



Author:  
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# Transitioning to Sustainable Transport in Riyadh

How Riyadh's Mega Projects are Spearheading Change



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## About the Author:

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*“We aim to transform Riyadh into one of the most sustainable cities in the world.”*

Crown Prince Mohammed bin Salman



## Introduction

Saudi Arabia is undergoing a remarkable transformation driven by its far-reaching national development plan, Vision 2030. This initiative seeks to diversify Saudi Arabia's economy by developing new sectors, reduce reliance on oil, enhance people's quality of life, and safeguard the natural environment. Saudi Arabia's mega projects are at the forefront of this change. There are around 20 projects in total (depending on how you count them). Five of these have been designated as 'giga projects': NEOM, The Red Sea Project, Diriyah, Qiddiya, and ROSHN.

As the capital city, Riyadh is at the heart of this transformation, hosting several of these projects. The city is positioning itself as a global destination and is set to host the Expo 2030 world fair and the 2034 FIFA World Cup. Riyadh is also aiming to become one of the world's most liveable cities. Achieving this vision will require a comprehensive sustainable transport system that integrates electric vehicles, public transportation, cycling, and walking.

Sustainability is a cornerstone of Vision 2030. The plan aims to reach net zero greenhouse gas emissions by 2060 and build an economy that can ensure long-term prosperity, particularly for a time when oil plays a smaller role in the global economy.

Since 2023, several sustainable transport initiatives have started to emerge in Saudi cities. Although these changes are still nascent – evidenced by the fact that 95% of all trips in Riyadh are currently made by private cars – transformation is on the horizon. Riyadh's mega projects are poised to lead the way in this transition through game-changing infrastructure development.

Transitioning to a sustainable transport system presents several challenges. Will Riyadh's residents use the new public transport network? How will first and last-mile trips be made? Can mega projects seamlessly integrate with the city's public transport system? Is transport infrastructure ready to adapt to the increasing impacts of climate change? How will future mobility be integrated?

This report explores recent developments in transportation across Saudi Arabia, using six of Riyadh's mega projects as case studies for sustainable transport. It also examines the challenges and opportunities associated with the city's shift towards a more sustainable transport system.



# Riyadh's Mega Projects

The following giga and mega projects are currently under development in Riyadh (among others):



NEW MURABBA

## New Murabba

A new modern downtown centred around a 400-metre high cube-shaped building.



## Diriyah

A historic oasis town, home to an 18<sup>th</sup> century mud-brick city.



القديية  
Qiddiya

**Qiddiya**  
An entertainment city, 45 km to the west of Riyadh.



المسار الرياضي  
Sports Boulevard

**Sports Boulevard**  
A 135 km long linear park with extensive cycle paths.



KAFD  
مركز الملك عبدالله المالي

**King Abdullah Financial District**  
A mixed-use financial hub.



حديقة الملك سلمان  
King Salman Park

**King Salman Park**  
A 16 km<sup>2</sup> urban park with expansive green areas and an arts complex.

# Why Do We Need Sustainable Transport?

The shift to sustainable modes of transport is accelerating worldwide. There are multiple benefits to this transition:

## Climate Change:

Transitioning from fossil fuel-powered transport reduces CO2 emissions. These emissions contribute to climate change, leading to rising temperatures and an increased frequency and intensity of extreme weather.

## Energy Consumption:

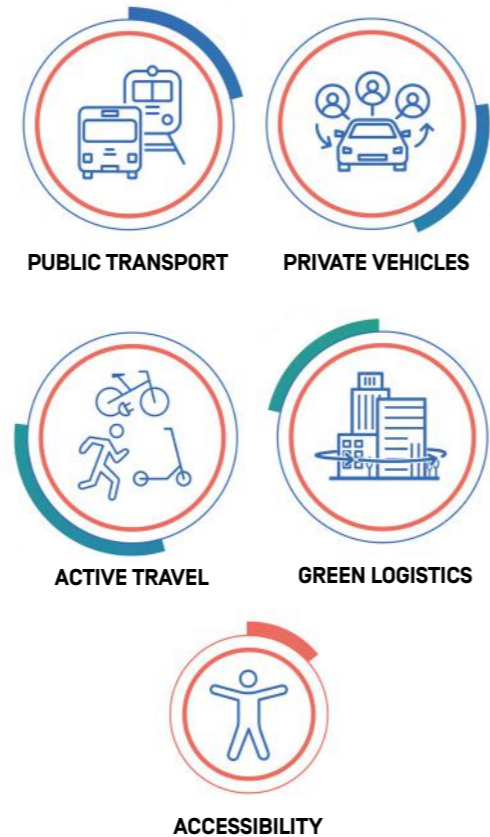
Switching from personal vehicles to shared mobility options like buses and metros, as well as encouraging walking and cycling, significantly reduces energy usage.

## Air Quality:

Switching from internal combustion engines (ICE) vehicles to electric vehicles (EVs) or other sustainable options decreases harmful air pollution in urban areas.

## Wellbeing:

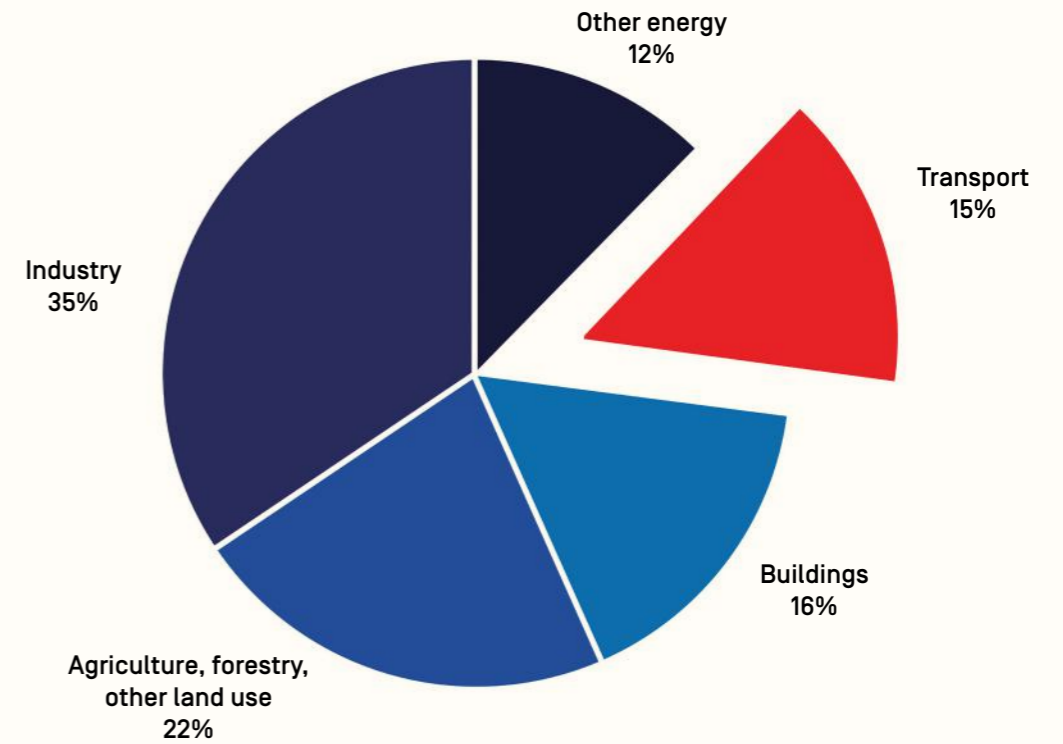
Using public transport reduces traffic-related stress. Incorporating walking and cycling into your routine boosts physical activity. Walking enhances social interactions, making you feel connected to your community, while cycling can be an enjoyable and joyful mode of travel (when safe and well-designed infrastructure is in place).



