

food
ethics

Food futures

Utopia, dystopia
or myopia?



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Rob Macklin | Ben Mephram | Pete Riley | Carolyn Steel | Shaun Spiers | Geoff Tansey
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Changing the present Choosing the future

We have seen an avalanche of reports in the last few years about the future of food. Scenarios, foresight exercises, projections, claims and counterclaims abound, predicting by how much and in what way food production must increase to meet the needs of around nine billion people in 2050.

As Isobel Tomlinson [p.12] makes clear, we must beware of putting too much faith in specific numbers in the projections. We should always look at from where these numbers derive. As she points out, the work on which the much quoted 70-100% increase in food production figures comes is based on looking at the most likely – but not necessarily the most desirable – future.

Therein is the key issue. What kind of world do we want to live in? How useful are all these scenarios in helping us to take action now to address the dysfunctionality of the present food system – which the reports generally acknowledge – and work towards a future which is, in Ben Mephram's [p.6] words, "the quest for a harmonious global community in which fair dealings are the foundations of all political and commercial activities."

If they have a value – which Jeannette Longfield [p.15] doubts – it is that these studies may help us understand what Dan Crossley [p.22] calls "the direction that certain trends are going in and how they might interact with each other". The challenge then is how we might positively affect these trends and move them in a desired direction.

That really does require 'system innovation', as he notes, to move things on to a more sustainable path. But such innovation challenges the very basis of today's businesses, the economics which underpin them, and the current direction of change. We can clearly imagine better worlds, as Joy Carey's story from Bristol suggests [p.25]. Food

is clearly a very powerful lens through which to look at the way in which the world is going, and why it illustrates the need for fundamental system change. Carolyn Steel's Sitopia [p.10] sees cities through food and argues that cities and the industrial food system that feeds them makes rural life untenable.

Tim Jenkins [p.4], from nef, says why a different economic model is required. A point Mephram reiterates, drawing on the work of Tim Jackson, who wrote "Prosperity without growth".

We do face a choice – one reflected in the two scenarios reported in the Agrimonde report. In one scenario we feed the world in 2050 thanks to economic growth with the environment playing second fiddle – and leaving huge problems for those living to and beyond 2050. In the other we feed the planet in a sustainable way with much more equity in the distribution of food and wealth throughout the world.

These two narratives are about the challenge here and now to choose the direction we want to go in and the narrative we wish to build upon. That is the choice Bob Watson [p.16] outlines in his comment; he comes clearly down upon the side of the second.

To move in this direction requires innovation in many areas such as economics, the law, institutions and not simply in technology. Even in technological innovation the needed research and development are informed by different questions and different research priorities under the second narrative compared with the first.

But how do we get there? What do we do now? Which policies and practices need changing in which direction, which activities do we support and cease, in order to act in the present to create the kind of future that will be built upon the pillars of justice and equity,

sustainability and health? These must come together if we are to have a food system, as part of a new economic system that is capable of delivering long-term sustainable security for human beings on this planet.

Here agency is critical – who is able to do what, or is prevented from doing what. Individually, in our communities, and corporately as citizens, through political institutions, we need action. As John Turner [p.16] says of farmers, it is not enough to wait for the next policy to come down from the top, it is necessary to be active in creating change from the bottom and interact with policy creation. This runs from the reform of the Common Agricultural Policy into a sustainable food policy, to the need to change the fundamental rules of trade and patents, to the creation of new business and governance models built on sufficiency and frugality, rather than increasing consumption and over consumption.

So the question becomes not simply one of whether existing large corporations can restructure to maintain themselves, but rather whether they need to be restructured to be doing different things and producing different things, rather than pushing so many high-fat, high-salt, and high-sugar products around the world.

There is a tendency when looking at scenarios to see them in extremes, when the reality is we will have a mix of these as we move into the future. What the different scenario exercises may give us are a set of measures we can use as milestones to indicate in which direction we are going. We can then use these to evaluate changes and change the mix of practices and policies we have if we are heading in the wrong direction.

As Bob Watson says, we know which future we would rather be part of.



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Conventional economic models

Fit for purpose?



TIM JENKINS from nef explains how a new economic model is needed to face the challenges posed by global food insecurity.

Recent food security scenarios have stimulated the debate over the need for systemic change and a strategic reappraisal of policy approaches. However, such scenarios only take you so far. On the one hand they allow a range of actors to collectively take a broad and longer term view, to review the urgency of the interconnected challenges and to agree high-level aims and principles. On the other hand, to the extent that they deal with policy change they tend to stay high-level and collect together various policy positions that are often in conflict or even mutually exclusive as they stand.

To turn scenario recommendations into strategic policy reappraisal, the use of economic models is of central importance. Such models are seen to enable policy makers to examine how alternative policy changes to deliver food security impact on an economy overall. They are also intimately linked with policy appraisal processes used by most governments.

But are these conventional economic models fit for the purpose of strategic reappraisal or systemic change, as implied by reports such as Foresight?

One approach to this question is to say that the conventional economic models are fundamentally right but require significant tuning in relation to how monetary values are attached to particular impacts. If you can find methods of putting monetary values on social, human and environmental impacts then these can be factored into the balance sheet.

Mission creep

nef (new economics foundation) has pioneered work on capturing the social return on investment and is deeply involved in the role that environmental valuation can play in achieving a sustainable fisheries policy. Yet there is concern that economics suffers from mission creep when trying to put monetary figures on values that require increasingly abstract methods. Unless a monetary figure is decided upon, the value is not included in the model. There is also concern that when such models attempt to tackle systemic challenges they fall well short of what is needed.

Lord Stern's review of the economics of climate change took this conventional approach and labelled climate change as the biggest market failure in history. Yet he attracted controversy over his approach to putting a price on the impacts for future generations. Conventional modelling assumes that future generations will always be better off than the present one and so can afford to pick up more of the bill. Stern suggested that for economic and ethical reasons this was not useful in the case of climate change and he ran models accordingly – triggering cries that he had cooked the books.

Lord Stern's report and the ensuing chorus of criticism leads to the second challenge to the hegemony of current economic models. Food security scenarios frequently demand that we understand three key points: that food is vital to wellbeing in ways that reach beyond simple market relations; that food security is intimately linked with climate change and environmental constraints; and that inequalities between and within countries are crucial (not simply average wage levels or total growth). Can conventional economic models with all their in-built assumptions really be fit for purpose when measured up against those assumptions?

A new approach

nef, together with a growing number of economists, believe they are not. A new approach to economic modelling is required not just to deal with critical global issues such as food security - but to make the Great Transition to a new economy that delivers improvements to social justice and wellbeing within the limits of the planet.

Building such an economy is both necessary and desirable – yet currently there is no economic model of how such an economy would work. Without this we have no clear means of assessing the possible outcome of different policy interventions. nef is currently developing such a model, not to give us all the answers, but to provide a robust testing ground for sets of policies that enable such an economy to develop. Our model and the others that are sure to follow will be vital to deliver on the goals of our current food security scenarios.



By Innpictime photography

We use a systems-dynamic approach to modelling which accepts that the global economy is a complex adaptive system. It differs from conventional models in several key ways.

Critical thresholds

Environmental constraints set the limits to plausible future paths for the economy and have major implications for equality and future well-being.

The available scientific evidence that reveals the threat of climate change also identifies critical thresholds and the likelihood of large non-marginal irreversible change. This clearly shows the urgent demand for economic change at unprecedented speed if these thresholds are to be avoided. Yet current economic models ignore this evidence.

Our model will draw on insights from climate modelling to include these thresholds, limits and feedback loops to enable analysis of sets to keep the economy at a safe operating distance from them. The ability to do this is vital in delivering policy change for food security.

The recent financial crisis and its severe on-going impact on economies around the world emphasised just how critical finance is to the operation of the economy. Conventional

models assume financial stability and treat the sector as external to the economy. We will consider finance as part of the economy. By treating it as a stock we're making explicit its relationships with the rest of the economic model.

The key aim of the economic system is to improve wellbeing. Yet the key output of conventional economic models is primarily the size of the economy rather than the impact on wellbeing – which includes inequalities. Stiglitz and Sen's landmark paper for the Sarkozy Commission has provided real momentum for change in this arena. nef has an international reputation for developing and running measures of wellbeing. We will utilise this knowledge in developing a set of model outputs that accurately reflects wellbeing.

Economic models – like the one being developed by nef – allow policy makers to explore solutions that deliver systemic change. They are critical to addressing the challenges of food security. It's impossible to fit a square peg into a round hole, and continuing to run the question of how we're going to feed the world through conventional economic models will not provide plausible answers.

Tim Jenkins is the director of nef's Great Transition Initiative.

Food and the future of fairness

A new ethical paradigm



The concept of food futures suggests a focus on technical innovations in the agro-food industry. But while acknowledging the potential of technology to ameliorate many problems we face, in this article **BEN MEPHAM** addresses food futures from a different angle.

Never doubt that a small group of thoughtful committed citizens can change the world; indeed, it's the only thing that ever has.¹

How can we effectively address perhaps the biggest question concerning the future of food – namely, the inadequacy of its supply to all the world's people and how that might change in future?² I claim that rather than relying on technology for the answers, public perceptions of morality need to undergo a radical change to address this fundamental challenge.

