ECOLOGIST
SETTING THE ENVIRONMENTAL AGENDA SINCE 1970
www.theecologist.org
Number 16 | October 2010

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ONLINE NOW:

SOUR MILK...

This month has seen *The Ecologist* cover some highly current and emotive stories. With the planning application for the UK's biggest dairy at Nocton in Lincolnshire expected to be submitted imminently, the spectre of US-style 'mega-dairy' farms looms large, according to animal welfare campaigners. They are worried about the impact of housing 8000 cows in a single intensive facility; particularly what it will mean for the wellbeing of the animals involved. Local residents are concerned about the impacts of the farm on their lives and the immediate environment.

Those behind the development argue that large, modern dairy facilities such as that proposed at Nocton offer a sensible, environmentally friendly and economically viable way of doing business in the 21st Century; big doesn't necessarily mean bad. They also accuse activists, and the media, of making inaccurate claims and prejudging the proposal before the full facts are presented. The latter is not entirely true – the original planning application was withdrawn after concerns were raised about the proposal's environmental credentials. But they are right to insist that the debate is based on hard facts.

That's why *The Ecologist* travelled to the US to see for itself what impacts 'mega-dairies' have had in California. Whilst there are differences between the US model and the Nocton proposal the broad principals are the same. You can read for yourself what Jim Wickens found – and watch our exclusive film on the website – before drawing your own conclusions. As part of our special report into the subject – the first of many new and in-depth examinations of topical issues – we also uncovered how those behind Nocton have themselves expressed doubts about meeting their own standards and targets, and spoke to a wide range of farmers to assess their views on this bubbling controversy.

Staying in the UK, Dan Box reports on an innovative conservation model being piloted around the Stiperstones in Shropshire – one which has land managers, conservationists and policy makers watching closely, particularly as the coalition government faces crucial decisions about the future of the countryside.

This month we also have two reports from Africa. Thembi Mutch examines carbon trading in Tanzania, and Dawn Starin reports on the bush-meat trade in Guinea-Bissau. Her remarkable dispatch – which in some ways raises more questions than it answers – is accompanied by what are probably the most graphic images *The Ecologist* has ever carried. You can see a selection here and a full gallery is online. They don't make for pleasant viewing but do shine a rare light on a seldom reported issue from a largely forgotten part of the globe.

That's something we'll be doing a lot more of in the coming weeks and months. Building on the excellent work done by my predecessor Mark Anslow, I hope to continue the magazine's long tradition of breaking new ground and setting the agenda, both in the stories we cover and in how we cover them...

Andrew Wasley, Editor

Carbon trading is being touted as a key tool in the war against climate change but will the world's forests be safe under such schemes?

Growing conflicts over Tanzania's 'charismatic carbon'

The country's forests are at the centre of a new global scramble to 'buy up' carbon, but as **Thembi Mutch** reports, is the process really going to benefit the environment or people?

Last month I rang my ethical isa broker. 'I want to invest in forests in Africa,' I said. We talked for an hour. I put the phone down knowing that there was little or nothing ethical about my ISA, and I certainly couldn't dictate that they invest in the biodiverse tropical forest that I overlook as I write here in Arusha, Tanzania.

The conversation was emblematic of the situation faced by an Africa trying to adjust to a brave new world in which the west once again has eyes for the continent's resources – this time it's carbon.

At present, there are (politically) two ways to reduce the amount of greenhouse gases in the atmosphere: emit less, or create more carbon sequestration initiatives. The second approach, under the auspices of the UN's 'Clean Development Mechanism,' involves high carbon emitters buying carbon credits from low carbon emitters – usually the less industrialised global south.

A key emerging mechanism for carbon sequestration is known as 'REDD' – Reducing Emissions from Deforestation and Degradation – designed to tackle the 17 per cent of annual carbon emissions that result from the destruction of forests.

Tanzania, along with several other less industrialised countries, argues that with a per person annual carbon emission of 1.2 tonnes per year (compared to the UK's 10.7 tonnes per person per year, and America's 23.5) has plenty of 'surplus' carbon to sell to the industrialised world. Much of this remains locked up in its extensive forests, which some believe could be worth up to $500m a year to the country.

But selling this carbon isn't a straightforward business. The ability to 'compete' (or offer economically 'efficient' carbon) is key. As Fred Nelson, from Maliasili Inititatives in Tanzania says: 'Land tenure security is a key factor in enabling local communities to capture revenues from the carbon market which will provide incentives for conservation measures.'

Secure land tenure ensures that the carbon owners – often villagers - are committed to the outcomes, and can't be sidelined in (often slow and cumbersome) decision-making.

This is important, because Tanzania is the proud owner of a great deal of what is becoming known as 'charismatic carbon': a

'The route forward is not clear cut. NGOs are concerned that the 'benefit sharing formula' around carbon offsetting and REDD between community and government is not yet sufficiently hammered out..'

term coined by Scientific American in 2006. It actually refers to carbon in a certain type of soil, but has morphed into meaning accessing carbon from grassroots projects , or carbon that is stored in trees that are rare and valuable. Tanzania has 37 million hectares of indigenous forest – 40 per cent of the landmass. In fact it is recognised globally as one of the 25 most biodiverse environments in the world.

Sharing the benefits?

There are already many existing schemes to encourage villagers to manage and cultivate wooded environments: from managed charcoal schemes, to medicinal plant collecting and beekeeping. The country is replete with unusual rare hardwood: from African Blackwood (Dalbergia melanoxylon, called locally mpingo) which is used for clarinets and oboes to valuable timbers like Mninga (Pterocarpus spp. - like cedar and mahogany), and Milicia excelsa (similar to mahogany) which can only be cut under licence.

But the route forward is not clear cut. Local NGOs such as African Wildlife Group are concerned that the 'benefit sharing formula' around carbon offsetting and REDD between community and government is not yet sufficiently hammered out.

It is a fair question to ask: will the Tanzanian government try to capture and retain all the revenue for itself?

Or, as in the case of the Congo basin, will communities be too weak to retain control and benefit, leaving the forests open either to illegal logging or exploitation by competing groups still immersed in brutal fighting?

Says Jessie Davies of the Tanzania National Resources Forum: 'REDD looks like a "silver-bullet" solution to sustainable development. However, if implemented wrongly, REDD could do just the opposite. Payments must be fair, fast, transparent, and must reflect the "transaction costs", which are the costs of forest management, and the "opportunity costs", which are the benefits lost by not engaging in other land use activities. Tanzania's track record of equitable benefit sharing between national, district and local levels has not been exemplary, despite legislation being in place which allows for benefit sharing from revenues generated from natural resources, such as from forests and wildlife. This experience is one reason why the current centralised funding approach outlined in the National REDD Framework causes great concern amongst key stakeholders.'

