

UAE's planned renewable energy city gets its first residents

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Architects show German Chancellor Angela Merkel, centre-left, a model of Abu Dhabi's planned Masdar City. The town, which is to be the world's first powered solely by renewable energy, now has its first residents -- students at the Masdar Institute of Science and Technology.

Abu Dhabi's planned Masdar City, which is to be the world's first powered solely by renewable energy, now has residents -- students at the Masdar Institute of Science and Technology.

"The total number of our students is about 170-175," said Dr Fred Moavenzadeh, president of the environmental technology research-focused institute. "Of that, 100 of them, roughly, are here ... living on the campus."

These are the first residents of Masdar City, of which the institute, which is still being expanded, is the first part.

The planned city, whose name means "source" in Arabic, will cost 22 billion dollars (15.9 billion euros), cover six square kilometres (2.3 square miles) and will eventually house 40,000 residents, its website says.

It is to be located about 17 kilometres (roughly 10.5 miles) from downtown Abu Dhabi. But for now, Masdar Institute's buildings are the only to have been completed, while a few others have been begun.

From a distance, the campus appears to be a single large, reddish-brown structure rising from the desert, with a small forest of construction cranes to one side. But up close, the details are striking.

The institute's Knowledge Centre, which houses its library, has a curved roof with solar panels, and a front that is almost entirely made up of windows.

"All windows are shaded to prevent direct sunlight from reaching inside" to aid building cooling while still allowing natural lighting from indirect sunlight, said Hamza Kazim, the institute's vice president for operations and finance.

From the front, it looks like a giant snorkeling mask, with the main staircase housed in a glass cylinder that extends from the building even resembling the part of such a mask that covers the nose.

Students are housed in terra-cotta-coloured buildings that form the outer ring of the campus. The curves and soft edges of the buildings give them an almost organic appearance.

They have solar panels on the roofs to collect energy and balconies shaded by latticework with geometric designs, echoing a traditional feature of Islamic architecture.

The institute's classrooms and laboratories are in a large, rectangular, futuristic-looking glass and metal building in the centre of the campus, which also has roof-mounted [solar panels](#).

Its sides are covered by sections of long, rectangular air cushions with reflective stainless steel behind them, a design meant to reduce energy use. This keeps direct sunlight off the building, aiding cooling, and also reduces sunlight reflected onto the streets.

"Shaded walkways and narrow streets reduce glare and solar gain," Kazim said, while "the diagonal orientation of the streets and public spaces make the best use of the cooling night breeze and lessen the effect of hot daytime winds."

The campus also features a modern take on the wind tower, a traditional architectural feature of the region. The steel tower with a large pipe at its centre catches breezes and funnels them to street level, providing cooling.

"I sometimes get the feeling that I'm in a spaceship in the middle of the desert," Moavenzadeh quoted one student's blog as saying about living on campus.

Masdar City will eventually be "a test-bed for technology" on which the institute is conducting research, said Moavenzadeh.

Director of the Technology and Development Programme for 39 years at the Massachusetts Institute of Technology, which is partnered with Masdar Institute, he joined the institute as president in July.

Masdar Institute's aim is to produce "engineers who are oriented toward" research and development -- the kind that are needed given the Gulf region's wealth in resources and paucity of labour, Moavenzadeh said.

Students are therefore encouraged to spend no more than 50 percent of their time taking classes, and to devote the rest to research, he said.

The institute offers various master's degrees, and introduced a doctoral programme this year. Masdar Institute's first class is to graduate in 2011, Moavenzadeh said.

All students are currently on scholarships, and about 20-25 percent are Emirati.

While the 19th century was mainly one of focus on agriculture and the 20th centred on industry and development, the "21st century is going to be the century concerned about the environment," Moavenzadeh said.

Therefore, "the focus of our research is primarily on the issues related to the climate change, the environment, clean technologies, sustainable technologies," he said.

The Oil and Gas Year Abu Dhabi 2010 report put the emirate's proven oil reserves at 98.2 billion barrels -- 95 percent of the reserves of the United Arab Emirates, which are ranked seventh-largest in the world.

However, [Abu Dhabi](#) aims to be a center for renewable energy as well as petroleum.

By researching and investing in [renewable energy](#), the emirate is seeking to stay in the business it knows, Moavenzadeh said.

"Energy is the business they know, and therefore by diversifying in the energy sector, they can produce results much faster than by going into something else."

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