

Fair of the "4 per 1000" international Initiative – Turning the Ulan Buh Desert into a high yield zero pollution eco-agricultural zone

HomelandGreen

EU GREEN WEEK 2021 PARTNER EVENT

ZERO #EUGreenWeek
POLLUTION
for healthier people and planet



Greening the Ulan Buh Desert

The process of turning the Ulan Buh into a zero pollution eco-agricultural green zone

A first-hand story reported by HomelandGreen – a Hong Kong based charitable organization whose members took part in voluntary tree planting in the area for 9 years

Who are we and how we got involved?

HomelandGreen is a Hong Kong based charitable organization established by a small group of volunteers on 17 June 2013, World Day to Combat Desertification, with the motto 'Be just to the earth; for the sake of all beings.' To this date, we only have less than ten active members, mostly full-time career workers and a few retirees. We receive no public fund and run all programs from our own reserves. HLG will be used throughout this presentation to mean HomelandGreen.

22/07/2014

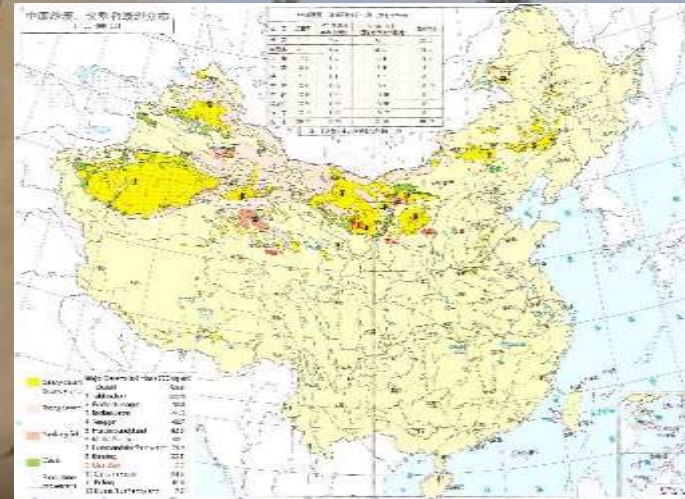
HomelandGreen began our involvement in voluntary tree planting projects to combat desertification in 2012 in Inner Mongolia after learning of the incredible story of the land restoration work of NPO-GreenLife in Hure Banner. The once totally degraded land was consequently turned back into arable land and local peasants managed to make a better living by adopting sustainable zero-waste agroforestry practices. Subsequently, HomelandGreen became a collaborative partner of NPO-GreenLife.

Before the formal establishment of HLG and the subsequent involvement in tree planting projects, our founding member dug deep into the problem of desertification in China

Her footsteps spanned across Xinjiang, Ningxia, Tibet, Qinghai, Gansu, Inner Mongolia, Shaanxi provinces where most of the arid and semi-arid areas of China are. Such area occupies about 27.23% of the total national area.

She visited officials of the China Desert Control Bureau, the Forestry and Agricultural Bureau, the Three North ShelterBelt Program, the Museum of Desert Control in Ningxia and the earliest six sand control laboratories in Dengkou, Minqin, Yulin, Lingwu, Golmud and Toksun (marked red in the map), all built before 1958.

What she saw and learned led her to the establishment of HLG with like-minded friends to support civilian tree planting activities at the plantation sites of NPO-GreenLife in different parts of Inner Mongolia.



What HLG also learns...

- Through the various **tree planting experience** and **study trips**, HLG also learned of the **world-wide land degradation problem** not only in extremely arid areas but **also as a result of exploitative agricultural practices** all over the world in the past several decades and that working from the soil up can be an **alternative way of farming** that may help **remediate** a lot of the **damages** done to agricultural land and as a way of **mitigating climate change**.
- **HLG** responded by taking up the role of **promoting regenerative farming** in **Hong Kong** beginning 2014. The **strategies HLG** adopted for this mission and the **progress** made through these seven years will be reported as another story under the theme '**Promoting Regenerative Farming and Green Consumption in Hong Kong**'.

