Programme on Innovation, Higher Education and Research for Development

IHERD

Seminar co-hosted by
OECD/Project IHERD,
Sida/Sweden
and Boston College, USA

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This report is authored by Mary-Louise Kearney, as part of the Programme on Innovation, Higher Education and Research for Development (IHERD) hosted at the OECD and funded by the Swedish International Development Cooperation Agency (Sida). The opinions expressed and arguments employed herein are those of the author and do not necessarily reflect the official views of the OECD or Sida or of the governments of the OECD member countries.
Executive Summary

The seminar focused on the key role of research universities (RUs) in promoting economic growth and social wellbeing. These institutions are major actors in the global knowledge economy (notably in relation to R&D and innovation). Thus, governments in both high income and emerging economies seek to support or to establish them as knowledge hubs and to dialogue with other key stakeholders such as the private sector, the research community and civil society bodies with academic mandates. The seminar hosts (OECD/Project IHERD, Sida/Sweden and Boston College) all give strong support to strengthening research universities.

The OECD designs frameworks to help national decision-makers in the policy choices. Four frameworks contextualised the seminar: Tertiary Education for the Knowledge Society, Innovation, Development and Gender. Research universities, through their mission, activities and impact, relate to the objectives and components of each framework because they help countries shape their knowledge policies and compete in the global economy.

The policy implications of RUs were the major thrust of the seminar. Aspects of knowledge policy were presented by international experts and discussants (e.g. RUs and national development, regional and international networking, managing academic knowledge networks, researcher mobility, the role of Institutional Research Offices, policy choices to support African research, research challenges for the MENA region, ranking systems and emerging economies, the multiple roles of Learned Societies and RUs, technology transfer and job creation). This data was then linked to the four key policy frameworks with reference to tertiary/higher education governance, academic careers, research management, funding, support for RDI, labour market linkages, quality assessment, CIT capacity and internationalisation. Special attention was paid to African RUs, the careers of women and young researchers and research for sustainable development.

Finally, the seminar emphasised the growing importance of RUs and similar academic research networks and why these must by both dynamic and equitable: i) for developing national competitiveness in the global economy; ii) their dependence on intrinsic capacity and adequate resourcing; iii) for policy advice give by OECD and other IGOs; iv) how RUs and research networks will help reshape academia as a major force for national and global development in the future.
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Introduction: Rationale for the Seminar

The seminar sought to focus on the powerful role played by these particular academic institutions in promoting economic growth and social wellbeing. The multiple facets and complex tensions involved require constant dialogue amongst the concerned stakeholders, namely governments, the institutions themselves, the national and global economies (including the private sector) and society at large.

The expansion of higher education into a global industry has brought diversity of institutional purpose with research universities aligning academic research to national economic growth and social development, thereby linking up to the national and global knowledge economy.

Research universities stand at the pinnacle of academic systems everywhere. They are central to a nation’s capacity both for research and for advanced education. Also, depending on their quality and resources, they are part of the new global knowledge economy. As knowledge systems become increasingly complex, the success of universities is critical and their capacity to support strong research networks is essential.

Today, relatively little is known about how research systems and their associated knowledge systems actually work. The varied socio-economic conditions of different contexts further complicates investigation and prevents the design of any model applicable to all situations. Interesting questions are: are international research networks accessible and what are their terms of engagement? Do international knowledge networks contribute to research excellence and can they address local needs and national capacity-building as well?

Worldwide, the management of R&D and innovation has emerged as a specialised area and specifically concerns research universities. To compete globally and to contribute to national and local development, these good governance, talented faculty and students require solid resources for success.

