

# **Ninth Annual Lecture of the Higher Education Policy Institute**

## **10 May 2012**

**Choon Fong Shih**  
**President, King Abdullah University of Science & Technology**

### **TOWARDS A NEW GOLDEN AGE**

#### **Goals-Challenges at**

#### **King Abdullah University of Science and Technology**

Sir Graeme, and fellow trustees and members of the HEPI Advisory Board,  
Distinguished guests, and  
Friends,

It is always a pleasure to come to the wonderful city of London from King Abdullah University of Science and Technology by the beautiful Red Sea. I always enjoy visiting colleagues and friends in the UK. It is truly an honor to be invited to speak this evening.

I just wish this year's HEPI Annual Lecture could have been two months later. Then I would get to see the London Olympics, just as I saw the opening ceremony four years ago in another wonderful city, Beijing.

Hosting the Olympic Games is an exhilarating challenge, and an immense opportunity for your country. It is also a big responsibility. The world has placed into your nation's hands an event that has been a global benchmark of excellence for more than two millennia.

#### **Power of Three: Faster, Higher, Stronger**

The engineer in me was intrigued when I saw the specially designed London 2012 Olympic Torch. It has three sides. The designers say they were inspired by the 'Power of Three', particularly the Olympic motto of "Faster, Higher, Stronger".

Like talented athletes the world over, many nations are hungry to "run with the best". With their fast growing economies, countries like China, India and Brazil are able to aim for more gold medals in the Olympics. They have also developed an appetite to compete in a different arena – the increasingly crowded race for their universities to stand among the best.

At this point in time, few economies have the resources to match the Kingdom of Saudi Arabia. Saudi oil accounts for more than one-fifth of the world's proven reserves. Oil revenues have helped sustain a rising standard of living and generous levels of social benefits.



### **Oil, Youth, Jobs**

At the turn of the century, the Kingdom's former oil minister, Ahmed Zaki Yamani, famously said:

"The Stone Age came to an end not because we had lack of stones;  
the Oil Age will come to an end not because we have lack of oil."

The Kingdom's current Minister for Petroleum and Mineral Resources, Ali Al-Naimi, is also the Chairman of the Board of Trustees of the new university I will share more about shortly. Two months ago, Mr. Al-Naimi singled out the "toughest" challenge facing Saudi Arabia:

"... a high dependency on oil,  
and a high proportion of people below the age of eighteen."

More recently, Khalid Al-Falih, who succeeded Minister Al-Naimi as CEO of Saudi Aramco, echoed this view:

"... without quality education and work, a young demographic becomes a liability."

These quotes from three leaders with their hands on the taps of the Saudi oil fields illustrate forcefully how much the Kingdom has become aware of the urgent need to provide meaningful

jobs to its burgeoning population. A recent study found that after Shanghai, Riyadh and Jeddah are the second and third fastest growing cities in the world.<sup>1</sup>

In short, Saudi Arabia is a country with plenty of oil, plenty of youth, but not plenty of jobs. There appears to be another power of three here – oil, youth and jobs.

Oil revenues can pay for food and water. Oil revenues can pay for access to Internet games and social media. But oil alone cannot create the kind of jobs that match the rising expectations of the Kingdom’s increasingly Internet savvy youth in a country where overseas workers and talents fill many jobs at both ends of the spectrum.

Youth represent both risk and opportunity. A big challenge for the Kingdom is the urgency to turn its young demographic from a liability into an asset.

To meet the pressing need to create meaningful jobs for its youth, there is a growing determination to build a knowledge and innovation sector in the Kingdom from the ground up, leveraging the ready pool of Saudi youth. This also means building up the Kingdom’s universities and making its higher education sector more responsive to the challenges of moving beyond an oil based economy. Education should impart skills and knowledge for careers and jobs. Education is also about creating knowledge for the future.



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<sup>1</sup> Global Metro Monitor 2011/12, Metropolitan Policy Program at Brookings. Authors: Istrate E, Berube A and Nadeau CA. [www.brookings.edu/metro](http://www.brookings.edu/metro)

It has been said that knowledge is the oil of the 21<sup>st</sup> century and beyond. Knowledge, specifically science and technology, can provide a ‘second engine’ for the Saudi economy – even in a future where oil could lose its luster.

### **A King’s Dream, A Living Gift**

The Breakwater Beacon stands tall and proud at the Red Sea harbor of King Abdullah University of Science and Technology, or KAUST as we usually call our university. Our Beacon reminds me a bit of the London 2012 Olympic Torch.

