

# Innovation Report 2021

# Joining the dots between innovation and impact

2021 was a year of growth and scale

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**Innovation. We tend to imagine it as a series of breakthroughs** – the discovery of fire, the agricultural revolution, the steam engine, the automated assembly line, the internet. Big moments that herald a new age. But it’s never that simple.

Innovation works on the same principles as evolution. Each step must solve a problem – must be useful to society and must be sustainable – or it won’t happen at all.

That’s why the KAUST Innovation team is so important. Even if a student proved it was possible to create a stable fusion reactor – that doesn’t mean the world instantly changes. An idea must have a market. It’s no good if the customer has no need for the product.

So we must establish a connection between scientific research and the real-life applications of that research. We must make sure the research is used. That’s innovation.

### Deep tech and innovation

While innovation is important, it’s crucial that we focus on developing technology that will have a wider impact in Saudi Arabia and on society. Deep tech – companies with the express objective of overcoming significant scientific or engineering challenges – is the keystone to these efforts. It isn’t enough to simply encourage scientists, but to encourage them in the correct fields. That’s why we have become the heart of deep tech for Saudi Arabia and the entire world.

### Creating more innovation

KAUST Innovation’s prime focus is on supporting and encouraging innovation in Saudi Arabia, which will go on to have a positive impact in the world. Achieving this means that we must grow our own capabilities. More development. More training. More funding.

I’m happy to say that we achieved that in 2021.

### Growth and scale together

Over this last year, I’m extremely proud of the Innovation team. In every area, we’ve improved, grown and scaled the difference that we make.

With every technology we’ve helped develop, with every startup we have supported, with every spin-in we have attracted, with every company we have partnered with and with every SME we’ve helped to grow, we are helping to create that deep tech innovation community and ecosystem that everyone recognizes as key to achieving the Kingdom’s vision.



**Kevin Cullen**  
Vice President of Innovation





# The bridge between research and industry

## There are many stages in the life of an idea.

From knowledge creation through research to developing a global enterprise. Scaling innovation is about moving more ideas along the pipeline to impact faster.

Our teams support every stage – teaching scientists to find practical applications for their research, training people to become entrepreneurs, accelerating startups into stable companies, attracting new spin-ins to the ecosystem, developing capacity in the SME community and supporting businesses to grow. That's how more big ideas get into the world.

We've scaled the speed of the process and the quality of innovations by focusing on five key areas:

### 1 Learning about industry problems

We are partnering with industry and creating a network to identify and share ideas. This year, our initiatives, through our KAUST Industry Collaboration Program, have gained three new members and signed seven new partnerships.

### 2 Developing world-changing technology

Research is at the heart of our innovation approach. Through our Technology Transfer Office, we work with industry, in all its forms, to identify the innovations and ideas that can help them to compete and grow. We help scientists to develop their research into a viable product or prototype. We also help distribute those ideas – connecting the researcher with the people in industry who they can work with to turn the research into impact. We help by providing seed funding and grants and in the last two years, we've developed 48 new technology products.

### 3 Training entrepreneurs and SMEs

If the business selling the innovation fails, so too does the innovation. Running a company, finding a market gap, getting customers, leading a team – these are all skills that a company needs if they're to succeed. This year, our Entrepreneurship Center and SME Innovation Services team have hosted more workshops and trained more people in Saudi Arabia and across the world than ever before.

### 4 Growing successful businesses

From startups to established players, we help speed up growth. Our TAQADAM Accelerator focuses on giving startups the push they need and provided over \$1.6 million in non-equity investments this year. Meanwhile, we've invested a further \$7.9 million to startups through our Innovation Ventures deep tech fund.

### 5 Providing a home for deep tech

All companies need resources: offices, research equipment, lab space – we even have sections of the Red Sea if they need it. Our Research and Technology Park gives businesses – from startup to enterprise – the space they need to work on big issues and find solutions. It also helps them form communities, make contacts and find clients. This year, the park has attracted more tenants and extended its facilities.

Through these areas, we've helped to scale innovation in Saudi Arabia. But it isn't scale for the sake of it. We focus on technology that has a positive impact in the Kingdom and on the rest of the world. For example, we've helped businesses create ways to grow crops in previously impossible regions, capture carbon from the atmosphere, make factories safer with AI and recycle waste into fertilizer.

Throughout this report, we'll explore each of these areas and look at how we influenced the accomplishments that the researchers, entrepreneurs, and businesses made this year.



