

REAPING KNOWLEDGE A WORLD AWAY

Saudi Arabian students returning from scholarships abroad bring opportunities and challenges to the kingdom.

BY SEDEER EL-SHOWK

Twelve years ago, Saudi Arabia embarked on an ambitious programme to offer its young citizens educational opportunities unparalleled in its history. Hundreds of thousands of Saudis have now passed through the programme, but the national benefits are still unclear.

The Gulf kingdom's push for better education is part of its effort to diversify an economy long dominated by oil. Education in Saudi Arabia has historically been poor, hampered by an emphasis on rote learning and religious discipline. As a result, during the late 20th century thousands of the brightest Saudis left to seek opportunities in US universities. The involvement of Saudi citizens in the terrorist attacks of 11 September 2001 increased negative perception of Saudi Arabia in the US, and the number of visiting Saudi university students in the country fell from around 5,600 to just over 3,000. In 2005, in an effort to bolster cultural exchange with the US and improve the education of young Saudis, King Abdullah established the King Abdullah Scholarship Program (KASP).

A VISION FOR THE FUTURE

The programme, which was recently officially renamed the Custodian of the Two Holy Mosques Scholarship Program, but is still commonly known as KASP — has enabled thousands of Saudis to study abroad. “The programme opened up a whole universe for me,” says Mohammed Al Hajji, a biomedical scientist at Temple University, Philadelphia, who was among the first to benefit when it launched in 2005. The number of Saudi students reached 10,000 by 2007, and double-digit growth in most years since means Saudi Arabia has the

third-largest foreign student population in the US behind India and China, which each have a population about 40 times larger than the kingdom's. Saudi Arabia had more than 60,000 graduates and undergraduates in the US in 2015 with STEM students making up a large proportion of the scholarship recipients. In June 2017, more than 25,000 Saudis were studying STEM subjects at US universities, according to a US Student and Exchange Visitors Program report.

The scholarship programme was envisioned as an investment in the future, its explicit goal being to help the country “compete on an international level in the labour market and in scientific research.” When KASP was launched, Saudi Arabia ranked 85th out of 174 countries in UNESCO's Education Index, a component of the Human Development Index designed to assess the educational attainment of a country's population. Eight years on, in 2013, major investment in education and revisions to curricula had improved the country's ranking to 56th out of 187. However, this may also reflect improvements in high-school education. According to UNESCO, 5.7% of Saudi university students were studying abroad in 2015, well above the average for the Middle East (3.8%) and North Africa (2%).

The government supports more than 200,000 Saudis in the US, students and their dependents — spouses and children. As well as covering all academic expenses, the programme also gives scholars a monthly stipend, including an intensive language course and a trip to Saudi Arabia annually. T. Ryan Hall, president of English as a Second Language International, a company based in Bowling Green, Kentucky, which teaches English to KASP scholars and other students at North American universities, wrote his doctoral thesis on the motivations



Saja Kamal, right, of Saudi Arabia chats with fellow student Alanoud Al-Buainain, of Qatar, on campus at Northeastern University in Boston.

and experiences of KASP scholars in the US, and has worked closely with KASP students and officials administering the programme. “Students wanted for little,” he says. “Families could be fully supported while one or both parents studied.”

The programme's annual costs recently hit US\$6 billion, before KASP faced a 12% funding cut in 2016 — one of several cost-cutting measures to cope with a \$100 billion-plus budget deficit caused by falling oil prices, while the country also bears the cost of the war in Yemen. Eligibility requirements are now more stringent; applicants must be enrolled in one of the top 50 academic programmes in their field or in one of the world's top 100 universities and will have to maintain a minimum grade point average. With money no longer flowing as easily, the question of whether the return matches the investment is more pertinent.