KAUST was established as a “beacon of knowledge” to inspire the Kingdom of Saudi Arabia to “run with the best”.

When the Custodian of the Two Holy Mosques, King Abdullah bin Abdulaziz al Saud, first gave me an audience in 2008 in his Royal Court, he shared with me his long-held dream. He envisioned a university that would rekindle the Golden Age of Islamic Civilization, together with its great traditions of learning and scholarship. This graduate research university of science and technology was to be a gift to the Kingdom and to the world. More than that, the King wanted it to be a ‘living gift’ to benefit future generations in the Kingdom and beyond.



Inaugural Commencement  
December 2010

For more than five centuries, the countries of the Middle East were cultural and intellectual crossroads. The Golden Age showed how science can benefit humanity and bring people together. It produced dizzying levels of invention and innovation. The era represented a truly enlightened spirit – a spirit that loves knowledge not only for its own sake, but for its promise to improve the human condition.

King Abdullah envisioned a new Golden Age, with KAUST playing a key role in bringing the bright light of science and technology, invention and innovation to his people and all peoples of the world.

Three years after its opening, KAUST has taken its first steps on its journey towards realizing the King's dream.

### **Big Gamble in the Desert?**

The Royal Society recently assessed the prospects for science and innovation in the Islamic world. Its report is called "*A New Golden Age?*"

I am sure it will not surprise you that others can be more dramatic than the august Royal Society. When KAUST was first announced to the world, the premier journal '*Science*' carried an article with the headline: "*The Big Gamble in the Saudi Desert*" – without any question mark.

To me, KAUST is an exhilarating challenge, an immense opportunity and a huge responsibility. Many of us who have come to KAUST prefer to think of it as the Big Challenge of a Lifetime.

In 2007, when I was offered the role of founding president, I received a myriad of advice from friends and close colleagues. Some questioned why I was taking up the offer. One described it as 'Mission Impossible'. Some more literary friends suggested I was on a quixotic quest – 'The Shih of Arabia', caught up in the romance of noble deeds and unreachable goals, idealistic and with little regard to practicality.

This exchange reminded me of 1996 when I was on the faculty at Brown University. When I was offered the opportunity to found a research institute at the National University of Singapore, some friends were less than encouraging.

"Why on earth would you give up tenure at an Ivy League university?" they asked. "You are walking away from a world-class research university to take up a five-year appointment in a teaching university, known more for its bureaucracy than cutting edge research." Some even called it "career suicide in a cultural and literary desert." They questioned the kind of academic freedom I might enjoy in a country where chewing gum is banned.

When I moved from Singapore to Saudi Arabia, they added: "You might not chew Wrigley's. But you do enjoy a nice glass of Bordeaux."

## Contrasts and Dichotomies

By the time KAUST was inaugurated in 2009, the tone had changed.

Some people said: “No wonder you’re going to Saudi Arabia. You have a fresh start. They’re giving you a blank check and a blank page.”



Iftar (breaking of the fast during Ramadan) with students, faculty and staff.

### **No Blank Check**

Indeed, there is a notion that KAUST has been given a “blank” check. In terms of physical infrastructure and facilities, there is more than a germ of truth to this notion. Colleagues from Saudi Aramco led the building of KAUST’s physical infrastructure.

Indeed, KAUST has unparalleled research facilities, the envy of research universities around the world. The campus certainly dazzles. It will take your breath away. Our Aramco colleagues did an outstanding job of building the campus – all in 1000 days.

But as all of us know well, the business of building a university goes beyond infrastructure and facilities.

Building a great university is very much about people. It is about recruiting the best minds – the proven and the promising – as well as growing traditions and a culture of excellence. Excellence is not an act but a habit. We are what we habitually do and think. Imbuing this culture of excellence is critical – and will take time.

Here, let me quote *The Times Higher Education*:

“Excellence, like all things of abiding value, is a marathon not a sprint.”

### **No Blank Page**

Let me now turn to that blank page. A new university is rarely founded on a blank page. There is often an indelible watermark. At KAUST, that watermark is made up of Saudi Arabia’s history and religion as well as traditions and culture.

This young institution is growing roots in a Kingdom with a rich and longstanding trading heritage. Saudi Arabia was a vital part of the famous Silk Road and the Frankincense Trail. Life was sustained by caravan routes that became vital trade arteries. Sweet almonds from Taif and fat dates from desert palms were traded for life’s necessities. Spices were shipped from India across the Arabian Sea. Goods changed hands and profits flowed.

