Nashtifan windmills show Iran's ancient mastery of wind power

Iranica Desk

The windmills of Nashtifan in northeastern Iran stand among the most remarkable examples of indigenous engineering and climate-adapted architecture.
Long before the concepts of renewable energy and sustainable development entered modern discourse, Iranian communities had learned to harness the power of the wind to grind grain and sustain local livelihoods.
In a commentary provided to ISNA, Hamidreza Nasseri, a faculty member at the University of Tehran's Faculty of Natural Resources and head of the university's International Desert Research Center, highlighted the significance of Iran's historic windmills and called for renewed efforts to secure their international recognition.
According to Nasseri, deserts and arid regions are often associated with drought, dust storms, soil erosion, and advancing sands. Yet focusing solely on these challenges overlooks another reality: deserts have also been landscapes of innovation and wisdom. Throughout history, Iranian communities developed ingenious responses to harsh environmental conditions, including qanats, water reservoirs, mud-brick ice houses, Persian gardens, and windmills.
Rather than fighting against nature, Nasseri argued, Iran's ancestors learned to understand their environment and transform its limitations into opportunities. In places where rainfall was scarce, qanats brought water to settlements; where scorching heat prevailed, ice houses preserved cool water; and where powerful winds swept across the landscape, windmills converted natural energy into a source of food security.
Among these achievements, the windmills of Nashtifan in Khorasan Razavi Province remain particularly significant. Built centuries ago, the structures use vertical-axis technology specifically designed to capture the strong and relatively consistent winds of eastern Iran. Without electricity, engines, or fossil fuels, the system was capable of grinding wheat into flour and supplying local communities with bread.
Nasseri recently reflected on this legacy during a visit to the historic Witte Molen (White Mill) in Nijmegen, the Netherlands. While the Dutch windmill is an important symbol of local identity and heritage, he noted that its significance lies not only in its history but also in the way Dutch society has preserved and presented it to the world.

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In the Netherlands, windmills serve not merely as historical monuments but also as museums, educational centers, tourist attractions, and living symbols of national identity. In some regions, they continue to operate and produce goods for local communities.
A similar approach can be seen in Kinderdijk, where a collection of historic windmills has become one of the Netherlands' most recognizable cultural landscapes.
According to Nasseri, what visitors encounter there is more than a group of historic structures; it is a narrative about the relationship between humans and nature.
Although the windmills of Nashtifan and those of the Netherlands are both powered by wind, they were designed for entirely different environments. Nashtifan's vertical-axis windmills were developed to harness the powerful winds of Iran's arid eastern plateau. Their tall mud-brick walls channel air toward wooden blades and millstones in a system carefully adapted to desert conditions.
Dutch windmills, by contrast, feature horizontal axes and large sails suited to open plains exposed to winds from multiple directions. Their upper structures can be rotated to face changing wind patterns. If Nashtifan's windmills symbolize the harnessing of wind in a land of scarcity, Dutch windmills represent cooperation with wind in a landscape shaped by water.
These differences, Nasseri argued, make Nashtifan's windmills particularly valuable. They are not simply Iranian versions of European windmills but independent technological achievements developed in response to the specific environmental conditions of the Iranian plateau.
He described the structures as among the world's outstanding examples of indigenous technology and sustainable wind-energy use, demonstrating that Iranians were applying principles now associated with sustainable development centuries before the term entered the global scientific vocabulary.
Nasseri also emphasized that eastern Iran should not be defined solely through narratives of drought, dust, water shortages, and migration. The region is equally a landscape of knowledge and innovation, where generations developed sophisticated methods for adapting to some of the world's most challenging climates.
Each qanat, reservoir, ice house, and windmill, he said, represents a chapter in a largely overlooked history of human ingenuity. At a time when climate change poses growing challenges worldwide, these historical experiences offer valuable lessons in sustainable adaptation.
Calling Nashtifan the potential "capital of Iran's wind heritage," Nasseri proposed transforming the site into a center for education, research, tourism, and dialogue on renewable energy. Just as Kinderdijk has become a symbol of the Netherlands' relationship with wind, he argued, Nashtifan could serve as a global symbol of Iran's long-standing tradition of environmental knowledge and innovation.
He also urged Iran's cultural heritage authorities, in cooperation with UNESCO, to pursue the world heritage inscription of Nashtifan's windmills with a renewed perspective, presenting them not merely as historical structures but as a living legacy of human creativity and sustainable interaction with nature.