A WORKING SOLUTION

Improving Saudi Arabia's scientific research is an explicit goal of KASP, but while research has significantly improved in the country (see page S62), it is unclear what role, if any, KASP may have played. “The effect of the graduates from KASP on research will depend on the



19.6% in 2014, far above the OECD average of 7.3%. The same report notes that Saudi Arabia is one of the only countries where graduates face greater unemployment than their older peers; university-educated Saudis aged 55-64 have an employment rate 15% higher than their young counterparts.

“Many students I interviewed had difficulty finding full-time or satisfying employment in Saudi Arabia,” says Hall. “It’s painful for a student who was granted this amazing opportunity, lived abroad for several years and gained an extraordinary skill set, only to return to a life very similar to the one they left.”

A second study, carried out by political scientist, Maha Al Yousef, at the University of East Anglia in Norwich, UK, reached a similar conclusion. Al Yousef found that returning scholars are often told that they are over-qualified or under-experienced for a job. The situation is compounded by laws that prohibit women from being employed in hazardous jobs or industries, which limit their ability to work in certain fields, such as engineering, despite being able to study these subjects abroad through KASP.

These difficulties may be attributable in part to Saudi Arabian organizations’ preference to hire foreign experts, who enjoy fewer rights than nationals and have a reputation for working harder. Sociologist, Abdullah Alrebh, who attended Michigan State University in East Lansing as a KASP scholar from 2007 to 2014, believes he was the victim of such discrimination. “I applied for many positions in Saudi Arabia. In some cases, they told me that I didn’t get the job because my degrees weren’t all in the same field. When they offered the job to non-Saudis, they dismissed this condition,” he says.

Both Alrebh and Al Hajji say that Saudi universities use strategies to attract foreigners over Saudis, such as advertising jobs through foreign organizations or Saudi embassies in specific countries. Unable to find a position in his home country, Alrebh turned to US universities and is now on track for tenure at Grand Valley State University in Michigan.

“Unfortunately, it seems that few KASP graduates have joined Saudi universities.

number of KASP graduates that join higher education institutes or the country’s very few specialized research centres,” says Khalid Al-Humaizi, dean of the college of engineering at King Saud University in Riyadh. Precise figures on how many KASP graduates are recruited by these institutes are unavailable but he surmises, based partly on the fact that the country’s top three public universities have their own faculty development programmes, that “in general, graduates of the KASP do not join these

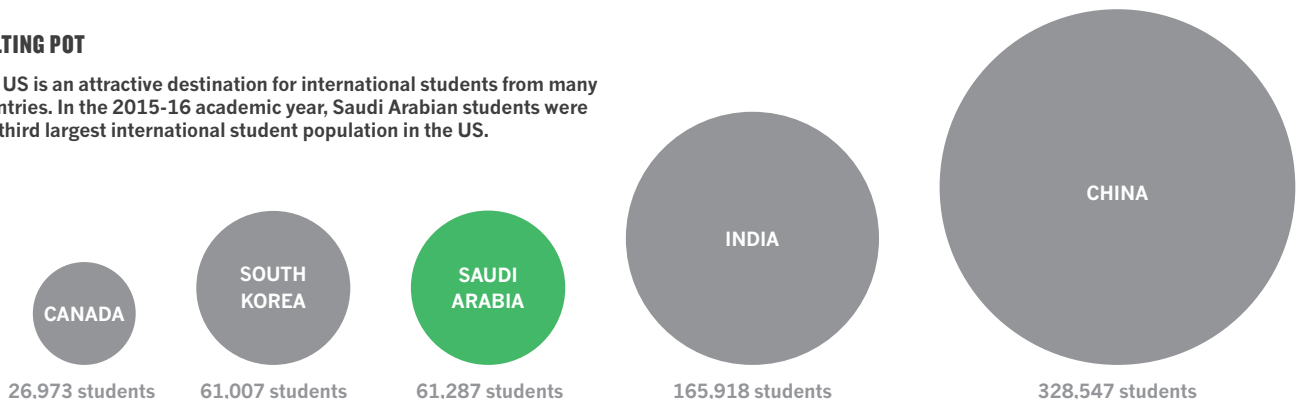
main universities as researchers,” adding that “the impact of the KASP on research volume or quality is very limited.”

