

## **Middle East – Research and Education Engagement**

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# Imperial College engagement



## RESEARCH FINDINGS AND CASE STUDIES

Comments on the impact of the current economic crisis

Major changes and trends in the region

The opportunity landscape

Case studies

- **Qatar Education City**
- **Saudi Arabia - KAUST**
- **Abu Dhabi**
- **Dubai**

Outlook: How to engage in the region

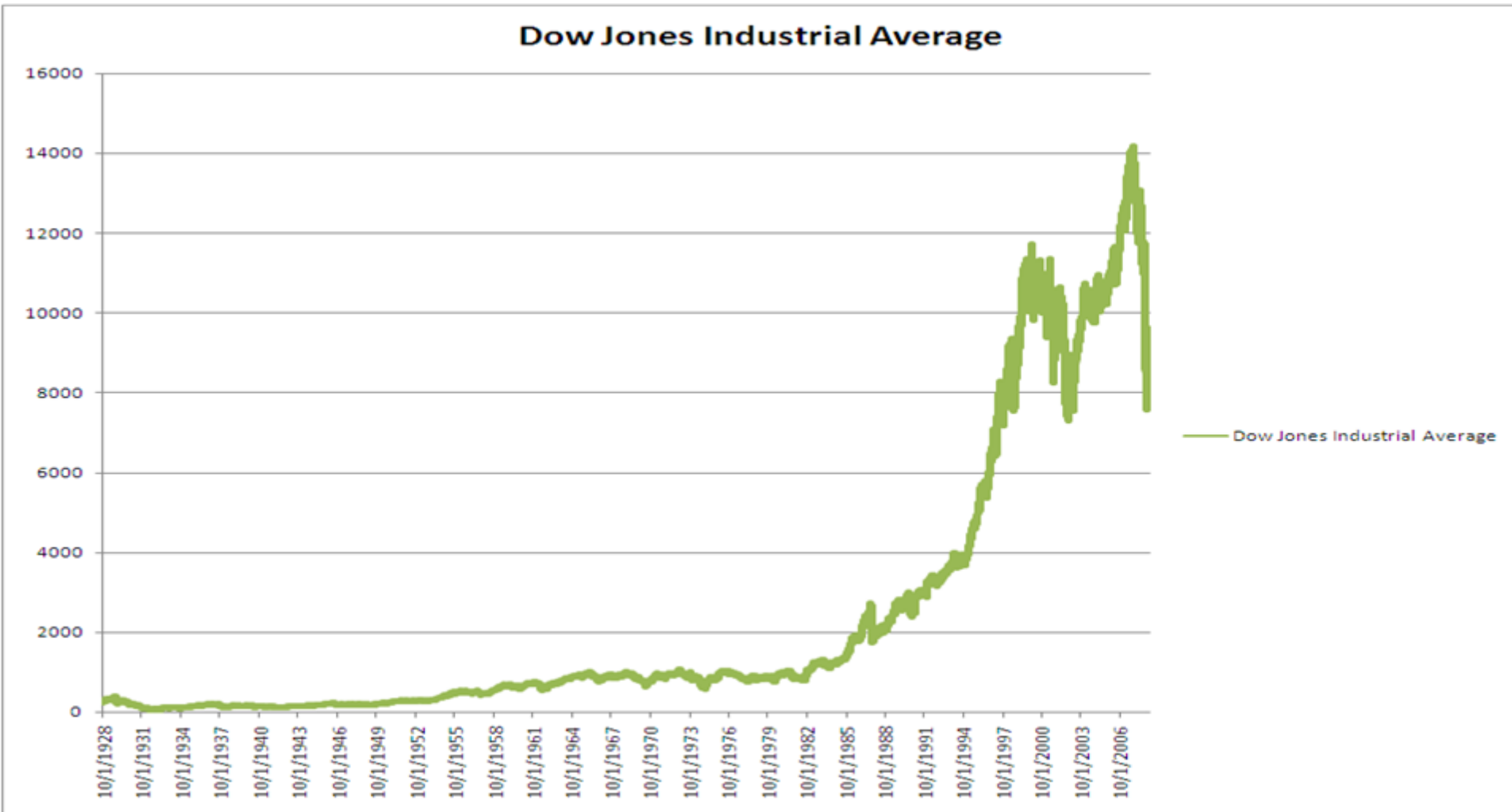
## FACTOR ONE: OIL PRICE



**2008 rise and decline – but the run-up since 2002 is more important**

Notes: Cushing, OK Crude Oil Future Contract 1 (USD per Barrel) from 4 January 2000 to 25 November 2008.  
Source: Energy Information Administration, U.S. Government.

