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Blood harvest: the hidden cost of Italy's orange trade



A special report
by **Andrew Wasley**

Hidden nuclear agendas By Nikki Clark

The Government's plan to pursue its nuclear agenda under the auspices of a nuclear new build programme in the UK has singled out Hinkley Point as the first location for attempts at a 'nuclear renaissance'. EDF, who are 90 per cent owned by the French state, have put in an application to the recently created Infrastructure Planning Commission, for two enormous, 1350MW generation 3 reactors, which are untried, untested designs. These EPR designs have experienced nothing but trouble in Finland, France & China, where projects there are behind schedule and over budget.

Nuclear new build in the UK cannot happen without subsidy from the public purse in the form of insurance liability, the electricity reform act (which will provide a fixed price per unit of electricity) and a floor on the price of a tonne of carbon under the woefully inadequate carbon trading mechanism. This comes on top of the £250 million per year spent over the last 25 years on research and development on how to deal with the legacy waste.

The decisions on nuclear are being challenged - Energy Fair have put in a complaint to the European competition commission which, if upheld, will see an end to nuclear new build in the UK and also the rest of the EU. The two legal challenges brought against the UK government on both the justification decision and the National Policy Statements, have thus far failed to make it to judicial review. This is unsurprising, as the government have been working very hard to reduce uncertainty in processes relating to nuclear new build. All has been designed to give nuclear the 'go-ahead' a smooth and speedy transit through our planning system, and yet despite this things are anything but smooth for the Government and EDF's plans. EDF's timetable here in the UK has already slipped enormously with them being about two years behind schedule and that's before they can begin construction in earnest.

Legal challenges, the on-going nuclear catastrophe in Fukushima, the lack of private finance available for this venture, these are but some of the problems faced by the nuclear barons, with further dirty dealing being exposed constantly. This has ranged from energy company workers running DECC or EDF spying on the environmental movement, through to both conspiring together to suppress events in Fukushima to stop the anti-nuclear movement gaining ground, as was revealed in the Guardian last summer.

The nuclear renaissance is plagued by problems. It's hardly surprising, as nuclear power has never been a sensible proposition for solving environmental problems despite it's being touted as such. Quite the opposite, the 'nuclear renaissance' is a project that will create more problems than it can solve. It's more of a resurrection Frankenstein-style than a Renaissance. Just last month a report was presented to Parliament that revealed scandalous practice being carried out by both the current and previous UK governments - namely that both of these governments have been making policy-based evidence rather than evidence-based policy. All of this has been done with seeming impunity by both administrations in order to force nuclear new build through parliament and onto a misled public, serving the real agenda of all flavours of government. The real agenda has been hinted at recently with surreptitious plans to replace Trident already underway despite the pretence that Trident is on the back-burner.

All sites identified for nuclear new build are in the few protected areas that exist in the UK. The Hinkley Point site exists within a mosaic of Special Protection Area, Special Area of Conservation, Site of Special Scientific Interest, Area of Outstanding Natural Beauty, Internationally recognised and protected wetland. Last year when EDF were applying for permission for preliminary works, the Environmental Statement was nowhere near comprehensive enough, failing to properly account for, understand or assess the interactions between habitats and species on and off the 500 hectare site. The statement failed completely to assess important microbial and fungal species that play such important roles in any ecosystems focusing instead on larger more well-know species.

It seems that UK environmental legislation is nothing but window dressing when any government can go ahead with the most dangerous type of development known to man that will leave intractable wastes for timescales we can't begin to imagine, and not just in one of these places we value so much, but all of them. This is why activists last month braved sub-zero temperatures to defend veteran Oak trees threatened by new nuclear development in the Somerset Countryside. The Oaks at Hinkley Point are veteran trees that are approximately 100 - 150 years old, they have that amazing quality of living and dead wood which provides a habitat for a diverse range of species. The Oaks here aren't just a few trees in a wider habitat, they are themselves a habitat, they are a living community whose ecological value is such that there is no justifiable reason why they should be removed to make way for a development that is increasingly unlikely to go ahead.

Nationally we really should be questioning the policy of ruining every one of the most important ecological sites remaining in our country in order to satisfy governments voracious appetite for infinite growth on a finite planet.

Special report: Coca Cola challenged over orange trade linked to 'squalor and exploitation'

The manufacturer of Fanta is being urged to help address the poor conditions and low wages endured by some African migrant workers harvesting oranges in southern Italy. **Andrew Wasley** reports from Rosarno



Oranges harvested in the Rosarno area of Calabria are mainly used for juice or concentrates

It is perhaps the worst address in Western Europe. A ramshackle slum with a noisy road on one side, a railway on another, and a stagnant-looking river flowing close-by. The camp itself consists of little more than a collection of shoddily-erected canvas tents and some abandoned buildings and sheds.

Behind the wire fence, fires burn amid piles of rubbish – discarded wholesale-sized tins of olive oil, plastic bottles, newspapers, food scraps and other unidentifiable filth. Woodsmoke stings your eyes. As the winter sun falls, the scene is almost apocalyptic; dozens of migrants swarm around us – cooking, chopping firewood, calling out, trying to keep warm – their figures silhouetted against the flames.

They are from Africa – Ghana, Burkina Faso, Ivory Coast – and this squalid camp, where doctors say conditions are as bad, or worse, than in refugee camps in war zones, is currently home to at least two hundred itinerants.

The migrants are here in Rosarno, in Calabria, southern Italy, to harvest the region's extensive orange crop. Each winter, as many as 2000 migrants travel to this small agricultural town to scratch a living picking oranges that will end up on sale in markets and supermarkets, or as juices or concentrates used in the manufacture

of soft drinks.

But these fruit products could be linked to a life of squalor and exploitation for some of those working at the bottom of the supply chain, an investigation by The Ecologist has revealed.

Campaigners are now calling on multinational food and drink firms purchasing orange ingredients from the region to help address the problem. Italy's largest farmers association says it has written to several companies – including Coca Cola, manufacturer of the Fanta orange drink – complaining that prices paid for orange concentrates are unfair, and fostering unpleasant conditions.

Coca Cola denies any wrongdoing and says its direct Calabrian supplier was given a clean bill of health by an independent auditor as recently as last May, but admits the nature of the supply chain means it is unable to audit every farm or consortium whose juice may be bought by its supplier.

Many of the African migrants are in Italy illegally, having crossed the Mediterranean in often treacherous conditions in order to seek out a better life, or secure employment to send money back to their families.

Most move between the major agricultural regions – Puglia, Campania, Sicily, Calabria and Basilicata – seeking

piece work during the seasonal harvests of oranges, lemons, kiwis, olives, tomatoes and melons. There's thought to be around 50,000 migrants, mainly Africans, a few Eastern Europeans, currently existing like this across Italy.

Squalor and slums

They typically earn 25 Euros (£21) for a day's work in the Calabrian orange groves. They are often recruited by gangmasters acting on behalf of farm owners cashing in on the ready supply of cheap labour. The gangmasters, both Africans and Italians, can charge workers for transport to and from the orange farms – typically between 2.5 to 5 Euros – and sometimes make other deductions from wages paid by farmers.