**Sustainable Transport:**  
Sustainable transport refers to transportation methods that positively impact the environment and society. This includes public transport options like buses, metros, and trains, as well as electric vehicles, bicycles, scooters, and walking.

**Active Travel:**  
Active travel refers to modes of travel that involve physical activity such as walking and cycling.

Transport is responsible for 15% of global greenhouse gas emissions.



Global Greenhouse Gas Emissions (2019)<sup>1</sup>

## Transport Challenges in Saudi Arabia:

|   |   |   |
|---|---|---|
| <p><b>25% CO2 Emissions</b><br/>Transport was responsible for 25% of Saudi Arabia's energy-related CO2 emissions in 2021.<sup>2</sup></p> | <p><b>3rd Largest Petrol Consumer</b><br/>Saudi Arabia is the third-largest consumer of petrol per capita.<sup>3</sup></p>                                  | <p><b>Air Quality</b><br/>Air pollution is high in Saudi Arabia. Transport emissions contribute to this. Particulate matter is responsible for 9% of deaths in Saudi Arabia per year.<sup>4</sup></p> |
| <p><b>95% Car Trips</b><br/>95% of all trips in Riyadh are made by private cars.<sup>5</sup></p>  | <p><b>Traffic Congestion</b><br/>Drivers in Riyadh experienced a 136% increase in travel time during the weekday evening rush hour in 2023.<sup>6</sup></p> | <p><b>Growing Demand</b><br/>Demand for passenger travel is expected to more than double by 2060.<sup>7</sup></p>   |



## How do people move between buildings?

This is the focus of ModeScore, a sustainable transport certification that is currently expanding into Saudi Arabia. ModeScore assesses and certifies sustainable transport infrastructure in buildings, real estate developments, mega projects, and cities. It provides detailed guidance and educational insights to help developments integrate sustainable transport solutions.



## How can buildings support active travel?

This is the focus of ActiveScore, the sister certification of ModeScore. It assesses and certifies active travel infrastructure, such as walking and cycling facilities, in buildings, real estate developments, mega projects, and cities. ModeScore extends the scope of ActiveScore by assessing all types of transport used to move between buildings. ModeScore incorporates ActiveScore within its assessment criteria.



# The Emergence of Sustainable Transport in Saudi Arabia

Saudi Arabia's national transportation network is undergoing extensive upgrades, including the development and enhancement of roads, railways, ports, and public transport networks. Significant efforts are being made to expand sustainable transport options. As part of Vision 2030, the Kingdom is positioning itself as an EV manufacturing hub, investing in all aspects of the EV value chain. Public transport networks are being developed in major cities, while active travel – such as walking and cycling – is being promoted through various initiatives. A new focus on sustainable urban planning is also helping to drive the expansion of sustainable transport. The year 2023 marked a pivotal point in this transition, with the launch of multiple projects. As a result, a multimodal transport system is gradually beginning to emerge.

## Electric Vehicles:



### Charging Infrastructure:

Some charging stations can now be seen in Riyadh, Jeddah and other cities. A new Public Investment Fund (PIF)-backed company, The Electric Vehicle Infrastructure Company (EVIQ), launched in 2023, with a mandate to develop a nationwide network of fast charging hubs.

EVIQ

### Manufacturing:

Saudi Arabia has a target to produce 500,000 EVs per year by 2030, with a cluster of factories being developed in King Abdullah Economic City, near Jeddah. Lucid opened Saudi Arabia's first EV manufacturing facility in 2023. The Kingdom's own EV brand, Ceer Motors, plans to start manufacturing in 2025. Hyundai is also planning a manufacturing plant.

LUCID



### Electric Buses:

Saudi Arabia began deploying electric buses in 2023 starting in Jeddah, Medina, Dammam, and Qatif.

## Sustainable Urban Planning:



### Guidelines:

Updated *Sustainable Planning Guidelines for Urban Growth in Saudi Arabia* were released in 2024. This provides a comprehensive framework to improve the quality of urban life through better planning practices.

### Sustainable Buildings:

Saudi Arabia launched its own sustainable building rating system in 2019 called Mostadam. This includes a focus on transportation methods to and from buildings.



### Medina Humanization Program:

Launched in 2017, this aims to improve the experience of residents and visitors by rehabilitating streets, neighbourhoods, and public places. This includes ensuring safe pedestrian and bicycle paths and improving public transportation services.



## Public Transport:



### Train Network:

Saudi Arabia has 3 main train lines: East Train (Riyadh-Dammam), North Train (Riyadh-Qurayyat), Haramain High Speed Rail (Mecca-Medina). New lines are also planned.



### Intercity Buses:

A large intercity bus network connects the Kingdom's main cities. The network was renewed and relaunched in 2023.



### City Buses:

Several new public bus networks have launched within major Saudi cities since 2023.

### Riyadh Bus:

Riyadh's bus network began operating in March 2023. The network will feature more than 86 bus routes, 2,900 bus stops, and 800 buses.



### Mecca Metro Line:

Saudi Arabia's first metro line launched in 2010. This single line is 18 km-long, with 9 stations, and shuttles pilgrims between holy sites in Mecca.

### Riyadh Metro:

Riyadh's metro is close to completion. Its first phase includes 6 lines, 84 stations, driverless trains, and 176 km of track. A 7th line is also planned.



