



IN CONVERSATION WITH
H.E. MOHD ALMANSOORI

His Excellency Eng. Mohd. Almansoori, Director General of Sheikh Zayed Housing Programme, shares about building flood resilience amid the wider threat of climate change.

A Flood Resilient Nation Built on Technology and Infrastructure



Image: MoEI, Ministry of Energy and Infrastructure

||
In the aftermath of the 2024 flooding, all federal, local, private entities, and individuals came together to address a well-coordinated crisis management.
||

What is the Ministry of Energy and Infrastructure's (MoEI) mission and vision for environmental sustainability in United Arab Emirates' (UAE) built environment?

The UAE firmly acknowledges that sustainability, in all its facets, is the bedrock of urban development. MoEI and Sheikh Zayed Housing Programme's (SZHP) mission is to drive sustainable development through the integration of innovative technologies, the enhancement of energy efficiency, and the promotion of renewable energy sources.

In our pursuit of sustainability excellence, the UAE has developed not only a strong technical infrastructure but also a comprehensive regulatory framework. This includes the implementation of building codes and standards that mandate sustainability through energy efficiency requirements and sustainable design practices, as well as regulations like the Green Building Regulations, which encourage developers to embrace environmentally responsible practices, such as waste reduction, water conservation, and the use of sustainable materials.

The UAE also remains steadfast in supporting research and development in sustainable construction materials and technologies and partnering with universities and research institutions to drive sustainable construction.

How did MoEI respond to and recover from the recent 2024 UAE flooding, especially with regards to its environmental, social, and economic impacts?

In the aftermath of the 2024 flooding, federal, local, private entities, and individuals came together in a remarkable display of unity to address the crisis. MoEI and SZHP were an integral part of this collaborative effort.

The response to the flood by our housing teams across UAE was a highly coordinated one. As housing was one of our most immediate concerns, MoEI and SZHP worked closely with local Governments and developers

to carry out emergency repairs and safety checks on homes. As part of our strategic planning efforts, we also ensured that families were granted temporary residence at hotels and hotel apartments, and that infrastructure assessments were conducted swiftly.

One of our key actions was deploying rapid-response teams to assess the structural integrity of housing in flooded areas. The use of previously developed digital platforms for monitoring building safety allowed us to remotely assess damage, prioritise repairs, and ensure that residents were able to return to their homes safely in the shortest time possible.

The UAE has always placed great emphasis on resilience and sustainability in its urban planning. Over the last decade, we have embedded climate adaptation into the design and construction of new housing and infrastructure developments, such as by adopting advanced sustainable drainage systems and urban green spaces that can absorb excess water.

We have also been emphasising decentralised, mixed-use urban areas that integrate residential, commercial, and recreational spaces. This urban planning approach improves the capacity for emergency response by allowing easier access to essential services and creating resilient communities where people can live and work even in challenging circumstances. These strategies were affirmed during the flood, as we were able to mobilise support and resources quickly in areas where infrastructure had been strengthened.

As a final point, our country's response to the 2024 flooding was significantly bolstered by advanced digital and technological tools, such as real-time data monitoring systems, which provided critical information on water levels, weather patterns, and drainage system performance.



Cars partially submerged during the severe 2024 UAE flooding.
Image: CNBC



Satellite imagery of Dubai taken before (on 3rd April) and after (on 19th April) the 2024 flooding show subsequent inundation of inland, urban areas.
Image: NASA Earth Observatory

By leveraging predictive analytics, we were able to anticipate the severity of rainfall and identify areas most at risk of flooding. This proactive approach allowed us to deploy emergency response teams and flood mitigation resources to the most vulnerable regions, minimising damage to critical infrastructure and residential areas. GIS-based flood mapping systems also allowed us to map out flood zones in real time, track the progression of floodwaters, and reroute emergency services to areas most in need. They were useful in generating real-time insights for making informed decisions about resource allocation, such as whether to redirect emergency teams or strategically place flood barriers.

In light of the lessons gleaned from the recent flood, what are MoEI's plans to mitigate and adapt to the increase in frequency and intensity of future flooding events, brought about by climate change?

The 2024 flood was a critical learning experience for us. The growing frequency and intensity of extreme weather events, driven by climate change, underscore the need for enhanced resilience across our urban environments. Accordingly, MoEI and SZHP are advancing a range of strategic plans and technological innovations to mitigate and adapt to the growing risk of future flooding.



A total of 2,300 personnel were deployed to respond to emergencies and mitigate the impact of heavy rains.
Image: Emirates News Agency-WAM



The Dubai Deep Tunnel Storm Water System can drain 40% of the entire urban area of the city.
Image: Stantec

By creating a network of underground reservoirs and smart retention basins, we can divert and store excess water, and prevent it from overwhelming urban areas. These systems are scalable to accommodate future increases in precipitation.

