



CONNECTING CULTURES
ENABLING ECONOMIES

6th to 10th October 2019

Abu Dhabi Roads Infrastructure – Connecting Cultures and Enabling Economies

From having no paved streets to building some of the world's best, most modern, fully integrated and sustainable road networks and infrastructure, Abu Dhabi has undergone a remarkable transformation in the last 50 years.

Today, the UAE capital has established itself as a key economic powerhouse, not just regionally but globally, by building and maintaining high-quality roads that connect to the other emirates and neighbouring countries.

BACK IN THE DAYS

Before the discovery of oil, the vital trade in dates, pearls and fish depended on old desert routes that connected Al Ain with the coastal areas of Abu Dhabi island, Liwa in the Western Region (Al Dhafra) and on to neighbouring Dubai.

Travelling through the desert landscape was no easy task, with the journey depending on the seasons. People often lived near the coasts during the winter before moving inland to the cooler mountains and oases in Al Ain during the summer.

To make the journey easier and accessible, paved roads and highways gradually replaced the sandy routes. This significant moment was just the beginning for Abu Dhabi and its mission to deliver an advanced, world-class road infrastructure network.

THE BEGINNING OF THE TRANSFORMATION

OVERCOMING CHALLENGES

Over the course of several years, progress was made on major road projects. Fully aware that significant work had to be undertaken to deliver a modern road network, His Highness the late Sheikh Zayed bin Sultan Al Nahyan, President and Founder of the UAE from 1971 and Ruler of Abu Dhabi emirate from 1966, realised it was essential to learn from other countries.

The UAE was gradually becoming a busy destination for importing and exporting goods. While this provided a welcome economical boost that created job opportunities, it also presented new challenges. However, the government was able to implement a range of innovative solutions to overcome them and move forward.

Having recruited many experienced and highly qualified engineers and professionals from more than 100 countries, Abu Dhabi now had a team of professionals who could make the 'Founding Father's' wish a reality.

More importantly, the engineers who made up this diverse workforce were able to offer their own insights to help build a network of roads. The combined expertise and knowledge of these international engineers enabled them to draw up construction plans suited to the desert conditions and create a modern road network for the emirate as per Sheikh Zayed's vision.



CONNECTING CULTURES
ENABLING ECONOMIES

6th to 10th October 2019

One of the initial challenges faced by the engineers was to identify which materials were most suitable to provide longevity to the roads being built in Abu Dhabi.

Many of the roads that were originally laid using sabkha were beginning to deteriorate. As a solution Sheikh Zayed suggested using extra layers of rock subbase. This proved to be a game-changer as not only did it solve the problem of salt corrosion, it also increased the life span of the roads.

Asphaltic concrete, widely used for road construction around the world, was considered for use in UAE by the engineers. But the extreme temperatures coupled with the excessive loads from trucks meant that the road surface would melt or crack easily.

Eventually the government and its roads agencies developed mixes of materials that could not only withstand the heat and impact of heavy commercial vehicles like trucks but also make roads more durable and sustainable.

Subsequently, this led to the development of the Unified Engineering Standards for pavement assets and for all aspects of the engineering and development works.

The government has continued to play a key role and with its full support and significant investment, the results are clear to see given that it has improved traffic flow, connected communities and stimulated many long-term economic benefits.

THE PRIDE OF ACHIEVEMENT

As the construction of a modern road infrastructure gathered pace, Sheikh Zayed used this as a platform to showcase the UAE's development and the potential to turn the desert green.

Sheikh Zayed always had a passion for the environment and this marked the start of an on-going initiative of adding trees and plants along the sides of roads and highways.

This has now become a permanent fixture on nearly all roads across the Abu Dhabi emirate. To implement Sheikh Zayed's vision in a sustainable manner, authorities have designed and implemented a system through which the various plants and trees are irrigated using recycled wastewater.

With Abu Dhabi established as a main hub for trade and cultural exchange thanks to its excellent road connectivity, the government was able to then transform the emirate into a world class destination for tourism.

The creation of high-profile landmarks such as the Louvre Abu Dhabi and Yas Marina Circuit, Ferrari World Abu Dhabi, and Guggenheim Abu Dhabi (an art museum that is planned for construction) has enhanced the city's global profile and helps to attract millions of visitors every year.

While these attractions can easily be reached via public transport or car, the integration of Abu Dhabi's road network means there is also easy access to shopping malls, schools, hospitals and other popular destinations.

With careful and extensive planning, Abu Dhabi's infrastructure has been extended beyond a road network to allow for the full integration for other modes of transport and key economic facilities such as the Abu Dhabi International Airport, Khalifa Port and Sheikh Zayed tunnel.

Travel around Abu Dhabi is even more enhanced thanks to the construction of four bridges that connect thousands of commuters with the mainland and neighbouring islands on a daily basis.

The opening of the Al Maqta bridge in 1968 was the beginning of the expansion of Abu Dhabi's connectivity and was followed by three other bridges – Musaffah bridge (1978), Sheikh Khalifa bridge (2009) and the Sheikh Zayed bridge (2010).

The network of bridges will increase by the end of 2020 with the completion of the Umm Lafina Island mega project, which will feature five new bridges.

Another key part of Sheikh Zayed's vision was the creation of a nationwide road network that connects Abu Dhabi with Dubai and the rest of the emirates.