## Active Travel:



### Bike Sharing:

Careem launched Saudi Arabia's first public network of electric bicycles and scooters in Medina in 2023.



### E-Scooters:

Electric scooters can now be found in Riyadh and other cities. Brands include TIER, Careem, BSKL, Gazal, and others.



### Cycle Paths:

New bicycle and pedestrian paths have opened since 2023 including 70 km of bike paths in Medina connecting key transport links and tourist sites, a 4.5 km waterfront track in Jeddah, and a 45 km cycling track in AIUla.

## Ride Sharing:



### Rekab:

Saudi Arabia's first ridesharing company launched in 2021. This on-demand service matches multiple passengers heading in the same direction and books them into a shared vehicle.



### Ride-Hailing:

Uber, Careem, and Bolt operate in Saudi cities.







# Riyadh's Redevelopment

Riyadh is undergoing extensive redevelopment to become a more liveable city and accommodate an increasing number of tourists and visitors. This transformation presents multiple challenges and opportunities. Originally a small mudbrick town in the early 20th century, Riyadh has experienced rapid urbanisation since the 1970s, spurred by a surge in oil profits. Much of this growth was uncontrolled, with infrastructure expanding primarily around cars rather than pedestrians.

Today, Riyadh continues to grow, with vast new neighbourhoods under construction and numerous mega projects at various stages of development. Many of these projects aim to transform the way urban communities live, work and travel. This real estate boom is part of a national trend. A 2023 study by KAPSARC forecast a doubling in residential and commercial floor space across Saudi Arabia by 2060, driven by economic growth and population increase.

## Riyadh's Key Features:

### Low Urban Density:

Riyadh is a very flat city, characterised mainly by low-rise buildings and wide streets spread out over a very large area.

### Urban Sprawl:

The city continues to expand, particularly to the north. Details of a tentative plan to expand the city much further north, known as the North Pole, were revealed in 2023.

### Car City:

Much of Riyadh's urban infrastructure was developed around cars, not pedestrians. This is a challenge the city faces as it works to redevelop its urban fabric into a more liveable city.

### Long Commutes:

Traffic in Riyadh is a major challenge, particularly during rush hour. This causes congested roads and pollution.

## Riyadh's Targets:

### 20% Public Transport Use

Increase the population's use of public transport from 5% to 20% by 2030.<sup>8</sup>

### 30% EVs

30% of all vehicles on Riyadh's roads to be electric by 2030.

### 9% Green Spaces

Increase green coverage from 1.5% to 9% of the city, with 7.5 million trees by 2030.

### Top 10 City Economy

Rank among top 10 largest city economies in the world by 2030.

### Increase Population

Increase Riyadh's population to ~10 million by 2030,<sup>9</sup> up from 7.7 million in 2023.

## National Targets:

### 3 Top 100 Liveable Cities

3 Saudi cities ranking among the world's top 100 most liveable cities by 2030.

### Regular Exercise

40% of people exercising on a weekly basis by 2030.

### Net Zero by 2060

Achieve net zero greenhouse gas emissions by 2060.

### 1 Million New Homes

Construct 1 million new housing units between 2018 and 2030.

### Top 10 in Logistics

Rank among top 10 countries in the World Bank's Logistics Performance Index by 2030, up from 38th in 2023.



## Who Regulates Sustainable Transport Infrastructure?

الهيئة الملكية لمدينة الرياض  
ROYAL COMMISSION FOR RIYADH CITY



The **Royal Commission for Riyadh City (RCRC)** oversees the development of Riyadh, managing city-wide initiatives.

وزارة الشؤون البلدية والقروية والإسكان  
Ministry of Municipal Rural Affairs & Housing



The **Ministry of Municipal, Rural Affairs and Housing (MOMRA)** is responsible for the urban planning of the Kingdom's cities.

وزارة النقل والخدمات اللوجستية  
Ministry of Transport and Logistic Services



The **Ministry of Transport and Logistic Services (MTLS)** determines strategy and policy for the transport sector and oversees various transport authorities.

TGA  
الهيئة العامة للنقل  
Transport General Authority

The **Transport General Authority (TGA)** oversees the operational aspects of all modes of transport (excluding civil aviation), ensuring compliance to regulations.

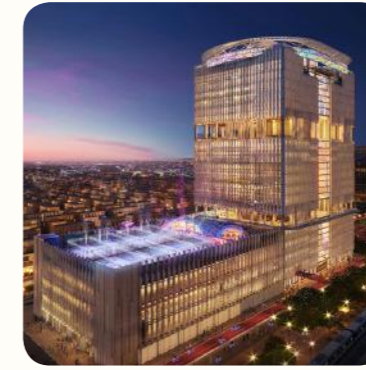


# Sports Boulevard

A 135 km long linear park featuring pedestrian and cycle paths, green spaces, and modern real estate. The project consists of three main branches. The central branch runs east to west along Prince Mohammed bin Salman Road in northern Riyadh. Buildings either side of this will be completely re-developed and inspired by traditional central Arabian designs. The western branch runs north to south through Wadi Hanifa in Diriyah. The eastern branch runs around the north east of Riyadh through Wadi Al Sulai and beyond Riyadh's airport. The project aims to promote healthy living by encouraging participation in a range of sports.



(Credit: MEED)



(Credit: ARAB NEWS / SBF)



## Project Overview:

### Key Features:



#### 8 Themed Districts

Offering a range of sports, cultural, arts, and outdoor activities.

#### Canal

A canal with a kayaking zone, surrounded by greenery.

#### Global Sports Tower

A 130 metre-high building with courts for different indoor sports, including a velodrome.

#### 50 Sports Facilities

Including running tracks, skateparks, kayaking, and shaded football pitches.

### Key Stats:

**Announced:** 2019

**Completion Date:** 2030<sup>10</sup>

**Site Footprint:** 135 km long

**Value of Project:** \$6.5bn<sup>11</sup>

**Development Authority:** Sports Boulevard Foundation (SBF)

**Ownership:** Royal Commission for Riyadh City (RCRC)

*“A linear park that will be rich in sporting, artistic, cultural, and eco activities to create a sustainable healthy lifestyle.”*

Sports Boulevard Foundation

## Transport System:

### Design Plans:



### Key Features:



#### Proximity:

2.2+ million residents can access within 15 minutes by cycling or a 30-minute walk.

#### Pedestrianised:

Multiple parks, gardens and open spaces equipped with cooling systems for the summer season.