Each of the seminar’s hosts have a vested interest in the chosen theme: OECD’s Programme IHERD aims to increase knowledge and awareness of policy and management instruments in higher education, research and innovation, and to share this knowledge with middle and low-income countries; (Sida/Sweden) accords special support to strengthening universities, research infrastructure and research cooperation for science and socio-economic development; and the CIHE of Boston College is a distinguished observer of research universities and higher education systems worldwide. Given these interests and the international profiles of the participants, the global perspective of the seminar was assured.
2. The Seminar in Context

2.1. IHERD

The IHERD Programme comprises three priority objectives, which necessitate direct linkages with research universities whatever their specific socio-economic context:

i) Strengthening the policy relevance of research: this requires a shift in the research agenda so as to review and reorient existing research, commissioning new research which is directly attuned to development goals and by fostering closer networking with researchers and their institutions in the IHERD field worldwide;

ii) Better Informed Policy-making: both the OECD and governments in all regions consider that integrated systems of innovation, higher education and research are necessary for economic advancement. Thus Programme IHERD can be a platform to promote policy dialogue in this area amongst OECD members and other economies. As strong research universities constitute a cornerstone of this policy, higher education policy must be reformed so as to build world-class institutions which will help a country to compete in the global economy;

iii) Policy coherence with regard to investment in innovation, higher education and research: the post-crisis economy requires governments to increase return on public investment through improved policy coherence and systemic efficiency. Building upon complementarities in the higher education and research systems, notably in specific sectors need for national development, may help realise this goal. OECD and Project IHERD, will privilege partnerships with key development actors such as the International Forum for Research Donors (IFORD) and multi-stakeholder dialogue amongst governments, the research community and the private sector. Research universities will take part in this debate as they can help link national development priorities to the global knowledge society.

2.2. Major OECD Strategies and Frameworks

Proposing strategies and frameworks in priority areas for national development is a main OECD task and strength. A number of these tools related to the IHERD seminar so that its conclusions could be shaped into policy advice for an interested audience of policy-makers, higher education authorities and the academy, as well as for the public at large. Four frameworks helped contextualise the seminar and each has implications for research universities:

1. Tertiary Education for the Knowledge Society

From 2004 to 2008, the OECD undertook a comprehensive international review of tertiary education policy. This is wider in scope than higher education which is primarily university-based.
Its goal was to help countries share innovative and successful initiatives and to identify policy options to maximise the contribution of tertiary education to national economic and social objectives. The eight challenges for tertiary education were: steering, funding, quality assurance, equity, contribution to R&D and innovation, the academic career, labour market links and internationalisation. Each type of Tertiary Education Institution -including research universities - must find its appropriate location within the wider landscape of the sector and the priorities of individual institutions and the wider social and economic agendas of countries need to be reconciled. TEIs are expected to demonstrate their specific responses to the eight domains considered critical for the future.

2. The OECD Innovation Strategy

Innovation has become the most-often used term in recent discourse related to the global economy. In the wake of the 2008 crisis, the world faces a fragile recovery process with many economic, environmental and social challenges. Research - university, public and private – plays a central role in discovering new knowledge which translates into innovation. This latter area is often dominated by young firms in CIT fields.

The 2011 Innovation Strategy is the outcome of three years of dialogue and analysis of good practice. It concerns multiple disciplines and stakeholders, from education and training to business environment, societal infrastructure and action to create and diffuse knowledge. Although each government has specific development objectives, innovation is a common priority and arches over multiple policy domains.

The strategy emphasises that: i) education empowers people to innovate; ii) SMEs are a vital part of the national business sphere; iii) R&D should attract public and private investment; iv) strong science capacity and capacity underpin breakthrough innovation. Everywhere, networking is the key tool for sharing new knowledge and good practice.

Innovation highlights the status and performance of research universities which are a central component of the national capacity in this domain. Several trends emerge: i) the Super RU model will likely continue to dominate Big Science based on basic research and top ranking tables; ii) many OECD country universities also rank well as their solid research credentials result in efficient infrastructure and cooperation mechanisms; iii) more MIC countries are providing support for governance, funding and top faculty to build one or several world-class universities and establishing research management structures so as to link into international research as part of the knowledge economy; iv) low income countries (LICs) face difficult choices as their needs in education and science are great, as their research infrastructure is often poor; research networking offers important and necessary connections to innovative knowledge and innovative strategies; v) Africa remains problematic for R&D and innovation issues since further investment to reinforce established research universities competes with support for the leap-frog potential of innovation in areas such as CIT and micro-credit. Despite depleted resources, African research universities can keep essential contacts with the international research through academic networking.
3. **The OECD Strategy on Development**

This new Strategy endorses the OECD as a policy-sharing hub for core member states and a wider audience of economies to promote both effectiveness and impact of development co-operation and interdisciplinary expertise in public policy-making. Its rationale recognises the paradigm shift in the global economic landscape over the past fifty years which includes new centres of economic gravity, diverse growth and development models, changing modalities for development funding, risks for development posed by poverty and global problems. The Strategy, to be implemented in partnership with the UN and the World Bank, assumes that all countries can prosper by learning lessons from one another, sharing ideas and improving policies based on inclusiveness and flexibility.

