APRU: Collaboration for Global Leadership

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Christopher Tremewan
Secretary General
APRU in brief

- 45 leading research universities
- Based in 16 economies
- 120,000 faculty members
- 2 million students
- More than US$50 billion total budget
Regional Architecture: the alliance of leading research universities
APRU Members

Australia
Australian National University
University of Melbourne
University of NSW
University of Sydney

Canada
University of British Columbia

Chile
University of Chile

China
Fudan University
Hong Kong University of Science and Technology
Nanjing University
Peking University
Tsinghua University
University of Hong Kong
University of Science and Technology of China
Zhejiang University

Chinese Taipei
National Taiwan University

Indonesia
University of Indonesia

Japan
Keio University
Kyoto University
Osaka University
Tohoku University
University of Tokyo
Waseda University

Korea
Korea University
Seoul National University
Yonsei University

Malaysia
University of Malaya

Mexico
Monterrey Institute of Technology and Higher Education
National Autonomous University of Mexico

New Zealand
University of Auckland

Philippines
University of the Philippines

Russia
Far Eastern Federal University

Singapore
National University of Singapore

Thailand
Chulalongkorn University

USA
California Institute of Technology
Stanford University
University of California, Berkeley
University of California, Davis
University of California, Irvine
UCLA
University of California, San Diego
University of California, S Barbara
University of Hawai‘i, Manoa
University of Oregon
University of Southern California
University of Washington
Origins: response to regional integration

• Founded in 1997 by four university presidents (Berkeley, Caltech, USC, UCLA)
• Membership modeled on APEC

Initial Objectives

• APRU to be ‘big science’ advisory body of presidents to APEC
• Asia-Pacific research and innovation infrastructure
• Technology commercialisation
The Big Picture - The Opportunity

The Pacific Rim is the most dynamic region in the world.

The world’s three largest economies are located on the Rim along with a rich diversity of developing and developed nations from Latin America, East and Southeast Asia, Russia, Australasia and North America.

Bordering the vast Pacific Ocean, one third of the Earth’s surface, Asia-Pacific societies face many common challenges: sustainability, water, energy and climate change, demographic shifts and ageing populations, pandemics and public health, inequality and poverty, governance, natural disasters...

The region is changing the face of higher education and research. Major public investment in university systems, especially in Asia, has seen the emergence of high-ranking institutions and new flows of talented faculty and students within the region and beyond.

Inter-government organizations like UNESCO, UN ESCAP, APEC, ASEAN, ASEM, ARF, ADB provide the architecture for nations to cooperate on regional issues.

APRU is poised to offer global leadership as the leading organization of the Asia-Pacific architecture for higher education and research.
Collaboration btwn APRU Institutions

• Edge width corresponds to number of co-authored articles between institutions. University pairings that have co-authored less than 100 articles (across all subject areas) between 2008-2012 are excluded.
Strategic Framework
2012-2015
The Asia-Pacific Network for Global Leadership
APRU’s Strategic Framework

1. Shaping Asia-Pacific Higher Education and Research
2. Creating Asia-Pacific Global Leaders
3. Partnering on Solutions to Asia-Pacific Challenges
1. Shaping Asia-Pacific Higher Education and Research

• Benchmarking
• Networking
• Public policy development and HE systems
• Multilateral cooperation (APEC, UNESCO, etc)

Programs include:
- provosts, deans, academic and admin leaders
- Equity and access (U of Chile, Santiago)
- Learning technology
- Science education
2. Creating Asia-Pacific Global Leaders

- Faculty and student mobility
- Leadership in internationalisation

Programs include:
- Asia-Pacific Women in Leadership (APWiL) (Tokyo)
- Doctoral Students Network and Conference
- Fellows Program
- Undergraduate Summer Program
- Internships
3. Partnering on Solutions to Asia-Pacific Challenges

