Living Lightly, Living Faithfully

Religious faiths and the future of sustainability

Edited by Colin Bell, Jonathan Chaplin and Robert White

The challenge of sustainability

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COLIN BELL is a Research Associate at the Faraday Institute in Cambridge and writer on faith and sustainability issues. His background includes degrees in mathematics and theology, and research in scientific and high-tech industry. His various roles focus around trying to help people understand likely or possible sustainability challenges in the decades ahead. This involves speaking and writing resources aimed at young people and the UK church, including work with Christian Ecology Link and the John Ray Initiative.

PAUL CHAMBERS graduated from Cambridge University with a degree in Natural Sciences, followed by a doctorate in ecology from Oxford University. After a period of post-doctoral research and teaching, he joined the UK Government's environment department in 1997. He has worked on a number of energy and environmental policies including transboundary air pollution, greenhouse gas emissions trading, climate change communications, energy efficiency and, until last year, international energy and climate policy. He is currently the energy adviser at the British Embassy in Jakarta, working with the Government of Indonesia to support their effort to promote low carbon energy

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JULIET DAVENPORT is founder and Chief Executive of Good Energy. Since Good Energy was founded ten years ago, it has been a catalyst for change in the energy market, supplying energy to 34,000 homes and businesses, and supporting 52,000 independent renewable generators. Its goal is to help the UK to a 100% renewable future by 2050. Juliet has won several accolades for her work, including PLUS Markets CEO of the Year three times, Business

Green Leader of the Year Award 2012, PEA Business Award CEO of the Year 2012 and First Woman Award (Retail and Consumer) 2011. Good Energy has won a *Sunday Times* Best Green Company Award twice, an *Observer* Ethical Award and was ranked by *Which* as the top UK energy provider for customer satisfaction in 2010, 2012 and 2013.

PAUL EKINS is Professor of Resources and Environment Policy at, and Director of, the UCL Institute for Sustainable Resources, University College London. His other roles include Senior Consultant to Cambridge Econometrics, Co-Director of the UK Energy Research Centre, and an adviser to the Energy Efficiency Deployment Office of the Department for Energy & Climate Change. He has served as an adviser to numerous governmental bodies in the areas of sustainable energy policy, sustainable development, environment and business. In 1994, he received a Global 500 Award for 'outstanding environmental achievement' from the United Nations Environment Programme. His academic work focuses on the conditions and policies for achieving an environmentally sustainable economy, and he is an authority on a number of areas of energy-environment-economy interaction and environmental policy.

HARFIYAH HALEEM has been a trustee of the Islamic Foundation for Ecology and Environmental Sciences (IFEES) since 2003. She is a regular speaker and writer on various aspects of Islam and the environment, and has edited or co-edited the books, *Islam and the Environment* (Ta-Ha, 1998), *The Muslim Green Guide* (IFEES, 2008) and *Sharing Eden* (Kube Publishing, 2012). She also runs various environmental awareness activities and practical initiatives, including workshops for Muslim scouts, and projects among Muslim communities across London. She was a contributor to two seminars at Lambeth Palace: Climate Change 2009 and Sustainability 2011.

MAWIL IZZI DIEN is Professor in Islamic Studies at the University of Wales, Trinity St David. He has researched and written on many aspects of Islamic theology, but has particular interests in law, faith and the environment, interfaith engagement and Islamic economics. He is currently co-editing a book on *Islamic Economics in the Contemporary World*. Since 1991, he has acted as an adviser and contributor on Islam to the Alliance of Religion and Conservation Organisation (ARC).

FAZLUN KHALID has a worldwide reputation as an indefatigable advocate of environmental protection rooted in religious traditions and is now recognised as one of 15 leading eco-theologians in the world. He appeared on the *Independent on Sunday* list of the Top 100 Environmentalists in the UK in

2008 and is also listed among the 500 Most Influential Muslims in the World by the Royal Islamic Strategic Studies Centre of Jordan. He founded the Islamic Foundation for Ecology and Environmental Sciences which is now established as the world's leading Islamic environmental NGO.

SATISH KUMAR teaches, lectures and runs workshops internationally on reverential ecology, holistic education, and voluntary simplicity. As a young man, he became a monk and peace campaigner and undertook an 8,000-mile peace pilgrimage from India to America. In 1973, he settled in England, taking the Editorship of *Resurgence* magazine. He has been the editor ever since: 30+ years! He is the guiding spirit and/or founder of a number of ecological, spiritual and educational ventures in Britain, including the Small School in Hartland, a pioneering secondary school; and Schumacher College, a residential international centre for the study of ecological and spiritual values. He has written four books, including *No Destination* (Resurgence, 1992), his autobiography, which has sold 50,000 copies—and presented a highly acclaimed BBC documentary that mixed eastern philosophy with the western landscape of Dartmoor.

BILL MCKIBBEN is an American environmentalist, writer and advocate on global warming, alternative energy, and localisation issues. Since 2006, he has organised a number of large-scale demonstrations on climate change, including 350.org, which coordinated 5,200 simultaneous demonstrations in 181 countries. MSN named him one of the dozen most influential men of 2009. His first book, *The End of Nature*, was published in 1989 by Random House after being serialised in the *New Yorker*. It is regarded as the first book for a general audience about climate change, and has been translated into more than 20 languages. Subsequent books include *Deep Economy: the Wealth of Communities and the Durable Future* (Times Books, 2007), and *Eaarth* (Times Books, 2010).

PETER MELCHETT has been Policy Director of the Soil Association—the UK's main organic food and farming organisation—since 2001. He runs an 890-acre organic farm in Norfolk, with pigs, beef cattle and arable crops. His many roles have included being a member of the BBC's Rural Affairs Committee, and the Department of Education's School Lunches Review Panel, an environmental consultant to businesses, a Special Lecturer at Nottingham University, President or Chair of various NGOs, including the Ramblers Association and Greenpeace UK, and a Labour Government minister in the House of Lords.

ANN PETTIFOR is a fellow of the New Economics Foundation (nef) and Director of Advocacy International Ltd. Her particular interests include the architecture of the international financial system and its impact on sovereign debt and domestic monetary and fiscal policy; and the challenges posed to economic policy by the twin threats of Peak Oil and climate change. She works in the area of sovereign debt around the world, and regularly attends World Bank and IMF meetings. Among her publications is *The Coming First World Debt Crisis* (Palgrave, 2006) which warned that rich countries were heading for a debt crisis that would overshadow anything seen in the developing world. She also co-authored nef's *A Green New Deal* (New Economics Foundation, 2008).

ELAINE STORKEY, President of Tearfund, is a well-known academic and broadcaster, and was named one of the 100 women public intellectuals by *The Guardian*. She is also Director of Education for the Church of England Church Army, and speaks at public events in many countries. Author of eight books, she has also written hundreds of articles for journals and newspapers. She has a number of academic degrees, including a Doctorate of Divinity, and has lectured at King's College, Birkbeck College, and Oxford University. She is passionate about justice and transformation, and has been connected with Tearfund for a number of years, visiting Tearfund projects in numerous countries.

RUTH VALERIO is a writer and speaker with a passion for the world that we live in and all its inhabitants, and a desire to motivate others also to live in ways that respect and look after this earth. Ruth is an academic, community activist, eco-warrior, author, practitioner, vegetable grower and pig keeper rolled into one. She has recently completed a PhD in Theology, looking at simplicity as a Christian response to consumerism. She is the author of *"L" is for Lifestyle: Christian Living That Doesn't Cost the Earth* (IVP, 2004), as well as a number of Bible study guides. Ruth is Theology Director for A Rocha UK and is involved in leading the major Christian event, Spring Harvest. She is also a director of Cred Jewellery, which has pioneered Fairtrade Gold.

ROBERT (BOB) WHITE is Professor of Geophysics at Cambridge University and Director of The Faraday Institute for Science and Religion. His research focus is on volcanoes, earthquakes and processes accompanying rifting and breakup of continents. His books include *Christianity, Climate Change and Sustainable Living* (SPCK, 2007); *Creation in Crisis: Christian Perspectives on Sustainability* (SPCK, 2009); and *Hope in an Age of Despair: The Gospel and the Future of Life on Earth* (IVP, 2013).

LASZLO ZSOLNAI is professor and director of the Business Ethics Center at the Corvinus University of Budapest. He is chairman of the Business Ethics Faculty Group of the CEMS (Community of European Management Schools—The Global Alliance in Management Education). He serves as editor of the *Frontier of Business Ethics* book series at Peter Lang Publishers in Oxford. With Luk Bouckaert, he founded the European Spirituality on Economics and Society (SPES) Forum in Leuven, Belgium. He is co-founder of the Buddhist Economics Research Platform, a collaborative venture of Buddhist scholars and practitioners. He is the author of many books on management, business ethics, spirituality, sustainability and their interrelationship.

Introduction—Faith in sustainability?

COLIN BELL, JONATHAN CHAPLIN & ROBERT WHITE

Can the religions of the world offer anything worthwhile towards the goal of a truly sustainable way of living in the twenty-first century? Today we are witnessing a growing aspiration in many sectors of society and parts of the world to cultivate a new global ethos of 'living lightly upon the earth'. More and more are seeing that, without this, our threatened and vulnerable natural and social ecologies will not be flourishing by the time our grandchildren grow up—and some may not even have survived. Arguably there is no more momentous issue confronting the human race at this time. Can the beliefs and practices of major world religions make a meaningful contribution to that urgent and ambitious goal? Or will invoking faith bring distraction or divisions to the environmental movement when maximum unity is required?

This book contains the edited proceedings of a lively multi-disciplinary and interfaith conference devoted to addressing exactly these questions. The conference, Sustainability in Crisis, was held at Murray Edwards College, Cambridge in September 2011 and attended by over 100 delegates. It was co-sponsored by the Faraday Institute for Science and Religion, based at St Edmund's College, Cambridge, and the Kirby Laing Institute for Christian Ethics (KLICE), also based in Cambridge.[1] The event, and this book, are products of a multi-year collaborative project between the two organisations, directed by Robert White (The Faraday Institute) and Jonathan Chaplin (KLICE), and generously funded by the Templeton World Charity Foundation, the Kirby Laing Foundation, and the Hinchley Trust.

The conference title poses a challenging question. Sustainability, it seems, is reaching crisis-point. Why are the prospects for a sustainable future becoming increasingly bleak? It is surely not for want of empirical knowledge about the condition of either our natural or our social ecologies. Evidence of serious and increasing strains on both is present in abundance, as the chapters that follow amply confirm. However, while the majority of governments, businesses, third sector organisations and

individuals accept that climate change, environmental degradation and many other associated issues need to be addressed, practical progress has been disappointingly limited. In 2013, while climate scientists reported that the concentration of carbon dioxide in the global atmosphere had now passed the iconic threshold of 400 parts per million (which for many years had been held as a maximum target to avoid seriously detrimental climate change), and as new alerts went out regarding the advancing extent of Arctic ice melting, most of the world's politicians, business people and consumers had 'stalled economic growth' on their minds.

The deep disappointments of the Copenhagen climate change conference in December 2009 exposed the limitations of elite global politics to address our immense environmental challenges. More than that, it revealed a deeper economic and cultural resistance—especially in the high-income countries of the Global North—to the far-reaching steps necessary to achieve not only climate stability but environmental sustainability in general. Post-Copenhagen, those leading the debate focused less on the parlous state of the environment itself, about which there is widespread if not unanimous agreement, and more on the socio-economic, cultural and indeed spiritual changes necessary if we are to advance toward sustainable consumption and production. Many governments and other bodies seem to be waiting for a clear lead from public opinion, but even highly committed and motivated individuals are tempted to see their personal efforts as insignificant in the face of both an apathetic majority and the overwhelming scale of our ecological—and now financial and economic—crises. There is also a growing sense of frustration among organisations engaged with the issues at the lack of sufficient support from individuals, business and government.

What can be done to engage this indifferent majority? This book is based on the conviction that religious faiths have profoundly important insights into questions of sustainability and, no less important, also have the potential to mobilise large numbers of citizens behind the changes needed to realise it. The challenges of sustainability are, in fact, increasingly engaging the energies of representatives of the world religions. But, strikingly, more and more secular observers are also beginning to recognise the vital contribution that religions might make in promoting sustainability. American philosopher Max Oelschlaeger, long a believer that religion was largely to blame for our environmental crises,

already came to the remarkable conclusion two decades ago that 'There are no solutions for the systemic causes of ecocrisis, at least in democratic societies, apart from religious narrative'.[2]

This is an audacious claim that will be disputed by many—including many religious believers—but it should not be a baffling one. For we are increasingly seeing that the crisis of sustainability raises deep questions about the shape of a truly fulfilling human life and the design of flourishing societies. More and more observers, religious and secular, are coming to see that the production of yet more technical fixes to environmental problems will not be sufficient to address such problems. The problems reveal deeper cultural pathologies that must force a radical rethinking of our personal, social and economic actions and commitments. Such pathologies operate at the level of our personal and corporate 'spiritualities', our 'faiths' or 'metanarratives'—the often invisible, even unrecognised, but overwhelmingly powerful driving forces of our lives.

If this is true, what religions may say and do in response to our looming challenges of sustainability may yet be globally very significant. Indeed, given that the majority of the world's population still adheres, however loosely, to some religious tradition or other, it may even turn out to be decisive. Religions undoubtedly have been, and still are, to some extent complicit in environmentally- and socially-damaging behaviour. However, at their best they can inspire people to bold new visions of a better 'quality of life' than that offered by the decreasingly satisfying materialist and consumer culture of the modern West. And the communities they generate also bring substantial resources for educating and mobilising millions of people across the world to address the issues.

This book seeks to join a variety of lively and growing global conversations surrounding the positive contributions religion can make towards sustainable living. A reading list at the end of this volume lists key texts and organisations involved.

There has been considerable academic work done in recent decades to study both what the world's religions teach about sustainability and what their adherents are doing on the ground, with the largest single contribution being made by the influential *Yale Forum on Religion and Ecology*, founded in 2006, building on extensive work done at Harvard University since 1996 including a pioneering ten-volume series on the

theme.[3] Much is being done inside most religious traditions to explore their own teachings on the care of the earth, to expound them to their adherents and encourage serious action.

An encouraging recent trend in Christianity is to see this more as an integral part of religious life rather than something to be left to the specialist; other religions are following similar paths, or already have, looking after nature in a more central position. From the evangelical wing, the Lausanne Movement's 2010 Cape Town Commitment called for care for creation to be treated as a key part of mission. Statements made by the recently-appointed Pope Francis I indicate that he sees it as central to Roman Catholic teaching as well.

A second major realm of literature concerns discussions about sustainability more widely—ranging from what it might mean in various sectors of society, to what can be achieved practically in the short and long term; and analysis of how we have reached our current unsustainable state. This ranges over many disciplines including science, engineering, geography, economics, politics, law, ethics, history and sociology. Much is highly technical—but some writers try bravely to synthesise the material for a more popular audience and provide practical solutions. A substantial and successful attempt to combine both goals is the body of work produced by the Transition Movement, often based on their experience of trying to implement their ideas.

Yet, despite the growing interest in sustainability—both at academic and more popular levels—relatively little has been written on the practical sustainability potential of religions. What there is tends to set out broad principles and theories rather than addressing this potential and in a form accessible to the general reader. Religions have generally focused on ecology and on issues surrounding care for 'the poor' without widening their view to the broader challenge of sustainability. It is unclear exactly why this is so, but one factor seems to be an underlying low-level mutual suspicion between sustainability activists and religious groups: the former seem to focus more on religions' failings than positive opportunities, whereas religious groups often distrust the sustainability activists' (perceived) philosophical axioms.

There are signs of hope in this regard, however, with partnerships between religious and secular groups beginning to form. A notable

example is the Stop Climate Chaos coalition, a partnership of a hundred bodies including most significant groups from both sides.

Our hope is that this book will help to fill these gaps and encourage more collaboration. Contributors represent diverse faith and secular positions and include academics, expert practitioners and faith leaders, many with long track records of writing, speaking and action. The book is accessible to non-specialists but also informative to experts.

The book is intended primarily for two audiences: first, those who—whether religious believers or not—are interested in sustainability issues and who recognise the potential of faith and faith communities for advancing the sustainability agenda; second, those active in religious communities who are keen to enlist the injunctions and energies of their own faith traditions in the cause of sustainability.

As well as advocating partnerships between religious groups and those working on sustainability issues, the book argues for a more holistic view of sustainability solutions. It proposes that personal action, changes in business practice, government action and economic growth strategies cannot be considered in isolation from each other. The core values inherent in the religions represented here help show why an integrated approach is necessary and possible.

While considering the theoretical principles underlying these issues, the book also explores what is being done and can be done practically. This will obviously vary considerably in each situation, depending on local needs, climate, and the relationship between religious groups and other public bodies in a given region. For this reason, the book reflects its UK origins, although the insights contained in it are of much wider relevance, and in any case the global context is kept very much in view throughout.

The goal of the conference was not to seek a consensus across religious boundaries or between religious and secular perspectives, but rather to hold an informed and honest conversation about the challenges we all face and the potential contribution religions might make to them. Given the breadth of the subject, the selection of views presented can only be a sample, albeit one which we hope is representative of the broad spectrum. We make no pretence of presenting a comprehensive picture of all possible perspectives. There are other religious viewpoints, other possible pathways to a sustainable energy future and other political analyses of our world which could have been validly included. Instead, many are

referenced in the bibliography. The authors speak for themselves, and the diversity as well as the commonality between their contributions is on display in what follows.

The book opens with an urgent and impassioned plea on 'The Challenge of Sustainability' from one of the world's leading environmental writers and campaigners, **Bill McKibben**. He exhorts us to confront the urgency of the ecological crisis and to take the decisive steps, needed at many levels, to work towards a sustainable future.

The book then addresses six dimensions of the challenge of sustainability: sustainable growth; sustainable consumption; sustainable production; governing for sustainability; global religion and sustainability; and spirituality and sustainability.

Part 1, 'Sustainable Growth', explores the relationship between sustainability and economic growth as conventionally understood. Does 'sustainable' growth actually mean no growth, slower growth, or a qualitatively different kind of growth? And what is 'growth' anyway?

Energy economist and policy adviser **Paul Ekins** asks directly whether economic growth is compatible with environmental sustainability. From an analysis of economic models designed by him and others, he offers a confidently positive answer to the question, yet one which would require significant changes in current investment and consumption priorities. Sufficient 'decoupling' is possible such that with care we can retain (modest) economic growth and meet government carbon targets.

Ann Pettifor is less optimistic that we can achieve sustainability within the terms of the current Western economic model. Our existing deregulated economic system is predicated on a deeply defective credit and debt system which is driving continuously escalating consumption and hence resource usage. Christians must adopt a more critical stance to a credit-based system.

Mawil Izzi Dien shows how Islam can yield its own distinctive 'environmental economics'. This is based on the conviction that both ecology and economics are part of the divine cosmic order. Converging intriguingly with Pettifor, he argues that in Islamic teaching an appropriate level of economic growth is compatible with this, but it must be 'real, natural growth', not an artificial economic growth driven by debt.

Laszlo Zsolnai concludes this part by proposing a Buddhist economics that challenges the idea of 'sustainable growth' as understood

in Western economics. Applying the fundamental concept of 'right livelihood' to modern economics and ecology, he shows that Western growth is neither desirable nor possible. Instead we should be looking at measures akin to Bhutan's gross national happiness.

Part 2, 'Sustainable consumption', addresses the contribution that individuals can make to promoting sustainability through their consumption choices and considers how the appropriate values which drive more positive choices can be encouraged in the face of much personal and institutional inertia and resistance.

Sustainability expert **Tim Cooper** offers a distinctively Christian perspective on the questions. He shows that, contrary to popular misconceptions, the Christian scriptures convey a powerful vision of environmental responsibility and a compelling injunction to practice sustainable consumption.

Drawing on his experience with the Worldwide Fund for Nature, and on social psychology, **Tom Crompton** shows that campaigning on environmental (and other) issues is more successful when it builds on values individuals already hold. But some of these values—for instance self-interest—can be detrimental to sustainability in other ways. He indicates the conclusions that need to be drawn for the messages we give to the general public.

Part 3, 'Sustainable production', offers three diverse perspectives on promising, and attainable, sustainable business practices available today and how they can actually inform corporate culture.

Writing from a Christian perspective, **Cal Bailey**, director of sustainability for a medium-sized construction company, recognises that businesses are often presented as the villains in sustainability. Yet, he shows, they have the potential to change rapidly, if given appropriate signals by individuals and governments. The example of building regulations illustrates the point. Governments should be willing to make decisions on long-range issues like this one.

Juliet Davenport, CEO of the UK's largest producer of renewable electricity, argues that electricity generation can and must become more sustainable both for environmental reasons and in order to make the UK less reliant on increasingly scarce fossil fuel imports. The solution includes a considerable increase in more localised generation, thus strengthening links between local communities and businesses.

Harfiyah Haleem offers distinctively Islamic insights into sustainable production. She argues that if Islamic principles for business are correctly applied—which is not always true in the Islamic world—they will naturally take into account environmental and economic sustainability. She presents a series of concrete case studies to illustrate the claim.

Part 4, 'Governing for sustainability', addresses what the top sustainability priorities for the UK government's domestic and international policies should be, and asks how democratic support at grassroots level and in civil society could be marshalled behind these policies.

Paul Chambers, a senior official in the Department of Energy & Climate Change (DECC) (but writing in a personal capacity) and a Christian, opens this part by analysing recent UK government sustainability legislation and plans. He argues that, while government can and must take a lead, its actual power is limited. Meaningful action is only likely to come through collaboration between government, business, civil society organisations and individuals.

This 'insider' conclusion is confirmed in Friends of the Earth Director **Andy Atkins**' 'outsider' perspective. He shows how campaigning organisations must both work alongside government to help shape policy, yet also against them by mobilising public opinion behind necessary changes that the government is reluctant to take on. As wide a campaigning coalition as possible is required, and people of faith and faith groups must join the fray—remaining authentic to their faith commitment while collaborating with others who do not share it.

Seasoned food campaigner and politician **Peter Melchett** shows how current trends in the food industry are in general damaging from a sustainability point of view. He proposes a range of suggestions for partnerships between individuals, non-governmental organisations, businesses and government to help set better policy and to work towards an improved food culture.

Environmental policy specialist **Douglas Crawford-Brown** addresses the question of governance from a secular starting-point. Yet he nevertheless finds insights from Augustine and Bernard of Clairvaux helpful in framing a high-level view of the morality involved in decisions on environmental issues that governments and others need to make on the basis of incomplete information.

While a global horizon has been tacitly in view all along, **Part 5** explicitly considers the '**sustainability potential**' of religion at the global level.

Fazlun Khalid is founder and director of the Islamic Foundation for Ecology and Environmental Sciences, which has a global mission among Muslim communities and beyond. He argues that sustainability and sustainable development are incompatible if the latter relies on unrestricted growth, as is often assumed. A new approach is required, and applying Islamic principles will help frame a viable global solution.

Elaine Storkey, drawing on her wide global experience as President of the Christian development agency Tearfund, shows how, contrary to secularist prejudices, Christianity has a major role as a global community in working towards sustainability. Two of its deep convictions are of great importance for sustainability: the human responsibility of care for God's creation, and the recognition that those in other countries and in the future are our brothers and sisters under God. Initiatives like the Fair Trade movement show that this role has been taken on in some areas but much more needs to be done.

Part 6, '**Spirituality and sustainability**' offers concluding, reflective pieces from Western and Eastern religious traditions on the issues addressed in this book. In these more personal offerings, the authors illustrate the distinctive role played by direct religious appeals in cultivating a spirituality of sustainable living.

Environmental writer, practitioner and theologian **Ruth Valerio** reflects on 'traditional virtues' as understood in Christianity in order to show that they are far from redundant for the issues we face. Rather, they exemplify exactly the kind of intrinsic values we should be encouraging in order to promote sustainability among both Christians and others.

Colin Bell, also writing from a Christian perspective, suggests actions churches can take in their local communities. Although we may face a 'crisis of sustainability' from which many will suffer, this is an opportunity for churches to serve and support the needy, regain something of their traditional central role in society, and to bring hope for the future.

Distinguished ecological writer and campaigner, and former Jain monk, **Satish Kumar**, tells the story of his life as one inspired by Eastern spirituality on questions of sustainability. Spirituality, he avers, is not merely helpful, but indispensable in seeing the interconnections between

the various issues involved. We must restore a deep understanding of, reverence for, and relationship with, the natural world.

The final contribution is a poem from **Harfiyah Haleem**, included for reflection and encouragement. As has been evident throughout the book, we are holistic beings and sustainability issues should affect every part of ourselves. This includes the arts and media, which have a considerable effect on how we see ourselves and the world.

The chapters in this book express many different starting points and belief-systems—we have allowed those differences to stand without attempting to blur or synthesise them. The whole is thus a genuinely 'interfaith' encounter, but contains no unified 'multi-faith' statement. All contributors share the conviction that the widespread neglect of religious voices in 'mainstream' sustainability debates has been detrimental and must be overcome and, consequently, the desire to animate new and lively conversations about the sustainability potential of religion today.

Even more importantly, contributors also seek to inspire new commitments—from individuals, faith communities, neighbourhoods, businesses, NGOs and governments—to help wean our societies off the destructive and unsatisfying addiction to endless material growth and to promote practices that enable us to 'live lightly upon the earth'. The book shows how religious faiths and religious communities bear distinctive spiritual insights and energies that could, if articulated and channelled wisely and courageously, make a major contribution to that currently elusive, yet never more urgent, objective. The chapters in the book show that these insights and energies are now being actively rediscovered and redeployed by individual believers and faith communities themselves. It is our aspiration that this book will also carry such insights and energies out into wider society and that many people of faith, religious or secular, will find them enriching, challenging, perhaps disturbing—but most of all capable of reviving hope in a sustainable future. It seeks to show that by living faithfully, we may also live more lightly.

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[1] A Faraday Institute-John Ray Initiative workshop in Cambridge in 2008 addressed the issue: 'The Root Causes of Unsustainability'; its papers appearing as Robert S. White, ed., *Creation in Crisis: Christian Perspectives on Sustainability* (London: SPCK, 2009).

[2] Max Oelschlaeger, *Caring for Creation: An Ecumenical Approach to the Environmental Crisis* (New Haven: Yale, 1994), 5.

[3] http://fore.research.yale.edu/

Preface—The challenge of sustainability

BILL MCKIBBEN

Most in the West live in the ultimate flowering of a high consumer society. The way we have lived over the last 30–40 years has never been experienced before. Its benefits are obvious and often listed by its acolytes and exponents, beginning with unprecedented life expectancy, and continuing with health and material wealth. Yet it is important to recall that many of these benefits are often tied to earlier periods in this consumer society. The most significant increases in life expectancy, for instance, came in the late nineteenth century and early twentieth century when we implemented basic improvements with regards to public sanitation and health.

But now even those gains are very much in doubt. In the USA, for example, parts of the country are seeing life expectancy fall—because we are consuming with such a great frenzy, we are becoming larger in physical terms than it is healthy to be. This is just one example of a threshold problem, not a binary one. The choice is not, as it is often presented, about choosing 'yes' or 'no' to a consumer society, but how far along that spectrum you want to go. The crucial point is this: consumption in the West has passed a tipping point and has become counterproductive. It is simply no longer producing enough benefit to outweigh the harm. And parts of the rest of the world are beginning to follow our lead: consumption levels in urban China, for instance, are increasing exponentially.

The first and most obvious type of this harm is ecological, with the largest cause being the widespread use of fossil fuels, which more than anything else undergirds the consumer society in which we live. The effect of burning them to such an extent has been massive and ongoing change beyond what any human being has ever seen.

In 1989, at the time of my book *The End of Nature*, we already knew most of what we needed to know about global warming; all we did not know was how hard and how fast it would pitch. But we now know that it is not some abstract problem for the future, but one that we are seeing the

beginnings of now. At some point in the last 10–15 years, we moved from the Holocene into whatever comes next—a sufficiently different earth that it deserves a new name. The physical indicators are clear: in the last 40 years, temperatures have risen and sea water has become 30% more acid. In addition, the atmosphere can hold 4% more moisture leading to greater evaporation and drought, and more heavy rain. Arctic sea ice has dropped by 40%. We are seeing increasing extreme and 'weird' patterns of weathers.

This is by far the biggest thing humans have ever done. The scientific method has tackled the problem very well—we have studied the physics, chemistry and so on and have a workable consensus for what we might expect and what we might do about it.

This provides a clearer and more accurate warning than we had 20 or 30 years ago, for which we should be grateful. But our standard model for addressing the problem has broken down—rational scientists have talked to politicians, but politicians have failed to act on the message.

The consequences

Ecological upheaval on this scale calls into question our willingness to follow God's request that we exercise careful dominion over this planet. Also of ethical concern is a second point: the economy we have built is generating inequality at massive levels. To use software engineering terminology—this seems to be a feature, not a bug, of our system, that widening of inequality turns out to be a problem not just in terms of fairness but also in very practical ways. Plenty of work has been done that shows how one outcome of inequality is that it increases stress with ruinous effects. Strangely, this occurs at both ends of the inequality scale—though of course the most difficult and devastating effects are for those at the bottom. It was not always thus—which is another reason the point about threshold is important. For the first few years after the Second World War, high consumer growth promoted greater equality, not inequality, but past some threshold, the opposite effect began to kick in.

The third thing that is being generated is instability, which is again a relatively new phenomenon. Hedge funds and the like were intended to smooth out risk, and reduce boom and bust, but now seem to be doing the opposite. We see it in its ugliest form in terms of the near-collapse of

our financial system in 2008—the result of instability brought on largely by size. The most important phrase to come out that period was that some things were 'too big to fail', and so we were expected to bail them out. But, in some larger sense, anything that is too big to fail is therefore too big, and needs to be made smaller to avoid that kind of instability.

It is not just the financial system that falls into that category. We have other institutional arrangements that are oversized, top-heavy, and brittle. Take big energy, for example. It is enormously clear at this point that one of the things driving the whiplashing economic cycles is our reliance on a globally-traded pool of energy that comes from very few places. Or consider big agriculture. Is it a good idea to have literally put all our eggs, plus all the corn and so on, into one basket? These are beginning to generate all kinds of problems, especially in light of our ecological situation, with entire regions' harvests getting wiped out. Our ability to grow food is being called into question—in fact, our crop of grain *per capita* has been decreasing for the last 15 years. Instability is in play in a way it never was before. Production depends on a few varieties being grown everywhere, leading to big risks.

Fourthly, there has been a rise, during the last few decades of our consumer society, in a certain kind of unhappiness and dissatisfaction. This is odd because you would think that an economic regime as theoretically devoted as ours is to our own happiness, would be producing transports of ecstasy all the time. But this turns out not to be true. In the USA, always the leading indicator in such things, an annual survey of reported happiness shows a peak in 1956 and decline since then, despite a tripling of the American standard of living in the same period. A similar survey in the UK shows no increase in happiness since the early 1970s. Why has effectively unlimited access to our material desires not made us happier? That we are not, is an indication that there is something else going on here—past a certain point, high consumption generates a severing of connectedness between human beings which, in turn, erodes basic human pleasures and satisfactions. A significant trend in American life since the Second World War, and again to a lesser extent imitated by the British, is the building of bigger houses further away from each other. As well as the ecological damage, this means the average American eats meals with friends and family half as often as they did in the 1950s and has half as many close friends. That is a very large change for a socially-

evolved primate to undergo, and it is no wonder it is not leaving us very happy.

These four things—ecological damage, inequality, instability, and loss of happiness—represent what the economist would say is the declining utility of this increase in consumption. It should be of interest for us in ethical terms, as well as practical terms. But how should we respond to the change? It is tempting to advocate large, centrally-planned economies which could direct the right solutions to our problems. However, economies like that have generally failed, and it seems to me that we need to worry less about *ideology*—we are likely to retain markets, at least in the short term—and worry more about *scale*, which has become the paramount variable. It is not that our arrangements are too big to fail; it is that they are too big to succeed, in any of the ways we want them to.