The Development Strategy resonates strongly with IHERD’s emphasis on strengthening research universities in middle and low-income contexts and placing them at the heart of development policies. Four factors have special significance: i) the role of universities as core established knowledge-generating institutions in emerging nations; ii) charting and monitoring the widely varied R&D and innovation landscapes in emerging countries will show that research universities are key actors within this space; iii) increasing international exchange and mobility in tertiary education requires that local research capacity be retained and reinforced via more effective university research management and international research collaboration underpinned by stronger CIT capacity; iv) Africa still faces massive development problems. African science (often located in research universities) will be essential for their long-term solution but this will depend on sound national research systems, the retention of top researchers, improved data collection, greater presence in scientific publishing and research-based policy-making.

4. **The OECD Gender Initiative**

This strategy is designed to contribute to the ongoing global campaign for gender equality and, in particular, to highlight the economic aspects involved. It is built on three areas namely education, employment and entrepreneurship since these are key pathways to better economic opportunities. Four pillars underpin the Gender Initiative: data on barriers to equality, indicators to measure progress, evidence on women’s entrepreneurship and good practice for policy-makers. The strategy involved numerous OECD directorates and a Final Report entitled *Closing the Gender Gap: Act Now* was published in late 2012. In relation to research universities, academia is a predominantly male precinct in its leadership and faculty career paths, although women may now dominate enrolment numbers and certain fields of study. Too few universities are run by women and the scarcity of women professors in research in science-related fields is a problem yet to be resolved. The academy should take heed of current research on workplace attitudes and practices which deny gender equality because these prevent the sector itself from realising its optimal contribution to socio-economic development.
3. Policy Implications of the Seminar Discussions

3.1. Aspects and Actors: Topics Discussed

The main papers addressed a wide range of aspects specific to research universities, and the actors essential for their networking. Authors and their discussants represented all regions of the world so the global scope of the experiences tabled was assured.

Topics covered were:

- Advancing the national and global knowledge economy;
- Regional and international networking of universities;
- Scientific mobility and international research networks;
- Managing academic knowledge networks and research output;
- Developing institutional research capacity at research universities;
- Centres of Excellence: contextualizing research in Africa;
- Building national research capacity in Africa;
- North-south partnerships between research universities;
- Internationalisation, research and the knowledge society: implications for the MENA region;
- The impact of ranking systems on middle-income country research universities;
- Learned societies as a bridge between research, policy-making and funding;
- Research universities, technology transfer and job creation.

(NB: Full papers can be consulted on the websites of Boston College and of OECD Project IHERD.)

3.2. Major Policy Linkages

This section demonstrates the synergies between papers presented by the main participants (see Section 3.1) and the policy options suggested by the OECD in its recent frameworks (see section 2). Thus, experts in similar academic groupings may become more aware of current policy recommendations and implement those which are relevant for their future action.

As important background data, the priority components of the four specific OECD policy frameworks discussed in the paper should be recalled:

- **Tertiary Education 2008**: governance, funding, quality, equity/access, R&D links, the academic career, labour market links, internationalisation
- **Innovation 2011**: driving growth and addressing social challenges, helping to recover from the 2008 crisis, policies to reflect innovation occurring today, empowering people to innovate, unleashing innovation in firms, knowledge creation, diffusion and application
- **Development 2012**: building on core expertise and experience, leveraging comparative advantages, applying a more comprehensive and inclusive approach, adapting frameworks, upgrading skills and deepening partnerships
- **Gender 2012**: equitable approaches to education, employment and entrepreneurship to realise the potential of women.
Examples of policy linkages were as follows:

**Policy Reviews**

These exercises, which are stock in trade for the OECD, show that countries put great store on inviting an objective appraisal of the appropriateness and impact of their policy choices.