## FACTOR TWO: Market Forces



## MAJOR CHANGES IN THE REGION

- In the past, boom times did not result in sustainable, diversified, and expertise-driven development. A number of countries and Emirates are now employing a much more rational and well managed approach
- Rather than just largely focusing on out-going students, current approaches are highly diversified, including local teaching and research capacity creation as well as in-bound recruiting
- The level of policy and fiscal commitments towards building out and sustaining (quality) educational capacity is a departure from the past
- A gradual awakening of the private sector, partial instances of civil society paradigms taking hold, and the gradually changing role of women in some countries have contributed to what appears to be major changes

Changes in the region should not be misunderstood as westernization

## OPPORTUNITY AND ENGAGEMENT TARGET COUNTRIES / EMIRATES

### High Potential

- Dubai
- Egypt
- Jordan
- Libya

### Medium Potential

- Abu Dhabi
- Bahrain
- Kuwait
- Qatar
- Saudi-Arabia<sup>(1)</sup>
- Other UAE<sup>(2)</sup>

### Limited Potential

- Algeria
- Lebanon<sup>(3)</sup>
- Morocco
- Oman<sup>(4)</sup>
- Palestine Territories
- Syria
- Tunisia

#### Notes

- (1) Saudi-Arabia's continued, substantial, and increasingly more diversified investments into higher education is tempered by the unique challenges of engaging in-country.
- (2) Specifically Sharjah and Ras al Khaimah.
- (3) The Lebanon offers good student recruiting opportunities and is home to some of the leading regional institutions. However, political instability poses a significant challenge.
- (4) Oman appears to have chosen a methodical approach which may allow it to move up in terms of potential.

## OPPORTUNITIES BY ENGAGEMENT CATEGORY

### Strong(er) Opportunities

- UK in-bound recruiting
- Capacity creation
  - Basic quality level
  - Medium quality level
- Applied research
- High quality labor market up-skilling (vocational plus)<sup>(1)</sup>
- Advisory / management services<sup>(2)</sup>
- English language training<sup>(3)</sup>

### Weak(er) Opportunities

- UK out-bound exchange
- Capacity creation
  - High quality level
- Advanced research<sup>(4)</sup>
- Basic (entry level) research
- Regulatory / QA advisory<sup>(5)</sup>