31 07 2013

What do we do in Ulan Buh? And why Ulan Buh?

HLG organized volunteers from Hong Kong to help plant Haloxylon in Ulan Buh coordinated by NPO-GreenLife. Ulan Buh is one of the 4 plantation sites of NPO-GreenLife.



Why planting *Haloxylon*?

Was it always such happy and light-hearted experience?

- This is the story we want to tell.
- What we intend to share in this presentation are records of the changes we saw through our eight years of involvement in these voluntary planting projects.
- We witness how the Ulan Buh desert was transformed from a stormy dusted inhabitable land of migrating sand into a **zero-pollution eco-agricultural green zone practicing circular economy** through the concerted efforts of cross-disciplined officials from central to local government, small businesses and entrepreneurs, NGOs and voluntary agencies, and of course, the local people, resulting not only in ecological recovery but improvement in the livelihood of the inhabitants.
- All materials used in this presentation are authentically our own collection and production.

Nothing happens overnight. First, a few words about Ulan Buh

- Ulan Buh is the eighth largest deserts of China. The total area is about 10,000 sq km, about 4 times of that of Luxembourg (2,586 sq km)
- Located in the west bank of the Yellow River, it is under the administration of Dengkou, a county of the Bayannur City in Inner Mongolia Autonomous Region.
- Dengkou County housed one of the six earliest desert control laboratories during the infant stage of the PRC.
- It was notorious for being the source of sandstorms that frequently scour northern China, or periodically even southeastern Asia till the first decade of the 21st century.



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Prepare using Google Maps

Is Ulan Buh a natural desert?

- Five centuries ago, before the Ming Dynasty, it was once a rich prosperous agricultural land.
- But population boom, warfare, land exploitation and overgrazing eventually turned the once productive area into the endless sand dunes by the 1950-60s.



Weather hazards were a common place during early days of HLG tree planting trips in the vicinity of Dengkou

Sandstorms would strike any time during tree planting activities. Volunteers had to take shelter to stay safe.



From our studies, we learned that attempts to control the sands in the deserts began back in the 1950s.

- Those were the days when scientific research in desert restoration was not well-established.
- The major tasks then was to find the cheapest and most effective means to stabilize the migrating sand to keep the deserts from expanding.
- This picture taken during one of the HLG study trips shows workers laying straw checkerboards along the Taklamakan Desert Road, a strategy still widely used in all desert control projects over China, including Ulan Buh, even to date.



The straw checkerboards method used in Ulan Buh

- Physically, the straw checkerboards work by slowing down the wind and reducing sand mobility. Biologically, after a few years, when the straws dry up, decay and decompose, the aggregated residues become sand barriers. Though no irrigation is needed for this first step, this is a very labour-intensive undertaking.
- Average annual precipitation in Ulan Buh is only 100mm. Evaporation rate is 17 times more. This makes the environment too dry for any vegetation.
- Miles and miles of straw grid along the highway (built only in 2014) is a common sight after 50 years of laborious efforts.



In those early days, scientists also experimented with the various indigenous plants still in existence and tried to identify the most tenacious ones that could consolidate the effect of the straw checkerboards and stand the challenge of time.

- Officer-in-charge of the Dengkou County Agri-promotional Office explained to HLG visitors what suitable plants had been identified in Ulan Buh in the 1960s, including *Hedysarum scoparium*, *Haloxylon*, *Calligonum*, *Artemisia ordosica*, etc.
- The chosen plant will then be planted inside the grids as a second step to consolidate the effect of the straw checkerboards.
- Saplings had to be replanted at least three times in the early days because of the frequent sandstorms and strong wind. This means years of effort and millions of investment were gone with the wind every now and then. When moving sand becomes more settled, the survival rate may go up to 60-80 per cent.



And here is why we plant *Haloxylon*, the miracle tree in Ulan Buh

- *Haloxylon*, indigenous in this part of Inner Mongolia, is known for its ability to survive drought. It has amazing vitality, a high survival rate and low planting cost.
- Irrigation using dripline is only needed for the first three years in general.
- The video here shows the plant from saplings to maturity and its effect in stabilizing the sand.
- In other desert control projects of China, different plants will be chosen.