# How KAUST Innovation works together



**Solve industry problems**

Industry Engagement and Consultancy Services



**Develop world-changing technology**

Technology Transfer Office



**Train entrepreneurs and SMEs**

Entrepreneurship Center and SME Innovation Services



**Grow impactful startups**

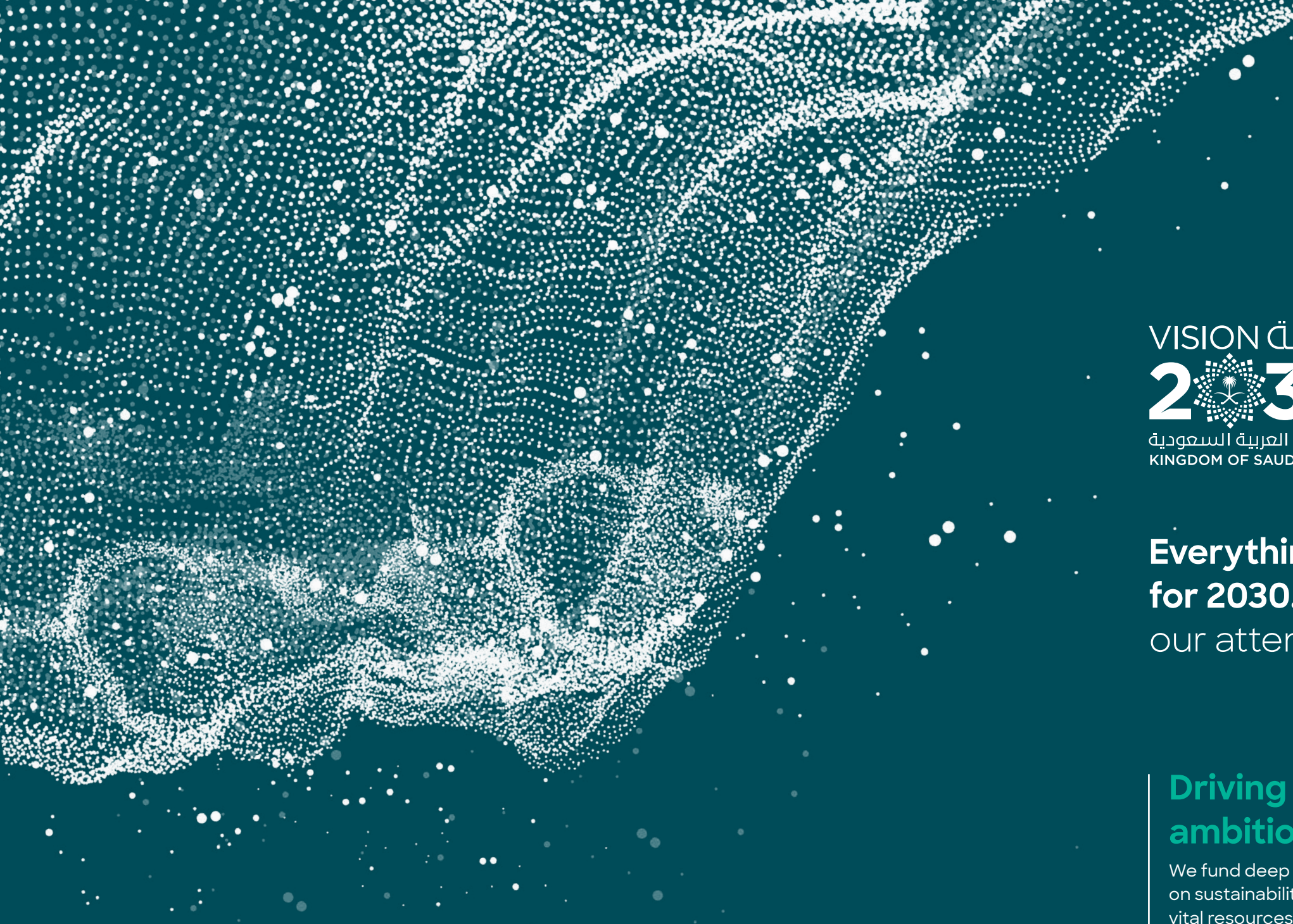
KAUST Innovation Ventures and Entrepreneurship Center



**Provide a home for deep tech**

KAUST Research and Technology Park





**Everything we do ties back to the Kingdom’s vision for 2030.** These three objectives have helped focus our attention.

Joining the dots between...