Fred Nelson is more positive: 'Tanzania has some of the most forward thinking forestry policies in the world. After years of "Ujamaa" (family hood) and the partially successful villagisation policies of Mwalimu Nyerere, Tanzania is combining pro-forest policies with pragmatism.'

Dr Steve Kiriswa of African Wildlife Group agrees: 'The Tanzanian government actually has a very good and enabling forest policy and frameworks... [which] give the local communities a stake in managing and utilising sustainable forest resources in both government and community forests.'

Carbon cash

Carbon Tanzania, a global pioneer in channelling carbon market money to communities, is leading the way with the Mpingo Conservation & Development Initiative: by 2013 it is hoped that forests in Kilwa district in southern Tanzania will supply an estimated 50,000 of 'gold-rated' accredited carbon credits – some real 'charismatic carbon'. Assuming a conservative yield of $5 per tonne of CO2 after deducting costs, this will bring a net benefit of $250,000. At the end of the project, predicted profits of this charismatic carbon will be spread amongst approximately 10,000 people in six villages.

As Mark Baker, CEO of Carbon Tanzania, says: 'There's an overall change in the country; we want to profit from what we have already. There's much to gain if we can sell carbon: we add value and create employment. We'll never meet the demand for carbon credits: globally we emit 6 billion tonnes a year, and sequester only 1 billion a year. It's an obvious economic and conservation winner, and vital for Tanzania, which has to find ways to capitalise on its excellent pro-poor and pro-conservation policies: I have already sold the carbon output of Kilwa, demand far outstrips supply".

Communities in Kilwa have already started to benefit. 'Previously we just used blackwood without thought, but we have learnt that it is a valuable resource,' says Mwinyimkuu Awadhi, Chairman of Kikole village. 'Now we see that we can utilise our stocks to benefit us all as villagers.'

Another farmer says: 'We people own this land, we own the trees, they are a tangible thing. This is easy for us in terms of conservation; and trees don't destroy anything or bring diseases like lions or wildebeest. From our experience with wildlife we understand the concept of communal management, and we see, trees bring communities benefits! Our people always list trees as highly advantageous, and if we can be paid to keep them standing rather than chopping them down, that's a good thing.'

Green light for polluting?

Opponents of carbon trading, including NGO Carbon Trade Watch, say the whole carbon market just gives major polluters a green light to carry on polluting. Other critics, such as Larry Lohmann argue that it is an easy way for big polluters in the industrialised world to buy their way out of problems, up their carbon credentials, and get lots of marketing kudos in the process. He believes that carbon trading glosses over the central problem: that we are extracting too much carbon that should remain underground.

But the business case for carbon offsetting, especially in the less industrialised world, is becoming clearer by the day. 'In the long run I am a conservationist, not a tree hugger,' says Marc Baker. 'Preserving Tanzanian woodland has to make economic sense. If this project encourages local people to look after our forests because they produce a valuable commodity, good! If the profits from carbon trading go poorer sections of community, even better.'

And the impact that steady, predictable flows of money from carbon trading could have on the lives of ordinary Tanzanians is greater still. Margareth Chacha, Executive Director of the Tanzanian's Women's Bank is reviewing how carbon credits are valued. Whilst you cannot currently borrow against the value of stored carbon, the bank views land that is registered as privately owned as equity. So, potentially, the actual trees on it will in turn be recognised as a valuable asset, with a relatively stable valuation, and can then be used as equity for a loan.

As long as potential projects are UN-recognised as offering carbon credits, the bank is looking at ways to value it: '73 per cent of our population works in a rural context: the majority of these are women,' says Chacha. 'By increasing the incomes of these rural poor, and their ability to access capital, we fundamentally change the shape of the Tanzanian economy. The important thing is the source of repayment, so if it's trees on registered land, then in theory this is fine.'

Thembi Mutch is a freelance journalist based in Tanzania. *She wishes to thank Jo Anderson, Marc Baker, Fred Nelson, Margareth Chacha, Bella Chacha, Dr. Steve Kiriswa, Charles Meshack, Carol Sorensen, Cassian Sianga, Jesse Adams for their help in producing this article*

In a remarkable and harrowing dispatch from Guinea-Bissau, **Dawn Starin** investigates how growing demand for bush-meat is emptying the country's forests of some of its most enigmatic monkey species, and meets those profiting from the devastating trade

PHOTO: DAWN STARIN

Revealed:

How corruption and deforestation fuel horrific trade in west-African primates

'I eat monkey whenever I can,' says Angela, a Guinean health worker at one of the major hospitals in the capital Bissau. 'Often I go with my son and we pay 2000 CFA (the approximate equivalent of $4.12) for four or five pieces of monkey and a loaf of bread. I prefer Mona monkey but I'll eat anything on offer unless I'm pregnant. Pregnant women can't eat monkey because they will end up having kids who act like monkeys and that's a problem.'

Angela takes me to her local monkey butcher in Bissau. At two o'clock in the afternoon he has already sold out but, he says 'come back tomorrow and I'll have more.' He buys monkeys everyday; monas and baboons and sometimes red colobus and black and white colobus – all of them from Gabu in the eastern part of the country. According to the butcher, 'they come by boat and they come by road and they come everyday.'

Above: More than 200 primates a week are thought to be ending up on dinner plates in the city of Bissau, with many more being sold and consumed elsewhere in the country

Jose, a poet/artist/accountant who has travelled far and wide – and knows the works of Picasso and Michelangelo – sits in his local monkey restaurant drinking coke and beer and smoking cigarettes. While waiting for a plate of monkey stew he shows me his many pencil drawings. Detailed portraits of Amilcar Cabral, the father of the nation, naked full-breasted women and Joao Bernardo, the assassinated ex-president, spill across the table. Jose explains that 'my favourite meat is domestic goat, but next to that, I prefer

Corruption and exploitation of Guinea-Bissau's forests is fuelling the country's bush-meat trade

PHOTO: DAWN STARIN

monkey meat, especially the chest... I eat it anywhere from four days a week to four times a month.'

Jose also points out that 'this restaurant gives the best value in Bissau. I can get four or five pieces of monkey for just 1,000 CFA (the equivalent of $2.06) and the other restaurants either give fewer pieces or charge more money or do both. So, I always come here.' Jose may find this good value for money, but this is not a cheap meal by Guinea Bissau standards: according to the World Bank, the average yearly income is less than $250 and the UN ranks it one of the poorest nations in the world.