New priorities

Our current fixation on growth is no longer useful, and it must now be a priority to engage in a set of policies that would lead us in a different direction. Worthwhile alternative goals include security—that is stability—resilience, durability, and fellowship. My analysis suggests that our consumer society is no longer generating these in useful quantities, so we would be better off intentionally pursuing them and making them part of public policy.

However, in many ways, we seem to have a psychological barrier that keeps us from thinking about things other than growth. Growth has always been a particularly attractive thing for humans to think about—at least for the last couple of hundred years of our economy. It has positive analogues in our own lives: we see growth in our lives and those of our children. Sustainability is a difficult term, as it has no real analogue in our lives. Instead, perhaps we should think in terms of maturity—having reached an adult size, we need to work out other ways in which to go.

It is interesting to see that activities targeting these alternative goals are increasingly appearing in parts of our economic life, even in the absence of explicit policy choices. I think this is starting to happen simply because the logic of it is becoming overwhelming.

It is not just the efforts that individuals are making. Readers of this book are probably doing the obvious things already: buying low energy

light bulbs, driving less, and so on. But the maths of this does not work remotely fast enough. We do not need just *addition*—as an increasing, but still small, number of individuals make changes; we need *multiplication*—in other words, changes in society and government policy.

An example of the positive social trend in the USA is found in changes in the food sector over the last 15 years. After a long period of consolidation, centralisation and industrialisation of our food supply, there has been something of a backlash. People have been working hard to promote this for a long time—most significantly, one of the greatest ecological writers, Wendell Berry, called for a renewed local food system. Eventually, this has begun to take hold. It has been the fastest growing part of our food sector now for a decade—the number of farmers' markets doubled and doubled again, and so on—to the extent that it is having real effects on the landscape. The US Department of Agriculture reported in 2010 that for the first time in 150 years, there were more farms in America instead of fewer, reversing one of the most long-standing demographic trends in the US. This has good effects in a number of ways—obviously ecologically, but the social effect of this change is also important. A farmers' market is a different social construct than a supermarket. It has been found in studies that ten times more conversation occurs, and this is doing the work of knitting back together some of the lost social connection that 50 years of a high consuming society had eroded away.

This logic is spreading to other sectors at the same time. The energy world that we are moving towards will not be that of centralised fossil fuel production which is concentrated in a few places and easy to transport. In that system, we built a few huge power stations and connected everyone up to the grid. What comes next—sun and wind—are the exact opposite: omnipresent but diffuse. Hence, it makes sense to have what the engineers call *distributed generation*: solar panels on as many roof tops as possible, all linked together in some way—a farmers' market in electrons, as it were.

Capital is starting to follow the same trends. It is still rather in its infancy, but the rise of things like local currencies in a number of places is, at the very least, a reflection of our discomfort with our current financial arrangements—and, at best, a real alternative to that. It was remarkable to watch what did *not* happen in the financial crash in the States. While the larger banks struggled, only a few of the smallest and most local ones

around the country collapsed. They emerged largely unscathed, as they were still at a stage where they were capable of assessing the wisdom of the loans they were making, as they actually knew the people they were lending to and understood what the finance would be used for.

A further piece of the picture is that, on some issues, we need action at the level of governments. For example, most economists have come to the conclusion that we need to put a price on carbon that is equivalent to the damage it is doing to the atmosphere, so we get a strong signal not to use it. But this can only be done with national, and preferably international, agreement.

Such a policy would have both environmental and social benefits, since at the heart of our consumer society is the believed endless availability of cheap fossil fuel. This is what has made us consumers. John Maynard Keynes calculated that the standard of living only doubled in the 2,000 years to 1800. Technological and other improvements to our way of life were introduced slowly but were limited by the available energy. However, when we worked out how to burn coal, gas, oil, we got the equivalent of a few thousand slaves each. So any regulation that restrained the availability of cheap fossil fuel would have enormous effects—wider effects than just about anything else we could do. There are real and powerful effects that come with fairly small changes in variables because some of them—in particular, the endless availability of cheap fossil fuel—are *so* important to what the future looks like.

But there is no way of doing this without damaging the profits of the fossil fuel industry—the most profitable business on earth. It is my firm belief that the fossil fuel industry has more money than God. Unfortunately, it has deployed that money in order to block political change in the US and all over the world.

We are thus making steady progress in some spheres, if not others. A wise policy would be to allow and encourage further change to happen gradually over time. That is how human beings best adapt to things—less trauma, and wear and tear. Unfortunately, a wiser policy at this time would be to go on an all-out sprint rather than a steady walk, as the window from climate change is closing fast. You can have the most beautifully designed local agricultural system in the world but, if it rains 30% more than it has ever rained before, or does not rain at all, you are still not going to grow anything.

Let me give you the example of my home area, Vermont. It has been a perfect place for local food and, until recently, it was easily possible to eat nothing but locally-grown food, all year round. But in 2011, at the tail end of Hurricane Irene, the storm picked up huge amounts of moisture and brought water into Vermont in unprecedented amounts. We have meteorological data for 200 years, but saw records broken by over 25%. Many of the state's famous covered bridges washed away, together with much of the showpiece land for local agriculture. Intervale Farm in Burlington which provided 10% of the food for the city was largely destroyed. The rain was falling on a different planet from the one these were built on. The best designed farm cannot survive unprecedented rainfall, or no rainfall at all—but that is what climate change is inflicting on us.

So, if we are to have any hope of getting beyond this basic physical damage that we are doing to the planet, we are going to have to move more swiftly than would otherwise be recommended. We are going to have make change at a pace that will be, at best, difficult for our systems, our economies and our societies to tolerate. We are going to have to change our *political* and *economic* arrangements at least as quickly as we changed our *technological* ones in the last century—and that will cause all kinds of stress, and it may not even be possible.

The wild card

The wild card, and one of the things that gives me a certain amount of hope, is the advent of the internet, which has many effects—some pernicious, but some very positive. One is a change of scale. Information no longer just flows out from a centre, but is distributed: a farmers' market in ideas. The internet makes it possible to imagine a world where we live economic lives that are far more local; where we live our lives in a particular place, without having to suffer what was always the biggest drawback of that way of doing things—the stifling parochialism. It is now possible to imagine living your whole life in a small ambit, but with a window open to the world where old prejudices can flow out and new ideas can flow in. If we are smart, we will find a way of making that work so this transition can happen as quickly as possible.

And as already noted, there is an ethical dimension underlying all this. A high consumer society professes to make each one of us the centre of the world: me and my desires are the most important thing. This turns out to be, for all the reasons I have described, *practically* problematic—but it should be *ethically* and *religiously* problematic for all of us as well. The idea of elevating all of us to the position of deity helps to explain why consumer societies have been so corrosive to faith among all else.

Our faith, in turn, should be at the heart of our work. In the Christian Gospels, for instance, the apostles often play a humorous stand-in for us, losing the thread of the discussion and having to ask Jesus what is going on. On one occasion, Jesus sums up what they should be doing as 'love God and love your neighbour'. Easily and clearly expressed for the benefit of the less bright, but not something we have ever been very good at, which is why we keep going to church. However, we have been failing at it in an increasingly spectacular way.

Bangladesh is one of the most beautiful countries on earth. Though a very crowded nation, it can still feed itself, as its land is enormously fertile. But it faces chronic problems—the Bay of Bengal rising, increasing salination, and irregularities in the glaciers that feed their rivers. The prevalence of Dengue fever has increased by 200% in a decade, because the mosquitoes which spread it thrive more in the warmer and wetter climate. Unlike malarial mosquitoes, they are diurnal, so bed nets are not much help and there is no real treatment.

This strikes me as unfair. When the UN tries to work out how much carbon we use, Bangladesh's contribution is almost a rounding error—most people do not drive, few use electricity. By contrast, the USA has 4% of world population responsible for about 40% of the global warming gases in the atmosphere, with the UK not quite so bad but still much more than Bangladesh. The notion we are loving our neighbours is incorrect—all the work that people have done in development work has been more than overmatched by the clouds of CO_2 we have also been sending in that direction. We have put them on a treadmill where the chance of real development is virtually nil. That's our scorecard.

If we are serious about this, now is the time to do something. It is the worst thing that has ever happened on the planet, and it is happening right now. We are the cause; we are the only solution that we have. There is no guarantee we will succeed; some scientists think it is too late, some

political scientists say the odds are too high—but when I spend my time in other countries which have not caused the problems, then I feel the need to keep working, and work harder. I do not know how this is going to end up, but one of the virtues of being people of faith is that we are allowed to have at least some faith to think that if do everything we can, there is some chance things will happen to make survival possible for the hundreds of millions of people whose fate is at stake right now.

Part 1

Sustainable growth

1

Is economic growth compatible with environmental sustainability?

PAUL EKINS

I have put a question mark in this title of this chapter. It is an incredibly important question, because if it is not possible to reconcile sustainability and economic growth, then the sustainability movement has a couple of Himalayan ranges to climb before it could be considered remotely feasible. There is no country in the world, especially in these dysfunctional economic times, that is not wholly committed to reigniting economic growth—as anyone will have noticed from listening to any current affairs programme about the global economy. The entire discussion is about how to secure economic growth. If this precludes the achievement of environmental sustainability, then those of us who are persuaded that the more important out of these objectives is sustainability have an enormous distance to travel.

In this chapter I want to consider what exactly we mean by growth: what is it that may or may not be growing? More particularly, where does one sort of growth, economic growth, come from? Can it be environmentally sustainable in theory—and in practice? Is economic growth desirable? Although I cannot deal adequately with all the relevant evidence on that here, I want to underline how crucial that question is to the subject of this book. For we must ask: in the light of the evidence, why do people resist policies for environmental sustainability?

What is growth?

Let me start with the first question. There are three main growth concepts relevant to this discussion—related to one another but distinct—and treatment of them in the literature can often confuse them. The first idea of growth is *physical growth*. This is growth measured by the amount of

matter and energy mobilised by the economy and human activities. Clearly in a finite system physical growth is limited.

Economists generally refer to a second kind of growth, *economic growth,* measured by GDP. This is the growth in money flows, calculated by adding together consumption expenditure, investment, government expenditure and net exports. There is thus a clear methodology for computing it. There is also no theoretical limit to it, since money is essentially purely electronic these days. Failing to distinguish correctly between these two definitions is a recurrent problem in the literature in this area, which tends to argue on the basis of one form of growth but then apply the conclusions to the other.[1]

The third form of growth is particularly appropriate to a book addressing the spiritual dimension of sustainability, and considers improvements in *human welfare*. Measuring this, or even assessing the contributory factors, is extremely complicated. Roefie Hueting came up with a fairly typical list: employment, working conditions, leisure, equality or income distribution, relationships in families and communities, and perceived security and safety of the future.[2] Although economists make the assumption that income has an effect on welfare—we return to this specific point later—it is only one of many factors, and not even necessarily the most important. Research done by Richard Layard among others shows that people's spiritual condition is a major influence on their subjective welfare.[3] It is thus important that, in discussions of growth, it is clear which of these three concepts is being referred to.

Where does growth come from?

Our second question is where does economic growth, the growth of real incomes, come from? An extensive literature shows that it is mainly due to applied knowledge and innovation. This often takes the form of turning something that was not previously a resource into a resource—in other words, something useful. An example is fossil fuels. These existed long before people knew how to make large-scale use of them—for hundreds of thousands of years they existed but were effectively not a resource. The discovery of how to use them on a large scale, and the invention and development of the relevant technologies to do so, enabled the Industrial

Revolution to occur and has certainly contributed to the economic growth that has taken place ever since.

The other main component of the innovation that drives economic growth is finding a better way to do something we already do. From this perspective, calls for 'no growth' have little rational basis, because it is unclear why we would want to restrict either form of economic growth—turning non-resources into resources, or implementing better ways of doing things—or, indeed, how we would go about doing so in a free and democratic society.

However, economic growth is certainly not automatic in a society as complicated as ours, and requires facilitating institutions. If they fail, then growth is hindered, as has been seen in recent years following the breakdown of the financial system. Allowing our institutions to malfunction, or alternatively the effects of runaway climate change, could stop economic growth, but neither of these is desirable.

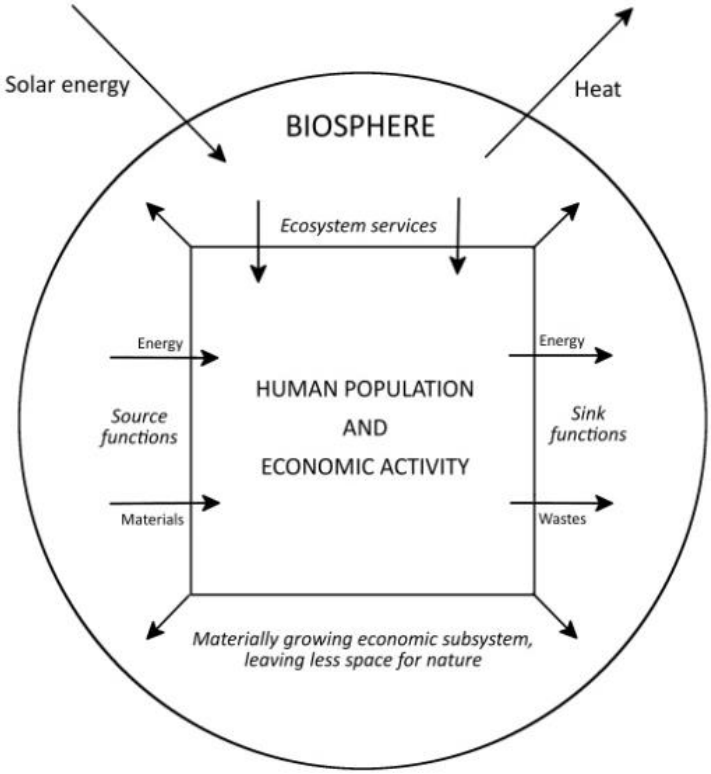

Figure 1.1: The economy as a sub-system of the biosphere[4]

Of course our economic growth has to be environmentally sustainable, as is illustrated in Figure 1.1 (which derives from the work of Hermann Daly in the 1970s). It shows the economy in physical terms as a subsystem of the biosphere, and shows the basic truth that if you have a bounded material economy, as we do, it cannot outgrow the physical bounds of the system that contains it. Among the challenges presented to us by climate change is finding ways of turning renewable energy into an effective resource for human activity. There is plenty if we can harness it. The daily radiation from the Sun—coming from outside that diagram—provides many times more energy that humanity could ever aspire to use for its own purposes.

A similar argument can be made in respect of materials. Two centuries ago, many of the materials that now play a major part in our economy had not even been discovered. To be sure, if we extrapolate forward the expansion of current uses of some these materials (for example like some of the rare earths), then shortages of them appear possible. But there is huge ongoing research in materials science, and new materials are being developed the whole time. The history of such developments strongly suggests that shortages of particular materials will be transitory.

None of this changes the fact that our physical economy is ultimately limited by the physical size of the biosphere, especially in its appropriation of biomass resources (what is sometime called the earth's net primary product); and the biosphere would very likely cease to provide humanity with its accustomed benefits (for example, relatively stable patterns of rainfall) well before it approached any theoretical limit of maximum exploitation. But this limit does not necessarily translate into a limit on the amount of money in the economy.

Instead, there is substantial evidence (see Table 1.2) that the amount of money in an economy can continue to grow without a corresponding increase in matter and energy usage and hence environmental impact. This process is known as *decoupling*. This decoupling can be either relative or absolute according to whether the environmental impact and resource use decline *relatively* to the size of the economy or *absolutely*. If economic growth is driven by innovation, then if it is to be environmentally sustainable, innovation must be guided so that absolute decoupling comes about.

Country	GDP	SO_X	NO_X	Particulates	CO	VOC	CO_2
France	132	35	66	67	50	52	98
Germany	123	10	50	10	33	35	82
Ireland	258	38	95	106	55	58	126
Japan	120	76	94		67	88	107
Portugal	135	69	104	133	70	94	143
Turkey	173	128	166		92		184
UK	143	19	55	53	29	41	85
USA	155	63	74	81	62	69	116

Table 1.2: GDP and domestically produced emissions indices, selected OECD countries, 2005 (1990=100)[5] *Shading=no absolute decoupling. Note: International aviation and shipping emissions are excluded from the 'territorial' emissions figures, but the economic benefits from aviation and shipping are included in GDP.*

Looking in more detail at Table 1.2, it can be seen that absolute decoupling is already happening, at least in the case of some important air emissions. Note that the GDP column shows that all these countries grew economically between 1990 and 2005. However, in many cases, air emissions were reduced, some significantly, with German sulphur dioxide and particulate emissions falling by 90% despite a 23% growth in that economy. The shaded boxes show where absolute decoupling did not occur but, in most cases, the rise in emissions trailed the rise in GDP, indicating relative decoupling.

The only failures to achieve even relative decoupling in this table (in respect of Portugal and Turkey) are in the carbon dioxide column, and a high proportion of the shaded boxes are here also. This shows just how difficult it is to reduce carbon dioxide, because most of it comes from the combustion of fossil fuels which lies at the foundation of our economy.

For this reason I argue that carbon dioxide emissions—and the climate change they produce—form the paradigmatic environmental impact in terms of absolute decoupling. Those like me who argue that such decoupling is possible to the extent required, need to demonstrate it on this particular issue.

We have known that we have needed to reduce carbon dioxide emissions for a long time: Margaret Thatcher's speech to the Royal Society

on the subject of global warming revealed the UK government's awareness of the problem as far back as 1988, and the Framework Convention on Climate Change underscored this awareness at a global level in 1992. But we have done very little to reduce carbon dioxide emissions since then. Those, like Tim Jackson, who despair with regard to what still needs to be done to avoid anthropogenic climate change have a point.[6] But I would argue that we have simply not seriously attempted reduction yet.

At some point it will become too late; we will have set in train runaway climate change and it will be quite clear that any amount of absolute decoupling will not get us to where we need to go. It is conceivable that we are already past the tipping point, but to claim this is a counsel of despair. For now, we should work to get the level of decoupling we believe we need.

What is the cost of climate change?

An important question is whether addressing climate change with the robustness required is compatible with economic growth. This will depend on the costs involved. Even if there are costs, if they are relatively small, then at the macro level they will only result in slower growth, not an end to growth.

I have spent the last four or five years trying to look at the evidence for how big these costs might be. Opinion among economists varies considerably on this issue. I side with the more optimistic ones who say that when we look at what needs to be done and how it could be done, the costs might not be so great. More pessimistic ones argue that addressing climate change will be extremely expensive and have significant negative effects on economic growth. The latter school of thought has been influential in the past with the US Government and was a major factor in persuading the then US President, George W. Bush, not to ratify the Kyoto Protocol and generally play a rather unproductive role in the convention on climate change.

There are a number of reasons for being optimistic on this issue. First, many of the 'costs' of mitigating climate change can also be seen as investments in the energy system and, as such, contribute to GDP; second, there is considerable opportunity for zero-cost mitigation; third, a number of resource-efficient technologies are (nearly) available at low incremental cost over the huge investments in the economic system that

need to be made anyway; fourth, 'learning curve' experience suggests that the costs of new technologies will fall dramatically as they are deployed; fifth, resource-efficiency policies can spur innovation, new industries, exports and growth. Against all this, pessimists counter that constraining the use of fossil fuels that are still cheaper than their substitutes, is bound to constrain growth, and cheap, abundant energy and other resources are fundamental to industrial development.

The question is, which of these various factors will dominate in practice? Answering this is difficult, since all these costs interact in the large complex system that is the economy. The only way to work out what the macroeconomic effect of these costs is going to be on GDP is to model them in a macroeconomic model of either just the energy system (since it is energy use which is the major contributor to climate change) or the full economy. Such models are notoriously complicated and difficult to create and run, and their outputs need to be interpreted with care. The detail of them is beyond the scope of this chapter; I will only present the results.

A study of the impact of a low carbon transition on the UK economy in which I have been involved suggests that the GDP costs are likely to be relatively small, and certainly not enough to stop economic growth altogether.[7] This is in line with the conclusions of the more widely-known *Stern Report* in which Lord Stern reviewed the evidence on the macroeconomic costs of tackling climate change. He concluded:

> Overall, the expected annual cost of achieving emissions reductions, consistent with an emissions trajectory leading to stabilisation at around 500–550 ppm CO_2e, is likely to be around 1% GDP by 2050, with a range of +/-3%, reflecting uncertainties over the scale of mitigation required, the pace of technological innovation and the degree of policy flexibility.[8]

The consequence of a 1% cost in GDP would be that, if GDP were growing at 2% per year, about halfway through 2051 you would reach the same level of GDP that you would otherwise have reached at the end of 2050. This would seem to be a reasonable cost to pay for tackling climate change, as Stern concluded on the basis of the evidence.

A policy proposal

I have also spent a considerable amount of time looking at a particular policy for reducing carbon emissions, called *environmental tax reform*

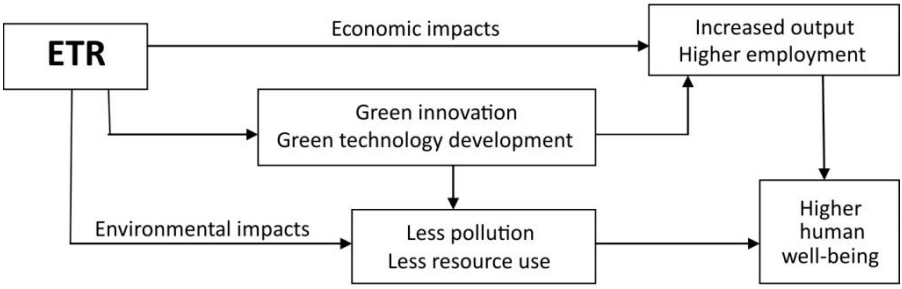

Figure 1.3: The potential contribution of environmental tax reform to human well-being[9]

(ETR). This policy entails shifting taxation from 'goods' like income, to 'bads' like pollution, in a revenue-neutral way.

Figure 1.3 shows the kinds of effects that might be expected from an ETR policy. Clearly, by increasing the cost of resources and environmental impacts, you would hope to improve the condition of the environment, which is the intent. Increasing taxes to increase the cost of resources and of impacts on the environment brings you tax revenues which you can use to reduce other taxes. In particular, by reducing labour taxes you would expect to get higher employment, because you are making employment less expensive.

A further intention of this policy is to encourage green innovation. By increasing the relative price of resources, innovation is directed into finding more efficient ways of using these resources and the environment, very much the process of guided innovation referred to earlier. Many countries have tried this on a small scale, and extensive analysis of the results is presented in Andersen and Ekins' *Carbon Taxation*.[10]

The analysis shows the outcomes of this policy to have been broadly positive, and the effects on industrial competitiveness minimal. As shown in Figures 1.4 and 1.5, in all the countries that introduced this instrument, greenhouse gas emissions fell, and GDP rose. But the rise in GDP was not substantial. Our conclusion is that this is not some way of fixing the economy, but it does show that you can reduce greenhouse gas emissions substantially without the negative impact that is so often presumed.

When we compare the countries in Europe which have introduced the ETR policy with those that have not, Figure 1.6 shows that, according to our model, the former have performed better with the instrument than

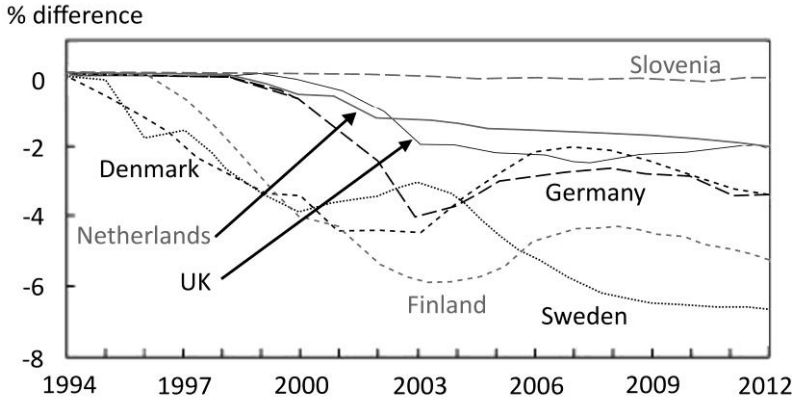

Figure 1.4: The effect of environmental tax reform on greenhouse gas (GHG) emissions in seven European countries[11] *Percentage difference is the difference between the base case and the counterfactual reference case.*

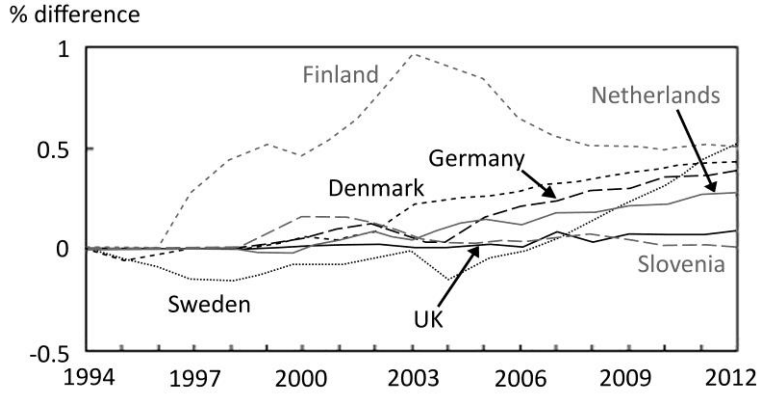

Figure 1.5: The effect of environmental tax reform on GDP in seven European countries[12] *Percentage difference is the difference between the base case and the counterfactual reference case.*

they would have done without it, so that there is no evidence of the policy adversely affecting their competitiveness.

These models and analysis thus do not support the arguments that we are pricing ourselves out of world markets by implementing a tax regime that promotes care for the environment. Having demonstrated that small changes in tax were beneficial, we performed some analysis on the likely effects of a much larger tax shift. Ekins and Speck considered two models

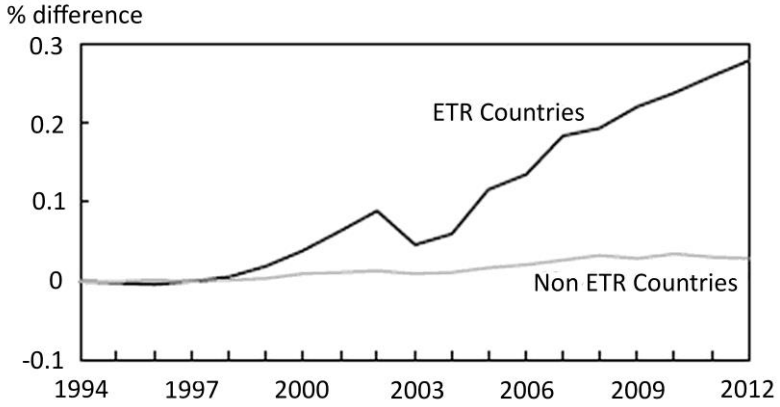

Figure 1.6: The effect of environmental tax reform on GDP in 7 ETR and 8 non-ETR European Union countries[13] *Percentage difference is the difference between the base case and the counterfactual reference case.*

and a number of scenarios in which we specified that the European Union had to meet its 2020 carbon target of a 20% reduction, with one imposing a higher 30% target.[14]

The most interesting and encouraging result is illustrated in Figure 1.7. This scenario run (scenario S4), Europe met its 30% carbon reduction target by 2020 by introducing an ETR policy with broadly cooperative action from the rest of the world.

In this figure, which measures global greenhouse gas (GHG) emissions, the 'Base LEP' line represents a baseline case with a low energy price (LEP). Emissions continue to grow through to 2020 and beyond as would be expected. The second 'Base' line represents a baseline with a higher world energy price, and with lower, but still rising, emissions through to 2020 and beyond—again, as expected.

When ETR was just implemented in Europe (scenario S2), although it met Europe's 20% carbon reduction target, the effect on global emissions was relatively insignificant, as Europe now accounts for a diminishing share of global emissions. But when the world as a whole opted for ETR (scenario S4), then emissions broadly stabilised over the 2010–20 decade, although they started to rise again towards 2020, indicating that undoubtedly further policy would be required to keep emissions steady.

However, stabilisation of global emissions before 2020 is remarkable. We performed a similar analysis solely for the UK through the Green

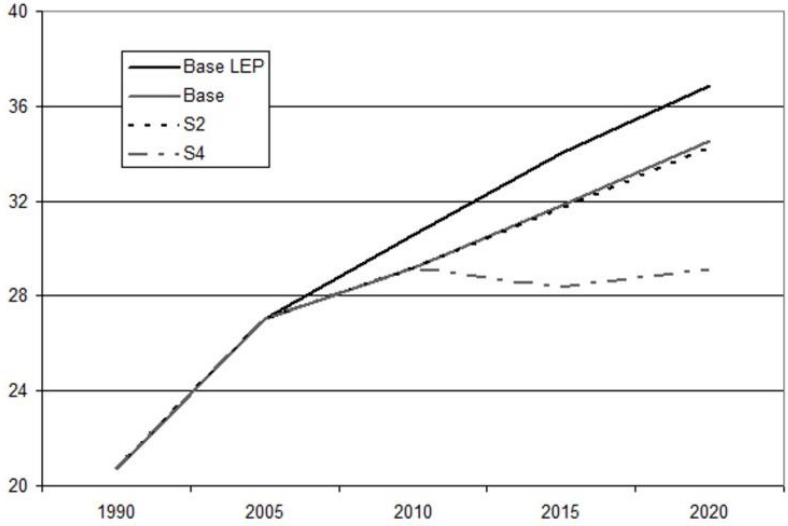

Figure 1.7: The effect of environmental tax reform on global greenhouse gas emissions (billion tonnes CO_2e)[15]

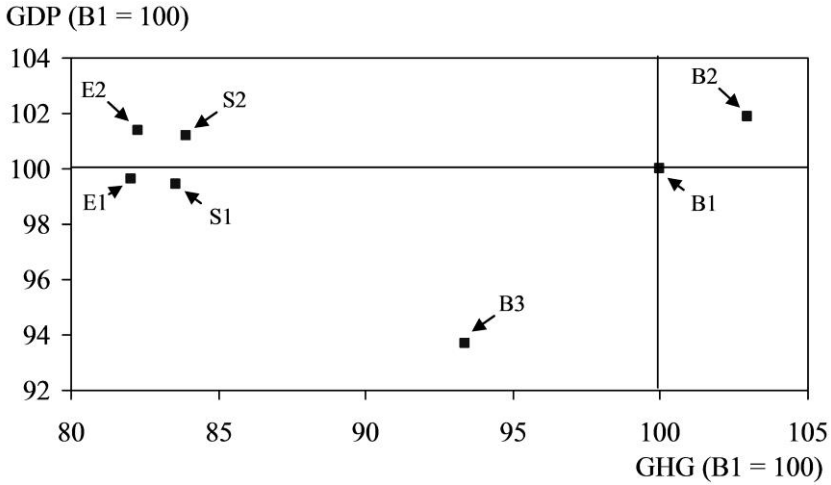

Figure 1.8: The effect of environmental tax reform on GDP and global greenhouse gas emissions in the UK in 2020[16] *GHG figures have been calculated on a net carbon account basis in Mt CO_2e.*

Fiscal Commission, this time modelling scenarios that met the 34% reduction target by 2020 to which the government is now committed. Our results are shown in Figure 1.8. B1 and B2 are two baselines, B2 with a lower oil price, and so with higher GHG emissions and GDP. S1 and S2 relate to these baselines and show the effect of implementing ETR, and E1 and E2 add a further change in which 10% of the tax revenues were invested in low carbon technologies.

It can be seen that emissions reductions are substantial, but the effects on GDP are small, in this case negative rather than positive. The two E scenarios (investment in low carbon technologies) produce larger GHG emission reductions and slightly higher GDP because of the higher investment. B3, a baseline with the same high energy prices as S1 and S2, but this time caused by high world market prices rather than the ETR policy, has the worst effect on GDP of all.