Food and malnutrition

Clearly, food is not our only critical concern: poverty, military conflict, oppressive governments, and debilitating diseases, among other concerns, all demand urgent responses. But for each of us a regular supply of safe, nutritious food (including potable water) is clearly the sine qua non of survival. It is unquestionably the most critical of the rights enshrined in the UN Declaration of Human Rights, that momentous agreement affirming the set of moral standards deemed categorical and non-negotiable for every human being. And yet, currently, one billion people world-wide suffer from protein-energy malnutrition and many in less developed countries (LDC) also endure vitamin and mineral deficiencies.³ They are not only hungry, but most are usually so poor that their living conditions are primitive, protection from criminality non-existent, medical services minimal, and they have virtually no educational opportunities or political influence.

Simultaneously, another billion are overweight, of whom a third are clinically obese. Of course, these are not just cosmetic problems: they are major risk factors for several chronic

diseases, such as diabetes, cardiovascular disease and cancer. I have recently tentatively proposed one ethical strategy to address this problem,⁴ and will not pursue it further here.

These are currently the two major global food problems. But it would be foolish to ignore impending changes that will exacerbate their scale and depth. For the global population continues to rise; global warming (whatever its primary cause and actual time course) continues to increase; and more people are adopting lifestyles that significantly impact adversely on future agricultural productivity.

A paradigm shift

In an earlier age, the soundest strategies for addressing such problems were assumed to lie firmly with science and technology, backed up by legislation to ensure compliance with objective targets. And undoubtedly, in some respects, this has worked, for example in relation to food safety standards. But in a globalised, electronically-networked world in which people in LDC are, understandably, no longer content to remain third-class citizens, we desperately need fundamentally different approaches.

The challenging proposal I want to highlight here is that we in developed countries (DC) need to be motivated by a reformed concept of our ethical obligations to others. We need a new ethical paradigm, which prioritises fairness in our dealings with fellow humans, whether we know them personally or not. For most people, ethics (thought to be largely based on upbringing and intuition) primarily relates to those we know or interact with in various ways – some willingly, others burdensomely. It was assigned scientific justification by the quip of the eminent geneticist, J. B. S. Haldane, that he would lay down his life 'for two brothers or eight cousins' – that is, in order to perpetuate his own genes. Now, in the globalised world of the 21st century, such genetic reductionism is quite untenable. But even if we were convinced that self-interest is ultimately the motive for acting ethically, it would not be difficult to find it in the quest for a harmonious global community in which fair dealings are the foundations of all political and commercial activities.

Acting fairly

Acting fairly in relation to the billion undernourished people necessitates sacrificing some of our wealth and privilege. In principle there are two ways of achieving this – diverting part of our income to the most needy and reducing the adverse environmental effects of our habitual lifestyles.



By Andy Cross

In 1972, philosopher Peter Singer formulated what might be called the 'drowning analogy.' He compared the failure to donate money to famine relief (of the then prominent Bengal famine) with a decision to avoid the inconvenience of missing a business appointment because of time spent in pulling a drowning child from a shallow pond. He argued that what was morally wrong was the failure to avert a great harm to someone else when the cost to oneself was quite insignificant.

The argument has met with various objections, such as the claim that the analogy drawn between an observed experience and distant events is false: or that we are not responsible for such famines and therefore have no obligation to ease them. But such counterarguments might seem narrow minded and legalistic – since whether we personally could be held responsible would hardly be considered a valid reason for ignoring the drowning child.

The case for increased aid has been made in terms of reparation for benefits DC have received, and continue to, as a result of our exploitation of LDC; on grounds of compassion – and few can be unmoved by reports such as those recently emanating from the horn of Africa; or out of prudence, since poverty is

often a breeding ground for terrorist attacks on the privileged. But according to the concept of fairness advocated here, there is an ethical obligation, for those of us who are able, to directly help to mitigate the dire circumstances of our fellow citizens who through absolutely no fault of their own are undernourished, impoverished, diseased and largely incapable of extricating themselves from their predicament. As if to emphasise both their lack of responsibility for the situation and impotence in addressing it, the vast majority are babies and young children – of whom, in consequence, 10 million die annually. Of course, this objective might be addressed through political and educational activities; but wisely targeted cash donations are also a crucial means of ameliorating this gross unfairness in global society.

The roots of unfairness

As recently persuasively argued by economist Tomas Sedlacek,⁵ our stunted sense of moral obligation is largely due to mainstream economists' unquestioned belief in the benign effects of the 'invisible hand of the market' – usually (erroneously) attributed to the Scottish moral philosopher Adam Smith. It has been widely assumed that if we all act selfishly only social good can result. In Smith's oft-quoted

words (in *The Wealth of Nations*, 1776): 'It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest.' Yet, like most simplistic rules, this notion is quite untenable in the real world. For Sedlacek, economics has lost its soul; it has become a 'mathematical-allocative science' instead of the branch of ethics that Smith described in his lesser-known book 'The Theory of Moral Sentiments' (1759). Today, 'Too happily we have run away from these moral principles...on which economics should stand.'

For the 19th century visionary H. D. Thoreau, 'A man is rich in proportion to the number of things he can afford to leave alone'. It is clear he believed that what others might label 'stoicism' can in reality yield far greater rewards than hedonistic pursuits. Even if the point is far-fetched, he was surely right that the concept of wealth is impoverished if it is simply reduced to financial capital – often to the detriment of social and natural capital. Indeed the 'hedonic treadmill' is well known to bring diminishing returns, and often increasing disutility, above a certain basic level of income.⁶

In DC even the least advantaged take for granted the provision of food, housing, clothing, education, medical treatment and a safe environment – although clearly there are many unjust inequalities in accessing these. Higher up the socio-economic scale, professional people go on strike over prospective changes to their retirement age, largely due to increased longevity in DC. But these problems pale into insignificance in comparison to the lot of many in LDC. And while the utilitarian principle that we should seek to achieve the 'greatest happiness for the greatest number' is highly problematical, Karl Popper argued that it adds clarity in the field of ethics, if we formulate our demands negatively, by demanding 'the least amount of avoidable suffering for all.'⁷

How much are we morally required to donate?

Peter Singer has recently returned to this question.⁸ From his original position – perhaps best summarised as 'until it hurts' – he now considers that to suggest 'too much' is often counterproductive because many people object to being 'got at.' His current rule of thumb is that most people should aim to donate at least 5% of their income, although many on higher incomes could clearly give more without noticeably affecting their lifestyle. But while perceived 'piety' is off-putting, there is evidence that modest disclosure encourages others' altruism. (It's worth noting that because 'donation' has connotations of largesse, the phrase 'fair tax' might be more appropriate.)

Other philosophers have proposed a more stringent

rationale. For example, Garrett Cullity believes we should give donations up to a level at which further contributions would undermine our 'intrinsically life-enhancing goods,' such as friendship, developing musical talents or community life.⁹ The organisation 'Giving what we can'¹⁰ was set up in 2009 by 30 year-old Oxford philosopher Toby Ord, who pledged to donate to charities £1 million of the £1.5 million he expects to earn by the time he retires. People signing the organisation's pledge (currently over 60) commit to donating at least 10% of their income to 'whichever organisations can most effectively use it to fight poverty in the developing world.' The fact is that even someone earning £24,000 p.a. is in the richest one per cent of the world's population, giving them a relative position of power and privilege that would be difficult to justify.

According to the UN Development Programme, the financial costs of some critical universal requirements are relatively modest, for example \$13 billion (b) for basic health and nutrition, \$9b for water and sanitation, and \$6b to provide basic education. Yet, currently in DC, \$50b, \$13b and \$11b are spent every year respectively, on cigarettes, perfume and ice cream; while the global military spend is \$780b.

Wise targeting of cash donations is not, however, a simple matter, in that there is no guarantee that a well-meant sacrifice will be effective following a peremptory scan of the newspaper and few clicks of a computer mouse. Some relief organisations are more

efficient than others, while some use funds for emergency food supplies or for improving public health. The value of aid versus trade is a persistent conundrum,¹¹ because while aid may ease emergencies it is clear that promoting recipients' productivity, for instance through providing financial credit or training, is the best longer-term strategy. It is thus incumbent on donors to consider the options carefully, a task facilitated by computer searches.

But cash donations are not the sole point. There is evidence that a culture of giving encourages associated lifestyle changes such as in career choices and political involvement. Clearly, each of us will have our own sincerely-held priorities on how to allocate the fruits of our labour and/or good fortune. But the current debt crisis may well be a stimulus for reassessing the future of fairness in relation to food. Charity may begin at home, but it doesn't have to end there.

The simple life

The second strategy for a fairer world entails leading lives in which consumption and pollution are at a minimum – now usually equated with a small carbon footprint. And that of course means curbing the obsession with economic growth

Charity may begin at home, but it doesn't have to end there

– for it is still widely assumed that a rising per capita GDP is equivalent to increasing prosperity. But as Tim Jackson puts it, in his admirable book: 'How is it with so much stuff already we still hunger for more? Might it not be better to halt the relentless pursuit of growth in the advanced economies and concentrate instead on sharing the available resources more equitably?'¹²

Of course some technologies can help here: renewable energy sources, improved efficiency in energy use, and carbon capture to name a few. But major cultural changes would also have significant impacts – for example in eating home-grown or locally-sourced food; walking, cycling or using public- rather than personal-motorised transport; satisfying physical recreation in rambling, jogging or team sports; and intellectual stimulation in reading and drama. Many recreational activities with environmentally adverse effects can hardly be necessary.

Fairness revisited

Popular perceptions of moral standards are largely a legacy of scripturally-ordained prohibitions – for instance on theft, fraud and adultery. But a newer conception of ethics, which acknowledges mankind's genetic solidarity and the wisdom of acting as a global community in facing future environmental and economic challenges, surely needs also to reassess the current partiality commonly assigned to the ethical principle of fairness.