Despite enabling thousands of Saudis to obtain a high-quality education, the scholarship programme has not shored up the use of this knowledge when the students return home. According to a report from the Organisation for Economic Co-operation and Development (OECD), unemployment among university-educated Saudis aged 25–34 was

ELISE AMENDOLA/AP/REX/SHUTTERSTOCK

MELTING POT

The US is an attractive destination for international students from many countries. In the 2015-16 academic year, Saudi Arabian students were the third largest international student population in the US.



SOURCE: INSTITUTE OF INTERNATIONAL EDUCATION

COLLABORATION: AN OPPORTUNITY FOR GROWTH

Forging effective collaborations has been a major part of Saudi Arabia's emergence as a regional research leader. KASP offers Saudis an excellent opportunity to build networks that could serve as a basis of collaborations. "This might have happened in a few situations," says King Saud University (KSU) statistician, Abdulrahman Abuammoh, but the programme is not seen as a crucial source of collaboration.

A revealing example is the career of Ali Alhasan, a nanomedicine researcher at the King Abdulaziz City for Science and Technology (KACST) in Riyadh who studied at Illinois's Northwestern University under KASP. After receiving his PhD in 2013, Alhasan went on to a post-doc at the University of California San Diego (UCSD). While there, he tried to establish a nanomedicine research collaboration with KACST, the King Faisal Specialist Hospital and Research Centre, and KSU. "What motivates me is to do science at a high standard, and collaboration is the key to high-quality research, which we need in Saudi Arabia," he says.

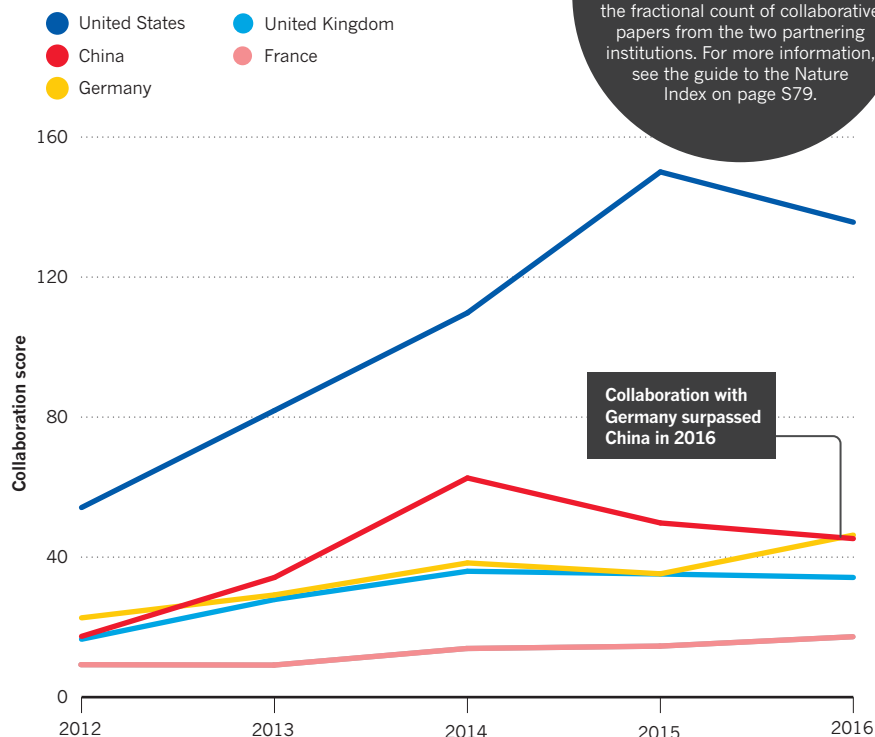
"It was a challenge," Alhasan recalls. The pace of research was much quicker in the US, and the UCSD team had trouble finding Saudi students who were qualified to participate. "Since it was so tough to set up a collaboration from the US, I decided to go back, establish a lab and a research team, and then collaborate with US institutions from here," he says. Impressed with his earlier efforts, decision-makers in the kingdom's research community provided him the resources and support to set up a nanomedicine unit at KACST. Over the past year, Alhasan has established his lab and trained Saudi scientists. Now the team is launching a major collaboration with prominent Harvard biomedical scientist, Jeffrey Karp, to develop nano-systems for precise targeting of drug delivery to diseased tissues within the body.