A final piece of evidence on the subject of the GDP costs of climate change mitigation comes from work done for the *Stern Review*, and is shown in Figure 1.9. The dots represent various model runs looking at different percentage reductions in greenhouse gas emissions, with the horizontal axis showing reductions in emissions up to 100% and the vertical axis the impact on GDP. Most of the runs show a reduction in GDP but not a substantial one, supporting Stern's conclusion that large-scale carbon reduction would cost 1% of GDP, or six months' economic growth under normal conditions as already noted.

Stern has subsequently acknowledged that this figure is on the low side, due to the emissions reduction required to avert dangerous climate change being larger than he had assumed in his report. Even so, Figure 1.9 shows that the great majority of the model runs for a 60–80% cut in emissions by 2050 showing a GDP cost in the range of 1–4%. Assuming that we recover to the historical average of 2% growth a year, this would sacrifice at most two years of economic growth, which would seem to be a price worth paying.

I have thus failed to find evidence to suggest that taking strong action to mitigate climate change would substantially reduce economic growth, let alone that it would halt growth completely. Of course, as with all model-based results, this depends on the assumptions adopted. Among the most important are that carbon reduction technologies will continue

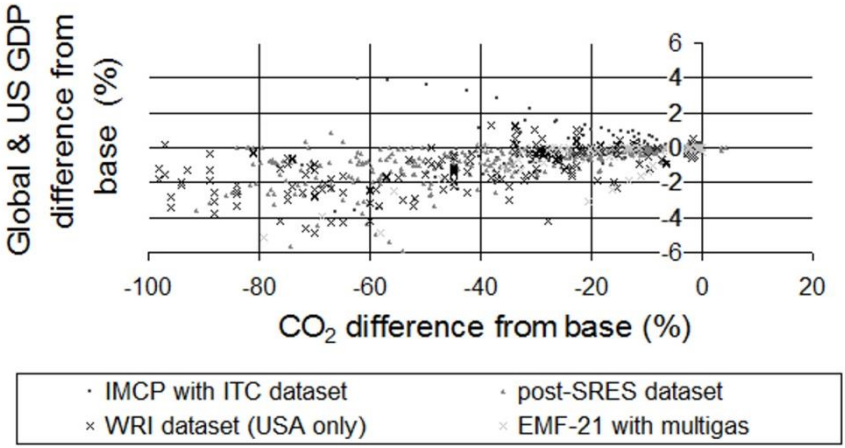

Figure 1.9: Scatter plot of model cost projections, 2000–50[17]

to develop in the same way as in the past, including coming down in price considerably. A second assumption is that there is no magic quality in fossil fuels that makes them uniquely productive for an industrial economy. This is contested: for instance, by Bob Ayres and Benjamin Warr who argue that fossil fuels are what has made the industrial society possible, and that it will not be sustainable without them.[18]

Resistance to carbon reduction

But even if what I have argued is true, one key final question remains: if these economic costs are relatively low, and low compared with the potential costs of climate change coming in the future, why is carbon reduction so difficult?

One reason is that, whatever the evidence, people still fear that climate change mitigation will reduce or halt economic growth, and there are many reasons why economic growth is desired. One is simply that people want more money: that is the definition of economic growth. Not only do individuals want more money in the form of higher average incomes, but governments want the increased tax revenues they get from economic growth, especially given the current fiscal deficits; and businesses want more profits, which again normally correlate with economic growth.

Finally, there is a clear negative correlation between economic growth and levels of unemployment. In theory this could be broken, but no industrial economy has been successful in doing so.

This formidable constituency in favour of economic growth means that if it were to be conclusively demonstrated that economic growth and environmental sustainability were incompatible, then it is sustainability that would be regarded as not a viable political project—certainly in the short term and perhaps the longer term too.

But essentially we are talking about ideology and world view here: what makes 'the good life'? And this leads to a final question: if we were to assume that growth is possible even while we take action to reduce carbon emissions, and if we could persuade people that this was the case, would they still have a problem accepting this course of action?

The answer is, unfortunately, 'yes', for two reasons. The first is that it is absolutely clear that in order to reduce carbon emissions we have to increase the investment component in the economy enormously. The UK energy system alone will need £200 billion of investment between now and 2020 in order to arrive at anything resembling a low carbon system. Considerably more will be needed to invest in resource efficiency and other sustainability issues. Increasing investment does not hinder GDP growth since investment is one of the components of GDP. However, resources for the investment would need to come from somewhere and, in this case, could only come from a shift to investment from consumption, which is problematic for a consumer society like ours today. The UK was not always a consumer society—it used to be an investor economy. In Victorian times, about 40% of its relatively small GDP (compared with today's) was invested at a time when the kind of people written about by Charles Dickens would have welcomed a little more consumption. Similarly, the Chinese now invest about 40% of their GDP, and there are many Chinese who would like more consumption. By contrast, we are a consumer economy, and in 2008 our savings rate even went negative—we consumed more than the economy produced and got no net investment at all. So the required change towards an investor economy is large.

The other big change this required investment will bring about is a change in lifestyles. In order to incentivise low carbon investment, the price of carbon will need to increase dramatically. The government recognises this and is trying to take action. As of the 2013 budget, we have

a carbon price floor that seeks a steeply rising carbon price until 2030, although even what is being proposed may not be high enough. It is clear from current media coverage and elsewhere that increasing the price of energy is politically very difficult. Nor do politicians find it easy to encourage people to make less carbon-intensive lifestyle choices, even such as walking their children to school over relatively short distances.

Persuading people to change their lifestyles in relation to their energy use is one of the fundamental issues that must be addressed if emissions are to be substantially reduced. Perhaps it will require a big event to bring about the requisite shift in public opinion, as, for example, occurred in relation to the public attitude to gun control following the Dunblane shootings.

Another analogy may be the explosion of public outrage over phone hacking at the News of the World newspaper. For some time it had been generally known by the public that there was a close and sometimes unhealthy relationship between the government and parts of the media who seemed to be influencing government policy excessively. But nothing much was said or done about it until it was revealed that the phone of Milly Dowler, a murdered schoolgirl, had been hacked. Suddenly there was a great outcry of public opinion that this was completely unacceptable behaviour. It may be that, for the necessary action to be taken on climate change, some kind of 'Milly Dowler moment' may need to occur, to spark a wide recognition that this phenomenon is definitely coming down the track, that it is being caused by what human beings are doing to their environment, and that there is a lot we can still do to stop the problem getting as bad as it might ultimately be.

My hope is that this book will contribute towards hastening our 'Milly Dowler moment' on climate change, and that when it comes, we can have an informed and clear public debate on the appropriate political action to take, drawing upon the kind of research presented in this chapter. The public will have to accept that a proportion of economic growth may need to be sacrificed, but that it is comparatively small, and certainly worth forgoing to avoid much of the risk of bequeathing a severely damaged environment to future generations.

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[1] For a detailed discussion of this issue, see Paul Ekins, *Economic Growth and Environmental Sustainability: the Prospects for Green Growth* (London: Routledge, 2000).

[2] Roefie Hueting, 'An Economic Scenario for a Conserver Economy' in *The Living Economy: a New Economics in the Making,* ed. Paul Ekins (London: Routledge and Kegan Paul, 1986), 242–256.

[3] Richard Layard et al., *Happiness* (London: Allen Lane, 2005).

[4] Robert Goodland, 'The Case that the World has Reached Limits' in Robert Goodland, Herman E. Daly and Salah Serafy, eds., *Population, Technology and Lifestyle: the Transition to Sustainability* (Washington DC: Island Press, 1992), 5.

[5] Tim Everett et al., 'Economic Growth and the Environment', DEFRA Evidence and Analysis Series, Paper 2 (DEFRA, London**,** 2010), March, 22.

[6] For example, see Timothy Jackson, *Prosperity without Growth: Economics for a Finite Planet* (London: Earthscan, 2009).

[7] See Jim Skea, Paul Ekins and Mark Winskel, eds., *Energy 2050: the Transition to a Secure, Low carbon Energy System for the UK* (London: Earthscan, 2011).

[8] HM Treasury, The Economics of Climate Change: The Stern Review (Cambridge: Cambridge University Press, 2007), 267, http://webarchive.nationalarchives.gov.uk/+/http:/www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/stern_review_report.cfm.

[9] Paul Ekins and Stefan Speck, eds., *Environmental Tax Reform: A Policy for Green Growth* (Oxford: Oxford University Press, 2011), 15.

[10] Mikael Skou Andersen and Paul Ekins eds., *Carbon Taxation: Lessons from Europe* (Oxford/New York: Oxford University Press, 2009).

[11] Andersen and Ekins, *Carbon Taxation*, 183.

[12] Andersen and Ekins, *Carbon Taxation*, 183.

[13] NERI et al. (University of Aarhus), Cambridge Econometrics, ESRI, IEEP, University of Economics (Prague), PSI and WIIW, *Competitiveness Effects of Environmental Tax Reforms*: *Final Report to the European Commission, DG Research and DG Taxation and Customs Union* (Aarhus: NERI, 2007), http://www2.dmu.dk/cometr/COMETR_Final_Report.pdf, 67.

[14] Ekins and Speck, *Environmental Tax Reform*, 205.

[15] Ekins and Speck, *Environmental Tax Reform*, 304.

[16] Paul Ekins, *The Case for Green Fiscal Reform* (London: Final Report of the Green Fiscal Commission, Green Fiscal Commission, 2009) http://www.greenfiscalcommission.org.uk/index.php/site/about/final_report/, October, 66.

[17] Terry Barker, Mahvash Saeed Qureshi and Jonathan Köhler, *The Costs of Greenhouse Gas Mitigation with Induced Technological Change: A Meta-Analysis of Estimates in the Literature* (Cambridge: Cambridge Centre for Climate Change Mitigation Research, University of Cambridge, 2006), cited in Stern, *Econ. of Climate Change* (2007), 270.

[18] Robert Ayres and Benjamin Warr, *The Economic Growth Engine: How Energy and Work Drive Material Prosperity* (Cheltenham: Edward Elgar, 2009).

2

The role of credit and debt in our economic crises

ANN PETTIFOR

In this brief contribution, it will be my contention that there is a direct link between the deregulation of the finance sector, its power to create credit and to fix interest rates, and the resulting increases in consumption and fossil fuel emissions. Furthermore, I will argue that Christian faith organisations have failed in their duty to condemn usury, to demand regulation of money-lenders, and to protect society from the exploitation of usurers. This failure has led, I argue, to the now pervasive practice of usury in Western economies, to high levels of consumption, and ultimately to the rise in fossil fuel emissions.

I define usury here as the practice of exalting money values over human and environmental values; of creating money at no cost and lending at rates of interest intended not to foster and maintain humanity or the ecosystem, but to:

- accumulate reserves of unearned income;
- extract wealth from the productive sector in a manner that is parasitic;
- extract wealth from those who lack wealth (the asset-less) and to transfer this wealth to the already-rich (those with assets);
- make a claim on the future.

Natural and exponential rates of return

I will begin with a brief reference to the 'interest' or rate of return that the financial sector expects from investments and compare this to the 'rate of return' that the ecosystem provides. The rate of return generated for investors in George Soros's quantum hedge fund serves as an example of such expectations. The *Financial Times* reported on July 26, 2011 that

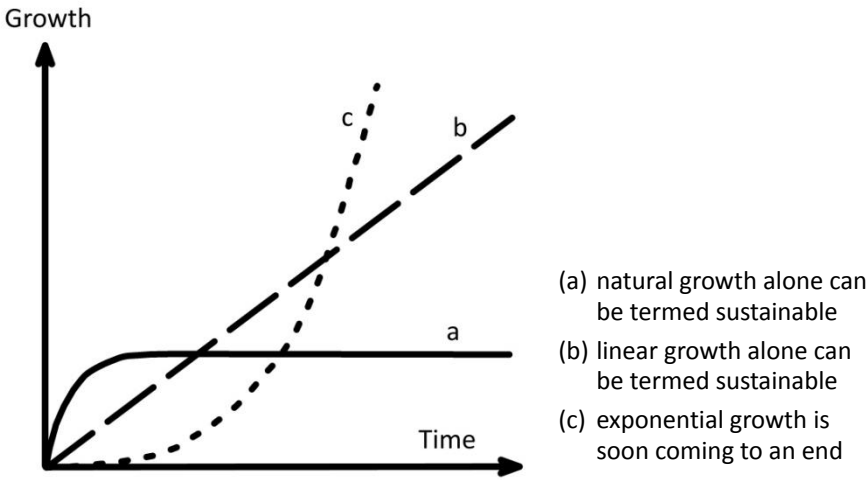

Figure 2.1 Compound interest versus natural growth[1]

George Soros's hedge fund 'has turned $100,000 in 1973 into just over $100 million, an average annual growth of 20 per cent. The return was about 102,000 per cent, before inflation'.[2] In Figure 2.1, reproduced from Margrit Kennedy's book, *Interest and Inflation Free Money,* line (a) indicates nature's growth pattern.

Note how nature's stable rate of growth (its 'steady state', as Herman Daly puts it) is so different from an exponential rate. Contrast this with the exponential rate of return of 20% a year on £1,000,000—£237,376,314.

For a real relation to exist between the financial system and the ecosystem—in other words, for the financial system to be able to extract gains at exponential rates—then the assets of the ecosystem have to rise mathematically to match the expectations of investors. This is not possible because, as Professor Frederick Soddy explains, the rate of interest and the financial rates of return that can be obtained from lending and speculation are *mathematical calculations*.

> Debts are subject to the laws of mathematics rather than physics. Unlike wealth, which is subject to the laws of thermodynamics, debts do not rot with old age and are not consumed in the process of living. On the contrary they grow at so much per cent per annum, by the well-known mathematical laws of simple and compound interest … The process of

> compound interest is physically impossible, though the process of compound decrement is common enough … the former [increment] leads to infinity, which, like minus one is a mathematical not a physical quantity, whereas the latter [decrement] leads … to zero … the lower limit of physical quantities.'[3]

They are not physical—therefore, they are diametrically opposed to nature. As Herman Daly has so eloquently argued in his book *Steady-state Economic*s, the ecosystem—and, by implication, the economy—is governed and limited by the second law of thermodynamics.[4] This means that human activity not only leads to the use of nature's resources (for example, a lump of coal) but also 'uses it up' so that it cannot be used again in the future. Furthermore, in 'using it up', the resource (for example, the lump of coal) does not disappear, but is transformed into something else (for example, pollution). Because of the nature of the material world and because of the limited capacity of 'sinks' to absorb the dissipating energy, the capacity to exploit nature's assets—to obtain exponential 'returns'—is finite.

I will use the rate of interest as a signifier of humanity's drive to ignore the finite boundaries and limits of nature. John Maynard Keynes's *General Theory of Employment, Interest and Money* is fundamental to the approach taken here.[5] The chapters on interest and money of Keynes's great work are often ignored and side-lined by both the economics profession and casual readers.

Capitalism's elastic production of money[6]

It is John Maynard Keynes who is credited with having made this comment: 'I know of only three people who really understand money. A professor at another university; one of my students; and a rather junior clerk at the Bank of England.'[7] From him (and, indeed, from many of his predecessors in both the banking and economics professions), we learn that in an advanced economy with a well-developed banking system, the creation of credit is effortless. As 'fountain pen money', it involved nothing more than an entry into a ledger by a banking clerks, and the charging of that sum to another account. 'Fountain pen money' or the production of bank credit-money has been a feature of both capitalism and of banking—public and private—since banking first evolved under

the Florentines and Dutch; and since the founding of the Bank of England in 1694.

Money is produced (by both commercial and central bankers) simply by the arrangement of a debt contract between creditors and borrowers, based on nothing more than the backing of collateral and the promise of repayment. Money-creation by *central* bankers takes many forms. But the one best known to the public today is 'quantitative easing'—a way of generating new credit or bank money that involves a body like the Bank of England doing nothing more than pressing a few keystrokes on a computer keyboard.

The governor of the Federal Reserve was asked in 2009 to explain where the money for bank bailouts came from. Was it from taxation? No, was his reply: 'The banks have accounts with the Fed, much the same way that you have an account in a commercial bank. So, to lend to a bank, we simply use the computer to mark up the size of the account that they have with the Fed.'[8]

Central banks and commercial banks are empowered by the authority of the state to create credit or money out of thin air. There are, of course, constraints on the ability to create credit out of thin air—including the constraint of inflation on the one hand (too much money chasing too few goods and services) and deflation (too little money chasing the falling prices of goods and services). Nevertheless, these are great powers exercised on behalf of society by both private, commercial bankers and central bankers.

The creation of credit, as John Calvin argued, is not in itself wrong. On the contrary, the invention of banking and credit systems represent a great civilisational advance. Sound banking systems are, like clean air and water, a great public good. Thanks to credit-creation by the banking system, humankind has been able to mobilise trust and resources to make advances that are impossible in countries where there is little trust in the banking system, and where contracts are not enforced and legal agreements upheld. Thanks to a sound banking system, society need never be short of money—even while it may be limited by finite natural resources. As Keynes argued, 'we can afford what we can do'. Given a sound banking system, it ought to be possible for humankind to mobilise the resources needed to tackle the greatest threat to civilisation: climate change.

One of the greatest social advances that followed the development of sound banking systems was the democratisation of the allocation of credit. No longer were citizens obliged to depend on the goodwill of those powerful Lords and Ladies that had built up (by fair means or foul) surpluses and who offered loans at high real rates of interest. By increasing the availability of credit, developed banking systems lowered their 'price'—the rate of interest. Today, in countries without the public good of a sound banking system, economic activity is held back, and millions of people unnecessarily impoverished—by a shortage of money, and by debts and unpayable rates of interest charged by unregulated money-lenders.

By creating credit, the banking system is able to generate (kick-start) economic activity. Economic activity—in other words, employment—in turn generates income. Income generates bank deposits, and then savings—and not the other way around. In other words, private bankers are not mere intermediaries between savers and borrowers. Savings are not needed for investment. Private bank loans *create* deposits—not the other way around.

This, in essence, was the theory and understanding of sixteenth-century Florentine bankers, their successors in innovative Dutch and British banks, economists such as Joseph Schumpeter, J.K. Galbraith and many others, not least Keynes. However, this historic understanding of the financial system is in direct conflict with today's dominant, but flawed, orthodox economic theory.

Orthodox economists—the overwhelming majority of the economics profession—tend to ignore the role of bank money in the economy. For many people, it is a startling paradox that orthodox economists do not attach much theoretical importance to money, since for them, money is a thing that acts as a medium of exchange because it possesses value. Therefore, money can be characterised as a commodity—a 'stock' or 'quantity' of 'things' that 'circulate' or 'flow' with varying 'velocity'. Second, in orthodox economic theory, money is, as Paul Samuelson puts it, a 'neutral veil' (or 'obscuring layer') over the workings of the 'real' economy which 'largely boils down to barter'.[9] It is neutral in the long run, because variation in its quantity can affect only the level of prices and not output and growth in the economy. Orthodox economists tend to focus instead

on more tangible activities within the economy, such as the supply and demand for goods and services.

The characterisation of money as a commodity leads to a widespread assumption that money or credit is 'the most exchangeable commodity'. Like a commodity, it is assumed to be subject to market forces—shortages and gluts—as a result of supply and demand. Some assume that it is the *result* of market exchange. The argument is made that *savings* precede economic activity and it is *savings* that enable investment to take place and generate economic activity and income. Hence, the current debates in the UK about the need to 'cut spending' to generate 'savings'.

The despotic power of money

According to Geoffrey Ingham, 'Money does not just have function; it is not just 'infrastructural power' but also 'despotic power'.'[10] Keynes's understanding of the nature of money and credit led him to argue forcefully that because of its potential for despotic power, it was important to regulate and *manage* the financial system and not leave it to the random effects of market forces. Furthermore, in order to avoid both inflation (through the creation of too much credit) and deflation (caused

Figure 2.2 Bank of England interest rates 1914–2009 [11]

by the creation of too little credit), it was vital for central banks to regulate and manage the creation of credit by both the central bank itself *and* the private banking system. At the same time, he argued that, for investment to be sustainable for firms, both small and large, it was vital for the full spectrum of interest rates (short and long, safe and risky, real) *to be kept low*. The management of interest rates required regulation of capital flows across borders.

These monetary and fiscal policies were adopted during the Keynesian period, known as the 'golden age' of economics (1945–70). Macroprudential tools, including controls over the movement of capital, a cap on bank leverage (borrowing against assets), and control over the full spectrum of interest rates were adopted and used. In other words, Keynes introduced policies that led to *tight credit at low rates of interest*. The contrast between Keynes's approach to interest rates and that of economic liberals can be seen most clearly in Figure 2.2. The chart shows fluctuations in the Bank of England's base rate over a long period.

During the years 1933–50, Keynes used his influence with the Bank of England and the UK Treasury and promoted policies (including capital controls) that regulated the interest rate—it was a period during

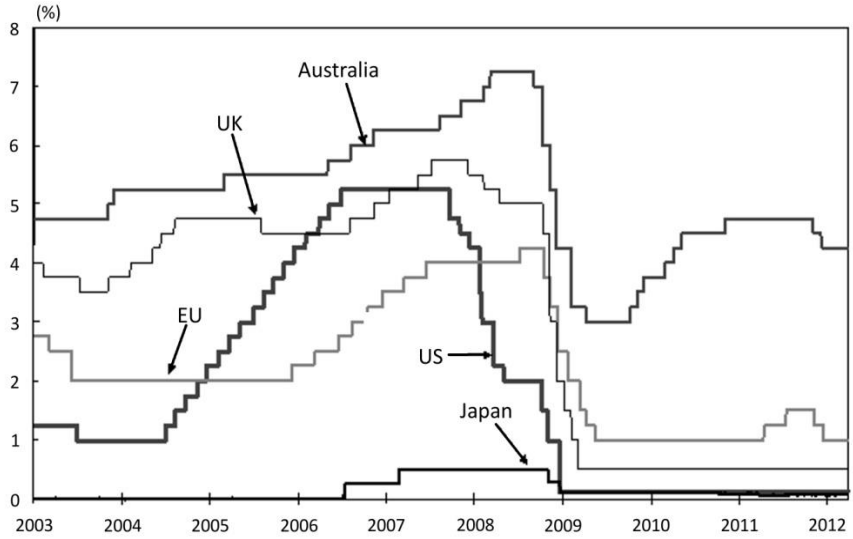

Figure 2.3 Rise in central bank rates from 2003 onwards[12]

which interest rates were extremely low. But it was also the period in which Britain borrowed more than it had ever borrowed before to finance the war against Hitler. Four decades later, *high real rates of interest*—not low rates of interest—were causal in the Credit Crunch of 2007–9. Figure 2.3 shows the rise in central bank rates from 2003 onwards.

Excessive amounts of borrowing—much of it invested in speculative activity—had taken place in all the major economies at high, and *rising*, real rates of interest. Eventually, these high rates were the 'straws' that broke the heavily indebted 'camel's back'. During the boom, rates of return made on these high rates by creditors and bankers were extraordinary. The International Monetary Fund chart (Figure 2.4) shows the (average) rates at which bankers borrowed from their central banks (only commercial banks can borrow from central banks), and the rate at which they lent on to individuals, households and firms.

The third 'leg' of Keynesian policies: sound investment

Keynes understood—as economists during, for example, the Weimar period of hyperinflation failed to do—that it is not just important for

Figure 2.4 Composite private borrowing rate and short-term interest rates (%)[13]

central and private banks to create tight, but affordable credit. Even more important, is the way in which this credit is *spent into the economy*. If it is used for speculative, unproductive activity—at home or abroad—economic instability and inflation result. Keynes considered it important, therefore, for both central bank credit and privately-created credit to be managed and directed at productive, sustainable economic activity—*activity that would generate the income needed to repay the original debt.*

In other words, for the banking system to be sustainable, the amount credit that is created should be limited to the capacity of the economy to spend the credit on sound productive and sustainable projects able to generate income for the repayment of debt. This advice and these policies were to be overturned soon after Keynes's death in 1946, and later by the liberalisation and globalisation of Anglo-American economies in the 1960s and 1970s. The removal of macroprudential tools—including controls over capital flows and caps on banks' leveraging and interest rates—led to a massive expansion of credit, reckless lending to risky borrowers, with much of the costly credit aimed at speculation.

Deregulation: how did it happen?

This deregulation of credit was the direct result of political decision-making. In the UK, deregulation was triggered in 1971 by the introduction by Chancellor Anthony Barber of Competition and Credit Control—dubbed 'all competition and no control' by many economists. At the same time, the increasingly popular free-market economist Milton Friedman advocated that currencies should no longer be managed—offering in an important paper, a justification of the introduction of 'floating' exchange rates.[14] In 1971, President Nixon, without consulting his allies, unilaterally dismantled the Bretton Woods system of global financial and trade regulation.[15]

Financial deregulation led to the massive explosion of credit issued between the 1970s and 2008—at ultimately unpayable rates of interest. This 'credit bubble' led to a devastating 'credit crunch' in 2007–9. At the same time, the easy availability of credit and the high rates of return stimulated consumption. This required sustained exploitation of the ecosystem's assets. We know that consumption rose in the UK between 2000 and 2007 by 33%. Incomes however, only rose by 15%.[16] The

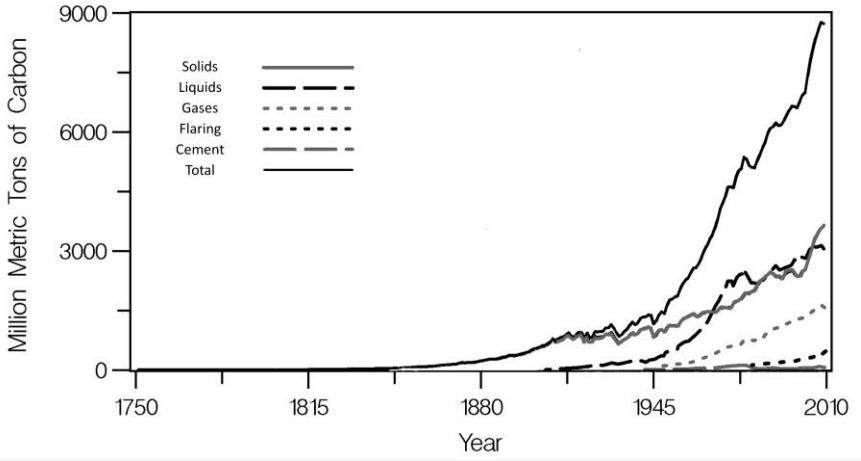

Figure 2.5 Carbon emission estimates[17]

difference was matched by credit. Worldwide, private consumption expenditures—the amount spent on goods and services at the household level—topped $20 trillion in 2000, a four-fold increase over 1960 (in 1995 dollars).[18]

Increases in overall consumption lead, inevitably, to an increase in fossil fuel consumption, as Figure 2.5, showing Carbon Emission Estimates, demonstrates. I contend that this process begins with 'easy, if dear money', fuelling escalating consumption and emissions.

Testing the limits of the ecosystem

As a group of climate scientists led by Johan Rockström of the Stockholm Resilience Centre has recently warned, we are reaching the limits of the earth's biocapacity: its 'planetary boundaries'.[19]

Mark Lynas, in his recent book *The God Species: How the Planet Can Survive the Age of Humans* cites one example of the perverse incentives of interest rates against nature's regenerative capacity.[20] He discusses the tendency of whalers to exploit whales at a rate which exceeded the ability of the whaling population to regenerate itself.

> Each population [of whales] was exploited to near-extinction. Most whales are slow-breeding, and with reproduction rates of 1–3 per cent per year. The economically rational whaler would gain more benefit from driving the species to extinction and investing the profits elsewhere (to accumulate

Figure 2.6 Global ecological footprint (1961–2007)[21]

> interest at perhaps 5 per cent a year) than leaving any alive in the sea. Such is the remorseless logic governing the unregulated capitalist exploitation of nature.[22]

The *2010 Living Planet Report* noted: 'Overall, humanity's Ecological Footprint has doubled since 1966. This growth in ecological overshoot is largely attributable to the carbon footprint, which has increased 11-fold since 1961 and by just over one-third since the publication of the first *Living Planet Report* in 1998'—as shown in Figure 2.6.[23]

Christianity, Calvin and capitalism: moving the ethical goalposts

In 1768, William Blackstone commented on the ethics of charging interest: 'When money is lent on a contract to receive not only the principal sum again, but also an increase by way of compensation for the use, the increase is called interest by those who think it lawful, and usury by those who do not.'[24]

What, the reader might ask, has the liberalisation of credit creation to do with Christianity? A great deal, I will argue. In common with many other religious traditions, Christianity had a long-standing prohibition on the charging of interest, following Old Testament commands forbidding usury on loans to other Israelites (but not to foreigners).[25] The Third Lateran Council of 1179 ruled that those who accepted interest on loans

could not receive the sacraments or a Christian burial. But, over time, Christian theologians came to accept that the charging of interest on money was not unnatural—on the contrary, it could be a useful stimulus to trade. John Eck, supported by the Fugger banking family, in his book *Tractates contractu quinque de centum* (1515) defended 5% as an acceptable rate of interest as long as the borrower and lender mutually agreed to the loan.[26] By contrast Martin Luther took exception to this laxity, and raged against Christian acceptance of usury, arguing that:

> The heathen were able, by the light of reason, to conclude that a usurer is a double-dyed thief and murderer. We Christians however, hold them in such honour, that we fairly worship them for the sake of their money … Whoever eats up, robs, and steals the nourishment of another, that man commits as great a murder … as he who starves a man … Such does a usurer … Meanwhile, we hang the small thieves … Little thieves are put in the stocks, great thieves go flaunting in gold and silk.[27]

Luther's views were considered extreme and were eventually to be displaced by a line of thinking stimulated by John Calvin (1509–64), whose writings altered the understanding of 'usury' and gave legitimate status to lenders of money—albeit hedging the activity around with many qualifications. Richard Tawney points out that, instead of arguing, in effect, loans should be 'natural' or sustainable; Calvin argued that 'interest is lawful, provided that it does not exceed an official maximum'.[28] Calvin's commentary on Psalm 15:5 explained that when Christ said 'lend hoping for nothing in return', he meant that we should help the poor freely.[29] He dissected the two Hebrew definitions of words usury—*neshek* meaning 'to bite', and *tarbit* meaning 'to take legitimate increase'—and argued that only 'biting' loans were forbidden. Thus, one could lend at interest to business people who would make a profit using the money.

Whereas Islam remained unwaveringly opposed to interest and usury, elites in Christian societies were given permission to decide on a rate of interest. Lenders could offer credit, confident that a profit would be made from the money. Loans offered above this rate were from then on to be considered usurious; and Calvin was certainly critical of such exploitation. But the financier was no longer a pariah, but a useful member of society. According to Tawney, Calvin 'was to change the plane on which the discussion was conducted, by treating the ethics of money-lending, not as

a matter to be decided by an appeal to a special body of doctrine on the subject of usury, but as a particular case of the general problem of the social relations of a Christian community'.[30]

Tawney shows that Calvin himself only opened the door to a highly qualified practice of money-lending, one still strictly limited by strong moral constraints.[31] Yet, Tawney judges that even starting to permit a restricted form of a practice that had hitherto been condemned outright by Christian ethics, turned out to be a 'watershed'. For, after Calvin, the justification for charging interest on money loans was taken up enthusiastically in works promoting much more aggressive and unrestrained forms of capitalism, notably by Francis Bacon in his essay on usury.[32] By the eighteenth century, lending at interest had come to be seen as essentially legitimate, with few moral restraints—as is seen in Adam Smith's formal definition of interest, which was to become the standard one:

> The interest or the use of money ... is the compensation which the borrower pays to the lender, for the profit which he has an opportunity of making by the use of the money. Part of that profit naturally belongs to the borrower who runs the risk and takes the trouble of employing it; and part to the lender, who affords him the opportunity of making this profit.[33]

But this standard definition errs in one major respect: it ignores the fact that the lender makes a profit even when the enterprise makes a loss. In other words, and again in contrast to Islam, Smith and most liberal economists since then, extend co-responsibility only to gains, not losses.

