

# INSIDE K&A

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| Khatib & Alami Newsletter

An abstract architectural collage featuring various elements: a 3D rendering of a multi-story building with blue and yellow facades, a 2D floor plan with red and blue blocks, a yellow train car, and various geometric shapes like circles, squares, and lines in colors such as red, blue, yellow, and black. The composition is dynamic and layered.

GROWING  
CITIES'  
POTENTIAL

Cover inspired by Kandinsky's geometric compositions that were drawn with a ruler and compasses, and are here revisited digitally. The dynamic balance of the three commonly used colors – yellow, red and blue – reflects the three major elements of sustainable urban development: social, economic and environmental.

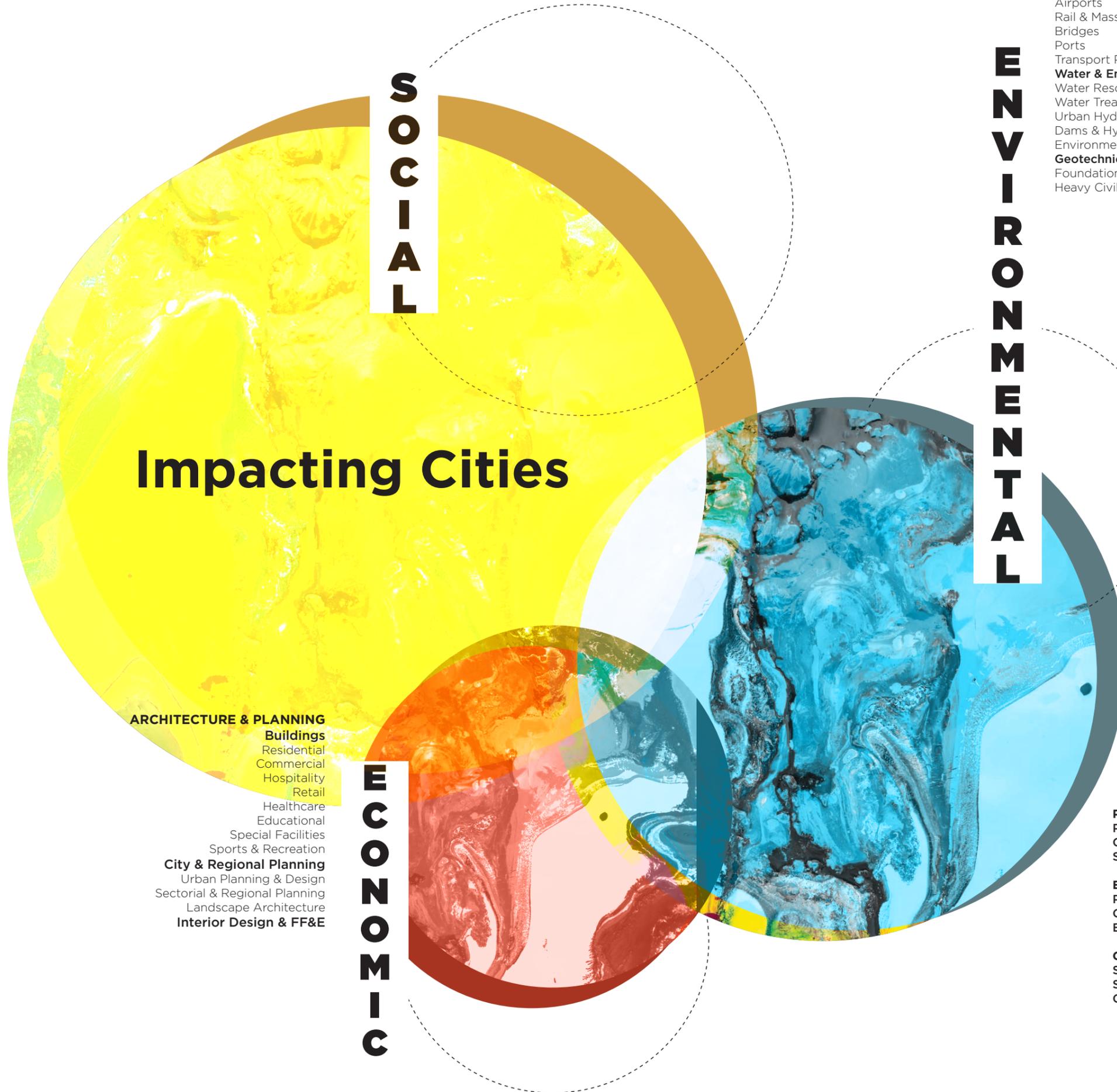
# WELCOME TO INSIDE K&A

The experts who shape our urban environments – whether they are architects, engineers, planners or other design specialists – are in positions of great responsibility. The look, feel, functionality and impact of the world around us are in their hands, for better or worse.

At Khatib & Alami (K&A), we are driven by the privilege of being able to create places and infrastructure which help to improve lives, bind communities and connect people, while minimizing the impact on our fragile natural ecosystems.

This edition of Inside K&A showcases how our work is living up to these responsibilities by supporting development which is socially, economically and environmentally sustainable. It also contains the latest news and updates from across the business.

We hope you enjoy reading it!



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# Impacting Cities

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**ARCHITECTURE & PLANNING**

**Buildings**

- Residential
- Commercial
- Hospitality
- Retail
- Healthcare
- Educational
- Special Facilities
- Sports & Recreation

**City & Regional Planning**

- Urban Planning & Design
- Sectorial & Regional Planning
- Landscape Architecture
- Interior Design & FF&E

**INFRASTRUCTURE**

**Transportation**

- Roads & Highways
- Airports
- Rail & Mass Transit
- Bridges
- Ports
- Transport Planning & Traffic Engineering

**Water & Environment**

- Water Resources & Drainage
- Water Treatment
- Urban Hydraulic
- Dams & Hydraulic Structures
- Environmental Studies & Waste Management

**Geotechnical & Heavy Civil**

- Foundations & Earthworks
- Heavy Civil Engineering

**PROGRAM MANAGEMENT SERVICES**

- Program Management Consultancy
- Consulting
- Sustainability

**ENERGY**

- Power & Renewables
- Oil & Gas
- Energy & Utilities

**GEOSPATIAL SYSTEMS INTEGRATION**

- Segments
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# SHAPING A NEW EDUCATIONAL LANDSCAPE

## 10 vocational schools in 10 villages in North Lebanon's Akkar region

As the long-term consultant of the High Commission for Relief in Lebanon, Khatib & Alami (K&A) has been appointed to deliver an ambitious educational design project which will support social and economic development in one of the country's most deprived regions.

K&A's role will include the design of six new vocational schools and the upgrading of a further four existing ones in Akkar region. These vocational schools are post-secondary educational institutions aimed at developing occupation-specific skills.

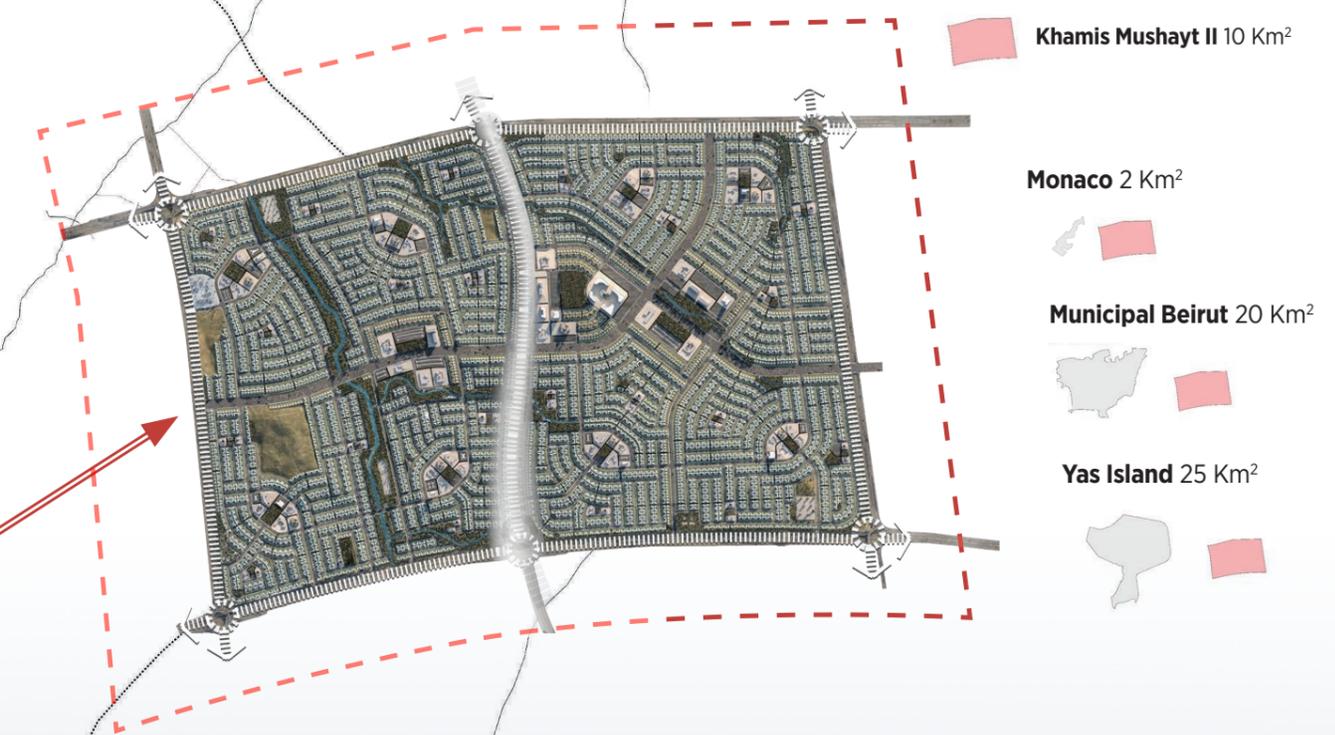
The design of this ambitious project will focus on improving school quality and enrolment capacity. In total, the vocational schools will accommodate over 6,000 students and will feature classrooms, labs, workshops and recreational areas, in addition to administrative offices and common facilities.

