



Hope in a Changing Climate

China's Loess Plateau

John D Liu

This is China's Loess Plateau...

Until recently this was one of the poorest regions in the country...

...a land renowned for floods, mudslides and famine.

But with the fanfare comes the hope of change for the better.

My name is John D Liu, I've been documenting the changes on the Plateau for fifteen years.

I first came here in 1995 to film an ambitious project where local people were constructing a new landscape on a vast scale. With the aim of transforming a barren land into a green and fertile one.

The project certainly changed my life. Convincing me to become a soil scientist.

The lessons I've learned in the last few years have made me realise that many of the human tragedies that we regularly witness around the world - the floods, mudslides, droughts, and the famines are not inevitable.

Here on the Loess Plateau, I've witnessed that people can lift themselves out of poverty.

They can radically improve their environment... and by doing so reduce the threat of climate change.

John D Liu

When I first came to the Loess Plateau I was astounded by the degree of poverty and degradation and I wondered how could the Chinese people, the largest ethnic group on the planet, and my fathers and my own ancestors come from a place that was this barren.

China's Loess Plateau is a region that stretches for 640,000 square kilometres across north central China.

Unspoilt valleys in neighbouring Sichuan show us how it might once have looked. It's the sort of natural abundance that is necessary to support an emerging civilisation.

How could a landscape with such potential have been reduced to this?

When Chinese scientists and civil engineers began to survey the area they realised that several thousand years of agricultural exploitation had denuded the hills and valleys of vegetation.

The relentless grazing of domestic animals on the slopes meant that there was no chance for young trees and shrubs to grow.

The rainfall no longer seeped into the earth but simply washed down the hillsides, taking the soil with it.

Over millennia, this progressively destroyed the region's fertility.

When this happens over an area as extensive as the Plateaux, millions of tons of silt are swept down into the Yellow River, which gets its name from the colour of the fineless soil.

The mounting quantities of silt clog up the river impeding its flow contributing to the floods that give the river another name. China's Sorrow.

In some areas creating floating mud mattresses that attract passing tourists. A local problem becomes a national problem. In the dry season the light unprotected soil is swept up in the winds causing the dust storms that are blown over China's cities and beyond its borders.

On the plateaux the researchers realised that progressive degradation of the environment trapped the local population into a life of subsistence farming.

It's a process that has occurred throughout the world where poor agricultural communities find themselves overusing their land in order to survive. Depleting its fertility and further impoverishing themselves.

(JL) One thing that became apparent early on is the connection between damaged environments and human poverty. In many parts of the world there's been a vicious cycle. Continuous use of the land has led to subsistence agriculture and generation by generation this has further degraded the soils. The vital question we have to ask is - can this be destructive process be reversed?

Fifteen years ago, Chinese and international experts were confident it could be.

They decided that to prevent further erosion it was necessary to cease farming on certain key areas to allow the trees and shrubs to grow back.

But this could not happen without the consent of the farmers themselves.

They took some persuading? (05:45)

Mr Ta Fuyan
Chief Engineer, Water Protection Bureau

Of course a lot of people didn't understand the project, they weren't thinking in the long term.

Villager (subtitles)

They want us to plant trees everywhere. Even in the good land. What about the next generation? They can't eat trees'

John D Liu

What eventually convinced the local people was the assurance that they would have tenure of their land.

That they would be directly benefit from the physical effort they invested in the new project.

Villager (subtitles)

The goal was to give a hat to the hilltops, give a belt to the hills as well as shoes at the base. The hat meant that the top of these hills had to be replanted with trees. The belt meant that terraces had to be built, to be used for crop planting and also for trees. The shoes were the dams which we had to build. So that the hills could grow back to life and our economy as well as our lives could improve.

John D Liu

Hills and gullies were designated as ecological zones to be protected. Farmers were given financial compensation for not farming on them and keeping their livestock penned up.

When I first filmed Mr Ta Fuyuan and his colleagues back in 1995 I had no idea this initiative could achieve such dramatic results.

The effort that people put into converting their slopes into terraces has resulted in a marked increase in agricultural productivity.

The higher yields are directly related to the return of natural vegetation in the surrounding ecological land.

Now when it rains, the water no longer runs straight off the slopes.

Trapped by the vegetation, it sinks into the ground, where it is retained in the soil, taking weeks and months to gently seep down and irrigate the fields and terraces, below.

Restoration has occurred over an area of 35,000 square kilometres.

The impact of such an enormous addition of vegetation goes far beyond the plateau itself.

There's been a significant reduction in the soil rushing down into the Yellow river.

John D Liu

As I've been travelling around the Loess Plateau I've seen extensive changes. The vegetation cover on the hillsides, on the tops of the hills, and down in the valley. Everything has changed.

Its changed the lives of the people and in fact the people themselves have done this because they were the ones who, who changed their behaviours, terraced the fields, improved the soils, learned to protect the marginal areas.

John D Liu

The changes are not simply on the hillsides. On the plains you can see greenhouses that are filled with vegetables this extends the growing season. Its very high value produce.

The abundance of variety of new produce can be seen in the local markets. Follow up studies have shown incomes have risen threefold.

And scientists point to a more global benefit.

Plants through photosynthesis,
Remove carbon from the air countering the effect of emissions on the Climate.

**Prof. Cai Mantang
Beijing University**

In terms of Climate change, we can say that the project made a double contribution. Firstly the project was successful in restoring vegetation on a large scale.

So many trees and so much vegetation grew up, and this definitely helped take carbon out of the atmosphere.

Secondly, because the health of the Loess Plateau's eco-system has been so much improved, the region will be better able to resist the negative impacts of climate change.

John D Liu

As a result of its success the lessons learnt, from the Loess Plateau rehabilitation, are now being applied all over China.

But, could such projects work elsewhere in less centrally controlled societies? With fewer resources and different soils.