A key principle relevant to an ethical assessment of lending and borrowing might be that interest should simply not be charged at all on loans, especially money loans (as in Islamic law). However, the availability of credit has undoubtedly facilitated trade and helped society progress at key points in history. Credit *per se* is not, as argued above, the problem. The problem is the rate and the terms on which credit is provided. Human progress, ecological sustainability and social stability depend on interest rates being set at rates that are repayable and sustainable—rates that take into account the concerns of all of society's and nature's limits. Above all, rates of interest should underpin and reflect ethically- and democratically-agreed priorities and goals, not simply the concerns of money-lenders.

A Christian response to the practice of usury

In the Old and New Testaments, we read: 'Thou shalt not lend upon usury to thy brother; usury of money, usury of victuals, usury of any thing that is lent upon usury' (Deut. 23:19, KJV) and 'Forgive us our debts, as we forgive our debtors' (Matt. 6:12, KJV). And William Temple, in *The Church Looks Forward*, made his position clear:

> The line should probably be drawn between loans for objects that involve some risk, and loans where the principal is really secure and consequently there is no proper partnership in the enterprise; and in the latter case it seems to me that the condemnation of usury requires a limitation upon the return that may be earned. This is quite irrespective of the party making the loan—whether an individual or a bank.[34]

I have tried to argue that there is a direct link between what I would define as 'easy' or lackadaisical ethics in relation to money, credit and interest, and climate change. The consequence of removing ethical and other constraints over credit creation has led to 'easy', if dear, money. This in turn has led to 'easy shopping' or consumption and that, in turn, to the rise in toxic emissions. If society is to tackle excessive consumption leading to man-made climate change and financial crises, then it will be vital that we tackle the key source of these calamities: the liberalised financial system. Above all, we must address society's failure to regulate and constrain the great public good that is the banking and credit system.

However, if society is once again to tackle financial regulation, it is imperative that once again we assert and re-assert Christian values in relation to money-lending and usury. Unless usury as a practice is once again fully understood, exposed and condemned, then its practitioners will continue to act as parasites on the economy; on healthy individuals and families; on enterprises large and small; on governments and governmental bodies. That is why it is vital for people of faith to draw on the leadership of all the great prophets and help broaden understanding, exposure and above all, condemnation of the practice of usury.

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3

Environmental economics of Islam

MAWIL IZZI DIEN

> 'I sincerely believe … that banking institutions are more dangerous than standing armies; and that the principle of spending money to be paid by posterity … is but swindling futurity on a large scale.'—*Thomas Jefferson*[1]

In Islam, ecology and economics are both systems that are part of the Divine cosmic order. The role of humans is purely to discover these systems for the betterment of life in all its forms. In this chapter we will attempt to examine some basic principles of Islamic economics which might help in understanding the relationship between Islam as a system of life and the environmental crisis.

The definition of economics—*iqtisad*—in Islam is derived from the Arabic word *qasd* which means to control human want and intention. By replacing human greed with satisfaction, and squandering with moderation, Islam suggests an ethical foundation for a socially and environmentally responsible economic system. The Islamic economic system is a behaviour-based system, which uses material resources to fulfil the needs of the living. This system of behaviour is based on the theological premise that all living activities are based on charitable and cooperative competition to make the earth a better place for all God's creatures. The Qur'an informs us: 'It is He who has made the earth manageable for you—travel its regions; eat His provision (*rizq)*—and to Him you will be resurrected' (67:15).[2]

The mundane and the ethical

In essence, Islamic economics follows two main strands of enquiry: those which are purely scientific and which govern social and economic life; and Islamic principles that guide human behaviour and could affect the making of personal and communal economic decisions. Islamic law and theology do not underpin economic rules and principles since these are

natural rules such as we see in many areas of life. For example, supply and demand are constant principles similar to the law of gravity that no living creature has control over. Humans often try to benefit from these principles for the betterment of life. Islam is seen by Muslims as a belief that could boost such betterment.

The main foundation for the Islamic perception of life is based on the sources of Islamic law and theology, founded on the Qur'an and the tradition of Mohammad. These, together with their interpretive sources, provide direction on Muslims' understanding for life and needs, including economic rules and principles, since these are natural rules, such as we see in many areas of life. The Qur'an says that spending should be balanced between exaggeration and restriction: 'Do not be tight-fisted, nor so open-handed that you end up blamed and overwhelmed with regret' (17:29).

This is clearly reflected in the way Islam perceives economic growth in a society. Growth is a natural fact that is expected to influence any society (as with all natural laws)—but, following Islamic ethical rules, it has to be balanced, reflect what is real, and be useful to all in society, human or otherwise.

An Islamic understanding of growth

In identifying its basic understanding of economic growth, Islamic legal terminology differentiates between two fundamental concepts: *riba* and *namaa'*. *Riba* is an Arabic word which refers to usury or financial interest charged by money lenders. Lexically, it designates a false growth which is similar to a swelling caused by an injury.[3] Healthy growth, on the other hand, is termed *namaa'* and refers to the natural process of growth similar to the growth of a healthy plant.[4] In a social context, *namaa'* takes place in a gradual and real manner without a sudden and unexpected enlargement in one part of its institutions or sectors at the expense of others.

Perhaps the most observable aspect of false or fictitious economic growth is found in paper or coin money which has less intrinsic value than its value in use. Fractional reserve regulations require commercial banks to keep as a reserve about 4% of their deposits. The rest is loaned to customers almost as if it were balloons given to children at a party. The non-tangibility of these balloons is a good example of many other forms of

complex debt created by the banking system, which has contributed to the crisis of the world economy today.

The relationship between the natural rules of economics and the Islamic ethical value of life is also seen when we consider money. In Islam, the economic system should be based only on the *purchasing* value and not on the *fixed* value of money as set by governments. As Dr Khalid Almosleh puts it: 'The value of money should be judged only according to its purchasing power, and if that power fluctuates then duties and responsibilities associated with that money should be increased or decreased accordingly.'[5]

In Islam, the economic value of all matters is based on what God considers to be of value. Life to God is one of the ultimate valuable objectives that the Qur'an recognises. This would exclude any economic activity or property that Islam considers to be of harm to life and calls 'valueless'—*ghayr mutaqawim*—such as drugs and alcohol. Among the list of such valueless matters is money interest, *riba,* which is considered to be an illusionary value given to a fictitious and non-tangible concept generated by human greed. This is distinct from trading, which is based on tangible value derived from tangible commodities. The Qur'an further describes *riba* as causing its vendor to live a life of disarray like someone tormented by Satan's touch (2:275).

If money is accepted as a medium of value for the transaction, then it is the *purchasing value* which should be maintained and not the *fixed value*.[6] The changing value of money is assessed according to the changing of value of purchased goods before delivery. If the value of the goods is reduced while in the possession of the seller before delivery, then the new value is the responsibility of the seller. In today's economy, massive wealth changes hands simply because the fictitious value is considered as the real value. This has destructive consequences for the social and economic life of most people, for the benefit of few.

The Qur'an (13:17) refers to real, natural growth as 'that which is of benefit to man'—whereas illusionary growth is described as a 'growing layer of froth' which appears deceptively large but in reality contains nothing but empty air. Ann Pettifor uses a similar metaphor when she refers to banking credit as created 'out of thin air'.[7]

A summary of an Islamic view of economic growth is provided by contemporary Muslim scholar Abul Hasan Muhammad Sadeq: 'Islamic

economic growth or development is a balanced and sustained improvement in the material and non-material well-being of man, and development as a multidimensional process which involves improvement of welfare through advancement, reorganisation and reorientation of entire economic and social systems, and through spiritual upliftment, in accordance with Islamic teaching.'[8]

According to the ethical rules of Islam, economic growth is only acceptable when based on a tangible reality rather than a hypothesis. Accordingly, growth of a presumed asset in the bank, with no actual credit cover, is not real growth. The creation of fictitious growth in Islam is the result of human disharmony, greed and injustice, using what should be fulfilling the needs of others to create aggressive wealth. Without state control over human greed in the society, it risks collapse.

The famous scholar Ibn Khaldun (AD 1332–1406/732–808 AH) arranges the essence of political economic wisdom (which he ascribes, among others, to Aristotle), into nine parameters:

- The world is a large garden (*bustan*).
- The fence around it is the state (*dawla*); the state is authority (*sultan*).
- Through the state, customs (*sunna*) are kept alive.
- Customs are ways of governing implemented by the ruler (*malik*).
- The ruler (*malik*) is a shepherd.
- The soldiers (*jaysh*) are his helpers.
- Money provides for all people and is livelihood (*rizq*) that the flock (*ra'aya*) gather.
- The flock are God's creatures, devoted to the service of justice (*'adl*).
- Justice is something harmonious; through it, the world persists.[9]

Accordingly, the very existence of a society in Islam is based on the presence of justice and social harmony linking all its elements—whether human or animal communities or 'nations'. The social interest of a society (*maslaha*) is designated as the main objective of economic activities—which need to be balanced with the individual interests of each member. Muslim scholars define the objective of public interest as aiming to achieve good and remove harm in life.[10] The balance between good and harm is an important guideline that helps us understand how an Islamic

economic market operates, by setting boundaries beyond which investors cannot go. Such boundaries aim to achieve the central Islamic principle of economic ethics—namely that all wealth belongs to God.

From this is derived the prohibition on usury. As stated by Ibn Khaldun, the Islamic position on usury is central in understanding its economic philosophy as one based on social harmony. Unlike Ibn Khaldun's world, today's world is a global society with shared aims and interests; yet the same rule applies. For our world to persist, it must be based on fair competition in the use of the sustenance (*rizq*) provided by God, rather than on conflict and enmity. Usury, by definition, exploits the needy by abusing the wealth that God gave to people as a trust, not as an absolute property. In Islam, the most dangerous part of usury is that it leads to the creation of fictitious values in human life which can devastate society causing further hardship to the poor who are the majority of humans on earth.

Actual value and Islamic economics

Another observation about Islamic economics is that it accepts variation in people's wealth as part of the Divine natural law. Here we encounter the basic principle of *zakāt*—a form of 'ethical tax' which collects a percentage of people's wealth to be redistributed by the state to the neediest members of society. It is a social share (*hussa*) taken by the government from the wealth of people. The word *zakāt* implies the process of paying the due as well as the due itself. [11] Hence, it is also called *sadaqah*, which is derived for the Arabic word *sidq*, which indicates truthfulness.[12]

The poor and needy are the first priority for the use of *zakāt*. Indeed, in Islamic thought, the first step in establishing a just society is to combat poverty, which is one of the main causes of economic decline.[13] One of the prescribed ways of distributing the income of *zakāt* is to pay it to someone who is in severe debt; such a person is called a *gharim*. A *gharim* is a person who borrowed a capital sum in order to invest in a project, but was unable to fulfil his debt.[14] Using *zakāt* in this way is seen as a measure to safeguard this important group in society from becoming prey to money lenders in all their forms. By extension, this will protect the process of economic growth from being hijacked by money lenders who abuse the wealth of society (and God) for their own benefit.

To understand how Islam sees real economic growth, it would be helpful to note how *zakāt* and *riba* are contrasted. *Zakāt* is a method of purification which aims to guide financial growth in a society, preventing it from falling into the trap of the 'fictitious values' that can be created by *riba*. One of the conditions required of wealth subject to *zakāt* is that it has to be progressively generated. In other words, it has to be used for investment intended to help social growth. Thus, for wealth to be 'purified' it should not be stagnant. *Zakāt* indicates an annual tax on what is continuously growing, such as the profit of trade (as opposed to mere capital), or the salary of an employee (as opposed to his house). Also, no *zakāt* is paid on jewellery, pearls or all kind of metals, apart from gold and silver. No *zakāt* is to be paid on furniture, buildings, or animals, as long as they are not part of a financial investment. The expected amount of *zakāt* on gold and silver is 2.5% every year.

It is also observed that *zakāt* is not optional like charity, but rather a compulsory duty to be paid by every Muslim. Indeed, it is one of the five pillars of Islam without which a person might lose his qualification as a Muslim. The following story of Tha'laba relates a profound message about the value of *zakāt* over against growth:

> Tha'laba was one of the companions of the prophet who regularly performed prayer in the mosque. Once, he asked the prophet to pray to God to increase his wealth. The prophet responded by telling him that 'to have little that you thank God for is better than plenty that you cannot bear.' Tha'laba insisted on his wish, asking the prophet again and again. Then the prophet prayed, 'O God, give wealth to Tha'laba.' Soon after, Tha'laba's trade in sheep grew and his herd size became like ants and he had to take them out of the town. He stopped his regular attendance at prayer. When the time for the collection of *zakāt* came, Tha'laba refused to pay his due and said to the *zakāt* man sent by the prophet, 'This is too much.' After a while, he changed his mind and went to the prophet with the *zakāt* revenue. But it was too late. The prophet refused to take it from him since *zakāt* is paid as a right and not a voluntary due. The prophet then died and Tha'laba's *zakāt* was not accepted from him by any ruling successors of the prophet.[15]

One of the messages of this story in an Islamic economic context is that less wealth, and controlled wealth, is far better than wealth that cannot

give its dues to society. It also conveys the message that 'more is not better' and that wealth can come into conflict with ethical principles.

Islamic environmental economics

As has become clear already, in Islam the relationship between God and humans is not only spiritual in character but also has practical applications deriving from the principle that real growth is not related to size or greed. This is reflected in the way that Islamic economics perceives the environment and its resources. Islamic economics sees all the elements of the environment as unique entities whose value does not derive from their use to humans, but which are independently worthy of respect. Because other species supplicate God just like humans, they must be granted the status of communities or 'nations'—*umam*—on a par with the status of the human race. 'The seven heavens and the earth and everyone in them glorify Him. There is not a single thing that does not celebrate his praise, though you do not understand their praise: He is most forbearing, most forgiving' (Qur'an 17:44). Even if human existence were about to cease, humanity's mandate for care continues. Muhammad's tradition provides an Islamic doctrine for a modern and sustainable approach to nature: 'If the day of resurrection comes upon any one of you while he has a seedling in his hand, let him plant it.'[16] This stance has much in common with the concept adopted by the United Nations' *World Charter for Nature* which attributes value to all forms of life, not according to their use to humans, but on account of their uniqueness as distinct forms of life: 'Every form of life is unique, warranting respect regardless of its worth to man, and, to accord other organisms such recognition, man must be guided by a moral code of action'.[17]

The Qur'an informs humans that the communities of all forms of life are 'communities like yourselves' (6:38). This conveys the message that this likeness indicates the need for respect and for a sharing of an earth created for all creatures. The well-known medieval Qur'anic exegete Al Qurtubi explains: 'The meaning of this verse is that they [all creatures] are groups like you [people]. They are created by God and justly designated their livelihoods (*rizq*). People should not oppress them and exceed their privileges ordered by God.'[18]

Islamic environmental economics aims to harmonise the diverse aspects of creation in a holistic way under the notion that all resources belong to their creator. The resources are shared by God's creatures and, again, the *zakāt* helps in their distribution. *Zakāt* thus turns out to have important implications not only for poverty but also for sustainability.[19] As noted above, *zakāt* designates a blessed (pertaining to blessings or *baraka*) form of a healthy growth or *namaa'*, for both the individual and society.[20] It is an economic measure guided by the notion that wealth can be purified from mundane greed when part of it is spent to help others, especially the needy. Islam recognises that God's natural environment is itself in a desperately needy state, just like a poor person with an outstretched hand begging for money in the street.

Environmental sustainability and growth

All forms of development in Islam have to be derived from a 'legitimate' source. The value is only real if it is legitimately acquired by law—in other words, not stolen, taken by force or deception, or generated by a false value such as *riba*. It also needs to be tangible—in other words, present in the hands of the owner and not simply a number that does not exist in reality. Otherwise, it will be a form of *riba* like the foam of the sea. *Riba* or usury does not only lead to the exploitation of the weak, but also enables the people or companies who manipulate the rest of the society to achieve their own gain. The impact of usury on giving less value to something than it should have can be seen when a materialistic economy accords to the elements of the environment much less value than they are worth. For example, water is evaluated only by its immediate availability in nature and not by its actual importance to the environment. The same can be said about the earth, air and all elements of life. Unless this distinction is acknowledged and acted upon, eventually all our environmental resources will be grossly depleted. There is an urgent need to stop the exploitation of our ecosystems at the hands of a materialistic economy which aims to achieve predatory gain at the expense of a sustainable environment. An Islamic economic philosophy of the earth will seek to preserve the earth as one of the main sources of an economic activity which must be shared by humans with other inhabitants. Humans may use it to better their life but they have no permission to destroy it or exhaust its resources. Such a

philosophy emanates from the Qur'anic belief that the role of humans on earth is to reform it, not corrupt it. The Qur'an states: 'And do not corrupt the earth after it has been set right' (7:56).

An Islamic conception of a sustainable and balanced ecosystem needs to begin from the importance that the Qur'an accords to the balanced and systematic structure of life on earth, a structure which serves as a sign of the creator.

> In the creation of the heavens and earth; in the alternation of night and day; in the ships that sail the seas with goods for people; in the water which God sends down from the sky to give life to the earth when it has been barren, scattering all kinds of creatures over it; in the changing of the winds and clouds that run their appointed courses between the sky and earth; there are signs in all these for those who use their minds (2:164–5).

Such verses succinctly show how the cultural coding of the environment in Islam is embedded in the acknowledgment of the harmony of a life-system created by one maker. The role of an Islamic environmental economist is to investigate Qur'anic verses and traditional Islamic cosmological systems in order to understand and act upon the means by which Muslims can interact with the elements of life on earth, without causing the scale of life (*mizan*) to become imbalanced. Islamic environmental economics employs this Islamic sense of being part of a wider world in order to understand the relationship between social and economic needs and the needs of the environment.

The Qur'anic sense of being part of a wider world is similar, in many ways, to the views of contemporary environmental experts such as William Rees, who states: 'True sustainable development cannot be forced, it is a natural product of society that comes from a profound sense of being in and of the natural world.'[21] A sense of being in and of the natural world is reflected in the Qur'anic eschatology which links life and death with the earth: 'From the earth We created you, into it We shall return you, and from it We shall raise you a second time' (20:55). The earth is not sacred like God, but it is valued as a mother who gave us life, so we should at least give it back love and respect. The Islamic environmental moral code and philosophy of respect between humans and environment mean that life must be sustained for all generations—past, present and future.

The contemporary scholar Professor Al-Zuhaili provides us with an important point relevant to this discussion, indicating that the concept of growth in Islam also includes the idea of public participation in generating society's wealth. This is based on the principle that 'All property belongs to God, His creatures share the benefit of such wealth'.[22] The Qur'an emphasises this notion: 'It is He who created all what is on earth' (2:29). And, as noted, being created by God is applicable not only to human beings but also to all creatures that God has created on earth.[23] Al-Zuhaili further informs us that, 'although a property might bear the name of someone specifically, yet its ownership belongs to all God's creatures, *ibad allah*'.[24]

Islamic values and principles

We have seen that, in Islam, true economic growth can only be achievable if it is understood to be a socially-based process whereby all earth's citizens have both rights to, and duties towards, earth's resources. Islam discourages the accumulation of wealth and huge increases in individual ownership. Public property is used by Muslim economic planners to achieve the goal of social harmony (as indicated above by Ibn Khaldun). Action is undertaken by rulers on behalf of society, bearing in mind that their role is not to make the rich richer and the poor poorer (or, conversely, to make the poor rich unjustifiably). Achieving a balance between the two can often be a difficult task. Zakāt at a rate of about 5% will not take all the wealth from the wealthy but will certainly make a difference to the poor. As the Qur'an states: in the wealth of the rich there is a specified right for the beggar and deprived (70:24–25). As part of our responsibility for the environment, we need to consider the pledges and declarations that the world frequently makes in addressing the problem of environmental degradation.[25] We need to ask repeatedly of people of all faiths whether they really mean what they say. The truth is that maximum satisfaction has become part of the culture of modernity since the Industrial Revolution—a period which caused major convulsion, not only in Europe but also in the Islamic world. In addition to the positive changes brought about by technology and its application, the associated materialism has had a negative effect on people's attitude towards life. Maximum satisfaction of material desire became the goal of life rather

than a means of perfecting the planet. The principle of material maximisation is rejected in Islam, since it teaches that contentment with what one has is like an unending treasure. The Prophet is reported to have described human desires in these terms: 'if the son of Adam has two valleys filled with wealth, he will demand a third, but nothing fills the stomach of the son of Adam like dust'.[26] When we link this *hadith* with the story of Tha'laba, a clear Islamic perspective on the sustainable use of the environment emerges.

I find myself asking the same question I posed over ten years ago, if the elements of the environment have both a spiritual and a material value, which value takes precedence? If a tree praises God, can it be felled for the construction of a motorway?[27] The definition of *iqtisad* with which we started this paper is a good place to return to, for in Islam *iqtisad* is all about controlling human want and greed in compliance with God's directions to build the earth, not corrupt it—and to live with it in harmony, rather than raping it. We need to pause and question the validity of the current global capitalist system that we all follow like passengers in a train. We need to ask ourselves, is this train going in the same direction as God's religions want it to go? And, how can we adjust that direction without derailing the train?

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1 Paul Leicester Ford, ed., "Letter from Thomas Jefferson to John Taylor, Monticello", in *The Works of Thomas Jefferson, Federal Edition*, vol. 11 (London: G.P. Putnam's Sons, 1904), 533, http://oll.libertyfund.org/title/807.

2 Qur'an quotations are taken from M. A. S. Abdel Haleem, *The Qur'an: a new translation* (Oxford: Oxford University Press, 2008).

3 Ibrahim Anis et al., *Al Mu'jam al Wasit* (Arabic lexicon): 2nd ed. (Cairo: Academy of Arabic, 1973), vol. 1, 326.

4 Anis et al., *Al Mu'jam*, vol. 2, 956.

5 Khalid Almosleh, *Al Tadakhum Fi al Islam* (Inflation in Islam) (Buraydah: Qassim University, 2003), 83.

6 Almosleh, *Al Tadakhum*, 85.

7 As she puts it: 'Few understand that the banking system has a power that you and I lack: it has the power to create credit out of thin air—and that this credit in turn creates deposits and savings. Quantitative Easing has alerted us to the fact that the banking system has been able to create extraordinary levels of credit, without taxation or borrowing. But we still find it hard to believe that credit can be created out of thin air.'

8 Abul Hasan Muhammad Sadeq, *Economic Development in Islam* (Bangladesh: Islamic Foundation, 2004).

[9] Ibn Khaldūn, Franz Rosenthal and N. J. Dawood, *The Muqaddimah: An Introduction to History* (Princeton, NJ: Princeton University Press, 1969), vol. 2, 41.

[10] Mawil Izzi Dien, *The Environmental Dimensions of Islam* (New York: Lutterworth/Parkwest Publications, 2002), 135.

[11] Anis et al., *Al Mu'jam*, vol. 1, 396.

[12] Wahba Al Zuhaili, *Al Fiqh al Islami wa adilltuh* (Islamic Law and its sources) (Damascus: 1985), vol. 2, 729–31.

[13] See for example, Barry T. Hirsch, 'Poverty and Economic Growth: Has Trickle down Petered Out?,' *Economic Inquiry* 18, no. 1 (1980): 151–158, doi:10.1111/j.1465-7295.1980.tb00566.x. See also Frank Ackerman, 'The Shrinking Gains from Trade: A Critical Assessment of Doha Round Projections Working Paper 05-01' (Tufts University, MA, USA: October 2005), http://ase.tufts.edu/gdae/pubs/wp/05-01shrinkingGains.pdf.

[14] Al Zuhaili, *Al Fiqh*, 874.

[15] Abu 'Abdullah Al-Qurtubi, *Tafsir Al-Qurtubi* (Commentary on the Qur'an), vol. 8, 209.

[16] Al-Bukhair, *Al-Adab al-Mufrad*, 479, http://www.kalamullah.com/Books/Adab%20Al-Mufrad%20-%20Imam%20Bukhari.pdf.

[17] This is a statement passed by the United Nations World Assembly. See United Nations, 'UN GA RES 37/7: World Charter for Nature (1982),' October 28, 1982, http://www.un.org/documents/ga/res/37/a37r007.htm.

[18] Abu 'Abdullah Muhammad ibn Ahmad ibn Abu Bak al Qurtubi, 838-923 CE, *Al-Jami li-Ahkam al-Qur'an* on the meaning of Qur'an 6:38, vol. 6, 419–20.

[19] Paul Ekins proposes institutional measures to reconcile economic growth with environmental sustainability. One important measure is the reform of taxation.

[20] Al Mu'jam al Wasit 1:396.

[21] William Rees, 'Development: Economic Myths and Ecological Realities,' in *Environmental Ethics: Readings in Theory and Application*, ed. Louis P. Pojman, 3rd ed. (Belmont, CA: Wadsworth, 2001), 459.

[22] Al Zuhaili, *Al Fiqh*, vol. 5, 516.

[23] Qur'an 13:15, 16:49, 22:18.

[24] Al Zuhaili, *Al Fiqh*, vol. 5, 516.

[25] A good example is the Rio Declaration, addressing growth on an open international economic system. 'PRINCIPLE 12: States should cooperate to promote a supportive and open international economic system that would lead to economic growth and sustainable development in all countries, to better address the problems of environmental degradation. Trade policy measures for environmental purposes should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade. Unilateral actions to deal with environmental challenges outside the jurisdiction of the importing country should be avoided. Environmental measures addressing transboundary or global environmental problems should, as far as possible, be based on an international consensus.' See United Nations, *Rio Declaration on Environment and Development* (Rio de Janeiro, June 3–14, 1992), http://www.un.org/documents/ga/conf151/aconf15126-1annex1.htm.

[26] Narrated by Abu Musa al-Ash`ri and transmitted by Muslim. Mundhiri, *Mukhtasar* 1, 152.

[27] Izzi Dien, *Environmental Dimensions of Islam*, 84.

4

Sustainable growth or right livelihood? A Buddhist approach to economic development

LASZLO ZSOLNAI

The paper addresses two questions—first, is Western economic growth sustainable? and secondly, is sustainable growth desirable? My answer to both questions is a definite 'no'. Buddhist economics promotes what has been called *right livelihood*. The paper argues that right livelihood can be interpreted as sustainable human functioning which implies sustainable 'degrowth'.

Is Western economic growth sustainable?

The so-called ecological footprint calculations clearly show that industrialised Western economies are in a dramatic ecological overshoot. The *ecological footprint* of a person is equal to the land and water that is required to support his or her activities indefinitely using prevailing technology. The sustainable ecological footprint—also called *earth share*—is the average amount of ecologically productive land and sea available globally *per capita*. According to the latest available data, the ecological footprint of humankind exceeds the ecological capacity of the earth by 50%. It means that we would need 1.5 earths for continuing our present lifestyle. The ecological footprints of the most industrialised Western countries are shocking. These countries are ecologically overshot by 270–440%. (See Table 4.1).

Today 'happiness' is a top priority in economic, psychological and sociological research. In the last several decades the GDP of Western countries doubled or tripled but the general level of happiness—the subjective well-being of people—remained the same.[1]

Country	Ecological footprint in 'global hectares'[2]	Ecological overshot as % of sustainable level
USA	8.00	444 %
Holland	6.19	344 %
Norway	5.56	309 %
Germany	5.08	282 %
France	5.01	278 %
Italy	4.99	277 %
United Kingdom	4.89	272 %

Table 4.1 Ecological footprint of some industrialised Western countries in 2007[3]

Happiness research has disclosed evidence which shows that the major determinant of happiness is not the abundance of material goods but the quality of human relationships and a spiritual approach to material welfare. American psychologist Tim Kasser summarises the main findings of happiness studies thus: 'People who are highly focused on materialistic values have lower personal well-being and psychological health than those who believe that materialistic pursuits are relatively unimportant. These relationships have been documented in samples of people ranging from the wealthy to the poor, from teenagers to the elderly, and from Australians to South Koreans.' Such studies document that 'strong materialistic values are associated with a pervasive undermining of people's well-being, from low life-satisfaction and happiness, to depression and anxiety, to physical problems such as headaches, and to personality disorders, narcissism, and antisocial behaviour'.[4]

Ecological economists argue that the material 'throughput' of the economy should be drastically reduced in the industrialised countries, and also globally. We need to undertake an 'economic diet' by introducing more frugal production and consumption patterns. Frugality—in other words, reduced material activities—is crucial for our survival.[5] Herman Daly uses ecological economics arguments to show that frugality should precede efficiency in achieving sustainability. He suggests understanding sustainability in terms of the notion of throughput. In this view, the physical throughput of the economy should be sustained—that is, the entropic physical flow from nature's sources through the economy and back to nature's sink should be non-declining. Daly states that the problem with 'efficiency first' is what comes second. An improvement in efficiency alone is equivalent to having a larger supply of the factor whose

efficiency increased. The price of that factor declines, and more uses for the cheaper factor are found. The net result is that there is greater consumption of the resource than before, even if it is produced more efficiently. So scale continues to grow. A policy of 'frugality first', however, induces efficiency as a secondary effect. However 'efficiency first' does not induce frugality. The main task of our age is to limit the scale of the economy relative to the ecosystem, by restraining uneconomic growth that increases costs by more than it increases benefits—thus making us poorer instead of richer.[6]

The *Global Warming Survival Guide,* created by the American weekly magazine *Time,* suggests the following: 'There is an older path to reducing our impact on the planet that will feel familiar to evangelical Christians and Buddhists alike. Live simply. Meditate. Consume less. Think more. Get to know your neighbors. Borrow when you need to and lend when asked. E. F. Schumacher praised that philosophy this way in *Small Is Beautiful*: Amazingly small means leading to extraordinarily satisfying results.'[7]

The Buddhist alternative

Buddhism suggests an approach to economic life which is radically different from what is offered by mainstream Western economics. The British economist E. F. Schumacher was the first to propose the idea of a 'Buddhist economics' in his best-selling book *Small is Beautiful*.[8] Schumacher states that the central values of Buddhist economics are simplicity and non-violence. From a Buddhist point of view, the optimal pattern of consumption is to reach a high level of human satisfaction by means of a low rate of material consumption. Schumacher concludes that the Buddhist approach to economics represents a middle way between modern growth economy and traditional stagnation. It seeks the appropriate path of development, the *right livelihood* for people. Since the 1970s, Schumacher's conception of Buddhist economics has become popular in the West, especially among members of the alternative economic and environmental movements. It was gradually recognised that Buddhist economics is not only relevant for Buddhist countries but can help Western countries to solve their own problems—namely overconsumption, welfare malaise and the destruction of nature.

One seminal contribution to Buddhist economics was made by the Thai Buddhist monk and philosopher Ven. P. A. Payutto in his book *A Middle Way for the Market Place*.[9] According to Payutto, Buddhism recognises two different kinds of wanting: *tanha*, the desire for pleasure objects; and *chanda*, the desire for well-being. *Tanha* is based on ignorance, while *chanda* is based on wisdom. For example, people who are driven by *tanha* will seek to satisfy the blind craving for sensual pleasure which, in this case, is the desire for pleasant taste. But when guided by *chanda*, desires are directed to realising well-being. We eat to satisfy hunger and nourish the body. We enjoy our food, but not in such a way that leads to remorse.

Payutto stresses that from the Buddhist point of view, economic activity should be a means to a good and noble life. Production, consumption and other economic activities are not ends in themselves, but means—and the end to which they must lead is the development of well-being within the individual, within the society and within the environment. Given that there are two kinds of desire, *chanda* and *tanha*, it follows that there are two kinds of value which we might term *true value* and *artificial value*. True value is created by *chanda*. In other words, a commodity's true value is determined by its ability to meet the need for well-being. Conversely, artificial value is created by *tanha*—it is a commodity's capacity to satisfy the desire for pleasure. Buddhism distinguishes between two kinds of consumption, which might be termed *right consumption* and *wrong consumption*. Right consumption is the use of goods and services to satisfy the desire for true well-being. Wrong consumption arises from *tanha*—it is the use of goods and services to satisfy the desire for pleasing sensations or ego-gratification.