The north of Lebanon has for many years witnessed the lowest indicators on poverty, economic growth and development. Akkar is one of the most disadvantaged regions in Lebanon with a significant influx of refugees fleeing the crisis in Syria and a stressed educational system, where dilapidated buildings and poorly-maintained infrastructure restrict accessibility to new students.

This ambitious project will equip Lebanon's North with a local workforce, reinforcing the steps being taken by government to undertake projects that will deliver sustainable growth and create jobs, such as the revitalization of Tripoli Port and the Tripoli Special Economic Zone.

# HELPING SAUDI ARABIA INCREASE THE SUPPLY OF NEW HOMES

○ Grant Lands



The Saudi Ministry of Housing appointed Khatib & Alami (K&A) to undertake the master planning infrastructure design and supervision of several major housing developments in the south-west provinces of Asir and Al-Baha. The project is part of the Saudi Government's program to address the long-term housing needs for middle-class Saudi families across the Kingdom.

Saudi Arabia is seeking to boost home ownership in the Kingdom from 47% to 70% by

2030. By spearheading the master plans for areas which have been earmarked for residential development (known as grant lands), the Ministry of Housing aims to encourage the private sector to build houses.

K&A's role will see our experts conducting a detailed study of approximately 20 sites that span around 30 million m<sup>2</sup> in Asir and Al-Baha governorates. A team of planning and infrastructure experts in Riyadh, Beirut, and Cairo are mobilized on this mega project to deliver

the new lands' subdivision master plans and road networks, ranging from an area of 300,000 m<sup>2</sup> to 10 million m<sup>2</sup>, in compliance with the Ministry of Municipal and Rural Affairs' (MoMRA) stringent standards.

During the planning process, K&A preserved the sites' natural features, morphology and topography, while delivering functionality in line with Saudi culture and tradition.

## A SATELLITE CITY NORTH OF KHAMIS MUSHAYT

One of the biggest projects is Khamis Mushayt II, which eventually will be home to more than 60,000 inhabitants. K&A is tasked with designing the master plan as an extension of the original city.

The site spans an area of 10.7 million m<sup>2</sup> and is located 15 km to the North of Khamis Mushayt city. Around 45% of the space is dedicated for residential plots, while the remainder is for open spaces, roads and public facilities. K&A has designed open spaces around existing

Wadis, with a network of footpaths which make the public realm appealing to pedestrians and encourage strong communities, with the mosques playing an essential role. The souk/retail facilities are also prominently and conveniently positioned for local residents.

The flexibility of Khamis Mushayt II master plan, combined with its location, mean it can be extended in future to meet residential demand.

# CREATING A BEACON OF MODERN ARCHITECTURE IN KABUL

## DARULAMAN GOVERNMENT ADMINISTRATION COMPLEX'S MINISTRY OF FINANCE

A ground-breaking new government complex is set to bring a taste of modern architecture to Afghanistan's capital, Kabul.

The Darulaman Government Administration Complex (GAC) will be a mixed-use governmental district outside the center of the city. It is being carefully designed to complement its surrounding as it exhibits a strong public realm which encourages community engagement and promotes sustainable development.

Khatib & Alami (K&A) is delivering the master plan and the architectural design of the project on behalf of the Ministry of Urban Development and Housing (MUDH). The complex has been arranged in clusters of a number of buildings which bring together similar functions and operations for the various aspects of the different Government Organizations (GO).

The first building to be designed within the financial cluster is the Ministry of Finance (MOF). It will be alongside other GOs including the Central Bank, the National Procurement Authority and the Ministry of Economy. All with some mixed-use functions are grouped around a public piazza that is meant to host the communal activities in the cluster.

### Modernizing Tradition

Afghanistan has been the cradle of many cultures who introduced and left behind a great legacy in arts, sciences and architecture. The design of the MOF building takes inspiration from the traditional architectural of the region and strives to present some of its features in a modern context, while being sympathetic to local environmental and cultural values. It includes a centralized portico, landscaped internal courts, arched windows and narrow openings, while maintaining a strong functional value to support the various workings of the government.



### Harsh Weather: Robust Architecture

Kabul has a cold, arid winter (temperatures can drop as low as -12 C° between January and February) and a relatively warm, arid summer (highest temperature can go up to 32 C° between July and August), while autumn and spring are relatively fresh (temperatures occasionally go above 20 C°).

Heating is a major concern during most of the year, while ventilation is a priority during the summer. The five-story building is composed of many wings encircling two courtyards that open towards east and west. The two courtyards at opposite sides will be subject to different temperatures which creates an imbalance in atmospheric pressure, evoking a natural cross-ventilation from cooler court to the warmer one. Traveling air when in touch with the water beds that decorate the courtyards will gain more freshness supporting thermal comfort.

All facades are protected with seasonal trees. The bare trees in front of the vertical windows allow the winter sun to penetrate

deep inside the building, while during summer they are green enough to block undesired sun and provide shading.

### A Co-working Space that Sparks New Ideas

The interior of the MOF building fosters an open office culture that boosts networking, promotes flexibility and saves time and resources in a cost-effective way. This suits modern working practices (often referred to as “co-working or distributed work”), which are increasingly social, flexible and collaborative, while being mindful of security and privacy requirements. Employees embrace the new levels of personal freedom in spaces that are explicitly designed to support distributed work. These dynamic, interactive workplaces recognize the substantial shift toward formal and informal collaborative activities, as well as the social component of work. Distributed work environments are characterized by a wide variety of smaller individual and group spaces with higher sharing ratios: smaller and higher density individual spaces; a wide variety of individual and group setting types; an increased allocation of seats for collaborative spaces; and reduced emphases on large formal meeting spaces.

K&A's design has capitalized on values inspired by the rich history and culture of the region, the development site itself, and future workplace trends. The result will be a sustainable, inspiring and productive complex which truly meets the needs of the client and end-users.

# AN EVIDENCE-BASED PLANNING APPROACH

## THE KEY TO EFFECTIVE CITY GOVERNANCE

Conventional planning is not always the most effective way to guide decision-making. Khatib & Alami (K&A) has developed an approach which incorporates vast amounts of spatial data to give clients and stakeholders the benefit of fully-informed choices.

K&A has been at the forefront of many data-driven spatial planning projects. Our specialist GIS expertise adds value by overlaying vast amounts of complex geographic data to predict and spatialize potential changes in a city's future.

Specialist modeling techniques are used to link diverse socio-economic data, land uses, movement patterns and transportation networks. These techniques massively improve visibility and understanding of current and future factors which impact the decision-making process, enabling scientific justification for proposed solutions.

K&A experts, led by the Sectorial Planning and Proposal Manager, Hanadi Samhan, recently described this evidence-based planning methodology at the City Debates 2018 conference in Beirut. Hanadi explained how the integration of Geographic Information Systems (GIS) and geo-design is becoming an indispensable tool for planners and architects.

Such tools can significantly help policy and decision makers in the planning process with respect to urban development. Hanadi used two K&A case studies to help explain the approach to attendees at the City Debates event: the Saudi Arabia Provision of Social Facilities 2030 and Sharjah Spatial Plan 2040.



