

DESERT GREENHOUSES FROM CHINA

CONVERTING DESERT LAND INTO AGRICULTURAL SPACES

March 2025

The Desert Greenhouses, solar-powered smart greenhouses that transform desert land into arable farms, built by the Xinjiang Shawan Oasis Sustainable Development Institute in China, [were recognized in 2024 as finalist by the Zayed Sustainability Prize](#) for their technology addressing the challenges of land degradation and food insecurity by converting arid landscapes into productive agricultural spaces.

[The Zayed Sustainability Prize](#) is the UAE's pioneering global award that recognizes and rewards small and medium enterprises (SMEs), nonprofit organisations and global high schools with impactful, innovative, and inspiring sustainable solutions. A total of 33 finalists from 5,980 entries, received from 156 countries were chosen by the judging panel for 2025 across six categories: Health, Food, Energy, Water, Climate Action and Global High Schools. To date, in 17 years, the initiative has awarded 128 prizes, transforming the lives of more than 400 million people around the world.

[The Desert Greenhouses are also one of the Innovative Tech Solutions promoted in the database of the empowering people Network](#) an initiative of Siemens Stiftung, a non-profit foundation that promotes sustainable social development. In particular the Network aims to identify and foster innovative technologies and organizations that improve basic supply issues globally.

[The innovation is presented in the database](#) through a document that explains how Desert Greenhouse turns wasted sandy land into arable land suitable for growing different kinds of fruits and vegetables and the solution has been successful in providing food supplies to people living in desert areas. More than 30 kinds of fruits and vegetables can be grown in Desert Greenhouses, including: eggplant, tomato, pepper, cucumber, potato, leaf lettuce, watermelon, etc. In China, depending on individual productivity, a farmer can operate and manage about 3 to 10 standard Desert Greenhouses.

There is an increasing number of wasted desert lands in the world and the Xinjiang Shawan Oasis Sustainable Development Institute plans to scale up its Desert Greenhouse solution in the future in more developing desert countries with insufficient domestic food supplies through a cooperative project with various organizations in environmental and development fields. They are also developing new technologies to make the Desert Greenhouse solution suitable for all desert regions with no ground with no ground or underground water.



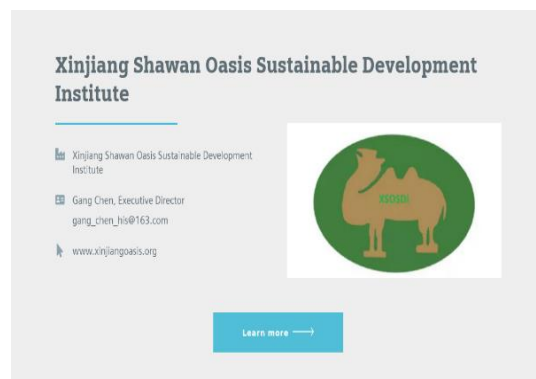
Based on the construction methods of the [solar passive greenhouses designed and adopted in China for cultivation of fruits and vegetables in winter season](#), the Xinjiang Shawan Oasis Sustainable Development Institute developed the methodology to use the resources of sandy land to cultivate organic fruits and vegetables. “According to scientific inspection and verification, many desert areas possess good natural conditions that can be developed and utilized to build Desert Greenhouses. Due to the scarce rainfall, straw, twigs and other organic materials are valuable resources in desert areas, representing an inexhaustible source for organic cultivation substrates. Few organic substances are needed for the growth of crops on sandy land. Grooves of a certain size and depth are dug, which can hold tree bark, sawdust, poultry manure, or oil cake mixed evenly with sandy soil. When fully fermented, this mixture creates a vegetative environment in which seedlings can be planted”.

The Desert Greenhouses are also promoted by the [Million Lives Collective](#), a global, multi-sectoral network of actors committed to promoting proven, impactful innovations and supporting their further scale-up to address global development challenges. The document presents the project realized by the Xinjiang Shawan Oasis Sustainable Development Institute in China. The Institute is an NGO dedicated to promoting the sustainable development of Xinjiang in the fields such as economic and social development and conservation of the valuable ecological systems and the fragile ecological environment under the threat of desertification in China.

The Desert Greenhouses project has increased agricultural yields, employment, and incomes and improved people’s lives and ecological environments. In terms of agricultural yields increase, over 2,100 units of built desert greenhouses can produce about 19,000 tons of vegetables and fruits in more than 30 varieties every year. The DGP has been successful in providing vegetable and fruit supplies in desert areas and can also help to create many direct agricultural jobs for planting, daily operation, and harvest of planted vegetables. The Institute employs 41 full-time employees and additionally, they helped create more than 1,200 jobs related to the operation and management of the Desert Greenhouses and to the sales and processing of the agricultural products cultivated. The desert green houses have improved the living conditions of the desert communities, helping to improve the nutritional situation through the local production and supply of fresh vegetables and fruits. In terms of ecological environments, the Desert Greenhouses help reduce and stop desertification and improve the environmental quality of desert communities. For example, it turned more than 1.4 million square meters of desert land into forest land and arable land and helped to greatly reduce sandstorms and stop the expansion of desertification.

Transforming desert land into fertile farmland through their solar powered greenhouses and smart technologies for organic farming, the Xinjiang Shawan Oasis Sustainable Development Institute is growing fresh food, creating jobs, combating desertification and building a sustainable future for communities around the world.

The winners of the [Zayed Sustainability Prize](#) were announced at the Zayed Sustainability Prize Awards Ceremony on 14 January 2025 as part of [Abu Dhabi Sustainability Week](#). [The Zayed Sustainability Prize has opened the call for applications for its 2025 edition](#) and invites all interested parties to participate.



To know more

[2024 Finalists Zayed Sustainability Prize](#)

[Premio Zayed a la Sostenibilidad](#)

[Zayed Sustainability Prize 2024 in iigrownews.com](#)

[ZayedSustainabilityPrize/meet-xinjiang-shawan-oasis-sustainable-development-institute video in Facebook](#)

[Article in chinadaily.com.cn](#)

[Zayed Sustainability Prize Submission Portal 2025](#)

[Zayed Sustainability Prize in Masdar.ae](#)

[Xinjiangoasis .org website](#)

[Desert Greenhouses in Empowering People Network website](#)

[Desert Greenhouses in Million Lives Collective website](#)

[Winners of the 2024 Zayed Sustainability Prize in businesswire.com](#)

[Chinese style greenhouses in insongreen.com](#)

[Reinventing the greenhouses in lowtechmagazine.com](#)

[Solar passive greenhouses IDEASS article](#)