I used to assume that increasing wealth would lead to decreasing bush-meat consumption. Looking at the customers here I now think the opposite. These are not poor people and monkey meat is not cheap. Monkey meat in Bissau is not a necessary source of protein – or even a semi-treat. Monkey stew seems to be a luxury for the well-off.

Two businessmen sit discussing the day's deals and sucking on monkey bones. An old man sits in a corner, drinking his liquor and eating his monkey stew. Two young men sit drinking beer and waiting for their special morsels. They are only interested in chomping and sucking on the hands. Maria, a well-dressed young businesswoman arrives carrying a mobile phone, a computer case and a Tupperware-like container. The restaurant owner ladles five chunks of monkey meat and lots of sauce into her container and she returns home with her take-away. She does this every evening for dinner because she 'loves the taste of monkey.'

The monkey stew on offer today is made by a woman from one baboon head and the head and body of a mona. Onions, garlic, chilli, vinegar, lemon and oil are added, along with some extra herbs, and it is stewed on top of a charcoal fire before drinking with liquor and eaten with bread... the Guinean equivalent of a French baguette.

Every day, seven days a week Carlos, the owner of the monkey restaurant – who says he prefers 'wild pig to monkey but monkey is second best' – goes to the local monkey butcher where he buys at least two monkeys, the equivalent of 20 separate plates. At the butchers he forks out 1,250CFA per kilo – regardless of the species. The hands, feet and head are the most coveted pieces and are sold separately. A baboon head can cost up to 2,500CFA (approximately $6.50)

Butchery and bribery

Inside a monkey butchers' I found skinned, gutted, smoked and shaved human infant-like forms lying on blood-soaked, filthy floors. Heaps of baboons rolled in on wheelbarrows get dumped in the corner in a pile. All of them have been smoked so they don't go rotten while being transported long distances from the forest. The sight is unbearable. The stench is overwhelming. The butchers – almost all of them women – sit around gossiping and plaiting each other's hair and waiting for customers.

I spend five days visiting the local monkey butcher. During this period, the shop receives at least 48 monkeys (21 baboons, 15 monas, three red colobus, one black and white colobus, one green monkey, seven unidentified – but not baboon). I know that this count is far from complete and I have no idea how many other monkey butchers there are in Bissau – but I am told that there are at least five others scattered around the town.

If 48 monkeys is a normal haul for five days, this would mean that in any five day period a minimum of 240 monkeys are leaving the forest and end up somewhere in Bissau. These numbers do not even begin to include the meat that is consumed in the local village, the meat that is sold to fellow passengers en route to Bissau, and the meat that is taken by the transporters.

The numbers are believed to be less during the rainy season when the forestry department halts the killing, but corrupt officials frequently ensure monkeys get through in return for cash.

Across town Agostinha runs another monkey restaurant six days a week. Every day she goes down to the harbour to collect monkeys from the boats. Today she has received a call from a hunter who tells her 'there are four monkeys arriving on a boat.'

When the monkeys come off the boat, Agostinha pays a bribe to an official from the forestry department. The official originally asks her for 1,000CFA per monkey but she talks him down to 500 CFA per monkey because 'they are only small ones.' She then sells three monkeys and keeps one for her restaurant.

I meet up with a local hunter and follow him around town as he goes from Agostinha's

restaurant to another restaurant serving monkey. As we walk through Bissau, the hunter is accosted by a policeman who claims he is owed money as a 'monkey tax'. The hunter pulls away and yells 'you are not from the forestry department and I owe you nothing. I have paid my tax and I have paid for my hunting permit.'

Talking with the hunter to get a better idea of how the entire 'chain' works, he tells me that after the monkey is shot in the forest and falls to the ground, he skins it, smokes it, and removes the tail, genitals and intestines. These 'dirty' pieces are then either thrown away or fed to dogs. In order to work as a hunter he says he pays the forestry department 60,000CFA (approximately $123.60) per year for a permit that entitles him to hunt anything he wants wherever he wants: 'A typical catch for me is ten monkeys a day but if someone wants a live one I can get it. If you want a chimp I can get that too but I have to kill the mother to get the baby.'

Monkeys arrive in the capital Bissau from the eastern and the southern parts of the country and also from some of the islands. Criss-crossing the country, the dead monkeys are often hidden in charcoal sacks and then transported by truck (there is no rail system) or boat. All along the way from first shot in a dying forest to last bite in a monkey chop shop, the bribing and bartering and bargaining occurs.

If a hunter is not caught and his goods make it on to a truck headed for the capital then he may have to pay the lorry driver in meat. And, when the meat reaches the butcher shop, representatives from the forestry department often stop by and take some for their own use. Or, if the meat arrives by boat, then the boat is met by a bribe-taking forestry official. And when the meat is being stewed in the dark and smoky kitchen another forestry department official or a policeman might stop by for a 'free meal'.

Empty forests

Walking through Lagoas de Cufada Natural Park, where leopards, elephants, buffaloes, chimpanzees and numerous species of monkeys once reigned, the forest feels empty. There is silence. There are virtually no insects, hardly any birds, no reptiles, a small number of mammals and some chimpanzee nests. A few mona monkey troops run through the canopy in the distance and one troop of baboons flees across the almost devastated landscape. This forest looks empty too. Large areas have been degraded by slash and burn agriculture and logging operations. There are gaping holes in this living architecture.

Things could get worse since an Angolan mining company has reportedly secured a vast mineral deal and is now building new roads and a harbour and tearing up this forest for bauxite. If this is so, hundreds of mine employees will be on the hunt for protein – and the monkey harvest in this region could expand.

A conservationist with knowledge of the local situation told me: 'this mining company has already cut down almost 10 per cent of the forest and when they have finished taking the bauxite out of Guinea-Bissau they will leave nothing behind except for habitat loss, an increased access to previously inaccessible areas – making it easier for the hunters to get their monkeys to market – and possibly, even the creation of more commercial hunters and more monkey eaters.'

In the past the bush meat market was limited because it was difficult to gain access to forests and it was difficult to transport the meat to urban centres. These factors have now been overridden.

Travelling further into the country I get to Cantanhez, the largest and newest national park. Sitting beneath massive buttressed trees in the middle of the forest, I hear some chimps pant-hooting. I see a small group of graceful black and white colobus and a larger group of clumsy red colobus. Soon there is a veritable choir of primate voices from on high and I begin to think that maybe there is hope for the forests in this poverty stricken land.