For just as no reasonable person can deny the unfairness of mass malnutrition, surely no ethical person can ignore it. As I previously suggested, for each of us: 'Our real challenge is to overcome the barriers to fairness: ignorance, inconsistency, incompetence, insensitivity and insincerity.'¹³

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Analysis on a plate

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Sitopia

Shaping the world through food



Among architects, the importance of 'vision' to the creative process is clear, writes **CAROLYN STEEL**. She explains how architects have the ability to imagine other, better futures in vivid detail. This can be a useful skill; it can also be a dangerous one, as numerous failed 'brave new world' projects demonstrate.

Housing ghettos and empty public squares are frequently created by architects whose ability to design buildings and spaces exceeds their capacity to imagine how their creations will be inhabited.

As an architect and teacher, this flaw in the design process always troubled me. How could projects that looked so persuasive on paper turn out so disastrously in reality? I eventually came to the conclusion that the problem lay with architecture itself: buildings are so complicated and difficult to build, that architects have little room left to imagine the people for whom they are designing. What was missing from architecture, in other words, was life.

It was my search for a way of bringing life into architecture that led me to food. I had always been interested in food: when it featured in projects, it seemed to me to make them more animated and real. But it was only when, after years of searching, I had the idea of describing a city through food that the penny really dropped. That particular 'light-bulb' moment came during a conversation in 2000, and I was so excited that I could barely sit still, so eager was I to rush off and start work on what, seven years and many light-bulbs later, was to become my book *Hungry City: How Food Shapes Our Lives*.

Hungry City describes food's journey through the city in six stages, from its production, transport, buying and selling, to cooking, eating and waste. The final chapter looks at food's journey in its entirety, and asks how we might use food to shape a better world in the future. The chapter is entitled 'sitopia' (food-place), a word I invented as a practical alternative to utopia. I hadn't set out to invent a new word, but it bothered me that utopia, our greatest tradition of multi-disciplinary thought about human dwelling, should be unachievable. I felt that 'sitopia' could offer a similarly broad approach, so pervasive was food's influence over different aspects of our lives.

When people ask me to describe sitopia, I say that it isn't a place, but rather a way of seeing. Once you learn to see through food, you spot sitopia everywhere, in good and bad guises. Food shapes our landscapes, cities, streets, houses, politics, economics, societies and cultures, for good or ill. When British supermarkets pay dairy farmers less than the cost of production to supply milk, sending thousands into bankruptcy, that is 'bad' sitopia. When urban communities get together to support local farmers through CSAs, that is 'good' sitopia.

I call these examples 'good' and 'bad', because I believe (as I expect most

readers of this magazine do) that we need more farmers, not fewer, in the countryside. Why do I think this? Such questions are complex, and in order to answer them, one has to ask oneself a series of further questions, which ultimately have to do with value, and one's vision of a good life.

Using the prism of food to create such vision – and working towards it – is how sitopia works. Its argument is simple: in a world of temporally finite resources, our common need for food is a useful yardstick by which to live. Since we must all eat, the question of how we should eat equates to that of how we should live. In every culture, food bears inherent values. If we pay them proper attention, food can orientate us and show us our boundaries. Through food-based values, we can judge whether or not the life we lead is 'good', in every sense.

In order to create sitopia, we must therefore restore its proper value to food. Our most vital common necessity, food surely belongs at the core of society; yet, ever since industrialisation, we have allowed it to drift to the periphery. The social and ecological costs of this shift are immense, yet almost all are excluded from the price we pay for food in shops. One recent study reckoned that a hamburger made from beef raised on recently cleared rainforest land should be US \$200, not the \$2.00 we currently pay.¹

Our failure to value food properly affects more than the cost of a burger: it destabilises our value systems as a whole. By treating food as though it were cheap, we lose sight, not just of food's true value, but that of life itself. If we are to act effectively in response to such threats as climate change and resource depletion, we must recalibrate our values. Through food, we can create new economic, political and social structures better adjusted to reality. Only then will we see climate change and peak oil for what they really are: physical threats to our material existence, not existential ones that threaten life itself.

At the global scale, the sitopian task is to address the relationship between city and country. Striking a balance between the two has never been easy, and today, with 200,000 rural migrants arriving in cities every day, it is harder than ever. What lies at the root of this mass exodus to cities? The pursuit of social opportunity, for sure, but also the fact that small and medium-scale farmers are being driven off the land by global agribusiness: a system geared towards the production of 'cheap' food for cities, in which only the largest, most 'efficient' farms can survive.

In truth, it is cities, and the industrial food systems that feed them, that make rural life untenable. Connecting producers to consumers is where all food-based power lies, and that power is increasingly consolidated in fewer, corporate hands.² It follows that in order to create ethical, sustainable societies we must address the power structures governing food. Only through the creation of alternative food networks can we hope to establish some sort of balance between city and country, the relationship upon which civilisation depends.

One example of such a network is Park Slope Food Coop in Brooklyn NYC. Established in 1973, the Coop has 14,000 members, each of whom works a few hours' shift every month in exchange for up to 40% savings on their groceries. The Coop maintains long-term relationships with 40 small-scale local farms within a hundred-mile

radius of the city, giving farmers a degree of market security rare in the modern food industry. The Coop has a strong ethical code, enforced through monthly members' meetings. Its members are effectively 'co-producers': a term coined by Slow Food founder Carlo Petrini, to describe knowledgeable consumers who actively promote ethical food networks through their thoughts and actions.³

Democratising food trade in this way opens up new possibilities for rural communities, releasing the social potential inherent in food systems. Opportunities to create complex, humanised food networks are also greatly increased by modern communication technology. For the

Through food-based values, we can judge whether or not the life we lead is 'good'

first time, some of the advantages of living in cities – news, knowledge, access to markets – are available online. The effects can already be seen in Kenya, where Masai cattle-ranchers now share information about market trends before deciding when and where to go to market. Such communicative networks are vital, because they shift power away from global corporations, loosening their stranglehold over the food chain.

To return to our earlier question, the social and ecological benefits of having more, rather than fewer, people working on land and sea to produce our food are legion. In contrast to the slash-and-burn approach of global agribusiness, small-scale farmers and fishermen

invariably take the long-term view of food production. Tied to their locality by social bonds, knowledge and tradition, stewardship of precious resources is inherent in what they do. Since food is essential to life, people who know and care about it are essential too.

Food's power to connect is arguably its greatest asset as a medium, both for collective action and collaborative envisioning. Since writing *Hungry City*, I have met and collaborated with inspirational people from all walks of life: cooks, food producers, teachers, planners, architects, marketeers, engineers, economists, doctors, designers and mothers, who all understand food's true value, and act accordingly. Food, I am happy to say, is also rising steadily above the horizon in many areas where it was previously ignored, for instance in the emergent discipline of food planning. Sitopia is essentially a food-based philosophy. Thinking through food is empowering: it gives us permission to think big, to ask important questions and search for answers. It has certainly changed my life. I am no longer an architect in search of better ways of designing, but a human being with a burning question – many questions – to share. Food has become my guide and teacher, leading me to many people, places and ideas. Sitopia is my life-work and passion, and I hope that by sharing it with others, we can work together to create a better world.

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Telling porkies

The big fat lie about doubling food production



We are often told that we need to double global food production by 2050 in order to meet the demands of a world population that has increased to nine billion. But where did these statistics come from? Are they accurate? What assumptions do they make? The Soil Association's **ISOBEL TOMLINSON** investigates.

In the UK, doubling global food production by 2050 and the interim target to increase production by 50% by 2030, have become, as Hilary Benn (former Secretary of State for Environment, Food and Rural Affairs) declared, 'the accepted figures that everybody repeats.'¹ The magnitude of these statistics makes headlines, and has captured the imagination of scientists, politicians, policy-makers and the agricultural industry alike.

Their use has given an air of scientific precision to the widely held belief that the new imperative for global – and UK – agriculture must be to massively increase production. Further, with recognition of environmental problems such as climate change and land scarcity, it is being used to justify the promotion of the 'oxymoron' of sustainable intensification.²

Last year, the Soil Association published its report 'Telling Porkies: The Big Fat Lie about doubling food production', that looked into the sources of both of these statistics. The trail begins at the UN's Food and Agriculture Organisation (FAO) 'High-Level Conference on World Food Security' in June 2008 when Ban Ki-moon, Secretary-General of the UN said that 'Food production needs to rise by 50% by the year 2030 to meet the rising demand'. At the same event, Jacques Diouf, Director-General of the FAO stated that 'Global food production must be doubled to feed a world population ... expected to rise to nine billion by 2050'.

The source of these statistics was investigated by the UK House of Commons Environment, Food and Rural Affairs Committee³ and they found that the 50% statistic was from 'Future Scenarios for Agriculture: Plausible Futures to 2030 and Key Trends in Agricultural Growth'⁴ whilst the source of the doubling by 2050 figure was an FAO (2006) report 'World Agriculture: Towards 2030/2050'.⁵ These were cited as the principal sources in e-mail correspondence between the Committee and the UK Department for International Development.

A key error with the 'doubling' statistic was identified by the Committee who had another look at the FAO report, and

calculated for the period 2005-7 to 2050, that the increase in demand predicted stood at 70%, not 100%. Subsequently, the UK Government and other official bodies have followed the FAO in shifting to saying that food production must increase by 70%. The Government acknowledged that 'The difference between 100% and 70% is not trivial: it is more than the food production of the whole American continent. So claims around food production needing to increase 50/100% need to be treated with care.'⁶ Today, both statistics continue to be used in parallel, or combined to offer a range of the scale of production increases needed.