To help KASP scholarships develop into collaborations, Alhasan suggests that scholarship applicants should be encouraged to first spend a year at a Saudi research institute to improve their prospects. "Many Saudis are fine in terms of English and their science background," he says. "What will make them stand out and go to top research schools like Harvard, MIT, or Stanford is research experience." Making applicants more attractive to such schools would improve their chance of being exposed to world-class research and establishing valuable scientific relationships which they would carry back to Saudi Arabia.

So far, Alhasan's experience isn't typical of KASP scholarships. "But it can be reproduced," he says. "And it should be."

COLLABORATION TRENDS

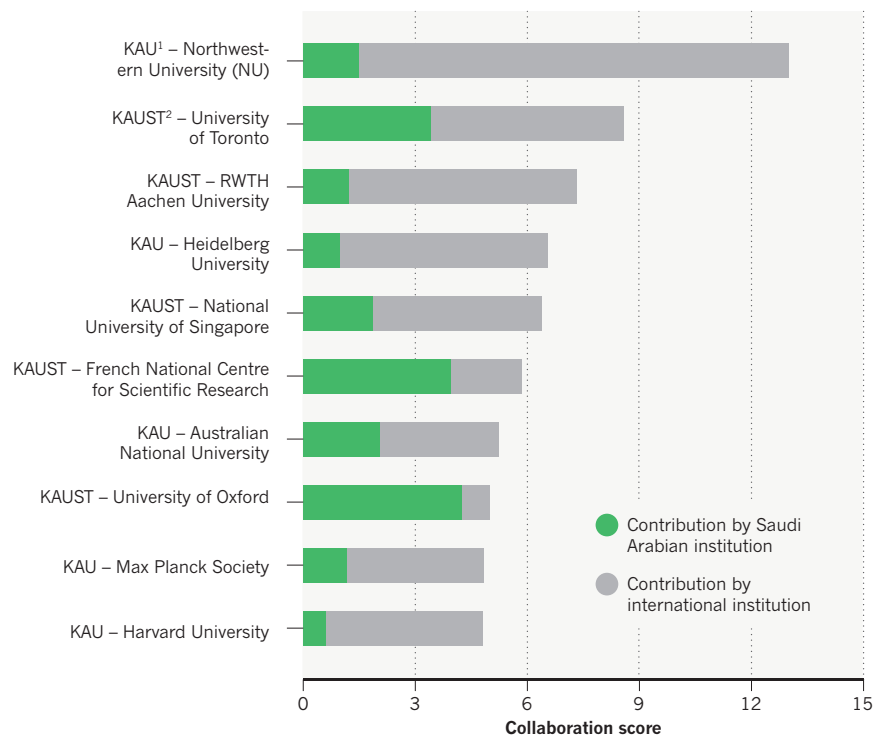
Saudi Arabian collaboration with the United States decreased in 2016, breaking the pattern of rapid growth seen since 2012. Collaboration with China continued the fall first seen last year, allowing Germany to replace it as Saudi Arabia's second biggest collaborator.



