

at the heart of earth, art and spirit
Resurgence

**RESILIENCE
& CLIMATE CHANGE**

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RE SIL ENC^e

& CLIMATE CHANGE

The November/December 2009 issue of **Resurgence** magazine presents a “Green Agenda for the Copenhagen Climate Summit” where key writers and thinkers, including Rob Hopkins, Jonathon Porritt, Crispin Tickell, Wangari Maathai and many others discuss the root causes of, and solutions to, this pre-eminent challenge of our times.

Far from being doom-laden and apocalyptic, this special issue sees the crisis of climate change as an opportunity to rethink our economic, social and political systems - perhaps the last chance for humanity to fulfil its potential as a truly interdependent, wise and compassionate species.

We do not have time to wait for a technological fix; but we do have Nature’s template with which to design a new society. As Wangari Maathai says in her interview, “forests must be part of the solution”; and as Rob Hopkins states in his article “resilience thinking is a crucial missing piece of the climate change jigsaw and is a more useful concept (to base our future decision-making on), than sustainability.

This supplement gives you a taste of the breadth and quality of articles you will find in the November/December 2009 issue of **Resurgence** magazine.

To order a copy visit www.resurgence.org or tel. + 44(0)1237 441293.

Cover: White snake's head fritillary PHOTOGRAPH: DAVID HALL/WWF

Green violet-ear hummingbird pollinating an orchid flower, Costa Rica
PHOTOGRAPH: MICHAEL PATRICIA FOGDEN/NATIONAL GEOGRAPHIC STOCK



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* Extracts featured in this supplement



TIME FOR ACTION

The kind of leadership that was shown in bailing out the banks should now be demonstrated to protect the tropical rainforests.

For more than three decades the international community has made different attempts to combat the ongoing challenge of tropical forest clearance. Initial concerns were spurred on by disappearing wildlife, impacts on forest peoples and the degradation of environmental services, but now the debate has moved on. At the heart of the discussion about tropical forests today is the matter of carbon, and how to keep it in the trees and the soils beneath them, and thus out of the atmosphere.

Centre stage in this new discussion are negotiations taking place under the auspices of the United Nations Framework Convention on Climate Change (UNFCCC) through talks on Reducing Emissions from Deforestation and Forest Degradation – or REDD. The aim is to find ways of cutting the vast carbon emissions arising from tropical forest loss through new funding streams to help countries shift toward lower carbon development pathways – and create some form of market mechanism to stop deforestation.

The discussion has been controversial and intense, with passionately held views on all sides. Meanwhile, the forests continue to fall. Some six million hectares of diverse tropical forests are cleared every year. As a result, hundreds of millions of tonnes of carbon dioxide are pouring into the atmosphere. Indeed, the emissions arising from tropical deforestation

are today larger than the whole transport sector – with an estimated 17% of total emissions arising from human activity – it is more than all the world’s cars, planes and ships combined. If we are to avoid a climatic catastrophe that will affect all life on Earth, then deforestation must be stopped quickly, and at the same time, drastic cuts in emissions from fossil fuels must take place. While there are many ideas on how best to do this, the one thing that we are truly short of is time.

“Any serious attempt to avoid the worst effects of climate change must include a credible attempt to slow down, stop and then reverse tropical deforestation.”

In April 2009, a new process to look at the potential emergency measures that might be put in place to cut deforestation was presented to governments. Perhaps the kind of leadership that was shown in bailing out the banks will now be demonstrated in the provision of the much more modest finance needed to bail out one of our planet’s ailing life support systems? Let’s hope so, for we may not have too many more chances to make the difference needed. For unlike the banking system, when our natural capital is depleted no cash injection will bring it back.

Tony Juniper is an independent sustainability campaigner and a Special Advisor to the Prince’s Rainforests Project.

Climate-friendly Farming

The new approach of 'rich-soil' farming reveals that correctly managed agriculture could help us to turn back the carbon clock.