Improved land condition then makes way for higher order plants of more varieties

- HLG members saw the results of such experimentation when visits were paid in 2013 to these 50 years old Early Afforestation Sites near Dengkou.
- The isolated small oasis remain today as monuments to the efforts made by the scientists and people who dedicated their lives to find viable solutions and save the county.
- Biodiversity has been emphasized from the first day.



Was Ulan Buh tamed and Dengkou County saved?

– a story in video

- These early efforts were experiments only. In no way they could slow down Ulan Buh from expanding. By the 1970s, Dengkou County was 85% desertified.
- More efforts needed and things must move fast to save the county from totally disappearing.
- By the end of the last century, a windbreak and sand-fixing forest belt with a length of 154km and a width of 100-300m had been built on the eastern edge of the Ulan Buh Desert, all done manually. Work could only be done in the vicinity of the county as no road was yet built into the desert.
- This remote area has yet to benefit from the open-door policy of the country.

A glimpse of the shelterbelt outside

Dengkou County
in 2012



HLG volunteers got trapped en route to the plantation site during early tree planting trips was no uncommon incidents

- a story in video



即使如此。綠州內外的道路使用者。
還必需對隨時遇到的障礙習以為常

What about the people there? – a story in video

- In 2012, a HLG member took the same route in a trip a few months prior in search of a peasant family on an October day.
- The wind was strong.
- Sand blasted against the body, making it difficult to walk.
- The peasant family shed was found to be deserted; claimed by the moving sand.



現在祇是十月天，風速便已達六級

What has happened to the desert control efforts? Why was it not working?

- At the turn of the century, as the original tree belt aged, a 40-km-long gap gradually opened. Dengkou County was again threatened with fierce winds and frequent sandstorms.
- The already poverty-stricken inhabitants lost their homes as houses were buried by encroaching sand. Also gone were their livelihood as they long failed to grow anything from their farmland.
- Ecological immigrants became a common sight. Resettlement villages with bare necessities were built in the outskirts of the county to accommodate these peasants.

A typical early resettlement village HLG member visited in 2014



The future outlook : gloomy or bright?

- HLG members felt as gloomy as the local people there.
- We made more visits to the area in 2014, trying to find out more from local officials and people the chances of turning around. Little did we know that a grand plan to **recovery** and **regeneration** was already under preparation and was being implemented by phases.
- We learned that new measures were employed fast, and scientific organizations were called in to resolve some knotty problems, resulting in infrastructure quickly built and new technologies rolled out at a speed beyond our imagination. It takes time for things to take shape. What was being done took place far from our plantation site, right in the heart of the desert.
- What could be more magical than the concept of zero pollution green zone of circular economy that may work miracles!
- We set out to learn more.

Dimension 1 : Infrastructure building

In 2014, we interviewed a Dengkou official about the infrastructure building plan and process – video



Actually, we witnessed the construction of the first Ulan Buh desert road between 2013-14 - video



Dimension 2 : The policy towards zero pollution – with the completion of the desert road, productive land use began to appear

Family farms are the first to benefit from the construction of the desert road - video



Enterprises from outside of Dengkou are also attracted by the special climate condition and policy that favours the growing of organic Chinese yam, a crop and medicinal food commonly used by Chinese



Chinese Yam farmer: Chinese yam grown here in Ulan Buh has especially high nutritional values

Plantations began to take on new looks as more varieties of crops are tried out by pioneering entrepreneurs

An entrepreneur from Wuhai, a nearby city, talked about his vision, difficulties, hopes and the support of local authorities and the academia - video



Coordinator of the Dengkou farmers co-opt talked about his changing vision and hopes because of the infrastructure being built - video



Also changing is the nature of husbandry - video



New industries are also rising ...