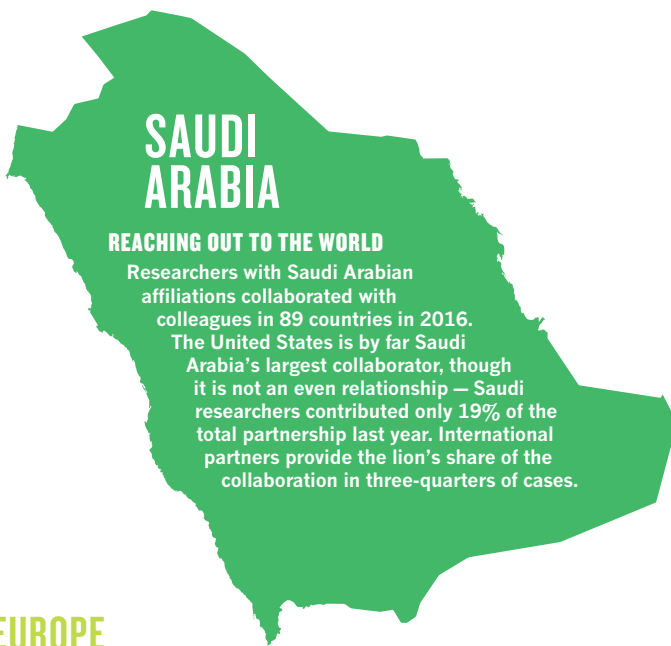
WHAT IS A COLLABORATION SCORE?
Bilateral collaboration scores sum the fractional count of collaborative papers from the two partnering institutions. For more information, see the guide to the Nature Index on page S79.

KEY PARTNERSHIPS

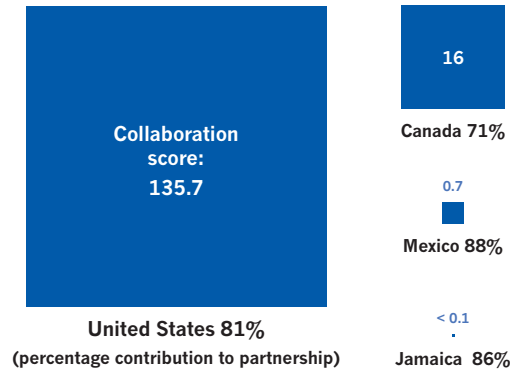
The bilateral collaboration between KAU and Northwestern University in the United States is the largest to involve a Saudi Arabian institution. Each of the ten biggest international partnerships involves either KAU or KAUST.



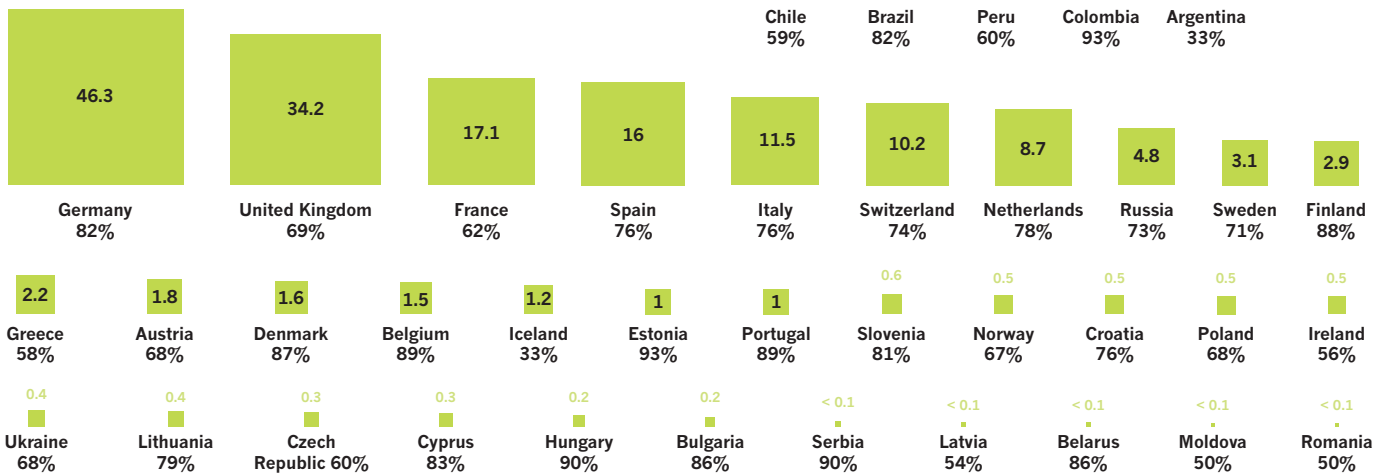
1. King Abdulaziz University (KAU)
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NORTH AMERICA