#### Trails:

Trails for pedestrians, cyclists and horse riding including 123 km+ of horse trails.

#### 4.4 km<sup>2</sup> Green Spaces:

Serving as a green spine through the city.

#### Cycling Bridge

A 900 metre-long cycling bridge connecting Wadi Hanifa to Sports Boulevard's central branch.

#### Sands Sports Park

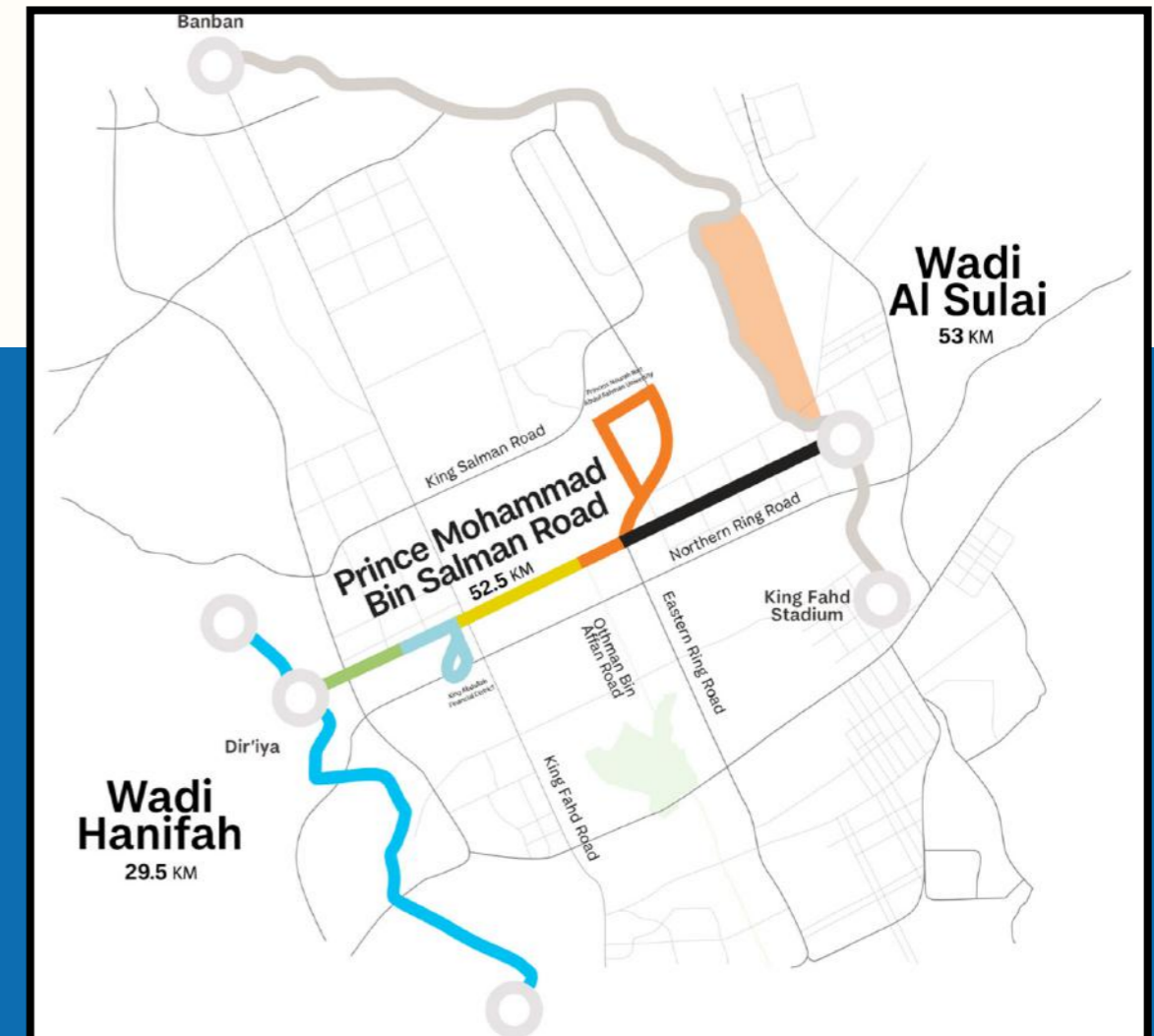
A desert park with a 15 km flower-shaped pathway designed for professional cyclists.

#### Cycling Paths

220 km+ of cycling paths for both professional and amateur cyclists.

#### Riyadh Metro

3 stations built (Yellow/Purple Line). The metro line runs along some of the central branch of Sports Boulevard.<sup>12</sup>



(Credit: Sports Boulevard)



# King Salman Park

A 16 km<sup>2</sup> urban park with expansive green areas and an arts complex. Located in the centre of Riyadh, the park is built on the grounds of Riyadh's old airport which closed in 1983 and has served as a military airbase since. It will feature mixed-use real estate surrounding the central public open areas. This will include residential units overlooking the park, offices, retail facilities, and hotels. It is intended to be the largest urban park in the world.



(Credit: KSP)



(Credit: KSP)



## Project Overview:

### Key Features:



**1.1 Million Trees**  
and 14 million shrubs, helping to significantly increasing Riyadh's vegetation cover.<sup>13</sup>

**Recreational Facilities**  
Including a sports complex, an equestrian centre and a sky diving centre.

**Royal Arts Complex**  
Featuring a national theatre, arts institute, library and museum.

**Visitor Pavilion**  
Featuring a 360 degree terrace overlooking the park, interactive exhibits, and multi-purpose halls.

### Key Stats:



**Announced:** 2019

**Completion Date:** 2027

**Site Footprint:** 16.9 km<sup>2</sup>

**Visitor Target:** 50 million visits per year

**Value of Project:** \$9.4bn

**Development Authority:**  
King Salman Park Foundation (KSPF)

**Ownership:** Royal Commission for Riyadh City (RCRC)

*“King Salman Park is envisioned to be a holistic 15-minute city - a prototype for sustainable, convenient, and active living.”*

King Salman Park Foundation

## Transport System:

### Design Plans:



**15-Minute City:**  
All necessary amenities accessible within a 15-minute walk.

**Active Travel:**  
Designed to promote healthy lifestyles with multiple pedestrian and cycling routes.

**Outdoor Spaces:**  
11 km<sup>2</sup> of green spaces including 800,000 m<sup>2</sup> of natural valley areas.

**Climate-Control:**  
70% green coverage and topography will create a cooler microclimate, supporting year-round walking and cycling.