These reviews target areas of specific topicality, as signalled by the OECD in terms of how these areas impact on sustainable economic growth, amongst member states and associated nations. A sample of recent reviews (2009-2012) demonstrates the importance of the areas under scrutiny:

*Tertiary Education Policy:* Poland, Chile, Colombia, Egypt, South Africa, Republic of Korea, Japan, China, Netherlands, Russian Federation, Australia.

*Science, Technology and Innovation Policy:* Sweden, Slovenia, Peru, Russian Federation, Mexico, Republic of Korea.

*Reviews of cities and regions central for economic growth:* Berlin, Rotterdam, Seville, Penang, Parana, Lombardy, Pasa del Norte (Mexico).

Beyond the OECD, numerous countries are assessing their capacities to help drive economic development, inter alia, Malaysia, Morocco, the Gulf States, Baltic nations, Caribbean states such as Trinidad and Tobago. The message behind these reviews is clear: economic opportunities do not wait. In each case, the notion of context is vital, given the range of socio-economic variables in play. So, why do countries, regions or cities ask for review? Because they understand their strategic importance and seek to reinforce their strengths within the global economy.

**Governance and Management Issues**

Altbach cited these to be a *sine qua non* for institutional excellence, along with Meek and Jacob who claimed that good governance and dynamic institutional leadership ensure the quality of research; Postiglione considered that this factor creates the necessary enabling context for research capacity, as exemplified by the recent success of Hong Kong universities. Brodhag took this analysis of context further to the function of preparing students for today's labour market. Chirikov suggested that institutional research provides valuable advice to governance actors, institutional leaders and managers on current trends in support of their overall steering role.

**Academic Careers in Teaching and Research**

These career paths are fast evolving as countries must satisfy access demands (via teaching) and also support a solid research base which embraces international talent. Altbach alluded to the dearth of doctoral faculty in certain regions, which is directly addressed by strategies in South Africa (e.g. the SanTrust Programme) and in Brazil. McCarthy and Rands considered that Learned Societies can - and must - help recognise, nurture and rewards talent, while Tremewan and Tadaki contended that civil society organisations need to clarify their respective political and academic roles for optimal impact. Measuring the success of research careers by criteria such as co-
publications and ranking tables may require revamping in the near future as context-relevant research and new approaches to metrics assume new importance.

**Student Access to Research Opportunities**
This is a varied landscape: Meek and Jacob spoke of broader opportunities for mobility and recognition of international talent at the global level; Knobel cited Brazilian strategies to attract talented students (both undergraduate or graduate); McCarthy and Rands referred to the role of learned societies in recognising and nurturing young research talent. Choucri warned of the challenges posed by highly populated nations in all regions, which already requires forward-looking strategies in tertiary education and RDI policies. The SanTrust experts described the approaches to special programmes which raise the level of African doctoral credentials. As raw talent irrigates knowledge creation, there was agreement that this must be effectively identified and harnessed.

**Research Funding**
Today, this responsibility is shared between the public and private sectors and, as noted by Altbach, this is another building block for knowledge production. Support ranges over a wide range of sources: generous government and local support (Brazil and Hong Kong); judicious use of available funds managed by support bodies such as learned societies (New Zealand); and moving from donor aid to sustainable self-ownership (South Africa/SanTrust). Other schemes yielding significant support include philanthropy and alumni pledges. Adequate funding by multiple sources signals agreement that the academy must access and perform in the knowledge economy.