But then a shot rings out... the endangered primates above my head are being preyed on by a local hunter. This hunter is caught and his gun is confiscated. He then pays a bribe to the man who caught him and the gun is returned to him so he can shoot another endangered animal another day. There doesn't seem to be any other way: this forest is the hunter's supermarket and job centre combined. This forest is also a place without a fence; without

PHOTO: DAWN STARIN

There are at least five restaurants in the city of Bissau specialising in monkey meat dishes

guards, and without headquarters. In short, this is a park in name only, a park without protection.

Another conservationist – who did not want to be named – pointed out to me that 'Cantanhez is not far from the border where chimps are considered a delicacy... I can give you a list of problems you wouldn't believe. Not long ago French medical laboratory researchers reportedly came here and bought 20 young chimpanzees for 20,000CFA (approximately $41.20) each for experimental research. I can understand why the villagers would sell the chimps. That's a lot of money for a poor villager. It would be impossible to turn that amount down. I don't blame the poor villager. I blame the medical researchers and the incompetent bribe-taking government officials.'

The conservationist continued: 'Recently an irate farmer killed a chimp for taking oranges from his orchard. And these wildlife-human conflicts are going to increase because the more the forest is denuded through mining and logging, the more the wildlife will loose out and the more the chimpanzees are going to be forced to search for food and water on the farms. I seriously believe that law enforcement is only part of the problem. Living conditions, livelihoods have to be improved. Economics. It all boils down to economics. If the economic situation here doesn't change then I don't think there is anyway this is going to end until all the forests disappear and all the chimps and all the monkeys are dead and then all the people will have lost out because they will have lost their forested supermarket, pharmacy and job centre.'

Protected areas

The trade in primates in Guinea-Bissau shouldn't be happening. Sport hunting and trafficking in wild animals is illegal; the bush-meat restaurants and butcher shops I visited are illegal. On paper Guinea-Bissau doesn't look bad. They have signed CITES, an international agreement designed to regulate the trade in rare and endangered animals and plants. Hunting with guns, fire and traps is illegal. Red colobus, black and white colobus and chimpanzees are protected throughout the year and all the other primates are protected during the rainy season. Only individuals living in the forested areas can hunt in those areas and they can only use the meat for their own personal use; it cannot be sold, bartered or traded. A network of 'protected' areas has been established.

In reality none of this matters. Because of a lack of proper fencing, manpower, financial resources and educational conservation, the setting of uncontrolled bushfires, constant logging, mining and hunting and total non-protection of the so-called 'protected' areas, Guinea-Bissau is on its way to disaster. Its forests and its primates are disappearing and its people are on their way toward becoming eco-refugees in their own land.

How did things get so bad? According to an official with IBAP, a semi-autonomous Government agency semi-responsible for management of the country's five national parks: 'We don't have the resources in terms of money or manpower to protect what we have. Cantanhez, has no fencing, no guards and no headquarters. Basically it is a totally unprotected area that is being logged and hunted and there is nothing we can do about it. Our problems are immense. The government is irresponsible and bribes are a normal way of life. We have no way of rescuing pets and the restaurants and the butcher shops are illegal and there is nothing we can do about it. And, even if hunters and poachers were arrested, we couldn't do anything since the country has no prisons or detention centres to hold prisoners or suspects. Corruption plus a lack of transport plus a lack of detention centres only means that anyone arrested would simply walk free.'

Walking through the forest he continues: 'Look around you, it is getting worse. Now people from the neighbouring countries and beyond are coming in and raping the land. They have ruined their land and now they are coming here to ruin ours. They are taking away the fish and the trees and the animals and leaving nothing behind for the local people. Until very recently the people in Guinea-Bissau knew how to preserve and protect their resources. They only took from the forest – their larder and hospital and sacred sites – what they needed and no more because they respected the forest. I cannot give up the belief that someday we will find a balance.'

The official tells me that 'more and more we are seeing that the people who are benefiting from Guinea-Bissau's resources are not the people of Guinea-Bissau. They are from Europe, Asia and the neighbouring countries. If we had to deal with just subsistence hunting for consumption at the village level we might be able to contain the problem. But what is going on here in Guinea-Bissau is commercial hunting for markets in Bissau and beyond. In the past, people were few, their weapons primitive, the forests were large and the market economy small, the impact of hunting was probably modest.'

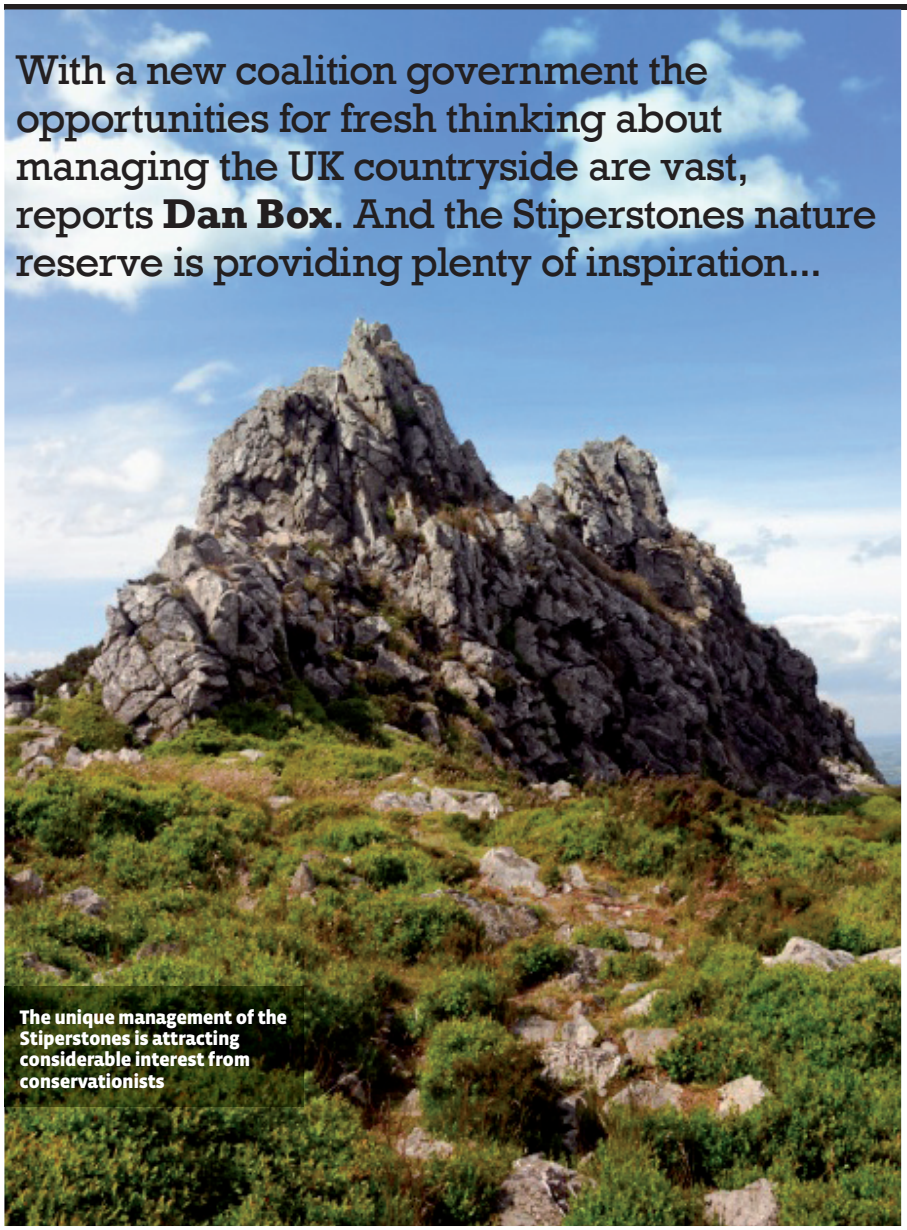
'Today in Guinea-Bissau this is no longer the case. The population is now growing, the weapons are no longer primitive slingshots and bows and arrows, the forests are fragmented and unprotected and being exploited by mining companies and the monkey meat market economy is far-reaching and extensive. The government is weak and does not have the political will to enforce any of the laws and the government employees are poorly paid (sometimes not paid at all for months on end) and thus open to bribes and handouts and sometimes even encourage the bush-meat trade. This is a beautiful but poor country frequently at war with itself so the conservation of wildlife and the protection of its primates is a very low priority. But, in spite of all the problems I live in hope that the devastation will stop and the conservation of our many species and beautiful landscapes will become a priority.'