# Innovation and vision

## Driving an ambitious nation

We fund deep tech that focuses on sustainability – protecting vital resources like food and water. These innovations help increase yields, reduce waste and use less fresh water. But we also advise and support in key areas. For example, KAUST had a leadership role in the COVID-19 taskforce, partnered with multiple ministries to share knowledge and research and our scientists spoke at COP-26 to inform much of the world’s agenda around sustainability research.

## Growing a thriving economy

A thriving economy needs jobs. These jobs come from helping scientists develop new technologies and license them to companies, teaching young innovators how to form successful businesses and growing already established enterprises. For example, our Entrepreneurship Center alone has now taught almost 24,000 people – each innovator a potential entrepreneur in the future. As these companies grow, so too do the number of jobs. Meanwhile, the economy becomes broader and more diverse, as new technologies bring Saudi Arabia into new industries.

## Supporting a vibrant society

Creating jobs helps bolster the economy and make sure that individuals are financially stable. But a vibrant society isn’t just about surviving – it’s about thriving. For that, individuals need a community. One way we do that is through our Research and Technology Park. It provides a home for deep tech. Companies – both large and small – can get the equipment they need to develop ground-breaking technology, while also building their network and socializing with their fellow innovators. They can form partnerships and bonds that foster more creativity and build a vibrant society together.



# It's important to encourage women in innovation



participation in our Entrepreneurship Adventures Massive Open Online Course.



## Supporting women in business and innovation drives a healthier economy.

Half our population – and thus half our potential innovators – are women. Yet, across the world, too few patent applications are from women.

We've found that when we hire more women into our patent department, we receive more applications from women. That's why, in 2021, we introduced the Technology Transfer Fellowship program for post-doctoral Saudi women. The Fellows will learn how to work on applications and build the skills necessary to develop research into practical products.

Meanwhile, we've also partnered with the University of Texas to host the Empowering Saudi Women Through Entrepreneurship program. During the program, 10 participants

will spend time in Austin to build their network and learn the essential building blocks that'll help them bring new products and services to market.

Programs like these are essential in creating role models that will encourage even more women into innovation. Thus, in the spirit of highlighting role models, we'd like to commend and celebrate two women in particular this year: Asrar Damdam (PhD '18) and Shahad Geoffrey. Two individuals who went through our TAQADAM Accelerator with their current startups.



**Shahad Geoffrey in top 50 most influential Saudi women.** According to Arabian Business, Shahad Geoffrey is one of the top 50 most influential women in Saudi Arabia.

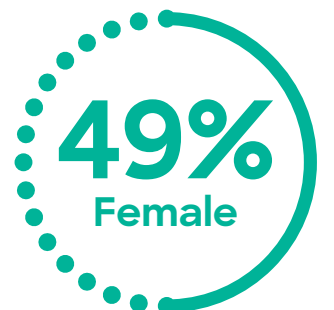
She was chosen in part for her achievements as the CEO of Taffi, a fashion retailer and TAQADAM Accelerator graduate, that's revolutionizing how people choose their outfits.



**Asrar Damdam makes Forbes list.**

Every year, Forbes creates the 30 Under 30 list.

These are the people who, while under 30 years old, have shown considerable achievements. Dr Asrar Damdam was on the list for her achievements as the CEO and founder of Uvera, another TAQADAM Accelerator graduate. Her company helps prolong the shelf life of fresh food by 97%, using UV light instead of chemicals.



founders in TAQADAM accelerator.



Joining the dots between...

# Scientists and industry

**It's important to create a network between scientists, entrepreneurs and key businesses in Saudi Arabia.**

An open dialogue helps us understand the challenges that industries face and to identify ways that new technology could solve their problems.

This benefits everyone. We can collaborate on research together, license technology, develop new innovations, provide the equipment and space to solve problems, find talented individuals that businesses need, or consult on what they should do.

**We believe in the ripple effect**

Even seemingly small innovations can have a large impact. Our network includes industry connections along the entire supply chain – companies that supply services to industry giants such as Aramco. Innovations in these companies can make them more efficient. As they grow more efficient, the savings pass along the chain to the final customer. The results ripple through the entire economy.



funded by KICP  
members over  
12 years.



# We've successfully forged new partnerships



**We focused on two industry collaboration goals in 2021:** enter into more strategic partnerships and invite more companies to join the KICP. Both of these help us grow our community and network. We achieved this goal. This year, we signed seven partnerships:

## KICP

### KAUST Industry Collaboration Program (KICP)

This program invites members globally and from across the kingdom to share their knowledge, discuss trends across industries and establish mutual connections.

