Resilience: the capacity of a system to absorb disturbance and reorganise while undergoing change, so as to retain essentially the same function, structure, identity and feedbacks.

RESILIENCE THINKING

Why 'resilience thinking' is a crucial missing piece of the climate-change jigsaw and why resilience is a more useful concept than sustainability.

In July 2009, UK Secretary of State for Energy and Climate Change Ed Miliband unveiled the government's *UK Low Carbon Transition Plan*, a bold and powerful statement of intent for a low-carbon economy in the UK. It stated that by 2020 there would be a five-fold increase in wind generation, feed-in tariffs for domestic energy generation, and an unprecedented scheme to retrofit every house in the country for energy efficiency. In view of the extraordinary scale of the challenge presented by climate change, I hesitate to criticise steps in the right direction taken by government. There is, though, a key flaw in the document, which also appears in much of the wider societal thinking about climate change. This flaw is the attempt to address the issue of climate change without also addressing a second, equally important issue: that of resilience.

The term 'resilience' is appearing more frequently in discussions about environmental concerns, and it has a strong claim to actually being a more useful concept than that of sustainability. Sustainability and its oxymoronic offspring sustainable development are commonly held to be a sufficient response to the scale of the climate challenge we face: to reduce the inputs at one end of the globalised economic growth model (energy, resources, and so on) while reducing the outputs at the other end (pollution, carbon emissions, etc.). However, responses to climate change that do not also address the imminent, or quite possibly already passed, peak in world oil production do not adequately address the nature of the challenge we face.

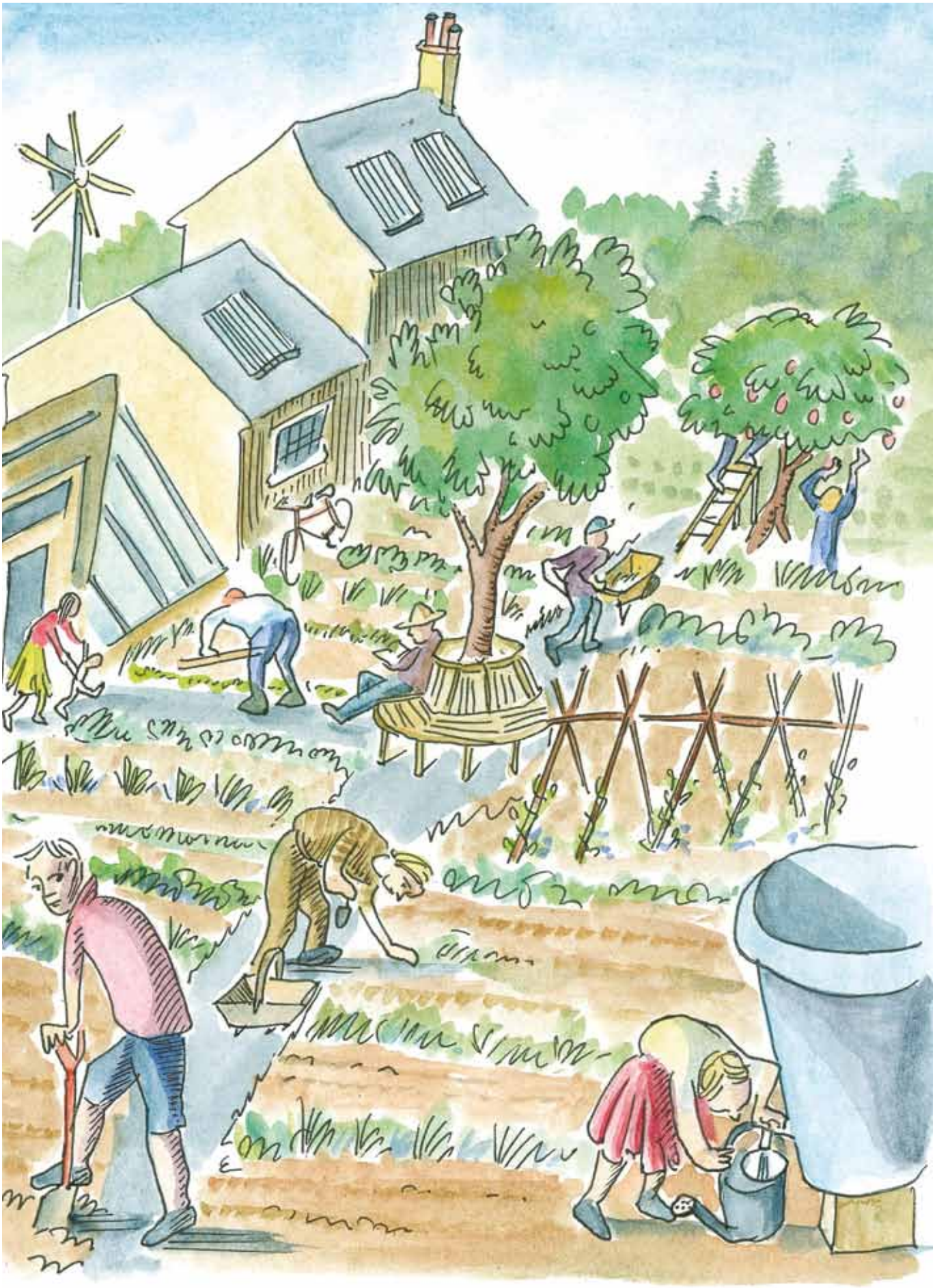
Let's take a supermarket as an example. It may be possible to increase its sustainability and to reduce its carbon emissions by using less packaging, putting photovoltaics on the roof and installing more energy-efficient fridges. However, resilience thinking would argue that the closure of local food shops and networks that resulted from the opening of the supermarket, as well as the fact that the store itself only contains two days' worth of food at any moment – the majority of which has been transported great distances to get there – has massively reduced the resilience of community food security, as well as increasing its oil vulnerability. One extreme, but relevant, example of where sustainability thinking falls short was Tesco's recent 'Flights for Lights' promotion, where people were able to gain air miles when they purchased low-energy light bulbs!

