Can a City Become a Living Lab?

Over the last few centuries, the rapid acceleration of urbanisation has meant that today, over half of the global population lives in a city. What's more, that percentage is expected to grow to more than two-thirds by 2050, meaning cities will become where a significant majority of humans live and work.

But as well as displacing the countryside as the primary human habitat, cities could also potentially offer us an unprecedented opportunity to learn more about ourselves, our habits and how these can be tailored to optimise efficiency. In this role as a living lab, cities can not only improve our quality of life, but also reduce our detrimental impact on the planet and the flora and fauna with which we share it. Alnama, a smart city in Saudi Arabia, may be the prototype for other metropoles to follow.

Emirati experience

Alnama is a planned community spanning 10km^2 in size which aims to become a smart zero-carbon destination in the near future. The brainchild of Dubai-based developer URB, the city will house different zones (including residential, commercial, medical, educational and tourism areas), each of which will form part of the so-called living lab experiment.

Smart technology, embodied in the implementation of the internet of things (IoT) and artificial intelligence (AI), will govern every aspect of Alnama's day-to-day operations. This will hopefully not only benefit the inhabitants of the city themselves, but help inform decisions that could ultimately have much further-reaching repercussions in the future.

Intelligent living

In order to make its vision a reality, URB have embedded a wide range of smart solutions into the city's underlying infrastructure. For example, electricity will run from a smart two-way grid powered by renewable energy, with the ability to send power back and forth between consumer and provider.

Water systems will be optimised to minimise consumption, while EV charging stations are to be found throughout the city. At the individual level, each building is set to be equipped with an abundance of sensors which can measure moisture, motion, temperature, humidity and fire risk, so as to automatically adjust conditions to suit the time of day and number of occupants inside.

Learning for tomorrow

As well as helping to give Alnama's residents the best quality of life possible, the city will also serve as a living lab that will continually gather data and analyse it to improve future actions. Just as a smart lab has all of its operations and infrastructure integrated, so too will Alnama's, right down to the granular level.

In the long term, this can help to recognise patterns in resource consumption and service demand, allowing AI to create predictive templates for what may happen in the future. Meanwhile, it's also set to be a hive of innovation, allowing progressive policymakers to test out new pilots and assess user feedback to make them more functional going forwards.