Putting the many approaches to agriculture into simplistic categories and making sweeping generalisations about their merits and faults has led to farmers of all kinds feeling that their methods are unfairly criticised. There are farmers employing good techniques in every category. As well as working harder than many other professions for low remuneration, most farmers care about their work, want to produce the best products and maintain their livelihoods for the future. But pressures including competition, prices, perceived need for high productivity, sector policy and marketing of agricultural inputs have led to many farm practices that 'borrow' more carbon from the soil each year than they put back.

However, there is a newly emerging way of looking at farming that recognises good techniques being practiced on any type of farm. It gives credit where due and creates a level playing field for assessing all approaches to farming; from



Green manures like vetch are part of a farmers' toolkit to sequester vast amounts of carbon
PHOTOGRAPH: JASON INGRAM/www.jasoningram.co.uk

“Healthy farmland may have the potential to sequester as much carbon dioxide per hectare as a forest.”

traditional to mechanised, intensive, organic, biodynamic or permaculture. This universal aspect of good farming could perhaps be called ‘rich-soil farming’.

The three major considerations in the assessment of food production are the quality and quantity of food produced and the ability to continue production. At a biological level, it is soil that produces food and its production capacity can be enhanced or reduced. Typical rich forest soil might be made up of approximately 15% air, 15% water, 60% rock and minerals, and 10% organic matter. Organic matter is decomposed plant matter (humus) and animal life in the form of microbes and insects, and is at least 50% carbon. As the rock content of soil is stable, and air and water content are affected by organic matter, the critical controllable factor that determines food quality, quantity and continued productivity is increasing or decreasing its organic matter content.



A Small Copper butterfly on vetch

PHOTOGRAPH: TAKASHI KOMIYAMA/PHOTOLIBRARY

Over 70% of Britain is covered with agricultural land, so the greater part of the soil and plant life of this island is controlled by human management. The soils of natural oak forests in the UK contain around 10% organic matter but in the majority of British agricultural land this has been reduced to an average of 3.5% and in some intensively farmed arable land just 1%. But the good news is that while some farming practices decrease soil organic matter others increase it and a host of recent studies are helping to define the effectiveness of different practices. Initial calculations suggest that rich-soil farming (where organic matter is incorporated back into the soil) not only produces high quality foodstuffs, but could also have a carbon sequestration potential so powerful that it could turn back the carbon clock.

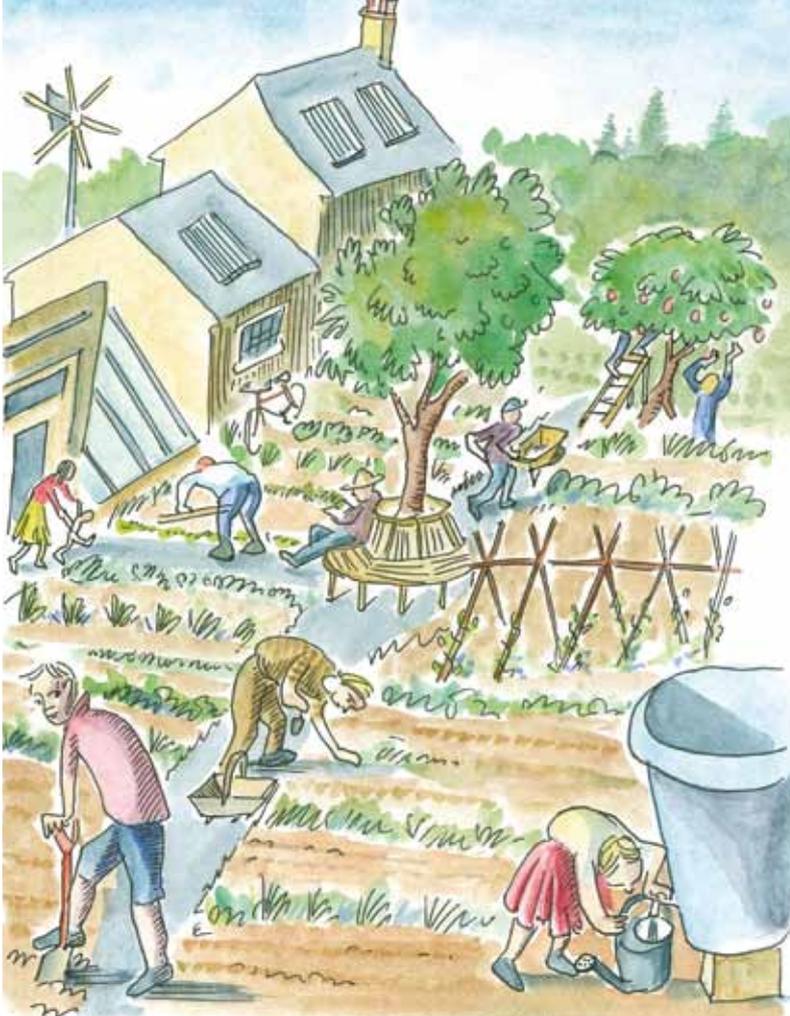
Mukti Mitchell is a carpenter, sailor, and pioneer of low-carbon lifestyles. www.lowcarbonlifestyle.org