**Promoting R&D and Innovation**
The respective policy recommendations for tertiary education, R&D and innovation converge on this specific point, which is congruent with the importance of these fields for the knowledge economy. While Education features as a key element in the Innovation Strategy, this is rather to promote creative teaching which will hone critical skills and entrepreneurial attitudes amongst students as these will be vital for their careers. In contrast, the RDI focus targets Institutions which seek the status of world-class research universities. Examples (both old and new) in all regions attest to the necessary policy choices and measures which must be taken in this regard. Examples are the University of Manchester Institute of Science and Technology (UMIST)/UK, Chalmers University of Technology/Sweden, Georgia Tech/USA, Monterrey Institute of Technology/Mexico, Tshwane University of Technology/South Africa and the Masdar Institute of Science and Technology in the UAE and the new Hamad bin Khalifa University in Qatar. While some of these also teach the humanities and social sciences, as befits a traditional university, the science focus is strong.

In the future, it is likely that institutions aiming for world-class status as research universities will be under increasing pressure to sharpen their mission and strengthen their capacities in the SET disciplines. Certain institutions in MLIC countries will find this a daunting challenge. However, with the support of visionary governance and ample resources, success stories are evident and can offer valuable lessons. Postiglione pointed to the rise of top Hong Kong institutions, notably HKUST, in record time. Altbach cited Israel as another context where major investment has nurtured dynamic
research institutions. Meek and Jacob alluded to the critical importance of research reputation for universities which - as knowledge hubs - aggressively compete to attract and retain top researchers. According to Shin, Lee and Kim, natural corollaries of this are aspects such as the publications track record of star faculty and elevated status in university ranking tables. Chirikov noted that one key function for institutional research capacity is to monitor the university’s progress, both as a leader in scientific research and as an actor in the national economy via innovation and technology transfer. Brodhag concurred with this view and took the process one step further since innovation can translate into job creation in today’s high-tech driven labour market. In stark contrast, Africa and certain parts of the MENA region (due to political instability) confront major challenges to strengthen RDI research excellence in their leading universities.

Hard choices will be essential regarding institutional mission and whether the primary focus should be applied research, given the pressing needs of local and regional socio-economic development. Sustained public support and investment (whether public or private) are also vital for progress. Despite the numerous difficulties involved, these countries agree that connectedness to regional and international research networks is an imperative for their development. Moreover, there is cause for optimism when bodies such as the African Ministerial Council for Science and Technology (AMCOST) propose initiatives such as a Pan African Intellectual Property Organisation (PAIPO), thus demonstrating the will to deal with present realities.

**Links with the Labour Market**

Employment in the knowledge economy requires new types of academic credentials (e.g. Bioinformatics, nanotechnology), which are often earned through research-based teaching in universities. Brodhag (France) insisted on the role of tertiary education institutions, including world-class universities, in preparing students for this new and highly-skilled labour market. Here, the firm cannot be seen in isolation as it is part of a broader innovation system which involves multiple stakeholders and processes. Young graduates must learn how to function in this more complex and many-faceted environment (described as “action arenas”), including its obligatory networking and often international aspects. Such capacities are urgently needed in emerging economies (e.g. Choucri for the Arab region and Jegede for Africa) but lingering political and socio-cultural barriers are preventing the progress required for education and employment opportunities to be better matched.

**Quality Assurance Mechanisms**

Quality assurance can be measured by various mechanisms (e.g. ranking tables), as can academic performance such as peer review and cited publications. For research universities, a key issue for their quality has become their standing in ranking tables. While the criteria for these differ considerably, publications – or more precisely co-authored papers – have rapidly gained importance as a key indicator in recent years. Postiglione and Knobel reported on this phenomenon from the Asian and Latin American regions. In contrast, Jedege and Jowi deplored the lack of relevance of these tools in the African context. One of the most discussed examples is Chinese research collaboration which has burgeoned in recent years and with obvious advantages for the institutions behind the scholars. Yet, behind this rise, there is growing awareness that the indicators used do not apply in all regional contexts. By way of example, when Triple Helix
conditions do not pertain in a certain context, why retain this sort of indicator since it is irrelevant? Shim, Lee and Kim expressed concerns as to the validity of these particular quality mechanisms, while Postiglione alluded to other options such as the government-led Research Assessment Exercise, used in the United Kingdom. One particular source of disquiet is the fact that not only are rankings table managed by independent sources (inter alia, QS and THE) but their weight has grown exponentially. As a result and to restore a sense of reality, other exercises are in train such as the Multi-rank system and the webometric ranking of African universities. In addition, Ian White, an expert from British academic publishing, reported on the latest initiatives to ensure automatic E-publication for publicly funded research and on tools for mentoring and networking (such as AuthorAID, Research4Life, INASP), which aim to broaden access to knowledge networks and cater for academics from MLIC contexts. In the near future, it would seem that research excellence will be better served by the new and more relevant criteria available to carry out assessment.

