

## John D Liu on land restoration on the Loess Plateau, China

I began this journey high in the Himalayas. This is the birthplace of the Han Chinese race, the most populous race on earth. It's an area approximately the size of France. It's known as the Loess Plateau because of its soil geomorphology, which is a windborne sedimentary soil which was created by the movement of glaciers high in the Himalayas and was deposited on the plateau below over geological time. It is a minerally rich soil but it requires organic matter to be fertile. These are the largest deposits in the world, but because of where it is, if you dig around in there, you may find some extremely interesting things.

This is where all the major dynasties began. This is to the southwest in Xixuan. It's a fully functional forested ecosystem. It has biodiversity and excellent hydrological function.

This is to the northeast in the Mongolian Steppe. It is a fully functional grassland ecosystem with large migration of ungulates. It's the largest remaining contiguous grasslands.

There's a lot of evidence that the Chinese race emerged in a mixed forest/grassland ecosystem. There's evidence of humans and their ancestors there for a million and a half years according to the Chinese. It's the second place on Earth where human beings began to cultivate the earth.

In 1995 when I was assigned to begin this documentation I found a fully degraded ecosystem. There was virtually no vegetation: you could stand on a mountaintop and look in 360 degrees and it was completely denuded. It was extraordinary to me to imagine that the largest ethnic group on the planet could have come from a place that was this massively degraded. I didn't understand how this happened but I was curious and I began to study.

I found that they cut the trees. When the trees were gone they tried slope farming. When the slope farming eroded the fertility they brought in goats and sheep and denuded everything and this caused a cycle of poverty and ecological destruction which was passed from generation to generation. If you move that scenario forward 10,000 years it's a ruin.

Over the last 30 years the Chinese have reinvented their society and they've drawn on some of the characteristics that they have gotten from enduring terrible problems with this. By 1,000 years ago this place was poor. The Chinese decided to analyse the area and they found they could also understand what had happened and they took the negative behaviours they had found and they banned all of them. So they banned tree-cutting, they banned slope farming, they banned the free-ranging of goats and sheep. And then they analysed that many of these areas that were being exploited weren't really suitable for agriculture. And they excluded them from economic use to create ecological land. So they differentiated and designated ecological and economic land. This is a step that has not taken place in many countries. They engaged the local population using participatory assessment mechanisms - not everybody was on board - but when they explained what was going on, the people were engaged. The people were also compensated. So essentially they were

carried for 10 years as they transitioned from subsistence agriculture. There was infiltration and retention of rainfall, terracing, planting, the differentiation and designation of ecological land and this was taking place over 35,000 sq kilometres. The active project area was the size of Belgium.

In 1995 when I went there, this is what it looked like. And the next picture will be in 2009. If you didn't have a baseline you'd say that was a fairly degraded system. But in comparison to a completely denuded, disfunctional ecosystem this is a tremendous improvement. Again this is 1995 and this is 2009.

What happened was, the yields in agriculture were increased by three or four times and this was after reducing the area - the ecological land may be 40/50% - but they could increase yields this way because they had soil moisture and fertility. And all of this is sequestering carbon and its reregulating the hydrological cycle, the weather and the climate. And in these areas I've had illiterate farmers tell me that they can survive drought because they have soil moisture and the soil moisture is due to the natural vegetation. So they have evolved their understanding and physically done this through the labour of illiterate farmers.