At the heart of Buddhism is the wisdom of *moderation*. According to the Buddhist approach, economic activity must be controlled by the qualification that it is directed to the attainment of well-being rather than 'maximum satisfaction'. In the mainstream economics model, unlimited desires are controlled by scarcity, but in the Buddhist model they are controlled by an appreciation of moderation and the objective of well-being. Buddhist economics understands that *non-consumption* can also contribute to well-being. Though monks eat only one meal a day, they strive for a kind of well-being that is dependent on little. However, if

abstinence did not lead to well-being, it would be pointless, just a way of mistreating ourselves. The question is not whether to consume or not to consume, but whether or not our choices lead to self-development.

Production is always accompanied by destruction. In some cases, the destruction is acceptable—in others it is not. Production is only truly justified when the value of the thing produced outweighs the value of that which is destroyed. On occasion, it may be better to refrain from production. In industries where production entails the destruction of natural resources and environmental degradation, non-production is sometimes the better choice. To choose, we must distinguish between production with positive results and production with negative results; production that enhances well-being and that which destroys it. In this light, *non-production* can be a useful economic activity. A person who produces very little in materialistic terms may, at the same time, consume much less of the world's resources and lead a life that is beneficial to the world around him or her. Such a person may benefit the world more than one who diligently consumes large amounts of the world's resources while manufacturing goods that are harmful to society.

Payutto summarises the basic values of Buddhist economics as follows:

- *Realisation of true well-being:* The 'Middle Way', the 'right amount' and 'knowing moderation'—all of these terms may be considered as synonyms for the idea of balance or equilibrium. Knowing moderation means knowing the optimum amount, how much is 'just right'. This optimum point, or point of balance, is attained when we experience satisfaction at having answered the need for quality of life or well-being.
- *Not harming oneself or others:* From a Buddhist perspective, economic principles are related to the three interconnected aspects of human existence: human beings, society and the natural environment. Economic activity must take place in such a way that it does not harm oneself (by causing a decline in the quality of life) and does not harm others (by causing problems in society or imbalance in the environment).

In his book, *Putting Buddhism to Work,* former Japanese banker and economic thinker Shinichi Inoue presented his view of economics and Buddhism.[10] Inoue claims that the Buddhist motivation for work must be

the pursuit of the interests of both oneself and others. So one should not engage in business that does not serve the world, and then brag about being a philanthropist. Buddhist economics does not have profit as its principal goal. Instead, its primary objective is to serve the community in a wider sense. Profit will come, but it is a by-product rather than the main goal of business activities. Inoue emphasises that living necessarily involves the taking of life of other beings. We cannot change that, but we can limit how many lives we take and to what extent we allow our desires to be satisfied. Gratitude toward other beings and a sense of regret about harming others are crucial considerations in Buddhist economics. It calls for the environmental and social assessment of products and industries, already a highly developed practice in Japan and other countries.

Both production (P) and consumption (C) have to be considered. *Production* can be ranked according to four levels:

P1=production with a negligible negative impact on the environment
P2=production that has a minimal negative impact on the environment
P3=production that has some negative impact on the environment
P4=production involving a great deal of negative impact on the environment

Consumption can be also be assessed according to four levels:

C1=consumption of goods that are vital for human existence
C2=consumption of goods that, while not absolutely necessary, make living more tolerable
C3=consumption of goods that are not very necessary
C4=consumption of goods that are frivolous or even harmful

Table 4.2 presents the combination of these variables in order to determine whether the production of a product is relatively earth-friendly, and the consumption of a product truly necessary. The lower the number associated with a combination, the better it is for the environment and society.

In the Buddhist view, any economic enterprise is located in the context of the entire natural universe. Therefore, ignoring environmental and social costs appears to be unacceptable. Economic efficiency must be redefined in the form of 'not wasting'. It carries with it the goal of living happily in a simple way. For example, although recycling costs time and money, and may seem inefficient and troublesome, ultimately we are

	P1: negligible impact	P2: minimal impact	P3: some impact	P4: great impact
C1: Vital consumption	1	2	3	4
C2: Consumption for tolerable living	2	4	6	8
C3: Non-essential consumption	3	6	9	12
C4: Frivolous or harmful consumption	4	8	12	16

Table 4.2 Environmental impact for various production and consumption categories[11]

being more efficient by recycling and not wasting products. This is because any given product exists in relationship to the earth and human society as a whole. A recycling culture is economically sound.

In his publications, Thai economist Apichai Puntasen addresses the problems of macroeconomics from a Buddhist point of view.[12] Because of the different meanings of 'happiness', Puntasen suggests using the word *sukha* drawn from the teaching of the Buddha. The closest word to *sukha* is 'wellness'. There is also a range of meanings for the word *sukha*. It implies the state where pain is reduced from its original level. Less pain implies more *sukha*. On the other hand, pleasure does not necessarily imply less pain. *Sukha* from acquisition is a lower level of *sukha*; it can be the same as hedonism. However, at this level of *sukha*, as the Buddha qualified, it must not cause any burden for oneself or any other living beings. Even with this qualification, the Buddha recommended the attainment of a higher level of *sukha*, namely *sukha* from non-acquisition. It can be *sukha* from giving, from meditation, or from helping others to be relieved from pain. The highest level of *sukha* is derived from being emancipated or liberated from all impurities of mind or all the defilements.

It can be seen that *sukha*, in the teachings of the Buddha, is more associated with mental development than with any form of acquisition. The most important tool to achieve this mental stage is through training of the mind to reach the stage of *panna,* the ability to understand everything in its own nature. *Panna* is instrumental in being relieved from pain. With no pain, it will be *sukha* or wellness of the mind as well as the body. Puntasen suggests that the mode of production in Buddhist economics can be defined as *panna-ism*. *Panna* is the supreme quality of the mind. It means the ability to understand everything in its own nature.

Human beings who have *panna* do not seek to maximise pleasure or utility but seek to be relieved of—and relieve others of—pain, as much as possible. With less pain there will be more peace and wellness.

Panna should be used to control the factors of inputs—such as technology, capital and natural resources. The production process should be done in such a way as to enhance the good qualities of human inputs. The process should generate human skills and creativity, as well as provide a sense of fulfilment from their work. Workers should not feel that they are being exploited, but rather given opportunities to do something worthwhile for themselves as well as others. Minimal use of non-renewable resources should be constantly practised, and use of renewable resources should be encouraged in place of non-renewable resources as much as possible. Waste from the production process should be kept to a minimum. Every attempt should be made to improve nature and environment at the same time. The need for production to be increased to meet increased demand for consumption is not required in Buddhist economics, since consumption will also be in moderation. As only moderate consumption is needed, the rest can be donated to others who are still in need. Peace and tranquility are results of the ability to understand everything in its own nature or having *panna*. Such knowledge will result in more understanding of the world, as well as the understanding of 'nothingness' or 'voidness' and no self to cling on to—the main cause for pain. This way, excessive production is not needed. Buddhist economics insists that priority should be given to those that are still in pain through not having adequate materials to support their lives.

The concept of gross national happiness (GNH) has now gained worldwide recognition. Sander Tideman reminds us that the concept was first expressed by the King of Bhutan in the 1980s in response to Western economists visiting Bhutan who regarded it as a 'poor' country by the standard of gross domestic product (GDP). While acknowledging that Bhutan may score low on the scale of conventional economic indicators, the King of Bhutan claimed that his country would score high on an indicator measuring happiness. But GNH is more than a counterpoint to GDP. Gross national happiness can be regarded as the next stage in the evolution of economic indicators for sustainable development, going beyond merely measuring values that can be expressed in money. GNH is

an attempt to account for all values relevant to life on this planet, including happiness.[13] Bhutan's leaders define gross national happiness in terms of four pillars: economic development, good governance, cultural preservation, and nature conservation.[14] By including governance and culture into its measurements, Bhutan not only follows the trend of incorporating the qualitative dimension into its model but is also a pioneer among nations. The benefit of the model is that it *includes* GDP while complementing it with 'higher level' components that collectively constitute GNH. This model helps us to see how we can combine efforts to generate financial capital alongside with policies to generate social, environmental and cultural capital.

GNH can also serve as a tool for policymaking when confronted with conflicting interests. Typically, political decisions are made on the basis of trade-offs. For example, when faced with the choice between providing employment versus the preservation of environment, most governments would choose the former. The GNH model shows that such trade-offs should be made in the context of a certain hierarchy of values. Otherwise, policymakers will continue to sacrifice higher values for lower values, longer-term interests for shorter-term interests, and causing investments in sustainable development to be put off. If GNH can be developed into a comprehensive tool incorporating all relevant values for a happy life, it will free governments from defaulting to economic decisions on the narrow paradigm of materialism.

Tideman suggests that GNH is congruent with what is known as a 'mixed economy',—the idea that market forces could do many things well, but not everything. This will require government and all actors in the economy to reclaim responsibility for their lives and start defining economic objectives in more human terms. We need both efficient markets and good leadership from central government. The 'Middle Way' does not mean a compromise or settling for second-best—but, rather, proactively creating an attitude of responsibility of all actors in the economy by which synergetic alliances with 'win-win' outcomes are naturally achieved. Economic history has shown that healthy economies and healthy societies usually had a mixed economy, in which markets and governments work together in a dynamic equilibrium.

Sustainable human functioning

How can we interpret the Buddhist ideal of *right livelihood* in a Western context? I suggest that *right livelihood* is a way of living which represents functioning within ecological limits—in other words, not exceeding the *earth share* of the person, the family and the community. Also, it implies developing basic human capabilities as emphasised by Amartya Sen and Martha Nussbaum.[15] Put simply, *right livelihood* means human development in an ecologically sustainable environment. The capability approach emphasises functional capabilities such as the ability to live to old age, engage in economic transactions, and participate in political activities. These are construed in terms of the substantive freedoms people have reason to value—instead of utility (happiness, desire-fulfilment or choice) or access to resources (income, commodities, assets). Poverty is understood as capability-deprivation. The emphasis is not only on *how* human beings actually function but also on their having the capability to function in important ways, if they so wish. Someone could be deprived of capabilities in many ways—for example, by ignorance, government oppression, lack of financial resources, or false consciousness.[16] The capability approach to human well-being emphasises the importance of freedom of choice, individual heterogeneity, and the multidimensional nature of welfare.

Nussbaum suggests the following list of basic human capabilities:

- *Life*: Being able to live to the end of a human life of normal length; not dying prematurely, or before one's life is so reduced as to be not worth living.
- *Bodily health*: Being able to have good health, including reproductive health; to be adequately nourished; to have adequate shelter.
- *Bodily integrity*: Being able to move freely from place to place; to be secure against violent assault, including sexual assault and domestic violence; having opportunities for sexual satisfaction and for choice in matters of reproduction.
- *Senses, imagination and thought*: Being able to use the senses, to imagine, think, and reason. Being able to do these things in a 'truly human' way, a way informed and cultivated by an adequate education—including, but by no means limited to, literacy and

basic mathematical and scientific training. Being able to use imagination and thought, in connection with experiencing and producing works and events of one's own choice and of different types—religious, literary, musical, and so forth. Being able to use one's mind in ways protected by guarantees of freedom of expression with respect to both political and artistic speech, and freedom of religious exercise. Being able to have pleasurable experiences and to avoid non-beneficial pain.

- *Emotions*: Being able to have attachments to things and people outside ourselves; to love those who love and care for us, to grieve at their absence; in general, to love, to grieve, to experience longing, gratitude, and justified anger. Not having one's emotional development blighted by fear and anxiety. (Supporting this capability means supporting forms of human association that can be shown to be crucial in their development.)
- *Practical reason*: Being able to form a conception of the good and to engage in critical reflection about the planning of one's life. (This entails protecting liberty of conscience and religious observance.)
- *Affiliation*: Being able to live with others, to recognise and show concern for other humans, to engage in various forms of social interaction; to be able to imagine the situation of another. Having the social bases of self-respect and non-humiliation; being able to be treated as a dignified being, whose worth is equal to that of others. This entails provisions of non-discrimination on the basis of race, sex, sexual orientation, ethnicity, caste, religion, national origin, and species.
- *Other species*: Being able to live with a concern for animals, plants, and the world of nature, and relating to them.
- *Play*: Being able to laugh, to play, to enjoy recreational activities.
- *Control over one's environment*: Being able to participate effectively in political choices that govern one's life; having the right of political participation, protections of free speech and association. Being able to hold property (both land and movable goods), and having property rights on an equal basis with others; having the right to seek employment on an equal basis with others; having the freedom from unwarranted search and seizure.

> In work, being able to work as a human, exercising practical reason and entering into meaningful relationships of mutual recognition with other workers.[17]

Sen's view is that it would be difficult to finalise an exact listing and relative weightings of human capabilities for two reasons: the necessary, appropriate specification of the context of their use could vary; and the need not to devalue in any way the domain of reasoning in the public sphere. He argues that the task of assigning weightings to various capabilities should be left to both the ethical and political considerations and scrutiny of a given society based on public reasoning. Sen argues that part of the 'richness' of the capability perspective is its insistence on the need for open scrutiny of the value for making social judgments and, as such, he chooses not to seek a defined, predetermined list of what capabilities matter.[18]

Buddhist development strategy

Buddhist economics suggests a development strategy which differs from Western economics.[19] Western economics represents a *maximising* framework. It wants to maximise profit, desires, markets, instrumental use and self-interest; and it tends to build a world where 'bigger is better' and 'more is more'. Buddhist economics represents a *minimising* framework where suffering, desires, violence, instrumental use and self-interest are minimised. This is why the phrases 'small is beautiful' and 'less is more' nicely express the essence of the Buddhist approach to economic questions. This is illustrated in Table 4.3.

The underlying principle of Buddhist development strategy is to *minimise suffering* of all sentient beings, including nonhuman beings. From a Buddhist viewpoint, a project is worthy of being undertaken if it reduces the suffering of those who are affected. The 'suffering-minimising' principle can be formulated to reveal that the goal of economic activities is not to produce gains but to decrease losses. Since humans (and other sentient beings) display loss aversion, in that losing what someone already has causes a greater change in happiness than gaining something of equivalent 'value', it is worthy trying to reduce losses for oneself and for others rather than trying to increase gains for them.[20] Losses should not be interpreted only in monetary terms or applied only to humans. The

Western development strategy	Buddhist development strategy
maximise profit	minimise suffering
maximise desires	minimise desires
maximise market	minimise violence
maximise instrumental use	minimise instrumental use
maximise self-interest	minimise self-interest
'bigger is better'	'small is beautiful'
'more is more'	'less is more'

Table 4.3 Western versus Buddhist development strategies

capability to experience loss—in other words, of suffering, is *universal* in the realms of both natural and human kingdoms.

Buddhist development strategy suggests not to *multiply* but to *simplify* human desires. Above the minimum material comfort—which includes enough food, clothing, shelter, and medicine—it is wise to reduce one's desires. Wanting less could bring substantial benefits for the person, for the community, and for nature. Buddhism recommends moderate consumption and directly aims at changing one's preferences through meditation, reflection, analysis, autosuggestion and the like.

Nonviolence—*ahimsa*—is the main guiding value of Buddhist development strategy for solving social problems. It is required that an act does not cause harm to the doer or the receivers. Nonviolence prevents doing actions that directly cause suffering for oneself or others, and urges participative solutions. Community-economy models are good examples: communities of producers and consumers are formed to meet both their needs at the lowest cost and reduced risk by a long-term arrangement. Community economy uses *local resources* to meet the needs of *local people* rather than the wants of markets far away; it is based on partial or complete self-reliance.[21]

Buddhist development strategy favours practising *genuine care*. Robert Frank developed five distinct types of cases when socially responsible organisations are rewarded for the higher cost of caring:

- Opportunistic behaviour can be avoided between owners and managers.
- Getting moral satisfaction, employees are ready to work more, for lower salaries.

- High quality new employees can be recruited.
- Customers' loyalty can be gained.
- The trust of subcontractors can be established.[22]

Caring organisations are rewarded for the higher costs of their socially responsible behaviour by their ability to form commitments among owners, managers and employees and to establish trust relationships with customers and subcontractors.

Buddhist development strategy suggests that *generosity* might work in business and social life because people are *homo reciprocans*. In other words, they tend to reciprocate what they get and often they give back more than the doer gave them. Samuel Bowles, Robert Boyd, Ernst Fehr and Herbert Gintis summarise the model of *homo reciprocans* as follows: *homo reciprocans* comes to new social situations with a propensity to cooperate and share, responds to cooperative behaviour by maintaining or increasing his or her level of cooperation, and responds to selfish, free-riding behaviour by retaliating against the offenders, even at a cost to himself/herself, and even when he or she could not reasonably expect future personal gains from such retaliation.[23]

Finally, it is important to stress that Buddhist development strategy is not only for Buddhist countries but can be applied in any economic setting. Buddhist ethical principles and their applications in economic life offer a way of being and acting which can help people to live a more ecological and happier life, while contributing to the reduction of human and non-human suffering in the world.

Thomas Shelling, the great American economist, suggests the need to make a clear distinction between micromotives and macrobehaviour in the economy. *Right livelihood* is a micromotive which induces sustainable degrowth as macrobehaviour. While this may seem strange and unattainable for many Western people, there are already degrowth movements in France, Spain, Canada and other developed countries. Since overconsumption lies at the root of long-term environmental issues and social inequalities, degrowth thinkers and activists advocate the downscaling of production and consumption—the contraction of economies. Key to the concept of degrowth is that reducing consumption does not require individual martyrdom and a decrease in well-being. Rather, degrowth promotes maximal happiness and well-being through

non-consumptive means—sharing work, consuming less—while devoting more time to art, music, family, culture and community.

At the individual level, degrowth is achieved by voluntary simplicity. Global solutions involve a relocalisation of economic activities in order to end humanity's dependence on fossil fuels and reduce its ecological imprint. Degrowth opposes the notion of 'sustainable development' because, while it aims to address environmental concerns, it does so with the goal of promoting economic growth; but such growth has failed to improve the lives of people and inevitably leads to environmental degradation. In this way, degrowth stands in sharp contrast to current forms of productivist capitalism that consider the accumulation of capital and commodities a desirable end.[24] Steps toward sustainable degrowth may liberate us from the tyranny of the modern-day economic mindset according to which, in the words of none other than John Maynard Keynes, 'what is good is bad and … what is bad is good, for what is bad is useful and what is good is not useful.'[25] Surely we must reach beyond that!

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1 Richard Layard, *Happiness: Lessons from a New Science* (London: Allen Lane, 2005).

2 The 'global hectare' is a normalised unit taking into account that different types of land are more biologically productive than others. See Global Footprint Network 2010, *Ecological Footprint Atlas 2010*, http://www.footprintnetwork.org/en/index.php/GFN/page/ecological_footprint_atlas_2010, 14, for a formal definition.

3 Data taken from Global Footprint Network 2010, *Ecological Footprint Atlas 2010*, http://www.footprintnetwork.org/en/index.php/GFN/page/ecological_footprint_atlas_2010, 31.

4 Tim Kasser, *The High Price of Materialism* (London: MIT Press, 2002), 22.

5 Luk Bouckaert, Hendrik Opdebeeck and Laszlo Zsolnai, eds., *Frugality: Rebalancing Material and Spiritual Values in Economic Life* (Oxford: Peter Lang, 2008).

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[14] http://www.grossnationalhappiness.com/articles/.

[15] See Amartya K. Sen, *Development as Freedom* (Oxford: Oxford University Press, 2000); and Martha C. Nussbaum, *Creating Capabilities: The Human Development Approach* (Cambridge, Mass.: Belknap Press of Harvard University Press, 2011).

[16] Sen, *Development as Freedom.*

[17] Nussbaum, *Creating Capabilities.*

[18] Amartya Sen, "Human Rights and Capabilities", *Journal of Human Development* 6, no. 2 (July 1, 2005): 151–166, doi:10.1080/14649880500120491.

[19] Laszlo Zsolnai, *Ethical Principles and Economic Transformation - a Buddhist Approach* (Dordrecht: Springer, 2011).

[20] Amos Tversky and Daniel Kahneman, "Loss Aversion in Riskless Choice: A Reference-Dependent Model", *The Quarterly Journal of Economics* 106, no. 4 (November 1, 1991): 1039–1061, doi:10.2307/2937956; and Amos Tversky and Daniel Kahneman, "Advances in Prospect Theory: Cumulative Representation of Uncertainty", *Journal of Risk and Uncertainty* 5, no. 4 (October 1, 1992): 297–323, doi:10.1007/BF00122574.

[21] Richard J. Douthwaite, *Short Circuit: Strengthening Local Economies for Security in an Unstable World* (Totnes: Green Books; in association with The Lilliput Press, 1996).

[22] Robert H. Frank, "Can Socially Responsible Firms Survive in Competitive Environments?" in Robert H. Frank, *What Price the Moral High Ground?: Ethical Dilemmas in Competitive Environments* (Princeton, NJ; Princeton University Press, 2004).

[23] Samuel Bowles et al., "Homo Reciprocans: A Research Initiative on the Origins, Dimensions, and Policy Implications of Reciprocal Fairness", *Research Initiative on Reciprocal Fairness* (June 7, 1997), http://www.umass.edu/preferen/gintis/homo.pdf.

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Part 2

Sustainable consumption

5

Growth, sustainability and behaviour change: a Christian perspective

TIM COOPER

The reputation of economics has, in modern times, diminished. As a discipline, it has been slow to respond to the critical demands of environmental sustainability. Its methods and tools appear unsuited to deal with the complexities of measuring quality of life and predicting human behaviour. Even within more traditional disciplinary territory, economists and their political masters have wrestled unsuccessfully with questions arising from the banking crisis—not least the fragility of an economic system that demands endless expansion and yet appears unable to prevent unacceptable financial debt.

A failure to address the inevitable long term environmental constraints upon economic activity is indicative of the discipline's tendency—at least in its dominant, neoclassical, form—towards obscurantism in the face of a 'real world' crisis. Hence the observation of Mark Blaug, a former Professor of Economics and one of a growing number of dissidents: 'Modern economics is sick. Economics has increasingly become an intellectual game played for its own sake and not for its practical consequences for understanding the economic world ... Economists have converted the subject into a sort of social mathematics in which analytical rigour is everything and practical relevance is nothing.'[1]

Similar dissatisfaction has been eloquently voiced within the context of environmental sustainability by economist Herman Daly and theologian John Cobb Jr, who criticise the way in which mainstream economic thinking is dependent upon abstractions from the real world, or what philosopher Alfred Whitehead termed 'the fallacy of misplaced concreteness'.[2] It has become apparent that much contemporary economics suffers from methodological dependence upon a quasi-

scientific approach based on unrealistic theoretical assumptions about the nature of people, the environment and markets.

Critics point to false assumptions and flawed methods. An example of the former, rooted in utilitarianism, is that people are rational, selfish and materialistic: they seek to maximise their 'utility' (a measure of satisfaction) and have an insatiable 'demand' for goods and services. Another, associated with instrumentalism and a desacralised view of the universe, is that the earth has no intrinsic value. Likewise with methods—mainstream economists are often inclined to adopt a quantitative approach which implies that what cannot be measured does not matter. Given the absence of markets for many of the natural assets of the planet upon which our future depends (for example, fresh air and unpolluted rivers), such an assumption is clearly problematic from an environmental perspective.

Over the past 30 years, new, 'heterodox' schools of economic thought have emerged, including behavioural, institutional and ecological approaches to economics. Many explicitly acknowledge an interdependence between (and the co-evolution of) human economies and natural ecosystems, and infer that nature therefore imposes limits upon human activity. They tend to be value-based (in other words, they are 'normative' as distinct from 'positive') and, as a consequence, distinguish quality of life from growth in gross domestic product (GDP) as the primary goal of economic policy. They also tend to adopt a multi-disciplinary framework, thus readily embracing the environmental and social domains of sustainability alongside the economic.

What kind of prosperity?

In order to address sustainability it is necessary to understand the purpose served by measuring the output of the economy (in other words, GDP) and the implications of different rates of economic growth. Economic output in industrialised countries such as Britain typically grows by around 2% *per annum*, while growth in newly industrialised countries is much higher—in the case of China, growth has averaged nearly 10% *per annum* over the past 30 years.

Measuring economic output is important because this enables governments to understand trends in the economy and to track variables

such as employment and income which directly affect people's quality of life. In the context of environmental sustainability, trends in economic output also serve as a proxy for resource consumption, although this connection may, to a certain degree, be addressed by 'decoupling' economic and environmental activity.[3]

In industrialised countries, growth in GDP has not always been matched by an increase in people's sense of well-being or *prosperity*, and the need for other indicators of social progress is now widely acknowledged.[4] Nonetheless, most politicians and many economists argue that economic growth is necessary in order to address poverty. Such thinking extends to churches. Thus a report by Churches Together in Britain and Ireland concluded: 'the thinking of all the mainstream denominations ... has converged around one key proposition: that under the right conditions, economic growth can serve God's purposes.'[5] It is important to note the caveat, 'under the right conditions', which implies the presence of social justice and thus an appropriate distribution of income and wealth. Unfortunately, in recent years, economic growth has led to higher incomes but resulted in an increased gap between rich and poor.

In practice, most public debate concerning economic growth focuses on the short term, such as discussion in recent years over whether the nation is in a recession and, if so, how long it might last. Yet, it is the long term that is significant from an environmental perspective. In the short term, economic growth is not necessarily bad for the environment any more than recession is necessarily good for it. The accumulated impact of growth over the long term, however, is profound. Significantly, over the course of the twentieth century the level of consumption in the UK increased fourfold[6] and current levels of growth in many newly industrialised countries imply consumption doubling every decade.

A growing body of opinion suggests that in industrialised counties, economic growth over many years cannot be environmentally sustainable. Tim Jackson, Professor of Sustainable Development at Surrey University, concludes: 'Questioning growth is deemed to be the act of lunatics, idealists and revolutionaries. But question it we must. The idea of a non-growing economy may be an anathema to an economist. But the idea of a continually growing economy is an anathema to an ecologist.'[7]

Such questioning of economic growth and the assumption of overconsumption is especially problematic for governments in today's recessionary times, often described as an 'era of austerity'. Aside from this political obstacle, the relationship between growth, a measure of economic activity, and sustainability, a concept with a multiplicity of components measured in different ways, is unresolved. There is general acceptance of a need to decouple economic activity and environmental activity, as noted above, but the position taken by Jackson is, at best, disputed—at worst, ignored.

Thus, a general consensus appears to have settled—among politicians and industrialists, at least—around the notion of 'green growth', a strategy of increasing resource efficiency in order to reduce the environmental impact of rising consumption. From this position, reducing the consumption of goods and services by the end-user is either unnecessary or not feasible, and attention should be focused on supplying them through more efficient processes. Industry is understandably more comfortable with this approach. The World Business Council for Sustainable Development (WBCSD) has long been a proponent of 'eco-efficiency', a broadly similar concept, and some politicians and industrialists have latterly adopted a bullish approach, arguing that so-called 'environmental industries' (such as those engaged in waste management, pollution abatement and renewable energy) may lead the nation out of recession and in the process create a 'low carbon economy'.

An important dimension to any discussion relating to economic growth, particularly from a Christian perspective, is the impact on the poor. Poorer groups in society tend to suffer the most from environmental degradation, being less able to heat their homes when energy prices rise or to buy houses away from shabby, litter-strewn and polluted environments. They need special attention when market instruments are proposed on environmental grounds, such as increased taxes on fossil fuels. It is disturbing that over the past 20 years, the poor have benefited less from economic growth than more affluent social groups.[8] Significantly, a less equal society appears to result in a tendency towards people in general feeling less happy—even those who have themselves become relatively affluent.[9]

Integrating a faith perspective

One of the first major attempts to address the implications for economics of the need for sustainability was the previously cited study by Daly and Cobb, an unusual collaboration between an economics professor who formerly worked for the World Bank and author of several scholarly critiques of economic growth, and a leading figure in the development of process theology.[10] The book concludes with a chapter in which the authors provide several reasons to explain why their 'theocentric' Christian beliefs inform the foregoing economic arguments.

The first is that theocentric belief provides 'a check against idolatry ... treatment of what is not ultimate as if it were ultimate'. Such idolatry leads people to believe that human beings can control the material world without reference to 'ultimate questions' and, among economists, that 'no real arguments need to be given for devoting oneself ultimately to the promotion of productivity and growth'. Second, theocentric belief provides a perspective that 'transcends one's own and embodies the truth about the whole'. Belief in God, 'the omniscient and impartial unifying source of all ... makes the ethical life more authentic ... [and] ... gives real importance to what happens in the world.' Third, theocentric belief both inspires and directs commitment; and, finally, such belief provides a basis for understanding our relation to the future because 'God is everlasting, and future lives are as important to God as present lives. To serve God cannot call for sacrifice of future lives for the sake of satisfying the extravagant appetites of the present.'[11]

It is both possible and necessary to identify an authentically Christian form of economics and yet, although the potential benefits of interdisciplinary study are widely accepted, there are relatively few examples of scholars crossing the fields of economics and theology.[12] There may be many explanations for this, such as use of different methods, standards of evidence, and types of knowledge. Nonetheless, there appears to be further scope to explore cross-disciplinary relationships between the two disciplines whether through applying Christian teaching to contemporary economic practices or, indeed, using economic theories to interpret Biblical texts. Different approaches are possible depending upon one's view of the authority of Scripture and the form of its application to a contemporary context.

Application of Scripture to the present day

One approach is to identify laws and practices recorded in the Bible and relate these to economic activity in the present world. Perhaps the most obvious is the Sabbath principle, the Old Testament commandment to 'rest' (Ex. 20:8–11). Historically, Christians have interpreted this as an admonition not to work on Sundays, unless the work is required out of compassion for others, as in the health sector and emergency services. A political battle to preserve strong restrictions on economic activity on Sundays was lost in 1994, when the Sunday Trading Act was passed. At that time, the defence was primarily constructed on the basis of protecting workers' rights. In the context of sustainability, however, there is another argument for defending the Sabbath principle—that people benefit from periods during which they are restrained from consuming (as does the natural environment). It is regrettable that this objection is so rarely voiced by church leaders.

Another area of Old Testament teaching of obvious significance to economics concerns the practice of usury, widely interpreted as the charging of excessive rates of interest (Ex. 22:25, Deut. 23:19–20). The church objected to usury until the sixteenth century, when John Calvin defended the charging of interest (although he argued that the level of interest should not exceed 5%). Debate within the church continued up until the eighteenth century, but in the modern era the subject has attracted remarkably little discussion, despite debt-fuelled overconsumption in the industrialised world and the near collapse of the banking system. Such apparent disinterest within Christianity is in contrast with debate within Islam, which has resulted in the development of Islamic banking systems that claim to avoid usury.

A somewhat different approach to the application of Scripture in the modern world is to base economic activity upon broad ethical principles derived from the Bible. For example, there is much in the Old Testament about the need for social justice (for example, Deut. 16:20; Ps. 33:5; Prov. 29:7; Is. 30:18; Mic. 6:8)[13] and recent scholars have highlighted the principles of creation care and environmental stewardship (for example, Gen. 2:15; Ps. 24:1).[14] In the context of sustainability, an awareness of interdependence within God's creation and the recognition that many resources are finite makes calls for greater social justice imperative—as

excessive consumption by the rich is exposed as threatening the well-being of the poor. An obvious example is when people in the poorest countries face environmental threats arising from climate change caused primarily by carbon emissions from consumption in rich industrialised countries. Sustainability also demands government intervention in order to ensure that the earth receives proper care, because in many economic transactions there is a 'social cost' (in other words, a negative impact such as pollution) that is borne by society as a whole rather than the parties directly involved in the transaction. This can only be addressed through public policy.

