# earth matters

# Making a stand

Through initiatives to increase energy efficiency and reduce waste, the UAE wants to ensure residents have sustainable options to safeguard resources in a region vulnerable to climate change. By **Nick Leech**

One of the world's largest solar power stations, Shams 1, is located near Madinat Zayed in Abu Dhabi's Western Region. Courtesy Masdar

Last night saw the opening of Eco Future, an engaging new multi-media exhibition at Manarat Al Saadiyat that offers visitors the chance to create their very own city of the future. Aimed at the next generation, the show presents children and their families with the opportunity to engage with some of today's largest environmental issues and to see how the decisions they make today might affect all of our lives in the future.

For Disha Bobby, a 10-year-old environmental activist from Bur Dubai, that sense of personal responsibility and the interconnectedness explored by Eco Future lies at the heart of her own beliefs about the environment, about which she is passionate: "Global Warming is now threatening us a lot. Sea levels are rising and we need to start saving the environment and we need to use less electricity."

The environmental activist Disha Bobby, 10, volunteers her time raising awareness about global warming. Last year she ran a successful can recycling campaign in schools and in the Dubai community. Courtesy Disha Bobby

Disha's commitment to sustainability – she spends six hours each week and most holidays engaged as a volunteer – has been reinforced by a recent visit to the Amazon basin, where she was surprised by the efforts that are being made to combat climate change. "In Brazil, they have banned the cutting of trees and construction in parts of the forests and there are recycling bins everywhere. They are taking drastic action to do their bit to combat global warming. In Dubai, we have recycling bins but only near bus stops. So much more waste could be recycled."

Unfortunately, Disha's observations are not the only point of environmental comparison. UAE residents break negative records for waste, energy consumption, carbon emissions, and their ecological footprint. Since 2008, however, Abu Dhabi has successfully managed to position itself as an environmental catalyst and sustainability leader in the region, using schemes such as Plan Abu Dhabi 2030, Estidama building philosophy, Masdar City and the emirate's new integrated building codes to support its environmental bona fides. The result is a contradictory picture in which neither image is entirely true.

Karim Elgendy is in no doubt about the complexity of the issues behind the Gulf's energy crisis, but insists that a more nuanced analysis is ultimately more productive than crude generalisations. "There are simply too many variables to make comparisons between the UAE and the UK or USA meaningful."

The founder of Carboun, a research-based initiative that seeks to promote sustainable urbanism throughout the Middle East, Elgendy is also an architect and sustainability advocate who has worked on many projects in the region, including Masdar.

"In terms of the region's role in climate change, on a per capita basis, yes, it does show that the average person in the UAE emits a lot of carbon emissions and the results are worrying. However, if you stack up the historical data, their responsibility is pretty limited. The UAE is such a small country that the total emissions aren't a big deal and we steer away from blaming the region for climate change because it's just not true."

But despite the fact that historic emissions from the developed world have had a greater impact on climate change, Tanzeed Alam, director of policy for the Emirates Wildlife Society in association with the World Wildlife Fund (WWF), insists that nobody can afford to dodge the issue now, and that includes the UAE. "All countries need to step up and take responsibility for their emissions and targets ... If you look at the current science of climate change, it calls for a rapid urgency in action."

Dr Rob Cooke, an associate engineer with Buro Happold and the technical coordinator for the Emirates Green Building Council (EGBC), an industry body dedicated to the promotion of sustainable construction in the UAE, agrees. "In order to hit the targets and create a future that is comfortable, we need to reduce carbon emissions by 80 to 90 per cent. We seriously need to do our bit here. Put simply, we need to halve demand, double efficiency and halve carbon."

For Alam, the likely impact of climate change in the Gulf makes action a strategic as well as an environmental imperative. "The Gulf is one of the most vulnerable regions in the world to climate change. If you look at sea level rise predictions and development on the coast, there's a huge risk here to the very fabric of society."

In 2007, the UAE became only the third country in the word after Switzerland and Japan to work with WWF on an Ecological Footprint Initiative. The footprint is a measure of a nation's environmental impact, and an assessment of whether it is living within the planet's environmental limits. The aim of the initiative is to understand and mitigate the nation's impact, a matter of urgency given that the WWF judged the UAE to be the world's most environmentally wasteful country on the planet 12 years running, an ignominious title it only lost to Qatar and Kuwait earlier this year. For Alam, the shift is testament to the UAE's improving environmental performance, but its continued failure to live within its ecological means poses far-reaching economic as well as environmental threats.

"Oil and gas resources may be abundant, but the rate at which these are being consumed domestically means that the UAE's future prosperity is at risk. Our power stations cannot cope with the growth in demand, so you start having blackouts like the recent ones in Sharjah. In a country that's growing so rapidly with plans for further development, failure to supply enough energy and water pose economic problems as well."

Elgendy also calls for a more analytical approach to the assessment of GCC countries' ecological impact. "There are macro-economic reasons that put the UAE at the higher end of the scale in terms of energy use per capita and CO2 emissions. The oil industry in countries like Qatar, Kuwait and the UAE is massive. It can be described as being bigger than the country itself because it is on an export scale, and because it serves a market that is bigger than itself, the energy used to feed that industry is bigger than the scale required for a normal economy. You also have a smaller population, which means that energies per capita will be higher."