### Key Features:



**The Loop**  
A 7.2 km circular promenade surrounding the centre of the park for walking or cycling.

**Parking**  
280,000 m<sup>2</sup> parking spaces.

**Riyadh Bus**  
10 bus stations connecting to the park.

**Riyadh Metro**  
5 stations built (Green Line).



(Credit: KSP)



# King Abdulah Financial District

A mixed-use office and residential district in the centre of northern Riyadh. KAFD is Riyadh's first high-rise district. It was launched in 2006 and the main area of the development is now largely complete. A major expansion of the district is now underway in adjacent undeveloped land. KAFD aims to be at the centre of Riyadh's ambition to be one of the world's top 10 city economies by 2030.



(Credit: SHA Workshop)



(Credit: AUDI)



## Project Overview:

### Key Features:



**95 Buildings**  
Designed by 25 world-leading architectural firms.

**PIF Tower**  
The tallest building in KAFD and Riyadh at 385m.

**Office Space**  
1 million sqm of Grade-A office space.

**Residential Units**  
3000+ residential units.

### Key Stats:



**Announced:** 2006

**Completion Date:** 2027

**Site Footprint:** 1.6 km<sup>2</sup>

**Value of Project:** \$10.5bn

**Development Authority:** King Abdullah Financial District Development and Management Company (KAFD DMC)

**Ownership:** Public Investment Fund (PIF)

*“Our 10-minute walkable city is supported by a climate-controlled 1,580m long skywalk network. And fun fact: our skywalks combined are more than 4 times the length of the Eiffel Tower.”*

King Abdullah Financial District Development and Management Company

## Transport System:

### Design Plans:



#### 10-Minute City:

All necessary amenities accessible within a 10-minute journey.

#### Smart Mobility:

A model for smart city solutions such as smart traffic management.

#### Transport Hub:

Designed to connect to Riyadh's core transport infrastructure, making KAFD accessible throughout the city.

#### Walkability:

A pedestrianised development with large open spaces.

### Key Features:

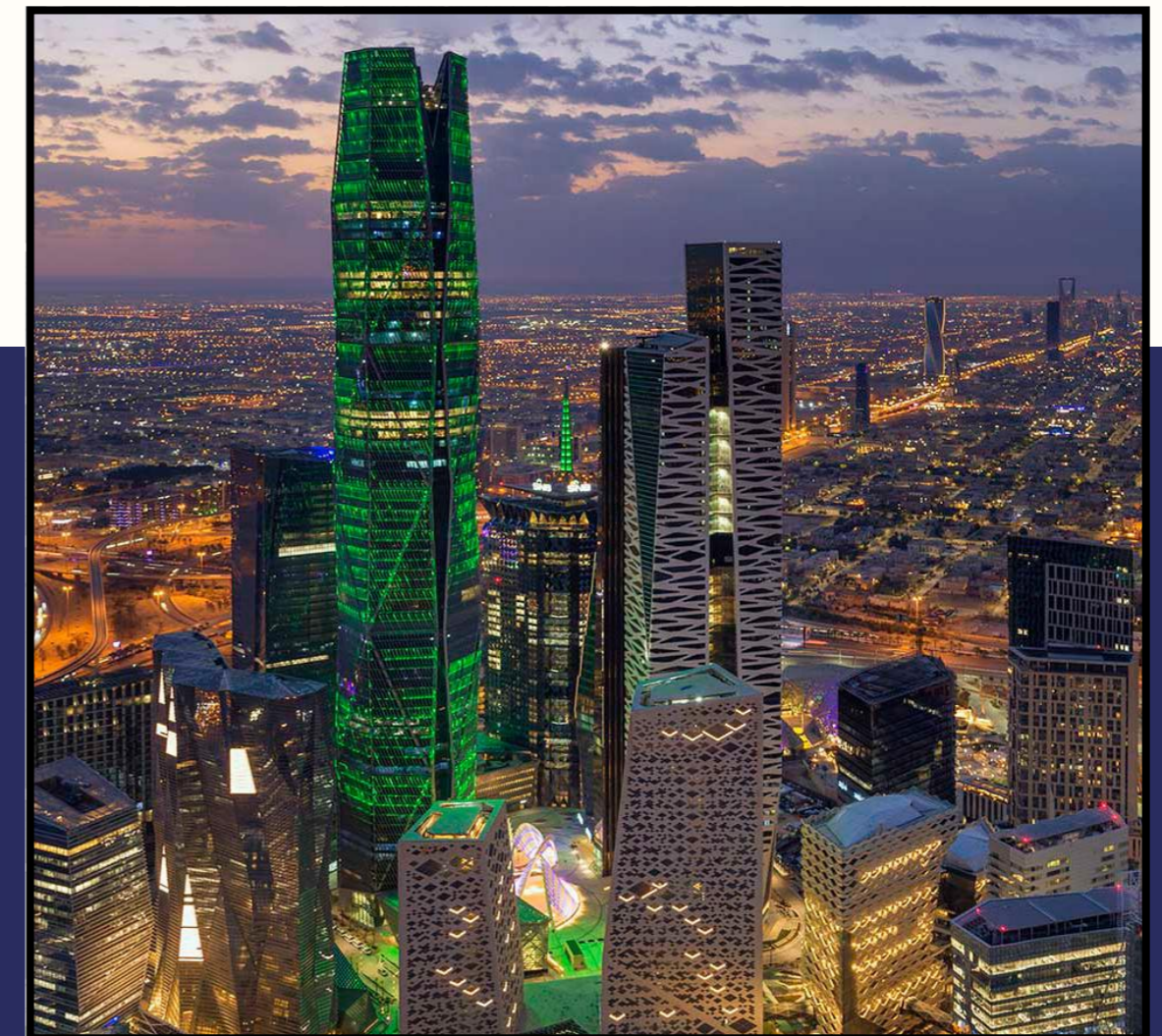


**Skywalk Network**  
Enclosed walkways connecting KAFD's buildings, measuring over 1.5 km in length.

**Monorail**  
3.6 km-long elevated monorail track with 6 stations, expected to launch by 2026.

**Shuttle**  
Shuttle service within the district and a ride-sharing service taking residents to and from work.

**Riyadh Metro**  
1 large interchange station built [Blue/Yellow/Purple line].



(Credit: TimeOut / KAFD)



# New Murabba

A new modern downtown centred around a 400-metre high cube-shaped building. This cube (Mukaab) will be one of the largest built structures in the world and will redefine Riyadh's skyline. New Murabba is located in northwest Riyadh, contrasting with the historic downtown and Al Murabba neighbourhood in southern Riyadh. The project will include residential areas, hotels, retail space, offices, leisure facilities, and community centres. It will focus on quality of life, sustainability, and cutting-edge technology. It aims to serve as a model for future urban development.