New Testament teaching, too, offers ethical principles that are relevant to economic practices and, specifically, consumption. Jesus warned about material possessions threatening to distract people from finding the kingdom of God (Luke 12:22–34). The apostle Paul, in his letter to Timothy, cautions against being 'eager for money' and suggests that being content requires only the basic essentials of food and clothing (1 Tim. 6:8–10). Such teaching resonates with the principle of sustainable consumption and calls for 'low carbon lifestyles' (formerly termed 'voluntary simplicity' or frugality).[15]

Consumption: the heart of the problem?

The crucial role of consumption in the debate on sustainable development has been recognised for some 20 years. A key chapter in *Agenda 21*, a report produced for the 1992 Earth Summit (a meeting in Rio de Janeiro attended by over 100 heads of state), highlighted the need to address prevailing consumption patterns in the industrialised world. Since then, discourse on sustainable consumption has increased—but achieving change has, in practice, proven problematic.[16] Indeed, the term 'sustainable consumption' is sometimes dismissed as an oxymoron, and whether it implies merely 'consuming differently' or 'consuming less' is subject to dispute.[17]

In the context of environmental sustainability, the starting point for discussion on 'consumption' is typically characterised by concern, and the descriptive term 'consumer society' is often used with negative connotations. Christian attitudes towards consumption, however, vary. Some would argue that consumption generally enhances human well-

being, while recognising the possibility of dysfunctional attitudes, habits and behaviour. A not insignificant number, perhaps influenced by prosperity theology, would see affluence as a sign of God's favour. By contrast, others, particularly those more concerned about environmental sustainability, would adopt a more critical stance.

What role might consumers play in accelerating progress towards sustainable development? In the immediate aftermath of the 1992 Earth Summit, a strategy favoured by many governments was the provision of information to consumers in anticipation that market forces, in the form of increased demand, would result in 'greener' products. Perhaps the most striking example was the European Union's energy labelling scheme, the success of which prompted considerable interest in environmental labelling and the potential for market-led change. Yet, by the turn of the millennium, the limitations of this approach—not least, the high cost of undertaking life cycle analysis of products in order to substantiate green claims, were apparent. While some products were marketed successfully on the basis of environmental credentials, in many cases other factors were judged by consumers to be more important. For example, the visual aesthetic or price premium associated with such products sometimes hindered sales. Interest thus began to grow in other strategies to achieve sustainable consumption, although it was clear that their success would demand better understanding of consumer behaviour.

In an influential exploration into what might motivate sustainable consumption, Tim Jackson has reviewed past theoretical approaches to consumer behaviour and exposed the sheer complexity of consumption.[18] Factors that influence what and how people consume include our attitudes, motivation, opportunities and values, together with expectations, norms and habits.

Insights from Christian beliefs and practices

This final section briefly explores whether understanding Christian beliefs and practices might offer any insights to this ongoing discussion on consumer behaviour and enhance the possibility of overcoming the obstacles to sustainable consumption. More specifically, are the values that underpin the attitudes and motivations of Christians of any particular significance?

Attitudes shape behaviour and the attitudes of most people towards most types of consumption are essentially positive—believing that, as a general principle, consumption enhances human well-being: by consuming, we affirm the creativity of others—for example, designers—and develop our own individuality. The idea that consumption should be restrained is fundamentally countercultural. It is perceived as a threat to the economy, the source of maverick lifestyles.

Failure to change consumption patterns may also arise through people's lack of motivation. For example, individuals are unlikely to be motivated to change their behaviour if the outcome is uncertain or change seemingly dependent upon collective behaviour. Thus individuals may not be motivated to choose to travel by rail rather than plane because they consider it highly unlikely that a flight would be cancelled as a result of their choice; their personal decision would not have the intended effect.

A further obstacle concerns a lack of opportunities to change behaviour. Opportunities may exist in theory but in practice be absent or demand unrealistic effort or expense. Relatively few goods are produced that strictly apply the principles of sustainable design and in markets where they are available, such as clothing, the range is often limited. Moreover, despite past initiatives on environmental labelling, consumers often lack information about the environmental impact of products, such as how long they have been designed to last.[19]

Significant debate has taken place on the need for attitudes to change, ways of motivating consumers, and opportunities to influence people's behaviour. From a Christian perspective, an especially interesting area is the significance of values in shaping behaviour.[20]

The church's potential

How might Christianity shape people's attitudes, motivation and opportunities with regard to their consumption patterns? The failure of many nominally 'born again' Christians to choose ethically distinctive lifestyles has rightly been described as a 'scandal' that needs to be addressed.[21]

A commonly held attitude among Christians is to be passive with regard to the fate of the earth rather than anticipate the possibility of reversing environmental degradation. They accept a share of

responsibility in that they trace the problem to collective (if not personal) 'sin', but do not see any possibility of renewal. Such an attitude may arise out of certain doctrinal positions on the future of the earth and the kingdom of God. Yet these are subject to dispute.

Thus some scholars interpret 2 Peter 3:10 as meaning that the earth will be 'destroyed', others believe that it is to be 'refined'. Similarly, some scholars interpret Luke 17:21 as meaning that the kingdom is 'within' us, whereas others that the kingdom is 'among' us. Christians who anticipate the transformation of God's creation, rather than its destruction, and those who see the kingdom as the rule of God throughout all creation, rather than in people's hearts alone, are more likely to be motivated to change their behaviour as consumers in order to protect the environment. In other words, the Christian faith may serve as a motivating influence upon consumption but this is dependent on our tradition and how we interpret the Bible. Such theological ambiguity within Christianity concerning our relationship to the environment has been very effectively described in an historical study by Paul Santmire.[22]

Changing behaviour depends on creating and using opportunities. In Britain, the church, with at least two million adults listening to its teaching every week, has a unique ability to promote appropriate human behaviour. As Sir John Houghton, the world renowned climate change scientist, has argued: 'The leadership that Christians can offer is not to be underestimated … We are the largest NGO [non-governmental organisation] in the world; if we take up the cause of combatting climate change on a global scale, the impact will be enormous.'[23]

Economics, sustainability and consumption

The significance of economics to the challenge of sustainability cannot be underestimated and it is unfortunate that so little use has been made of economic policy to drive the necessary shift towards sustainable development. This failure is rooted in the flawed methods and false assumptions used in mainstream, neoclassical economics and the fact that economic growth has long been a primary policy goal for governments.

In the face of pressure to reduce negative environmental impacts caused primarily by the level of consumption in industrialised countries, a

case is often made for 'sustainable growth'. Yet there is scant evidence that so long as consumption increases, the development of 'greener' products will be sufficient to bring about the necessary change. Moreover, economic growth in industrialised countries appears to be failing even to deliver anticipated levels of human well-being.

Christian principles could be used to inform economic debate with regard to sustainability, but dialogue between economists and theologians has been inadequate. As a consequence, Biblical teachings about the Sabbath, interest rates, justice, creation care and affluence are not being applied to contemporary concerns.

Consumption has long been regarded as of crucial significance in the debate on sustainable development. Efforts to change consumer behaviour through environmental labelling schemes had limited effect, and it has become apparent that product improvements alone will not bring about the necessary reduction in environmental impacts: more radical changes in people's lifestyles are required.

The influences upon consumption are complex—but understanding of people's behaviour in relation to environmental goals is improving. Consumer behaviour theories have exposed the many influences that shape people's decisions as consumers, which include their values. The church appears to have a tremendous opportunity to promote appropriate consumer behaviour by shaping people's values and thereby influencing their attitudes and providing motivation, not least because of its capacity to communicate to large numbers of people on a regular basis.

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6

Values and the role of charities

TOM CROMPTON

Neither government nor business can respond adequately to today's sustainability challenges without encountering far greater public pressure for change. Political leaders are crucially hobbled in the ambition that they can show. Certainly, they must make sure that they maintain the approval of their electorate: there is a need for greater public acceptance of ambitious policy interventions. But more than this, they also experience resistance from powerful and often countervailing interests. If such resistance is to be overcome, this will require greater public scrutiny and pressure.

Business leaders—however philanthropically motivated—must carry their customers with them. They are constrained to work in that narrow space where environmental imperative and competitive advantage can be made to converge. To be sure, assessed on its own terms, this is a space that provides for excitement and innovation. But, without either profound changes in customer preferences, or otherwise regulatory changes, this space cannot accommodate responses that in any way match the scale of environmental problems which we confront. Yet, again, these are changes that will require public pressure—whether this is brought to bear by people expressing concern as consumers, or as voters.

This chapter asks, what are today's mainstream environmental non-governmental organisations (NGOs) doing to help build public acceptance of the need for more ambitious interventions? What are they doing to nurture active public expressions of concern?

Seduced by the power of commercial marketing techniques, these NGOs often ask, how can we marry people's interests, as these are manifest today, with reduced environmental impact? This is a question that is answered by promoting 'green consumerism', money-saving tips for improved energy efficiency, or celebrity stunts aimed at driving YouTube videos 'viral'. As we will see, far from energising people to demand and

embrace change, such approaches are likely to harden public resistance to the more difficult changes that are necessary.

Confronted by profound sustainability challenges, environmental NGOs could rather be deepening their understanding of the reasons that public demand for proportionate change is shallow and fragile. Better questions to ask would be: 'what determines what matters to people?' and 'what is our role in working systemically to build public concern?'

Pursuing answers to these questions, as this chapter begins to do, leads one into territory that is, regrettably, still uncharted for most NGOs. There are many disciplinary perspectives which bear on this question (economic, political, sociological, philosophical and theological). In what follows, I offer some insights from the perspective of just one discipline—social psychology. But, in doing so, I ask the reader to bear in mind that this is an exploration that could equally be conducted from other perspectives—leading to similar insights.

What determines what matters to us?

Many social psychologists address the question, what determines what matters to us? through the lens of values. Values are the aspects of people's identities that reflect what they deem to be desirable, important, and worthy of striving for in life.[1] A wide range of studies have shown that our values influence both our attitudes and our behaviours. They affect our political persuasions, our willingness to participate in political action, our career choices, our ecological footprints, the amount of resources we use (and for what purpose), and our feelings of personal well-being.[2] Social psychologists have identified a set of 'intrinsic' values which are consistently found to underpin both concern about sustainability, and action in line with this concern (from day-to-day behaviour, to voting choice, to political activism). These, then, are the values that the environment movement must seek to engage and strengthen if it is to step up to the challenge of building public acceptance of, and active public demand for, ambitious change.

Intrinsic values include broadmindedness, social justice, creativity, and unity with nature. Simply engaging these intrinsic values—any of them, it seems—leads to increased concern about sustainability. So, in one typical experiment, social psychologist Tim Kasser and colleagues

asked American participants in a study to think about aspects of their national identity.[3] They asked some to think about national identity in the context of America being a country which prioritises wealth, financial success and material gain; they asked another group to think about their national identity in the context of America being a country with a long tradition of generosity, ideals of self-expression and strong family values; and they asked a third group to think about their identity as humans. The researchers then asked the participants what environmental footprints they would advocate. Those asked to reflect on intrinsic aspects of American identity were more likely to support a range of policy interventions to reduce environmental footprint.

Intrinsic values stand in opposition to 'extrinsic' values—concern about wealth, social status or image—which are associated with lower levels of concern about environmental problems, and lower motivation to help tackle them. So, just as public expressions of concern about environmental issues will be promoted through engaging and strengthening intrinsic values, influences which serve to engage and strengthen extrinsic values will tend to erode such expressions of concern.

The good news is that it seems almost all of us hold intrinsic values to be important. Indeed, the great majority of us hold them to be more important than competing extrinsic values. As we will see, there are several ways in which NGOs might work to engage and further strengthen intrinsic values, and to weaken extrinsic values. But before highlighting these, it is important to understand something more about the relationship between these different types of values.

In the remainder of this section, I will use further discussion of the results of the 'American identity' experiment outlined above, as a vehicle for exploring some more principles about how values work. It is important to appreciate, though, that while this experiment provides a helpful vehicle for exploring these principles, the results that I will describe have been corroborated by many other studies.

Principle 1: Intrinsic values are associated with greater concern about sustainability, and greater motivation to act in line with this concern.

As we have seen, the researchers found that, relative to the group asked simply to think about their identity as 'Americans', those asked to reflect on more intrinsic aspects of American identity were significantly

more likely to support a range of environmental policy interventions. This corroborates a great deal of other work which has established that there is an association between intrinsic values and pro-social and pro-environmental attitudes and behaviour.

Principle 2: Values can be 'engaged'.

Engaging a value (even unconsciously) can exert influence on people's attitudes and behaviour. In the 'American identity' experiment, this 'engagement' was achieved by asking participants to read a short piece of text. But values can be engaged very subtly—for example, one study has shown that simply sitting at a computer with a screen-saver depicting dollar bills leads participants to seek to place a greater distance between themselves and a stranger.[4]

Other work suggests that repeatedly engaging values leads them to be strengthened. So, for example, law-school experience is associated with students coming to place greater importance on extrinsic values—perhaps because of excessive performance and grading pressures. Before embarking on their courses law students seem to place *higher* priority on intrinsic values, relative to a control group of other undergraduates. But over the first year of their studies, the importance that the law students ascribed to these values erodes. In particular, and irrespective of age or gender, they come to place significantly lower value on 'community contribution' and significantly higher value on an 'appealing appearance'.[5]

Michael Sandel makes this point powerfully in *What Money Can't Buy: the Moral Limits of Markets*. He writes that altruism, generosity, solidarity and civic spirit (attributes closely aligned to 'intrinsic' values) are 'like muscles that develop and grow stronger with exercise'.[6] The alternative perspective—that 'reckless expenditures of altruism in social and economic life not only deplete the supply available for other public purposes ... They even reduce the amount we have left for our families and friends'—appears absurd.[7] But as Sandel demonstrates, it is a perspective that has been seriously advanced by some leading economists.

Principle 3: Concern about sustainability can be promoted by engaging any of a range of intrinsic values.

Engaging intrinsic values, then, supports uptake of a wide range of behaviours consistent with deeper environmental concern. But this is the case *even where no explicit mention is made of environmental concern*.

Recall that in the 'American identity' experiment, discussed above, participants asked to read about the 'intrinsic' American identity were prompted to think about generosity, ideals of self-expression and strong family values. Nonetheless, even though *no mention was made of the environment*, these participants were significantly more likely to support a range of environmental policy interventions. This effect has been called 'bleed over'. It seems that engaging any of a constellation of intrinsic values can 'bleed over' into the activation of others—prompting increased social and environmental concern.

The phenomenon of bleed over points to the possibility of NGOs working concertedly to activate—and therefore, over time, strengthen—this constellation of intrinsic values underpinning public expressions of concern about a wide range of different social and environmental issues. I will return to this possibility below.

Principle 4: Engaging extrinsic values is likely to decrease concern about sustainability.

A range of studies show that engaging people's extrinsic values acts in opposition to engaging people's intrinsic values. Study participants who are temporarily more aware of money, image or status show lower levels of social and environmental concern. We also know that countries where citizens, on average, place greater importance on extrinsic values tend to perform more poorly on a range of social and environmental measures.[8] Although it is not possible to manipulate values experimentally at a societal level, these two results strongly suggest that any factor which serves to strengthen extrinsic values in society is likely to reduce public concern about sustainability issues, and public motivation to act in line with such concern. Such factors will include NGO communications and campaigns, but also political discourse, public policies and the design of social institutions.

What role could NGOs play in influencing what matters to us?

These insights from social psychology, coupled with an appreciation of the scale of the sustainability challenges that we confront, have important implications for NGOs. They have implications both for the way in which NGOs communicate and campaign, and the issues upon which they work.

Considering first how NGOs communicate and campaign, many environmental campaigns appeal to extrinsic values in attempting to motivate pro-environmental concern. Proponents of such campaigns argue that, because many individuals are concerned about extrinsic values—for instance, financial outcomes—it is sensible to frame campaigns to encourage uptake of pro-environmental behaviour in terms, for example, of the money that might be saved by adopting some pro-environmental behaviours. Of course, it can now be seen that there are likely to be costs associated with such approaches.

These costs have been demonstrated experimentally. So, for example, Laurel Evans and colleagues found that, after being prompted to think about car-share schemes in terms of their environmental benefits, participants in a study were more likely to recycle paper. In itself, this is unremarkable.[9] But when the researchers presented other participants in their study with information about car sharing that drew attention to *both* environmental benefits *and* financial savings, they recorded a significantly reduced motivation to recycle. It seems that raising financial concerns engaged extrinsic values, with a negative impact on recycling rates—even though attention was simultaneously drawn to the environmental benefits.

Appeals to extrinsic values *may* sometimes prove to be effective as ways to motivate particular behaviours, such as joining a car-share scheme—although there is evidence that appeals to intrinsic values can be more effective.[10] But, crucially, it seems that such strategies also entail unwanted side-effects. Such effects may be apparent across a large number of people—all those who are exposed to a communication, irrespective of whether or not they act in line with this. These effects may also be apparent across a wide range of socially and environmentally relevant behaviour—potentially, many more behaviours than recycling, which was the only one Evans and his colleagues recorded in the study above. For example, one would predict that people who read the information that focused on the financial incentives for joining a car-share scheme would also be, temporarily, less likely to engage in civic activism in support of more ambitious political engagement on climate change. Cumulatively, such side-effects may outweigh any possible positive effects of a campaign which makes appeal to extrinsic values.

Of course, this is not to argue that there can be *no* role for appeals to extrinsic values in environmental campaigning. It seems clear that such appeals will, at times, have their uses—potentially where a campaign aims to encourage uptake of a behaviour which is in itself particularly environmentally significant, or where it aims to address some of the structural barriers to strengthening intrinsic values at a cultural level. But such communication and campaign strategies should be deployed with great care. Ideally they would only be deployed in the light of experimental trials demonstrating their effectiveness, and even then only following careful deliberation about unwanted side-effects.

Many NGOs are beginning to respond to an understanding of cultural values, and some have undertaken analysis of their public communications and campaign materials to explore the values that these currently serve to engage—that is, to begin to explore the possible 'mindprint' of these communications. So, for example, 13 UK-based conservation NGOs commissioned social psychologists and linguists to undertake an analysis of their entire communications output for a six-month period in 2011—establishing the values which these communications currently engage and strengthen.[11]

Nonetheless, important as it is to examine the values that NGOs themselves are communicating, the mindprint that they exert will be small compared to that of the public and private sectors. An understanding of the mindprint of business and government can point to important new ways in which NGOs can work to help bring intrinsic values to the fore at a cultural level.

Turning now to *what* NGOs communicate and campaign on: business and government have great influence on cultural values through the mindprint of their products, services, policies, institutions, communications and marketing. Consider, for example:

Public policies: Intuitive politicians are well aware of the importance of public policy in communicating—and reinforcing—the importance of particular values, through citizen's lived experience of those policies. Margaret Thatcher, for example, famously commented on the second anniversary of her first election, in *The Sunday Times* on May 3, 1981: 'it isn't that I set out on economic policies; it's that I set out really to change the approach, and changing the economics is the means of changing that approach. If you change the approach you really are after the heart and

soul of the nation. Economics are the method; the object is to change the heart and soul.' Public policies which have little direct material impact on environmental issues may nonetheless be of profound importance in shaping cultural values, and therefore public attitudes, towards environmental issues, and motivation to behave in pro-environmental ways.

Social institutions: Our daily interaction with social institutions is likely to serve to reinforce particular values. Consider our experience of the NHS—both as tax-payers who contribute to its services, and as patients. This experience is likely to reinforce the perception that it is normal and right to live in a society which addresses the health needs of all, irrespective of their ability to pay. This experience is therefore likely to engage—and over time strengthen—intrinsic values (here, values of social justice) that are associated with concern about a wide range of social and environmental issues extending far beyond public health.

Media: The media plays a crucially important role in shaping our collective sense of what is important in life, how we perceive ourselves, and how we properly interact with others. Take one, apparently trivial, example. Studies have found that briefly referring to participants as 'consumers' rather than 'citizens' significantly increases participants' bias towards extrinsic values, and that referring to them as 'consumers' rather than 'individuals' leads them to behave more selfishly in a natural-resource dilemma game.[12] Yet *The Times*, *Guardian* and *Observer* newspapers in the UK increasingly refer to their readers as 'consumers' rather than 'citizens'.[13] Consistent with this, content analysis of *The Sun* and the *Daily Mirror* over the period 1968–1992 finds a decline in reporting matters of the public sphere, in favour of publishing material encouraging consumption.[14]

Marketing: Estimates vary widely, but it is thought that the average UK citizen is exposed to hundreds, perhaps several thousand, advertisements each day. There is evidence that exposure to advertisements, and to photographs of consumer products, increases the importance that a person attaches to extrinsic values.[15] Irrespective, therefore, of the steps that more progressive advertising agencies and their clients may have taken to reduce their immediate material footprint (for example, the greenhouse gases produced in the course of creating an

advertisement), they are likely to have a significant social and environmental impact mediated by their mindprint.

Conditions of employment: Most people of working age spend a significant proportion of their waking hours in a social environment that is shaped by their employer's management culture and employment policies. So, for example, a competitive work-place which extends little job security, demands that employees work long hours, provides minimal annual leave, and rewards good performance through pay increases, is likely to engage—and over the course of time strengthen—extrinsic values among its workforce.

Education: Educational experiences that stress competition and that present education as a pre-requisite for more remunerative careers are likely to strengthen extrinsic values. There is also evidence that such approaches may be counterproductive in supporting learning.[16] Studies have found that simple interventions to encourage primary school children to uncover stories of kindness or love lead to remarkably durable improvements in these pupils' pro-social and helping decisions.[17] Although not tested in this study, one would anticipate that this would also lead them to express greater environmental concern. There is also evidence that encouraging immersion in nature leads a person to attach more importance to intrinsic values.[18]

This understanding points to the need for environmental NGOs to begin to work, in strategic ways, to address such influences on cultural values. Clearly, campaign targets should be chosen carefully to maximise potential political support and ultimate impact.

Working in this way opens opportunities to form new coalitions. Consider the Wild Network, which brings together a small group of large NGOs, such as The National Trust and RSPB, representing a range of issues, to campaign for initiatives to improve children's connection to nature. Such initiatives are likely to generate multiple social and environmental benefits.

Or consider the Leave Our Kids Alone (LOKA) campaign, which seeks tighter restrictions on advertising to children. If successful, this campaign would be likely to have widespread social and environmental benefits: the available evidence suggests that increased exposure of children to commercial advertising leads them to attach greater importance to extrinsic values. It has been found, for example, that the proportion of

national income spent on advertising is associated with levels of youth materialism five years later.[19] The LOKA campaign is currently unsupported by any mainstream environmental NGO. This is perhaps unsurprising: most large environmental organisations would encounter significant barriers to joining such campaigns. A conservation NGO, defined in terms of its work to protect UK biodiversity, would probably struggle to explain to its supporters a decision to join a campaign to legislate against advertising to children.

However, this difficulty would be encountered in part because most large conservation organisations have encouraged their supporters, over many years, to compartmentalise biodiversity-related problems and to identify proximal responses to these—for example, creating new protected areas, or campaigning for changes in farming practice. These are of course sensible and *necessary* responses. But they are not *sufficient* (as indicators of biodiversity decline attest).[20] They cannot offer a systemic and durable solution to habitat loss.

On the other hand, working to tighten restrictions on advertising to children could lead to widespread increases in the importance placed on intrinsic values, with systemic impacts on public attitudes towards conservation issues, and increased public pressure to enact durable and systemic solutions. Moreover, in campaigning on advertising to children, politically powerful coalitions might be established with a wide range of other NGOs, representing a disparate set of concerns.

This problematic tendency to fragment and compartmentalise problems, in turn, seems to be driven importantly by an imperative to clearly differentiate an NGO from its 'competitors', in pursuit of limited financial support. One response would be for NGOs to begin to familiarise their supporters with the need for systemic solutions, operating at the level of those things that importantly shape cultural values. This is *not*, of course, to suggest that these NGOs should abandon current approaches to campaigning on their defining issues. But there is a clear case for apportioning some campaign resources to work on cross-cutting issues that should be of concern to a wide range of NGOs, irrespective of the issues upon which they work. So far as I am aware, for example, disability charities and conservation NGOs rarely collaborate on joint campaigns. This is because, viewed through the lens of their respective issues—

disability rights and biodiversity loss—there is little convergence in terms of the *policies* or *practices* for which they are campaigning. But it can also be seen that proportional and durable delivery of their respective objectives is unlikely to be achieved without the mobilisation of far wider public support for their respective issues, support that is premised upon the same constellation of intrinsic values. The opportunities are there for disability charities and conservation NGOs to establish common cause on campaigns to strengthen intrinsic and weaken extrinsic values.

The challenge—strengthening intrinsic values

Sustainability presents huge—increasingly, it seems, insurmountable—challenges. Piecemeal approaches to addressing these challenges are falling far short: they are not generating the scale of systemic change that is necessary. NGOs could lead the way in highlighting the possibility of working in a more systemic way—building public appetite and active demand for ambitious action. But, for NGOs to work in this way, they will need to embrace an understanding of societal values and how these are shaped; transcend a narrow focus on specific issues; and start to establish common cause in working to strengthen those values that infuse public concern about sustainability, social justice and democracy.

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Part 3

Sustainable production

7

A critique of sustainability in the business world from a Christian perspective

CAL BAILEY

There is little doubt in the minds of most people in the environmental movement that business is responsible for a large share of the sustainability crisis. The event which most clearly illustrated for me the sharp antagonism between business and the environmental movement was the Brent Spar conflict in 1995. Shell announced its intention to dispose of a disused North Sea oil platform by dumping it in a deep trench in the Atlantic Ocean. Greenpeace objected that this was like leaving our trash in the countryside. They said it was lazy and irresponsible—and its members occupied the platform, gaining widespread media attention.

What brought the conflict to a resolution was neither the antics of protestors, nor the logic of Shell's case for offshore disposal—but the impact of a boycott of Shell service stations in Germany. Shell rapidly announced a changed plan involving onshore disposal and eventually the cleaned-up platform was reused as part of a new harbour near Stavanger in Norway.

Much business behaviour is perceived to be unsustainable, and business needs to thank the NGOs, churches and academics who have brought this to our attention. Some of our business activities have been environmentally appalling, and we business folk need help to correct our behaviour. But it is worth noting that this has been largely accidental and ignorant. Business is focused on customers and profit, not environmental destruction. Indeed, there is a growing realisation within the business world that throwing away waste materials is not a way of disposing of a problem, but reflects bad engineering and is a waste of money.

Not all businesses are similar: many small businesses have behaved well for a long time, often driven by the instinctive good behaviour of their owners. Big business has multiple owners and no single owner has

control, and this leads to simplification of objectives for purposes of clarity. Financial return is often perceived to be the primary goal, to which all else is subservient. The environment is external and becomes a resource to which nothing is owed and whose life is neither valued nor—sometimes—even considered.

This chapter will explore effective ways of changing business behaviour; look at proposals both for sustainable energy generation and for sharply reducing our energy consumption; and review some of the underlying political and theological challenges which face our government and the church respectively in achieving the desired change.

Methods of changing business behaviour

A positive development in the last decade is a growing movement towards social and environmental responsibility within bigger businesses. This complements the strong sense of wider responsibility that has been implicit in smaller businesses for many generations. It is a result of pressure from shareholder activism, from customer demand, from the action of many employees of large businesses who have a deep desire to serve their society better—also from the wish of big businesses to avoid the cost of community disengagement. It is greatly assisted by the wonderful work of such NGOs as Business in the Community.

A good example is Marks & Spencer who launched Plan A in 2007—a set of 100 commitments to improve the environmental and social contribution of their business. It has grown into 180 commitments and become core to the M&S identity. To their surprise and delight, it proved to be popular with customers, staff and suppliers—as well as highly successful at reducing business costs.

The most powerful way of achieving change in big businesses is to understand the power of their brands and the ability of customers to influence them. It was not Greenpeace's media antics which won victory in the Brent Spar example—but the consumer boycott which threatened Shell's profitability and its carefully developed public image. In recent years, we have seen the beginning of this being exploited; and so the pace of change has accelerated, even if it remains too slow for many. I predict much more.

Why does change not happen more quickly? Why do businesses not eliminate their waste without being told to? Is it not in their interest to save money? Yes, it is—but the cost of changing a production process often requires a big investment too. So the challenge to environmental campaigners is very simple: if the cost of change is higher than the cost of the *status quo*, then you will fail. One way to be effective is to organise enough customers to ask for it—businesses are typically very good indeed at responding to the wishes of their customers!

Sustainability and the energy needs of the UK

There are three widely accepted goals for our energy supply strategy in the UK. Our energy, whether for electricity, heating or transport, must be sustainable; and also affordable; and also secure.

Our existing energy supply industry is dominated by six major companies. Listening to them, you will hear much about affordability, a little about security (because much of their energy comes from countries who will not guarantee supplies during cold winters), and even less about sustainability. Their energy sources are widely regarded as unsustainable on both environmental and social grounds. There can be little doubt that energy policy has been a major factor in our foreign policy—because most of our energy comes from a variety of overseas countries, some with poor records on human rights. Yet without overseas energy the UK becomes cold, immobile and unproductive very quickly! Environmentally, the 'Big Six' get most of their energy from fossil fuels such as coal, oil and gas, which are the primary contributors to UK carbon emissions.

Changing this presents a major challenge to technical innovation, to public or private sector funding, and to human behaviour—and, therefore, to political imagination also.

However, a range of new and imaginative businesses, credible academics and influential NGOs have suggested ways in which the sustainability challenge can be overcome. From these organisations, you will hear a lot about sustainability, a little less on security (the wind does not always blow on winter days, and we cannot yet store yesterday's wind energy), and less still about affordability because the cost of innovative, often smaller scale, renewable technologies such as wind, solar and tidal

power is often high or unknown. When they do talk about cost, they often refer to hidden fossil fuel subsidies which are little understood.

The politics of this discussion are fierce because vested interests are deep, and solutions are widely divergent in method, risk, impact and cost. There is a major need for transparency, respect and integrity on all sides.

Consumption of energy

Our family business, NG Bailey, has had a sustainability strategy since 2006. Initially, we undertook the strategy as 'the right thing to do'. It cost us money to implement, but we did it as part of trying to become a responsible business. However, we were surprised and delighted by our success at saving energy: as a result, 'the right thing to do' became an essential part of our business. Let me explain.

Our first sustainability strategy was focused on learning how to measure and reduce our own buildings' energy consumption. We became good at this and reduced our buildings' emissions by 34% over four years. The result was that we started saving so much money that the savings easily exceeded the costs of the strategy. We learned that 15% of most energy bills can be saved simply by focusing on energy—in other words, by a little leadership; and a further 15% can be saved by spending small sums, repaid within two years, on meters and monitors to measure and display energy patterns. We extended our efforts to save money in our travel and materials as well. For the last two years, these savings have contributed handsomely to our bottom line!

The second surprise looks like being even more significant. We have now developed a strategy to help clients reduce their energy costs, and we are now winning energy performance contracts from some of the biggest companies in the UK.

In simple terms, we have realised how much waste there is in our buildings, in our travel and in our construction on site. We never used to measure or manage these costs. We do now—and the benefit is enormous. We have learned that two quite different steps are needed to reduce energy consumption in buildings. The first requires three technical skills, mostly derived from GCSE Physics:

- *Fabric first*—the building must be well insulated and very airtight.

- *Systems second*—efficient heating systems, simple controls, easy-to-access off switches and energy information systems are the second most important factor.
- *Renewables third*—find the best low carbon generation solutions for your building. But do not start with this, as many people do.

This is the technical approach which we are learning to deploy with great sophistication. But technology alone is not enough! The second step requires no physics—it has more to do with psychology: it is the need for behavioural change among those who occupy buildings and drive cars. How many of us open the windows if we are too warm in winter? Or leave the lights on when we go to the canteen at lunch time? We need to develop habits of turning heating or thermostats down and turning lights off. Habits are difficult to change and there is much skill in changing the habits of a community whether at work or at home.