**CIT Capacity**

Altbach reiterated that this aspect forms part of the essential resource base for world-class research universities because it facilitates the networking which assures the creation and sharing of knowledge. Choucri described the knowledge economy in the cyber era which offers ever increasing venues for electronic and networking communication. This includes the Open Source movement which is revolutionising access to knowledge and challenging traditional norms related to teaching, learning and research collaboration. With regard to the professional applications of CIT, Brodhag distinguished between using this for practical purposes such as the collection of data and best practices and its much newer benefits as a tool for social networking. Because this aspect bridges time and space, the modern workplace becomes an environment which is constantly interconnected to facilitate the interaction of global and local communities. However, it was recalled that excellent CIT capacity remains the privilege of high-income countries, although the catch-up process underway in many emerging economies is rapidly bringing positive results. Jegede for Africa and Choucri for the Arab region attested to the rapid adaptation to and use of advanced information technologies which is significantly influenced by the large youth populations (with active female participation) in these regions. Consequently, education and research and business are amongst the many domains where practices must change due to the impact of CIT. Due to less sophisticated technical infrastructure and weaker human capacity notably in low-income countries, CIT growth currently has problems of sustainable delivery. Time and heavy demand from all areas of the population will resolve these issues so as to improve both local connectivity and also international and intra-regional networking.

**Internationalisation**

At the outset, Altbach reminded the seminar that this policy component, perhaps more than any other, affirms the inherently international nature both of the academic profession and of universities as institutions with local and global outreach. In terms of research networking, numerous allusions to the benefits of international contacts were made throughout the discussions: Meek and Jacob commented on the rise in career mobility for researchers and on the benefits resulting from global brain circulation, Choucri noted that international linkages would enhance opportunities for regional development (both in the MENA region and elsewhere), Postiglione referred to China’s historical experience of commitment to international outreach, Knobel
illustrated how modern strategies can rapidly create a diverse and international academic environment, Tremewan and Tadaki studied how NGOs with an international mandate can best achieve their mission, McCarthy and Rands showed how national learned societies assure contacts with the academy worldwide while internationalisation received priority rating on Chirikov’s proposals for institutional research agendas. Till now, the market value of international higher education has tended to attract more attention than the global interaction amongst the research community worldwide (which becomes a sort of “brains with borders” movement). This situation is now changing fast. Due to its physical and virtual networking, research is amongst the most mobile professions which is in keeping with its contribution to the global knowledge economy. Last but not least, this mobility requires support from other policy areas (such as immigration) to offer researchers smooth career transitions.

**Overarching Policy Issues**

*Networking African Research Universities*

- Focusing a select number of world-class African universities on basic science expertise and linking these to counterparts in other regions
- Building networks of universities with research expertise in African development issues (e.g. AULP, SADC) into a Pan-African movement
- Strengthening linkages with regional and international networks for university cooperation, research management, quality assurance and with learned societies
- Encouraging internationalisation via academic co-publications and interaction with learned societies
- Linking African RUs more closely with national and local business to train the skilled human capital need for the job market and to facilitate technology transfer
- Encouraging more African female academics in university leadership and as teaching and research faculty
- Stronger CIT capacity to underpin networking in university research

*Networking Women in the Academy*

- Supporting university networks with initiatives to promote female academics as university leaders (e.g. ACU, IAUPL, IOHE) and replicating these efforts
- Supporting networks which promote female academics in research careers, especially in science-related disciplines (such as EPWS, SWE, TWOWS, WISE) where women are fewer and may need to hone their networking skills
- Networking initiatives in emerging economies which promote women in the academy and in professional life (e.g. the Asian University for Women in Bangladesh; the Unesco-supported Arab Network for women in Science and Technology, ANWST).
Networking Young Researchers