(Credit: Construction Week)



(Credit: Arabian Business)



## Project Overview:

### Key Features:



### Key Stats:



**Announced:** 2023

**Completion Date:** 2030

**Site Footprint:** 19 km<sup>2</sup>

**Value of Project:** \$50bn

**Development Authority:**

New Murabba Development Company (NMDC)

**Ownership:** Public Investment Fund (PIF)

#### The Mukaab

400 metre high, wide and long cube-shaped building offering immersive technological experiences.

#### 18 Communities

18 unique communities surrounding the Mukaab, with entire development home to 420,000 residents.

#### Stadium

45,000-capacity stadium, inspired by the local acacia tree.

#### Green Spaces

25% of site covered by green spaces, parks and plazas.

*“The masterplan includes linear parks, convenient mobility loops, walkable communities, and cycling tracks that easily connect you to the various districts of New Murabba.”*

New Murabba Development Company

## Transport System:

### Design Plans:



### Key Features:



#### 15-Minute City:

All major amenities within a 15-minute walk or a 5-minute journey when inside neighbourhoods.

#### 6-Tiered System:

Multi-modal mobility system featuring mobility corridors, cycling and walking paths, metro networks, feeder bus routes, and EVs.

#### Human-Centric:

Human centric development is at the core of New Murabba's design philosophy.

#### Future Mobility:

Exploring use of autonomous vehicles, robotic parking and mobility innovations.

#### Mobility Loop

Pedestrianised loop connecting different sites within the development.

#### Linear Parks

A series of parks with walking and cycling paths, green spaces, and storm water drainage systems.

#### Streetscapes

With minimal hardscaped areas.

#### Riyadh Metro

New stations to be developed (Line 7).



(Credit: New Murabba)

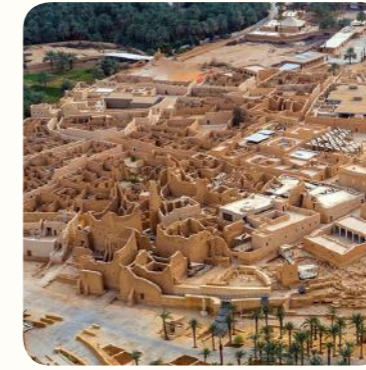


# Diriyah

A historic oasis town on the edge of Riyadh that is being redeveloped into a culture and lifestyle destination. Diriyah is the ancestral hometown of the Al Saud ruling family. The restored 18th century mud-brick city at its heart, known as At-Turaif, officially opened to tourists in 2022. Surrounding this historic core, vast new neighbourhoods and districts are being developed in traditional architectural styles.



(Credit: Business Traveller)



(Credit: Business Traveller)



## Project Overview:

### Key Features:



#### At-Turaif

Preserved remains of an 18th century mud-brick city formerly home to the Al Saud ruling family.

#### Diriyah Square

The central commercial and cultural hub with retail, leisure and entertainment facilities.

#### Opera House

3,500 person capacity venue with four theatres including a 2,000-seat opera theatre.

#### Wadi Hanifah

A shallow valley passing through Diriyah. Home to historic palm groves and farms, combined with new walking trails and picnic areas.

### Key Stats:



**Announced:** 2017

**Completion Date:** 2027

**Site Footprint:** 14 km<sup>2</sup>

**Visitor Target:** 50 million visits per year

**Value of Project:** \$63bn

**Development Authority:** Diriyah Company

**Ownership:** Public Investment Fund (PIF)

*“We have integrated sustainability into every stage of Diriyah’s planning, design, construction, and operation.”*

Diriyah Company

## Transport System:

### Design Plans:



#### Active Travel:

Designed to promote wellness and active lifestyle.

#### Walkability:

A 100% walkable city, planned as Riyadh’s most walkable city neighbourhood.

#### Shade:

Traditional architecture and streetscapes will include narrower streets ensuring better shade for walking.

#### Amenities:

Close proximity to everyday needs.

### Key Features:



#### EV Charging

Some of Riyadh’s first EV charging infrastructure was made available at Diriyah’s car parks in 2022.

#### Parking

60,000+ parking spaces. Large underground car parks will support pedestrianised spaces above.

#### Cycling Route

Sports Boulevard’s Wadi Hanifa District runs through Diriyah and features cycling and pedestrian pathways, as well as horse-riding trails.

#### Riyadh Metro

4 new stations to be developed (Red & Yellow Lines).<sup>14</sup>



(Credit: The Saudi Boom / Diriyah Company)

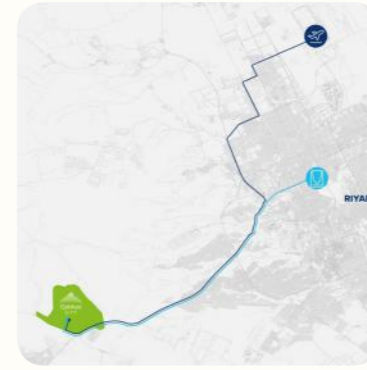


# Qiddiya

Qiddiya is a huge entertainment city under construction to the southwest of Riyadh. It straddles a large mountain escarpment with sites being developed on the upper cliffs and lower plains. It is set to become Saudi Arabia's sports and entertainment capital and will feature theme parks, sports arenas, a performing arts centre and a Formula One race track. Located about a 40-minute drive from Riyadh, Qiddiya will also include hotels and residential communities.



(Credit: Dezeen)



(Credit: Qiddiya)



## Project Overview:

### Key Features:



**Six Flags**  
Large theme park with 28 rides, including 5 world record-breaking rides.

**Race Track**  
Racing track that will host international motorsport events.

**Performing Arts Centre**  
3,000 seat venue on the edge of a cliff with a rooftop sky garden.

**Stadium**  
45,000 seating capacity, climate-controlled venue with retractable roof.

### Key Stats:



**Announced:** 2017

**Completion Date:** 2030

**Site Footprint:** 376 km<sup>2</sup>

**Visitor Target:** 48 million visits per year

**Value of Project:** \$10bn

**Development Authority:** Qiddiya Investment Company (QIC)

**Ownership:** Public Investment Fund (PIF)

*“We strive to transition to a car-free environment through the implementation of zero-emission zones.”*

Qiddiya Investment Company



(Credit: New Atlas)

## Transport System:

### Design Plans:



#### 15-Minute City:

Essential services accessible within a 15-minute walk, bike ride, or public transit ride from any location within the city.