Buildings are responsible for 40% of UK carbon emissions. If 30% of building operational emissions (typically 80% of lifetime building emissions) can be saved so easily, then (you can do the maths for yourself) 10% of total UK emissions can be reduced very simply indeed—and at a profit!

Government strategy for energy reduction

The UK government this century, whether led by Labour or the Conservative/Liberal Democrat coalition, has made many verbal commitments to sustainable energy. Indeed, the UK has led the world in many respects—for example, we were the first country to set legally binding targets for emissions reduction. However, the practical effect has been very different: after initial success in reducing emissions—partly to do with the 'easy early wins' and partly to do with a shrinking economy—they are now struggling both to define policy and to reduce emissions.

The method used has been the traditional government tool—regulation. In the construction industry, they have tried to tell builders what we must build, and what we may not build. The regulations apply to new buildings, and substantially ignore existing buildings. They are complex, expensive to implement, and difficult to enforce—which means that there is low compliance and little enforcement. They have also led ministers into all kinds of problems—the so-called Conservatory Tax is

one example; another problem is the ineffectiveness of the regulations—the poor energy performance of buildings which follow the government rules. I want to propose a much simpler, less expensive, policy which applies to all buildings occupied by businesses; and then to reflect on a fundamental problem facing governments which try to tackle this kind of problem.

Here is my proposal to deregulate new buildings and to increase regulation on existing buildings (very marginally)—which is simple, highly transparent, very low cost and effective. The proposal is designed to overcome the problem that many businesses declare their good intentions to be environmentally responsible but do not do much about it.

The first step is to allow people to consume whatever energy they wish in their buildings—in other words, to remove all those regulations on new buildings which are so expensive and complex! The second step is to require every building occupant to declare publically their carbon emissions by displaying their building energy performance in the reception or lobby via a large poster. The poster would be appropriate to the size of the reception so that every visitor would see it clearly. For example, in the reception of a multi-storey building this would be an A0 size poster displayed very prominently. The energy performance measure is the Display Energy Certificate of that building—which is like the A–G energy label on a new fridge. These certificates exist today and must currently be displayed only by a limited range of public buildings.

The point is, if businesses have to declare their *actual* energy performance in the buildings they occupy, which are visited by their customers and their staff, then good intentions will be transformed to action because few businesses wish to declare themselves to be poor and wasteful. The cost of a certificate varies between £200 and £2,000 (average about £300) and is accompanied by a list of suggestions as to how energy can be reduced. If implemented, businesses would recover the cost of these certificates within a few months. By implementing this simple rule, hundreds of pages of Building Regulations can be removed from the statute book alongside many millions of wasted design hours. Enforcement is replaced by exposure—exposure of the energy performance of our commercial buildings; exposure of the better performing buildings to those who want to rent or buy low-cost-to-

operate space; exposure of hypocrisy by those who appear to behave well, but do not. I would start by implementing it on large buildings (say, over 10,000 m^2) and gradually reduce the size every year until all commercial buildings were covered. To begin with, there would be a need to check that buildings had up-to-date certificates—a quick and simple task. But this would not last long. Who checks today that people do not smoke in buildings? Enforcement is done by the public.

Sustainability and government

It is clear to every observer that our government, of whatever hue, faces significant and conflicting challenges. Every government would like to create jobs and reduce government debt; but job creation costs money which raises government debt. Every government would like to raise the level of economic growth—but how sustainable is growth in a world where resources are constrained and the 'environmental commons' are already over-stretched? Every government wishes to encourage renewable energy—but how should local objections to onshore wind turbines be overcome? Every government wishes to accelerate behavioural change towards public transport—but what might be the reaction of voters?

It often seems that our government is reduced to argumentative hyperinactivity—because it cannot find answers which both meet its objective assessment of the situation and overcome its electoral fears.

A root cause of this situation is that sustainability presents a set of very long-term questions which our short-term political system cannot address. It is widely accepted that governments, which are elected for five years, typically have a horizon of much less under the spotlight of our media—as the media focuses more on the political fight, than the economic and philosophical arguments which underlie it.

This reflects a serious problem with our democratic process: its different time horizons for political and economic decisions. My suggestion is to seek governments which are encouraged to think long term, so that they face the consequences of their decisions. This could be achieved by adjusting our voting system in general elections from a 'first past the post' system of local constituencies to something more like a proportional representation system which increases the likelihood of permanent coalition government. If this achieved a less regular oscillation

from one party to another in government, then I believe we might see more of the long-term thinking that we need.

Theological reflection: the root problem of business

What is the purpose of business? I am a Christian, and so the big picture for me is about being part of God's work to rebuild his people to live in his restored world under his rule of deep love. Put in less religious language, and keeping it simple enough to communicate with those who share different faiths or none, I might say the purpose of business is to provide the many practical needs and pleasures of our society from the resources of our people and planet, without spoiling either society or planet by disobeying its rules, abusing its people or destroying the planet's capacity for future provision.

If this is the purpose of business, then it is clear there is both a social and an environmental problem. The root of the problem is that business has lost touch with its primary goal in two very simple ways.

First, business has frequently ceased to be the servant of society, and has sought to become its master instead. It has broken many of society's rules, consumed many of its people, and left the planet struggling for life. It has looked after itself and its own, and taken little responsibility for the effects of its work on people or planet. Business needs to recover the humility of the servant, and its sense of purpose, and its proper place in society, abandoning greed and vanity.

Secondly, both society and business have failed almost completely to measure progress towards its goal—and, instead, allowed other measures to displace the original goal and confuse us as to what the purpose of business is. If the primary goal of business is to serve our neighbour in a way that does not damage either our neighbour or our world, then we should undertake the hard task of trying to measure the success of businesses in meeting this objective.

Such a measure is difficult to find. Currently, business is highly attuned to a proxy measure—profit—which actually records financial accumulation rather than responsible service. Yet this proxy has become the overwhelming priority, even the sole driver, of many large businesses. We have all been party to this deception—how often do we hear on the news that the results of 'XYZ plc' are a rise in profits of 6% last year? Why

has the accountant's measure of financial accumulation become the only significant outcome of all the effort by the people in a business? Surely this has something to do with our inability to find a better measure, our laziness in accepting a measure that is (relatively) easily counted and the implicit greed in all of us that allows everything to be reduced to money. Profit is certainly necessary to a sustainable business; but business has erected what is necessary to its survival into its primary objective—and everybody else has let them get away with it.

The church, workers and sustainability

In my twenties, I was a member of an Anglican Evangelical church in London where there was a handful of business folk. If I ever heard anything from the pulpit about work, which was rare, it was always about one of four things:

- searching for my true vocation, which I had evidently yet to find;
- my duty and opportunity to tell colleagues about Jesus;
- my duty to contribute liberally to funding the Church's mission;
- my duty to remain honest in a greedy world, and not to pinch the paperclips.

What my firm did, what I did at work, the heart of the work itself—was never mentioned. The bulk of my life was not relevant, it seemed, to the church or to God. Did I lend money at iniquitous rates of interest without a care for the law on usury? Or did I sell lousy cars by draping beauties on the bonnet to beguile men out of their money? Did I make films which reached huge audiences but conveyed an atheist world view and contributed to the abandonment of the church?

Or did I make wonderful salads which delighted customers, keeping them healthy, while employing the penniless? Or install security systems which kept people safe while also pioneering methods of rapid communication with the police to catch criminals more effectively? Or offer holidays to tired workers which also funded the careful and responsible development of new sunshine destinations?

I thought that God must be interested in these questions—but the church certainly was not. The truth about my pastoring in those days is that London work life was assumed to be one with its nightlife—a den of

iniquity which I had entered in my fallenness, and from which I needed rescue.

At a local level, the church largely ignores both the workers in its congregation and the issues of planetary sustainability. The reason is near to hand: the church has its own problems of sustainability, and this preoccupies it in most places. As a result, it is focused on growing its people to be good church members in their evenings and weekends to sustain the church—by welcoming, giving, leading groups, maintaining its buildings; instead of growing us as workers in God's world—whether electricians, students, project managers or pensioners—to play our part in God's new kingdom, including the local church community.

So, if the vocation of church is to reflect the voice and values of our creator God, then we must wonder whether its vocation has been overwhelmed by its preoccupation; not unlike businesses, perhaps.

What is our work about in God's eyes? It was suggested earlier that the goal of business is to serve our neighbour's needs in a way that damages neither our neighbour nor our world. If this is right, the role of the worker is to serve that business in accordance with God's vision for our world, using the skills we have been given, with enthusiasm and dedication and, yes, love. The challenge is to remember always that the work is for God, primarily; only secondarily is it for the firm, or ourselves.

Our challenge as Christian business folk is therefore to hold to our values of service and honesty in a world that sometimes forgets the primary goal and becomes greedy instead; it is to retain our focus on God's standards of behaviour and integrity in a world where we are tempted to be selfish and compromise; it is to be faithful to Him, in a world where I am tempted to be faithful only to me.

These challenges often become acute when the issue of sustainability arises. What is the primary impact of my business on the environment? How much profit must we sacrifice to become sustainable? Sometimes we may judge that our integrity requires us to challenge our employers; even perhaps to disagree with them. Being a true disciple of the Master certainly requires us to play our part in nudging our business in the direction of kingdom behaviour.

When we are met with a blank response then our task is to become imaginative and persuasive. We might develop a strategy which will illustrate what *good* looks like and how it might work.

And if the blank response becomes a hostile stare? Then we may need to change strategy; perhaps ask for help from friends or colleagues. The time may come when we need to make it clear where we stand—clear that we are more committed to God's way than to either our career with the firm or our income.

This is a high price. We may hope that the church is there to stand by us. Our Master also worked to save the world. And he paid a higher price.

8

Sustainable energy

JULIET DAVENPORT

Energy is fundamental to how the modern world works, but the way it is currently produced in the UK is unsustainable. As Table 8.1 shows, it is the biggest source of greenhouse gas emissions globally.[1] Climate change is an *energy* problem. At this seminal moment for the energy industry and policy, the UK is facing some major choices. Our energy landscape is changing, electricity and gas prices have risen sharply in recent years, and security of supply has become a key issue contributing to economic and political uncertainty. The biggest reform of the energy market since privatisation is underway, and an estimated £200 billion of investment over the next nine years must be found. Meanwhile, international action on climate change has resulted in ambitious national targets to reduce carbon emissions.

The effects of climate change are global, and clearly they will not be solved by one country acting in isolation. This chapter assumes that other countries will take action and adopt similar decarbonisation paths. It examines the ways in which current energy production processes are unsustainable, the changes that are needed to make them more sustainable, and what barriers need to be overcome—whether economic, psychological or technical—for sustainable energy production to become the norm in the UK.

Source of greenhouse gas emissions	%
Energy	74%
Agriculture	13%
Land use	10%
Waste	3%

Table 8.1 Breakdown of world greenhouse gas emissions (2000) by source.[2] *'Energy' includes power stations, industrial processes, transport, fossil fuel processing, and energy-use in buildings.*

In what ways are current production processes unsustainable?

If we want to make a difference to climate change, we have to address these points. For many generations, the majority of our energy has come from large, centralised, fossil-fuelled power stations. This is not just bad for climate change but also for our energy security: fuel is increasingly imported. In Britain today, 95% of our energy comes from fossil fuels[3]—and almost all of it is centralised and produced by very large operators—the 'Big Six'.[4] Almost two-thirds of our final energy needs are met by imports from abroad.[5]

The global economy, and therefore our energy market, is built on the basis of fossil fuels being cheap and plentiful, with little regard for their environmental cost. In the UK, for example, our energy market was designed in the early 1990s, at a time when North Sea oil and gas supplies were booming. As these resources dwindle, more sustainable alternatives now need to be found. With more than one third of our current generation capacity set for retirement over the next two decades, the UK energy of the future needs to be drastically different from the energy of today. The answer is on our doorstep: renewable energy. With our abundant natural resources, the UK has the potential to lead a renewable energy revolution.

It is clear that the traditional approach to energy is broken and needs fixing. We have a large, monolithic market, so we need more small players—whether generators or suppliers—because of the benefits that they can deliver. We need to move towards a decentralised energy market which can provide the UK with greater energy stability, security and independence. Government policy is currently being reviewed through Electricity Market Reform and the main challenge is to get this right *now* to ensure that the technologies of the future—tidal, wave and geothermal—will supplement wind and solar as part of the UK's fuel mix. This also means moving from a few centralised suppliers to a distributed generation model. Instead of energy being produced far away from where it is needed, we need to start producing and using energy locally.

Not only is it our responsibility—but the UK also risks missing a massive opportunity. The simple fact is that more investment in the energy infrastructure in the UK is needed because there has not been any

for so long. There is a unique opportunity to lead the world in developing renewable technologies. Not only will this help ensure that the economic benefit of any investment is kept in the UK, bringing huge advantages in terms of security of supply, but we will also be able to export that expertise globally and maintain our position in an increasingly competitive market.

Importing energy and energy security

Recent research shows that nearly 60% of our energy used for electricity generation is imported from the world market—illustrated in Figure 8.2.

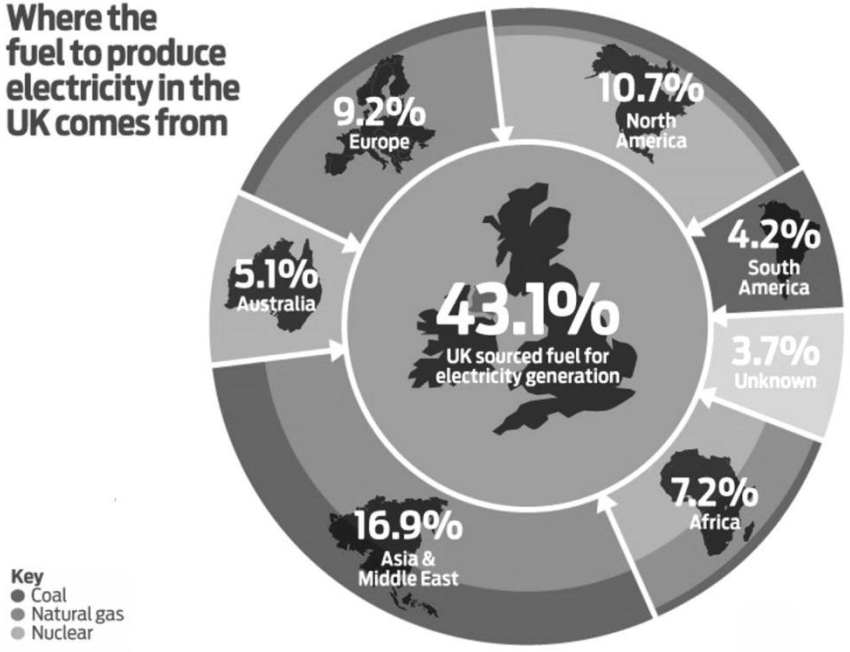


Figure 8.2 Good Energy electricity miles research (March 2012)[6]

What are the implications of importing energy? Achieving energy independence for the UK is not only a question of economics and environment, but of ethics too. The fossil fuels imported by the UK, and many other countries, are often sourced from regimes with deeply dubious humanitarian records, such as Saudi Arabia. Political power in these countries is often funded by fossil fuel payments—and the possible threat

of disruption of the energy supplies that we rely on is a deterrent to those who would challenge their activities. Energy and geopolitics are entwined. For example, Iran has a significant level of influence over the Strait of Hormuz, the main export route through which 20% of the world's oil exports pass. The chase for energy leads to conflict—the challenge is to move away from this, and adopt a more sustainable and humanitarian approach.

Another obvious disadvantage of importing energy is the cost. Provisional data for gas imports to the UK suggest that these costs totalled almost £7 billion in 2010.[7] Billions of pounds are leaving our shores, whereas a shift to renewables—even if the technology is imported—would keep around 75% of this money spent in the UK. This could reach 100% if we develop our own indigenous design and manufacturing industry linked to green energy.

Another aspect of the energy security problem is that gas and electricity wholesale prices are extremely volatile, leaving the UK vulnerable to outside factors and events. For example, in 2011, geo-political tensions in Libya and the Middle East put pressure on oil supply, while the Fukushima nuclear accident in Japan also increased demand for gas, pushing up wholesale prices.

Continuing down a road which focuses on non-renewables leaves the economy exposed to the rising costs of fossil fuels, while also contributing to climate change. We are already seeing the impact at a macroeconomic level: during autumn 2011, rising energy bills were the single biggest factor in pushing up inflation. Producing and using energy locally, where it is needed, is also more efficient. Renewable energy, produced in Britain, has the potential to deliver long-term energy security, as well as sustainability.

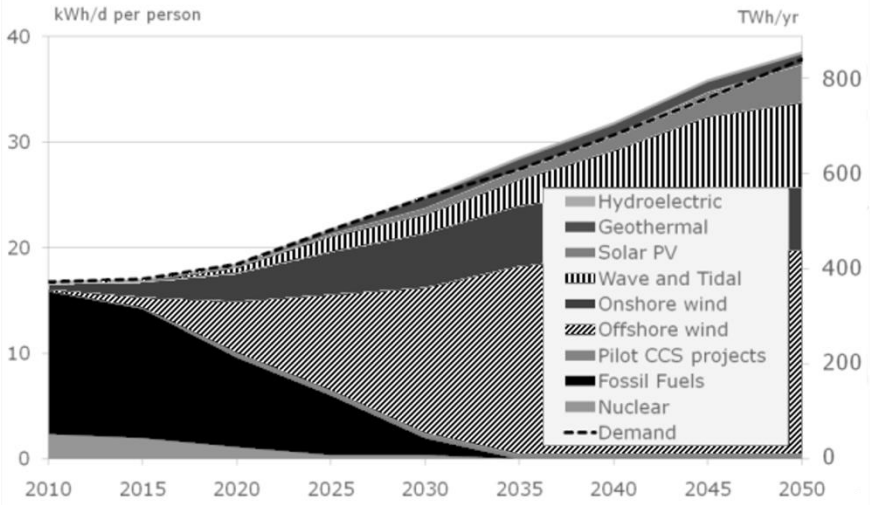
What changes are needed in the business sector to make it more sustainable?

Solving the problem requires a major shift in our approach to energy—'business as usual' is unsustainable. We need to change the energy supply:

- *from brown to green:* from fossil fuel derived, to renewably sourced;
- *from far to near:* from centralised energy dependent on imports to decentralised energy that is produced locally;

- *from few to many:* from being controlled by the 'Big Six' to increased competition, and a community of thousands of independent generators producing electricity.

The UK has pledged to reduce carbon emissions by 34% by 2020.[8] The government has committed to producing 15% of the UK's energy from renewable resources within the same timeframe. The UK is also committed to reducing its greenhouse gas emissions by at least 80% by 2050, relative to 1990 levels. These targets represent a massive challenge, but provide an equally large opportunity. The UK could become 100% renewable by 2050, but it will require significant change to our energy systems. A pathway for reaching this ambitious goal would involve changes to UK energy at every stage of the process—from grid management to investment, and from research and development to clean transport, such as electric vehicles. Figure 8.3 shows a pathway to 100% renewable by 2050, developed by Good Energy, calculated using the Department of Energy & Climate Change's pathway analysis tool.[9]



Energy fuel source	%
Offshore wind	51.2%
Wave & tidal	21.3%
Onshore wind	15.7%
Solar PV	9.6%

Figure 8.3 Percentages of energy fuel source from the Good Energy pathway to 100% renewable[10]

Nuclear power is not part of Good Energy's pathway because the UK could produce 100% of the energy we need from renewable sources. In this pathway, around 70% of the energy is sourced from offshore wind (51.2%) and wave and tidal (21.3%). This makes the most of the abundant resources the UK has available. Instead of a few centralised fossil fuel powered plants, there could be large offshore wind, wave and tidal generation focused in specific locations around the country. This still leaves some 30% of our power which can, and arguably should, be locally generated. At the moment, the UK energy market is a long way from that approach. First and foremost, I argue that a 100% renewable future is possible. Second, I believe that landbased renewables should be locally generated, as far as achievable, so that they are deployed in a geographically diffuse and technologically diverse fashion. That approach is important not only to ensure that we fully capitalise on the renewable resources we have, but also to help manage the intermittency of renewables.

The pathway assumes a greater proportion of energy use from electricity in the future—for example, the electrification of transport. The reliance will therefore be on the electricity market and this demand should be met by green electricity generation. The elements of energy efficiency and consumer behaviour change are also important parts of the pathway to 100% renewable by 2050.

In the UK of 2050, even allowing for transformation in consumer behaviour and smarter technology in our homes and businesses, we are expecting electricity demand to double, as transport and heating are electrified. But we can meet that new demand with renewables. As the windiest country in Europe, we enjoy 40% of the continent's entire resource.[11] Yet, in 2010, it was used to generate only around 2.7% of electricity. In 2011, the UK's share of renewable energy consumption was just 3.3%. Compare this with 48.1% in Sweden, 32.6% in Latvia, and 31.9% in Finland.[12] Out of all the European nations, the UK has the biggest gap to bridge to achieve its ambitious targets. We are in the slow lane with a lot of ground to make up.

The World Wide Fund for Nature (WWF)[13] and the Centre for Alternative Technology[14] have developed similar plans to those developed by Good Energy. The pathway discussed above does not suggest that all the answers have been found or that the problems have been fixed. But it

successfully demonstrates that, with the right policies and commitment, it is possible to change energy in the UK. If 100% renewable by 2050 is possible, what is stopping us from doing it?

What blockages need to be overcome for sustainable production to become the norm in the UK business sector?

Change is required at every stage of the energy process—from production to consumption. There are economic, psychological and technical barriers to overcome. We must not fall into the trap of searching for a 'silver bullet' that will solve all our energy problems. It is not an 'either/or' scenario. We need to recognise the failings of the current system—which is dominated by large, centralised organisations—and explore the opportunities and advantages of a more diverse strategy. The future energy mix is not just about using any one technology or approach, but using a range of different resources to harness the huge renewable energy potential of the UK.

Wave and tidal—stunted growth, long term deployment: Wave and tidal generation are still new technologies in the UK, but both have vast potential due to our island location. With over 11,000 miles of coastline, we have abundant renewable resources waiting to be tapped into. Tidal energy is extremely reliable and predictable, and waves contain massive amounts of energy. The Carbon Trust's report, *Accelerating Marine Energy,* concluded that full exploitation of the UK resource has the potential to generate about 15%–20% of the UK's electricity and that, in the future, marine energy could provide a fifth of the UK's electricity needs.[15]

However, growth has been impeded because the risks are too high, the certainty of recouping any investment is too low, and there are too many questions left unanswered for investors to manage the associated risk. Government needs to play a role in this. Lack of investment and connection issues have resulted in an emerging technology becoming a stunted one. Fixing it is either a matter either of government underwriting the research and development (R&D) risks, or the incentives being sufficiently large to attract the private sector.

Clearly there is an opportunity to become a world leader in wave and tidal technologies, but the investment in R&D required must be undertaken here in the UK. We cannot rely on other countries to develop

the technology—as was the case previously for other technologies, such as solar in China and wind in Denmark. Development of prototypes into commercially viable arrays is already underway. For example, in autumn 2011, the Scottish government unveiled an £18 million fund to support the development of the country's first commercial wave and tidal power arrays. In early 2012, the Department of Energy & Climate Change (DECC) announced the south west as the UK's first marine energy park. Under the Renewables Obligation, the government is proposing that it will more than double the amount of financial support to wave and tidal stream technologies. This kind of investment should make such technologies more viable methods of generating renewable power, though even higher support levels would obviously provide a better guarantee of securing interest.

Planning permission: A key barrier to the development of renewable energy—in particular, onshore wind in the UK—is planning permission. As of December 2010, there were 316 operational wind farms in the UK, and 251 were awaiting planning permission.[16] Local approval rates in the UK fell by 11% to 42% in 2010.

Greater involvement of communities and engagement of the wider public in the planning process are a key part of overcoming some of the barriers. Prospective changes in planning will require the industry to engage in more local consultation. It is important for developers to work with local communities as much as possible, to try to make new sites work for everyone. Overall, developers need to be more innovative in what they are doing, as witnessed by the falling permission rates.

Good Energy's experience is that thorough community engagement and quality environmental assessments should be at the core of every development. The redevelopment of the Good Energy wind farm in Delabole involved two consultations during the project. This allowed the proposed plans to be introduced to the community and their comments to be considered before coming back with the plans that would be submitted for planning approval.

Developers must ensure that they are doing the simple things, better. A responsible approach to development has to be hardwired into the way that new sites are proposed. Renewable energy projects should benefit the communities that host them and those that play a role in delivering the

projects that benefit us all should be recognised for doing so. Good Energy is publicly committed to a responsible approach through its Renewables Development Charter.[17]

For example, in late 2012, Good Energy launched the UK's first local electricity tariff linked to a wind farm at the site. The Delabole Local tariff provided residents within a two kilometre radius of the site substation with a 20% discount on Good Energy's standard electricity prices.

Policy drivers and electricity market reform: In the UK, renewables exist in spite of the current market arrangements, not because of them. Even the name of the main mechanism to encourage investment in renewables—the Renewables Obligation—makes it clear that the government is having to force the major energy providers to invest.

The Feed-in Tariff (FIT) is another mechanism, introduced by the government in April 2010 to encourage more small-scale renewable energy generation in the UK, by enabling them to sell back excess generation to the National Grid at a premium rate. FIT has been a positive policy: as of March 2013, 1792 MW of installed capacity had been registered under the scheme.[18] However, the credibility of FIT has been seriously damaged by successive government reviews of the scheme which have created uncertainty for investors, consumers and the solar industry.

The way the energy market is structured is currently undergoing much needed reform, offering a once-in-a-generation opportunity—to deliver a new market that puts as much an emphasis on investing in renewable energy infrastructure, as it does on price competition. At the same time, reform in the way we encourage investment has to be matched by reform of the retail market. This will encourage new, more innovative suppliers who are able to deliver innovative offerings, thus taking advantage of a newer, smarter energy market, and helping consumers manage their energy usage better and reduce emissions.

Cost: However, the cost of the low carbon transition risks becoming a barrier to progress. With significant investment in the energy infrastructure needed at a time of economic austerity, the question of where the money will come from becomes increasing pertinent and political. If we had genuine transparency on what has been spent on energy historically—which we do not—it would show that subsidies for renewable are a drop in the ocean compared with what fossil fuel and

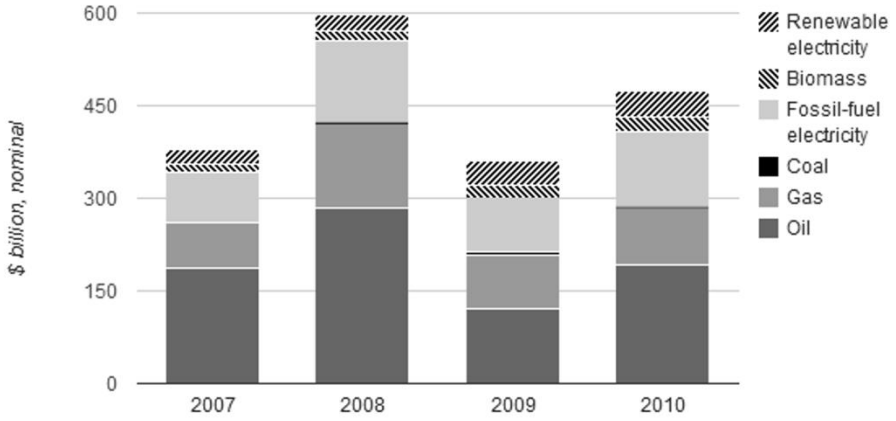


Figure 8.4 International Energy Agency data on global subsidies for fossil fuels and renewables[19]

nuclear energy have benefited from. In 2011, the International Energy Agency (IEA) reported that renewables subsidies were $66 billion compared with subsidies for fossil fuels of $409 billion as shown in Figure 8.4. This data cogently challenges the popular opinion that fossil fuels do not receive any subsidy.[20] The support given to oil, gas and rarely captures any attention, whereas each pound of renewable power subsidies is subject to highly critical political and media scrutiny.

There are no centralised subsidy mechanisms for fossil fuels such as the Renewables Obligation or Feed-in Tariff, but they do benefit from *de facto* subsidies like tax relief and allowances. An example of this is the support for oil exploration off the Shetland Islands in the 2012 Budget. Most fossil fuel plants were built when the UK energy market was nationalised. This is the first time that attempts are being made to build new generation capacity in a liberalised market place orientated around vertically integrated players. The prime motivation is the lowest possible retail price, ahead of investment in new energy plants. In the current economic climate, it is more crucial than ever that consumers and politicians be convinced not only that a clean, green future is viable for the UK, but that green growth is a real opportunity that must not be missed.

Investing in energy efficiency and sustainable practices makes sense and, while there is a cost for doing this now, the cost of inaction is far

greater—the longer it is delayed the more expensive it gets. It is important to convince people that the cost now is worthwhile. Transparency about what the numbers are and why, can help win the argument that tackling climate change is the true pro-growth strategy, while ignoring it will ultimately undermine economic growth. The report *Renewable Energy: Made in Britain* by the Renewable Energy Association found that in 2010-11, the UK renewables industry was worth £12.5 billion and supported 110,000 jobs, whereas 400,000 jobs are required to meet the 2020 renewables targets.[21]

An independent report, published by the Committee on Climate Change (CCC), found that bills for gas and electricity rose by £455 between 2004 and 2010, and around 64% of this rise was due to the soaring cost of gas on international markets.[22] Green measures have added £75, or 16%. The Department of Energy & Climate Change (DECC) published an estimated impact of energy and climate change policies on average household energy bills in year 2020.[23] This suggested that bills in the future will be reduced by 2020 if we invest more now in renewables. The CCC's predicted costs show the falling costs of renewables in the UK.[24]

Analysis by Professor David Mackay using DECC's pathways tool indicated that the transition to a low carbon economy in the UK would be no more expensive than continuing to rely on fossil fuels.[25] Furthermore, the cost of the 'do nothing' option does not factor in the damage to the economy created by climate change, which according to the *Stern Review* 'is the equivalent of up to £6,500 per person per year on average, on top of the cost of the energy system.'[26]

Demand side management

Energy supply must meet demand at all times. Because renewable electricity comes from nature's abundant resources—wind, water and the sun—its generation is not always predictable. The current systems require massive improvements in how to forecast, store and manage renewable power, and how to back it up. To secure this, a highly dynamic and interconnected European electricity grid is essential. It is technologically feasible, but change is necessary to realise that possibility.

Our energy market in the UK is an unintelligent market. Despite all the advances in smart technology over the last 20 years, it is massively underused when it comes to giving people more control over their energy. For example, compare the capabilities of smart mobile phones with those of the average household energy meter. The mechanisms around energy in the home are not intelligent and do not take advantage of the new technology available; this is a huge missed opportunity. As the market stands, there are few options for the consumer to take control of their energy. Changing this is crucial to delivering a sustainability revolution, because when people know where their energy comes from, they value it more and use it less.

There have been some successful policies that could help change this. Smart meters—high-tech electricity and gas meters that measure usage, and relay that information back to the energy supplier—could provide consumers with both real-time data on their energy use and more accurate bills. If implemented properly, smart meters will be an important tool for transforming the way energy is supplied and used.

Smart meters are high on the agenda at the moment, but less well known is the effect that the Feed-in Tariff has had on people's energy use. For example, Good Energy now supports over 52,000 FIT generators. The real value of the scheme lies in its impact on people's understanding of energy, clearly demonstrating the importance of an energy market which puts households, businesses and communities in charge of the energy they use.

Behavioural change—our relationship with energy

Our society needs to transform not only the way energy is produced but also the way it is consumed. Modern lifestyles have evolved around having abundant amounts of cheap energy. It is taken for granted that at the flick of a switch, the lights come on. For so long, governments have said, 'we cannot let the lights go out'. But by *not* letting them go out, society has been conditioned to assume that it can use more and more energy without ever thinking about where it comes from, and if it might ever end up in short supply.