Many of the migrants in Rosarno and the surrounding countryside live in appalling conditions, in run down buildings or in makeshift slums on the edge of town. There's no electricity or running water. In many cases there's no functioning roof.

In the town's largest slum some workers 'are forced to sleep outside, even in winter', according to Solomon, a migrant from Ghana who has been here for two months.

'Conditions are not good, as you can see,' he tells The Ecologist, gesturing to the chaotic camp around us when we visit at night. Solomon says he has been in Italy itself for three years, in Naples before Rosarno, and came 'for economic, for financial reasons.'

Another migrant, who doesn't give his name, says he came from Ghana because there was work here, and money to be earned. He had 'no idea' this would be where he would live.

Food parcels from local activists arrive whilst we are there - hot pasta from a local restaurant, some tinned food and other staples. One migrant agrees to distribute the provisions – not enough to go round for sure, but something.

When we return the following day some of the migrants become unhappy at our presence – they say they are tired of journalists photographing them in this condition. One throws a stone. An angry confrontation begins, people gather around, there's shouting, in Italian, in French, in English. The situation is diffused only by the intervention of our guide, and we agree to leave.



Migrant workers in an abandoned building, Calabria



Living conditions for many migrants in Calabria are squalid

Some of the migrants are drunk. One, outside the camp's entrance, pulls up his trouser leg to show an injury he says prevents him from getting any work. 'I have two children back at home [in Africa], no papers, now this [the injury]... what can I do?'

Many want to return home but are trapped – with no money, no documents and no means of escape. At a nearby slum, Mambure is one of twenty workers living in a disused farm house. From Burkina Faso, he has spent nine years in Italy. 'Every day we go into [Rosarno] to wait for work harvesting oranges,' he says.

Many of the migrants in Rosarno and the surrounding countryside live in appalling conditions, in run down buildings or in makeshift slums on the edge of town.

'But at the moment there is no work, it is difficult to earn money... all of us here have no work,' he says. Mambure says he's managed to do 'less than a month' of paid work in this year's orange harvest. 'I only have one statement,' he says, 'I want to go home.'

The workers don't want The Ecologist to see the conditions they are forced to endure inside the farm building. A few miles up the road, however, at another crumbling house – until recently home to a group of migrants – pots and pans, empty cereal packets and food wrappers litter the stone floor.

There's a fireplace in what served as a makeshift kitchen. It's filthy. Upstairs, clothing, bedding and rubbish is strewn across a room that had clearly been used for sleeping. Outside a mattress has been thrown in a ditch.

About half of Rosarno's seasonal workers – including most of the Eastern European migrants who also come to region seeking employment – live in paid-for accommodation, organised by gangmasters or through private landlords. Even here conditions can be poor, say welfare groups, with many migrants living in overcrowded flats or apartments.

Hard labour
For those that find work during the annual harvest, conditions can be tough and the pay low. Migrants typically earn around 25 Euros for a day's work. It can be less or more depending on the individual farmer, the market rate for

oranges, and whether a gangmaster makes deductions for transport or other 'services'.

At one farm visited by The Ecologist, half a dozen migrants are working in the orange groves, picking the fruit – some standing on the ground, some having climbed into the trees themselves – before loading them into crates and stacking ready for collection.

Sogo talks while he harvests. He's 28, and from Mali, and says that although the work is hard he has managed to save some money to help build a house back home.

'I've been in Italy for ten years. If production is good then we manage to get paid,' he says. The migrant says he spent his first year in Italy in the 'ghetto' – the slums in Rosarno – although he now lives in an apartment in the town.

He never planned to stay in Italy for so long. 'I have 30 people in my family and originally, 10 years ago, my plan was to return home,' he says. 'Now it is difficult to earn [enough] money to send home [to support them].'

The workers at this farm won't confirm how much they are paid or whether gangmasters are involved. The farmer who employs them, Alberto Callello, who mainly produces oranges for eating and also some industrial-grade fruit destined for processing, maintains workers get a reasonable deal. '25 Euros

is the minimum wage, it is a poor wage but it is a poor economy. Poor but not exploitation,' he says.

Callello, who is part of a co-operative representing 8 or 9 farmers, and who is currently trying to convert to organic production, blames the economics of orange farming and the wider supply chain for the conditions.

He says the market price has fallen below the cost of production: 'I get 7 cents per kilo for industrial oranges (used for concentrates) but need 8 cents per kilo to pay workers, so there is a paradox.' 'At the end of the chain is a clash with poor people,' he says.

The farmer sells his oranges to a local processing plant which in turn sells to larger processing companies which then process the fruit for large food and drink firms.

Medical aid

Back in Rosarno, the medical charity Emergency is operating its twice-weekly mobile clinic – a specially converted coach with consultation and treatment rooms, and facilities for carrying out basic medical procedures.

Staff say they expect to see 40 patients

tonight: 'They come in with muscle and skeletal conditions, respiratory problems, and may need specialist doctors such as a dentist,' says Dr Luca Corso.

'We have started to see, particularly since the beginning of January, some cases that can be linked to working activities; mainly the improper use of pesticides and fungicides used during this season', the doctor says.

'Mostly cases of irritative phenomena, for example contact dermatitis in exposed areas such as hands and face, or conjunctivitis because the eyes are exposed.'

Angelo Moccia, operations manager of the clinic, says that conditions here are worse than those he'd previously encountered in Congo. Andrea Freda, the clinic's nurse, adds: 'Conditions are not so different in Afghanistan to here.'

Although officially Italian hospitals are supposed to offer treatment to migrants – even those in the country illegally – there have been cases of workers being refused treatment, according to medical officials, with some migrants afraid to seek help because they fear being sent to interment camps.

Medicins Sans Frontiers previously responded to the crisis by distributing emergency hygiene kits consisting of sleeping bags, soap, toothbrushes and toothpaste. In a report the group described conditions in southern Italy quite simply as 'hell.'

The situation briefly improved in early 2010 after the authorities intervened following the shooting of two migrants in Rosarno: the incident led to widespread rioting, and revenge attacks by local vigilantes. Shocked by the ferocity of the violence, and with pictures of the disturbances broadcast around the world, the authorities bussed many migrants out of town for their own safety. Several of the larger slums were demolished.

Workers quickly flocked back however and conditions deteriorated. In response, the authorities have recently moved to house some migrants in temporary refugee camps.

In a report the group described conditions in southern Italy quite simply as 'hell.'



Inside migrant workers' accomodation



Many camps housing migrant workers in Calabria are makeshift - and unfit for dwelling

Unfair prices

Italy is a major producer of citrus fruits – around 3.6 million tonnes are cultivated from approximately 170,000 hectares of land. Calabria is the second biggest orange growing area, producing more than 870,000 tons in 2009. The majority of the oranges grown around Rosarno are cheap, industrial grade fruits favoured for processing into concentrates.

Italy's orange sector faces increasing competition from other producing countries including Brazil, China, the US, Mexico and Spain. According to Pietro Molinaro from Coldiretti Calabria, the regional branch of Italy's largest farmers association, overseas competition combined with the low prices paid by large companies has resulted in orange growing becoming unviable for many farmers. They are – literally, he says – 'being squeezed.'