#### Zero Cars:

Zero internal car trips, supported by several Park & Ride sites encircling the city.

#### Public Transport:

Transport system designed to prioritise public transport and active travel.

#### Future Mobility:

Plans to incorporate autonomous vehicles and passenger drones in the future.

### Key Features:



**Q-Express**  
High-speed railway connecting Riyadh's airport and Qiddiya using magnetic levitation technology.

**Internal Metro and cable cars**  
Internal light rail transit system. Cable cars connecting Qiddiya's main sites, lower plains and upper cliffs.

**EV Charging**  
80% of parking slots with EV charging stations.<sup>15</sup>

**Riyadh Metro**  
New stations to be developed (Line 7).

# Challenges and Opportunities

To ensure a successful transition to sustainable urban transport, Riyadh's mega projects and real estate developments need to effectively integrate sustainable transport infrastructure. The challenge is significant. Riyadh needs to retrofit its existing urban infrastructure while developing new systems to enable sustainable mobility. This infrastructure must be well-designed to create a seamless travel experience. It needs to cater for first and last mile trips, connect well to other destinations in the city, be able to adapt to the impacts of climate change, and be ready to incorporate future mobility technologies.

Infrastructure alone will not suffice. Encouraging behavioural change will be essential to ensure Riyadh's residents adapt their transport habits. Creating favourable conditions to facilitate this change is crucial. However, notable barriers to change will continue to persist including the nature of Riyadh's existing urban landscape (characterised by low urban density and sprawl), weather conditions, social norms, and a strong preference for cars.

This section begins to explore some of the challenges and opportunities in transitioning to sustainable transport in Riyadh. It aims to stimulate further discussion and analysis on the topic.



## Behavioural Change:



### Key Questions:

*Will Riyadh's residents use the new metro and bus network? Are initiatives in place to encourage behavioural change?*

### ICE to EVs:

Cars are the primary mode of transport in Riyadh. Residents have become strongly accustomed to this mode of transport, favouring them for comfort, freedom, and reliability. The Saudi population tends to have a strong affinity for their cars. Today, the country has one of the highest rates of car ownership in the world<sup>16</sup> with the number of vehicles in the country increasing dramatically over the last 10 years. For these reasons, the transition to sustainable mobility is likely to be led primarily by EVs.

### Bus Use:

Use of Riyadh's bus network is currently low. In the first six months of operation, an average of 22,000 passengers were carried per day.<sup>17</sup> In contrast, Dubai's bus network transports around 370,000 passengers per day, while London's transports around 5 million.

### Social Norms:

Conservative social norms and an emphasis on privacy has been a key factor in Riyadh's urban development and provision of transport options. This will impact the nature of Riyadh's new transport system and its use, particularly by women. Social norms however are fast changing, particularly among younger generations with higher education backgrounds.<sup>18</sup>

### Quality Infrastructure:

Insufficient infrastructure prevents uptake of sustainable mobility options. Quality infrastructure will need to be developed to enable residents to easily transition to sustainable mobility. This will need to ensure a seamless travel experience where comfort and reliability of services are prioritised. It will require significant expansion of EV charging infrastructure, development of safe and well-designed cycling routes, and pedestrian-friendly sidewalks.

### Incentives:

Incentives will be needed to steer individuals toward sustainable options. Increasing costs of petrol and falling prices of EVs will provide important incentives. Greater affordability of public transport compared to private vehicle use will also be important.

### Awareness:

Increasing public awareness of new transport options will be essential. Educational initiatives should highlight the benefits of sustainable transport, making it a more attractive choice for residents.

### Dubai as a Model:

Dubai can serve as a model for Riyadh to learn from, with many EVs already on Dubai's roads, numerous cycling lanes and walking tracks, and a well-utilised public transport network.

## First and Last Mile:



### Key Questions:

*How will first and last mile trips be made? Can people easily, safely and sustainably access public transport stations from their homes, workplaces and leisure facilities? Will the hottest months reduce use of public transport?*

### Access to Public Transport:

To encourage widespread use of Riyadh's public transport network, seamless accessibility must be ensured from commuters' starting points to their final destinations.

### Travel Time:

First and last mile transport solutions should be designed to ensure efficient travel times for commuters, providing a competitive alternative to private vehicle use.

### Hot Conditions:

The first and last mile challenge will be exacerbated by Riyadh's climate. Temperatures are very hot for around half of the year (May-September) with extreme heat during summer months (averaging 38°C and reaching up to 45°C). This impacts residents' willingness to participate in outdoor activities, especially walking and cycling.

### Active Travel:

Availability of bicycles, scooters and walking routes can improve connectivity and access to public transport hubs and are convenient options for short-distance trips when weather conditions are favourable.

### Cycling Routes:

Cycling routes need to be well planned and effectively integrated. For example, Careem's Medina bike network is integrated with other public transportation options in the city, including the Haramain High Speed Rail Station and the bus network.

### Walking Infrastructure:

Willingness to use public transport is influenced by the distance people must walk to a transport station. KAPSARC has estimated around 50%-75% of Riyadh's population may be within a 5-10 minute walk to a bus station, and 5-15% to a metro station.<sup>19</sup> However, proximity alone is not enough. Quality of access is crucial. Favourable walking conditions such as sidewalks and shade provision will be essential for encouraging public transport use.

### Park and Ride:

Car parks next to public transport stations can support public transport use when cars are needed for first and last mile trips.

### Ride-Sharing:

Ride sharing and shuttle bus services can also provide for first and last mile trips.

### Buildings as Nodes:

Real estate developers should avoid viewing buildings as merely stand-alone islands but instead as nodes of connectivity which people move between, for example from home to work. This approach can help to ensure sustainable transport infrastructure is effectively integrated into real estate developments. A valuable urban planning strategy for achieving this is transit-oriented development (TOD), which focuses on creating vibrant, walkable communities centred around public transportation hubs.



## Connectivity Between Projects:



### Key Questions:

*How will residents and tourists move between different mega project sites? Do Riyadh's mega projects seamlessly integrate with the city's public transport system?*

### New Metro Line Planned:

The metro is a legacy project that was designed before the launch of Riyadh's new mega projects and does not currently connect all of the mega projects to each other. However, a 7th metro line is planned that will link Qiddiya, King Abdullah International Gardens, Misk City, Diriyah, New Murabba, and Riyadh's airport. This new line will connect to existing lines, providing access to King Salman Park, KAFCO, and Sports Boulevard.<sup>20</sup>

### Gaps in Integration:

At present, there are gaps in the connectivity between Riyadh's mega projects and existing public transport infrastructure.