Much of this changed with the discovery of oil in the Kingdom just about 80 years ago. Oil has fueled the Kingdom’s rapid economic growth, with concomitant impact on its society.

Those of you who have visited the Kingdom may have noticed some sharp contrasts – between old and new, continuity and change, time-honored ways and bold fresh ideas.

The University has been built quickly and presented to a society with deep religious faith and strong traditions. In so many ways, KAUST really does represent a paradigm shift for Saudi Arabia and the region – it is co-educational, research-led and globally benchmarked.

We are the first University in the Kingdom which is independent of the Ministry of Higher Education. It is governed by a Board of Trustees, half of them from overseas and with many distinguished academics.

At KAUST our faculty, students and staff live and play, work and learn side by side. It is also a gated community protected by the King’s National Guard and the Saudi Coastguard. Beyond the secure entrances is a fourteen square mile campus where women and men can drive.



King Abdullah  
Grand Mosque,  
KAUST

At the same time, the Call to Prayer drifts across our campus five times a day from five different mosques. In our schools, children also learn Arabic and Islamic Civilization. Food on campus is prepared according to Islamic custom. Some people may very well head to the beach or to the pool in swim wear; but women also choose to dress in the traditional black abaya and hijab. Some opt to swim in our 'Women Only' pool, much like how Queen Victoria used to take to the waters in Bognor just about a century ago.

KAUST embodies contrasts and dichotomies. Some might say KAUST is progress while others consider it sacrilegious.

### **Change and Divergence**

The sociocultural character of KAUST will evolve gradually. Let me elaborate.

We know sociocultural change takes place over generations, if not centuries. It is inherently local, or homegrown. On the other hand, technological change is global and marches to its own drumbeat. It can hit society in a matter of years, or even months. The stresses and the tensions this divergence in pace can create can hardly be overestimated.

Indeed, we recognize that KAUST is more than a scientific enterprise. It also has a sociocultural dimension. KAUST is right where the proud traditions of the Kingdom and the time-honored norms of the global academy meet. Finding enough common ground where both can exist and work together in harmony is critical for KAUST's success. Growing this common ground will require engagement with openness, sensitivity with respect, and patience with perseverance.

## Oasis of Science

KAUST has been characterized as an “oasis of science”. It will probably remain so for some time to come. Some have suggested that KAUST is a generation or more ahead of the curve both scientifically and culturally.



We are attracting interest throughout the Kingdom and the wider world. We know many are hoping we will succeed. We also know that others are waiting to see if we might confound expectations. After all, many see KAUST as a quixotic quest.

I have visited the oil fields of the Eastern Province and the Rub Al-Khali – or the Empty Quarter – in Saudi Arabia. Rub Al-Khali is an epic landscape covering most of the southern third of the Arabian Peninsula. It barely sustains a handful of the hardiest plants and insects. Beneath a vast sea of shifting sands, oil of the highest grade flows readily. The Shaybah oilfield there started pumping oil in abundance just two years after the project got the green light. Big success stories like this may heighten expectations for quick and easy results across the spectrum of human endeavor.

However, research with the potential to transform lives is no bargain basement enterprise. There is no short cut to train scientists and engineers or to get quick and easy results when it comes to research.

Likewise, building capabilities for knowledge and innovation takes time to bear fruit. There is no quick and easy way to hothouse scientific success for knowledge-led economic development.