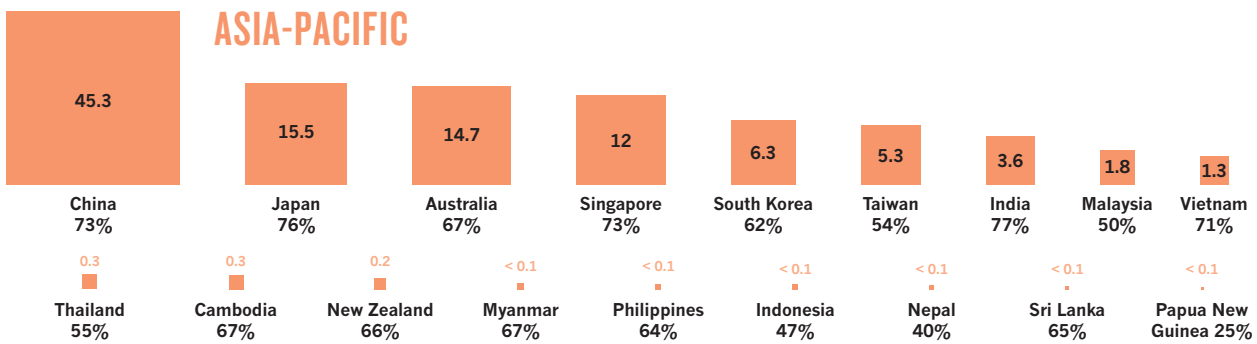
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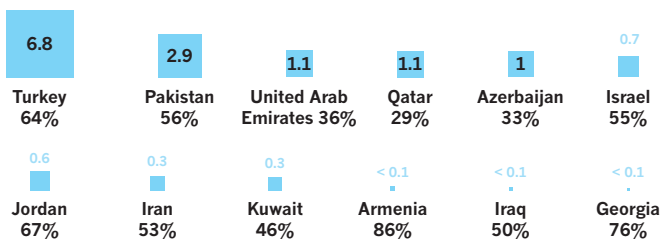
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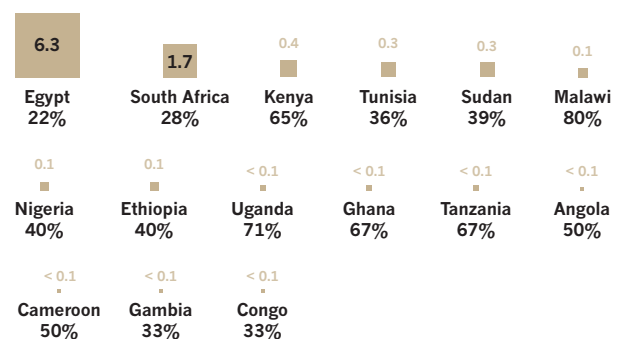
ASIA-PACIFIC



WESTERN ASIA



AFRICA



SOURCE: NATURE INDEX. ONLY COUNTRIES WITH A COLLABORATION SCORE OF >0.001 ARE SHOWN.



Mohammed Al Hajji says studying in the US challenged his preconceptions and was an eye-opening time.

Some have joined the newly established universities, which are focused more on teaching than research,” says Abdulrahman Abouam-moh, a statistician at King Saud University and a member of the kingdom’s Center for Higher Education Research Studies, who has researched the challenges and opportunities of higher education in Saudi Arabia.

A recent revision to the programme aims to alleviate the unemployment problem by coordinating scholarship awards with ministries and other public institutions to ensure that KASP scholars will return to a job. Although this will do little for those who graduated during the past decade, it may help students starting now.