The FAO projections are based on computable general equilibrium modelling (CGE) with assumptions about economic growth and population growth the major determinants of projected food consumption, although they are not the only ones used. The projected increases in demand for food are driven by the 'normal evolutionary path' of increased per capita food consumption in the Global South as these countries get richer.

There are obvious limitations with this work. Firstly, the 70% figure does not correspond to an increase in actual tonnes of production, or yield, as might be assumed, but is calculated by multiplying the physical quantities of demand or production by the price for each commodity. This is important because with a dietary shift away from staple foods towards more meat and animal products that are of a higher value, it indicates greater growth than if the weight of production was measured. Secondly, fruit and vegetables are excluded from these projections, a significant omission given their prominence in recommendations for healthy diets.⁷

Nevertheless, the most important point is that the FAO work does not state that we need to double global food (or increase it by 70%) production by 2050: in fact quite the opposite: It actually says that 'Another important feature of this report is that its approach is "positive" rather than "normative". This means that its assumptions and projections reflect the most likely future but no necessarily the most desirable one'. Yet the work is being used in a normative way.



By Phil Parsons

This is highly problematic. Not only is it a misrepresentation of the modelling work, but if such a future path for the global food and farming systems were to occur, it would be likely to exacerbate many of the problems already occurring within our current system, and also fail to solve the problems of food insecurity.

Perhaps most significant is the prediction that the 'nutrition transition' will continue in the Global South, with further increases in the consumption of livestock products (meat, milk and eggs), vegetable oils (and to a smaller extent sugar) as sources of food calories. These three food groups now provide 29% of total food consumption in the Global South, predicted to rise to 37% by 2050. The FAO report itself admits that 'These rises are not always an unmixed blessing as the diet transitions experienced by many countries imply changes in diets towards energy-dense ones high in fat, particularly saturated fat, sugar and salt and low in unrefined carbohydrates.' The report further acknowledges that 'In combination with lifestyle changes, largely associated with rapid urbanisation, such transitions, while beneficial in many countries with still inadequate diets, are often accompanied by a corresponding increase in diet related chronic Non-communicable diseases.'⁸

This shift towards higher consumption of livestock products has implications for mitigating climate change. The modelling work projects an increase in the annual world production of cereals from the 1.9 billion tonnes produced in 1990/1

to 3 billion tonnes per year by 2050. A good part of this increase would be for animal feed with most use to support the expansion of livestock production in the Global South. The greenhouse gas emissions from livestock are significant primarily from methane from ruminants, as well as nitrous oxide from the application of manufactured fertilizers to grow animal feed, and from land use change.

The third important issue is that such a future will fail to achieve food security. Whilst the projections would reduce significantly the proportion of the population in the Global South who are undernourished, because of population growth the reduction in absolute numbers 'is likely to be a slow process', with just over 290 million people still undernourished in 2050.⁹

So what implications does this have more broadly for modelling work that seeks to predict the future of global food and farming? There is a question about the extent to which models on the global scale are best placed to answer the question of how to 'feed the world', when the causes of hunger are different in different places and when local scale solutions with agriculture adapted to local environmental conditions may be the best solution. It is highly likely that this is going to mean different diets, with different levels of meat consumption, for example, in different places.

It would seem wise to have clear caveats to their use at the very least. There is a case for making sure that the



By CarleyJane

assumptions made to calculate the figures should be clearly stated and communicated to those who might use the results in policymaking or elsewhere. There is also a need for acknowledgement that any model of the future food system is just that; one possibility of how the future might be, and that many others are possible.

This is perhaps where a more positive role for such modelling exercises lies, in exploring different options for diet and farming systems, and seeing which possible futures are viable. Work like this has begun.

As Hervé Guyomard and his colleagues write elsewhere in this magazine, researchers in France have created 'Agrimonde,' a platform designed for facilitating collective scenario development and debate on the world's food and agriculture.

And in Germany and Austria, a group of scientists have modelled 72 different scenarios for 2050 that included four different diets, three different livestock systems, three crop yields (intensive, intermediate and organic) and two levels of land use. They measured the technical level of feasibility of each. They found that for a 'western high meat diet' to be 'probably feasible' 'would require a combination of massive land use change, intensive livestock production systems and intensive use of the arable land.' This would have negative impacts for animal welfare and lead to further destruction of natural habitats. The report provides evidence 'that organic agriculture can probably feed the world population of 9.2 billion in 2050, if relatively modest diets are adopted, where a low level of inequality in food distribution is required to avoid malnutrition.'¹⁰ Through such modelling, the authors are

able to offer a range of alternative theoretical possibilities of different farming systems operating within certain ecological limits that are able to meet different dietary requirements.

Whilst such modelling does offer technical possibilities for the future of the food system, and provides useful 'visions' of what might be achieved, we need to focus on the political, social and economic changes necessary to realise these alternatives for 2050.

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The big question

Future gazing: utopia, dystopia or myopia?



Pete Riley is Campaign Director of GM Freeze. After studying ecology at university, he has spent much of his free time building soil structure and fertility on a number of pieces of land in the Vale of Evesham and South Yorkshire.

Soils rich in organic matter, with beautiful crumb structures able to hold moisture and resist erosion, and heaving with life is my simple vision of the future.

To achieve this requires a complete re-think of how we farm and how we manage the vast array of organic wastes which are often seen as a problem instead of being part of the solution. Dependency on oil based inputs and mined phosphates to provide fertility is at the root of the problem. These inputs have enabled us to separate crops and livestock by hundreds, even thousands of miles, making the closing of the nutrient cycles much more difficult than it should be.

The solutions are systems which mimic the ability of natural ecosystems to cycle nutrients with the minimum of effort by adopting agroecological approaches as the mainstream form of agriculture. This means integrating livestock and poultry into crop rotations, so manures can be returned to the soil at optimum times and animals used as crop breaks to reduce pests and weeds. It also means tackling our antiquated sewage treatment system which wastes millions of gallons of clean water to flush expensive plant nutrients into the sea.

This can only come about if there is a major shake-up of the institutions that fund and shape research so that agro-ecology becomes the heart of what they do. We need to inspire a new generation of soil scientists dedicated to working with the amazingly complex ecosystem beneath our feet which we have taken for granted for too long.



Jeanette Longfield is co-ordinator, Sustain - the alliance for better food and farming

In my view, not one of the (mercifully few) futures projects

I've been involved with, or read, has added anything useful to the already monumentally difficult task of making our food and farming system more sustainable.

In fact, I'd go so far as to say futures exercises are worse than useless, because they gobble up colossal amounts of experts' time and, therefore, money. Frankly we have little enough of these precious commodities, without wasting them.

Not only that, the futures industry gives the illusion of serious endeavour, thereby helping to postpone actual effort. And perhaps worst of all, futures work, by definition, frames problems (they are rarely utopian) firmly in the future rather than the here and now. An exercise that confirms to policy makers that the problem is "not now" gives them all the excuse they need to avoid dealing with it.

There is a growing body of evidence to show that all of us – not just policy makers – are powerfully motivated, psychologically, to deal with immediate issues and we postpone tackling something that may – or may not – happen later. We are also predictably very keen to avoid difficult decisions and conflict.

Sitting in a comfortable room speculating amiably with a diverse array of knowledgeable people, easily trumps facing each other across the negotiating table and grappling with the politics and economics of radical change. Maybe that's why so many institutions persist with the futures exercises? Whatever their reasons, I think they are self-indulgent luxuries we cannot afford.



Shaun Spiers is Chief Executive of the Campaign to Protect Rural England.

A couple of years ago CPRE published a Vision for the

Countryside in 2026. This foresees a more beautiful and vibrant countryside, where farmers prosper and are valued both for producing food and managing the land. The countryside benefits from a strong local food culture and a planning system. It's all good.

Well, there seemed little point in producing an uninspiring vision. But we recognised the need to do more work on the food and farming system we wanted to see in twenty years' time.

In doing so, we have been conscious of the influence of the perfect cliché of the 'perfect storm' – the threat of rising population, climate change and economic flux. The last time concerns over food security shaped farming policy, the countryside suffered.

So how can we not only avoid making things worse, but also repair some of the damage caused by intensive farming?

In CPRE's Vision for Farming we describe a future where the twin challenges of nature restoration and food provision have been reconciled. But for our aspirations to become reality there will need to be some major changes to policy at all levels, including a reformed CAP that rewards farmers for the full range of public goods they provide; money for landscape-scale conservation measures; and support for local foods.

We hope CPRE's farming vision will be a useful contribution to the debate we need on producing the food we need while enriching the countryside.

Future gazing: utopia, dystopia or myopia?



Bob Watson is Defra's Chief Scientific Advisor.

The demand for food will double within the next 25-50 years, primarily in developing countries, and the type and

nutritional quality of food demanded will change. We need sustained growth in the agricultural sector in an environmentally and socially sustainable manner to meet that demand. The recent International Assessment of Agricultural science and Technology for Development, and the Go-Science Report 'The Future of Food and Farming' both acknowledge that business-as-usual will not feed the world in a sustainable manner.

The utopian world would have affordable nutritious food for all, with hunger and child under-nutrition eliminated by 2050 and food grown in an environmentally sustainably manner resilient to the adverse consequences of human-induced climate change. Food waste would have been greatly reduced. Agricultural productivity in developing countries would have increased significantly, stimulated by small-scale farmers having access to the best seeds, appropriate inputs, financing, markets and knowledge on agro-ecological processes (such as integrated pest management and integrated natural resource management). All this would be coupled with improved extension services and empowerment of women farmers. International trade would have been reformed through the elimination of OECD production subsidies, the elimination of tariff escalation on processed products, and non-reciprocal market access for the least developed countries.