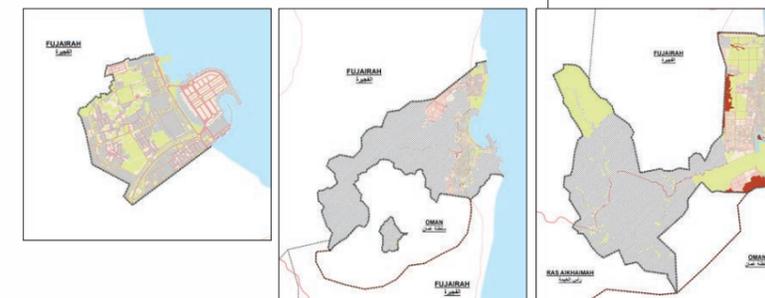
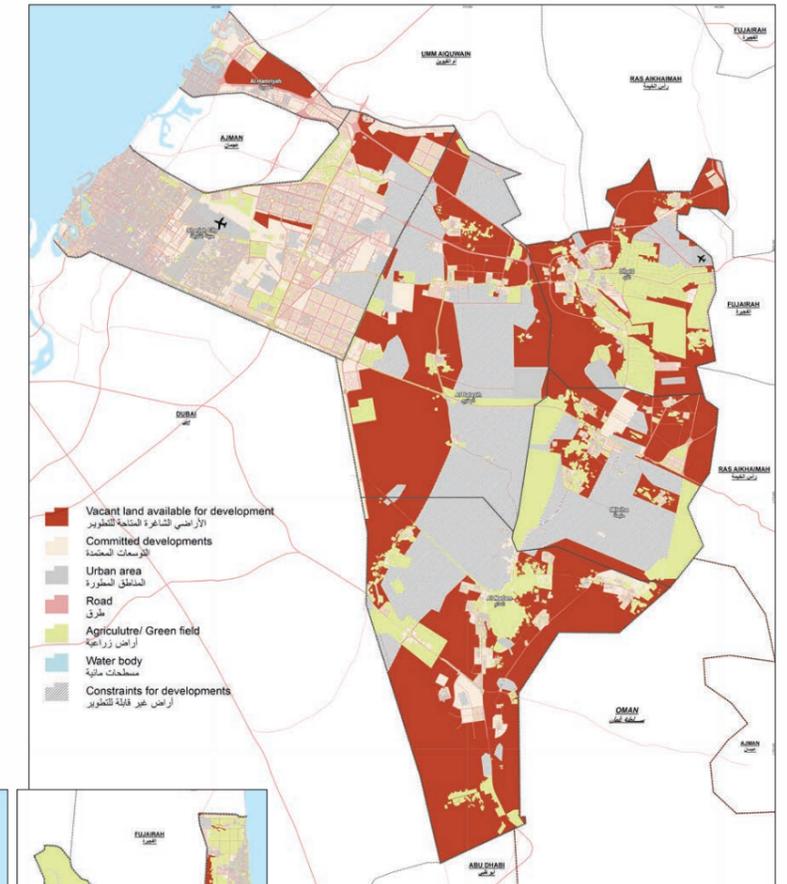
## SPATIAL PLAN FOR NINE CITIES OF SHARJAH EMIRATE 2040

**TREND APPROACH** using a Land-Use Constraint Model

One of the main aspects of Sharjah's Spatial Plan covered the mapping of existing and projected land uses, including residential, commercial and industrial areas, as well as sensitive areas which should be protected from future urban development. On this basis, it was possible to create, for the first time in Sharjah Emirate, an optimal tool for sustainable land management.

A Land-Use Constraint Model was built to allocate highly sensitive areas including agricultural lands, natural green open spaces and natural habitat zones, archaeological and heritage protected zones, and water resources.

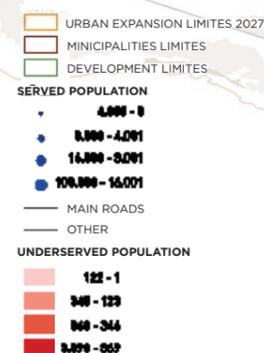
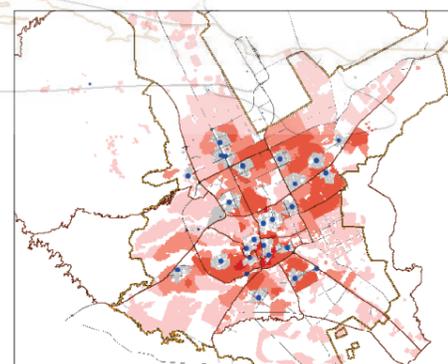
This model was highly efficient to allocate available free areas for new developments by extracting actual built-up areas, committed areas and land having physical constraints like mountains and Wadis.



## EQUITY IN SOCIAL INFRASTRUCTURE PLANNING IN RIYADH



Stakeholders' Consultation in Riyadh



**TREND APPROACH** using Location-Allocation Model

K&A designed and built a Location-Allocation Modeling tool to support the planning process for the city of Riyadh, covering an area of over 5,700 km<sup>2</sup>. The tool supports the selection of the best location for social facilities across eight main categories: education,

health, mosques, security, recreation, administration, governmental, and culture. The Location-Allocation Model was used to identify served and unserved areas by type of service and population distribution (to 2030), based on planning standards and existing facilities'

parameters. The land bank data (empty public/private lots) for Riyadh city, formed the basis to project the best locations for facilities following an urban Service Priority Index, highest needs, and population density.



WHAT WOULD AN ENTIRELY  
FLOOD-PROOF CITY LOOK LIKE?

# DOHA

SUBURBS

MOVING FROM A  
DISASTER-RESPONSE TO A  
DISASTER-RESILIENT CITY

Flooding is probably the last problem that most people think of when it comes to the desert. However, occasionally when it rains into the desert, it tends to be torrential rain.

For cities in desert regions this can be problematic. Sudden storms can create flash floods, which are exacerbated further due to man-made recharge and/or rising groundwater table.

Rapid urbanization is intensifying the potential for flooding in towns and cities across the Middle East and Africa, the consequences of which can be devastating. Therefore, it is essential for municipalities and government agencies to take steps to mitigate flooding and reduce the potential for future flood losses.

In Qatar, Public Works Authority, Ashghal, has assigned Khatib & Alami (K&A) as the main design consultant

to conduct a thorough review, prepare a Flood Protection Scheme (FPS), and develop flood control solutions for all reported hotspots across Al Dayeen Municipality and Mubaireek area in Doha suburbs.

These hotspots were identified via Ashghal's Operations & Maintenance department (O&M), which has built a dynamic database system to address all incoming flooding hotspot complaints.

Ashghal's ambitious project is part of the government's plans to turn Doha into a highly resilient city that is capable of withstanding potential environmental shocks. By better understanding the potential stresses it may face, the city is striving to improve its development trajectory, boost inclusive growth and enhance the wellbeing of its citizens.



# Finding Water Solutions in Egypt's Driest Places

**Al Mahsamah is one of the world's largest water treatment plants.**

Egypt is among many MENA countries that is suffering from severe water scarcity, and according to the United Nations will face critical shortages by 2025. The reasons are many, including population growth, the natural aridity of the area, climate change, stress on water resources, and pollution.

To address this major challenge, Egypt is planning to develop one of the largest water treatment plants in the world. Located in the Sinai-Eastern Suez Canal area with a capacity of 1 million cubic meters per day, Al Mahsamah water treatment plant is part of Egypt's commitment to implement projects for irrigating 6,300 km<sup>2</sup> within the development projects of Suez Canal and Sinai.

Khatib & Alami (K&A) is undertaking the study, design, and construction supervision of this pivotal project.

The drainage water from Al Mahsamah's drain - collecting drainage water from parts of Delta region - is transferred to the proposed treatment (water reclamation) plant passing under the old and new branches of the Suez Canal through four siphons, each approximately 500 to 600 m-long. The depth of siphons is approximately 60m under the canal with diameters of 15m each.

Launched by the Engineering Authority of the Egyptian Armed Forces (EAAF), this vital project will

boost economic growth by addressing water shortages east of the Suez Canal; providing water for irrigation to approximately 50 thousand hectares of agricultural land; and creating opportunities for economic development.

The construction of the treatment plant is set to start in June and will take 12 months, followed by 60 months of operation and maintenance support.



saadiyat



## STUNNING SAADIYAT ROTANA RESORT & VILLAS

When preserving a natural habitat becomes the focus amid conceptualizing the built environment

Every year, Saadiyat Island's nine-kilometer beach is a key nesting ground for the Hawksbill turtle, which has become critically endangered due to habitat destruction and poaching. Protecting this vulnerable species was a critical factor when Khatib & Alami (K&A) was appointed as the main consultant for the five-star Saadiyat Rotana Resort & Villas.

## Designed to Support Sensitive Local Environment

Abu Dhabi's Tourism Development and Investment Company (TDIC) set in place stringent development guidelines to protect the natural habitat and its wildlife.

This included working closely with a number of agencies to ensure their exacting standards were met throughout the construction process, including the Federal Environment Agency and the Environment Agency - Abu Dhabi (EAD). Special environmental training was provided to all site staff, and measures were taken not only to protect the environment,

but to enhance it for the long term - this included the mangroves, beach and the dune protection zone.

Today, the area is alive with native wildlife and the future of the beach as a nesting ground for the hawksbill turtle is secured.

In addition to complying with TDIC's guidelines and regulations, the project meets Estidama Pearl 2 building codes, including the incorporation of a wide variety of proven technologies such as solar panels, and a wastewater management system.

Saadiyat Rotana Resort & Villas is built on a plot of around 112,000 m<sup>2</sup>, of which 17,000 m<sup>2</sup> are protected beaches. The property comprises 291 guestrooms and 36 suites, as well as 13 villas, each with a swimming pool and a terrace facing the sea. It also boasts a variety of food & beverage outlets, including the first Italian restaurant on Saadiyat Island, a 'gastropub', a rooftop grill restaurant, and pool and beach bars. The project will be one of the top attractions in Saadiyat Island with its lazy river, splash pool, cinema zone and water slide.