Standing outside the butcher's shack watching piles of dead monkeys arrive by wheelbarrow; squatting in Agostinha's kitchen with the stench of cooked mona wafting around me; sitting on the forest floor hearing the hunter's shot, the magnitude and rate of loss of primates here is reaching breaking point and I wish I could share in the conservationist's hope. Urbanisation, rural poverty and growing economic burdens, conflict and fragmented societies are also creating a vast crisis for already vulnerable human communities. Leaving Guinea-Bissau I was left wondering how many species can an ecosystem lose before it collapses? How many disasters can a people endure before they too are doomed?

All names have been changed to protect the identities of those involved.

'When the monkeys come off the boat, Agostinha pays a bribe to an official from the forestry department. The official originally asks her for 1,000CFA per monkey but she talks him down to 500 CFA per monkey because "they are only small ones." She then sells three monkeys and keeps one for her restaurant...'

With a new coalition government the opportunities for fresh thinking about managing the UK countryside are vast, reports **Dan Box**. And the Stiperstones nature reserve is providing plenty of inspiration...



The unique management of the Stiperstones is attracting considerable interest from conservationists

'Futurescapes'

How a Shropshire land manager rewrote the conservation rulebook

It is a long day's walk along the Stiperstones, a hill-top ridge struck with shattered granite tors that look like broken bones. Tom Wall rests one hand on one of those, Nipstone Rock, and cocks his head. 'Hear that?' he says. A bird's song against the wind can be heard: 'Skylark!' Tom grins.

He has good reason to be happy. The skylark population has fallen by two million, say the RSPB, in recent years; more than any other British bird. This small, brown thing tumbling over a stretch of Shropshire countryside is in freefall elsewhere in Britain, yet we have found it here, among the stones.

Tom has worked here for 20 years, retiring only a few months ago as Natural England's senior manager of the nature reserve that sits at the centre of these hills. In that time conservationists like him have won small victories – the red kite, the bittern, that skylark – and suffered great defeats:

2010 is the United Nations' International Year of Biodiversity (the range of plant and animal species in any given habitat), yet last year the British government abandoned its target to halt the loss of UK biodiversity by this date. Similarly unsuccessful government policies elsewhere meant European and global targets were also badly missed.

A new approach to nature conservation is needed. Something, perhaps, like what is happening on the Stiperstones. For the place Tom leaves behind is now seen internationally as a model for a pioneering, landscape-scale kind of nature conservation. A new style that does not yet even have a name, though Living Landscapes, Futurescapes and re-wilding have all been mooted.

On paper, different parts of the Stiperstones are owned separately by government, council, the local Wildlife Trust, Forestry Commission and the private country estates. Each of these used to be managed separately, but Tom encouraged the owners to think instead in terms of the entire landscape and to work together towards a common vision of returning the hills from biodiversity-poor conifer plantations back to heather. Back to the natural wildness it once had.

Landscape-scale conservation

Similar schemes are now being set up across the country by the big conservation charities. Political will is also beginning to run the same way. A new government white paper on the environment is due by the year end. It is expected to draw on two reviews launched in 2009; one a UK-wide 'national ecosystem assessment', and the second called 'Making Space for Nature', exploring 'if our collection of [wildlife] sites represents a coherent and robust ecological framework for England'.

Launching the first of these, the then-environment secretary, Hilary Benn, signalled that landscape-scale conservation was the next big thing: 'Re-wilding, and linking

together areas to make ecological corridors and a connected network, could have real benefits in allowing nature to thrive,' he said.

Tom Wall, of course, had been thinking about the Stiperstones like that for years. 'Geologically, it's a single landscape. Ecologically, there's lot's of commonality between areas along it. In terms of access, it's a wonderful walk,' he says. 'There's a unity of purpose amongst many of those who manage it...who share our vision for how to manage it in the future. Yes, it makes huge sense for it to be looked at as a single unit in that way.'

Nature conservation has traditionally been about creating islands; fencing off, say, a certain field because it contained bee-orchids. The weaknesses of this approach are now becoming clear – the resulting small, fragmented populations of wild animals and plants can be wiped out by sudden changes such as a harsh winter, pollution or drought.

Discussing the progress made on 'Making Space for Nature' earlier this year, the review chair, Sir John Lawton said 'The evidence that we have collated so far suggests that the current collection of wildlife sites in England does not function as a coherent and resilient network.

'It is essential that we work at a large landscape-scale that takes account of the context of and connections between sites.'

A big green land grab?