The dystopian world in 2050 would have food prices being significantly higher than today, food waste continuing, and an increased number of hungry people and undernourished children. Instead of sustainable intensification using agro-ecological processes, current unsustainable business-as-usual practices would continue, resulting in an inadequate supply of food in the regions of the world where it is most needed, coupled with an increase in the emissions of greenhouse gases, loss of biodiversity, and soil and water degradation.

The choice is ours for the making. I know which future I'd rather be part of.



Rob Macklin is National Agriculture and Food Adviser for the National Trust.

All farm businesses are constantly affected by financial, physical and

biological variables, so simply surviving from year to year tends to take priority. We can help give farmers a broader and longer-term view through effective knowledge transfer – for example by advisory services and producer collaboration. The National Trust actively supports environmentally responsible production and we have been working with our 1,500 tenant farmers for many years through whole farm planning, diversification, adding value and agri-environment provision.

In the future we predict that balancing crop and livestock production with land capability will become even more important, as the global need for food intensifies pressure on productive land. We need to promote innovations in sustainable agriculture, so that in 10 years time, today's best farming practice is seen as routine.

Our vision is to encourage fair trade at a local level though sourcing local, seasonal produce for our catering outlets from our own estates and trusted local producers. We're already beginning to do that, and are assessing what a commercially sustainable model would look like if we rolled it out more widely across our 130 food outlets.

Key to our role is giving people access to the countryside. In the future we want to continue that 'outdoors' focus, and help reconnect people with the countryside and how their food is made. Over the next few years our properties will host more 'home grown' vegetable production, well beyond our existing 1000 new allotments. We anticipate more community supported agriculture schemes and farm related tourism, bringing our places to life and making better links between producers and consumers.

A dream you dream together can become reality, and with over 3.8 million members and millions more visitors to our places, we're determined to make food and farming central to our purpose of benefiting the nation.



John Turner runs a 100ha mixed farm near Stamford, on the edge of Rutland, and is a founder member of FARM.

Farmers tend to

have a deserved reputation for being reasonably innovative when it comes to resurrecting dead pieces of machinery or filling out subsidy claim forms. But we also share a similarly deserved reputation for being rather badly organised and even lazy when it comes to planning our own futures. We await the latest "vision" document from Defra, the Treasury, or other architect of our destiny and greet it with a mix of derision and contempt, when we should really be asking why we are not taking a more active role in the process ourselves.

However, from time to time, there are glimpses of what a coordinated effort towards a shared future vision can achieve. One of the most exciting for me has been the emergence of the Pasture-Fed Livestock Association. The group is dedicated to promoting the benefits of livestock systems based exclusively on pasture and to challenging some of the commonly held preconceptions about the limitations of such systems.

The group's conception can be traced back to initial discussions about Transition Farming. Founder members shared a belief that a system of sustainably reared livestock is a vital part of the shift in land use patterns needed to feed increasing world demand whilst also reducing to a minimum our reliance upon non-renewable natural resources, such as fossil fuels.

The strength of that overarching objective, and the vision that drives it, has been a significant factor in drawing farmers together and agreeing not only a set of production standards and brand name, but also to plan the entire food cycle that embodies those same principles and objectives.

Feeding the world in 2050

Key findings and hopes for policy making and agricultural research from the Agrimonde foresight project

One of the key questions facing the planet is how to safely feed at an acceptable cost an estimated nine billion people in 2050, whilst protecting the environment, limiting the effects of agriculture on climate change, and coping with the effects of climate change itself. This is the question behind the Agrimonde foresight project¹. The authors of this article explain how Agrimonde adopted a foresight approach in which researchers considered two scenarios describing sharply contrasting futures.

T. Ronzon, S. Treyer, B. Dorin, P. Caron, P. Chemineau, H. Guyomard.
TR, PCh and HG from INRA, ST from IDDRI and BD and PC from CIRAD

The Agrimonde foresight project

Agrimonde was launched in 2006 by INRA and CIRAD, the two leading French agronomic research institutions. The project's aim was to contribute to international debates on food, agricultural and environmental issues, and prepare the ground for future directions in research.

Its key objective was to analyse the extent to which it would be possible to feed nine billion people while preserving the agro-ecosystems that are also expected to provide other products (bioenergies and building materials) and services (soil and water conservation, biodiversity enhancement and carbon sink).

Agrimonde combines quantitative and qualitative analyses within the framework of an iterative and interactive process between scientists and stakeholders. The quantitative analyses rely on a specifically-developed tool called Agribiom, in which past and future food biomass resources and their food, feed and fuel uses can be evaluated for a country, a set of countries, or the planet. Production, demand and trade data are all expressed in kilocalories.

Experts intervene mainly at two stages: first by defining the basic principles of each scenario and transforming them into quantitative assumptions; second by analysing the resulting resource-use balances including, if needed, a revision of some quantitative hypotheses, assessing outcome plausibility and consistency, as well as identifying policy and research priorities.

Agrimonde GO: feeding the world thanks to economic growth, with the environment playing second fiddle.

'Agrimonde GO' is based on principles and results drawn from 'Global Orchestration', one of the four scenarios of the Millennium Ecosystem Assessment². It represents a

continuation of current trends in the production and uses of the many sources of food biomass in a liberalised world where priority is given to economic growth and the material well-being of current generations. Technical progress spreads throughout the planet thanks to investments in education, health, infrastructures, research and innovations. Poverty is significantly reduced along with the number of undernourished people.

Food demand is driven by demography, urbanisation and economic growth. It increases in all regions to reach a minimum of 3000 kilocalories/capita/day in sub-Saharan Africa (from 2320 in 2000) and a maximum of 4100 kcal/capita/day in OECD countries (from 3940 in 2000). Consumption of animal products increases in all regions, from 133 to 283 kcal/capita/day in sub-Saharan Africa and from 1167 to 1628 kcal/capita/day in OECD countries. Under-nourishment is considerably reduced, but diseases due to over-nourishment increase.

To satisfy this rise in the demand for food and non-food uses of biomass, agricultural production increases in all regions, owing primarily to improved yields but also to the expansion in the area of cultivated land (+330 million hectares from 2000 to 2050) and pastureland (+260 million hectares). Deforestation rates are, however, much lower in this scenario than over the 1960-2000 period. Agricultural production systems are increasingly similar worldwide, based on an industrial model with heavy use of biotechnologies, engines and machines, irrigation, fertilisers and pesticides, to the detriment of local know-how and diversity, notably in terms of cultivated species and varieties.

Global economic growth comes hand in hand with a marked increase in energy needs which are met with the help of investments and technical progress. Biomass is used for the large-scale production of biofuels (which, as shown in other studies, requires large amounts of land).

In Agrimonde GO, conditions are set for an explosion of local and global environmental problems, aggravated by the consequences of climate change or the overuse of natural

resources. Nonetheless, plans are not necessarily made to address these problems. Environmental concerns are tackled reactively, playing second fiddle to the more pressing issue of immediate food and energy needs. Despite available financial resources and a favourable institutional context, there is no real push to cut greenhouse gas emissions.

Agrimonde 1: feeding the planet in a sustainable way using demand and supply levers

The second scenario, 'Agrimonde 1', follows a different path. Under the joint effect of climate change and repeated food and energy crises at the beginning of our period (2010-2020), the world reacts by setting drastic conditions for the planet's sustainable development.

Global economic expansion is fuelled by the agricultural growth of developing countries. This is established via a cumulative virtuous circle: international and national fund transfers make it possible to launch and sustain initial investments, particularly for the spread of ecological intensification practices and in infrastructures for storage, transport, industrial processing, education and health. As ecological intensification practices are economically affordable – and actively encouraged – for poor farmers, rural household incomes increase. This capital allows them to finance new investments and increase and diversify food production and consumption.

Food availability reaches 3000 kcal/capita/day in 2050 in all regions, of which 500 is of animal origin. This slight increase from the 2000 world average means a decrease in some regions (the OECD, Middle East and North Africa), a stagnation in Latin America and the Former Soviet Union, and a rise in Asia and sub-Saharan Africa. In the OECD, food demand declines by 25% due to a reduction of losses and waste at distribution and consumption; and a greater effectiveness of nutrition policies.

In sub-Saharan Africa, food availability palpably increases, mainly as a result of agricultural development. Diets are more diverse worldwide due to several factors, ranging from cultural characteristics to nutritional policies. All in all, in 2050, global needs in food calories are 30% less than in Agrimonde GO due to improved diets and reduced waste.

In Agrimonde 1, yields increase much less than in Agrimonde GO, because agricultural land is cultivated in a markedly different manner compared with today. Yield and production increases are gleaned from a variety of sources in order to boost synergies between numerous plant and animal species, below and above ground.

Innovation comes in many guises, both specific and generic. Local know-how and agro-ecosystem services are optimised. This process favours technological choices based on the

'sustainable intensification' of practices that limit the negative impacts of agriculture on the environment. Agricultural greenhouse gas emissions are cut, soil and water resources are protected, and biodiversity is enhanced.

Yields rise in all regions – but they rise unevenly. Increases are moderate in the OECD, Asia, the Middle East and North Africa, and much more significant in Latin America, sub-Saharan Africa and the former Soviet Union. Because of these modest increases in yields, cultivated land expands considerably (+580 million hectare increase from 2000), which is twice as much as in Agrimonde GO. But this increase occurs almost exclusively on pastureland, and forest cover remains broadly constant.