# Another Win for Egypt



## Khatib & Alami named consultant for monorail projects in greater Cairo

Khatib & Alami (K&A) is set to support the delivery of two important monorail projects in Egypt which will be able to transport 1 million passengers per day, while boosting economic development.

The projects were awarded to a K&A-led joint venture with Spain's GP-TPF, and will provide comprehensive technical consultation to the client, including the procurement strategy, tender documents, evaluation of proposals and EPC contractor selection.

K&A's client is the Higher Committee, formed by the Ministries of Housing & Urban Communities and Transportation.

The first project will have 12 stations and runs 42 km-long in its initial phase, on an outstanding concrete road, connecting 6<sup>th</sup> of October City with Sheikh Zayed, Cairo, and Giza.

The second project, at 54 km in length, will have 21 stations and links the New Administrative Capital with Nasr City and New Cairo. It is set to accelerate the development of Egypt's New Administrative Capital and meet passenger demand according to current and future development plans for the years 2020, 2030, and 2050.



Utilities Tunnel



TBM Tunneling



Pedestrian Tunnel

# Integrated Railway Fuels Qatar's Growing Economy

Qatar Integrated Railway project is one of three ground-breaking aspects of the Qatar Railways Development Program that is anticipated to serve the country's future vision. Strategically located at the heart of Qatar, the railway branches into various key locations in Doha city along four key route connections.

Khatib & Alami (K&A) is the design consultant for utilities and traffic diversions for more than 40 stations and structures. Once operating, Qatar Railway will be one of the most advanced rail transit systems in the world.

Scheduled for completion before the 2022 FIFA World Cup, the project will boast an attractive, effective and efficient railway network that will spur future urban developments in Greater Doha and the country as a whole.

As a catalyst of economic advancement, environmental improvement and social vibrancy, Qatar Railway network will provide a mixture of safe and accessible passenger and freight rail operations with advantages of minimized costs in a

carbon neutral setting. As an integrated transit system, it will help Qatar address its fast growing transportation demands due to unprecedented urbanization within the country.

K&A, as a major participant in this Qatar Railway project, is contributing to sustainable economic development which will support employment and community engagement, as well as energy efficiency and resources investment programs in line with Qatar's National Vision 2030.

# Port of Beirut

City's Extended Gate to the Future

The Port of Beirut is a vital part of Lebanon's national infrastructure and, as such, its ongoing development is essential to the country's long-term growth and prosperity. The Port of Beirut Authority is therefore spearheading a comprehensive investment plan which aims to improve land-based connectivity, increase capacity, reduce the dwelling time of containers, optimize operational efficiency and modernize the physical and logistics infrastructure.





- Steel and Scrap
- Others
- Oil and Gas
- Free Zone
- Vehicle
- Grain
- General Cargo
- Circulation
- Passenger Terminal
- Armed Forces
- Site Boundary
- Municipal Areas

To kick-start this process, the Port of Beirut Authority commissioned the development of a holistic master plan for the year 2037, a first in the port's history. Khatib & Alami's (K&A) City and Regional Planning experts, in partnership with maritime specialists Moffatt & Nichol, were selected as the ideal team to undertake this pivotal project.

## The Ancient Port and the City

Since the time of the Phoenicians, Beirut's prosperity and resilience have stemmed from its international maritime

and mercantile activity. Beirut's history is inseparable from its port's history. This strong port-city relationship, combined with the dexterity and commercial ingenuity of the Lebanese people has, since ancient times, earned Beirut the reputation of an Eastern Mediterranean cultural and economic powerhouse.

Today, the Port of Beirut is facing a range of issues such as a highly constrained footprint, difficult transportation connectivity with its surroundings, and a need to upgrade its operations and infrastructure. The port's ability to grow and flourish is reliant on the transformation of the current footprint into one that meets the needs of modern shipping and logistics operations.

## A New Era of Port Planning in Lebanon

With a wide range of challenges to overcome, K&A undertook a thorough and detailed comprehensive diagnosis of all infrastructural, operational and performance factors that are impacting the port on local, national and regional bases. In parallel, an in-depth market analysis was conducted based on a quantitative analysis of market statistics, as well as a qualitative analysis through stakeholder interviews with key figures.



## The New Port: A Catalyst of Growth

After rigorous assessment, combined with stakeholders' feedback and iterative refinements of the diagnostic work, a forecasting model was developed and scenarios for future growth produced. These were based on criteria that factor in such issues as infrastructure provision, market growth, economic growth, population growth, and geopolitics.

As a result, K&A established the spatial development framework and four master planning alternatives which all accommodated the growth forecasts, as well as a major reconfiguration of the internal port layout and operations. Great care was also put into minimizing impacts on the city and surroundings. Specialized terminals for all cargo types were proposed and an optimization of land-use and operations was a common thread across all options.

The expansion and upgrades that are proposed in this Master Plan for the year 2037 will boost Port of Beirut's international ranking. Furthermore, it will allow the port to sufficiently cater for the trading and distribution needs of the Lebanese economy, create new jobs for port workers and truck drivers alike, reduce distribution time for goods and traffic on surrounding roads, and improve efficiencies for clients.

Finally, the Master Plan proposes to allow the Port of Beirut to integrate directly with the city, through a waterfront promenade and a tourist passenger terminal, re-establishing its port-city relationship. The ambitious steps being taken to invest in the future of Port of Beirut will cement its position as the national logistics and distribution hub for Lebanon and a major shipping hub on the Eastern Mediterranean.

# Tripoli

## Lebanon's Second Largest City Reboots Its Economic Fortunes

Tripoli Special Economic Zone (TSEZ) is one of the most pioneering projects under its way in the north of Lebanon – its aim is to foster economic momentum and support the sustainable growth of the region.

As the project's main consultant, Khatib & Alami (K&A) is playing a pivotal role in delivering the master plan, including a strategic environmental assessment, sustainable engineering solutions, urban design guidelines and detailed infrastructure works. All aspects of the project are being delivered in line with best practice for Export Processing Zone (EPZ) development and criteria laid out by the World Bank, while meeting the Lebanon 2020 integrated vision for the Industrial Sector in Lebanon.

### A Pilot Project

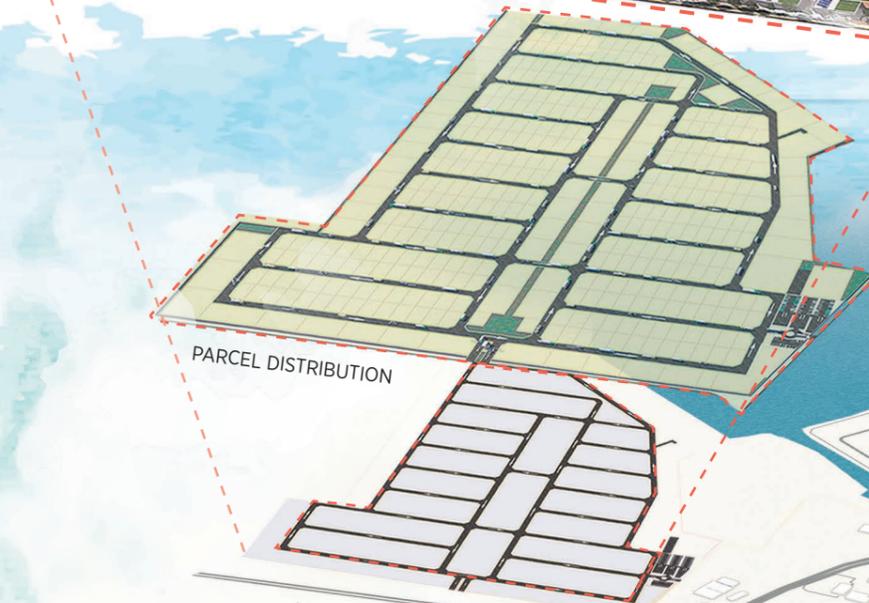
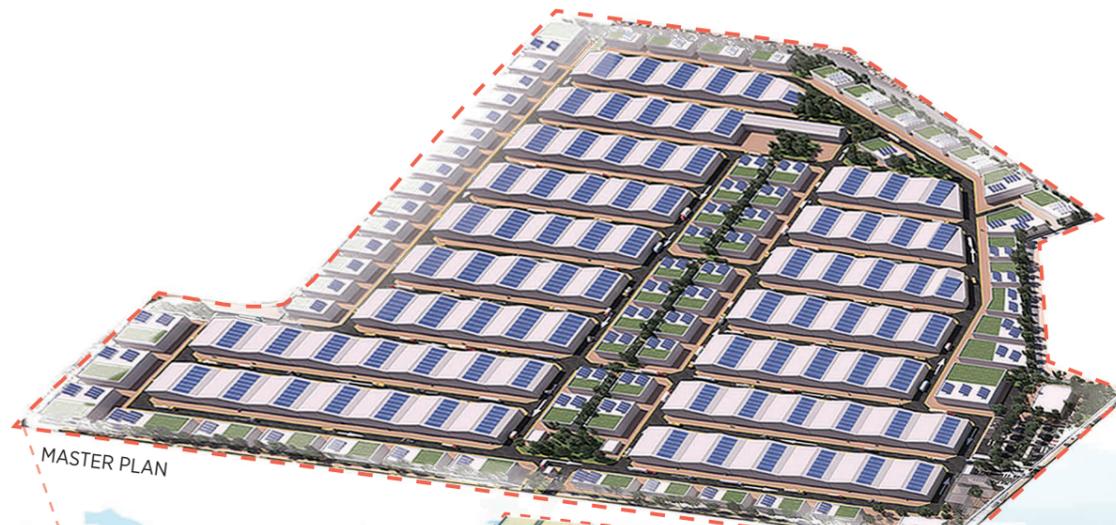
Spanning 500,000 m<sup>2</sup>, the site is adjacent to the Port of Tripoli with multimodal routes and rail capacity. It offers many logistical advantages for attracting local and foreign investors and

expanding Lebanon's export potential. The functional synergy with the Port of Tripoli offers significant benefits for the TSEZ, which will have excellent access to skilled labor from the North Lebanese region.