## Climate Impacts:



### Key Questions:

*How will Riyadh's new and existing transport infrastructure cope with higher summer temperatures and an increased frequency and intensity of extreme weather?*

### Climate Impacts:

Climate change will bring greater physical stresses to transportation infrastructure and impact useability. Temperatures are rising 50% faster in the Arabian Peninsula compared to other landmasses in the northern hemisphere.<sup>21</sup> Climate change is also causing an increased frequency and intensity of extreme weather events. Riyadh's new and existing infrastructure will need to adapt to this new normal to ensure it is resilient and future-proof.

### Power Grid:

Greater use of EVs and the Riyadh metro will increase electricity demand. Ensuring the resilience of the power grid to higher temperatures and extreme weather events will be essential for avoiding outages.

### Weather Extremes:

Events such as the April 2024 flooding in Dubai and November 2022 flooding in Jeddah show the highly disruptive impacts of extreme weather and the need for robust urban infrastructure that can withstand such impacts.

### Sponge Cities:

Cities can adapt. For example, New Murabba's masterplan includes storm water drainage systems to help mitigate flooding. Large open green spaces will act like sponges when large rainstorms hit. These spaces are evenly distributed throughout the site and work with the natural drainage course of the site.

### Infrastructure & Lock-in:

The infrastructure that is built today is expected to last for decades. New infrastructure developments will need to consider the possibility of a significantly warmer world and the ability of that infrastructure to function within it.

## Future Mobility:



### Key Questions:

*How will future mobility be integrated into Riyadh's transport network?*

### Transport Innovation:

Many new forms of transport are on the near horizon such as autonomous vehicles, drone deliveries and flying taxis.

### Investment:

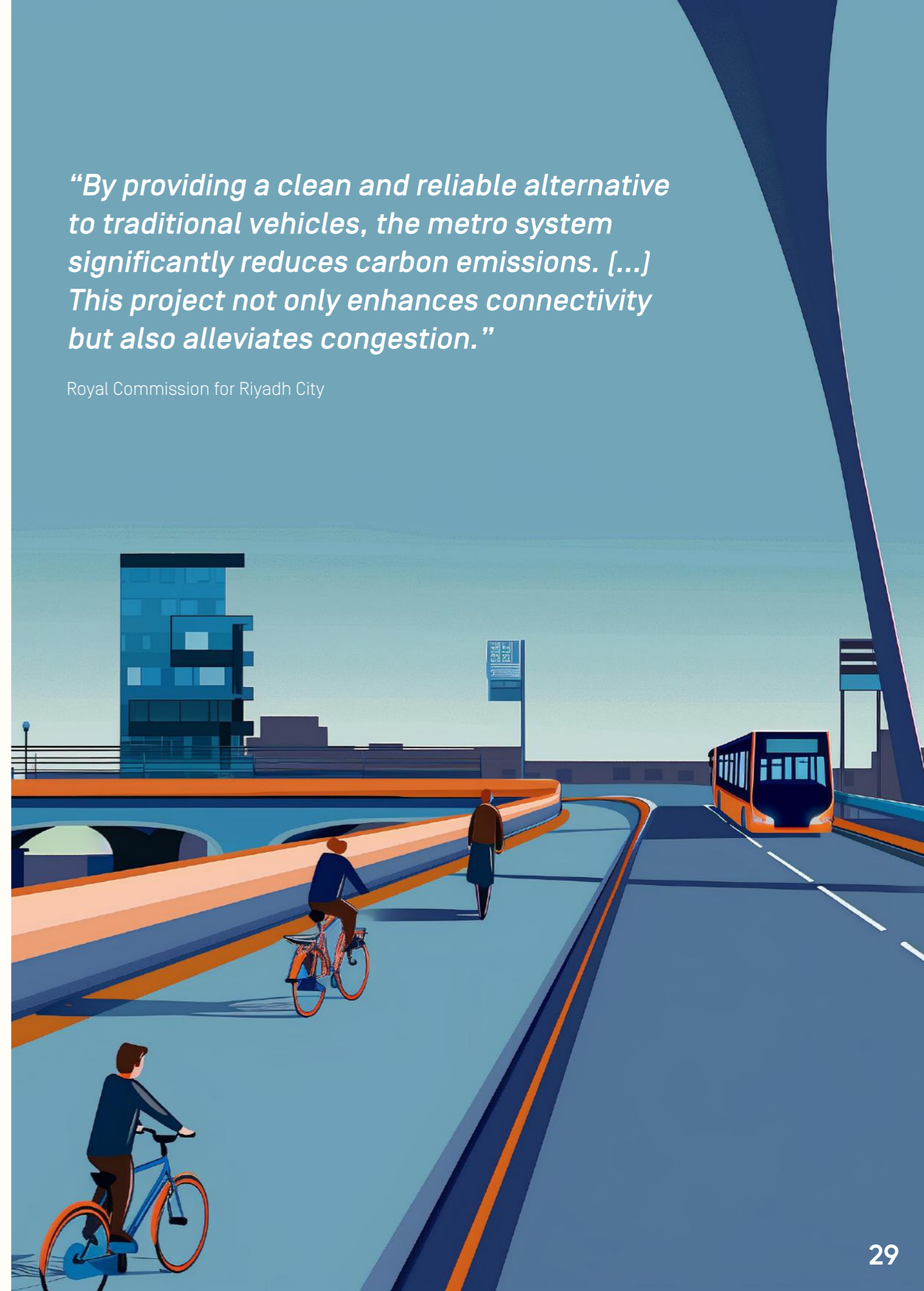
In 2023 the PIF launched a mobility investment company called TASARU. Future mobility is one of its focus areas. For example, in February 2024 TASARU signed deals to invest in three autonomous vehicle-related companies with the aim of bringing this technology to Saudi Arabia.

### Urban Air Mobility:

Saudi Arabia is positioning itself as a pioneer for urban air mobility. In July 2024, Austrian urban air mobility startup, FlyNow Aviation, announced it would provide thousands of electric helicopters for Riyadh Expo 2030. It is also planning to set up an assembly line for local production and export.

*“By providing a clean and reliable alternative to traditional vehicles, the metro system significantly reduces carbon emissions. [...] This project not only enhances connectivity but also alleviates congestion.”*

Royal Commission for Riyadh City





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