Some people believe that we can move from our current 'high carbon' model, where goods are transported at great distances, to a 'low carbon' information economy, where it is ideas that are exchanged rather than goods, and where we operate in a virtual world with few impacts. Yet such an economy still depends on fossil fuels: to power the vast internet servers as we check our morning emails, not to mention the breakfast we eat and the coffee we drink that continue to be sourced from far and wide, often with a disastrous impact on the local food systems that would have supported us in the past. Despite the temptation to believe otherwise, we still operate in the physical world with very real and pressing energy and resource constraints.

The concept of resilience emerged from within the ecological sciences as a way of looking at why some systems collapse when they encounter shock, and some don't. The insights gleaned now offer a very useful overview for determining how systems can adapt and thrive in changing circumstances. Resilience within communities, for example, depends upon

- Diversity: a broader base of livelihoods, land use, enterprise and energy systems than at present
- Modularity: not advocating self-sufficiency, but rather an increased self-reliance; with 'surge protectors' for the local economy, such as local food production and decentralised energy systems
- Tightness of feedbacks: bringing the results of our actions closer to home, so that we cannot ignore them

A recent report by the think tank



ILLUSTRATIONS: HUGH DUNFORD WOOD

DEMOS, *Resilient Nation*, raised the question, "Resilient to what?" Are we building resilience in the face of peak oil and climate change, or of terrorism and pandemics? While it is clearly not an either/or situation, I would argue strongly that peak oil and climate change are so far-reaching and destabilising that we really must give them precedence, the solutions that arise being markedly different from addressing terrorism or pandemics. But what would this kind of resilience thinking look like in practice?

For many years, those writing and campaigning on relocalisation have argued that it is a good idea because it produces a better, more equitable economy. Now, as the potential impacts of peak oil and climate change become clearer, an additional and very strong argument has emerged: that as the net energy underpinning society inevitably contracts, so the focus of our economies and our daily lives will inexorably shift, at least in terms of manufacturing and trade, from the global to the local.

It requires a huge amount of cheap oil thundering around the superhighways and shipping lanes of the world to bring to our shops the things we now feel we need, much of which we would have grown or made ourselves not all that long ago. But creating a different way of doing things takes time, resources and proactive and creative design.

Often, climate-change thinking doesn't question the notion that higher rates of consumption lead to individual happiness – it focuses rather on low-carbon ways of making the same consumer goods. Yet as we enter the world of volatile oil prices, resource constraints, and the need to situate ourselves more within the local economy than the global one, we will need to link satisfaction and happiness to other less tangible things like community, meaningful work, skills and friendships.

When I give talks on this subject, there are always some who interpret the concept of increasing localisation to mean that building resilience in the West – increasing national food security, rebuilding local manufacturing and so on – will by necessity lead to increased impoverishment in the developing world. I don't believe this to be the case. Will the developing world be lifted out of poverty by continuing to dismantle its own food resilience and becoming increasingly dependent on global trade, which is itself massively dependent on the cheap oil we can no longer rely on? Is the way out of poverty really an increasing reliance on the utterly unreliable? Rather than communities meeting each other as unskilled, unproductive, dependent and vulnerable settlements, they would meet as skilled, abundantly productive, self-reliant and resilient communities. It is a very different quality of relationship, and one that could be hugely beneficial to both.

In any event, work by people such as Mike Davis in his book *Late Victorian Holocausts* shows how the impact of famine was enormously magnified by the forced introduction of India into the international money/cash-crop nexus. As Amartya Sen has shown, famine occurs more from the way in which food is distributed, and inequality, than from food shortage. Even that analysis now needs to be revisited from a 'resilience' perspective. Over the last few years we've started to see clear impacts of tying the developing world into global commercial food webs, as food prices rose in step with oil and fertiliser prices. In fact, I'd argue that tying developing-world food producers into the globalised system leads to their exposure to both food and money shortages.