However, in the Middle East and North Africa, sub-Saharan Africa and Asia, increased local agricultural production is not sufficient to meet domestic needs of an anticipated seven billion people in 2050. This deficit is offset by increased imports from the three other regions (OECD, Latin America and the Former Soviet Union) under secure and regulated world trade. International rules provide for strong exceptions to free trade by including environmental considerations and allowing for the protection of less productive local agricultures during their development phase.

Four strategic domains for policy action

As far as international trade is concerned, both Agrimonde GO and Agrimonde 1 end with the same image of 2050: a world divided into two regions with one group (OECD, Latin America, and the Former Soviet Union) enjoying an agricultural surplus and supplying the other with a deficit (Asia, Middle East and North Africa/sub-Saharan Africa). In both scenarios, net

food trade between regions increases. This result raises the question of how to secure international agricultural trade and stabilise food prices.

The first domain for policy action is to closely link trade and environmental regulations. A majority of the world's poorest people are farmers and/or rural households in developing countries. Therefore it is essential that any new trade rules do not penalise local agricultural production growth, which is required for reducing poverty and malnutrition, and favouring global economic growth.

This **second** domain for policy action implies well-functioning institutions, well-designed macroeconomic policies targeted on health, education and research, as well as agriculture and agri-food sectors, well-developed infrastructures and sufficient investments.

The **third** domain of policy action lies on the food demand side. It includes the need to implement nutritional policies aimed at reducing malnutrition (under- and over-nutrition)

In both scenarios, net food trade between regions increases



By CIAT International Center for Tropical Agriculture

as well as limiting losses and waste at distribution and final consumption stages.

The **fourth** domain for policy action is related to policies aimed at the development of sustainable food systems more generally, by encouraging sustainable agricultural practices. This includes using less fossil fuel, optimising the soil capacity to mobilise organic matter (for example through greater crop and livestock diversity or suitable tilling methods), and fighting crop enemies using integrated protection and production methods (reducing fertilisers and pesticides, and increasing resistance to diseases by using a larger number of species and varieties).

Far from being mired in the past, this ecological intensification of agriculture would make use of more recent scientific and technological advances in biology and biotechnology as well as using traditional knowledge and skills.

Research priorities

How we feed the world in 2050 is still hotly debated. The Agrimonde foresight study makes a compelling case for ecological intensification. It defines a clear agenda for future research priorities for our institutions, including serious investment in biology, green and white biotechnologies³, and innovation at the wider ecosystem scale of production systems, as well as in the production, management and exploitation of large amounts of data.

Other priorities include support for innovation in the social, spatial, economic and political organisation of food production systems and landscapes.

There is much promising research already underway in these areas; research that will help develop plants and animals that can survive in harsh conditions such as droughts and extreme temperatures, and are better adapted to a large spectrum of agro-ecosystems.

We also need to see more research and innovation in the fields of food losses and waste, our understanding of food consumption behaviours, and in analyses of food price trends in order to define and implement efficient stabilisation policies.

There are four key pillars that should drive agricultural and food research: sustainability, resilience to global changes – notably climate change, adaptation to local conditions, and taking a holistic approach to problems.

To create a sound foundation on which to build food security in 2050, we need a coordinated effort from a wide spectrum of scientific disciplines, from biology to economic, social and human sciences, in integrated research and research-development programmes.

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Hervé Guyomard is an agricultural engineer and statistician-economist. He is Director of Research at the National Institute for Agricultural Research (INRA) in France.

Telling stories

Making futures work



One of the biggest challenges in selling futures work – whether as consultant to client or strategy executive to strategy director – is getting beyond the perception that it is ‘blue skies thinking’ and not, therefore, grounded in reality. **ALISTER WILSON** explains.

It’s a common misconception; but, in fact, futures work is all about current reality. Yes, it involves taking time out from day to day operational matters to think expansively about the future and what it might be like and yes, it can involve leaps of the imagination. But all futures work begins with an analysis of existing trends and drivers in order to highlight emerging opportunities and threats facing the business or policy area.

What futures work offers is the chance to look at current challenges from a different perspective and in a way that complements traditional business planning processes. This article highlights six of the important ways that futures work is used to make a real contribution to the development of concrete plans and innovative strategy.

Rehearse key decisions

For organisations that get it right, futures work provides a rehearsal space where decision makers can explore the dynamics and uncertainties of the market or policy area and think about the strategic or policy choices they are likely to face on the path to success. Futures work is not about predicting what will happen, but about modelling what might happen; and the more that individuals and organisations can test their models, the easier it becomes to spot and respond to real change in real time.

Rehearsing decisions is particularly important in times of uncertainty. Over the last two years, we have found increased interest from corporate leadership teams in using futures

thinking to ask themselves some challenging questions about the decisions they are likely to face in the future. Most intriguingly, we have found that these conversations take place prior to starting the next round of strategic planning.

Test and challenge conventional views of the future

One of the most widely used futures techniques is scenario planning. The scenario process highlights the principal drivers of change and associated uncertainties facing organisations today and explores how they might play out in the future. The result is a set of stories that offers alternative views of what the future might look like.

Through discussion, organisations and policy makers can explore what they would do differently in each scenario. They can identify success criteria, suggest new ways of working and define new relationships. Generally, these differ in each scenario – and the discussion can help participants build a shared understanding of how the increasingly complex changes taking place in the world are likely to affect their activities.

The process of identifying and examining how current factors and trends might play out in the future helps participants focus on the likely impact of those trends on their own organisation. Quite often, participants find that the impacts are going to be bigger – or happen sooner – than they had previously realised.

Another strength of scenarios is that they can help different stakeholders to

explore each others’ preferred outcomes and courses of action. Often, of course, these differ for quite legitimate reasons. Using the stories to explore where and why differences exist can help collaborating organisations identify where future pressure points might lie and how to work together to create optimal outcomes.

Include subjective analysis in the evidence base

The benefits of futures work may be clear, but some organisations still feel uncomfortable about the subjective nature of some of the analysis, particularly when participants in the process are looking towards the long term future and using judgement to explore what might happen. The best way to overcome this discomfort is not, however, to avoid having the conversation but to combine subjective discussion with objective analysis to create new strategic insights.

The UK Foresight programme in the Government Office for Science, regarded as a world leader in futures thinking in Government, does exactly that. Foresight (which launched its Land Use Futures project in 2010 and its Global Food and Farming Futures project in January this year) aims to help government think systematically about the future and about how science and technology can be used to benefit society and the economy. Foresight projects are in-depth studies that look at major issues 20 to 80 years in the future and each project combines the latest objective scientific evidence with futures analysis to identify strategic options for policy.

The approach works. The 2007 report on Tackling Obesities (for example) played a central role in informing the cross-government strategy on obesity and in securing additional investment of £372 million for its delivery. The Infectious Diseases report, published in 2006, resulted in £55 million being made available to develop new rapid diagnostic tests and point-of-care devices for the detection and identification of infectious agents in both humans and animals. What both these projects did – and where Foresight’s futures work drives policy development – was to bring emerging challenges to the attention of policy makers in advance of the moment they needed to act. Futures work allows the urgent to be put to one side for a moment and for the important to get some attention.

Create a futures culture

Futures work in government can also support policy development at departmental and team level. In 2000, the then Department of Trade and Industry (now BIS) opened futurefocus, a dedicated futures centre open to policy teams across government and to external organisations wishing to use futures techniques to develop policy solutions.

Futurefocus offered a range of resources to support these conversations, including a dedicated set of scenarios for the future of the UK, decision support software and – critically – expert facilitation. Initially, groups visiting futurefocus used the centre’s own scenarios to explore how different socio-economic conditions might affect the design of initiatives (covering the whole gamut of policy areas from road pricing through consumer protection to e-learning), but the centre soon began to customise its futures programmes to meet the specific needs of its users. Much of its activity was centred on helping users to map and make sense of the complex drivers and trends shaping the future of a specific policy area – and then to use these insights to develop and test innovative policy responses.

One of futurefocus’s main achievements was to normalise the use of futures work in policy thinking amongst regular users of the centre. Creating this culture has increased innovation

and efficiency in policy making. An independent evaluation of the centre concluded that the futures processes it used were eight times more efficient at generating ideas for policy innovation than other methods and that the ideas themselves were more relevant to policy need. Perhaps most importantly of all, the centre provided a creative and collaborative environment in which policy makers and stakeholders could explore the future together to come up with realistic and innovative solutions to policy problems.

BIS continue to use futures thinking to support policy development and have created a new facility – The Innovation Centre – which builds on and expands the work of futurefocus.

The failure to connect futures and strategy together is surprisingly prevalent

Discuss the undiscussable

Often (but not exclusively), business is less interested than government in using futures to collaborate with external stakeholders and more interested in using it internally to help management teams explore how to meet a particular business challenge. Scenarios are particularly helpful in this context, allowing businesses to model future market conditions and test their strategic objectives against the different futures (a process known as windtunnelling).

In a recent exercise we carried out with the leadership team of a UK retail business, a key outcome from the windtunnelling exercise was that pursuing success in certain scenarios required the business to abandon long held values and beliefs. At first, the leadership team was unwilling to discuss this, seeing the values as sacrosanct; but as the project went on, they realised that

preserving the status quo could not be taken for granted. They therefore took time to explore whether their core values could be modified to improve their chances of success in certain futures. The conversation that subsequently took place had a profound impact on what the business chose to do strategically.

Connect futures and strategy together

We recently presented our final report to a private sector client by summarising the scenarios they had developed, presenting the outcome of their windtunnelling exercise (which recommended modifications to three of their four strategic objectives) and highlighting the short and long term commercial opportunities and threats facing them. The client was pleased with the outcome – but was unable to act on the short term opportunities and threats because the corporate strategy team had not been involved in the project until the final stages. They were therefore unclear about how the scenarios had been developed and were sceptical about the strategic importance of the identified opportunities and threats. Subsequent developments in the marketplace have shown they were wrong to be sceptical.

