
<td>1</td>
<td>10</td>
<td></td>
<td>22.1%</td>
</tr>
<tr>
<td>Indian Institute of Technology Kanpur (in Kanpur, Uttar Pradesh)</td>
<td>2</td>
<td>7</td>
<td>401-500</td>
<td>26.7%</td>
</tr>
<tr>
<td>Indian Institute of Technology Lucknow (in Lucknow, Uttar Pradesh)</td>
<td>0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PUNJAB &amp; HARYANA (Capital: Chandigarh)</td>
<td>0</td>
<td>32</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Postgraduate Institute of Medical Education and Research (in Chandigarh)</td>
<td>0</td>
<td></td>
<td></td>
<td>14.6%</td>
</tr>
<tr>
<td>Panjab University (in Chandigarh)</td>
<td>2</td>
<td>601-800</td>
<td>7%</td>
<td>39.2%</td>
</tr>
<tr>
<td>GUJARAT (Capital: Gandhinagar)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Centre for Environmental Planning and Technology (CEPT) University</td>
<td>1</td>
<td>17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indian Institute of Management Ahmedabad (in Ahmedabad, Gujarat)</td>
<td>1</td>
<td>17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>National Institute of Design (in Ahmedabad, Gujarat)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OTHER</td>
<td>2</td>
<td>8</td>
<td></td>
<td>21.3%</td>
</tr>
<tr>
<td>Indian Institute of Technology Guwahati (in Guwahati, Assam)</td>
<td>1</td>
<td>9</td>
<td>501-600</td>
<td>22.8%</td>
</tr>
<tr>
<td>Indian Institute of Technology Roorkie (in Roorkie, Uttarakhand)</td>
<td>2</td>
<td>21</td>
<td>601-800</td>
<td>n/a</td>
</tr>
<tr>
<td>Birla Institute of Technology and Science - Pilani (in Pilani, Rajasthan)</td>
<td>1</td>
<td>24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indian Institute of Technology Indore (in Madhya Pradesh)</td>
<td>0</td>
<td>601-800</td>
<td>7%</td>
<td></td>
</tr>
<tr>
<td>National Institute of Technology Rourkela (in Rourkela, Odisha)</td>
<td>0</td>
<td>601-800</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Tezpur University (in Tezpur, Assam)</td>
<td>0</td>
<td>601-800</td>
<td>n/a</td>
<td></td>
</tr>
<tr>
<td>Indian Institute of Technology (Indian School of Mines), Dhanbad (in Dhanbad, Jharkhand)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rajagiri International School for Education and Research (RISER) (in Kochi, Kerala)</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Siksha O’Anusandhan University (in Bhubaneswar, Odisha)</td>
<td>0</td>
<td>33</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Minerva Access is the Institutional Repository of The University of Melbourne

Author/s:
Freeman, B

Title:
The nature and extent of university engagement with Indian higher education institutions

Date:
2017

Citation:
Freeman, B, The nature and extent of university engagement with Indian higher education institutions, The nature and extent of university engagement with Indian higher education institutions, 2017, pp. 1 - 49

Persistent Link:
http://hdl.handle.net/11343/198088

File Description:
Published version