'This area is facing a big problem: the price big companies pay for this juice is not fair,' he says. 'All in all they force the small processing plants in the area – those that squeeze oranges and produce concentrate – to underpay for [the] raw materials.'

Farmers themselves say this is why they are reliant on cheap, migrant labour: 'Young Italians are not likely to want to work in the fields... the only

The Ecologist was given a tour of a brand new 'tent city' constructed next to an industrial estate just outside the town. The camp, although basic, will see six migrants housed per tent, each equipped with proper beds, light and heating. Flush toilets stand ready outside. You'd expect to find a camp such as this on the edge of a conflict zone, or after a major natural disaster.

In a nearby compound, local government officials show us a more permanent camp recently constructed. Eighteen portacabins house up to 108 migrants. There's an infirmary where a doctor visits once a week, a laundry, and each cabin has two rooms, a bathroom and a kitchen.

The migrants acknowledge that life in the camp is better than in the 'ghetto', but they still see no easy way out. 'It is a big question', says Daniel, 28, 'How do you go home?' Having been held in a detention camp in Libya after leaving Ghana, once released he quickly joined a boat heading towards Europe. But it hit rocks off Sicily, he says, 'Three migrants drowned... after we landed the police rescued us.'

Elisabetta Tripodi, the mayor of Rosarno – who is forced to live under 24-hour protection; this is Mafia country – later tells us that there are plans to

expand the number of beds in camps by 150. Tripodi acknowledges the migrant issue is a scandal – bad for the town and for those involved: 'The biggest problem concerns inclusion – they stay only for a few months, they arrive and go, arrive and go.'



Most camps have no running water

FOOD



Conditions are 'worse than refugee camps'

way is to use migrant workers because of the low wages connected to the harvest,' says Alberto Callelo.

Molinaro believes it was this situation that ultimately led to the violence in 2010. 'This twisted mechanism is the cause of the riots in Rosarno two years ago. International media showed only racism, social tensions, not the real

reason...,' he says.

Campaigners say the nature of the current orange supply chain – with processors sourcing from multiple co-operatives and farmers – and the widespread use of migrant workers, make it virtually impossible for companies sourcing from the region to avoid procuring 'tainted oranges'.

Coldiretti Calabria last year wrote to all the firms it says purchase orange ingredients from Calabria, including Coca Cola, highlighting what it believes are unfair prices paid for raw materials – a situation it says is partly fostering unpleasant conditions for workers. The group claims it never received a response.



Up to 2000 migrants live in Rosarno

Coca Cola said that to the best of its knowledge the letter shown to it by The Ecologist had not been seen by its office. The company said it was incorrectly addressed and related to another company's product.

Coca Cola promotes its Fanta drink in Italy as being '100 per cent' made from Italian oranges. The company confirmed it sources from the Calabrian region, but said its supplier was given a clean bill of health by an independent auditor as recently as last May. It admitted however that the nature of the supply chain means it is unable to audit every farm or consortium whose juice may be bought by its supplier.

There is no suggestion the company or its direct suppliers are involved in bad practice or wrongdoing.

In a detailed statement the company said: 'We have reviewed our audit records and found that our most recent audit of our juice supplier in the Reggio Calabria area was in May 2011. We have confirmed that none of the concerns you have raised was found during that independent, third-party audit. The majority of the juice we procure from this area is used in products for our Italian market.

'Our supplier is a juice processor that gets most of its raw materials from consortiums or collectives that buy from many farmers. While we cannot audit every consortium and independent farmer, our supplier does have declarations from a wide number of the consortiums stating that they comply with Italian labour laws. While we certainly encourage respect for human rights and good workplace practices throughout the entire supply chain, we are limited to auditing only our direct suppliers,' the statement continued.

The company added that it is 'a firm supporter of workplace and human rights', and pointed to several examples, including the convening of workshops on child labour and human trafficking.

In Rosarno, as word spreads about the establishment of the tent camps, many migrants are trying to find out how – and when – they could be moved. But despite this, there's continued anger and resentment at the treatment they receive, and the intolerable conditions they endure.

Diallo, from Guinea, who's been



Cooking 'alfresco'

prominent in trying to raise the plight of the orange workers with politicians and in the media, is blunt: 'I tell them, we are not criminals, I am working, they are exploiting us. We don't have nobody to help... [this is] apartheid, colonisation,

silent colonisation, silent slavery. There's no future.'

*Note: some names have been changed
Additional research & reporting:
Gianluca Martelliano*



Volunteer activists hand out supplies

Violence and pollution stain Brazil's shrimp farming boom

Despite being an economic success, prawn farms built in Brazil's mangroves have displaced natural ecosystems and the coastal communities which rely on them, says **Kennedy Warne** in an exclusive extract from *'Let Them Eat Shrimp'*



Shrimp - or prawns - are an increasingly popular seafood treat with consumers. But at what cost?

A flat-bottomed punt with an ancient outboard motor ferries me across the Rio Jaguaribe. Golden light gleams on fishing boats catching the afternoon breeze in their sails. Laughing children dive like sprites in the river while a man fishes for crabs from a rickety pier. A straggle of mangroves lines the river's edge. Their looping, spidery prop roots make the trees look as if they have strolled out of the sea, found the place to their liking, and settled in. Who could blame them? The name of this place is Porto do Céu, the gates of paradise.

Two residents lead the way along a dirt track to show me their new neighbor, a shrimp farm. We climb to the top of an embankment and look across a patchwork of ponds to distant mangrove forests. An electrified fence stretches the length of the village and beyond. Skull-and-crossbones signs on the barbed wire issue a blunt warning: keep out. On the village side, goats mill about in grassless yards, cut off from grazing areas over the fence just as their owners have been denied access to their traditional collecting grounds for mangrove crabs, mollusks, and fish.

Even worse, the shrimp ponds have no lining, so salt water has percolated through the sandy soil and contaminated the aquifer beneath. The residents point to abandoned wells that until recently drew sweet fresh water to the surface. The water was doce, doce, they say, repeating the word as they savor the memory of its sweetness. Now it is salgado, salty, undrinkable. They have to fetch water from bores nearer the river or, if they can afford to, buy from the town across the river.

Outside a cantina on the beach, Manuel Ferrera Pinto vents his frustration. A fisherman for forty-two years, he came to Porto do Céu to live out his twilight years in this riverside paradise. But someone stole paradise and put in a shrimp farm. Now his well is saline, and he has no money to drill a new one. 'They have made our lives a misery,' he says. 'All we have is what the environment gives us, but this they have taken away. I pray I

have the strength to start again when the fresh water runs out.'

Ruined land, ruined lives

Along the coast, in the village of Curral Velho, seventy-three-year-old Alouiso Rodrigues dos Santos stands in what used to be his vegetable garden. He has grown crops on this land since 1958—sweet potatoes, melons, cassava, beans. 'We never had to buy from the market,' he says. The land was so productive he had to tie up his papaya trees with ropes to stop the weight of fruit from toppling them.