In Carboun's latest research paper, *Gulf Region and Climate Change*, its author, Wissam Yassine – Carboun's UAE national coordinator – stresses the need for GCC nations to "decarbonize" their electricity supply in order to decouple increased energy generation from increased carbon emissions. This is an area, he notes, where the UAE is already leading the region. "The UAE is the first – and so far only – Gulf country that took [sic] concrete steps to diversify and de-carbonize its electricity fuel mix, most significantly by developing its nuclear power program." Yassine also points to the development of Shams 1, the giant solar array near Madinat Zayed, as evidence of the emirate's regional leadership in renewable energy.

Elgendy also stresses the importance of the detrimental effects of subsidised energy in the region. "Instead of having really high energy prices to prevent people from wasting energy, prices are subsidised to such a level that energy [conservation] is pushed off the agenda." The energy market in the Gulf is the exact opposite of the one in Europe, he says, where high prices effectively limit consumption. "In the UAE, energy use becomes an externality, another perk of the [expat] job." For Elgendy, subsidy also places a commercial handicap on the development of renewables because "there is an economic calculation that causes them not to [develop]."

These subsidies also extend to the road. In the field of transport, this wastefulness is exacerbated by a reliance on private vehicles – due to subsidised fuel prices – and the absence, until recently, of a proper public transport network, something that Dubai and Abu Dhabi have started to address with their Metro and the Abu Dhabi Department of Transport surface transport master plan.

Other factors in the UAE's poor environmental performance are the energy required for desalination – the UAE has the third highest desalination capacity in the world after Saudi Arabia and the US – and the inherent waste of clean water. Consider, for example, the six and a half million litres of drinking water used to irrigate just one of the capital's golf courses each day, and it's easy to see how Abu Dhabi residents consume a per capita average of 550 litres of water per day, three times the UN benchmark of 180 litres per day, according to the Environment Agency Abu Dhabi.

When it comes to achieving energy efficiencies in buildings, the issues are more complex because of the existence of a large number of highly inefficient buildings constructed in defiance of the local climate, many of which are made of glass, that require enormous amounts of air conditioning to function. Demolishing these would not only be financially untenable, it would also be environmentally unsustainable, and retrofitting them is unrealistic for the same reasons. However, as Yassine explains, "In a region where 75 per cent of the produced energy [is] consumed in residential and commercial buildings, improving buildings' energy performance is paramount to effectively mitigating climate change."

Given that the majority of the UAE's ecological footprint results from the increased energy consumption and wastage that has accompanied its recent growth, it's perhaps not surprising that reducing demand and achieving energy efficiencies have both been identified as a key drivers for reducing emissions. However, there is still considerable debate about how best to achieve these goals.

As Alam explains, WWF's focus is on the efficiency of domestic appliances and regulation; for example, the widespread use of LEDs and energy saving light bulbs. "One of our key focus areas is to develop an energy efficiency standard for domestic lighting. If you look at case studies from around the world, it can really help you address energy consumption in a very cost-effective way. If you can actually stop the importing of energy inefficient products, that can really make an immediate impact."

For Cooke, however, the prospect of meaningful change is illusory, even with all the UAE's advances in planning, design, construction and regulation, unless they are accompanied by profound changes in social attitudes and behaviour by the country's residents themselves. He points to recent events in post-tsunami Japan and efforts to reduce the nation's energy consumption in the face of an enormous and sudden shortage as evidence of the power of social change.

"The whole country joined together in an understanding that they had a responsibility to keep their power consumption low. If they couldn't do that, they were going to have to turn the nuclear power stations back on again. Saving energy became the moral thing to do ... It was a matter of self-preservation and pride.

"I think the societies in the Gulf have social bonds that are just as strong, and I see no reason why something similar couldn't happen here."

It is precisely this fervour, a very different kind of energy, that the UAE would do well to capture. As 10-year-old Disha says: "Whenever I travel and I tell people I come from Dubai in the UAE, people ... think of the world's tallest building, the biggest hotel, the biggest shopping mall. I want them to think of the UAE as one of the greenest places in the world. This is my dream."

See Oasis on w8-9 for the effects of global warming on the Polar ice cap

The Al Ain Fayda Project will be built as part of the Plan Abu Dhabi 2030 sustainable initiative. Courtesy X-Architects

Dr Rob Cooke says to do our bit "we need to halve demand, double efficiency and halve carbon". Jeff Topping / The National

The world's second-largest water and power plant project is located in Fujeirah. Satish Kumar / The National

## the facts

**550**
In litres, the average consumption of water each day by Abu Dhabi citizens

**82**
Percentage, per capita, of how much higher UAE residents consume water compared with the global average demand

**7:1**
The ratio of the UAE's use of energy compared with the global average

**3**
The position, behind Qatar and Trinidad and Tobago, of the UAE's carbon dioxide emissions globally

Sources: Environment Agency Abu Dhabi; Statistics Centre –Abu Dhabi; Manarat Al Saadiyat; US Department of Energy's Carbon Dioxide Information Analysis Center (CDIAC)