## KIAB

### KAUST Industry Advisory Board (KIAB)

This is our 12th year hosting KIAB – an annual conference and board meeting to discuss our latest research and give guidance and recommendations to industry. The focus this year was on AI, with presentations from Johnson Control, Boeing, Air Products and Westfield.



Dr. Muhannad Shaikh, CEO Alsalem – Johnson Control Saudi Arabia – KAUST Industry Advisory Board (KIAB) 2021

## This year, we signed seven new partnerships:

- **Boeing**  
They've renewed their Master Research Agreement for the third time. It details how they'll help fund multiple research projects with a focus on AI.
- **Air Products**  
A strategic, long-term research agreement to tackle decarbonization together. It recognizes our combined success from the Clean Combustion Research Center over the last three years.
- **The National Industrial Development & Logistics Program (NIDLP)**  
A Heads of Agreement to create a new research center and develop technology that will advance the fourth industrial revolution in Saudi Arabia.
- **Jeddah Chamber of Commerce & Industry (JCCI)**  
We've agreed to work with more businesses in Jeddah. We'll also join their councils and share our insights.
- **Saudi Venture Capital & Private Equity Association**  
We've created a framework on how we'll work together to advance and support deep tech startups.
- **Tabadul**  
Working with this national logistics provider, we'll research ways to advance global trade in Saudi Arabia, host hackathons and bootcamps and share know-how and technology.
- **Zapata**  
This Harvard spinout creates quantum technology. We're collaborating on research together to see how airplanes and cars could be more aerodynamic. This is the first time that quantum computing has been used for aerodynamics.



# 3

**new members into KICP:** NIDLP, Monsha'at and the Royal Commission for AIUla. This now brings our total members to 25.



Joining the dots between...

# Research and technology

**University research is the foundation on which many great products are built.** But before the first vaccine is produced, the first sale made or the first factory constructed, most research needs a little help.

Transforming research into a tangible product requires three steps:

**Discovery**

We get ideas started on the journey to products

**Development**

We turn ideas into technologies

**Deployment**

We find the customer and close the deals



# We're growing quality, not just quantity

33 proposals

3rd call of Research Translation Grants and Near-Term Grand Challenges resulted in 33 proposals seeking \$36M+ in development funding.

If we want to help more research to make an impact we need to turn those raw results into something closer to a product that someday a customer might use or buy.

We do this by providing targeted development funding to KAUST research that has the potential to have an impact and then partnering with the research team to reach that potential. There are three types of grants we offer to deliver impact:

- **Impact Acceleration Grants.** These grants of up to \$100,000 give researchers a chance to discover if an idea is commercially viable.
- **Research Translation Funding.** This grant provides up to \$1 million to rapidly develop prototypes to prove the technology has commercial potential.
- **Near-Term Grand Challenges.** We provide up to \$2 million to deploy technology that will solve society's biggest challenges and are likely to make an impact, fast.

How can we tell if a discovery has potential? The fastest way is to partner with the researcher to make an IP deal that leads to commercialization. Through these grant programs, we've been increasing the amount of IP deals we've made by more than 50% each year. We've also had a record number of 204 invention disclosures and hit a revenue of over \$1 million through licensing.

This year, we passed the 100 deals done milestone and just kept going. Getting technologies developed and deals completed has helped researchers develop AR technology that walks a surgeon through a spinal operation, techniques that remove sulfur from oil while it's refined and specialized glass that helps plants get the right wavelengths of light to grow – and more. When it comes to innovation there is unlimited potential.

## Enriching daily life in Saudi Arabia

You may find it hard to believe but in Saudi Arabia almost half the population doesn't get the daily recommended dose of Vitamin D, a nutrient that most people get from being out in the sun.

To tackle this KAUST Professor Niveen Khashab has teamed up with renowned MIT researcher Robert Langer and his startup, Vitakey, to work towards encapsulating Vitamin D so it can be baked right into Arabic bread, a staple of daily life. Using this cutting-edge technology – funded under the Near Term Grand Challenge program – we hope in the coming years to see an reduction of Vitamin D deficiency, without getting sunburnt.



KAUST startup Vitakey is baking Vitamin D into Arabic bread

## Modon pilot proves new wastewater treatment possible

**Waste from humans, animals and agricultural processes cause problems across the world.** But today, only half of cities in Saudi Arabia are connected to sewer systems.