### TSEZ Program

TSEZ will feature light to medium industrial activities including warehousing, logistics, food and beverage processing, and production of materials such as metals, chemicals, plastic and paper.

The project, which is divided into three phases, is expected to create more than 6,000 direct and indirect jobs, according to forecasts by K&A's planning team. Thanks to its location close to the Syrian border, TSEZ will also be well positioned to support the reconstruction process during the post-conflict period in Syria.



### Development Framework

The development framework for TSEZ will seek to create an attractive and efficient environment for Foreign Direct Investment (FDI), with user-friendly facilities and services for potential tenants.

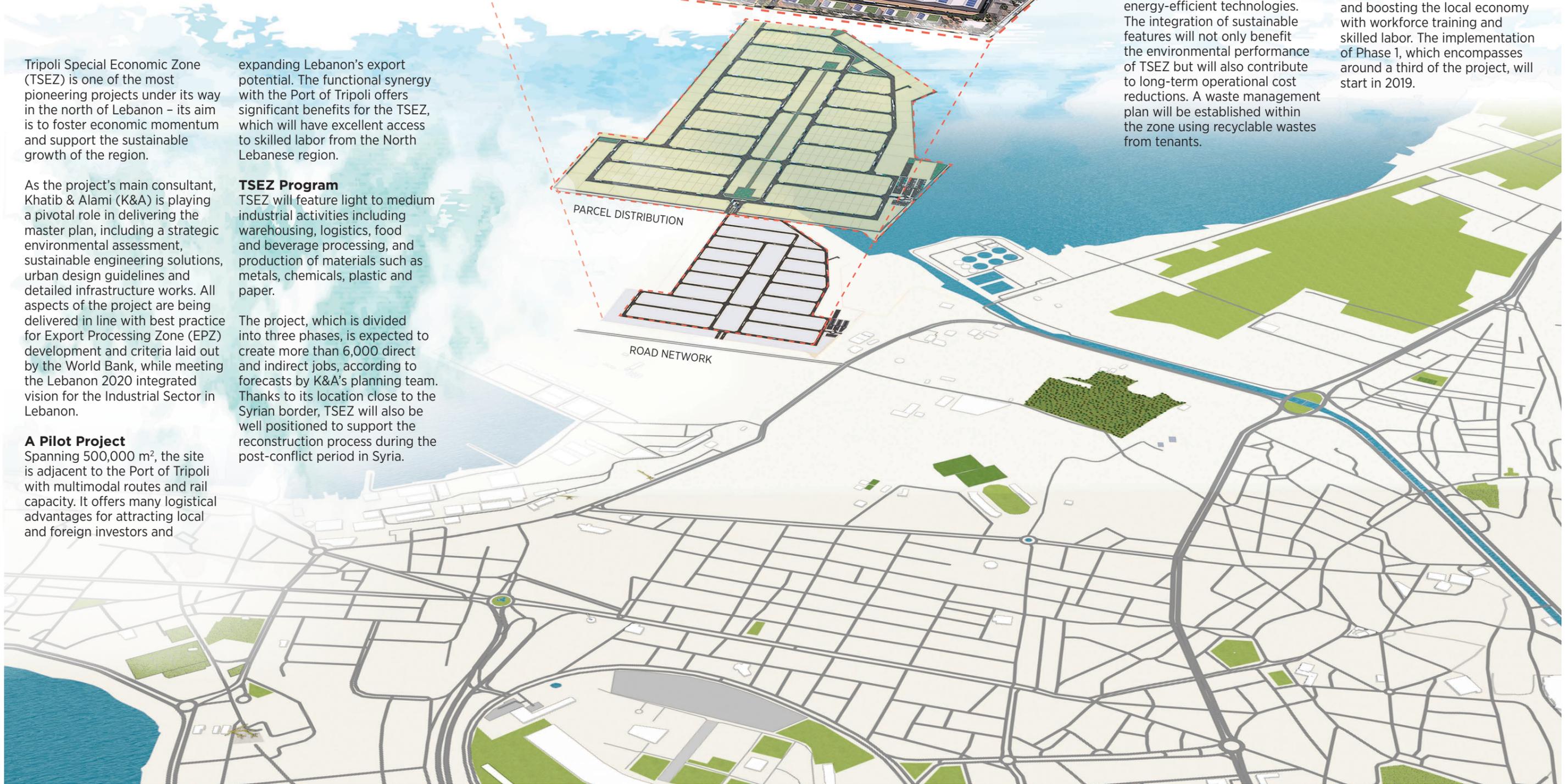
### Sustainable Eco Approach

K&A is proposing sustainable design features throughout the Master Plan, including renewable energy production and investment in recycling and other energy-efficient technologies. The integration of sustainable features will not only benefit the environmental performance of TSEZ but will also contribute to long-term operational cost reductions. A waste management plan will be established within the zone using recyclable wastes from tenants.

A nearby wastewater treatment plant will be used to reduce additional treatment costs and minimize duplication of infrastructure. Rain water collection will be recycled to support efficient water use.

### Supporting Economic Growth

In addition to the revitalization of the Port, TSEZ will play a major role in generating economic activity, promoting the export of goods and services, creating new employment opportunities and boosting the local economy with workforce training and skilled labor. The implementation of Phase 1, which encompasses around a third of the project, will start in 2019.



# SYSTEMIZING WATER REVENUE COLLECTION IN KURDISTAN REGION

Khatib & Alami (K&A) has been awarded an integrated Water Revenue Collection System project which includes meter reading, revenue and collection management solutions and services in Kurdistan's Erbil and Duhok Governorates.

Our success will be measured against international best practice key performance indicators (KPIs) in order to ensure the project meets world-class standards. The proposed system will collect and intelligently utilize vast amounts of digital data to deliver major improvements to customer services, while adding value to the quality of sustainable network management and operations.

K&A is set to implement a comprehensive, world-class water billing and revenue collection system for more than 1 million water subscribers in the Kurdistan Region.

Launched by the General Directorate of Water and Sewerage (GDWS), the project will systematize the collection of water revenues by building an effective IT platform, digitizing the revenue management processes, and enhancing customer services.

This ambitious project uses Oracle Utilities Customer Care & Billing (OUCCB), a mature, flexible, highly-scalable customer information system, enabling GDWS to securely manage critical and complex customer information, deliver superior customer services, and adapt to a fast paced industry.

## Building a Customer Database

K&A is set to deliver a comprehensive customer survey using advanced mobile devices which have been integrated with Geographic Information System (GIS) technology. Existing and potential water customers will be accurately located on a highly detailed satellite imagery procured for this project. The customer survey is set to collect personal and address details about the customer, along with meter information, location, and water consumption usage. The data collected will be migrated into OUCCB for billing, in accordance with a new tariff structure that was issued by the local government.



## Digitizing Meter Reading and Bill Collection

The Meter Reading and Bill Collection process will be fully digitized through the use of handheld devices. Households' barcodes will be scanned to identify the Water Meter ID and then capture water consumption data through OCR technology and built-in cameras, enabling real-time synchronization of information with the central OUCCB in the Data Center. This smart solution is fully automated, consistent, error free and time effective. The bills are then generated by OUCCB and printed for further collection through various methods including: mobile bill collection; walk-in customers at client cashiers; online payment customer portal; bank transfer; and mobile operators. In the near future, kiosks will be deployed at various locations (e.g. shopping malls) to facilitate the payment experience of customers.



## Enhancing Customer Services

The OUCCB solution will transform and increase the efficiency of billing, collection, and revenue management through the implementation of Oracle Utilities' best practices solution (financial and contract accounting, billing, customer service, device management, customer relationship management and materials management), and by addressing the functional requirements of GDWS's billing, CIS, and CRM systems. Business Intelligence (BI) will provide the GDWS's management reports and will fulfill their reporting requirements.