- Establishing national networks of young scientists via communication mechanisms such as CIT platforms and award schemes (e.g. the Indian Young Scientists Network (IYSN); the Young Scientists Network (YSN) based at Zurich’s ETH University; post-doctoral fellowships managed by the New Zealand Royal Society; the Qatar Science Leadership Programme (QSLP); fellowship programmes in Brazil offered by national (e.g. CAPES) or federal (e.g. FAPESP) agencies
- Replicating these bodies at the international level (e.g. Voices of Young Scientists (VOYS) with a data base of 5 000 experts; the International Network of Young Scientists (INYS) supported by the British Council; the Third World Network for Scientific Organisations, TWNSO, supported by the Third World Academy of Science, TWAS)
- Offering opportunities to young researchers from other regions in such networking via specific scholarship schemes (e.g. the Burkina Faso Young Researchers Network supported by the IDRC, Canada; the Australian Prime Minister’s Australia-Asia Endeavour Awards).

Networking Research Universities for Global Sustainable Growth

- Firstly, sustainable growth is the principal and overarching policy goal for all linkages described above. Hundreds of thousands of networking initiatives, some global, some regional or national in their scope and focused on the wide variety of actors related to socio-economic development. A small sample is as follows: the United Nations University (UNU), the Unesco Chairs Programme, the ACU Research Management Network, NEPAD, Universitas 21, WUN, IARU, LERU, along with the traditional networks of academies of science and learned societies. In all these instances, universities and the academy are central players regarding the necessary knowledge to generate and disseminate worldwide.
- Secondly, in terms of policy, a very large segment of this networking is undertaken by civil society organisations or by quasi-governmental organisations (sometimes called quangos) with the support of governments. This, in itself, underscores the critically important knowledge partnership between the public sector and the academy which can only grow stronger in the future. This is because knowledge for sustainable socio-economic growth is the common purpose.
- Thirdly, a variety of new factors will gain prominence: as the research landscape grows more complex, maintaining the necessary tension between global and local problem-solving will become more important. This will require enhanced dialogue and co-operation both amongst public policy departments and amongst the government, the private sector and the academy. Silo thinking (which can still be found in certain contexts) will become a thing of the past as it offers no positive outcome for development. As the world grows increasingly more interlinked (due to CIT facilities), understanding the potential of networks and leveraging these for optimal results will become standard practice.
- Fourthly, academia must now demonstrate its clear social engagement in national and international development. This responsibility involves possessing the necessary research capacity which, for MLIC countries, means work in progress. These contexts are very individual in scale and capacities. Although regional “motor” economies exist (e.g. Brazil for
LAC), each country needs its own knowledge base which can be applied to resolving local issues. Relevant social engagement then becomes a component of policy choice. Personal statements by experts at the seminar documented the various aspects in play and confirm that there is no “one size fits all” model for these economies:

- **Malaysia**: research collaboration at country level and focused on community issues enhances overall national research capacity.
- **Israel**: international research cooperation, though facilitated by CIT, must overcome disadvantages of geographical distance and especially the subtleties of cultural differences so as to nurture mutual understanding.
- **Qatar**: building a true research culture is a lengthy and expensive investment but one which is essential to long-term growth and prosperity; finally, policy-makers must face this reality.
- **Kenya**: despite the asymmetries of capacity in North-South research collaboration, partnering institutions always benefit from this cooperation.
- **Slovenia**: for small economies seeking to reinforce research capacity, the sheer broad scale of international research cooperation is particularly beneficial.
- **Mexico**: agency (i.e. commitment to international collaboration amongst scholars) is perhaps even more vital than institutional support for enduring and successful academic research.
- **India**: given rising revenue from R&D services (US$878 million in 2010-11), this BRIC economy must provide better research management infrastructure for international research collaboration in STI areas, while also supporting research (often social science-based) applied to local development.
- **Egypt**: the present flux in MENA countries offers a unique opportunity to re-tool performing national systems and institutions to reinforce international research collaboration to benefit regional development.
- **Ethiopia**: African ownership of research management remains a desirable goal, though more difficult since more donors (e.g. China, India) are now engaged in international in research collaboration.
- **Nicaragua**: for South-based partners, international research collaboration moves from dependence, through empowerment to autonomy but stills requires a robust national research policy framework for optimal impact.

