THE GREAT GREEN WALL OF CHINA

STOPPING THE YELLOW DRAGON

The Chinese call the Gobi Desert in the north the 'Yellow Dragon'. It spits sandstorms as far south as the capital Beijing, and this dragon likes to stay on the move. Never one to shirk a challenge, China decided to begin a 70-year campaign to thwart the dragon — wielding a sword called 'Trees'.

It is estimated that the Gobi desert grows by over 3000 square kilometres each year, pushing millions of 'ecological migrants' out of their homes, degrading landscapes and threatening food security. Inviting the desert south has been the stubborn legacy of deforestation for logs, overgrazing, and Mao – in 1958, he ordered whole forests to be culled to fuel his hungry factories. Another anthropogenic pressure has more recently emerged. Climate change exacerbates the 2.5 million square kilometres of China already covered in sand, where temperatures in some parts of the north have leapt 1.5°C in just the last 50 years, dramatically dropping annual precipitation levels.

Since 1978, the 'Great Green Wall' (GGW), also known as the Three-Norths Shelter Forest Program, has been deployed by China to fight the flight of the Yellow Dragon and help the fortunes of its northern provinces. Acting as a buffer between the Gobi and the rest of the mainland, the GGW is in the middle of swelling to more than 100 billion trees along a 4500-kilometre belt by 2050. It will eventually stretch over one tenth of the country.

While assessments of the GGW have been mixed, over 66 billion trees had been planted by 2014, and scientists think the GGW has successfully repelled and, in some cases, fought back the encroaching desert. According to China's State Forestry Administration, deserts shrunk from 1999 to 2014 (after expanding from 1994 to 1999). In recent years, the GGW has helped reduce sandstorms by 20% and desertification by nearly 8,000 kilometres. Independent research corroborates these findings, showing that compared with other areas, vegetation coverage has improved and dust storms have decreased substantially in GGW regions. The GGW has reduced local temperatures, increased soil carbon and created new forest-related incomes in many rural communities.

But, quantity has sometimes been sacrificed for quality. For example, in Minqin in Gansu province, survival rates of planted trees have been low; in other regions, single-species forests, or 'green deserts', have failed to provide the functional resilience needed for long-term success. With good reason, earth scientists are sceptical and increasingly vocal of large-scale monoculture plantations acting as panaceas, for they involve huge ecosystem service trade-offs, such as between carbon sequestration and biodiversity. It has been repeatedly found that diverse, intact natural ecosystems are better across the board than fast-growing tree plantations.

Yet even the critics agree that, despite some failings, China has witnessed a "a substantial increase in forest cover and associated carbon stocks." It is even hoped that the GGW will eventually stem the continued establishment of hundreds of new settlements, like Miaomiao Lake, which house the millions of ecological migrants that have been

displaced, in part, by climate change-related extreme weather.

As an old Chinese saying goes, 'one generation plants a tree and the next benefits from the shade'. The Chinese might be losing the odd biodiversity battle, but their 70-year campaign to slay, or rather stop, the Yellow Dragon is firmly on track.

NATURE'S CLIMATE STATISTICS

For potential ecological migrants on the southernmost rim of the Gobi desert, the GGW is an adaptation strategy, and an enormously welcome one at that. In 2015 analysis showed average temperatures in one province, Ningxia, had increased by 1.4 to 2°C over the last 50 years, with droughts and other extreme weather events becoming more frequent. Climate change makes life harder and more fragile, but trees on the other hand make life easier.

Although the GGW was first proposed as an adaptive strategy to climate change, it is also providing massive mitigation benefits. Independent analyses (and government data) paint a prolific picture. From 1979-2011, China increased its forest area by 66.5 million hectares – in other words, 2.1 million hectares per year following the start of the GGW programme. Since 1994, ARR in China has led to the removal of more than 400 million tonnes of CO_2 per year; and during the period 1994 to 2012, it removed over 8.5 billion tonnes from the atmosphere.

While some researchers think that sink may now be weakening as Chinese forests reach maturity, the GGW and other afforestation programmes are due to keep carbon sequestration ticking over for many years to come. In 2018 alone, China set out to plant 6.6 million hectares' worth of trees – about the same size as Ireland. No one – not even the dragon – can get in the way of a determined China.

KEY FIGURES

BETWEEN 1978 & 2014,

China planted

66 BILLION TREES

along the southern border the Gobi Desert;

China planted or seeded between

176-188 MILLION HECTARES OF FOREST

through multiple programs, resulting in an increase of forest area of about 66.5 Mha (over 50%).

CHINA'S FOREST COVER GAINS

between 2000 and 2010 were larger than the combined area of Germany, The Netherlands, Belgium and Luxembourg.

Net forest sequestrations of

8.54 $GtCO_2$

from 1994-2012.

IN 2015 ABOUT 500 (380-620) MILLION PEOPLE

lived within areas which experienced desertification between the 1980s and 2000s.

BY 2050,

GGW could increase the world's forest cover by

MORE THAN 10%

ABOUT 30% OF CHINA

is desertified land, adversely affecting about 400 million people; desert regions have grown by more than one million km², an area the size of France and Germany combined.

PROJECT BACKGROUND

The Gobi desert's advance toward major agricultural areas was seen as a major threat to food security during the 1970s. In 1978, the Chines government launched the GGW, largest forestation project ever envisioned.

EXECUTING ENTITY

The Chinese government.

FUNDING

The Chinese government.

SDGs

LOCATION

VIDEOS & STORIES

https://youtu.be/B6i_m_NCVQE

https://youtu.be/pSn6S-H7m-8

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CONTACT

forestfluxes@clua.net