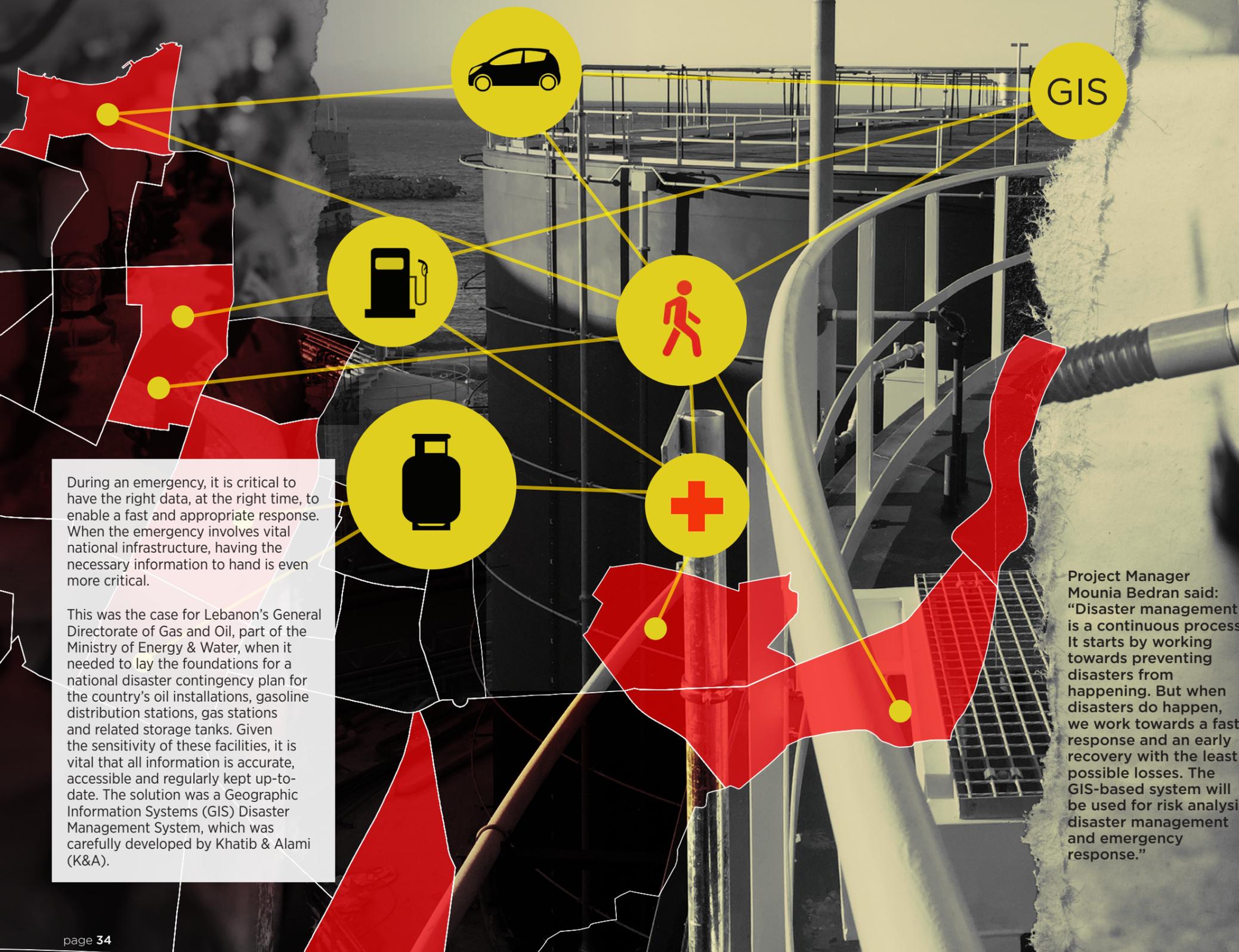
## Empowering the IT Platform

The IT infrastructure and platforms are key elements for the project's success. Deploying robust applications that link departments and their workflows will increase revenue, minimize cost and enable monitoring of all departmental activities. K&A has designed and built advanced data centers (main and disaster recovery) based on international standards and best practices that are proven, expandable and modular, allowing integration with additional systems and layers and the evolution of smart utility concepts.

This vital project will establish solid management solutions by strengthening the capabilities, control, and operational skills of staff, while boosting technical, commercial, financial, and administrative performance on a permanent basis. It will deliver efficient and effective water revenue collection in the Kurdistan Region, while potentially integrating with the local electricity utility for consolidated water and electricity bills. Furthermore, it will promote the deployment of smart services and advanced metering infrastructure for remote meter reading and automated billing and collection.



# NATIONAL DISASTER CONTINGENCY PLAN FOR OIL INSTALLATIONS IN LEBANON



During an emergency, it is critical to have the right data, at the right time, to enable a fast and appropriate response. When the emergency involves vital national infrastructure, having the necessary information to hand is even more critical.

This was the case for Lebanon's General Directorate of Gas and Oil, part of the Ministry of Energy & Water, when it needed to lay the foundations for a national disaster contingency plan for the country's oil installations, gasoline distribution stations, gas stations and related storage tanks. Given the sensitivity of these facilities, it is vital that all information is accurate, accessible and regularly kept up-to-date. The solution was a Geographic Information Systems (GIS) Disaster Management System, which was carefully developed by Khatib & Alami (K&A).

GIS

Project Manager Mounia Bedran said: "Disaster management is a continuous process. It starts by working towards preventing disasters from happening. But when disasters do happen, we work towards a fast response and an early recovery with the least possible losses. The GIS-based system will be used for risk analysis, disaster management and emergency response."

## GIS—The Foundation for Emergency Management

During a disaster event such as wildfires, floods, earthquakes, hurricanes or oil spills, emergency services would need detailed information concerning gas stations, oil tanks, pipelines, building layout, electrical distribution, sewer systems, and so forth. By utilizing GIS, all relevant departments can share information through databases on computer-generated maps in one location.

Without this capability, emergency responders have to guess, estimate, or make decisions without adequate information. This costs time, money, and – in some cases – lives. GIS provides a mechanism to centralize and visually display critical information during an emergency. The majority of information is spatial and can be mapped. Once information is mapped and data is linked to the map, emergency management planning can begin. Once life, property, and environmental values are combined with hazards, emergency management personnel can begin to formulate mitigation, preparedness, response, and recovery program needs.

The modeling of disaster events in GIS enables training for tactical deployment, as well as analysis of the consequences of different scenarios. In this way, the thoughtful application of a GIS can take much of the panic and surprise out of emergencies.

## The Innovative Approach to the Field Survey

The scope of this eight-month project included everything from initial surveys to the development of the GIS platform, followed by the uploading of data and finally delivery of training, maintenance and support.

By using Esri's Survey123 app for K&A Field Surveyors, the team is now able to better coordinate field works and achieve operational efficiencies. Using an e-Data Collection Survey proved to be more efficient and accurate than a paper survey, and helped the management team to stay on top of the field operations by monitoring, tracking and reporting real-time data feeds to focus on what matters the most.

# Tawafoq Geoportal is Activated

A major new geospatial data platform has been activated which will support the coordination and integration of development activities across the Holy Makkah region, in alignment with the Kingdom of Saudi Arabia's 2030 Vision.

Makkah Region Development Authority (MDA) launched the Tawafoq Geoportal on 25 April. The platform, developed by Khatib & Alami (K&A), uses state-of-the-art technology to provide service agencies and government authorities with access to up-to-date geospatial data from across the region.

Tawafoq will provide full visibility of Holy Makkah's future development, ensuring projects are planned and delivered in an integrated and efficient way, while minimizing disruption, maximizing cost effectiveness and driving quality.

The workshop to launch the Tawafoq Geoportal was sponsored by MDA's Secretary

General and attended by representatives from nine governmental agencies: Makkah Region Development Authority, Emirate of Makkah, Holy Makkah Municipality, Jeddah Municipality, Taif Municipality, Ministry of Hajj, Saudi Electricity Company, National Water Company, and the Saudi Telecom Company.