Lawton's review is expected to champion this new approach, one where the islands are joined together, giving once-isolated populations of wild things a better chance to spread out. This does not necessarily entail a big green land grab. In financial terms, any nature reserve is a liability - it costs to manage and often generates little money in return. As Tom found, it is cheaper and easier to work with existing landowners, encouraging them to manage their land in a certain way, either through regulation (stick) or through financial incentive such as environmental stewardship schemes (carrot).

How much land will be involved? Nobody knows, yet. Far more, most likely, than the 2.4 million hectares, or 10 per cent of UK land area, that currently receives the highest levels of environmental protection under law. More than land mass, however, what may be crucial is finding smaller 'wildlife corridors' or stepping stones of habitat that join these existing protected islands together, allowing species to move between them. These could be as small as individual hedgerows – or back gardens.

Ultimately, the champions of this kind of conservation try to think as big as possible. Already the Wildlife Trusts have over 110 projects trying to improve or conserve habitats outside their own reserves. The RSPB is doing the same thing – their Greater Thames Futurescape covers over 1000km2 from London's Tower Bridge out into the North Sea. The National Trust, too, is beginning to practise the same approach on a few of its major land holdings.

These advocates increasingly talk of re-wilding the entire countryside, or – in the language of the Wildlife Trusts (which may be significant; Professor Lawton chairs the Yorkshire Wildlife Trust, and the organisation's national chief executive, Stephanie Hilborne, is on his review panel) – of a single 'Living Landscape', the size of Britain itself.

Except, a familiar doubled-headed monster lurks in the way: politics and money. There has, of course, been a change of government since the two environmental reviews mentioned above were announced. Perhaps surprisingly, many environmental charities are fairly sanguine about the change and see the Conservatives, particularly, as more interested in wildlife conservation than Labour. Benn's replacement as environment secretary Caroline Spelman recently said her government is 'absolutely committed to reversing the trend in the reduction of biodiversity.'

The coalition launch document, its 'Programme for Government', backs this up, committing to 'introduce measures to protect wildlife and promote green spaces and wildlife corridors in order to halt the loss of habitats.'

On the other hand, Treasury belt-tightening means government stewardship subsidies paid to farmers for managing their land to favour the environment are likely to be frozen, if not cut. The new all-Tory ministerial team at Spelman's department also want to reduce the regulatory burden on farmers, and are therefore likely to reject using the stick of new rules to replace the carrot of stewardship fees.

Planning is also an issue. For landscape-scale conservation to work, it must work on a big canvas. Yet the government is abolishing regional-level planning in England and wants to give local communities more power over planning decisions. That will likely obstruct the kind of joined-up thinking necessary to created joined-up networks of habitats straddling different regions and, ultimately, nations.

We won't know more about where this government is headed until the environmental white paper is released or, at least, the (delayed) publication of the Lawton review. So much, then, for now, for one head. But what about the second?

The current round of government cuts – at least 25 per cent in real terms over four years – will harm its ability to make good policy, and to implement policy through public sector bodies, such as Natural England.

Outsourcing conservation

This doesn't necessarily mean a fire-sale of Britain's nature reserves. More optimistic NGOs see the cuts as an opportunity to take prize assets off the government's hands, effectively sub-contracting the management of these reserves on the basis that they could do the job cheaper. A number of charities, including the Wildlife Trusts, have already been asked by the Department for Environment, Food and Rural Affairs to draw up a list of which national nature reserves they think they could handle.

In Shropshire, where the local Wildlife Trust has a number of smaller reserves along the same ridge, the Stiperstones could be among them, although no decision has been made. This land could then be managed as part of the larger landscape-scale conservation projects these charitable organisations are piloting.

Even where government land is put up for sale, others are seeing this as an opportunity for nature conservation. At the far end of the Stiperstones ridge from Nipstone Rock, stands Pontesford Hill. The Forestry Commission has put its 999-year lease on the hill-top up for sale and a local residents have campaigned to raise money to buy it, raising over £40,000 in little over a month. At the moment, the deal is on a knife-edge – another, unnamed, bidder has come in, offering a six-figure sum for the lease. The residents are now determined, somehow, to match that bid.

Brian Morris, from Pontesbury beneath the hill, chairs the campaign group: 'The hill is part of a bigger wild area, and we want it all to be managed together, for the wildlife, for our children, for our children's children and for our community as a whole.'

'Nature conservation has traditionally been about creating islands; fencing off a certain field because it contained bee-orchids. The weaknesses are now becoming clear – the resulting small, fragmented populations of animals and plants can be wiped out by sudden changes such as a harsh winter, pollution or drought'

Undercover investigation: The shocking cost of US 'mega-dairies'

With planning permission for Britain's biggest dairy at Nocton about to be re-submitted, **Jim Wickens** of the *Ecologist Film Unit* travels to America to examine intensive milk production US-style – and finds factory farms, conflict, intimidation, pesticides, pollution and small-scale farmers driven out of business...

'You better get out of here or your gonna get your ass kicked or worse,' the leathery-faced farmer slurred, picking his words carefully as we pulled up outside his milking parlour. It was coming to the end of our first day in the US, and despite our best efforts to persuade the farmers otherwise, it was clear that journalists are not welcome in this part of the world.

Far from the glittering lights and well trodden-tourist paths that people normally associate with California, the vast udders of America's dairy industry run through the Central Valley, a rarely-visited arid plain that stretches down the state, wedged in between the Sierra foothills and the Californian coast.

This is the breadbasket of the USA, where almond farms, grapes and corn are carved out of the scrubby desert and grown on eye-wateringly large scales. It is also home to the largest dairies on the planet, a concentration of several hundred milk farms so vast, that in Tulare county alone, there are over 900,000 cows, producing in excess of a billion dollars worth of milk each year.

But as an *Ecologist* investigation carried out in conjunction with the World Society for the Protection of Animals (WSPA) has

Demand for milk has led to the creation of so called mega dairies in the US

PHOTO: WSPA / ECOSTORM

PHOTOS: WSPA / ECOSTORM

Above: The milking process is increasingly mechanised in modern dairy units

Left: Intensive dairies have been accused of pollution by local communities

discovered, the Central Valley has also become a battleground for an unreported conflict, pitting community activists and family farmers against the might of mega dairy farms that have taken root here.

Factory or farm?

For a first-time visitor, the sight and scale of a mega dairy is overwhelming; enormous open-air sheds, mountains of feed, million-gallon pools of slurry and thousands upon thousands of listless cows. Granted access by disgruntled dairy employees, we were able to observe a mega dairy in operation. More akin to a factory production line than a farm long lines of cows could be seen stumbling over outstretched udders as they were driven back and forth to the robotic-like, rotary-milking parlours.