The failure to connect futures and strategy together is surprisingly prevalent. Futures work and strategic or business planning are often separate activities, even (sometimes) carried out by separate teams. There is no single reason for why this occurs and various cultural explanations present themselves: delivery drives activity; futures work is interesting but irrelevant; futures work doesn’t provide answers about what should be in the plan and is not, anyway, rigorous; uncertainty is an inconvenient truth; and so on.

Whatever the reason, aligning futures work with strategy is particularly important for organisations that want to maximise their impact. It’s only those that haven’t made the connection who believe futures work is blue skies thinking. ■

Alister Wilson is Director of Waverley Management Consultants, which provides strategic consultancy to clients in government, business, education and the third sector.

Going beyond your wildest dreams

Making futures impactful



How can futures play a part in making positive visions a reality? **Dan Crossley** tells us about some of the features he believes are particularly important if futures work is to have a real impact - based on Forum for the Future's experience of futures work with leading organisations over several years.

Another 'future of food' report anyone...? What with the multiple visions, trends and scenarios for the food system developed in recent years, I understand why futures fatigue might be setting in amongst some foodies. Perhaps paradoxically, we need more dreaming about the future - but dreaming that is more effective. Critically, we also need to go beyond dreaming and work harder to accelerate the shift to a more sustainable food system.

Grounded dreams

Firstly, futures should be more than just idle navel-gazing. Futures work should be grounded in future trends that we can be reasonably certain about. Then again, it's not about getting too overwhelmed by precise details either. Instead, we should pay more attention to the direction that certain trends are going in and how they might interact with each other. It's more important to know that oil is fast running out, than to try and predict the exact date when peak oil will happen (or did happen).

Positivity and stretch

I'm a firm believer that we need to avoid creating nightmares. I would like to see those trying to make the food system more sustainable take a more positive outlook. Positivity is more likely to galvanise people into action than ever more gloomy stories about impending ecological collapse (although I accept that a bit of gloom might be necessary to add a sense of urgency).

Overall, the way we talk about the future needs to be much more positively framed. That doesn't mean being complacent. We need to go 'beyond our wildest dreams', to push ourselves outside our comfort zone. This is where futures can play an invaluable role.

One organisation we've worked with in recent years is Finlays, the global tea and flower producer. We helped it understand its possible future operating contexts in Kenya and come up with a vision and set of goals. These were ambitious and positively framed. For instance, one commitment was around "making a positive contribution to environmental recovery and resilience"¹ - rather than just being about 'reducing a bit of carbon here or a bit of water there'.

Shared dreams

Doing futures work together is the way to create shared dreams, a shared sense of excitement and a share of the responsibility for action. Working together can take place on two levels. Firstly, getting

people from one organisation together (with relevant external experts) to create scenarios or visions can be hugely effective at engaging different teams on sustainability.

And secondly, doing collaborative futures projects is incredibly powerful. A good example here is Forum's on-going Dairy 2020 project², which is trying to answer the question "what does

Doing futures work together is the way to create shared dreams



By Jordi Sanchez Teruel

a sustainable dairy industry look like, and what contribution can it make to a sustainable world?" This isn't something we're working on with one organisation. We've brought together leading players from across the UK dairy industry - First Milk, Volac, Asda, DairyCo, Dairy UK, the NFU and Defra. It's already showing that by coming together, organisations can move beyond day-to-day politics and short-term constraints. Instead they're working out what they can do (collectively and individually) to make sustainable dairy a reality over the next decade.

That's why Forum for the Future's new strategy is all about 'system innovation'³, a set of interventions that shift a whole system onto a more sustainable path, which more often than not requires collaboration.

We also like to use the futures tools that we develop with others to create wider change. We've used our PepsiCo scenarios, for example (see below), widely - not just with lots of different parts of PepsiCo, but also with other food companies, with industry bodies and with MBA students - to challenge thinking and help with long-term strategy. That's meant we don't have to spend lots of time and resources starting from scratch each time.

Looking long (but not too long)

Getting the timeframe for futures work right is important. For a macro level picture, the Foresight⁴ report understandably

took a very long-term perspective - out to 2050. But, with companies, we've found that if you look too far into the future, many people (and organisations) can't imagine what the world might be like or how it will affect them. Conversely, if you look too near into the future, people start working forward from today and worrying too much too soon about how they'll make things happen. That's why we tend to use 10-20 years for most of our futures work.

Seeing the impacts of futures

We developed scenarios with PepsiCo back in 2008-09 and used them with senior leaders from across the business to help identify the major sustainability risks and opportunities that the company would face in 2030, and to work out what it needs to do about these right now. But 2 to 3 years on, what impacts has the futures work had on PepsiCo?

Demonstrating the impact of futures work is notoriously difficult - not least because the nature of the work means

that you're looking at long-term strategy, so you might not see changes for a long period of time. With PepsiCo, some of the short-term benefits are already there to see.

Most visibly, the project led to the creation of a sustainable agriculture team in PepsiCo, to help the company mitigate risks posed by issues like climate change and water to its supply

Getting the timeframe for futures work right is important

Present meets future

A good, resilient food system for Bristol



By Ron Guest



Bristol needs a viable food supply and distribution system that delivers multiple benefits and maintains operation under increasingly changeable circumstances, writes **Joy Carey**.

chains. As a result, the UK business set stretching targets for its farmers to reduce water and carbon use on their farms by 50% in five years⁵.

Our work also fed into new global environmental and health commitments made late in 2009. Some of the key risks identified during the project have been put onto the company's risk register to be actively monitored.

More intangibly, the project also helped transform the way many senior people thought about sustainability. The whole process of creating and using scenarios means there are hundreds of PepsiCo executives who better understand how tomorrow's challenges are here today. The scenarios work helped demonstrate how the company is fundamentally reliant on the land and on the environment.

That doesn't mean PepsiCo is now a sustainable business, transformed solely by the futures work it did with us. Whilst PepsiCo has made great strides on sustainability, particularly here in the UK, it still has a long way to go. However, the project has been impactful – helped by the fact the scenarios were grounded, positively framed, stretching and created together.

Half an eye on the future

In the food industry, having (at least) half an eye on the future is vital. Futures work done well is more than about raising awareness of possible future trends. It's about exploring how we can make the dream of a sustainable food system a reality.

For individual organisations, it can be about exploring how they can prosper in a future world where key inputs like land, fertile soil, energy, water and skilled labour will come under immense (and growing) stress.

Futures techniques need to be used to better effect to challenge thinking and to help create new strategies, new products and services and new business models that are fit for the challenges of the 21st century.

Imagining a more sustainable world and a role for your organisation in that world is one thing. Making it happen is another. If we're to fix the broken food system, we need to be bold, to dream bigger and to act on those dreams... As Walt Disney said: "All our dreams can come true, if we have the courage to pursue them"⁶.

References

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- 2 <http://dairy2020.com/>
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- 5 <http://www.pepsico.co.uk/purpose/environment/reports-and-updates/2010-environment-report/passionate-about-growing/50-in-5>
- 6 <http://corporate.disney.go.com/careers/index.html>

■ Dan Crossley is principal sustainability advisor at Forum for the Future.

How, as a city, can Bristol turn its vision of a 'good' and resilient food system into reality? The first challenge is to understand our current operation, strengths and vulnerabilities. The second is to re-assess what 'good food' means – it needs to be more than just cheap and convenient. It has to be good for us and good for the soil; biodiversity; the workers; animal welfare; the local economy; the air, rivers and oceans; and natural resources such as water, phosphates and fuel.

Facts and figures

The West of England's population is one million. Bristol's is around 400,000. Bristol is part of a nation-wide food supply system. The UK imports 40% of its food. The South West is dominated by livestock production, providing just 6% of Britain's vegetable supply. Seventy percent of its cereals are produced for livestock; most wheat for human consumption is not of bread-making quality due to the damp climate. Ninety percent of the South West's meat is sold through six large abattoirs/processors into national supermarket chains.

Of the 4500 registered food businesses in Bristol, 74% are caterers. As in any other UK city, just four companies control over 75% of food retail sales. Bristol has around 140 independent specialist food retailer businesses. Ten out of 35 wards do not have a greengrocer. There is adequate meat, dairy and eggs to supply the city's needs from within a 50 mile radius, but not fruit and vegetables, wheat or pork.

Let's Imagine

Bristol's decision-makers have strategically focused on provision of fresh, seasonal, locally produced, organic and fairly traded ingredients to ensure residents can eat 'cook from scratch' meals. Fish, meat, dairy, eggs, fruit and vegetables, cereals grains and bread are sold through a delightfully diverse range of outlets.

All new homes have kitchens and gardens. Commercial market gardens and micro sites across the city generate wind/solar energy, recycle waste heat energy, and capture composted waste nutrients. Best quality agricultural land is safeguarded for food production. Sites are located in public and private green

spaces; university, hospital and school grounds; on previously derelict plots and between buildings. They cover 2000 hectares and provide an annual 10,000 tons of fruit and vegetables –16% of the city's requirements. Produce is sold daily in season through greengrocers and 'pop up' food markets in school grounds and community spaces.

A community/commercial partnership runs an in-city distribution network using electric milk floats to bring in additional fresh produce to retailers and caterers from the central composite wholesale market for farmers, growers and local food businesses, located alongside the historical fruit and vegetable wholesale market.