In 2001, a shrimp farmer built ponds right up to the boundary, 30 meters (100 feet) from his house. Now, with the seepage of brackish water from the ponds, his land produces nothing but saltwort and weeds. Near the pond wall, the land never dries and is covered with an algal crust. Unable to grow food, dos Santos turned to the sea, borrowing money to build a fish trap. But heavy seas destroyed it. 'The land threw me out to sea, and the sea threw me back to land,' he says ruefully. 'Where can I turn but to God?'

This is the nordeste, the sloping shoulder of Brazil that leans into the Atlantic Ocean just below the equator. It is a coast of heat-shimmering beaches, towering sand dunes, and cool, dark forests of mangroves. But in the past two decades it has also become a coast of shrimp farms. Zoom in on this landscape on an aerial mapping program such as Google Earth, and you will see the ponds where the shrimp are grown: hundreds of green rectangles

notched into the dunes and salt flats and mangroves.

Indisputably, shrimp farming in Brazil has been an economic success. Between 1998 and 2003, the country sustained the fastest growth in shrimp farming in the world. Production leaped from

7,000 to 90,000 tonnes—95 percent of it from farms in this region. But the same ponds that have been engines of prosperity have been agents of social and environmental harm. They have displaced natural ecosystems and the human communities that rely on them.

To see the social and ecological

footprint of the shrimp industry I am touring the nordeste with Jeovah Meireles, professor of physical geography at the Federal University of Ceará, and Elaine Corets, Latin American coordinator of the Mangrove Action Project, an environmental network based in the United States. We set out from the city of Fortaleza before dawn, and by daybreak we are among the shrimp farms. Ponds crowd the landscape like rice paddies. Paddle-wheel aerators froth the water, and workers crisscross the ponds by kayak, filling feeding trays with fishmeal pellets.

Fishmeal comes from so-called 'trash fish'—non-target species—caught by commercial trawlers. It angers Elaine that not only does the shrimp industry destroy mangroves on land, but it pillages the sea as well. Between two and three pounds of feed are needed to produce one pound of shrimp. Depending on the proportion of fish in the feed (typically around 30 percent), shrimp farming operations may be net consumers, rather than producers, of fish protein.

'A dagger in the system'

We stop at a roadside cantina for coffee and chewy tapioca pancakes, a favorite street food of Brazilians in the northeast. Jeovah speaks about the fragmentation of ecosystems and loss of biodiversity caused by shrimp farming. One of his research interests is the flux of energy between terrestrial and marine food webs, in which mangroves play a vital bridging role. 'Shrimp farming sticks a dagger into that whole system,' he says.

Jeovah has studied the Rio Jaguaribe and the communities it serves, including the settlement of Porto do Céu. He says that more than 40,000 people rely for their fresh water on an aquifer lying beneath dunes near the mouth of the Jaguaribe. The aquifer is a delicately balanced system. It consists of a lens of fresh water lying on a reservoir of denser salt water. The saltwater reservoir is replenished by the sea, and pressurizes the freshwater layer above it. The consumption of water by shrimp farms—16 million gallons per tonne of shrimp—throws the components of the aquifer out of balance, leading to salinization of the freshwater lens.

Jeovah says that of the 129 shrimp farms in the area, 90 percent do not recirculate the water they pump from the sea. Most of the farms have

Ponds crowd the landscape like rice paddies. Paddle-wheel aerators froth the water, and workers crisscross the ponds by kayak, filling feeding trays with fishmeal pellets.

no settlement ponds, but discharge directly into natural waterways—a recipe for environmental degradation. Small wonder that the villagers' water is *salgado*.

We walk along the embankment of a shrimp farm. Wastewater the color of antifreeze pours from a pond into a mangrove-flanked river. On the banks, fiddler crabs (called 'hand in the eye' crabs in Portuguese) wave their Popeye pincers. They remind me of shipwrecked sailors, semaphoring the plea 'Rescue us.' Brazil's federal constitution states that all citizens 'have the right to an ecologically balanced environment for the common use of the people,' and that the government is required to 'defend and preserve it for present and future generations.' Yet such is the drive for development that new shrimp farm licenses are being approved all the time. Jeovah says 256 applications have been made to build new ponds in the Jaguaribe area, and, despite the existing environmental damage, not one has been turned down. 'Este é incrível,' he says—this is incredible.

We continue along the coast, driving through towns with cobbled streets, tiled sidewalks, and pastel-painted houses with tall doors, wrought-iron balustrades, and flaking plaster—old Portugal preserved in her former colony. Jeovah has arranged to meet a youth group in a town called Icapuí to talk about ecotourism in mangroves. The group is keen to build a mangrove boardwalk and promote kayaking.

The mangrove area is near a fishing port. Fishers have beached their boats and are pounding caulking cotton into the joints between boards. The sound of mallets hitting caulking irons . . . a sound of the past. The boats have high superstructures, like miniature galleons, and workers on ladders and planks dip brushes into pots of vivid blue, red, yellow, and orange to freshen the paintwork. Jeovah talks to the group about the mangrove ecosystem as we walk. He stresses the need for minimum disturbance when building a structure like a boardwalk. Mangroves are resilient systems, he says, but vulnerable to changes in water circulation. Poor planning could harm the very ecosystem they are trying to promote.

Voicing opposition

Despite the proximity of shrimp farms inland, this forest seems healthy. A carpet of seedlings has sprung up beside runnels in the sediment. Brick-

red bristly legged *Goniopsis* crabs move nimbly over the roots of the parent trees. Against the dark brown of root and silt, they stand out like Christmas-tree ornaments. As if knowing what an obvious target they are, they retreat into clefts in the root matrix at the merest approach.

Seaward of the mangroves stretches an immense tidal flat, up to two miles wide. The stake fences of offshore fish traps seem to float above the sea in a mirage. Along this coast, where the water is shallow far out to sea, fish trapping was traditionally the work of *vaqueiros*, Brazil's breed of cowboy, who collected the catch on horseback.

Curral Velho, the old corral, takes its name from those times. Curral Velho

is one of the communities in the northeast that has raised its voice against Big Shrimp. Villagers have organized petitions, challenged land sales, built a public information center, and published pamphlets. Some of the villagers speak out through art. One woman paints mangrove scenes for sale in Fortaleza, using different-colored mangrove muds as pigments. Another writes poetry to express her indignation at the destruction of mangrove lands. In the cool of the evening, when all Curral Velho comes outside to swing in a hammock or chat in a doorway, we sit under a mango tree while Maria do Livramento Santos recites a lament for the lost trees. Among the stanzas are these lines (translated from the Portuguese):

Those who saw me before smiled.
Today, those who see me cry.
I am devastated, as if I were a lake whose waters have dried up.
As if I were a bird whose feathers have fallen out.
I feel the flames of fire rising in me.
My roots are torn away from the trunk by tractors.
My leaves fall to the ground
As if they were the tears that fall on the face of a child when she cries.

Along the street, fish sizzle on a charcoal brazier and a man with a guitar sings sad protest songs. Someone hands me a pamphlet with the title 'Crying for Justice.' The cover shows a hand gripping a giant shrimp, fierce-

eyed, mouth open to devour. This is how many people in Curral Velho see *carcinicultura*, the shrimp-farming industry: as a devourer of natural resources and livelihoods.