It is a continual daily cycle that stops only when the milk output begins to tail off, and the animals are either re-impregnated or sent off to slaughter; burnt out and discarded after only a few years of life on the factory floor. Animals in American mega dairies will never see a patch of grass in their life, and the only respite comes from shade in the dusty open-air lots where they wait between milking. Even here the animals will not get a chance to really rest; high-milk yielding cows suffer from chronic 'negative energy balance', where the cow uses more energy in making milk that she can physically take in by eating, losing body condition as a result.

The Holstein is the favoured breed of choice for most mega dairies, their towering bony frames contrasting wildly with bulging vein-filled udders swinging underneath them. Milk produced by them is of a lower quality with a higher pus content in the milk than that produced by other cow breeds, but what these freakishly-bred animals lack in quality, they make up for in quantity: milked three times a day and propped up with growth hormones to boost milk production, and antibiotics to stave off frequent infections, milk output in the Holstein has doubled in the last 40 years alone.

Flies and nitrates

It's not just the animals that suffer. Tom Frantz is a retired schoolteacher and grew up in Shafter, a small town in Tulare County. 'Until 1996, there weren't any dairies near me, then we got the first mega dairy situated close to here, followed by several others. Within a couple of years at the local school we had two big problems that have never existed before... the school was invaded by hoards of flies, nasty biting flies, clogging the water coolers and forcing the teachers to hang fly strips in the middle of each classroom. It changed things, changed the atmosphere of the school. Then nitrates in the water showed up. The school had always used water from its own well in the past, but suddenly the nitrate level doubled, then tripled, making it unsafe to drink,' he told *The Ecologist*.

Tom formed a community action group, one of a dozen that have sprung up in recent years, to try to stop more dairies from encroaching on communities. His group has sued two mega dairies to date and has successfully pressured both the school boards and the town council to put in place buffer zones, banning mega dairies from being built too close to the town. In the midst of costly legal battles however, Tom has been threatened and now lives with restraining orders in place against overly aggressive dairymen living nearby.

Mega dairies also bring an invisible threat to the Central Valley, producing high quantities of gases leading to smog and particulate pollution. According to the American Lung Association, pollution from industrial agriculture operations 'poses a significant health threat for some of the most vulnerable people in our community. Children, adolescents, seniors, people with asthma and chronic lung diseases, people with chronic heart disease and diabetics are most at risk.'

It is no coincidence that dairy counties such as Tulare or Bakersfield have some of the highest rates of ozone and fine particulate matter in the USA, equaling and in some cases exceeding the smog-infested city of LA further South. A medical study published in 2004 found that one in very four children in these counties have asthma. 'Mega dairies are effectively being subsidised by our lungs,' Tom says.

Pesticides

Teresa DeAnda is a mother of seven children and full-time Central Valley Representative of Californians for Pesticide Reform. She is, by her own admission, an unlikely activist: 'I didn't even know what that word meant for the first few years that I did this job,' she told *The Ecologist*. 'I was always interested in reading the news about air pollution and I knew air quality was getting worse. I knew that was all bad, then I read an article that they wanted to put in a dairy of 5,000 cows in Kings county nearby and I was so upset, and I said "oh my gosh I got to go over there"'.

With the assistance of the Council for Race Poverty and the Environment, Teresa began to work full time on pesticide issues and air quality – fighting against pollution on behalf of the voiceless Hispanic populations living nearby. The more she looked into the problem, the more frustrated she became. 'There have been studies done looking at why polluting industries move to certain areas; these industries actually look for neighbors who are Hispanic, low income, poor, of colour and are catholic,' she says. 'And it makes me so angry, big dairies pollute until water boards crack down on them, so then the dairies sell up and move here... where nobody complains,' she says.

Driving along the highway, Teresa waves at countless gangs of migrant workers as they work in lines, silently packing grapes. A few miles out of town fruit fields give way to vast fields of corn and alfalfa, crops all grown to feed the cows in the mega dairies. We are en route to meet Jorge, a Salvadorian worker whose family have experienced the impact of pesticides used to grow crops for cattle. Teresa explains that Jorge is an exception to the rule, usually people here don't want to speak out as 'they could lose their jobs and their homes... they're scared.'

Threats and intimidation

Jorge is scared too, he talks but not on camera, and is quick to explain why. 'Those who are illegal immigrants are told that they are going to call immigration [officials] to get them; another threat is that they are going to send someone, if you don't leave they will kill you,' he says, 'and that is not good.'

He complains bitterly about the pesticides used to grow cattle feed: 'I used to have cows, but they all died... I had canaries they all died... I had goats, but I sold them because they were dying too; they had stomach problems and the babies were also dying...'

'The Central Valley has also become a battleground for an unreported conflict, pitting community activists and family farmers against the might of mega dairy farms that have taken root here'

Jorge guides us around his smallholding. He has a few horses left, but for the most part the stables are empty, weeds sprouting from the dust. He points to the few remaining fruit trees his family planted, bare stems save for a few shriveled brown leaves at the end of each branch. "When I came here my financial situation was good and I was comfortable... it [pesticide spraying] has had a very bad impact because the children became ill, the animals are dying, I am ill,' he says.

Not all Californian dairies are operating on such a large scale. Paul Bianci tends a small herd of Jersey cows, which spend much of the year grazing on pasture in the rolling hills of Northern California. In scale and sight, Paul's farm resembles a British farm, and is perhaps a decent barometer of what mega dairies might mean for British farmers if they come to Britain. 'We just can't compete with them... they just put the little people out of business,' he told us. We heard similar complaints from other small farmers we met; that economies of scale make it virtually impossible to compete with mega dairies who are milking herds of cows up to a hundred times bigger than smaller family farms, driving down milk prices and forcing family farmers to sell up.

Dairy declines

Albert Strauss, who runs a successful organic dairy, has pioneered an alternative system to provide California with a more sustainable milk supply: 'We lose 55 of our dairies each year, and in the last 40 years in our district alone we have gone from 120 dairies to 23...so it's a bit drastic. Mega dairies are continuing the trend away from sustainable farming, and it's happening because mega dairies dominate because they are the biggest agricultural commodity in the USA, and when you have big dairies controlling most of the milk supply, you have a lot more political power.'

The problem isn't just confined to California, according to the USDA statistics 33,000 dairies disappeared nationwide between 1997-2002.

Our last day in California is spent at Turlock County Fair, a mom and pop type family affair where dairy farmers from the Central valley help their children to show prize animals in front of the judges. Behind the showground, children are busy grooming the prize cows that will soon be led out into the arena, whilst parents sit and chat over beers nearby. It is a timeless scene from small–town America, but despite the friendly feel of the place, few want to talk to the journalists asking questions about mega dairies; we are met with a wall of silence, people too scared to be seen talking about the problems they face.