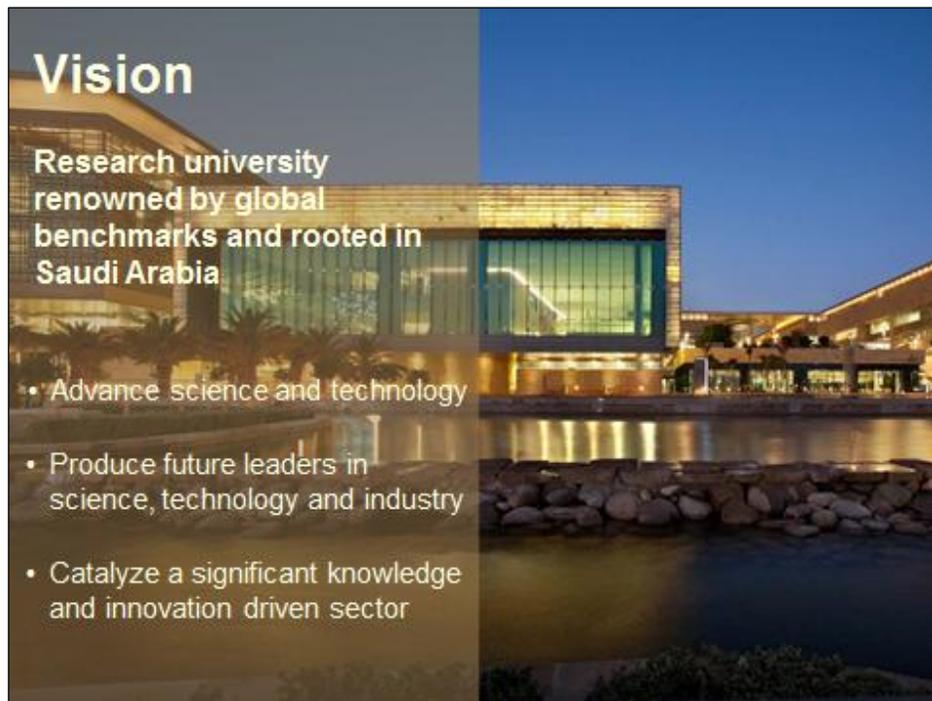
Indeed, making knowledge and innovations flow will be a bigger and more profound challenge than making oil and goods flow.

### **Ambition, Strategy, Resources**

Let me now speak about what is distinctive about KAUST.

In this gathering with so many distinguished academics, KAUST's vision and mission would ordinarily not turn heads, if not for where the University is located.

KAUST has a bold vision to be a research university renowned by global benchmarks and rooted in the Kingdom of Saudi Arabia. Our goals and challenges are nothing short of immense.



First, we have to attract top notch faculty and students from around the world to the Kingdom, especially talents with firsthand experience of the academic traditions and culture of a great university. Second, we want to recruit and develop homegrown talents in good numbers to pursue excellence in research, education and innovation. Third, we need to grow a distinctive

KAUST culture of excellence – embracing openness with purpose, passion with focus, and debate with respect.

Addressing these three goals and challenges is essential to building a university where all talents, homegrown and from overseas, can work together to pursue excellence and realize their full potential.

Moreover, rooting the University in the Kingdom needs a good mix of top homegrown talent imbued with their beliefs and aspirations and top overseas talent steeped in the norms and values of the global academy.

Some might say such goals are laudable but the quest hopeless. President Obama has spoken of the ‘audacity of hope’. What could be more audacious than trying to realize KAUST’s vision and deliver its mission against the backdrop of geography, culture and dichotomy?

Indeed, it would be a hopeless quest if we thought all of this could be achieved overnight. We all know that this cannot be.

To take on our immense challenges, we need to go beyond patience and perseverance. We also need to exercise prudence.



Old and New  
Continuity and Change  
Time-honored Ways and Bold Fresh Ideas

KAUST is adopting an overarching strategy of selective excellence with a focused and phased approach. This calls for developing strategies, setting priorities and allocating resources wisely. This calls for defining our intellectual space, playing to our strengths and building on the

interconnectedness of science and engineering, with an eye towards technology transfer. This also calls for our research and education to focus on four thrust areas that address great and pressing challenges facing the Kingdom and the world – water, food, energy and the environment.

With research outcomes foremost in mind, KAUST's academic structure is flat, with just one administrative layer between the faculty and the Provost. Our scientists and engineers are not bogged down by structures or baggage often seen in more established universities.

At KAUST, we organize our research around people and projects, with three Academic Divisions and currently nine Research Centers. Our academic model integrates graduate education and research that transcend disciplinary boundaries. Science and Engineering are 'joined at the hip'. Integral to KAUST's big ambition and focused strategies is the intelligent use of its primary advantage, i.e. its resources, specifically funding for research.

### **Long Runway**

We offer our academics a 'long runway' for research projects to take off. This long runway encourages and supports ambitious, truly original and sometimes risky research. While appointments are made on a fixed term basis, our faculty enjoy secure research funding that is the envy of their peers. Each faculty member has a good number of fully funded postdocs, doctoral and Masters students. Faculty also enjoy access to state-of-the-art labs and the kind of research facilities which their peers elsewhere simply could not expect at a similar point in their career.