## AN INTRODUCTION TO THE KING ABDULLAH UNIVERSITY OF SCIENCE AND TECHNOLOGY (KAUST)

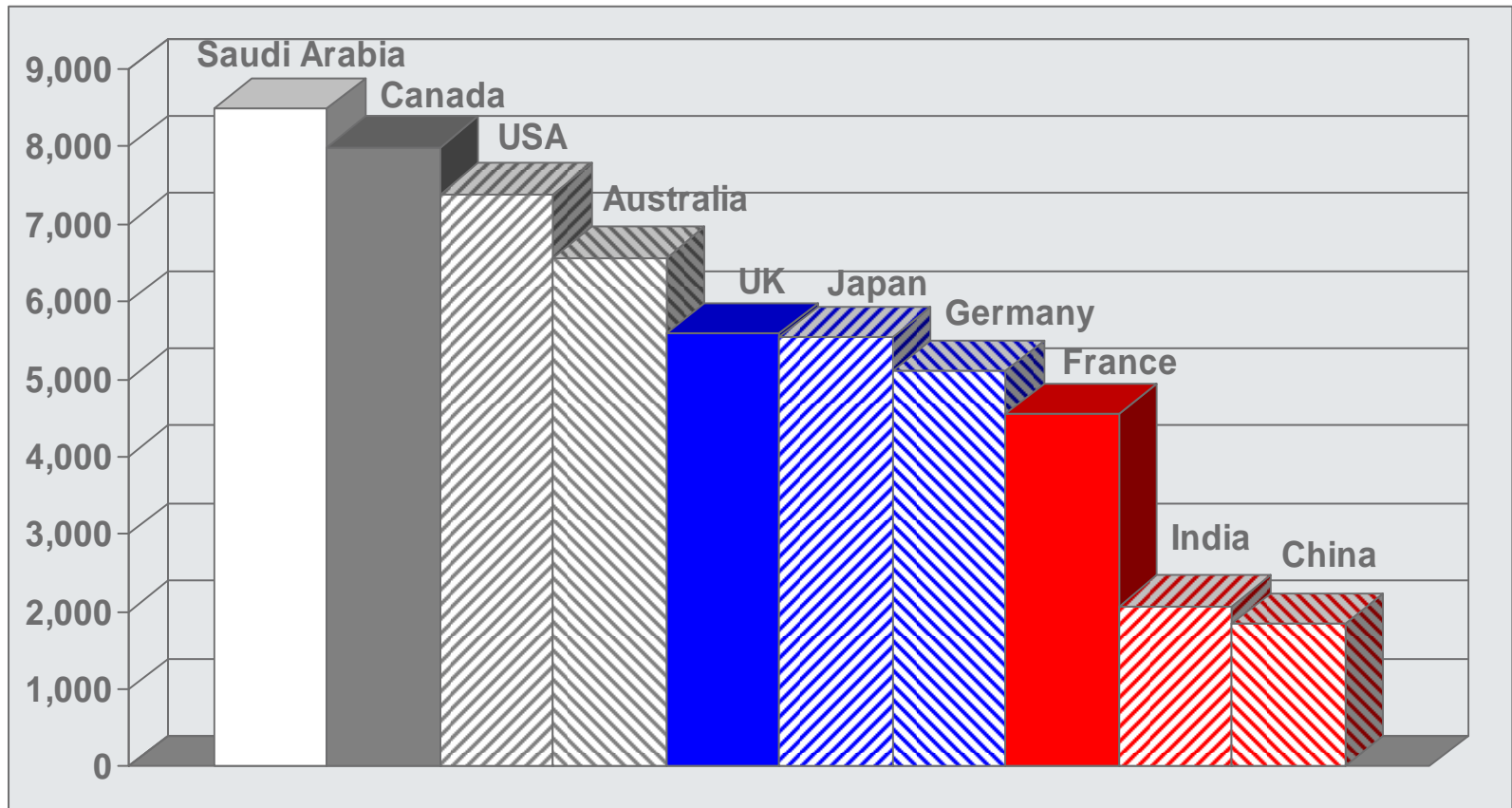
- KAUST is an international, co-educational, graduate-level research university which is set to open its doors in September 2009
- KAUST is governed by a Board of Trustees. Professor Choon Fong Shih (outgoing President of NUS) serves as the President Designate
- KAUST's core campus is located on the Red Sea near Thuwal and will occupy more than 36 million square meters
- King Abdullah has provided a multi-billion dollar endowment, making it the sixth wealthiest university in the world
- 300-500 students pursuing graduate degrees commenced 5 Sept 2009
- KAUST is driven by four strategic research areas:
  - Resources, Energy and Environment
  - Biosciences and Engineering
  - Materials Science and Engineering
  - Applied Mathematics and Computational Science

## UNIQUE ASPECTS OF KAUST

- Talent acquisition: Admission to KAUST includes a full fellowship and no tuition, plus a fellowship that covers students' final undergraduate year
- Standard-setting facilities: E.g. the "Shaheen" KAUST/IBM Center for Deep Computing Research, ranking sixth in the world in terms of performance
- Elite partners
  - Academic Excellence Alliances: [Berkeley](#), [Cambridge](#), [Imperial](#), [Stanford](#), [UT](#)
  - Global Research Partnership Centers: [Cornell](#), [Oxford](#), [Stanford](#), [Texas A&M](#)
  - Global Research Partnership Centers-in-Development: [King Fahd University](#), [National Taiwan University](#), [Utrecht](#)
  - Academic Research Partnerships: [Woods](#), [Institut Francais du Petrole](#), [NUS](#), [HKUST](#), [AU Cairo](#), [TU Munich](#), [King Fahd University](#), [UCSD](#)
  - Investigators: [Caltech](#), [Cambridge](#), [MIT](#), [Oxford](#), others

**No other educational venture has scaled quality this broadly or quickly**

## KAUST IN CONTEXT: AVERAGE MONTHLY TOP-LEVEL SALARIES



**Saudi-Arabia is committed to acquiring faculty talent**

Notes: Worldbank PPP (USD).

Source: Boston College, CIHE. International Comparison of Academic Salaries: An Explanatory Study. October 2008.