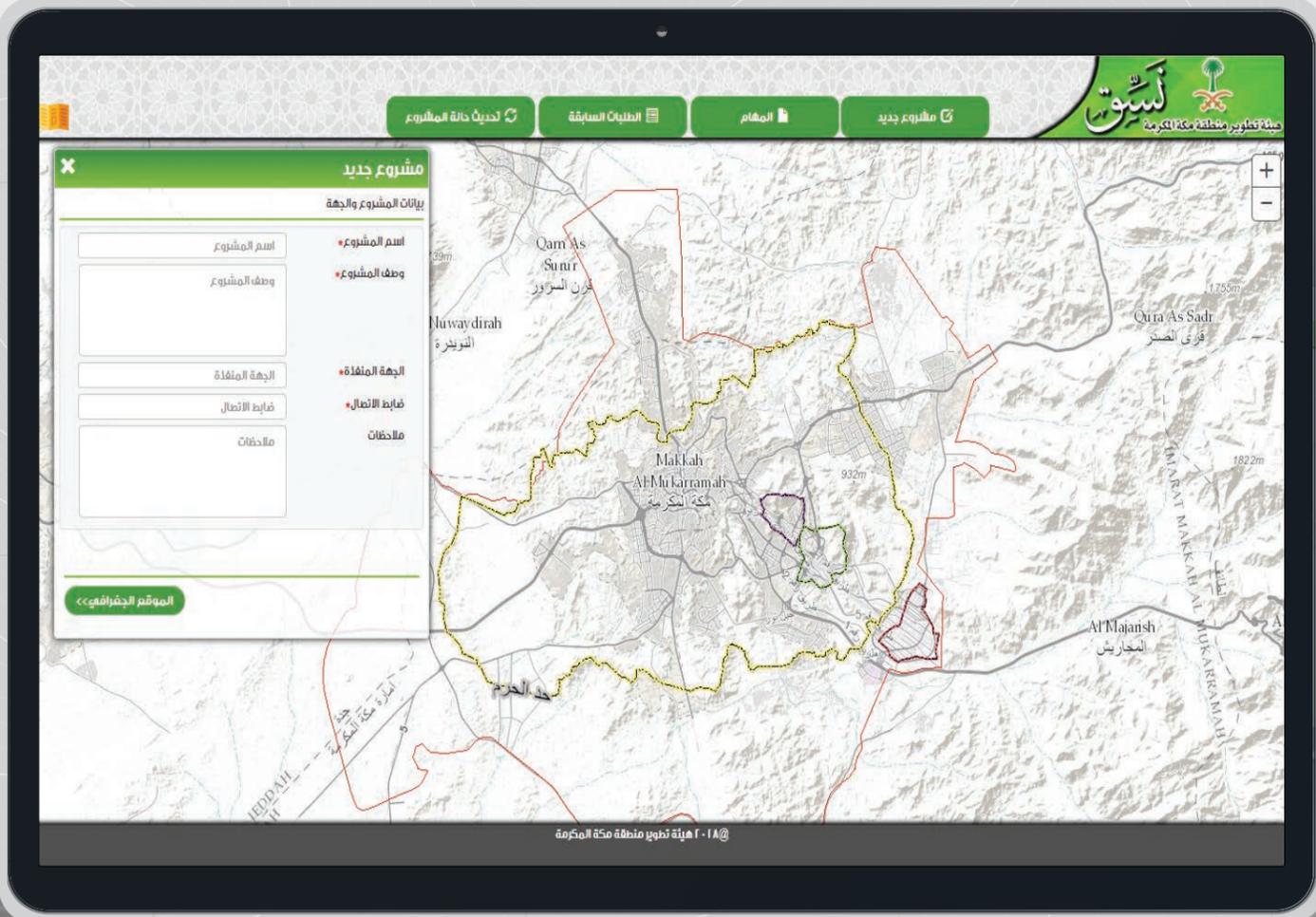
The workshop featured a presentation by K&A's Geospatial Systems Integration team on the platform's advanced functionality innovations and suggested data sharing methodology, which will control the process of sharing agencies' data across the Tawafoq platform through the Government Secure Network (GSN) of the e-Government Program (YESSER).

### THE PORTAL'S KEY FEATURES

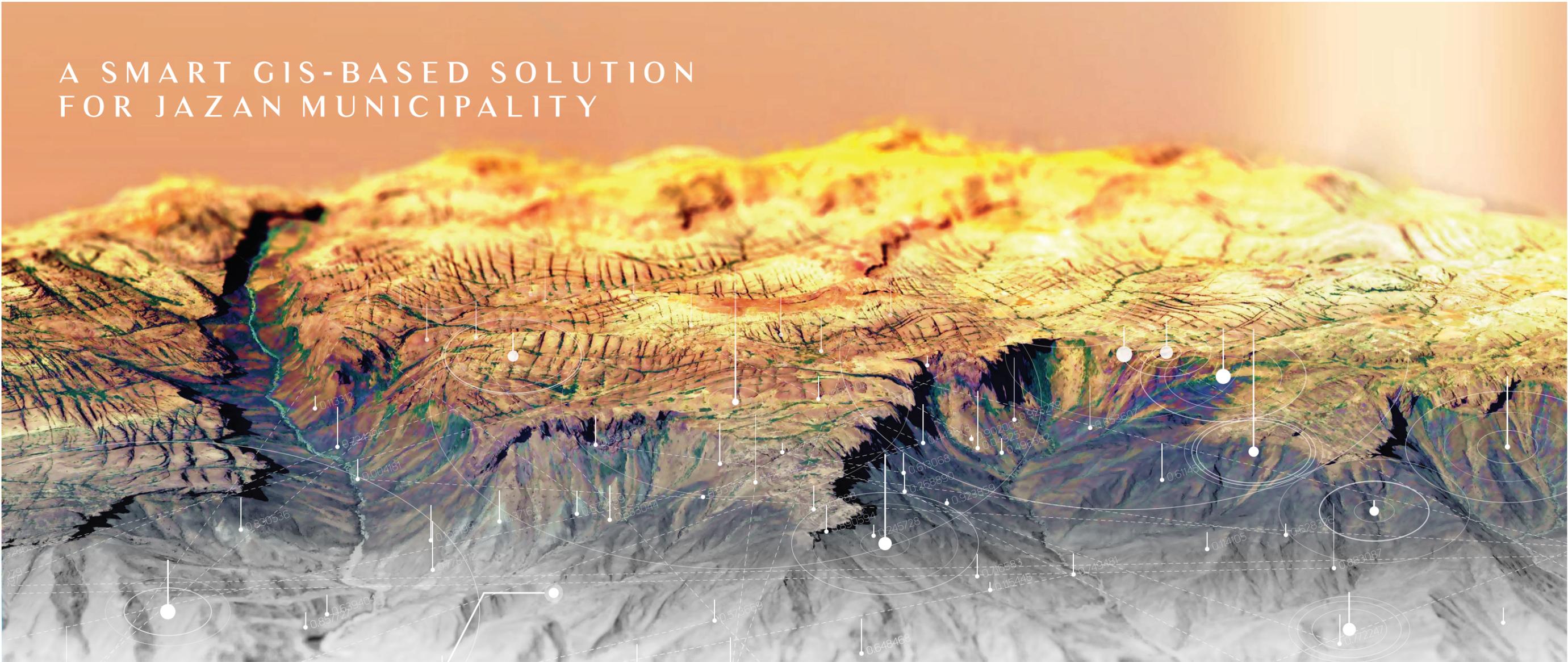
**The Infrastructure Transfer Service (Naseq)**, which automates the necessary procedures for infrastructure transfer within certain project boundaries, starting from the request submission, locating intersections between live projects and proposing possible solutions to resolve intersection issues.

**The Urban Expansion Analysis (Nomwa)**, which shows the direction of urban growth through the geographical information of issued building permits and commercial licenses. In addition, it provides the ability to specify overlaps between proposed building locations and development projects inside the Holy Makkah Region before granting permits.

**The Geospatial Data Viewer (Estkshaf)**, which presents the data of development projects to assist service organizations, government agencies and developers in developing their investment plans.



# A SMART GIS-BASED SOLUTION FOR JAZAN MUNICIPALITY



AWARDED THE “BEST SMART E-SERVICES SOLUTION ACROSS KSA MUNICIPALITIES” BY MINISTRY OF MUNICIPAL AND RURAL AFFAIRS (MOMRA)

Khatib & Alami (K&A) has developed a world-class Geographic Information System (GIS) based “intelligent” platform to improve, facilitate and expedite land and property procurement processes, including all types of licenses and permits, in the Saudi Arabian city of Jazan.

The new platform is designed with high performance data and workflow quality, together with international availability, performance and scalability standards. We designed the platform using Esri’s latest ArcGIS and Oracle Siebel technologies, which support the full automation of the municipality’s procurement activities and provide a user-friendly experience through an advanced interface. This transformative solution

will unify all scattered legal systems, systematize the integration processes and improve citizens’ experience.

### A Robust Centralized GIS System

Deployed throughout Jazan Municipality, the system can be easily accessed through both the intranet and internet by sub-municipality employees and citizens. Today, applicants can submit their requests online without the need to visit the Municipality’s offices. The solution is fully automated for land management processes, online payment, online file uploading, unified users profile management, and business process management.

The centralized GIS Center at Jazan Municipality will be responsible for all data production operations, where map production processes require large amounts of data from different sources and formats to keep the base-map up-to-date. In addition, five centers were developed, and distributed across the sub-municipalities allowing data to be synchronized and replicated automatically between the main center and the five sub-centers.

The creation of a centralized geodatabase has streamlined data production activities, using powerful data maintenance and quality control tools. This has enabled the development of a comprehensive enterprise data model, configuration of data loading and processing workflows, and configuration of advanced cartographic templates.

### An Award-Winning Case

Today, Jazan Municipality is among the first Saudi Municipalities to have digitized its transaction services, and extended its offerings to building permits, excavation permits, professional licenses, site preparation, demolition, level addition, reissuing of damaged or lost permits, permit modification, transfer of ownership, and permits for operating a station. In addition, it is offering many GIS-centric applications to support the daily work of its internal departments.

As a result, Jazan Municipality was awarded the “Best Smart E-Services Solution across KSA Municipalities” by Ministry of Municipal and Rural Affairs (MOMRA).

## DR. ZUHEIR ALAMI INNOVATION AWARD MARKS WFEO 50<sup>TH</sup> ANNIVERSARY



The World Federation of Engineering Organizations (WFEO) will this year be awarding the first-ever “Dr. Zuheir Alami Innovation Award” to mark the achievements of an exceptional engineering talent, while also celebrating the importance of engineering to global community development.