However, with Professor Peiying Hong's anaerobic membrane bioreactor it's

possible to treat wastewater in either an energy-neutral or even energy-positive way. In November 2021, Hong and Modon – the Saudi Authority for Industrial Cities and Technology zones – began a pilot project in Jeddah. This pilot began as a Research Translation Grant project to prove that a large-scale version of Hong's prototype is possible and commercially viable.





Sending texts  
underwater just  
became possible.

We have so many ways to communicate on the surface that we take it for granted. But underwater, we can't speak or communicate with electronic devices. So for scuba enthusiasts, being able to send a text instead could be a lifesaver. Red Sea Research Center Director, Professor Michael Berumen, and his team have taken up the challenge of bringing texting

underwater, so divers who can't see hand signals can finally communicate.

This work was funded through our Research Translation Grant, and will be coming up for trials in 2022.

# NEOM to create world's largest coral garden

Coral reefs are extremely important: while they only cover 1% of the ocean, they host 25% of the marine life.

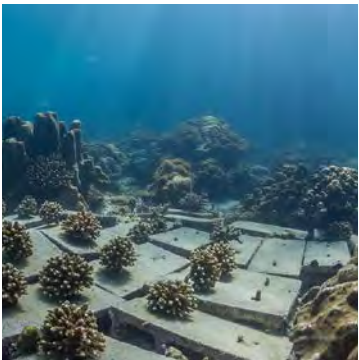
Sadly, climate change and other environmental issues are threatening their existence.

KAUST and NEOM have started a project to create the world's

largest coral garden to protect the species that live in these reefs.

The 100-hectare garden aims to be finished in 2025, and is made possible using our Maritechture Technology™. This will enable NEOM to 3D print, grow and plant corals in nurseries, ready to transport to the garden.

The reef will be built around Shusha Island in the Red Sea and is home to over 300 native coral and 1,000 fish species. The project seeks to preserve future generations and pioneer efforts to help coral reefs cope with climate change.



Coral Garden testing site



100

hectare garden to be finished by 2025.



# Diamonds are... plastic?

Professor Sanjay Rastogi wasn't being romantic when he set out to create plastic diamonds through his Research Translation Grant.

He was looking to engage with industry to provide a new material that would be less toxic and incredibly strong.

By marrying together work done in the Netherlands, South Korea and Saudi Arabia, Sanjay is creating a wide variety of unrivaled new products with potential applications in prosthetics, body and vehicle armor, automotive, lithium-ion batteries and even ropes. Diamonds truly can be the ties that bind.

# A solar cell for the future

**The sun is an abundant and free resource.** If only we could efficiently capture its energy.

While solar cells can convert sunlight into usable energy, the process to create them leads to defects.

Through the Near Term Grand Challenge project, Professor Stefaan De Wolf's team has come up with a new way to create solar cells to make them over 29% efficient. The process is to passivate defects in the perovskite's crystal structure and surfaces (coating the surface so it doesn't get contaminated). This allowed the team to create a new perovskite and silicon tandem solar cell. They have also used the Near Term Grand Challenge project to develop a way to collect light from both sides of the cell.

Both of these creations will lead to revolutionizing the solar energy sector.



Creating more solar-efficient panels



29%  
more efficient  
solar panels.



Joining the dots between...

# People and mindsets

Our mission at the Entrepreneurship Center is to develop an entrepreneurial mindset throughout Saudi Arabia. This all starts with training people how to think differently and take more risks.

## Our SME Innovation Services Team follows a similar philosophy.

It's not only important to train new entrepreneurs. We also need to upskill the SME owners themselves. So our SME Innovation Services Team does that through the SME Maharat program. The more skilled the owners, the more their businesses can grow and need new employees. And the more they grow, the stronger the whole of Saudi Arabia becomes.





# Entrepreneurship is the new math

**The skills that individuals develop while training to be an entrepreneur help them, no matter their career path.** This is a core belief in our Entrepreneurship Center.

We've trained over 5,024 innovators through 12 programs this year. Whether they go on to start their own business or become employees, the workforce becomes stronger for the entrepreneurial skills they've developed.



**5,024**  
Entrepreneurs  
trained this year.



## Our first Massive Open Online Course reaches 71,000 people

**This year we launched our 'Entrepreneurship Adventures' Massive Open Online Course (MOOC).** It's an eight-week online course and KAUST's first-ever MOOC.

Students walk through the startup lifecycle, tackling various issues and scenarios and seeing whether the entrepreneur life is for them.

The course is completely free and is the first Arabic course on edX that focuses on entrepreneurship. Already, it's had double the usual completion rate on the platform and attracted over 71,000 adventurers.