- Global Health (USC – Institute for Global Health)
- Sustainability and Climate Change (UC San Diego – Sustainability Solutions Institute)
- Multi-hazards (Tohoku U, Sendai – International Research Institute in Disaster Science)

Others in development:
- food security (Chulalongkorn U)
- biodiversity & resilience (U of the Philippines),
- ageing, ...
Partnerships

• APEC – PP Science, Technology and Innovation
  – Higher Education
• Pacific Economic Cooperation Council (PECC)
• UN ESCAP
• APAN
• ADB
• APAIE
• Elsevier
• Global Academy Jobs
Initiatives/ Priorities

• The future of research and innovation in the Asia-Pacific region
• And the role of research universities in society
• Sustaining the rise in excellence while meeting public policy goals
• Entrepreneurship and creativity gap
• Governance of the internet
Trends in R&D Expenditures (GERD)

Main takeaways:
A) Notice growth in China's GERD (both past and forecasted)

- Dotted lines indicate forecasted amounts
- Data Sources: OECD, IMF, UNESCO
Main takeaways:

A) The second tier (one order of magnitude smaller) of countries in terms of GERD

B) Notice Australia’s strong growth rate, projected to surpass Canada and catch up to Russia

C) New Zealand and Chile, Singapore and Mexico have similar projected GERD

Trends in R&D Expenditures (GERD)

- Dotted lines indicate forecasted amounts
- Data Sources: OECD, IMF, UNESCO
- NB: Data prior to 2007 for Chile unavailable
Main takeaways:

A) Regional trends in total publication output

B) Notice that Asia-Pacific has overtaken both the US and the EU27 in terms of total publications in the past 8 years.
Trends in Total Publication Output

Main takeaways:
A) The top tier of APRU member countries in terms of publication output
B) Notice again China's rise over the past 8 years
C) Relative to China, Australia and South Korea's growth in total output looks rather low …

Data Source: Scopus via SciVal 2
Main takeaways:

A) The second tier (one order of magnitude smaller) of APRU member countries in terms of publication output

B) But, relative to smaller countries, Australia and South Korea's output growth is quite strong

C) South Korea just overtaking Australia (though it has long had a higher GERD)

D) Taiwan overtakes Russia

Trends in Total Publication Output

Data Source: Scopus via SciVal 2
Production of “Star Articles”

Main takeaways:

A) Another take – convergence near the top in terms of production of star articles

B) NB: we exclude values from 2012 because not enough citations have accrued (or precisely, there is not enough variation in citations accrued); data is too noisy and likely subject to much further fluctuation

• Data Source: Scopus via SciVal 2
3 Pillars, 5 Disconnects

‘Putting Higher Education to Work – Skills & Research for Growth in East Asia’
World Bank 2012

3 Public Policy Pillars
- More efficient financing of higher education
- Better management of public institutions
- Exercising stewardship (steering) of HE systems

5 Disconnects
- Between institutions and employers’ skills needs
- Weak research & technology nexus between institutions and companies
- Separation between teaching and research
- Between institutions & with training providers
- Between tertiary and schools
## Size of 18-23 cohort (millions)

<table>
<thead>
<tr>
<th>Country</th>
<th>2012</th>
<th>2020</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cambodia</td>
<td>1.56</td>
<td>1.49</td>
<td>-4.49</td>
</tr>
<tr>
<td>China</td>
<td>109.62</td>
<td>89.80</td>
<td>-18.08</td>
</tr>
<tr>
<td>Indonesia</td>
<td>21.44</td>
<td>20.94</td>
<td>-2.31</td>
</tr>
<tr>
<td>Lao PDR</td>
<td>0.73</td>
<td>0.71</td>
<td>-2.28</td>
</tr>
<tr>
<td>Malaysia</td>
<td>3.64</td>
<td>4.06</td>
<td>11.56</td>
</tr>
<tr>
<td>Philippines</td>
<td>9.48</td>
<td>10.61</td>
<td>12.01</td>
</tr>
<tr>
<td>Thailand</td>
<td>6.54</td>
<td>6.01</td>
<td>-8.10</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>8.65</td>
<td>6.39</td>
<td>-26.20</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>15.09</td>
<td>15.77</td>
<td>4.54</td>
</tr>
<tr>
<td>India</td>
<td>141.58</td>
<td>145.68</td>
<td>2.89</td>
</tr>
<tr>
<td>Pakistan</td>
<td>19.36</td>
<td>19.48</td>
<td>0.64</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>337.68</td>
<td>320.94</td>
<td>-4.96</td>
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</table>
# Tertiary Enrolments