Not surprisingly, KAUST tends to attract talented individuals who are ambitious, driven and not overly concerned about the "iron rice bowl" of tenure. They are secure in the knowledge that the reward for research done well is the opportunity and funding to do more. As we know, star performers can write their own tickets.

### **Greening the Desert**

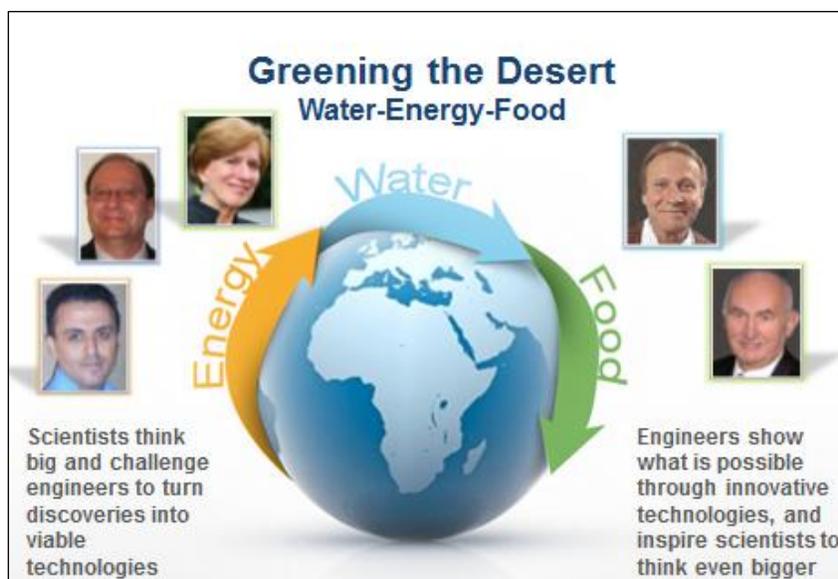
Let me turn to yet another power of three – water, energy, food.

Living in the midst of desert sand and heat we find the vision of food crops and fruit trees flourishing in the desert to be truly inspiring.

To meet the challenge of Greening the Desert, we shall need to harness a non-depletable source of energy that is abundant in the Kingdom – light and heat from the sun. This source of

energy can then be used to desalinate sea water to varying degrees of salinity. This water can then go to nourish genetically modified plants and crops that are resistant to heat, salt and arid conditions. I can see three key players – KAUST, the private sector and the government.

Within KAUST, we are putting together an interdisciplinary team comprising biologists, chemists, physicists and engineers drawn from several Research Centers.



Together, they form a virtuous circle in which scientists think big and challenge engineers to turn discoveries into viable technologies. In turn, engineers show what could be possible, inspiring the scientists to think even bigger.

Greening the Desert is an epic challenge of the century for arid lands, especially in the Middle East and the Sub-Sahara. The vision of 'Greening the Desert' is beautiful in its simplicity but immense in its complexity. It also speaks of the audacity of our ambition.

### **Patience, Perseverance and Prudence**

What I have described to you relates to the early phases of KAUST's journey. Aramco brought us to the starting line to run with the best in the global marathon. Over the past three years, we have run but the first mile. I have offered you a glimpse of the many more miles ahead of an arduous marathon.

A globally renowned research university rooted in the Kingdom is the Olympic gold for us. Running towards this gold standard of excellence demands patience, perseverance and prudence. We run to make the King's living gift a catalyst for a new Golden Age.

KAUST is barely three years old. With the assets of youth, vigor and passion, we have a window of opportunity to do this right.

Today, we're a newcomer to the global academy. Three years is miniscule in the time horizon of established universities like Oxford and Cambridge. Nevertheless, we believe that KAUST will in time run shoulder to shoulder with you in the best Olympic tradition of respect, excellence and friendship.

Before I end, let me wish London, and the UK, a truly golden Games. There will be a strong appetite for outstanding results; the expectation of a lasting legacy; and of course, a keen eye on what it will all finally add up to. And the whole world will be watching to see if you succeed. I know the feeling.



For me, leading KAUST in its marathon to realize its goals and deliver on its challenges is a personal quest. It does not faze me. It is not hopeless. It has been exhilarating.

KAUST is fortunate that so many of you in the global academic community have extended your hand of friendship. My hope is that you will continue to wish us well, as we carry the spark, if not a torch, for a new Golden Age. We shall endeavor to bring the bright light of science, technology and innovation to the Arabian Peninsula and to all nations.