However, job guarantees are not universally welcomed. According to Najah Ashry, vice president for Saudi affairs at King Abdullah University of Science and Technology (KAUST) in Thuwal, students in KAUST’s own Gifted Student Programme objected to a similar idea.

“We partnered with a major company to sponsor select students who would be guaranteed jobs, but the students saw this as a hindrance,” says Ashry. “They did not want to limit themselves, but rather keep their opportunities open.”

While KASP may have had a limited impact on Saudi research, STEM-focused programmes are thought to have been invaluable in helping the country establish a research community. Fowzan Alkuraya, a geneticist at the King Faisal Specialist Hospital and Research Centre (KFSH&RC) and Alfaisal University in Riyadh, says that nearly all of the Saudi scientists he knows benefited from a scholarship abroad.

“The trick is finding out how to translate this success into a sustainable local effort that

ensures continuity in grooming young Saudi scientists,” he adds.

A TIME FOR CHANGE

Experiences abroad often reshape the thinking of returning KASP scholars. “I don’t think education should only be for getting jobs,” says Al Hajji. Saudis studying in the US are exposed to a culture of innovation and creativity which they carry home. And despite employment difficulties, most do return — only 1.3% of highly-skilled Saudis emigrated in 2010, well below the global average rate of 5.3%.

“WE’LL SEE SOME SOCIAL CHANGES WHEN WE BECOME PARENTS AND RAISE OUR CHILDREN DIFFERENTLY.”

The critical thinking skills that Saudi students are exposed to when studying in the US are crucial for the kingdom to succeed as a knowledge economy.

For Al Hajji, a major benefit of the programme has been that “professors treat you like an independent individual who might have their own interesting thoughts, without any punishment for voicing different opinions. Back home I think it’s just a factory of the same

mentality over and over again.”

Al Hajji and Alrebh both also credit their time in the US with challenging their preconceptions. “As a student in the US, or just as a person who wants to live peacefully in this environment, you’ve got to respect all these different religions and sexual orientations and gender roles,” says Al Hajji. “It’s been an eye-opening experience for me.”

These changes are also reflected in the studies by Hall and Al Yusef. Participants in both studies reported a change in their ideas about gender and a lessening of the social division between Shia and Sunni Muslims. Mingling in academic contexts and a reliance on each other outside class creates social conditions for KASP scholars that don’t exist in Saudi Arabia, allowing them to explore relationships outside of traditional boundaries. However, some also reported leading split lives, with one participant saying that many Saudis in the US create two Facebook accounts to “hide the things they are doing in America.”

The scholarship programme has also created unprecedented opportunities for Saudi women. “It opened doors into different sectors for us,” explains Saja Kamal, who studied project management in the US under KASP. “It let women get into engineering and geology and other majors that they haven’t had access to in the past.” While this has enabled women to compete in the workforce, they still face cultural and legal restrictions. “Merging back into Saudi society is like reverse culture shock. You strive to be the independent person that you became just by being abroad,” says Kamal. She describes the returning KASP scholars as a “third culture,” merging traits from Saudi Arabia and their host countries, and she sees KASP as a catalyst of a gradual cultural change that will transform Saudi Arabia.

In the long run, the outcome will depend on whether the students can effect social and cultural change once they return. KASP is furnishing the kingdom with a wealth of highly qualified citizens able to carry scientific research forward and make innovation a driver of the economy. Changes in the workplace and in social practices are more likely to succeed than fundamental societal shifts, which will face resistance from Saudi Arabia’s entrenched conservative hierarchy. “I think we’ll see some of the social changes when we become parents and raise our children differently to the way our parents raised us,” says Al Hajji.

The scholarship programme has been extended to 2020, but changes in the kingdom’s labour and research culture will be needed to reap the rewards of this ongoing investment. Likewise, returning KASP scholars will have to rise to the opportunity bequeathed to them. “This was a big jump for the nation, but so far the benefit has been for us as individuals,” says Alrebh. “The country has invested a lot of money in educating its citizens, and we should find a way for the nation to benefit from it.” ■