Sister Mary Alice McCabe, an American member of the Sisters of Notre Dame de Namur, is helping the community in its struggle. 'One of the difficulties in fighting shrimp farming is that most Brazilians haven't seen it,' she says. 'They ask, "Where does it happen, out at sea?" No, no, no, we tell them, It is happening right here. They're digging up your mangroves, they're destroying your coastline. We're trying to bring the story into the open.'

It is no easy task, nor one without risk. In 2004, six Curral Velho fishermen were

beaten and shot by shrimp-farm security guards for challenging the legitimacy of the farm's expansion into new land. In 2005, a fisherman in the state of Bahia was executed and his body dumped in a

'Whilst some squat solely out of need, others see squatting as a legitimate use of abandoned spaces'

shrimp tank.

That same year, Sister Mary Alice's friend and colleague Sister Dorothy Stang was murdered in the state of Pará for opposing the illegal logging of terrestrial rainforests. The seventy-three-year-old nun, known as the Angel of Amazonia, was on her way to a community meeting when she was accosted by two men allegedly in the pay of ranchers. She was shot six times as she read aloud from her Bible the words 'Blessed are the poor in spirit.'

The forests may differ, but the same forces of dispossession are at work. In an interview after her friend's death, Sister Mary Alice said, 'Dorothy was with the excluded migrant farmers in their constant, futile search for a piece of land to call their own. She pressured the government to do its job in defending the rights of the people.' In the northeast it is subsistence fishers who are excluded—shut out of traditional harvesting grounds, protesting as the forests fall to the shrimp juggernaut.

Extracted from: Let Them Eat Shrimp: The Tragic Disappearance of the Rainforests of the Sea by Kennedy Warne. © Kennedy Warne 2011 Reproduced with permission of Island Press, Washington, D.C.

Mayan people battle oil giants as Belize's rainforests threatened

Forest communities are fighting increasing incursions onto their land by US oil companies. Now the Belizean government is seeking to reverse a court ruling preventing them allowing oil exploration, logging or mining. **Robin Llewellyn** reports from Belize



Flare at Spanish Lookout oilfield, operated by Belize Natural Energy with CHx investment. Photo: Robin Llewellyn

In a wooden hall built on stilts in the Belizean rainforest a man is speaking in Q'eqchi', a language common among the Maya on both sides of the Guatemala-Belize border: 'When we are kept in the dark, when we are kept like in a pot, we are like chickens, and those who intend to deny us our rights are putting on the salt and the onion - all the seasonings - to cook us... And that's what they want.'

He is Manuel Xó Cú, a member of Mayan advocacy organization Defensoría Q'eqchi', part of a Guatemalan delegation of Q'eqchi' leaders who have come to the Belizean region of Toledo to share experiences.

'There was a leader' he says, 'who, in three-quarter pants and a torn-up shirt went to Washington and voiced our concerns about the denial of rights to our land. The Inter-American Commission found the Guatemalan Government guilty of violating the rights of the community, and the government started to respond and to address it.'

The visiting Maya describe current threats to their communities as including nickel mines, African Palm plantations, and oil companies, in addition to the cattle ranchers who deprived them of most of their land and cleared the forests in their parents' generation. Having experienced civil war the Guatemalans have mobilised and organised themselves to a more militant degree than their Belizean counterparts, and they

expressed awe at the rainforest surrounding the village: 'You have so much land...' said visiting village leader Macario Che, and warned: 'Do not make the mistake of our parents.'

The Belizean Maya have success stories: Manuel Caal, former chairperson of the Q'eqchi' village of Conejo, described how their 'land was being surveyed and sold and leased by people from outside of the village, [so] we put a line around our land and with the help of the organization that we helped form, SATHIM, we created a map

showing the land of each village... We started to learn that we had rights, and to learn how we could take our ideas for resolving the problems of our villages to the Supreme Court.'

Protecting rights

In 2007, the villages of Conejo and Santa Cruz successfully argued that Mayan customary law governed their use of the rainforest, and that this body of law should form part of Belizean law. The judge drew guidance from an earlier judgment of the Inter-American Commission on Human Rights and the two villages were able to gain unchallenged legal title to their land.

Since then, villagers in Conejo have conducted an inventory of the valuable rosewood trees in their rainforest and developed a project of sustainable forestry that maintains forest cover, provides money and employment for the village, and perpetuates the stock of rosewood for future generations. 'We saw how the law was there to protect our rights,' Caal said.

Other Mayan villages across Toledo were inspired to follow suit. A 2010 case at the Belize Supreme Court again found in their favour, the Chief Justice Abdulai Conteh prohibiting the government from 'issuing any concessions for resource exploitation, including concessions, permits or contracts authorizing logging, prospecting or exploration, mining or similar activity under the Forests Act, the Mines and

Minerals Act, the Petroleum Act, or any other Act...'

While many campaigners saw this as an opportunity to protect their forests from illegal logging, and to foster self-reliance in place of development projects that had shown little benefit to

the villagers, the government saw not community self-government but rather a large swathe of the country escaping from its control. Prime Minister Dean Barrow immediately appealed it, declaring that it was 'injurious to the public interest, it is injurious to national unity and it is injurious to the

development of the Maya community.' He also refused to renew Conteh's contract as Chief Justice that year, in a move criticised by the Belize Bar Association.

The appeal has been heard but no date has been set for the delivery of the judgment which leaves the villages involved in a legal limbo - without papers to their land or the security to develop long term solutions to such problems as the illegal logging of rosewood on their land. In a development that questions how far the Maya can use the law to protect their communities, the authorities are not waiting for the judgment to be delivered before pressing ahead with its agenda.

The government is allowing American oil companies CHx and US Capital Energy to conduct seismic testing in the area of eight Maya villages neighbouring the village of Conejo which, as it has full land title, is excluded from the permit. The companies are allowed to conduct seismic testing inside the Sarstoon Temash National Park - listed as an internationally significant wetland under the Ramsar Convention.

"We are winning"

A week after December's Q'eqchi' meeting in the crowded hall in the rainforest the Ecologist spoke to Alfonso Cal, head of the Toledo Alcaldes' Association which was party to the 2010 case. He claimed that his organization lacked the funds to fight the oil exploration, and described how the government was not respecting the 2010 ruling on the ground, but instead using the Police to enforce old concessions. He insisted however, that: 'We are winning. Only the government's not respecting it, that's why they appealed the case. We won in 2007, and we won in June 2010. And now they appeal. So that's what we're awaiting. But we know that it's maybe 50-50, because the government picks their own judge who sits on their side.'

I asked him what the villages could do to develop their economies if the Government's appeal failed?

'There's a lot that we could do. Some villages want to replant back the forest, so they can leave something for their children in the future... We're trying to look at our neighbouring country: All their land has been sold, so the poor

In 2007, the villages of Conejo and Santa Cruz successfully argued that Mayan customary law governed their use of the rainforest, and that this body of law should form part of Belizean law.

people now have to borrow the land, and once you borrow the land the work that you do is half-half. Half for the owner, half for you.'