The award, which will be presented at a ceremony in London on 22 October, is named in recognition of the outstanding contribution of Khatib & Alami’s (K&A) Co-founder and Chairman Emeritus, Dr. Zuheir Alami. K&A will be represented on the award jury by Mr. Nasri AbdelNour.

This is a particularly special year for the WFEO as it is celebrating its 50<sup>th</sup> anniversary. An official partner of UNESCO, the organization is a global body for the engineering profession, representing more than 30 million engineers from 90 countries.

## A TRIPLE WIN FOR K&A



ABC Verdun Mall, Lebanon

Three exceptional Khatib & Alami projects have been recognized in respected industry journal ENR’s 2018 Global Best Project Awards.

As we went to press on this edition of Inside K&A, we were advised that ABC Verdun Mall in Beirut and Al Habtoor City in Dubai were the overall winners in the retail/mixed use development and residential/hospitality categories respectively. In addition, MEA Training and Conferences Center in Beirut was



MEA Training and Conferences Center, Lebanon

recognized with an Award of Merit in the education/research category. Congratulations to our clients and all stakeholders involved in these outstanding projects. We will share more details in the next edition!



Al Habtoor City, UAE

## THE ACHIEVEMENT OF EXCELLENCE IN SAFETY

Congratulations to Khatib & Alami’s (K&A) construction supervision teams for reaching two impressive milestones which demonstrate our commitment to health and safety leadership across the region.

In Oman, our teams completed 18 million man-hours without Lost Time Injury [LTI] from six of our on-going construction supervision projects.

In Dubai, our site experts achieved 1 million man-hours without a reportable accident or incident on the Liwan District Phase2- Roads

& Infrastructure Works project. Nik Rowley, K&A’s Safety Manager for the Gulf region, says: “Achieving a consistently high level of safety performance begins by developing a zero-incident culture which reinforces the idea that every person is responsible for the safety of themselves and others. This culture of compliance is supplemented by a rigorous Health, Safety and Environment (HSE) management system for monitoring, evaluating and reporting performance.”



The Liwan team celebrating 1 million man-hours without Lost Time Injury.

## LOOKING EASTWARDS IN DRIVE FOR INTERNATIONAL GROWTH



Khatib & Alami (K&A) has taken an important step forward to support its ambitious plans for international growth after changing the jurisdiction of its holding company from Lebanon to Singapore.

The change of jurisdiction for K&A Holding, which owns all the group’s subsidiaries, means it is now subject to Singapore’s globally respected judicial system and strong corporate governance practices. The decision also provides the company with direct access to international capital

markets, putting it at the heart of a growing ecosystem of engineering, construction, technology and financial services companies.

“Singapore is a vibrant and sophisticated financial center which is underpinned by strong and transparent corporate and legal frameworks,” says Dr. Najib Khatib, K&A’s Chairman and Chief Executive Officer. “It therefore provides an ideal platform from which to drive our strategy for business transformation and long-term growth.”

The South East Asian city-state’s outstanding reputation as a robust commercial environment, with high standards of market regulation, has sustained its emergence as a leading global financial center and a hub for infrastructure project development and financing. Singapore ranks second among 190 economies in the World Bank’s annual Ease of Doing Business report, and has ranked among the top three economies in the report for the past 12 consecutive years.

“At a time when there is a global trend towards the private financing of major infrastructure projects, not least across the Middle East and North Africa region, our presence in Singapore puts us in an excellent position to assist clients as they engage with the investor community,” adds Dr. Khatib. “This will both complement and strengthen our activities across our core markets, while supporting our entry into new geographies.”

## RECOGNIZING SUCCESS IN QUALITY PROJECTS ACROSS THE GCC



K&A’s team receiving the award

In May 2018, Khatib & Alami (K&A) picked up two awards at MEED Projects Awards in Dubai. Bay Square was a national winner in the retail category and Al Habtoor City was a national winner in the hotels’ category.

Congratulations to our clients and all stakeholders involved in these fantastic projects and well done to everyone who received national and GCC awards.

## TYING A DIGITAL KNOT WITH ABU DHABI’S NEW DEPARTMENT OF ENERGY

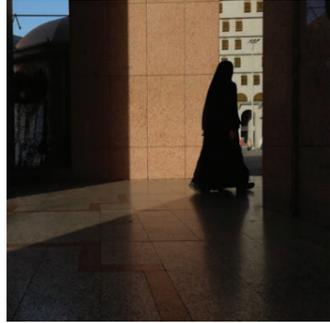


The Abu Dhabi Water & Electricity Authority (ADWEA), which has recently merged with the Emirate’s new Department of Energy (DOE), has awarded Khatib & Alami (K&A) a transformative utility project which will support the coordination of works among all stakeholders. The complex two-year project will align the Geographic Information System (GIS) data for DOE/ADWEA and water and electric transmission and distribution utilities (ADDC, AADC, and TRANSCO) with the networks that are constructed and laid in the field. Digitizing the records of all utility assets will

improve efficiencies and provide vital information to avoid potential hazards, unnecessary excavations and health and safety risks. K&A will also be developing a collective framework to accurately map, track and manage the DOE/ADWEA group’s utility networks. This transformative project will improve DOE/ADWEA’s data confidence indices and streamline GIS data management and asset lifecycle processes. This will help them deliver a safe, reliable and cost-effective service, while continuing to deliver operational excellence and quality performance.

## GIFTED TO KEEP ON GIVING

At Khatib & Alami (K&A), we're committed to supporting the communities in which we work.



### Helping Saudi Women Take the Wheel

Followed a decree by King Salman bin Abdulaziz which will allow Saudi women to drive, K&A was proud to be the gold sponsor of the Saudi General Directorate of Traffic's Safe Driving Environment Forum.

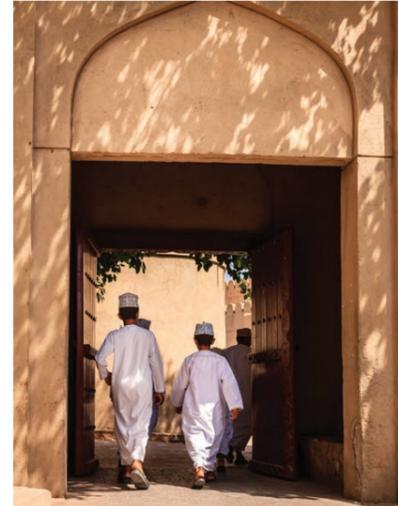
The Forum was held in April at the Crowne Plaza Riyadh RDC Hotel and Convention Center in Al Ra'idah Digital City, under the patronage of His Excellency Deputy Minister of Labor and Social Development, Dr. Tammadr Al-Ramah. This valuable event aimed to raise awareness on the importance of road safety and traffic laws. Women were able to have a driving lesson through virtual test driving simulators using the Ministry of Transport's smart transportation system.

### Cultivating a Long-Forged Partnership with Oman Charitable Organization

In appreciation to our support and contributions in the implementation of state-funded Omani Charitable Organization (OCO) social welfare programs, K&A received a trophy and a recognition certificate from H.E. Sheikh Muhanna bin Saif Al Lamki, the Governor of North Batinah in Oman.

During the ceremony held at Majan Hall in Sohar State, under the patronage of His Excellency Sheikh Muhanna bin Saif Al Lamki,

OCO's Director for North Al Batinah Governorate, Mr. Mohammed bin Said Al Shezawi delivered a speech, highlighting the Charity's support and its constructive partnerships with the public and private institutions towards achieving Oman's future aspirations in community-service excellence. He added that honoring these individuals and the institutions is a symbol of human fulfillment, and a token of appreciation to those who have contributed in their support.



## K&A PROVIDES A PMP TRAINING PROGRAM FOR PMO IN MAKKAH



PMP training attendees receiving the certificates.

K&A Jeddah office recently provided a major Project Management Professional (PMP) training program for 23 Saudi teams from the Ministry of Finance (MoF), the General Presidency of the Affairs of the two Holy Mosques, Dar Al-Handasah, SBG, and the Technical Committee, organized in MoF Makkah's Project Management Office (PMO). In line with Saudi Vision 2030, the Ministry of Finance

has been giving particular attention to training programs for Saudi engineers that aim to ensure knowledge transfer, sustainability of its projects, programs and performance efficiency. This program aimed to share the knowledge and skills needed to achieve the MoF-PMO's objectives. It was one of the first in KSA according to the Project Management Institute PMI PMBoK's latest 6<sup>th</sup> edition.

#### **LEVANT**

Lebanon  
Palestine  
Syria  
Iraq  
Jordan

#### **GULF**

Kingdom of Saudi Arabia  
United Arab Emirates  
Oman  
Bahrain  
Qatar  
State of Kuwait

#### **NORTH AFRICA**

Algeria  
Egypt  
Libya  
Morocco  
Sudan

#### **SUB-SAHARAN AFRICA**

Ethiopia  
Gabon  
Sierra Leone

#### **EUROPE**

Belgium

#### **CENTRAL ASIA**

Afghanistan  
India  
Kazakhstan

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