The official designation for the major highways that flow across the country begin with the letter 'E', which stands for 'Etihad' or 'Union' in English. Leading from the heart of Abu Dhabi, there are modern road links to Dubai via the E11, to Sharjah and the northern emirates via the E311 as well as easy access to Al Ain using the E22.

Not only do these roads have national significance, they also provide excellent connectivity to the neighbouring countries of Oman and Saudi Arabia.

It is no surprise that given the remarkable transformation of the UAE's roads, the number of vehicles that use them each day has increased.

Just like any nation in the world, road safety is paramount in the UAE. In order to prevent accidents, the government follows the 'Three Es' principle - Education, Enforcement and Engineering.

Education by creating awareness through different platforms whether digital or traditional media and seminars on the importance of driving safely. **Enforcement** by possessing a team of highly experienced and talented police officers to curb driving violations. **Engineering** that focuses on building and maintaining smart highways and roads with regular evaluations for improvement.

This has had a positive impact as according to the official statistics by the Department of Transport – Integrated Transport Centre, the number of fatalities on the UAE's roads has decreased significantly.

For example, the figure in 2018 was 4.98 per cent per 100,000 people compared to 23.2 per cent in 2007. More importantly, the figure is expected to decrease every year with forecasters predicting 3.06 per cent per 100,000 people for 2021.

This re-emphasizes the appropriateness of the comprehensive roads safety strategy that has been adopted and implemented over the last decade and will continue targeting optimal safety records in the future.

DEALING WITH THE PRESENT

The transformation of the road network in the emirate of Abu Dhabi, which now covers more than 25,000 kilometres of modern highways and streets, has not gone unnoticed. According to the Global Competitiveness Report issued by the World Economic Forum for 2017-18, the UAE's roads are ranked as one of the best in the world.



While this reflects the extensive work that has been carried out over several decades, the UAE is making relentless efforts to maintain its road network and improve the daily journeys of motorists.

Factoring in the UAE's increasing population, Abu Dhabi has always stayed one step ahead when it comes to the planning of infrastructure for new destinations and projects. Connectivity to Riyadh City, a whole new city being developed 30km from Abu Dhabi city, is a prime example.

Backed by the government's heavy investment in the latest state-of-the-art technology, Abu Dhabi's Department of Transport's (DoT) Intelligent Transport Systems (ITS) has become indispensable to road management.

With the primary aim of minimising traffic problems, ITS was launched across Abu Dhabi is now a significant tool in providing up-to-date traffic information as well as reducing travel time.

Visible across the emirate, large screens are installed on main routes to display eye-catching messages warning of hazardous conditions or directions for alternative routes. In addition to this, there are various installations of approximately 110 variable and permanent display signs, around 595 CCTV cameras, 70 Video Wall screens and 255 (fixed and portable) traffic counting stations with approximately 285 Travel Time Measurement devices.

With approximately 500 active traffic signals together another 50 inactive traffic signals currently under development, the DoT can adjust the systems from its operations room and control the flow of traffic, particularly during peak times as well as directing emergency vehicles.

Forecasting travel demand has also become a key asset implemented by DoT. Launched in 2011 and updated in 2015, the Strategic Transportation Evaluation and Assessment Model (STEAM) has become a sophisticated, dynamic and award-winning tool.

It helps DoT staff make informed decisions about land use development and transportation system including analysing different scenarios and managing congestion levels.

While motorists can enjoy easy traffic flow, the inclusion of dedicated cycle lanes and pavements in Abu Dhabi's enhanced and modern road infrastructure plans encourages residents and visitors to exercise regularly.

This is in line with the UAE's mission to promote the benefits of a healthy lifestyle and give people the opportunity to be active in a safe environment.

IN A STRONG POSITION FOR THE FUTURE

Abu Dhabi can take pride in its evolution from a desert landscape into a global destination for trade, tourism and culture.

As a testament to Abu Dhabi's world-class road infrastructure, the World Road Association-PIARC awarded the UAE capital the honour of hosting the 26th World Road Congress in October.



Selecting Abu Dhabi to stage this prestigious global event could not be more apt as the UAE has been ranked first in the Quality of Roads Index in the World Economic Forum Global Competitiveness Reports for four consecutive seasons.

The theme of this year's Congress – 'Connecting Cultures, Enabling Economies' – perfectly complements the UAE's achievements when it comes to creating a sustainable, state-of-the-art and fully integrated road infrastructure.

And having the world's best roads has prepared Abu Dhabi to ensure it is in the best position to embrace new opportunities and tackle future challenges.

As part of Abu Dhabi's Economic Vision for 2030, the city has shown it is already one step ahead and is working on plans to improve its infrastructure to cope with the eventual introduction of self-driving and electric vehicles.

With high-speed trains, trams and metro projects forming part of the Vision 2030 plan, residents and visitors will have easy access to even more travel options.

Work is already underway for a brand-new freight railway network with the Etihad Rail project. With the first stage completed – a 264km route that brings sulphur to and from oil refineries – further expansion work will link Abu Dhabi to other emirates and neighbouring nations.

There are also ambitious plans in place to launch the world's first commercial Hyperloop in Abu Dhabi. The first 10km section is expected to be ready for testing and development by next year and once opened, the Hyperloop will significantly reduce travel times between Abu Dhabi and Dubai.

These future projects, trends and developments in the fields of road building, infrastructure and transport will form the core of discussions at the World Road Congress and will herald the implementation of new ideas and innovations that will see further development of roads and transport in Abu Dhabi and the UAE throughout the 21st century and beyond.

ENDS