Finally we meet Paul Clarent, a Stetson-wearing, unapologetic mega-dairy owner, who flatly rejects the concerns of smaller farmers we had spoken with during the week: 'You've got to expand to compete with the big guys.. that's just business and that's life, it's not fair all the time,' he said. As we are preparing to leave the fair an elderly farmer beckons us over away from the crowds and offers up a different reality. 'Listen, we run a dairy and you know we will probably go out of business in the next two or three years. We are simply not big enough to compete with the big dairies... my grandparents, my parents, my wife and I did this to pass on to our kids and now it's going to die with my daughter's generation. It's pretty sad,' he said.

Jim Wickens is a producer with the Ecologist Film Unit and co-director of investigative agency Ecostorm

PHOTO: WSPA / ECOSTORM

Journalists are not welcome in California's intensive dairy farms

Will 21st century capitalism go green?

The role of economics and the future of capitalism will be to preserve our natural resources rather than destroy them but the US may be missing the message, says economist **Graciela Chichilnisky** from Columbia University

Capitalism is transforming itself. Having caused the worst environmental excesses of the 20th century – overconsumption of fossil fuels and forests in rich nations and the attendant denuding of poor nations' resources needed for survival– capitalism is now changing its stripes.

New global scarcities have emerged, and with them new limits on the use of critical natural resources such as air, water and energy that are key to human survival. The limits on resources are in turn creating new markets.

These new markets – for clean air, water, fossil and clean fuels - are transforming capitalism. An example is the US Clean Air Act, which put limits on the emission of sulphur dioxide by power plants, from which emerged a market that trades rights to emit SO2 at the Chicago Board of Trade. The SO2 market successfully and quickly eradicated acid rain in the US.

At the global level a similar market mechanism emerged in 1997, when the Kyoto Protocol laid limits on carbon emissions by rich nations. From these limits a carbon market was created that became international law in 2005, is now trading $165 billion/year at the EU Emissions Trading System, and is expected to become the largest commodity market in the world. The carbon market privatises the atmosphere of the planet, but favours the poor nations who have more rights to emit; as a result $50 billion has so far been transferred from rich to poor nations for productive projects that have allowed their economies to reduce carbon and leapfrog into clean development strategies, avoiding the heavy industrialization followed by rich nations.

The transformation is causing a clash between the old and the new. There is a heated political debate about whether to continue the Kyoto carbon limits after 2012. The nation that led capitalism during the last century is the most resistant to change: the US is the only advanced nation that has accepted no limits on carbon emissions, and the largest emitter among them.

Last week the US steelworkers union sued the Chinese government at the World Trade Organisation, for offering favorable credit and subsidizing land used for its clean technology industry, and President Obama plans to follow suit at the national level. In contrast, China is an enthusiastic supporter of the Kyoto Protocol and has become the leading exporter of clean energy equipment, having created one million jobs in clean energy manufacturing.

The US is the single advanced nation that has not ratified the Kyoto Protocol and does not trade in its carbon market. It desperately needs to create jobs as it has 9.6 per cent unemployment, the highest unemployment since the Great Depression - a major challenge to the Democratic administration in the November 2010 elections. One million jobs would be very valuable in the US right now, whilst 14.6 million people are unemployed and 170,000 families are living in homeless shelters.

The US has every reason to emulate China. But instead of investing in clean tech jobs, the US invested billions of taxpayers funds to provide credit and bail out venerable old financial institutions who created the US's main exports, financial services and products; the same institutions that caused the worst financial crisis of our times.

As the OECD nations slowly emerge from the worst financial crisis in 80 years, a completely different transformation is taking place in the rich nations and in the less industrialised world. Less industrialised nations now lead economic growth. China received tens of billions from the Kyoto Protocol Clean Developing Mechanism for clean energy infrastructure, and is emerging as the world's leading exporter in clean energy equipment – exporting turbines and solar equipment

India is quickly growing its clean technology industry based on its engineering capabilities, and is the largest exporter of software in the world, topping $60 billion per year in exports from Bangalore. Brazil and other large developing nations are quickly stepping up to the challenge using the Clean Development Mechanism and leapfrogging over heavy industrialisation to a clean future while they combat their citizens' hunger and deprivation.

Among advanced nations, the US is alone in resisting change and denying the need for carbon limits. US Senators face more acceptance from the power plant industry for creating a US carbon market than they do from their constituents at home, who will vote in the November 2010 elections and will decide the nations' political future for the next few years. The US public still regards clean technology as a cost and not a profit, asking how much the transformation will 'cost'.

Instead, the Chinese, the Indians, and the Brazilians see investment in clean tech as an opportunity for profits and growth. US reaction to China's export leadership is to sue the Chinese, rather than to compete and take over the reins in an area where, due to its own technological prowess, the US should be a natural leader.

But the world is moving on. Markets for biodiversity and for watersheds and forests will emerge in the near future. The United Nations, which created the carbon market as part of the Kyoto Protocol, is working on new global eco-markets. We need to create these market solutions before it is too late and we destroy the remnants of the planet's biodiversity. We are in the midst of the planet's 6th largest extinction and the first caused by human action.

The new markets that arise from ecological constraints will dominate the 21st century economy, and so will markets for knowledge. The carbon market will become the largest commodity market in the world because carbon is emitted in producing energy, energy is the mother of all markets, and 89 per cent of the energy produced in the planet comes from fossil fuels. Energy creates today the largest source of carbon emissions in the world – about 41 per cent.

The transformation of capitalism is unstoppable because we need limits on resources for human survival. And from these limits, new markets will emerge as we trade the rights to use resources. These new markets will change capitalism. They involve 'non rival' goods, since carbon in the atmosphere, biodiversity in the planet and even global knowledge are non–rival goods, they are the same for all and can be shared without losing them.

This is very different from the private goods that characterised capitalism until now. Markets for private goods divide us and create competition because goods are rival in consumption - 'what I consume you cannot consume'. The new markets involve non–rival goods that are the same for all. This is for physical reasons. Since CO2 distributes uniformly all over the planet and we all face the same atmospheric carbon concentration, we must cooperate to find a global solution, rich and poor, young and old, black or white.

The markets of the future are here. They are causing most welcome transformation for capitalism. The question now is how long the transformation will take, and whether we will experience ecological and climate disasters. Civilisation as we know it may not be able to survive during the transition. Time is not on our side. The longer it takes, the greater the risk we face.