RESILIENCE

Why 'resilience thinking' is a crucial missing piece of the climate-change jigsaw

We have a paucity of stories that articulate what a lower energy world might sound like, smell like, feel like and look like. What is hard but important, is to be able to articulate a vision of a post-carbon world, so enticing that people leap out of bed every morning and put their shoulder to the wheel of making it happen.

Resilience thinking can inspire a degree of creative thinking that might actually take us closer to solutions that will succeed in the longer term. Resilient solutions to climate change might include community-owned energy companies that install renewable energy systems in such a way as to generate revenue to resource the wider localisation process, the building of highly energy efficient homes that use mainly local materials (clay, straw, hemp), thereby stimulating a range of potential local



ILLUSTRATIONS: HUGH DUNFORD WOOD

THINKING



businesses and industries, the installation of a range of urban food production models, and the re-linking of farmers with their local markets. By seeing resilience as a key ingredient of the economic strategies that will enable communities to thrive beyond the current economic turmoil the world is seeing, huge creativity, reskilling and entrepreneurship is unleashed.

The Transition Movement is a rapidly growing, 'viral' movement, which began in Ireland and is now underway in thousands of communities around the world. Its fundamental premise is that a response to climate change and peak oil will require action globally, nationally, and at the scale of local government, but it also

needs vibrant communities driving the process, making unelectable policies electable, and creating the groundswell for practical change at the local level.

It explores the practicalities of building resilience across all aspects of daily life. It catalyses communities to ask, "How are we going to significantly rebuild resilience in response to peak oil and drastically reduce carbon emissions in response to climate change?"

By putting resilience alongside the need to reduce carbon emissions, it is catalysing a broad range of initiatives: from Community Supported Agriculture and garden-share schemes, to local food directories and new Farmers Markets. Some places, such

and why resilience is a more useful concept than sustainability.

as Lewes and Totnes, have set up their own energy companies, in order to resource the installation of renewable energy. The Lewes Pound, the local currency that can only be spent in Lewes, recently expanded with the issuing of new £5, £10 and £20 notes. Stroud and Brixton are soon set to do the same.

What underpins these responses is the idea that meeting our climate emissions responsibilities and preparing proactively for the end of the age of cheap oil can either be seen as enormous crises, or as tremendous opportunities.

Rob Hopkins is the co-founder of Transition Network, and is author of *The Transition Handbook: from oil dependency to local resilience*.



For our own survival we must implement
global protection of tropical rainforests

AMAZON IMPERATIVE



“Unless the world acts swiftly to prevent further deforestation in the Amazon, we could find the impact of global warming to be far worse than anticipated in the IPCC’s latest report.”