After a healthy and delicious meal

23 07 2014

23 07 2014



Network of roads built in Ulan Buh made it possible for a zero pollution eco-dairy farm to build 23 semi-free-range animal husbandries with own pastures among other agri-agonomical eco-farms in where once the heart of Ulan Buh.



Haloxylon took on a new role ...

- When more cross-disciplinary experts were called in, researchers in agricultural agronomy began to explore the possibility of making use of an untapped potential of *Haloxylon*.
- *Cistanche deserticola*, aka “desert ginseng,” is a Traditional Chinese Medical herbal ingredient with high economic value. By nature, *Cistanche deserticola* has a symbiotic relationship with *Haloxylon* long-known to the local people. Scientific research organizations found that the production of *Cistanche deserticola* can be greatly enhanced by grafting it to the root of *Haloxylon*.
- The potential economic benefit began to attract more entrepreneurs from nearby cities as the start-off cost looks affordable. By providing free seeds to farmers for and training them in their planting base, they can do good business with the farmers who own the land. It also provides jobs for the farmers who almost had no means to make a living.
- The agricultural bureau of the county also stepped in to engage in the relevant research and give assistance to the needed training.



HLG members shared the joy of harvest

10-plus enterprises got engaged in this industry and helped improvement of the economy of the Dengkou County within 20 years

- NPO-GreenLife's partner in Dengkou is one of those enterprises.
- The video is a glimpse of the place these pioneers work, live, the plants they grow and their harvest.
- Temperature during working days in the desert is at least 42°C.
- 10 hour is the minimum working time each day.



The landscape of Ulan Buh began to take on different colours



Dimension 3 : A visionary master plan to sustain the momentum of recovery

- At our last 2014 visit to Dengkou, we passed by a site with a lot of big posters with complicated illustrative diagrams under different unfamiliar industry names. Our enquiry was met with an answer of which we did not have a clue.
- It seems that the government is in the process of enacting policies to attract more courageous, responsible system-thinking entrepreneurs with new holistic mindsets.
- They are expected to do business to assist in the evolutions of sub-systems that will create positive influences on ecology, community and culture-building in the area.
- This has to be done in coherence with the National Sustainable Development Goals to nudge capital markets towards a longer-term perspective that may continuously enhance the health of the planet.