## Destination Deep Tech begins with five startups

If we're to disrupt industries and create an impact in fields such as agriculture, aerospace or green energy in Saudi Arabia, it needs to start with deep tech.

This new three-month program – in partnership with The Next Web (TNW) – provides deep tech startups around the world with the resources, research facilities and mentors to develop their world-changing ideas on our campus. We've already filled our five slots and are excited to see what they create in 2022.



# 300 students attend Entrepreneurship for All

In partnership with UC Berkeley, Cornell and Stanford, our Entrepreneurship for All program is a two-week course that teaches KAUST students how to develop an entrepreneurial mindset.

They learn to spot opportunities, develop a team and find their strengths and weaknesses. This year, due to COVID-19, we held it virtually for 296 students.



**Praise Eromosele,**  
KAUST Master's Student,  
Chemical Engineering

“Entrepreneurship for All has been a process of learning, unlearning and in some cases re-learning. We had to work at lightning speed, all while trying to get to know each other, form team dynamics, understand leadership and work with people – this was a new experience which I believe will be useful to anyone, no matter what you want to do in the future.”

# Innovation strikes at a new industry: gaming

**In 2021, the global gaming industry raked in over \$180 billion in revenue.**

For context, that's 75% of the global film and video industry, which reached about \$235 billion in 2020.

This is important as Saudi Arabia ranks first for gaming in the Middle East, with over 67% of the

population considering themselves gaming enthusiasts. Because of this, we partnered with Sandsoft to run a 48-hour Game Jam where 300 developers battled it out to create their own games, learning from industry leaders and experts along the way. The event pushed those enthusiasts into building games, rather than just playing them – ideally bringing more diversity to the economy in the future.



Saudi developers battled it out for 48 hours at KAUST's first-ever Game Jam

# Providing SMEs the skills to grow

Part of Vision 2030 is to increase the number of SMEs that contribute to Saudi's GDP by 35%.



**728**  
SME companies  
trained this year.

If they are to grow, they need to have the skills to take risks, digitize their business and prototype new ideas.

This year, we trained 728 SME companies to learn the technical skills they need to grow and scale their business. We ran 26 workshops through three series: Raqmana, Fikra and Qalab.

## Fikra

This program teaches soft skills, with the goal of helping SMEs develop a mindset focused around innovation.

## Raqmana

Businesses need to digitize. So this program teaches SMEs all about emerging technologies like AI, IoT, VR and more.

## Qalab

This program focuses on how SMEs can design, develop and prototype new ideas, using technology like 3D printing and robotics.

# Launch of first-ever direct line to KAUST for Saudi SMEs

After surveying SMEs, we discovered that 45% of them felt they lacked know-how and technical expertise.



**78**  
companies reached  
with our Knowledge  
Partnership Program.

They also wanted a way to connect with KAUST about their challenges and find talented people.

So we developed the Knowledge Partnership Program (KPP) – the first of its kind in Saudi Arabia. SMEs can use the portal to post technical challenges and request Master's and PhD students to help them. The KPP Master's already been promoted in several Monsha'at (General Authority of Small and Medium Enterprises) programs such as Tomoh and Ebtker.

KPP and its services are currently invite-only. We'll be opening it more broadly in 2022.



Joining the dots between...

# Investment and impact

**Creating a business, developing a product and finding customers takes time – sometimes years.**

With the right funding, we can speed up this process, allowing innovators to hire employees and develop their technology faster. The faster they develop, the sooner they can make an impact.



# Accelerating startups into scale ups

Due to the pandemic, we hosted our TAQADAM Accelerator virtually this year, with 37 startups graduating.

In addition to the mentorship and support that we give them, we invested \$2.74 million in non-dilutive funding – 37% of the total we’ve invested across our four cohorts so far.

As businesses grow, they need to hire more people. In our TAQADAM accelerator alone, the startups have created over 1,000 direct jobs over the past 4 years.

These businesses are directly responsible for hiring more people into industries like education, healthcare, fintech and logistics.

So all of these investments directly lead to an impact in society. It saves lives, puts food in people’s mouths and protects the environment.



graduated through our virtual TAQADAM Accelerator.



## This year in startup numbers



invested by KAUST programs.



investment raised.



total raised.

## All time



raised by KIV investee companies.



completed the TAQADAM Accelerator.



created directly through TAQADAM.