One of these is robust stormwater management systems. Even though our previous strategies already emphasised sustainable urban drainage systems (SUDS) as a cornerstone of urban planning, the intensity of the recent flooding event revealed the need for even more sophisticated solutions. Moving forward, we will be accelerating the integration of cutting-edge stormwater management technologies.

We are currently in the midst of implementing advanced technologies that allow us to predict stormwater behaviour and manage water flow more effectively during heavy rainfall. By creating a network of underground reservoirs and smart retention basins, we can divert and store excess water, and prevent it from overwhelming urban areas. These systems are not only suited to handle current conditions but are also scalable to accommodate future increases in precipitation.

Additionally, we are also integrating permeable surfaces and green infrastructure, such as rain gardens, bioswales, and green roofs into our urban planning. These natural systems enhance water absorption and reduce surface runoff, allowing stormwater to be managed at the source. This approach not only mitigates flooding risks but also improves the urban environment by promoting biodiversity and reducing the urban heat island effect. Already in the works are retrofitting and upgrading of our existing drainage networks to cope with higher volumes of water, as well as redesigning urban layouts to allow for better water flow. We are also incorporating in our new developments elevated foundations, flood-resistant materials, and redesigned roads and pavements that can channel water more efficiently.

Low-lying coastal and densely populated urban areas, in particular, presented significant challenges during the recent flooding, due to their vulnerability to rising sea levels and flash flooding. An essential step forward will be to incorporate flood barriers, levees, and more extensive drainage infrastructure. In these areas, we are exploring nature-based solutions, such as coastal wetlands and mangrove restoration, which provide natural defence against storm surges while enhancing the ecological health of the coastline.

How is MoEI ensuring that UAE's built environment can balance the needs of climate resilience, environmental regeneration, and liveability?

UAE's approach is comprehensive and multifaceted—drawing on existing strategies while also embracing new policies and innovations designed to ensure a climate resilient and environmentally regenerative future for all residents.

At MoEI and SZHP, we recognise that addressing climate resilience is not just about fortifying our infrastructure against extreme weather events, it is also about regenerating our environment and enhancing quality of life for citizens. To achieve this balance, we have developed a strategic framework that encompasses innovative policies, research initiatives, and infrastructural plans.



The tunnel is a groundwater and stormwater collection network, running 45 m deep.
Image: Government of Dubai



The Sharjah Sustainable City was designed to reduce carbon footprint in Sharjah through the use of renewable energy and recycling of water and waste.
Image: Sharjah Sustainable City

One such plan is the UAE Climate Change Adaptation Strategy, which emphasises sustainable urban planning principles that integrate climate adaptation measures directly into land-use planning and building codes. This ensures that new developments not only withstand climate-related challenges but also contribute positively to their surroundings.

Liveability is at the heart of our urban planning efforts. We strive to create communities that are not only resilient but also enjoyable to live in. This involves designing mixed-use developments that integrate residential, commercial, and recreational spaces. By creating vibrant neighbourhoods where people can live, work, and play, we foster social cohesion and enhance the overall quality of life. We view preparation for the challenges of climate change as an opportunity to enhance the quality of life for our residents.

How has MoEI leveraged digital participation and consultation with the public to foster greater preparedness and involvement in the area of climate resilience?

Building climate resilience is not solely a matter of infrastructure and policy—it requires active participation by the public. Over the years, we have established various channels to ensure that residents and stakeholders are part of the planning and decision-making process for urban development. As we work towards broadening the reach of our engagement efforts, our focus has been on utilising digital tools to streamline communication, gather input, and foster a collaborative spirit between government entities, the private sector, and the public.

By leveraging digital participation and consultation, MoEI has empowered citizens to become active participants in our climate resilience journey, fostering a culture of collaboration and shared responsibility.



Expo City Dubai aims to be a model for a sustainable and smart built environment through passive design strategies and technology-based solutions.
Image: Expo City Dubai

One of the key tools that we have implemented is the “MoEI Digital Participation Platform”, which serves as an interactive space where citizens can provide feedback on housing developments, urban planning projects, and environmental initiatives. This platform allows us to gather input directly from the people who are most affected by these projects, ensuring that their needs and concerns are reflected in our climate resilience strategies.

In the lead-up to the 2024 flooding event, we used social media platforms to share vital preparedness tips, safety measures, and real-time updates on emergency response efforts. Social media proved to be a key tool for encouraging public awareness and preparedness in the face of the disaster. Following the event, we continued to use these channels to gather feedback from affected communities, ensuring that their experiences inform future planning and response strategies. By leveraging digital participation and consultation, MoEI has empowered citizens to become active participants in our climate resilience journey, fostering a culture of collaboration and shared responsibility.

In conclusion, while the 2024 flood presented significant challenges, it also reinforced our resolve to build more resilient, adaptive urban environments. Our goal is not just to protect ourselves from the next flood but to create a sustainable urban framework that can thrive in the face of a changing climate. 🌱