Alfonso Cal said the villages had not been consulted by the oil companies and described how village leaders told him no permission had been sought by US Capital Energy:

'We are just seeing people coming in and cutting [seismic] lines. But now some of the people want jobs and they say "Don't stop

the company, we need some jobs."

The Government of Belize should abide by the judgment of the Supreme Court that requires the Government to seek our consent; it should come

to us and talk to us. But instead it's violating our rights, just doing things the way it wants.'

At the oil company compound in the village of Barranco the Ecologist was told around 70 people were employed in the explorations across Toledo. Their permitting officer Martin Choco later estimated the figure of employed people to be nearer 100, with more about to be hired. CHx head Alex Cranberg said his company's 'tax payments support government programs that would not otherwise be possible to fund. We are advised by our local and international counsel that all of our activities are in accordance with Belize law and relevant Supreme Court rulings.'

Violations?

CHx is also involved in the only commercial oilfield in Belize, at the German Mennonite community of Spanish Lookout. David Reimer represents the community's businesses in their relations with the oil company, and described the company's reluctance to offer any percentage of its profits to the local community for the upkeep of local roads. The company also broke an agreement, Reimer claims, not to continue to conduct flaring, which continues 24 hours a day, although Reimer says it 'eventually agreed' to give one percent of its sales to the community.

Back in the rainforest, an illegal

seismic line cutting across Conejo's territory was discovered in January. This violated the company's permit, the uncontested 2007 Supreme Court ruling, and therefore Belizean laws protecting Conejo's property rights. Once the seismic line became a news story US Capital Energy argued that its passage through the village's land had been cleared by mistake, but demanded that the community's leadership allow it to be operated with explosives. When

an immediate response was not forthcoming (the leadership having responded that a community meeting was needed to determine the response, in the presence of an attorney), the

company reportedly separated the village's 23 men from the rest of the US Capital's workforce on Thursday 2 February and sacked them.

The community meeting was held on Sunday 5 February. US Capital's permitting officer Martin Choco attended and read out a letter he said he had prepared, and asked villagers to sign. The letter condemned the village leadership for their initial objection to the incursion, made no mention of redress for damages, and granted US Capital Energy freedom to explore for oil on Conejo's territory.

Martin Choco, accompanied by the helicopter pilot and GPS officer contracted from seismic company Acoustic Geophysical Services, said: 'Sign it so you can return to work'.

The leadership suspended the meeting due to what they claimed was illegal pressuring of the community. Their request for a copy of the letter was declined by Martin Choco who reportedly took it away, and no copy was left in the village or released to the press.

Alistair King - US Capital's representative in Belize, told the Ecologist however that the letter had been composed by villagers, and was 'nothing to do with US Capital Energy.' He added, however, that on its authority they would return to the seismic line (number 08) this week to continue operations. He earlier told the Belizean media that Conejo's workforce had been

reinstated, and denied they had been sacked in the first place.

Declaration

When I put it to him that their claimed tally of signatures - 32 villagers - amounted to less than than half of the community's population he responded: 'The women tend to leave political things to their men.'

Anita Tzec, a researcher looking at the Maya land rights campaign in Toledo and a member of the Indigenous Peoples' Caucus of the Working Group developing the Draft American Declaration on the Rights of Indigenous Peoples at the Organization of American States, attended the meeting as an observer. Her studies not only focus on Maya land rights but give special attention to the decision making of women in these processes. She maintains:

'At least six women signed the declaration. And consent is definitely not a matter left to the men in Maya societies. The wider world needs to understand that these communities have their own dynamics and decision-making processes in which women play an important role. During the Conejo case the female elder Melina Makin testified as one of main witnesses at the Supreme Court. This clearly shows the critical importance of women's participation in the defense of their communities' collective rights.'

Maya land rights campaigner Gregory Ch'oc also attended the meeting and said the signatories included several teenagers who appeared to be below voting age.

When Conejo's former chairperson Manuel Caal described the community's securing of land title to the Guatemalan delegates at the Q'eqchi' conference, in the little wooden hall in the rainforest, it was received with a sense of wonder at their achievement. Now however, the extent of the rights secured is uncertain given the lack of law enforcement by the Belizean authorities.

Without resources to litigate, and facing incursions into their land that have evaded international attention, the community is encountering challenges to its legal title from vastly more powerful interests. This is forcing the community into position of vulnerability, as if being placed in a pot, and US Capital Energy is ready to add the seasonings.

Back in the rainforest, an illegal seismic line cutting across Conejo's territory was discovered in January.

Bjørn Lomborg: 'Five inches...? I can't even remember that figure'

Despite no scientific training Bjørn Lomborg has had a strong influence on the climate change debate, positioning himself against climate deniers and campaigners who say that climate change is a global emergency.

Richard Orange reports

Let's do it in my office, the saddest room in the world,' jokes Bjørn Lomborg, the man who has ranked as the chief bogeyman for climate campaigners ever since his book, *The Skeptical Environmentalist*, hit the bookstands ten years ago.

The room, in a dark corridor on an upper floor of the Copenhagen Business School, is piled with boxes, its shelves empty, making it difficult to find a place to sit.

In November, Denmark's new centre-left government withdrew funding from the Copenhagen Consensus Center, the Lomborg-run think tank which argues that setting caps on carbon emissions should not rank even in the top 30 of global priorities. 'This is pay-back time,' Lomborg says.

'I met with the woman who's now Prime Minister (Helle Thorning-Schmidt, the daughter-in-law of former labour leader Neil Kinnock). I said, "I'd love to show you how the Copenhagen Consensus is a good idea," and she looked at me and she said: "I think that probably might be right, Bjørn, but I will just get so much more mileage out of criticising you."'

Whatever the truth of that story, the fact is that on January 1, 90 per cent of Lomborg's funding, about £1.5m

annually, disappeared.

The blow comes at a time when Lomborg's longstanding campaign against the Kyoto process is in trouble, with November's Durban meeting finally drawing the world's big polluters and developing economies into a deal.

And it comes a year after Howard Friel, an American author, released *The Lomborg Deception*, in which he picked his way through citation after citation in both *The Skeptical Environmentalist* and *Cool It!* Lomborg's 2008 book, showing that many of the documents referenced simply didn't back up Lomborg's claims.

For a man with no scientific training (he has a PHD in politics and few peer-reviewed papers to his name), Lomborg has had an extraordinary influence on the climate change debate, positioning himself against both the deniers (he admits climate change is real), and against campaigners who argue that climate change is a global emergency that demands rapid, large scale action (he believes it doesn't).

In 2008, the *Guardian* named him one of its '50 people who could save the planet'. The same year, *Prospect Magazine* ranked him the world's 41st most influential public intellectuals.

With his engaging charm, it's easy to see why he was popular as a young lecturer at Aarhus University back in the late 1990s. But it's also apparent that



Bjørn Lomborg remains an influential if controversial figure

the laid-back attire of t-shirt, jeans and shiny trainers conceals raging ambition. 'I met with Barker (Greg Barker, UK Climate Change minister) for a short while, and I've been giving advice to the White House,' he says, explaining his recent impact on policy.

There are no books visible on the shelves at the Copenhagen Consensus Center by anyone apart from Lomborg, and when he flips open his Macbook Air, I see he's set a portrait of himself as his desktop wallpaper.