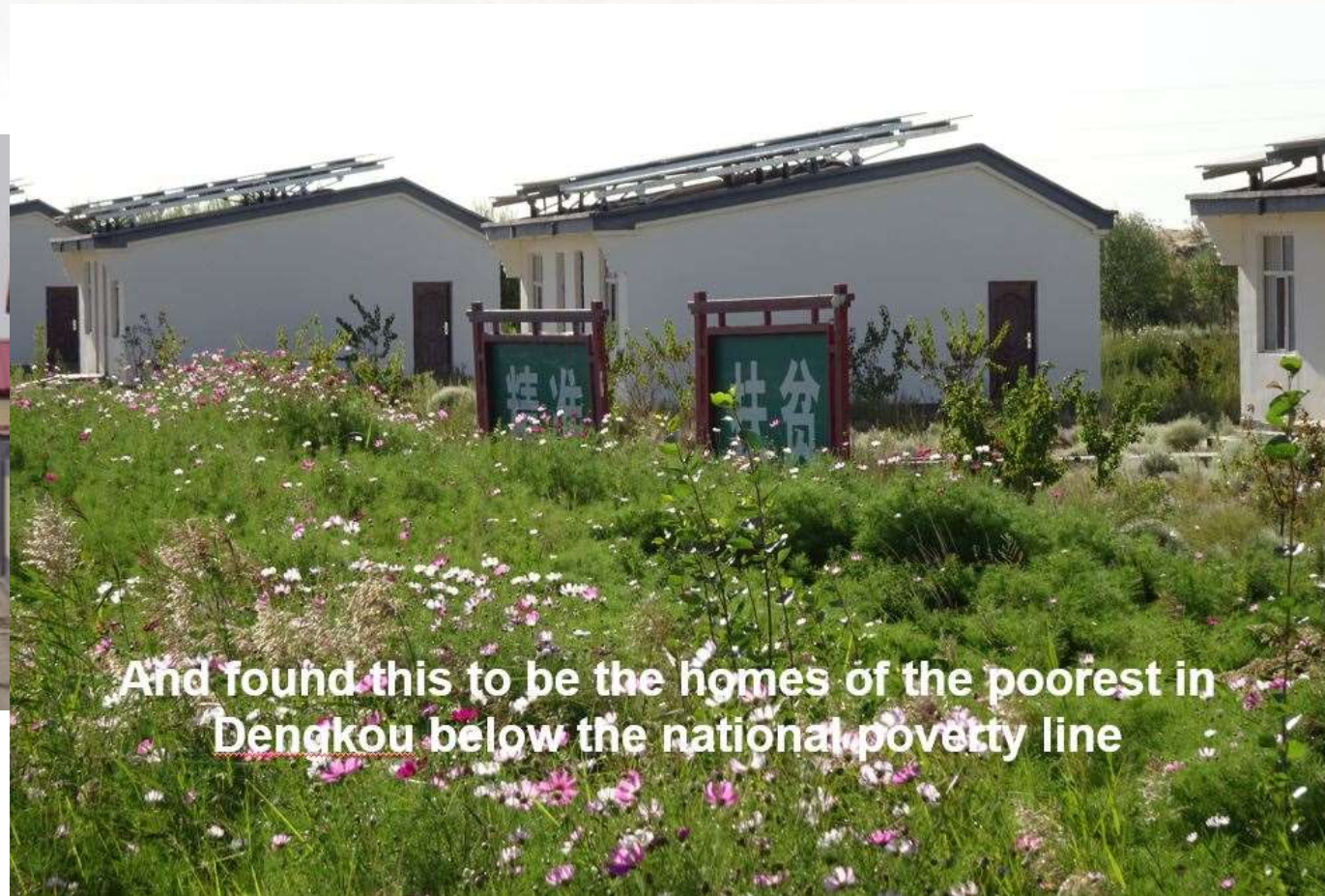


The result . . . a story in video

- For some reasons, HLG made our tree planting trips to Duolun, another plantation site of our partner, between 2015-2018, and came back to Dengkou in April and August 2019.
- This was what we saw right after riding on the Ulan Buh Desert road for 10 min where those big posters were 4 years ago.
- We began to understand what circular economy is.
- The Ulan Buh desert has been turned into a high yield zero pollution eco-agricultural zone.



We planned to visit the re-settlement villages where the displaced peasants were housed.



With improved economy and under the National Poverty Alleviation Program, the re-settlement village takes on a completely new look - video



Zero Pollution : Bringing in and Reaching Out – Green tourism and government support e-commerce coupled with commercial e-platforms



Green tourism

Government support e-commerce
coupled with commercial e-platforms



Viewing from a lookout of the INNER MONGOLIA SHENG MU HIGH-TECH FARMING LTD, a zero pollution eco-dairy farm, in 2019



Our message

- Ulan Buh is the eighth biggest desert in China and one of the major sources of sandstorms affecting Northeastern Asia or even the South-east until very recently.
- The restoration of Ulan Buh began some 43 years ago as part of the Three-North ShelterBelt Program and HomelandGreen began to get involved with voluntary afforestation some eight years ago and has the privilege to witness and record the fastest progress of land restoration ever imagined within six years.
- Beginning with the enactment of Ecological Civilization Construction as national policy in 2012, HomelandGreen witnesses how this once remote and poverty-stricken sand land is transformed into a zero-pollution eco-agricultural green zone practicing circular economy.
- This could never be achieved without the concerted efforts of cross-disciplined government officials, small businesses and adventurous entrepreneurs, NGOs and voluntary agencies, and of course, the local people.
- The result is not only an ecological recovery but the improvement in livelihood of the habitants. By sharing this story, HomelandGreen wants to bring a positive message to the international community that with sufficient political willpower and knowledge, large scale ecological recovery that benefits both people and the planet is feasible.

• Thank you!

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