

# BUSINESSFOCUS



## Chinese solutions taking on global fight against desertification

Models developed in Inner Mongolia autonomous region are being implemented across country and beyond

By LI JING and YUAN HUI  
in Ordos, Inner Mongolia

In the depths of the Kubuqi Desert, along the northern edge of Ordos in Inner Mongolia autonomous region, a remarkable transformation is unfolding. What was once a dry, desolate riverbed can now be seen as shallow streams, weaving between banks of tidy checkerboard plots of grass and newly planted trees. It's the thriving face of the Heilaigou sand control project.

Backed by an investment of 29.75 million yuan (\$4.14 million) and covering approximately 667 hectares, the project is expected to be completed by October.

"We're not simply stopping the desert spread," said Wang Shuangxi, a senior engineer with the forestry and grassland bureau of Dalad Banner. "We're reshaping both the environment and the economy that depends on it."

The project is part of a broader effort to manage the autonomous region's 10 seasonal flood gullies, known locally as *kongdai*, a Mongolian term meaning "mountain torrent gully". These channels slice across the Kubuqi Desert, feeding into the Yellow River. For most of the year, they're bone-dry. But when summer rains arrive, they can surge into violent torrents, dragging enormous volumes of sand and silt downstream. At their worst, these gullies used to dump as much as 27.11 million metric tons of sediment annually into the Yellow River — more than 10 percent of its total sand — and were a major cause of riverbed siltation and industrial disruption.

In 1998, Xiliugou, a seasonal first-level tributary of the Yellow River, unleashed a flood that created a sand dam so massive that it blocked the Yellow River, buried water intake systems at Baotou Iron and Steel Group, and temporarily brought one of northern China's industrial hubs to a halt.

Authorities in Ordos have since adopted a region-specific approach, applying targeted treatment measures for each gully based on its geographical features and ecological challenges.

At the Longtougua section of Xiliugou, engineers have installed sand barriers, gravel mesh and stone-filled gabions to stabilize riverbanks and prevent erosion. In comparison, the Heilaigou project relies more on natural solutions. At its Zhuobie Bay, drought- and salt-resistant species such as drought willow have been planted to form embankment forests. Sand dunes are stabilized using woven sand barriers made from desert willow



**Top:** Volunteers help lay sand barriers in the Kubuqi Desert along the northern edge of Ordos in Inner Mongolia autonomous region on June 7.  
LI ZHIPENG / XINHUA

**Above:** Employees install photovoltaic panels at a new energy base in Ordos, Inner Mongolia autonomous region, on June 6.  
LI ZHIPENG / XINHUA

“We’re not simply stopping the desert spread ... We’re reshaping both the environment and the economy that depends on it.”

**Wang Shuangxi**, senior engineer with the Forestry and Grassland Bureau of Dalad Banner

**29.75 million yuan**  
total investment in the Heilaigou sand control project

branches, reinforced by shrubs like caragana and grass seeds.

"Effective sand control is never a one-size-fits-all solution," Wang said. "It comes from designing solutions that work with the land, not against it."

"Deserts also need protection as they're essential parts of our ecological system," he added.

The ecological results are already impressive. Sediment loads from the gullies into the Yellow River have dropped dramatically from 27 million tons to 4 million tons per year now, and the region has also seen notable gains in vegetation and soil stability.

"It used to flood every summer," said Bai Qilao, a local villager. "Now we're raising animals and growing crops where there used to be nothing but sand."

While the land is becoming greener, the region still faces a pressing challenge: water scarcity. Annual precipitation ranges between 200 and 400 millimeters, while evaporation can exceed 2,200 mm.

To keep the momentum going, Wang Lijun, director of the soil and water conservation office under Dalad Banner water authority, said the region is turning to infrastructure improvements and alternative water sources.

"We are actively exploring the use of treated wastewater and recycled mine water," he added.

Beyond erosion and sand control, the Kubuqi Desert is also harnessing its harsh climate for energy innovation. Along the desert's edge, the "Photovoltaic Great Wall," a colossal

green-energy initiative is taking shape. When completed in 2030, this solar belt will span 400 kilometers with an average width of 5 km, delivering up to 100 million kilowatts of clean power annually.

Kubuqi Desert's revitalization has also boosted local tourism. The Xiangshawan scenic area, a national top level tourist site, now receives around 1.2 million visitors annually, generating 340 million yuan in tourism revenue, according to local authorities.

Inner Mongolia is home to several large deserts such as the Kubuqi, Badain Jaran, Tengger and Ulan Buh. The autonomous region's success in taming desertification has been credited for the decrease in sandstorms in northern China.

As part of China's Three-North Shelterbelt Forest Program across 13 provinces and autonomous regions to combat desertification, the models developed in Inner Mongolia are being implemented across the country and beyond.

"The techniques have already been replicated in places such as the Xizang and Xinjiang Uygur autonomous regions and Gansu and Qinghai provinces," said Cui Guipeng, an associate researcher at the Chinese Academy of Forestry. "They are now being promoted in countries joining the Belt and Road Initiative, such as Saudi Arabia and Mongolia, continuing to contribute Chinese solutions to the global fight against desertification."