The world is now waking-up to a momentous truth: that we cannot do without the Amazon, blessed as it is with its rainforests, rivers and unparalleled biodiversity. And were the forests to go, destroyed by human hands, the climate of South America, would change in a matter of decades, converting the continent from its verdant, luxuriously-vegetated state, the legacy of millions of years of extraordinary evolution, into one that resembles Africa, with its deserts, semi-arid areas and savannahs.

Natural forest cover is critically important in maintaining rainfall over a large continent such as South America. Natural, broad-leafed forest, with its canopy and sub-storey vegetation, carries out transpiration through the stomata of its leaves at a rate that compensates for what would otherwise be an exponential decline in rainfall. This maintains soil moisture and rates of evapo-transpiration in a self-feeding, highly-selected system. It is that process which gets the rainfall all the way to the Andes and beyond to the Pacific Ocean and higher latitudes on both sides of the Equator.

The forest, as a gigantic, irreplaceable water pump, is therefore an essential part of the planetary air circulation system. And it is that system which takes energy in the form of masses of humid air out and away from the Amazon basin to the higher latitudes, to the more temperate parts of the planet. Argentina, thousands of miles away gets no less than

half of its rain as a result of the low level South American jet stream. How many Argentinian landowners are aware of the Amazon’s role in giving them a productive agriculture?

The unavoidable conclusion is that, unless the world acts swiftly to prevent further deforestation in the Amazon, we could find that the impact of global warming would be far worse than anticipated in the latest report from the Intergovernmental Panel on Climate Change (IPCC).

Currently, protection of the rainforest tends to be piecemeal and fragmented, and despite all the concern about the future of the Amazon, an international process that values the overall forest as a natural carbon sink and for its climate services does not exist.

Ultimately, for our own survival, we cannot make do with less than a global scale protection of tropical rainforests. At the COP15 United Nations Climate Change Conference in Copenhagen this December, let us ensure that these concerns are given priority in the decision-making of all countries in the world whether with or without tropical forests, in the process of preventing irremediable climate change, and that those countries with vast expanses of humid tropical forests will take the initiative in getting global agreements in place that will result in protection of those same forests.

Peter Bunyard is Science Editor of *The Ecologist*.

The Three ‘Rs’

Three fundamental principles should underpin any approach to food security: resilience, resolarisation and relocalisation.

More than two years after the 2007 floods in the West of England, more than 150 families are still homeless – many of them in Tewkesbury. The anniversary of the floods prompted a number of moving interviews with these environmental refugees – driven from their homes by the kind of climate-induced disaster that we are going to see so much more of over the next few years.

I just happened to be listening to some of those interviews on the radio the day that I was getting to grips with the latest extraordinary report from the Global Humanitarian Forum: *The Anatomy of a Silent Crisis*. The findings of this report are stark: “Every year, climate change leaves over 300,000 people dead, 325 million seriously affected, and economic losses of \$125

billion. Four billion people are vulnerable, and 500 million people are at extreme risk.”

And the title tells it all. Understandably, there is little coverage here in the UK devoted to those 325 million “seriously affected”. We would be drowned by the unceasing flood of personal testimonies; our capacity for empathy would be overwhelmed. But as Kofi Annan puts it in his introduction to the report: “Where does a fisherman go when warmer sea temperatures deplete coral reefs and fish stocks? How can a small farmer keep animals or sow crops when the water dries up? Will families be provided for when fertile soils and fresh water are contaminated with salt from rising seas? The first hit and worst affected by climate change are the world’s poorest groups. 99% of all casualties occur in developing countries.





A church in Tewkesbury, Gloucestershire cut off by floodwater
PHOTOGRAPH: STUART FRANKLIN/MAGNUM PHOTOS FOR TIME MAGAZINE

Resilience

Our production systems here in the UK, as well as our supply chains globally, are seriously vulnerable in the face of the radical discontinuities. The Sustainable Development Commission first drew attention to this in its report in 2007, *\$100 a Barrel of Oil: Impacts on the Sustainability of Food Supply in the UK*.