'I experienced him as a man who pushes very hard to get what he

wants and has rather sharp elbows, with circular saws attached for good measure,' remembers Hugh Matthews, who worked with Lomborg to translate the *Skeptical Environmentalist*.

When I visit him, Lomborg is keen to dismiss the Durban result. 'I'd very much hoped that the Copenhagen breakdown would somehow lead to saying "let's try something new"', he says. 'But unfortunately, it didn't lead to anything but saying, "well, let's try again in Cancun", which of course failed, or saying, "let's try again in Durban", which I think by any reasonable standards failed.'

He wants governments to instead agree to invest 0.2 per cent of their national income, a total \$100bn a year, in green research and development, and look at geo-engineering technologies, such as pushing sulphur into the air, as a backstop.

The announcement of this plan in 2010 was interpreted as a sign that Lomborg now viewed climate change as a priority. But he maintains his stance is the same as in 2001.

'It has not changed appreciably, no,' he says. 'It's a problem, it's not the end of the world. Looked at in the large scale of things, where we have a 13-fold increase in GDP over the century for the developing countries, it's important to recognise that the thing we're going to be talking about in the 21st century isn't the 5 per cent decrease in GDP due to global warming.'

In 2008, the Copenhagen Consensus didn't rank an international agreement to curb carbon emissions among the top 30 of global priorities. Investing in green technology research ranked 14th.

From the day Lomborg gained notoriety, there have been questions from scientists, not simply about his view that climate change will not be a catastrophe, but about his methods.

Hugh Matthews, who translated the *Skeptical Environmentalist* into English, says problems with the 3,000 citations were apparent in the editing stage.

'I checked a good number of his footnotes, as a good translator should, and I remember wondering why so many of the URLs had done a bunk,' he remembers.

In 2003, an expert panel from the Danish Ministry of Science concluded that the *Skeptical Environmentalist* was guilty of "scientific dishonesty".

This was later annulled after Lomborg complained to the Ministry of Science, something his Danish opponents put down to the intervention of Anders Fogh Rasmussen, Denmark's Prime Minister at the time, and Lomborg's sponsor. Last year, Friel, reprised the attack.

To give an example of the kind of thing Friel documents again and again, in one of the passages in *Cool It!*, describing the impact of global warming on the Miami sea front, Lomborg writes: 'Yet sea-level increase by 2050 will be about five inches - no more than the change we have experienced since 1940 and less than the change those Art Deco hotels have already stood through.'

Under the book's citation system, the words in bold — sea level increase — are then, on page 179, cited to "Matthews, 2000".

You then have to turn to page 226, to see that 'Matthews, 2000' refers not to a scientific paper, but to an article, *The Attack of the Killer Architects*, from *Travel Holiday*, a now defunct travel magazine, that makes no reference to global warming at all.

Lomborg throws up his hands in exasperation when I mention this.

'Five inches? I can't even remember that figure,' he says. When pressed, he adds: 'I say that it will rise five inches, that's sourced to the IPCC (the international body that reviews climate science).'

In his office, without books to back me up, it's hard to counter this. But when I get home, Friel looks correct.

If the 'about five inches' has any basis, it's a back-of-the-envelope calculation derived from the lower end of the IPCC's 2007 range of six projections for sea level increase up until 2100.

Other citations backing up other key claims in *Cool It!*, that the polar-bear population 'has soared,' and that global warming could save more lives from reduced deaths due to cold than those lost due to additional heat, seem equally questionable when placed under Friel's microscope. Lomborg says the book was a 'set up'.

'I think the reason why you haven't seen this kind of book before is that you needed a combination of someone who really, strongly wanted to debunk me, and also someone wasn't too interested in actually getting it right.'

Friel claims he had no act to grind, and only stumbled upon Lomborg's work while trying to write a book about the coverage of climate change in the *New York Times*. Lomborg complains that Friel never contacted him when writing the book. If he had, there's every chance he would have won him over.

Rajendra Pachauri, the IPCC Chairman, in 2004 compared Lomborg to Hitler for arguing it might be cheaper to evacuate the Maldives than prevent sea level rise. But in 2010, he provided the blurb to Lomborg's latest book.

Mark Lynas, the green campaigner who threw a custard pie at Lomborg back in 2001, is now on good terms, and talking to him about making a joint appearance at next year's Hay book festival. 'I don't think that he's an evil two-horned devil incarnate who's not part of civilised discourse, as I probably did then,' Lynas says.

He thinks it's shame that he has lost funding. 'It's sad in some ways, but he does struggle to stay relevant, because the debate in all these areas has moved on.'

The Copenhagen Business School is set to announce the closure of Lomborg's research center. And Lomborg fears he is constrained in the kinds of donor he can tap.

'There would be a lot of people who'd be waiting to pounce, saying, "of course he's saying that because he's just funded by Exxon". Well no, I'm not, and obviously that's a big problem going forward, because we have to make sure that the funding, if it's going to go forward, is unassailable.'

Meanwhile, Lomborg has himself moved on, focusing on development as much as climate change. He's just back from an Aids conference in Ethiopia, before which he spent a while in the US and Australia. He's barely been home in three months.

'It's hard,' he concedes. 'Still, better than "nobody wants to hear what you say".'

Wind turbines: the future of renewable energy or a blight on UK countryside?

The wind farms debate rages on as the need for renewable energy grows. But is the UK in danger of putting aesthetics before the need to cut carbon emissions and adopt greener technologies? **Bethany Hubbard** reports



Scroby Sands was the second offshore wind farm to be built in the UK and the third anywhere in the world

Eerie, almost alien-like, inhabitants of otherwise natural landscapes, wind turbines have come to represent both positive change and unwelcome progress. As more farms crop up both onshore and offshore, a heated debate has arisen around the aesthetic impacts of these whirring giants, and the necessary move towards greener energy.

Set against a fiery sunset or cobalt sky, the starkness of their white physiques is difficult to ignore. For some they represent a move towards sustainable energy, and are beautiful because of that. For others they are scars on once pristine landscapes, certain to discourage tourism and ruin areas of outstanding natural beauty.

Donald Trump is halting construction of his luxury golf resort in Aberdeenshire due to a proposed offshore farm, and has publicly accused First Minister Alex Salmond of aiming to 'destroy' Scotland. And Trump is not alone. A myriad of anti-wind action groups have emerged throughout the UK.

But research shows that most people aren't turned off by propellers. 'The vast majority (93-99 per cent) of tourists that had seen a wind farm in the local area suggested that the experience would not have any effect on their decision to return to that area, or to Scotland as a whole,' according to a 2007 report conducted by Glasgow Caledonian University and commissioned by the Scottish Government.

According to Partnerships for Renewables, 68 per cent of those surveyed in 2003 on behalf of the Wales Tourist Board said, 'that if the number of wind farms increased in Wales it would make no difference to the likelihood they would take holidays in the Welsh countryside.'

In 2011, 36 more wind farms were built in the UK, Wales and Northern Ireland, bringing the grand total to 326. And in January, RenewableUK announced the country's wind sector has reached 6

gigawatts of installed capacity – enough to supply electricity to more than 3.3 million homes. But more needs to be done.