> *"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 shoulders to the wheel of making it happen."*

The need to cut carbon emissions is even more urgent than the government's Transition Plan acknowledges. NASA scientist James Hansen, one of the world's leading climate scientists, now argues that we have already passed the climate tipping point at our current level of 387ppm, when the safe level of carbon in the atmosphere is at most 350ppm. While the UK government argues that we need to stay below 450ppm, it is clear that even that is a huge ask. If you were to step outside your front door today and ask the first ten people you met what your town or city might look like in ten years' time if it began today to cut its emissions by 9% a year starting today, I imagine most people would say something between the Flintstones and Mad Max! 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 shoulders to the wheel of making it happen.

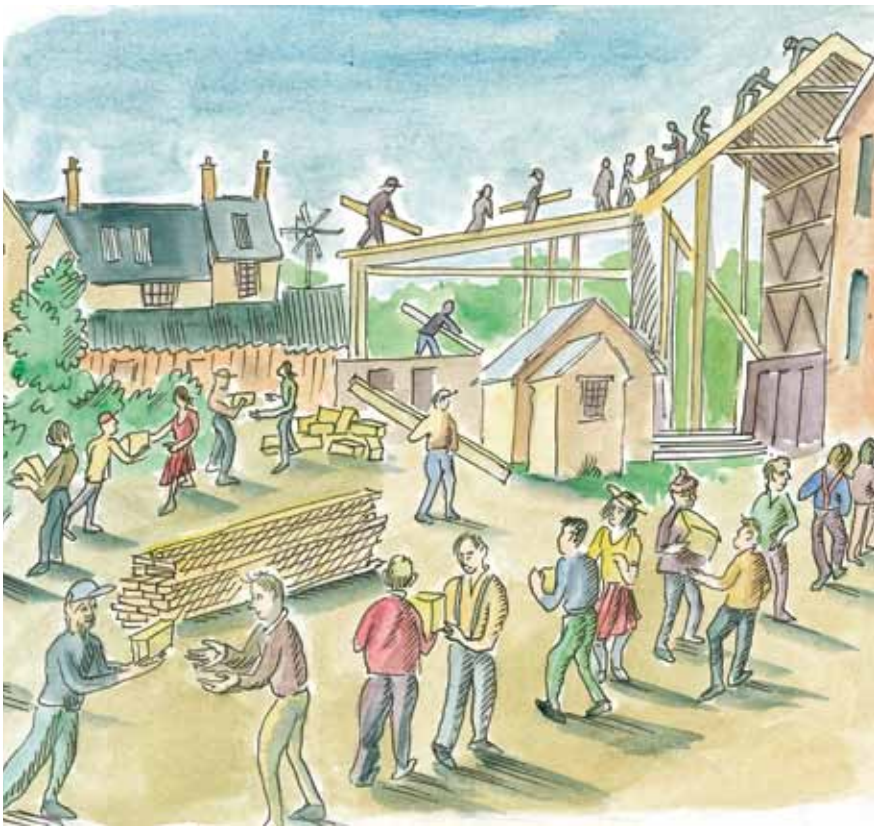
Resilience thinking can inspire a degree of creative thinking that might actually take us closer to solutions that will succeed in the longer term. Resilient solutions to climate change might include community-owned energy companies that install renewable energy systems in such a way as to generate revenue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

The Transition Movement is a rapidly growing, 'viral' movement, which began in Ireland and is now under way 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, 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 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 set to do the same soon.

The Scottish government is using its Climate Challenge Fund to fund Transition Scotland Support, seeing Transition initiatives as a key component of the country's push on climate change (and thanks also to that fund, a number of Transition initiatives have received substantial financial support: for example, Transition Forres received £184,000 and has become a real force for local resilience-building). In England, Somerset and Leicestershire County Councils have both passed resolutions committing themselves to support local Transition initiatives. 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.



It is clear, as Jonathon Porritt argues in *Living Within Our Means*, that attempting to get out of the current recession with the thinking that got us into it in the first place (unregulated banking, high levels of debt, high-carbon lifestyles) will get us into a situation that we simply cannot win. A friend of mine who works as a sustainability consultant in the North West talks of a meeting he had with a leading local authority there. Having read their development plan for the next twenty years, he told them, "Your Plan is based on three things: building cars, building aeroplanes and the financial services sector. Do you have anything else up your sleeves?" As John Michael Greer says, we're in danger of turning what could still be a soluble problem into an insoluble predicament. Transition is an exploration of what we need to have 'up those sleeves', an optimistic exploration of the practicalities of relocalisation, creating, as Jeremy Leggett puts it, "scaleable microcosms of hope".

However, resilience is not just an outer process: it is also an inner one, of becoming more flexible, robust and skilled. Transition initiatives try to promote this through offering skills-sharing, building social networks and creating a shared sense of this being a historic opportunity to build the world anew.

Navigating a successful way through climate change and peak oil will require a journey of such bravery, commitment and vision that future generations will doubtless tell stories and sing great songs about it. But as with any journey, having a clear idea of where you are headed and the resources that you have at your disposal is essential in order to most skilfully maximise your chances of success. If we leave resilience thinking out, we may well end up an extremely long way from where we initially thought we were headed. R

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