

Research in the UAE: An opportunity for UK universities?

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Aims of federal government & leading emirates

- To build knowledge economies in order to reduce their dependence on petro-carbons
- To invest in research for this purpose
- The federal government is relatively weak, with power residing in the leading emirates
 - Abu Dhabi produces over 90% of GNP
 - Dubai is most advanced in diversification because of small oil reserves

Where is it now?

Global Competitiveness index 2009

Tertiary enrolments	79th
Quality of scientific research institutions	74th
University-industry research collaboration	58th
Availability of scientists and engineers	75th
USA patents	88th
Company spending on R&D	50th
Gov't procurement of advanced technology products	11th
Overall innovation	46th

Where is it now?

- United Arab Emirates University (UAEU) is ranked between 400th and 500th in THE – QS world rankings
- UAEU is ranked 9th in the Muslim world in SESRTCIC rankings
- Each academic paper published 2004-06 has been quoted 1.07 times (but leads Gulf States)

Some obstacles to building research capacity (1)

- Research is not fully understood by society (incl business) or governments
 - “Ministers do not understand what research is, and so are unable to identify research priorities”
- There is an over-riding concern for applied research in science and technology
- The Egyptian view of research as an incremental addition and interpretation of what had come before remains influential

Some obstacles to building research capacity (2)

- It is difficult to attract Emirati entrants to a profession with relatively low status and pay
 - Only 20% of Emirati men graduate high school
- Heavy teaching loads limit the time available for research
- Research is only now beginning to become strategically managed in universities – it is frequently fragmented and uncoordinated
- There is an inadequate research infrastructure

Some obstacles to commercialising research

- University staff have little understanding of needs of industry
- Industries do not appreciate potential importance of university research
 - those that do turn to west because of poor quality of research in region
- Intellectual property law is inadequate
- Lack of entrepreneurs and venture capital

The federal level

- There are three federal universities-
 - UAEU
 - Zayed University
 - Higher Colleges of Technology
- The resource base of these universities is not at the same level as the new HEIs established by Abu Dhabi
 - their income has not increased for six years, but will next academic year when it will be based on student numbers

New universities

- Government has announced Government will let market forces decide how many universities the UAE should have and will not limit the total number
 - Overwhelming majority of 58 in free zones in Dubai and Ras al Khaimah Free Trade Zone
- Very few of new entrants have research aspirations apart from Michigan State University, University of Wollongong, Rochester Institute of Technology, American University of Sharjah and British University in Dubai

National Research Foundation

- Established in 2008 with an annual budget of £19m:
 - *Discovery*: develop and maintain a solid foundation of world-class research across a range of nationally relevant disciplines.
 - *Linkage*: encourage and extend cooperative approaches to research between universities, government and industry.
 - *Research Infrastructure*: increase the level and quality of research infrastructure in the UAE.
 - *Innovation and entrepreneurship*: contribute towards the building of an internationally competitive innovation system and culture of entrepreneurship in the UAE.
 - *Research education and training, and careers*: contribute to high-quality research education and training, and foster career opportunities for early career researchers, particularly UAE nationals.
 - *Public engagement*: increase public and government awareness and understanding of the benefits of national research and the important results from NRF funded projects.

NRF's first initiatives

- Competition for centres of research excellence
 - Water and Environment Centre (UAE)
 - Genes and Diseases Centre (UAE)
 - Nano-sciences and Nano-engineering Centre (UAE)
 - Centre for Study of Bilingualism and Bilingual education in Arab World (Zayed University)
- Competition for a first round of Research and Scholarship awards is currently underway
 - possibly 100 awards of c£135k over 3 years

UAE University

- Enrols 14,000 students (95% Emiratis) in 10 colleges. Men and women are taught separately
- It is a requirement that its 842 faculty members hold a PhD
- Postgraduate teaching is in its infancy. Less than 400 students, are studying on, 13 taught MSc programmes
- From September 2009, UAEMU will start doctoral programmes in each of its colleges
 - These programmes will follow an American model

Research and Innovation Office

- An Assistant Provost heads Office. He is directly responsible for Centre for Externally Funded Research and Consultancy (eFORS).
- The Office operates a variety of schemes to encourage research
- e-FORS has established two offices, in Dubai and Abu Dhabi, to develop and maintain contact with government, the public and private sectors.
 - The initiative has been successful in raising the number of projects funded by external partners from one in 2000 to 70 in 2008.

UAEU's future plans

- The University attaches high priority to increasing its research standing and capacity to support national development objectives
- It aims to achieve top 200 in world rankings
- Consultants have estimated that income needs to increase sevenfold, from AED1.5b (£270m) to AED10b (£1.8b) to achieve this aim
- The additional income would be spent on the 'cluster' hiring of staff in selected areas.