A looming electricity shortage
In an interview with the Ecologist, Charles Hendry, of DECC, said if we don't act now we will face an electricity shortage in the UK in about 10 years time. With the UK aiming to source 15 per cent of energy from renewable sources by 2020, wind seems like an obvious route to take. But it isn't the only solution, Hendry says.

'With all renewable technologies there's time when the resource isn't there – the sun doesn't always shine; the wind doesn't always blow; the tide isn't going in and out at the time we necessarily need it,' he says. 'With every single one there is a drawback and that's why a balanced approach is the best way of trying to deal with it.' Hendry says a mix of nuclear, fossil fuels and renewables will create that balance.

In 2010 the UK was responsible for emitting 590.4 million tonnes carbon dioxide equivalent, according to a February 2012 release by DECC. Thirty-five per cent of emissions were from the energy supply sector, which showed a 2.8 per cent increase, due to the switch from nuclear to coal and gas for electricity generation. A

greener energy alternative is needed.

Hendry is confident the country will reach the 2020 target and says the majority of wind turbines needed to meet that goal have already been built, or are in the planning system. As for the opposition, local impact is always part of the development process, he says, but the government needs to be cognisant of community concerns.

'We recognise that to be sustainable we have to carry public opinion with us; we have to carry communities with us,' he says. But Hendry worries that a push against development will lead to the exportation of wealth and jobs. 'From a security of supply perspective there's a real benefit in using a technology that uses our own resource – where we're

not dependent on imports.'

'A wind farm too far'

In the Scottish Highlands, plans for the Allt Duine Wind Farm, which will be situated on the edge of Cairngorms National Park in the Monadhliath Mountains, have also been met with opposition. Cairngorms is Britain's largest national park, covering 4528 sq kilometres and housing five of Scotland's six highest mountains, meaning a wind farm would be visible from surrounding hills.

Chris Townsend, who lives in the park and represents the action group Save the Monadhliath Mountains, says they are not against renewable energy, or wind farms for that matter, but are opposed to the proposed location of the Allt Duine farm.

'We're objecting to a major industrial construction on wild land,' he says. 'It happens to be a wind farm. But I would certainly object to anything else being built up there, whether it was a tourist development, like a ski resort, or a hydro scheme or any other type of development.'

Townsend describes the Monadhliath as lonely, wild, beautiful and peaceful – a vast area of rolling moorlands and stream valleys with a few dramatic peaks. A councillor described it as a place for connoisseurs, he says. 'You have to go into it, and appreciate the details and the quiet and the wildlife. But all of this will be completely destroyed by having a huge wind farm bang in the middle of it.' There's also concern about the rare golden eagles that inhabit the area, and the impact spinning turbines could have on the birds.

Townsend worries wind has become a free-for-all from which wealthy landowners reap the benefits. 'Most of these Scottish Highlands are in private hands, and there's not that much control over what the landowners can do.' He says owners of such huge estates agree to take money from turbine companies in exchange for building rights, which encourages such companies to submit applications. 'I think this is unsatisfactory all round,' Townsend says. 'The only people who really benefit from it are the landowners.'

Despite his concern for conservation, Townsend does recognise the role wind can play. But, like Hendry, he says a mix of renewable energies would be ideal while relying on any one would be risky. 'I would also think that offshore is a

With all renewable technologies there's time when the resource isn't there – the sun doesn't always shine; the wind doesn't always blow; the tide isn't going in and out at the time we necessarily need it.

better place for wind farms,' Townsend says. 'The wind is more reliable. You can build bigger ones. You can use sea cables to bring the energy ashore.'

Communities protest

Kim Terry has lived in South Ayrshire, Scotland, for eight years. She had only been living there a year when the Hadyard Hill wind farm went up about five kilometres away from her home.

'It's broken the view of the valley totally,' she says. 'It was a lovely valley and it sits at the end of it. And what is proposed now are another two wind farms in the same valley.'

When Scotland became a prime location for wind farm proposals, Terry took action and helped form Communities Against Turbines Scotland (CATS).

'Southwest Scotland started to become saturated with applications for large wind farms and it was having such an effect on the area and the residents that we decided to form a local group,' she says.

But, unlike Townsend, Terry does not support wind energy at all. Aside from aesthetics, she says the health, safety and livelihood of residents are not being considered.

'The way it's been done, it's created a system where the developers cannot lose whether they generate electricity

or not,' she says. 'They are guaranteed a profit and no other business is run like that. And it's the people who have to pay for it on their electricity bills.' In addition, she says residents closer to the wind farms have been terrorised by noise and shutter flicker, and are unable to sell their homes, which are no longer desirable.

Terry's own house has even been on the market for six months and the one prospective buyer who came to see it turned away immediately when he found out how close the proposed wind farm would be to the property.

She says nuclear power, along with fossil fuels, is the way to go.

Beauty is in the eye of the beholder

The Scroby Sands wind farm in Great Yarmouth, Norfolk, was the second offshore farm to be built in the UK and the third anywhere in the world at the time of its commission in March 2004. The farm's visitor centre was erected to educate people about what, at the time, was a new technology. The centre was only supposed to be open for five years, but proved to be so popular that it was expanded and refurbished. Now a tourist destination, the centre attracts more than 35,000 visitors each year.

'It's not just passing traffic that comes,' says project manager Jon Beresford. 'We do get people who actually have heard

about the visitor's centre and have made a special trip to Great Yarmouth just to see it.'

Beresford says those with preconceived perceptions about turbines are difficult to sway, but there is hope for the next generation. 'Children are very aware of climate change, and you find that they're a lot more open minded,' he says. Scroby Sands often hosts school groups, aiming to educate youth about renewable energy.

On a sunny day in Great Yarmouth the majority of deck chairs near the beach are pointed toward the wind farm, Beresford says. 'I even had a request two years ago from a guy whose mother had died and her dying wish was to have her ashes scattered amongst the turbines on the seabed because she lived opposite the wind farm and loved it.'

It may be fear of the unknown that needs to be conquered. Glasgow Caledonian University's report says that those who had seen a wind farm were less hostile towards them than those who had not.

Will Dawson, of Forum for the Future, says what is missing in the UK is a proper democratic process that gives people a say in where wind farms are placed, and ensures they benefit from the energy produced.

'If we had a much better system in the UK, like we do in Germany, Denmark and Sweden, which really enables community ownership of energy systems, then that would really start to switch the attitudes toward wind turbines,' Dawson says.

Forum for the Future recently launched Discover Community Energy, a project which aims to do just that. The project is spearheaded by a coalition that includes The Co-operative Group, The National Trust, The National Federation of Women's Institutes and The Church of England, and aims 'to start a revolution with communities at its heart which will drive a clean, affordable and secure energy system.' Currently, in the UK, less than 1 percent of renewable electricity is generated by communities. The coalition hopes to 'dramatically increase this figure by 2020.'

But when it comes to aesthetics, Beresford says it may be difficult to change people's minds. 'The one thing you can't argue about is the look,' Beresford says. 'You either love them or you don't.'



caption