## Developing more high-impact startups

**Our investment arm, Innovation Ventures, invested almost \$8 million in nine businesses, around 20% of our investment for all time.** Our portfolio companies also received \$12.5 million in co-investment.

This doesn't include the more intangible investments we make, such as helping them apply for patents, mentorship, or introductions to industry leaders.

It's through that additional help and our network that companies like Red Sea Farms have gone on to raise \$15.5 million in series A funding rounds.





# UnitX saves lives in manufacturing and construction

**It's dangerous working on a building site or in a technical facility.**

With so many hazards, it's important to keep your employees safe.

UnitX's AI technology, Vizard, uses drone and CCTV data to give real-time information – alerting staff if someone crosses a safety zone, illegally enters a building, or if a worker trips and falls.

As a TAQADAM alumni, we've helped UnitX to define their business model, prototype various service ideas, and introduce them to key contacts. We continue to mentor them to this day and they're headquartered in our Research and Technology Park. They've now joined Nvidia's Inception program, which will help them further their goals and save the lives of even more people.

# Red Sea Farms seeks to feed the world

**It's no surprise that this agriculture technology startup raised \$15.5 million this year.** Founded in 2018 by KAUST Professor Mark Tester and scientist Dr. Ryan Lefers, Red Sea Farms has created a technology to grow crops and cool greenhouses using saltwater, cutting the amount of fresh water needed by up to 90%.

This is particularly important in certain climates, such as the Middle East, where it's either not possible or too expensive to get hold of fresh water.

The funding will help them expand from Saudi Arabia to buyers around the world. Red Sea Farms plans to use the capital to build and retrofit commercial farming operations

across Saudi Arabia, Egypt, the United Arab Emirates and the United States, with a view to validate their technology at scale and generate significant revenue.

Red Sea Farms already sells produce to Tamimi and grocery stores across Saudi Arabia. They have commercial pilots across the Kingdom, Egypt and the United Arab Emirates, with greenhouses spanning over 10 hectares. One of these pilot greenhouses is in our Research and Technology Park, where they grow tomatoes and other produce.

Red Sea Farms also acquired fellow KAUST startup – iyris. Developed by Professor Derya Baran, iyris creates specialized glass that filters and refocuses light and heat to increase produce yield. This technology tied neatly into Red Sea Farm's greenhouses and they're now integrating the iyris technology.



fresh water needed by farms.

Red Sea Farms at the ground breaking of their smart greenhouse in Mastorah, KSA



Joining the dots between...

# Community & collaboration

**Research doesn't stop once a business is formed.** It's vital for their success. But finding the equipment, the space and the talent can be hard – even for established enterprises.

Our Research and Technology Park is the home of deep tech R&D. It gives startups and large companies alike a base of operations. One that already has the offices and research equipment that they need, as well as a direct line to leading scientists and researchers.

#### **Innovation doesn't happen in a bubble**

While resources are important, ideas don't occur in a vacuum. Collaboration is key. The offices and surrounding campus at our park provide this – companies work in communal buildings and forge new connections with talent, investors or potential customers. And, there are events outside of work where employees can learn, socialize and share ideas.

Bringing together community and resources allows our tenants to continue their research and keep their businesses relevant. This year, we've had 18 new companies join the park and secure their future. Many came through our own programs. But we also have established companies looking to set up a presence in Saudi Arabia.



new companies  
joined the park,  
with a total of  
63 tenants.



# Creators of the world's first automated kitchen garden join KAUST

**Natufia, an Estonia-founded startup, became one of the latest tenants of our Park.**

Their technology is a fully automated home kitchen garden, helping people grow organic herbs and vegetables.

The technology shows extreme promise to reduce the amount of food waste in homes. Along with joining our park, we have already invested \$2m so they can expand in Saudi Arabia.

## Wayakit's plant creates disinfectants to wipe viruses out

**This year, KAUST startup Wayakit, opened its first pilot plant.** The company realized that households buy around 58 liters of cleaning and disinfectant products every year on average.



**20,000**  
liters of safe disinfectant products a day.

And with the pandemic, there's even more focus on cleanliness. Often these cleaners have toxic ingredients, and are harmful to people and the environment. With this new pilot plant in our park, Wayakit will be able to produce 20,000 liters of safe disinfectant products a day – and deliver them with less waste and in a more environmentally friendly way.



Wayakit founders Dr. Luisa Javier Fregoso and Dr. Sandra Medina at their production facilities

## Aramco opens new R&D facility in the Park

**Aramco has now opened the doors to its new research center in our Park.** It's able to house 130 scientists, which they expect to fill by the end of 2024.