By Imagesniper



By Ed Mitchell



Suggestions for action - 'Who Feeds Bristol? Towards a resilient food plan', 2011

The composite market has a vastly improved local food supply into the city and the catering college is located close by to maximise students' skills development in dealing with fresh produce and suppliers.

Local currency

The Bristol People's and Farmers' Supermarket outlets supply parts of the city that previously had very few independent food retailers. Food tourism is a growing attraction and the annual 'Bristol Independents Day' celebration reminds residents to 'buy something local from somewhere local'. Fifty percent of residents use 'Bristol pounds' (called 'Banksies' on the street) to buy their 'cook from scratch' ingredients and eat out. Large companies, the City Council, universities and hospitals procure locally sourced catering ingredients in 'Banksies'. Working with independent retailers, wholesalers and farmer marketing groups, a community buying network based on collective purchasing power has caught the imagination of several thousand city residents. Groups use

a central ordering system to bulk buy using 'Banksies' wherever possible, and redistribute smaller quantities amongst themselves. They also bulk purchase house insulation services and renewable energy.

Composted domestic and commercial food waste goes back on the land – collected from garden/allotment composting; community composting; on-farm commercial composting; and anaerobic digestion at the universities and hospitals. Waste paper and cardboard feeds vermiculture enterprises. In turn they generate garden compost and supply worms to the hugely successful, ecological Bristol Trout Farm which supplies local restaurants.

From vision to reality

Bristol's challenge is to increase the amount of fresh seasonal staple foods available through a diverse range of

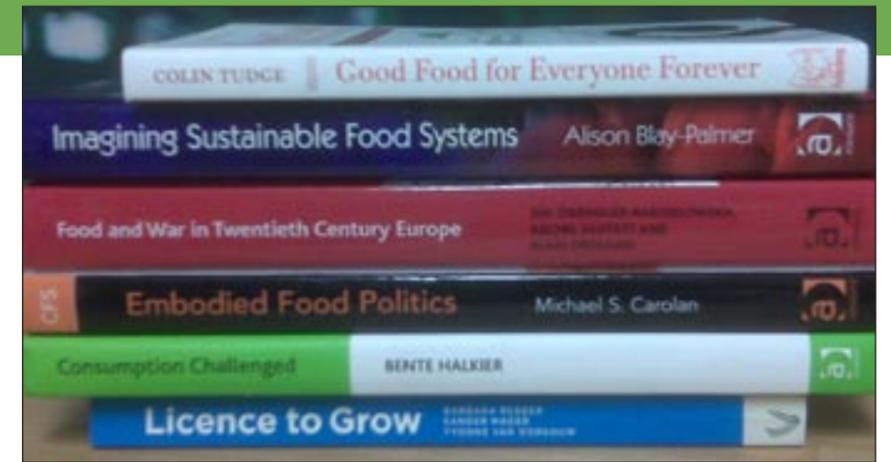
outlets, and to ensure that more food is produced closer to built up areas.

The high profile 'Bristol Food Policy Council' has held the vision, overseen a multi-stakeholder 'food system planning process' to clarify best options and kept up momentum on eight key work strands to implement change.

Bristol, currently Green Capital of Europe, is immensely proud of its green economic success which has connected up planners, academics, and technology and food businesses with city residents to find innovative and integrated solutions for locally produced energy and food, nutrient and water recycling and land management. Together we're shaping a positive future for food in our city.

Joy Carey is an independent consultant on sustainable food system planning, associate director of local food consultants CIC, and author of 'Who Feeds Bristol? Towards a resilient food plan', March 2011

BOOK REVIEWS



Embodied food politics

Michael Carolan | 2011 | Ashgate
ISBN 978-1-4094-2209-9

Carolan makes the case that 'consumer preferences' aren't innate, but produced and maintained through our lived experiences of eating, shopping, socialising and otherwise doing things that involve food. He looks at how getting involved in CSAs, seed saving and keeping chickens can change what people want and get from their food, and help fashion a fairer food system. This is an in-depth study, aimed at an academic audience. TM

Consumption Challenged: Food In Medialised Everyday Lives

Bente Halkier | 2011 | Ashgate | ISBN 978-0754674764

Consumer behaviour is routinely challenged in media discourse. Halkier sets out to interrogate this contestation, examining a number of cases pertinent to modern food systems and delving into the complexity and diversity of everyday practice. The book is both empirically and theoretically important, encouraging us to think past more individualised and rationalistic notions of challenging consumption and to set these behaviours in a social context – highly relevant to a consideration of individual versus public responsibilities. BS

Good Food for Everyone Forever: A people's takeover of the world's food supply

Colin Tudge | 2011 | Pari Publishing
ISBN 978-8895604138

In a friendly 'can-do' tone, Tudge describes why 'Enlightened Agriculture' is needed, and how it will contribute to making it possible to feed people to the highest standards of nutrition and gastronomy without cruelty to our fellow creatures or destroying our environment. This is an enjoyable read which leaves the reader feeling stimulated and motivated to join the 'Campaign for Real Farming' and help create the critical mass required for long-term positive change. LU

Licence to Grow: Innovating Sustainable Development by Connecting Values

Barbara Regeer, Sander Mager and Yvonne van Oorsouw | 2011 | VU University Press Amsterdam | ISBN: 978-90-8659-541-9

Drawing on the experiences of the Dutch agricultural innovation programme TransForum, this book proposes a 'Connected Value Development' approach to sustainable

development. Essentially, this means bringing together the values of different stakeholders – business, science, policy and civil society – to find 'win-win-win situations' (good for people, planet and profit) to the 'wicked problems' that face society today. Refreshing in its advocacy of new ways of thinking and working, one of the key premises of the approach is that 'innovation' must extend to how agricultural production is set up, not just more efficient crops and machinery. SR

Food and war in twentieth century Europe

Ina Zweiniger-Bargielowska, Rachel Duffett & Alain Drouard | 2011 | Ashgate | ISBN 978-1-4094-1770-5

Essays examining starvation as a weapon, nutrition as defence, and the parts that food science and policy played during the first and second World Wars in Europe. As today's campaigners look to rationing for inspiration in improving public health, a timely chapter on the British flat-rate system argues that it disadvantaged poorer households in spite of championing 'fair shares'. TM

The Common Agricultural Policy after the Fischler Reform

Alessandro Sorrentino, Roberto Henke and Simone Severini Eds | 2011 | Ashgate | ISBN 978-1-4094-2194-8

A comprehensive assessment of the effects of the 2003 Common Agricultural Policy (CAP) reform, this is a collection of essays from a dazzling array of experts across Europe. Looking back at the consequences of the Fischler Reform, and to the future shape of the CAP, this book is aimed at policy makers and academics in agricultural economics and agricultural policy at national and regional levels. EB

Imagining Sustainable Food Systems: Theory and Practice

Alison Blay-Palmer Ed. | 2011 | Ashgate
ISBN 978-0-7546-7816-8

A thought-provoking collection of articles recommended for graduate students, researchers, policy makers and professionals interested in alternative food systems. The book is divided into three sections. The first tackles contextual questions including definitions and the interplay between local and global scales. The second part addresses social justice issues, particularly food access and the potential role for public procurement. The third presents case studies as specific examples of how to activate change for a more sustainable future. LU

Forthcoming events

3rd - 4th Sep '11	Soil Association Organic Food Festival Soil Association http://soilassociation.org Bristol, UK
6th - 7th Sep '11	Dairy Event & Livestock Show The Royal Association of British Dairy Farmers (RABDF) http://www.dairyevent.co.uk/exhibitors Birmingham, UK
6th - 9th Sep '11	Eighth International Symposium on the Nutrition of Herbivores British Society of Animal Science http://www.isnh8.org Aberystwyth
6th - 9th Sep '11	Agricultural and Biotechnology International Conference Foundation for Professional Development http://www.abic2011.co.za Johannesburg, South Africa
8th - 9th Sep '11	Food and Nutrition in the 21st Century Ministry of Science and Higher Education, Poland http://www.foodconference2011.inhort.pl Warsaw, Poland
12th - 13th Sep '11	International Conference on Veterinary and Animal Ethics Royal Veterinary College http://www.icvae.com London, UK
13th Sep '11	Food Security for Cities The Royal Statistical Society http://tinyurl.com/43bct3f London, UK
17th Sep - 2nd Oct '11	British Food Fortnight www.lovebritishfood.co.uk UK wide
5th - 8th Oct '11	3rd Conference of the European Philosophy of Science Association http://epsa11.phs.uoa.gr Athens, Greece
10th - 11th Oct '11	The annual Chatham House conference on climate change Chatham House http://www.chathamhouse.org.uk/climatechange2011 London, UK
11th Oct '11	Reforming the Common Agricultural Policy: implications for UK agriculture and rural areas Westminster Forum Projects http://www.westminsterforumprojects.co.uk/forums/event.php?eid=276 London, UK
16th Oct '11	World food day Food and Agriculture Organisation http://www.fao.org/getinvolved/worldfoodday/en Worldwide
16th Nov '11	Who should run the countryside? Rural Economy and Land Use Programme http://www.relu.ac.uk/conference/index.html Gateshead, UK
28th Nov - 9th Dec '11	COP-17 UN Conference on climate change United Nations http://www.cop17durban.com/Pages/default.aspx Durban, South Africa
7th - 12th May '12	6th World Fisheries Congress The World Council of Fisheries Societies http://www.6thwfc2012.com Edinburgh, UK
30th May - 2nd Jun '12	Climate Change and Sustainable Development 10th Congress of the European Society for Agricultural and Food www.eursafe2012.eu Tübingen, Germany