Contact the writers at [lijing2009@chinadaily.com.cn](mailto:lijing2009@chinadaily.com.cn)

## Success for local plant species in restoring biodiversity

By LI JING and YUAN HUI  
in Hohhot

More than a decade ago, the Chilechuan Grassland on the outskirts of Hohhot, capital of North China's Inner Mongolia autonomous region, was a scene of ecological decline. Overgrazing and quarrying had stripped away nearly 30,000 *mu* (2,000 hectares) of pasture. Approximately 80 percent lay abandoned, the thin topsoil carried off by the wind, leaving only a few drought-tolerant plants clinging on between stones.

This early autumn, the same land presented a very different picture. On Sunday, it hosted the 2025 Chilechuan Grassland Half Marathon, with hundreds of runners traversing a landscape now covered by more than 70 plant species, echoing a verse from the Northern Dynasty (386-581): "The wind bends the grass low, revealing sheep and cows."

"Even visiting experts joked it would be easier to roll in sod from somewhere else than to restore this land," recalled Wang Junfang, head of the research results transformation department at M-Grass Ecology and Environment Group, a company tasked with Chilechuan's ecological restoration.

The turnaround began under Hohhot's integrated program for the southern slopes of the Daqing Mountain in 2012, a part of China's Three-North Shelterbelt Forest Program. The approach adopted was "close-to-nature" restoration, working with natural processes rather than imposing heavy artificial landscaping.

Local conditions tested that philosophy. The average 30-centimeter shallow topsoil could not retain water, sudden rains swept away seeds, and the ground was so hard that it damaged machinery. M-Grass' team began with a 1,000-*mu* pilot plot. The first sowing was washed away by summer floods, yet 20 days later, green shoots emerged from cracks in the rock.

"This is the strength of native plants," explained Hong Guangyu, a researcher at the Inner Mongolia Academy of Forestry Sciences. "Ecological restoration is essentially a process of matching. Researchers verify the original vegetation from historical records, then select native grass species from similar environments that can adapt to degraded soils, and use restoration engineering to help them take root again."

The M-Grass team ultimately chose local species such as sheepgrass, wild rye and lilyturf, advancing the restoration in three phases.

By 2014, the first 10,000 *mu* had over 80 percent vegetation cover. In 2016, the project expanded to 30,000 *mu*, with hay yields up twelfefold and the return of wildlife like foxes and hares. Chilechuan has since been sustained solely by natural rainfall. Four years later, it became a national grassland park and in 2021 it welcomed 5.58 million visitors, generating 2.05 billion yuan (\$285.43 million) in income.

Chilechuan's revival reflects a wider shift in China's approach to grassland management and renewal. Since the early 2000s, authorities at national and local

levels have tightened grazing controls and launched large-scale ecological projects to reverse decades of degradation caused by overgrazing and climate pressures.

"This stage was like pushing a boulder uphill," said Xing Qi, M-Grass's research and development director, who has worked in grassland science for decades.

She noted that early projects often relied on a single grass species, with limited ecological benefit. "Today, we aim to mimic native plant communities, and even fertilizers are developed to support microbial health and soil dynamics."

Central to M-Grass's work is research into local flora. Over time, the company has developed a germplasm bank holding hundreds of thousands of seed and soil samples from across northern China. This emphasis on indigenous species addresses a common challenge in China's ecological projects, which is the over-reliance on imported plants that require high water use and costly maintenance.

“Today, we aim to mimic native plant communities, and even fertilizers are developed to support microbial health and soil dynamics.”

**Xing Qi**, M-Grass R&D director

According to M-Grass, between 2022 and 2024, it invested around 10 percent of its annual revenue, about 200 million yuan each year, in research and development, successfully domesticating nearly 300 native species. Some, once dismissed as weeds, now are recommended plant species for ecological restoration in northern cities. Twenty-five plant varieties have been included in the National Forestry and Grassland Administration's recommended seeds for projects within the Three-North Shelterbelt Forest Program.

In recent years, the company has developed an ecological big data platform that integrates local information on climate, soil, hydrology and grassland degradation. The system enables the selection of targeted restoration technologies and optimal combinations of grass seeds, facilitating more precise and effective ecological rehabilitation.

The company's model has been applied in diverse environments, including grasslands, deserts, saline-alkali soils and abandoned mining areas, and restoring almost 33 million *mu* nationwide.

In March, M-Grass also launched an international division, further extending its expertise overseas to countries such as Mongolia and Saudi Arabia. The principle, Wang said, is not to export Chinese seeds, but to adapt local plant species to restore biodiversity.

"We explore first, and if it works, the experience can help restoration efforts worldwide," Wang added.



A researcher inspects alfalfa at the breeding acceleration room of a company studying the ecological environment in Hohhot in December 2024. BEI HE / XINHUA