Resolarisation

Let's just spell this out: the only way to avert a sequence of food crises resulting from supply disruptions and price spikes in oil and gas over the next twenty years is to systematically reduce our dependency on stored solar energy (fossil fuels) in favour of real-time solar energy.

Relocalisation

The combination of high oil prices, high input prices, growing demand for food, an additional 70 million or so people every year, and growing pressure on soil, water and biodiversity, compounded by accelerating climate change and the kind of high carbon prices that are inevitably on their way, leads to only one rational conclusion: increased resilience by reducing the length (and vulnerability) of our supply chains.

Jonathon Porritt is a Founder Director of Forum for the Future.
www.forumforthefuture.org

TREES ARE THE ANSWER

Let us continue the work started by Wangari Maathai in Kenya and reforest the entire world, sequestering atmospheric carbon, for a right livelihood for all.

Interview by **Satish Kumar.**

For many years, before humanity became aware of the dangers of climate change, Wangari Maathai was advocating the planting of trees. Her work was based initially in her home country of Kenya in order to redress the imbalances created by the imposition of a Western paradigm of progress on a country and people whose inherent wealth and wisdom went unrecognised. Wangari's intuitive understanding of ecology began when she observed a pristine stream in her childhood village become dry and barren as the forests around her home were cleared; she realised that the wellbeing of her people depended on the wellbeing of the natural world. This innate understanding of the interconnectedness of all life led her to found The Greenbelt Movement in Kenya which has in the intervening years planted millions of trees. I asked Wangari if she felt The Greenbelt Movement was a model that could be replicated throughout the world.

"The fact that trees can sequester carbon is really a miracle," she replied, "but when we started planting trees, that was not foremost in our minds. But the more I now think about climate change, the more I know for sure that trees are our best friends

in the global effort to mitigate climate change. So, yes, at Copenhagen we will be strongly advocating that forests must be part of the solution."

Wangari's work is backed up by an initiative called the Billion Tree Campaign, launched in Nairobi in 2006 in association with the UN Environment Programme (UNEP). By the time Wangari went to the Climate Conference in Bali the following year, a billion trees had already been planted. Now, she tells me, more than 3 billion trees have been planted worldwide as part of this campaign.

"Achim Steiner, the Executive Director of UNEP, has just launched a Seven Billion Tree Campaign," says Wangari. "That's 7 billion trees by the time we reach the Copenhagen Climate Conference in December this year, as a way of mobilising public opinion and raising awareness. But it's also a way of saying that we can all help in the fight against climate change – by planting a tree. Everyone can do this, and every tree that is planted sequesters atmospheric carbon. It means that anybody – poor or rich, man or woman, educated or uneducated – anybody can plant a tree.



Kenyan Nobel Peace Prize winner Wangari Maathai PHOTOGRAPH: REUTERS/YVES HERMAN YH/JV

“I also encourage the protection of standing trees. We have not yet appreciated the true value of the tree: it stabilises the soil; it gives us shade; if it is a fruit tree it gives us fruit. The tree fixes carbon for us; gives us oxygen; regulates the composition of the air... Trees are a wonderful gift to humanity!”

Wangari’s ultimate message as she makes her way to the COP15 Copenhagen Climate Conference is that forests must be part of the solution, and a financial mechanism must be established so that it is no longer economically viable to cut forests down. She believes that the governments of forest nations must commit to monitoring to ensure that there is no misuse of the potential remuneration packages intended to reimburse the economies of countries that have agreed to keep trees in the ground, providing ecosystems services for all of humanity in perpetuity rather than destroying the forests for the short-term financial gain of a rich elite. But her message is also that trees are the givers of life, the teachers of wisdom, the gifts of god, and our greatest allies in the race to mitigate the effects of climate change.

“I know for sure that trees are our best friends in the global effort to mitigate climate change.”

Satish Kumar is Editor of Resurgence magazine and author of Earth Pilgrim, published by Green Books, 2009.

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