<table>
<thead>
<tr>
<th>Country</th>
<th>2012</th>
<th>2020</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cambodia</td>
<td>0.23</td>
<td>0.30</td>
<td>28.95</td>
</tr>
<tr>
<td>China</td>
<td>31.82</td>
<td>35.92</td>
<td>12.88</td>
</tr>
<tr>
<td>Indonesia</td>
<td>5.70</td>
<td>8.38</td>
<td>46.92</td>
</tr>
<tr>
<td>Lao PDR</td>
<td>0.11</td>
<td>0.14</td>
<td>24.48</td>
</tr>
<tr>
<td>Malaysia</td>
<td>1.54</td>
<td>2.04</td>
<td>32.01</td>
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<tr>
<td>Philippines</td>
<td>2.96</td>
<td>3.71</td>
<td>25.68</td>
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<tr>
<td>Thailand</td>
<td>2.22</td>
<td>3.01</td>
<td>35.24</td>
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<tr>
<td>Viet Nam</td>
<td>2.42</td>
<td>3.90</td>
<td>61.48</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>2.16</td>
<td>3.15</td>
<td>46.29</td>
</tr>
<tr>
<td>India</td>
<td>23.93</td>
<td>43.70</td>
<td>82.60</td>
</tr>
<tr>
<td>Pakistan</td>
<td>1.75</td>
<td>2.92</td>
<td>66.57</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>74.85</strong></td>
<td><strong>107.17</strong></td>
<td><strong>43.19</strong></td>
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</table>
## Government gross enrolment targets

<table>
<thead>
<tr>
<th>Country</th>
<th>Target</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRC</td>
<td>40%</td>
<td>2020</td>
</tr>
<tr>
<td>Malaysia</td>
<td>50%</td>
<td>2020</td>
</tr>
<tr>
<td>Thailand</td>
<td>50%</td>
<td>2020</td>
</tr>
<tr>
<td>India</td>
<td>20%</td>
<td>2015</td>
</tr>
</tbody>
</table>
Implications of government targets

• The achievement of the aggregate gross enrolment targets across these 11 countries would necessitate the provision of an additional 32m tertiary education places in the next seven years.

• 43% growth from 2012
Academic Staff Implications

• If we applied existing staff-student ratios to the 2020 GER projections, an additional 1.46m academic staff would need to be in place by 2020.
• Equates to an additional 185,000 academic staff each year for the next eight years.
• USA + EU + Australia: 156,000 PhDs p.a.
Key questions

• How do you maintain quality? Is it even there to be maintained?
  – 80% of Thai firms have difficulties filling jobs; deem that graduates lack basic skills

• Employment prospects for large numbers of new university graduates?
  – China 2012: 4% unemployment in group with elementary degree; 16% if university degree

• What future labour market are you developing graduates for?
The Role of Research Universities

• Critical role in national growth strategies
• Need for multi-disciplinary, flexible, timely responses to crises in non-linear, complex, adaptive systems
• Challenges to taking leadership role:
  – strong research capability & focus
  – international cooperation, embedded trust and knowledge
  – internal organisation & resourcing
  – institutional autonomy to respond
  – partnership with business, govt, int’l orgns, NGOs
Historic shifts

• International networks have potentially created a new transformational space
• Pressure to engage (1=45)
• Global positioning system

deliver more value to members and to Asia-Pacific societies
www.apru.org

secgen@apru.org