Zayed University

- ZU, with separate sex campuses in Abu Dhabi and Dubai, has pursued a teaching mission in 5 faculties
- Only two-thirds of its faculty hold a PhD, and only one-quarter currently engage in research
- ZU is beginning to develop a research infrastructure, including research office, but active researchers still feel let down
 - Lack of time
 - Lack of support from management
 - Need to upgrade library facilities

ZU's future plans

- ZU's challenge is to transform small pockets of research excellence into centres of research excellence
- Three Centres are in various stages of development.
 - The Centre for Bilingualism and Bilingual Education will research Modern Standard Arabic and English among Arabic-speaking peoples
 - The Institute for Arabic and Islamic Studies will be support Islamic communities' capacity to adapt their discourses to rapidly changing social, economic and cultural conditions, and facilitate dialogue between Islamic civilisation and other peoples
 - A centre of economic research and policy is being discussed

Abu Dhabi Education Council

- ADEC established in 2005 to develop education in Emirate
- It adopts a restrictive approach to new entrants, requiring them to demonstrate a strong commitment to, and proven excellence in, research.
- It has mostly invested in new higher education initiatives in partnership with some of the world's leading research universities

Universities working in partnership with ADEC

- ADEC's approach is modelled on the Education City, Qatar with ADEC providing buildings and infrastructure
 - Paris Sorbonne opened in 2006
 - INSEAD's centre in Abu Dhabi was established in 2007
 - New York University will admit its first students in 2010
- All of these universities are expected to engage in research

Masdar Institute of Technology

- The Masdar initiative is a development programme to position Abu Dhabi as a world-class research and development hub for new energy technologies
- The Masdar Institute of Science and Technology is its centrepiece. It is modelled on MIT which is supporting its development
- Masters programmes will start this year, and eventually doctoral degrees, in science and engineering disciplines with a focus on advanced energy and sustainable technologies.

Khalifa University of Science, Technology and Research

- KUSTAR is a co-educational HEI based on Etisalat University College in Sharjah is Abu Dhabi's answer to KAUST
- A new campus is being developed in Khalifa for 5,000 students, with an associated Science Park
- It aims to become a world class research university in technology and science with a strong interdisciplinary focus
- A key part of its plans is to develop research partnerships with leading universities around the world

Degree programmes

- By 2011 KUSTAR will cover the range of undergraduate engineering programmes except chemical engineering and materials
- Undergraduate programmes are accredited by Institute of Engineering and Technology (IET)
- It is the only university in the UAE to offer Masters degrees in engineering purely by research - in computer engineering, communication engineering and electronic engineering.
- It will offer PhDs on American model in the same subjects next academic year

KUSTAR's research environment

- Staff will have a small teaching load of six to seven credit hours and a student staff ratio of only 6.5:1
- The library has access to the INSPEC database containing over 10 million bibliographic abstracts and indexing and the British Library electronic document delivery.
- KUSTAR runs ANKABUT (Emirates Advanced Network for Research and Education) which operates 250 times faster than the commercial internet

KUSTAR research groups

- There are five research groups:
 - Communication & Information Systems
 - Multimedia Communication and Signal Processing
 - e-Services and Networks
 - Embedded Mixed-Signal Systems
 - Information Security Research Group
- These groups will include research students with a generous scholarship programme
- The first 105 research students on the Abu Dhabi campus, chosen from 3,000 applicants, are all receiving scholarships; a quarter of them are foreign nationals.

Knowledge & Human Development Authority, Dubai

- KHDA ensures the development of education to international standards and to accommodate the requirements of the job market
- Much of the work of its higher education section is to accredit HEIs in free zones
- It does not vet new entrants in the same way as ADEC, but has facilitated Rochester Institute of Technology opening in Silicon Oasis
- Has been considering establishing University of Dubai to help it accomplish its mission

Opportunities for UK universities

Research collaboration

- Given that research tends to take place in pockets of excellence, it is important to be able to identify these pockets
- NRF's Centres of Excellence programme enables larger pockets to be identified
- The outcome of its competition for individuals will indicate some of the higher quality work by individuals
- Collaboration with KUSTAR or another ADEC initiative more or less guarantees excellence

Potential problems with collaboration

- The freedom to select research topics and publish in UAE may be limited for political and religious reasons
 - This constrains social science research most
- The country's reliance on expatriate staff on 3-year contracts adds a degree of uncertainty to the medium- / long-term future of collaborations

Departmental partnerships

- The ambitious plans for the expansion of research and doctoral programmes offer great scope for inter-departmental cooperation
- The country's HEIs urgently need support to design new facilities and establish new programmes
- This may take a variety of forms from partnerships to arrangements more akin to consultancy arrangements

The example of KUSTAR

- Needs help to design courses and to specify appropriate facilities. It is at present getting help from individuals but it would prefer to work on a department -to-department basis.
- Welcomes visitors and a staff exchange scheme, particularly now as departments and research groups are being established
- Welcomes joint PhD programmes with the UK to
 - persuade potential students to carry on with research after a Masters degree
 - tempt others who would otherwise go abroad for a PhD
 - give more opportunity for women to gain PhD
- Needs to draw on UK experience in the commercialisation of research.

The example of Zayed University

- Jointly developing new Masters programmes to include a significant research component
- Support to professionally manage research
- Support for the professional development of faculty members through mentoring and workshops on how to undertake research and writing for publication
- Presentations to excite staff about the pleasure to be gained from research

Thank you for listening

Do contact me if you have any more questions after the meeting

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