Hope in a Changing Climate
Rwanda's environmental restoration

John D Liu
Environmental degradation is not only a problem for the dry regions of Ethiopia. It can be just as devastating for countries like Rwanda where rainfall is plentiful.

This tiny country is grappling with the problem of a growing population, trying to eke out a living on a finite amount of land.

As in China and Ethiopia, over farming on the hill sides caused serious erosion and a decline in fertility, forcing poor farmers to move into protected areas such as the Rugesi wetlands– a wildlife site of international importance.

(JL) When farmers drain this marsh to try to grow more food they not only damaged an important wetland eco-system, they also had a significant impact, 3 hours drive away in Kigali the capital city.

The water that pours from the marshlands is a vital source of hydro-power for Rwanda's capital.

As the wetlands began to dry out, power stations below couldn't generate enough electricity.

The Rwandan government rented diesel power generators to make up the shortfall.

Dr Rose Mukankomeje, took me to see them.

Dr Rose Mukankomeje
So what is happening here is that those generators we are renting them from this company and we are then obliged to rent to them especially when we degraded the wetland and we lost 20 megawatts of electricity and to run those machines we're paying 65,000 years dollar a day.

John D Liu
Sixty five thousand dollars a day that's multi-millions of dollars.

Dr Rose Mukankomeje
Yes it is six million dollar and as you must, might know Rwanda is not a rich country. Some of that money has been borrowed from the bank, is from tax payers.

John D Liu
How does this affect the climate?

Dr Rose Mukankomeje
Of course those machines they're run on diesel and when you burn the diesel up you are producing green house gases.

John D Liu
Environmentally damaging -AND more expensive. Locals had to pay three times as much for their electricity.

So Government policy makers focused on how to restore the Rugesi wetlands.

If people were the problem they could also be the solution.

H. E. Paul Kagame
President of Rwanda
We had to take a careful look at what had actually been happening that damaged this system and therefore had to reverse that again with the human action and this is why it is important to look at how human actions can destroy or can reverse what has been destroyed or even protect our environment.

John D Liu
The government decided to help the farmers leave the wetlands and to restore the degraded slopes above them.

Improving their croplands and encouraging trees and shrubs to grow back, capturing the rain.

H. E. Paul Kagame
President of Rwanda
We have been supporting them by doing terraces, specifically there on the hills where they can increase and improve the productivity.

The most important thing is to have people with you on your side.

John D Liu
The Wetlands are now recovering. Great volumes of water once again cascade down to power the hydro stations.

Carbon free electricity is replacing the diesel generators… electricity prices have stabilised.

Restoring and preserving natural eco-systems like the Rugesi wetlands benefits everyone.

And so much more could be achieved.

H. E. Paul Kagame
President of Rwanda
If we had more involvement by different institutions coming in to help with available resources Rwanda could do more, much more and benefit much more but so would other countries, if such a partnerships and support were provided.

John D Liu
What the Rwandans recognised was the the marshlands are far more valuable as a natural system providing water for energy than as farmland. This principal is the same for the remaining hillsides and ravines.

John D Liu
What we're seeing here is very interesting because it's a line between human activity and natural systems and in human activity we have been able to value the productivity from agriculture and give it a monetary value. But in the natural systems we haven't been able to value the trees, the bio diversity the water that's absorbed to the bio mass and into the soils.

And theres another vital service that trees and plant provide. Photosynthesis.
Vegetation reduces the greenhouse effect by taking carbon dioxide out of the atmosphere.

Climate change is better withstood with trees. You know humans, no matter how intelligent we are, no matter how capable we are with all our technologies we are helpless in the face of climate change.
We have not yet properly understood the miracles performed by trees.

A measure of what restoring nature can do has been shown here on China's Loess Plateau, where farmers have continued to prosper despite the worst drought in decades.

Since the beginning of the project the soil that nurtures their crops has been accumulating organic material from plants and animals. This holds the moisture and contains carbon.

What's interesting about this is all these root materials, all this other stuff, this is organic material and this organic material is mixing together with the loess, the geologic soils here and it's making a living soil. This is where the moisture resides, yesterday it rained and there's still moisture in this soil. This is where the nutrients are recycled so that each generation of life emerges here and this is where the carbon is. What's interesting about this they made this field, this is new, so they're helping to sequester carbon.

Living soils like this retain on average three times more carbon, than the foliage above the ground.

If we were to restore the vast areas of the planet where we humans have degraded the soils just think what an impact we would have in taking carbon out of the atmosphere.
As much as a quarter of the worlds land mass has been degraded and much could be debilitated in the way we have seen on the Loess Plateau.
And weve only just begun to recognise the real value of natural capital.
Surely investing in the recovery damaged environments is a cost effecting way of solving the problems we face today.

ACHIM STEINER
Executive Director, United Nations Environmental Programme
Why did they not invest an equal amount if not more into a shovel read technology so to speak which is natures way of sequestering and restoring carbon.
It is actually by investing in our ecological infrastructure and eco systems and expanding the ability to sequester and restore carbon that we have the greatest opportunity to do something and the wonderful thing is its not just carbon sequestration we are also faced with loss of eco systems that will effect our food security, our water security. We are losing species on an unprecedented rate so maintaining, restoring protecting, expanding natural eco systems has multiple benefits.
Immediate in terms of climate change but also fundamental to the future of many of the services that we simply take for granted from nature.

My hope is that the developed countries, those most responsible for climate change will recognise the enormous potential of restoration.

John D Liu
What we've seen in China, in Africa and around the world is that it's possible to rehabilitate large scale damaged eco-systems. If we can transfer the capital, the technology and empower the local people to restore their own environment it'll have enormous benefits. Restoration can sequester carbon, reduce bio- diversity laws mitigate against flooding, drought and famine. It can ensure food security for people who are now chronically hungry. Why don't we do this on a global scale?