## OPPORTUNITIES AND CHALLENGES FOR KAUST

### Opportunities

- No monetary constraints whatsoever
- Strong royal/political support – recent sacking of critical minister
- High-quality student and faculty member body from scratch
- Attractive, competitive, and up-to-date curricula through the Academic Excellence Alliances
- Elite network of research partner universities through the Global Research Partnership Program

### Challenges

- Recruitment and retention of top faculty into one of the most socially conservative countries in the world
- Artificial and isolated nature of KAUST within Saudi-Arabia and within the community of scholars
- Structural and thematic overreach driven by ambitious timelines
- KAUST being both a beacon as well as a target

KAUST is full of unique promise, but also reaches very high

## **Imperial's engagement with KAUST – an Academic Excellence Alliance Partner**

**Imperial is a foundation member of KAUST's Academic Excellence Alliance :**

- » **Imperial College London (Department of Materials)**
- » **the University of California, Berkeley (mechanical engineering)**
- » **Stanford University (applied mathematics and computer science)**
- » **the University of Texas at Austin (computational earth sciences and engineering)**
- » **Cambridge University (Biosciences)**

**Imperial's engagement**

**Collaborative research proposals**

**Masters course in Materials**

**Advising on hiring new faculty**

## OUTLOOK FOR KAUST

- The overall management structure, operational involvement of ARAMCO, and key hires are very promising. It is a private university – not constrained by the Ministry of Education.
- Broad, multi-faceted linkages with leading institutions in conjunction with generous funding schemes will provide KAUST with a scientific jump start. Very impressive core labs – world class kit.
- KAUST has the definite potential to become a respected research institution in the short term.

In balance: Tremendous potential, a good start

# King Abdullah University of Science and Technology – KAUST, Saudi Arabia – 2 years



## QATAR

### Energy Futures Lab at Qatar Science and Technology Park

#### Overview

- The Energy Futures Lab at Imperial College collaborates with Shell Oil on the Shell-Imperial College Grand Challenge on Clean Fossil Fuels (this venture also involves Qatar Petroleum)
- It focuses on engineering-related issues dealing with carbon capture and sequestration in carbonate reservoirs.
- The program offers fully-funded Masters and PhD scholarships at Imperial to qualified Qatari citizens starting in fall 2008
- It offers employment opportunities with Qatar Petroleum and Shell

The program has a multi-million pound budget

- According to statements from Imperial staff ICLDC is considered a success as well as a model which appears suitable for replication

## OPPORTUNITIES AND CHALLENGES FOR QEC

### Opportunities

- Strong political support
- Few financial constraints
- Elite partner universities on-site drive quality paradigm
- Attractive and proven US curricula
- QSTP's USD 300 million investment into research facilities should produce spill-over effects
- 2008 marked the beginning of the construction of SIDRA which is endowed with USD 7.9 billion

### Challenges

- Limited pool of high-calibre Qatari students who do not go abroad
- The lack of QEC research focus makes recruiting top faculty challenging
- Accreditation (e.g.; Cornell)
- The multi-university structure provides little coordination or synergies
- A growing reputation as an artificial Disneyland in the desert

## ABU DHABI

### The Imperial College London Diabetes Centre (ICLDC)

#### Overview

- ICLDC was founded in late 2004 jointly with Mubadala Development Company and officially opened in August 2006
- It encompasses
  - » the full range of diabetes patient care
  - » epidemiological, basic, clinical and genetic research focusing on diabetes in the UAE
  - » continuing education for health professionals and the general public

#### Outlook

- According to statements from Imperial staff ICLDC is considered a success as well as a model which appears suitable for replication

## ABU DHABI

### The Masdar Research Network (MRN)

#### Overview

- MRN, launched in April 2006, is part of the Masdar Initiative which includes a \$ 250 million Clean Tech Fund, a Special Zone for advanced energy industry, and a graduate teaching and research institute
- Imperial and Aachen served as founding members. Other members are Waterloo, Columbia, DLR, and the Tokyo Institute of Technology
- The Masdar Institute of Science and Technology (MIST)
- MIT has taken a lead role in assisting MIST
- The Energy Futures Lab Imperial College contributes expertise in systems design and carbon capture and storage

#### Financial Parameters

- A current project with Shell has a budget of more than GBP 2 million

#### Outlook

- MRN appears to be a functioning research funding mechanism

## RAEng Engagement

- RAEng is already engaged through the Fellowship
- A delicate political balance in Middle East HEI would benefit from RAEng engagement at high level
- HEIs in the Middle East would welcome the credibility that RAEng engagement would bring
- With care, RAEng can benefit from an interaction but requires careful strategy formulation