Bandar-e Tang mud volcano reactivates with monsoon winds

Iranica Desk

With the arrival of seasonal monsoon winds along the Makoran coast, one of Iran's most remarkable natural phenomena has once again come to life. The Bandar-e Tang mud volcano, located in Konarak in Sistan and Baluchestan Province, has resumed activity, ejecting mud from its cone-shaped vent and offering a striking display of the Earth's dynamic geological processes.
In addition to reflecting natural environmental changes associated with the seasonal winds, the phenomenon highlights one of Iran's most valuable geotourism attractions and underscores the potential for expanding nature-based tourism along the Makoran coast, chtn.ir wrote.

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Mud volcanoes are rare geological formations created when pressure from natural gases deep beneath the Earth's surface forces mud and soft clay upward. Unlike conventional volcanoes, they do not emit lava or high-temperature materials; instead, their activity is characterized by the release of mud, water, and natural gases.
Earth scientists consider the Makoran coast one of Iran's most important regions for active mud volcanoes. These formations are valued for their scientific, educational, and tourism significance, with many Iranian and international researchers describing them as natural laboratories for studying geological structures and subsurface processes.
The monsoon winds, which affect the coasts of the Sea of Oman and Makoran from late June through early autumn each year, bring relatively cooler temperatures, higher humidity, and occasional rainfall. Experts note that these climatic conditions also contribute to the activation of certain natural phenomena, including mud volcanoes.
The region's distinctive climate and landscapes attract large numbers of visitors each year, drawing tourists to the Sea of Oman coastline and the Makoran coast's unique natural attractions.
According to Taher Mirzaei, head of the Cultural Heritage, Tourism and Handicrafts Department of Konarak, the Bandar-e Tang mud volcano is one of Iran's rarest geological phenomena and among the most prominent natural attractions in the country's southeast.
"The mud volcano creates a unique landscape by expelling cold mud from deep underground," Mirzaei said. "It's activity typically intensifies with the onset of the monsoon winds and the accompanying climatic changes."
He added that the mud volcano's activity has increased significantly in recent days and that conditions are favorable for visits by both domestic and international tourists.
"With the start of the summer travel season, we expect growing interest in this natural attraction," he said.

Takht-e Soleyman sees strong spring tourism

Iranica Desk

The director of the Takht-e Soleyman World Heritage Site in Takab, West Azarbaijan Province, announced that 32,643 tourists visited the historic complex during the first quarter of the Iranian year (March 21–June 21, 2026).
Afrasiab Geravand said that keeping the site open during the recent war was aimed at fostering hope, peace, national solidarity, and social cohesion. The initiative was well received by visitors and demonstrated that the civilizational and cultural roots of ancient Iran remain resilient and enduring even in times of crisis, according to chtn.ir.
He added that the Takht-e Soleyman World Heritage Site, which contains cultural and historical remains dating from the first millennium BCE to the medieval Islamic period, is one of Iran's most significant archaeological complexes and is widely known as the "turquoise jewel" of northwestern Iran.
Referring to the site's geographical location, Geravand noted that Takht-e Soleyman is situated 40 kilometers northeast of Takab in West Azarbaijan Province. The site was inscribed on UNESCO's World Heritage List in 2003 as Iran's fourth registered World Heritage property.
He further stated that, in addition to exploring the historical monuments within the complex, visitors can enjoy handicraft stalls, the region's mineral springs and thermal waters, and Qeynarjeh Waterfall, while gaining a deeper understanding of the area's natural and cultural attractions.
Takht-e Soleyman is regarded as one of Iran's most outstanding historical and archaeological sites. Located in a mountainous plain in southern West Azarbaijan Province, the complex is centered around a natural lake fed by a deep artesian spring, which has played an important role in local beliefs and religious traditions for thousands of years.
During the Sassanid era, the site served as one of the most important religious and political centers of the Iranian Empire. It was home to the renowned Adur Gushnasp Fire Temple, one of the three most sacred fire temples of ancient Persia. The remains of palaces, ceremonial halls, defensive fortifications, and religious structures surrounding the lake testify to the site's exceptional historical significance and its prominent place in Iran's cultural heritage.
Recognized for its outstanding universal value, Takht-e Soleyman continues to play an important role in Iran's cultural tourism landscape. The complex attracts thousands of domestic and international visitors annually, as well as researchers and heritage enthusiasts who come to explore its archaeological significance, spiritual heritage, and unique natural setting in northwestern Iran.

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