They'll be researching matters such as material science, nanotechnology, solar energy and fuel technology, among others. With the laboratory finished, we are now in talks with Aramco to grow our collaboration together.



**130**  
capacity expected to be filled by the end of 2024.

## Bruker will establish a customer support center

**Over a decade ago, we began to partner with Bruker.** They've helped equip our laboratories and together we set up the KAUST-Bruker Center for Excellence in the KAUST Core Labs, a place to research nuclear magnetic resonance.

This year, they plan to set up their Bruker Arabia office at our park. The office will build our relationship together and help support their customers.



Joining the dots between...

# Saudi Arabia and the world

**When all of our teams come together,  
we can see huge impacts for the world.**  
This year, we've scaled that impact.

We've forged new partnerships to find the problems, developed more technology to create the solutions, trained more entrepreneurs and SMEs to have the skills, funded more businesses to produce them and provided a home for more of their headquarters.

But ultimately it comes down to the innovators themselves. They grew their businesses, created more jobs, raised more funding and – ultimately – made a bigger impact.

The innovations that they've discovered and the startups that they've founded make a difference. They improve life for everybody and secure our future. It's these innovators that will help the Kingdom achieve its vision for 2030.





# IntraVides makes AR walkthroughs for surgeons

## Even misfortune can lead to opportunity.

After a devastating fall into a crater left KAUST research scientist Dr Corrado Cali in a hospital bed for three months, he had an epiphany.

The AR technology he was working on could help surgeons perform operations. Along with fellow KAUST research scientist, Daniya Boges, and two other founders, Matteo Cavalleri and Luca Damiani, they formed IntraVides. The wearable technology they developed shows a surgeon exactly where to place screws that they need to implant, while they operate.

Over the course of their journey, we were there to mentor them in how to build a business, secure their patents and provide the seed funding.

# Edama will recycle our food waste into fertilizer

**Thousands of tons of food heads to landfills every year, causing pollution.** KAUST startup Edama Organic Solutions wants to divert that waste and transform it into fertilizer for farmers.

Not only does this cut down on carbon emissions by 90%, but it results in up to 40% more yields and 50% less water being used. They are just one business that we backed through our Innovation Venture fund and who went through our TAQADAM Accelerator.

It's also part of our mission to reduce our waste. So we're now working with Edama to reach that goal. They're building a facility in our Park to recycle 5,500 tons of organic waste a year – which makes up 75% of KAUST's total usage.



Dr. Sabrina Vettori, Edama Organic Solutions founder at composting facilities at KRTP



## 5,500

tons of organic waste can be recycled at the new Edama facility.

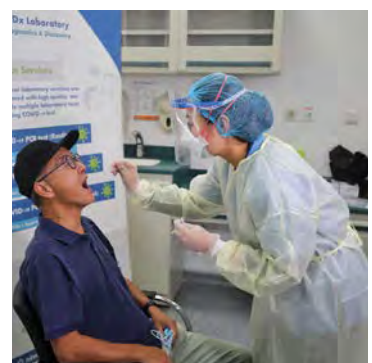
# Noor DX begins testing for COVID

Since the start of the pandemic – and with up to 110,000 PCR tests needed a day – Saudi Arabia has needed to rely on tests imported from other countries.

It became essential – both to reduce costs and wait times – to develop a test that could be produced locally.

Using technology developed at KAUST by Professor Samir Hamdan – startup Noor DX has now launched a PCR testing service on the KAUST campus. It is the Kingdom's first locally developed COVID-19 RT-PCR test – and was approved by the Saudi-FDA in October.

Headquartered in our facilities, Noor DX is set to bring the costs of testing down for the country. People can get their results within 24 hours, delivered straight to their phone. The healthcare company started its journey with seed investment from our Innovation Venture fund.



KAUST President, Dr. Tony Chan first to get the Noor DX COVID-19 test at KAUST Health



# Awards and highlights of the year



## **Natufia**

Received first place at the KPMG Tech Innovation Award KSA

Entrepreneurship World Cup first place for an early-stage startup

Won at FoodTech 500

## **Faseeh, Taffi, Themar, SARsat**

Won at MITEF Saudi Arabia

## **Wayakit**

First place at the MENA SelectUSA Investment Summit

## **Logexa and Natufia**

Won at Misk's Entrepreneurship World Cup

## **Red Sea Farms**

Won the United Nation Food System Summit award

## **Edama & Natufia**

Win the NASA Deep Space Food challenge





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