4. Conclusion: Towards Equitable and Dynamic Research Networks

The seminar illustrated research networking in several ways:

- how the mission of organisations such as the OECD can associate the nations of the global economy, which then devolves to national institutions such as research universities;
- how intrinsic capacity and sufficient resources can nurture academic networking;
• how important OECD frameworks link research university networks to national policy-making;
• how future social change will reshape academia, thus requiring research university networks to continually update their capacities. A robust and collaborative response from these bodies will best reaffirm their enduring importance.
Annex 1

List of Principal Papers

**Day 1**

Philip Altbach, CIHE, Boston College, USA; *Advancing the National and Global Knowledge Agenda: The Role of Research Universities in Developing Countries*

Marc Tadaki and Christopher Tremewan, APRU, Singapore; *Reimagining Internationalisation in Higher Education: International Consortia as a Transformative Space*

Merle Jacob, Lund University, Sweden and Lynn V. Meek, Melbourne University, Australia; *Scientific Mobility and International Research Networks: Trends and Policy Tools for Promoting Research Excellence and Capacity-Building*

Gerard A. Postiglione, The University of Hong Kong, China; *Anchoring Globalization in the Hong Kong’s Universities: Managing Academic Knowledge Networks and Research Output*

Igor S. Chirikov, The Higher School of Economics, Moscow, Russia; *The Right Knowledge for the Right Decision: Developing Institutional Research Capacity at Research Universities*

Olugbemiro Jegede, Nigeria; *Centres of Excellence: Contextualizing Research Excellence in Africa*

**Day 2**

Anshumali Padayachee, Charmaine Williams and Brigitte Smit, SANTRUST, Durban, South Africa; *Building National Capacity with the Support of International Research Networks: The Santrust Experience*

Marcelo Knobel, Tania Patricia Simoes, Univerdidade Etadual de Campinas (Unicamp), Campinas, and Carlos Henrique de Brito Cruz, FAPESP, Sao Paolo, Brazil; *North-South Research Partnerships between Research Universities: Experiences and Best Practices*

Nazli Choucri, MIT, Boston, USA; *The Knowledge Economy in the Mena Region and the Future of Arab Higher Education*

Jung Cheol Shiun, Soo Jeung Lee and Yangson Kim, Seoul National University, Republic of Korea; *Research Collaboration across Higher Education Systems: Focusing on maturity of Higher Education Systems, Language Use and Regional Difference*

Dianne McCarthy and Marc Rands, Royal Society of New Zealand, Wellington, New Zealand; *Knowledge Networks for Research: Learned Societies as a Bridge between Research, Policy-Making and Funding*

Christian Brodhag, Ecole des Mines de St Etienne, France; *Research Technologies, Technology Transfer and Job Creation: What Infrastructure for What Training*
Annex 2

List of Personal Statements by Discussants

Norzaini Azman (Malaysia); Reflections on Two Asian Region Research initiatives

Gili S. Drori (Israel); The Challenges of International Collaboration in Academe

Ahmad O. Hasnah (Qatar); Qatar Foundation for Education, Science and Community Development

Manja Klemencic (Slovenia); International Research Collaboration in the Western Balkans

Alma Maldonado-Maldonado (Mexico); Two Examples of Research Collaboration in Mexico

Eldho Mathews (India); Understanding the Changing Landscape of International Research Collaboration in India

Samilha Sidahom Peterson (Egypt); Challenges and Opportunities for the Research Collaboration in the MENA Region

Damtew Teferra (Ethiopia/University of Kwazulu-Natal); International Research Cooperation: The Untold African Success Story

Edmundo Torres-Godfroy (Nicaragua); Cooperation for University Research Capacity-building in a Lower Middle-Income country: the Case of UNAN-Leon in Nicaragua

Ian White (UK, Routledge/Taylor & Francis Publishing); Networking Knowledge: Global Initiatives by Routledge/Taylor&Francis