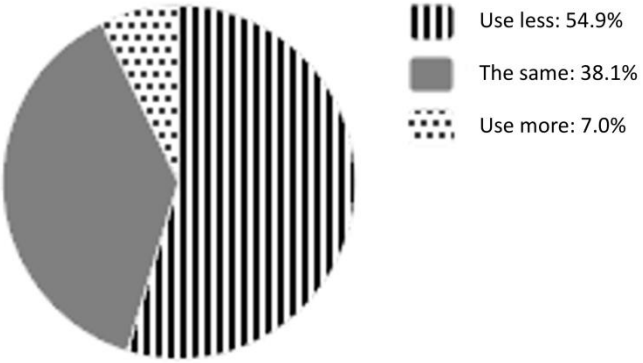


Figure 8.5 Have you changed your energy usage to match your consumption?

The benefits of energy are tangible—but how it is generated is invisible to most people; the connection to where energy comes from has been lost. It is important to re-educate people about the provenance of their energy. Microgeneration can give people a better understanding of where and how their energy is produced. For example, in July 2011, Good Energy carried out a survey of its Feed-in Tariff customers and prospective generators.[27] The results showed that installing generation is not the end of the journey to energy-efficiency, but is often just the start. Two thirds of Good Energy microgenerators said that they have changed the way they use energy in line with its generation—for example, by running appliances like dishwashers and washing machines one after the other rather than simultaneously, or heating hot water during the day when they are generating their own power. There is clear evidence that installing your own generation can drive not only greater energy efficiency but also behavioural change (see Figure 8.5).

Of the generators who claimed to use less energy, over a third said their usage had reduced by over 20%, with 5% claiming a 50% reduction—as shown in Figure 8.6. Nearly 55% claimed to have reduced their energy consumption since installing their renewable electricity system, with nearly one quarter cutting their consumption by more than 20%. Some 60% reported taking additional energy efficiency measures. These include increasing the amount of loft insulation, replacing household appliances with more energy efficient alternatives, and installing double glazing.

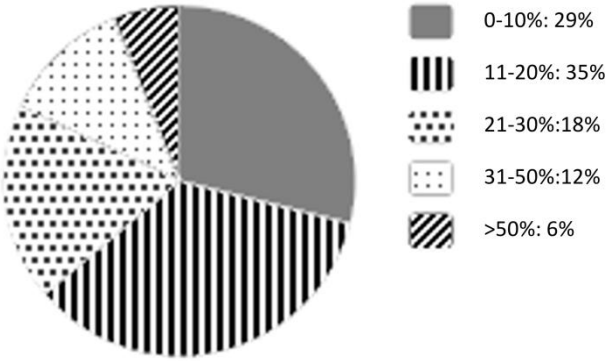


Figure 8.6 If you have reduced your usage, then by how much?

As well as relating consumption to production, microgeneration offers consumers the ability to save money on their electricity bill and protect themselves from rising energy prices. In this way, energy security and sustainability can be interlinked at a personal level—potentially, a powerful way to convince people that a renewable future is possible.

Yet there is a large gap between perception and what is actually happening on the ground. People remain sceptical that it is actually possible to run the country on renewable energy. But all too often, scepticism about renewables is misplaced, due to the misguided assumption that certain problems exist for which there are no solutions. For example, the issue of intermittency is frequently cited as a reason why we should not invest in wind, when in fact the government's own advisers, the Committee on Climate Change, have concluded that the issue is manageable and that 'the challenges presented by intermittency should not be overstated'.[28] Rather than examining output from specific plants, generation ought to be considered at a system level. Security of supply, in fact, can be maintained by managing output across geographically dispersed resources, taking into account seasonal weather patterns, and a using diverse portfolio of renewable sources.

Other options exist as well. These include greater interconnection to European and Scandinavian systems—this offers flexibility. A transnational grid complements decentralised energy because interconnection will introduce a more fluent marketplace, giving local generators the ability to sell any surplus power more easily. A

transnational grid and decentralised energy are not mutually exclusive. A further option which will offer a significant opportunity is demand side response—particularly around smart technologies and electric vehicles. And the National Grid is already able to deal with intermittency in demand—for example, when people switch on their kettles during advertising breaks in popular TV programmes.

Building wide public support for renewables is essential if the UK is to achieve a sustainable energy future. Interestingly, in November 2011, a YouGov poll of 1,696 adults in the UK, said that 56% want to see more wind farms and 74% are happy with increasing the use of solar power.[29] This compares with just 10% in favour of more oil power stations and 16% in favour of more coal. Nevertheless, consumer engagement in renewables remains low and this creates a vicious cycle. Decentralised generation—generating power in homes, businesses and communities—is helping to break this cycle, with schemes like the Feed-in Tariff making renewable electricity accessible to a wider market.

Is it possible? The Isle of Eigg as micro-example

A pathway to a 100% renewable future may sound like an idealistic vision, but an inspiring example of this vision being realised is the Isle of Eigg.[30] The location and natural resources of this small Hebridean island make it an ideal place to harness the elements and generate renewable power. Members of the community decided on an ambitious project to develop their own grid, powered by renewables. It is a fantastic example of how multiple renewable energy sources can be integrated into a grid system to supply a small community.

Before the scheme, most buildings used oil and coal for heating and diesel for generators—all brought in by ferry from the mainland. The new grid is supplied by three hydro generators, four wind turbines and solar photovoltaic panels. When they are generating a surplus, power is conserved in batteries or used to heat communal buildings, and there are back-up diesel generators for times when the grid needs a boost (though these are rarely fired up). Renewable generation meets up to 95% of the island's energy requirement because people are aware of what they use. A 5kW maximum use limit has been set for each house and everybody has an energy monitor to track their usage. A 'traffic light' system lets the

community know by email when renewable sources are low so they can be careful about what is used at that time and stay within the limit: when the light is red, it is a cue not to switch on the dishwasher for now. While the capability of different areas in the country will obviously vary a great deal, Eigg shows what is possible. On a larger scale, if more communities followed Eigg's approach, electricity demand would be reduced and power companies would not need to generate as much, using fossil fuels in order to close the energy gap. This would also spread the load rather than creating spikes between high and low demand. Eigg points to a much more intelligent approach to energy use.

Energy does not need to be complex and mysterious, delivered by large, remote corporations. Experience shows that it can be made by ordinary people, businesses and communities, throughout the UK. There is a space in this market for everybody. The six big companies no longer need to be left in charge of the UK's energy supply. Decentralised energy is about generating at a range of sizes—from the smallest householder, through to the larger community project, to a bigger regional project and then to the largest offshore wind farm. Community-owned energy generation is a growing sector in the UK. While it currently supplies only a small percentage of the country's energy requirements, it represents the start of a revolution in decentralised energy and the start of people engaging with and taking control of where their energy comes from.

Why a renewable future is so important

It is imperative that something as fundamental to our way of life as energy is sustainable. The UK faces some major choices about which path to take towards the future of its energy. Renewable energy can provide not only sustainability, but security too. Politicians and the media play a part in this, but ultimately it is about society as a whole making a decision that a renewable future is the better path. It is now a question of people's will and belief, rather than simply of technological knowhow. I have tried to show how a 100% renewable UK by 2050 is indeed possible. When humanity decided to land on the moon, it was not yet known how to get there, but technological ingenuity, determination and belief made it possible. The journey to a 100% renewable UK and a secure and sustainable energy future is no different.

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9

Sustainable production—insights from Islam

HARFIYAH HALEEM

Sustainable production is a concept hard to define or imagine in today's world of planned obsolescence, consumerism and pursuit of endless 'growth'. One definition is 'the use of goods and services that respond to basic needs and bring a better quality of life, while minimising the use of natural resources, toxic materials and emissions of waste and pollutants over the life cycle, so as not to jeopardise the needs of future generations.'[1] Another explains it like this: 'the emphasis of sustainable production is on the supply side of the equation, focusing on improving environmental performance in key economic sectors, such as agriculture, energy, industry, tourism and transport'.[2] A third definition starts by focusing on its opposite, which is easier: 'a green economy that internalises negative externalities such as environmental pollution, removes subsidies to inefficient modes of production, promotes clean energy sources, and enables sustainable livelihoods, among other things.'[3]

It is agreed by many environmentalists that the driving force of a sustainable economy should not, as it is now, be 'growth' as defined by the GNP of a country—for this measures only the flow of money.[4] Rather, a sustainable measure of success should include real social and environmental goals, which take into account the fact that capitalist market economics currently drives people and planet to self-destruction. Herman Daly therefore suggests replacing the goal of 'growth' with that of a 'steady state economy'[5]—or, in Islamic terms, 'balance' (*mizan*).[6] In the Qur'an *mizan* generally means the balance of justice, but can also mean the balance of God's creation which must not be exceeded by humans.

> It is the Lord of Mercy who taught the Qur'an. He created man and taught him to communicate. The sun and the moon follow their calculated courses; the plants and the trees submit to His designs; He has raised up the sky. He has set the balance so that you may not exceed in the balance: weigh with justice and do not fall short in the balance. He set down the

> Earth for His creatures, with its fruits, its palm trees with sheathed clusters, its husked grain, its fragrant plants (55:1–12).[7]

So here in the Qur'an we find instructions to human beings to act with justice towards their fellow human beings and towards all of God's creation, and to maintain the perfect balance created by God which enables their own survival. If they do exceed the balance, they are frequently warned that God can replace them with different people. Numerous examples are given in the Qur'an where God has done just this, wiping out whole communities who disobeyed Him, sometimes by what might be described as 'climate events'—howling winds, excessive rains, dry winds, storms of pebbles, as well as earthquakes.

Building 'environmental and social goals' (or 'the balance of justice') into the fabric of enterprise has been a principle in Islam from the beginning—numerous books of Islamic law bear witness to detailed attempts to ensure justice in business and enterprise.[8] In the twentieth century, however, even Saudi Arabia's traditional Hanbali *Sharī'a* law was adversely influenced by European laws: 'A major example of the influence of French law in the area of private law is the Saudi Corporation Law enacted in (1385H/1965), which was transmitted to the Saudi legal system through the Egyptian code which was directly patterned after the French company law'.[9] Nevertheless, *Sharī'a* law is sometimes still invoked in European courts when business disputes involving Muslims arise. But, as Fazlun Khalid's chapter shows, there is still a great of work for Islamic scholars and practitioners to do in this area.

The urgency of the problem is clear. The global population has now exceeded seven billion, with the balance of wealth firmly in the most populated countries. China and India, with their 'cheap labour' attracting companies to invest there, are in turn outstripping even the Americans in polluting the environment. In this situation, the world is desperately looking for viable alternatives to the unjust and destructive economic models espoused by capitalist expansion. There is an urgent need for successful models to follow, to bring the business world back to its senses.

Sustainable business: examples of best practice

I begin by offering some examples of the most promising sustainable business practices available:

Lifecycle Product Management: A good place to find inspirational examples is the *Harvard Business Review*. It espouses positive thinking, and tries to keep sustainability in its readers' minds without forcing it on them. Lifecycle Product Management, for example, is one useful concept which managers are beginning to take on board. This involves the sort of much needed, joined-up thinking that takes into account not only the profit to be made from sales of a product, but the environmental and social economics of sourcing the materials, the ways they can be retrieved from used and discarded goods by recycling or re-use, and so on. The EU Integrated Product Policy urges business to adopt this policy:

> All products cause environmental degradation in some way, whether from their manufacturing, use or disposal. Integrated Product Policy (IPP) seeks to minimise these by looking at all phases of a product's lifecycle and taking action where it is most effective.
>
> The lifecycle of a product is often long and complicated. It covers all the areas from the extraction of natural resources, through their design, manufacture, assembly, marketing, distribution, sale and use to their eventual disposal as waste. At the same time it also involves many different actors such as designers, industry, marketing people, retailers and consumers. IPP attempts to stimulate each part of these individual phases to improve their environmental performance.
>
> With so many different products and actors there cannot be one simple policy measure for everything. Instead there is a whole variety of tools—both voluntary and mandatory—that can be used to achieve this objective. These include measures such as economic instruments, substance bans, voluntary agreements, environmental labelling and product design guidelines.[10]

Wider notions of sustainability and social justice should also be factored into this concept, in order to offer the consumer an eco-friendly and ethical product, to enhance the company's corporate social responsibility (CSR) rating and, increasingly, to comply with civil and environmental laws.

Islamic finance: At the base of all production is finance. Business depends on moving large sums of money into productive use. Finance is not just money, as money is only an indicator of support and trust, as evidenced by numerous financial collapses and crises due to investors losing confidence and withdrawing money from a country. What examples

can be adduced using Muslim principles of just and sustainable financing?

Islamic Banking: Another example of best practice comes from discussions about Islamic financial principles going on in some quarters around the world, with economists and members of the mainstream banking industry taking an increasing interest. The Islamic Bank of Britain is the most overt of those offering *Sharī'a* Compliant Products, and has Lloyds TSB as its clearing bank. HSBC has its Amana fund, and the National Bank of Kuwait, among others, also offers Islamic forms of house purchase. Such efforts are hindered, however, by the prevalence (hopefully not for long) of the mainstream banks who lend based on flexible interest rates, meaning that Islamic banks have to account for their own borrowing in the prices they charge. For example, the various models of 'Islamic' house purchase so far all seem to include a 'rental' element instead of interest payments.[11] The Faisal Islamic Banks were an early attempt to establish successful banking on Islamic lines. Islamic banking now has its own global magazine and round of conferences and accounts for billions if not trillions of dollars in global investments.[12] Muslim bankers work within the system and adhere to multiple different regulatory systems besides the Islamic standards guided by their *Sharī'a* advisers. They respond to criticism and try to learn from their mistakes. One day, God willing, all (or at least most) bankers will be modest, trustworthy, charitable and '*Sharī'a* compliant' and, depending on how closely they have stuck to the spirit of the *Sharī'a*, the world economy will benefit from this in profound and far-reaching ways.

Finance for the poor: Grameen Banks were set up by Muhammad Yunus, a Muslim, in Bangladesh, to help poor women get onto their feet by starting enterprises. One of the most exciting developments in recent years has been the way in which the Grameen Banks have recreated the system of usury-free mints and exchanges set up in England by the Usury Law of 1571 and have developed the techniques of lending out money to the poor at interest but not at usury. They are ridiculously successful. The Loan Recovery Rates of nearly all Grameen Banks are in the high nineties and average 98%. This compares with the 70% and below for many conventional banks—before taking account of the billions upon billions of write-offs and write-downs generated by the Credit Crunch.

Grameen Loans meet the fairness criteria of the Doctrine of Usury by being subject to renegotiation by the borrower in the light of his changed situation. They also follow the ABC Analysis approach of the 1571 Law of Usury by specifying a repayment ceiling above which they do not go.

The Grameen Banks provide microcredit programmes at interest rates that fit into one of two zones: the Green Zone, which equals the cost of funds at the market rate plus up to 10%, and the Yellow Zone, which equals the cost of funds at the market rate. Other microcredit suppliers are now moving into the Red Zone above these rates of interest with profit-maximisation as their goal.

But the Grameen Banks avoid this territory. They are not in business to earn large profits for shareholders and other investors but have very different objectives. Institutionalising the traditional Moneylender System is not one of them. In Bangladesh, for instance, the Grameen Bank has very successful Home Loans for the Poor and Microcredit Lending to beggars.[13]

According to the Grameen web site: 'Today Grameen Bank is owned by the rural poor whom it serves. Borrowers of the Bank own 90% of its shares, while the remaining 10% is owned by the government.'[14]

Negative things have been said and written about the Grameen Bank charging interest, even excessive interest. Umer Chapra notes that a 'study by Dr Qazi Kholiquzzaman Ahmed, President of the Bangladesh Economic Association, has revealed that the effective rate of interest charged by microfinance institutions, including the Grameen Bank, turns out to be as high as 30 to 45%.'[15]

In any event, Grameen still seems to be going from strength to strength and, in 2008, during the throes of the economic crisis, it established several branches in the USA. The Grameen Bank, at the very least, is the result of an Islamic concern for the poor which is almost absent from the concerns of Western banking circles, in which poverty is akin to a crime, and is penalised by higher interest rates that make people even poorer.

Chapra mentions that the funds available for microcredit loans are inadequate and suggests linking up with charitable funds such as *zakāt* and *qard hasan*, as well as Islamic forms of commercial finance.[16] Some new Muslim organisations have now sprung up offering *qard hasan*—interest-free or very low-interest loans at less than 1%.[17] Akhuwat

(Pakistan) asserts that it is a 'philanthropic venture … we are not concerned principally with the market share or the competition from similar microfinance organisations. We are concerned with our target of poverty-alleviation.'[18] Its board and many of its organisers are volunteers. The Islamic Microfinance Network, while more concerned with developing and promoting Islamic microfinance generally, also lists 'alleviating poverty' as its aim, forming an 'apex global network against poverty'.[19]

Western Aid agencies like Oxfam and Islamic Relief are also using charitable microfinance, sometimes in the form of livestock,[20] to help poor people get back on to their feet.[21] This is the main aim of *zakāt*, in line with a *hadith* about a beggar who came to the Prophet Muhammad asking for help. Muhammad asked him if he had any possessions, and when he brought a bowl/pot and a piece of cloth, Muhammad auctioned them off and gave the proceeds to the man, telling him to buy an axe, chop and sell wood, and come back to him later. In this way he became self-sufficient and the Prophet asked him, 'Is this not better than having to bear the stain of begging on the Day of Judgement?'[22]

Finally, it is also worth noting that Social Enterprise law has been established recently, in the UK at least, to enable a new culture of socially-centred, not-for-profit enterprise to develop, and this is beginning to use charitable loans at 0% interest. A new principle in secular finance, this has long been a staple of Islamic finance, under the Qur'anic term *qard hasan* (beautiful loan). No interest is allowed on any loan in Islam, and if a person cannot pay the loan back, extra time must be allowed until the debtor is in a better position, or the loan is written off as a charitable gift, *sadaqah* (Qur'an 2:280).

Sustainable Food Production: Sustainable agriculture has been practised in Muslim riverine territories like Egypt and Iraq since well before the time of the Prophet (seventh century CE) and in coastal territories like Morocco, often using very little in the way of water, with rains only during the winter months. Many agricultural manuals were written by Muslim scholars at the height of the Islamic civilisation, and this knowledge was used to produce all kinds of fruits and vegetables, cereals and other crops.[23] With the conquests and decline of Muslim civilisation, this knowledge passed north to Europe, and was eventually

superseded by the growth of intensive factory farming in the twentieth century, especially in the USA. In Egypt and Morocco, for example, traditional methods are still being used to produce crops, which include clover for animal fodder. Crop rotation keeps the soil fertile. Waste products are used on the farms—animal manure is spread on the land, corn-cobs are fed to poultry and, when dry, used as fuel for cooking. Palm leaves are dried on roofs and used for fuel. Export crops, like potatoes and green beans, oranges and olives, which we find in our supermarkets in Europe, are grown using more intensive methods.

'Green' government policies: As for inspirational governments, in 2009–10 alone, China invested 37.8% of its economic stimulus package in solar and other 'green new deal' technologies and so the price of solar panels is coming down fast.[24] The UK's Feed-in Tariffs were severely reduced in 2012 on the basis that the price of solar panels has come down by 50%. Abu Dhabi has started work on Al-Masdar Eco City, the world's first carbon-neutral city, designed by no less than Sir Norman Foster![25] Renewable solar energy will form a major part of this development, and similar proposals making use of the Muslim world's most plentiful source of energy after oil.[26] Experiments using solar energy to power the desalinisation of water have been going on in the Middle East for several decades. Wind farms are also appearing in Tunisia, Turkey and other windy places.

Nurturing a culture of sustainable leadership

If these are some of the emerging best practices available today for sustainable production, how can we encourage them to be taken up? How might we nurture a culture of sustainability among business leaders? Here are some examples.

Sir Stuart Etherington, chief executive of the National Council for Voluntary Organisations (NCVO), has recently been calling on bankers to give more to charity,[27] and some bankers have been enticed out of their offices to dig and decorate for charity.[28] The HSBC Bank is working closely with the World Wide Fund for Nature (WWF) and has its own dedicated WWF adviser. WWF is also working with the World Bank to educate and influence its investment policies and recently the World Bank held an online seminar and consultation.[29] Such collaborations with

environmental and social charities can, like the ghosts in Dickens' *A Christmas Carol* or the children in *Mary Poppins,* help to humanise the people running the financial system, opening their eyes to the plight of other humans caused by the unjust systems they operate. These efforts need to be multiplied many times over to have a sufficient effect, but at least they are a start.

Businessmen can also be made aware of the effects of their misdeeds, carelessness and possibly ignorance on their business reputations and commercial good will. This can be done with great energy and success using public awareness campaigns, boycotts and so on.[30] An annual event, Climate Week, works with companies and all sorts of other organisations to publicise and educate people about climate change. [31]

According to the Qur'an, God knew when he created Adam that he would spread corruption and spill blood (2:30). God gave the 'trust' (*amāna*) to humans, although they 'have always been inept and foolish' (33:72). And they have always made a mess of things: 'Corruption has flourished on land and sea as a result of people's actions and He will make them taste the consequences of some of their own actions so that they may turn back' (30:41).

It is only by 'tasting' the consequences of their actions that people can be made aware that they need to change them, hopefully before it is too late. God is patient with us so long as we rely on Him and follow His guidance, try to learn from our mistakes and do better. The Qur'an tells us, 'Do not despair of God's mercy' (12:87).

Sustainability and investment

Nurturing a culture of sustainability among individual leaders, however, is not enough itself. Sustainability also needs to be integrated into investment practices. Businesses depend on investors. Investors are always in search of profit, but not just profit. Some investors want their money to do good in the world as well as make profits, or at least not to do harm. The growing demands for ethical investments are fuelled by horror at what some firms are doing to make profits, and investors are increasingly aware of their responsibility to ensure that their money does not contribute to the destruction of other people, animals or the planet. The growing movements such as Fair Pensions, Islamic finance and Green

Investments are shaking up the market in spite of the difficulties of negotiating a path through all the conventional packages. Islamic and ethical investments are beginning to merge and, perhaps one day, it will be possible to invest one's pension fund in an Islamic, ethical and green portfolio that actually makes a profit without having to compromise any of these values.[32] This movement, as well as consumer demand, could put pressure on businesses to be more ethical and sustainable in their business practices.

Sustainability and charity

Some exceedingly rich people are setting trends in charitable giving and environmental protection. Quite apart from keeping the government's hands off one's money, charitable giving offers a way to give something back to the consumers and workers in return for the wealth they have brought the person. Giving such as this enhances the reputation and PR of the firm and 'purifies' the individual's wealth. This is the root meaning of *zakāt*—the Islamic wealth tax, levied annually on uninvested wealth above a basic minimum. The *zakāt* provides a mechanism to provide for the poorer members of society and the needs of the state in the most basic way, while the Qur'an further urges everyone to 'Give what you can spare' (2:219) 'from what He has provided' to help those in need, and proclaims: 'Those who spend their wealth in God's cause are like grains of corn that produce seven ears, each bearing a hundred grains. God gives multiple increase to whoever He wishes: He is limitless and all knowing' (2:261).[33] It warns them, 'You who believe, give from what We have provided for you, before the Day comes when there is no bargaining, no friendship, and no intercession' (2:254). Here, it combines incentives with warnings:

> Those who give, out of their own possessions, by night and by day, in private and in public, will have their reward with their Lord: no fear for them, nor will they grieve. But those who take usury will rise up on the Day of Resurrection like someone tormented by Satan's touch. That is because they say, 'Trade and usury are the same,' but God has allowed trade and forbidden usury. Whoever, on receiving God's warning, stops taking usury may keep his past gains—God will be his judge—but whoever goes back to usury will be an inhabitant of the fire, there to remain. God blights usury, but blesses charitable deeds with multiple increase: He does not love the ungrateful sinner (2:274-6).

This is stern stuff to frighten those who care little about God or His creation. The Prophet's own reported words are more positive and friendly: 'Envy is permitted only in two cases: [that of] a man to whom Allah gives wealth, and who disposes of it rightfully, and a man to whom Allah gives knowledge which he applies and teaches it'.[34]

Charitable giving can also provide a new challenge for those tired of just making money. Some such examples are Bill Gates, Warren Buffet, David de Rothschild, George Soros and Tony Blair. (Of course, everything depends on where the charity funds end up!) These philanthropists follow in a tradition of businesses designed to be ethically and socially responsible from the beginning, like the original Quaker families, Cadbury and Rowntree among others. Many wealthy Muslims also give to charities and set up trusts to promote the causes they deem to be good. Some of these are not deemed so good by others, and several Muslim charities have been under close observation or even attack for the last decade or so at least.[35]

The Contribution of Islam

Recovering our history: There was a time when Islamic ideas and knowledge had long been fertilising European thinking. In 1543, the Latin translation of the Qur'an was first printed in Basel with the support of Martin Luther. As a result he was caricatured wearing a turban, even though his stated aim in his introduction to the book was to refute the Qur'an and protect Christians.[36] There is evidence that the Qur'an influenced Protestantism in the early modern period, and in particular that Jefferson's knowledge of the Qur'an and Islam may well have contributed to the US Constitution.[37]

The Qur'an says that believers are those 'in whose wealth the deprived have a recognised right' (70:24–25), and the Prophet Muhammad urged, 'Pay the worker before his sweat is dry.'[38] Even slaves and prisoners of war were to be treated like members of the family, and fed on the same food.[39] The Qur'an teaches that God created all human beings of various colours (35:27–28) from one soul (4:1), and that the most honoured of them in God's view are those most aware of Him (49:13).

Large sections of *hadith* (collections of the sayings of Muhammad) such as Bukhari's *Sahih* are devoted to business ethics. Business practices,

common in the Islamic world from the ninth century CE and adopted much later by Western commerce, include an early form of banking, the transfer of money using letters and cheques (*saqq*), partnerships and sleeping partnerships.[40]

Muslims, like others, are beginning to set up ethical and green businesses in the West—like organic *halal* farms to supply meat and poultry—and educating each other to demand more ethical products.[41] Muslim manufacturers of cola drinks donate funds to Islamic causes.[42] As noted above, all food grown in Muslim countries used to be ethical and organic, and much of it still may be. It is only since the introduction of Euro-American-inspired mass-production, using chemical sprays and intensive factory farming methods, that terms such as 'ethical' and 'organic' have been needed to distinguish food that has not been treated in this way.

The Work of IFEES: When speaking to Muslim communities in the UK about sustainability and climate change, the Islamic Foundation for Ecology and Environmental Science (IFEES) has found that using guidance and language from the Qur'an and *hadith* is more effective than trying to use the current academic or scientific terms. Muslims come from all over the world, speak hundreds of different languages (especially in London) and, although many are now well educated, some still are not—especially if they have come to the UK as refugees from backgrounds of poverty, war and disruption, floods and disasters. In the US and Canada, the educational and economic level of Muslim migrants is relatively high, but there may still be language problems in places. Overseas, in Muslim countries from Africa to Indonesia, similar language problems exist. Most Muslims are familiar from early childhood with the Arabic language of the Qur'an—and, for many, it is the local *imām* who is the leader and teacher of their community. At a recent presentation about the environment and climate in London to an over-50s group of Muslim ladies from Morocco, Algeria, Afghanistan, Iran, Egypt, Iraq, Somalia, Bangladesh and other countries, I explained some of what the Qur'an says about this subject, using the Arabic text as well as English translation. The women were very enthusiastic, recognising and reciting the verses and adding their own insights.

I have already mentioned using the words 'justice' and 'balance', rather than 'environmental and social goals', to remind Muslims about

environmental and social responsibility. 'The environment', in the Qur'an, is God and His Creation. God is *muḥīṭ*—all surrounding. In the Qur'an, God urges human beings to look around at His creation and see His signs, proofs of His existence, power and creative intelligence. When the Qur'an talks about production, it uses the word *akhraja,* 'to bring out': crops from the earth, babies from their mothers, and the living from the dead. God is the one who produces, sustains, and then repeats his creation. He nourishes crops with rain, provides for the needs of animals and humans, and is able to destroy as well as to nourish. There are several stories in the Qur'an of proud owners of flourishing gardens whose disobedience to God caused Him to destroy them. One of these (68:17–33) shows the owners intent on harvesting their crops without letting any poor person share the harvest. Compare the Biblical laws allowing the poor to glean after the harvesters (Lev. 19:19–20).

Using this kind of language in workshops and seminars, Fazlun Khalid of IFEES was able to convince Muslim fishermen in Misali, Zanzibar—otherwise unimpressed by experts and governments—to abandon the use of explosives in their fishing practices.[43] With help from the project leaders there, IFEES has produced a handbook for *imāms* in English and Swahili. Using this, *imāms* can teach the fishermen to keep the supplies of fish healthy by taking care of the coral reefs that sustain them instead of blowing them to pieces.

In London's largely Muslim borough of Tower Hamlets, and four west London riverside boroughs, IFEES has used the same techniques and language since 2005 to help boroughs, London Sustainability Exchange and Wastewatch to explain the need for recycling, and to impress upon the Muslims, in sermons, talks, women's and children's workshops and women's eco-champions projects, the many pro-environmental teachings of Islam which are otherwise rarely mentioned. Though the results of these campaigns—for example, on recycling rates—are difficult to measure due to other efforts being made at the same time, a MORI report on the first Tower Hamlets campaign recorded the lasting impression made on Muslims by the 2005 campaign. 'Muslim faith channels and sermons are a very good way to communicate messages as many Muslims attend mosques and place great importance on messages from the Imām. Indeed, it was notable in the groups that those who had attended the

sermons could recall the key messages some eight months after attending them.' [44]

At a 2012 focus group on water, some of the eco-champions were still saying that their religion was an environmental one. Overseas, the Foreign and Commonwealth Office (FCO) has helped IFEES to support and contribute to environmental movements in Indonesia and West Africa by holding workshops with *imāms* and official Islamic bodies. IFEES has also raised funds for pupils at Muslim boarding schools in Indonesia to plant trees, in its Schools4Trees campaign.[45]

Eco-Friendly Islamic Practices: It is traditional at Muslim festivals to cook large quantities of food and to share it with many people—family, friends and the poor. In urbanised Western society, it is less easy to give away surplus food to your poorer neighbours, but some Muslims still try to do this rather than waste the food, and they make efforts to pack up the food and take it to the hungry on the streets or in hostels.

In addition to the *zakāt* and *ṣaḍaqah* (non-obligatory giving) and mosque-fund collections at mosques, Muslims, like other communities, have numerous charities collecting donations for overseas causes. The best known of these is Islamic Relief, which works with Oxfam and the other main aid UK aid agencies as part of the Disasters Emergency Committee. Individual Muslims with families abroad normally send remittances of one kind or another to help support their families. (The Pakistan Flood Relief appeal in 2010 at our local mosque collected several thousand pounds, mainly from those on modest incomes.) IFEES has also collected funds and sent food and shelter packages via the Pakistani government.

More mosques are taking an interest in environmental projects and are keen to invest in solar panels, water-saving taps, bike racks and so on, and are making efforts to learn more about what they can do to help. *Khutbahs* (sermons) about God's creation and human responsibilities to respect, appreciate and care for it are becoming more frequent. Many mosques already have Islamic Relief clothes collection bins and some are also getting recycling facilities for other items.

Some Muslim schools run projects on the environment, and Muslim summer camps like the JIMAS conference and Living Islam have included environmental themes in their programmes of talks.[46] Living Islam, for the past three events (2005, 2008, 2011), has commissioned IFEES to run

Scout Eco-workshops for around 800–1,000 scouts as part of a wide programme of activities over two days.[47] *Emel*, the Muslim lifestyle magazine, has run several issues on environmental topics to highlight the issues.

Many Muslims come from countries with extremely low carbon footprints, where everything is scarce, and people have to learn to do without most of what developed countries see as necessities. Fasting, the fourth pillar of Islam, helps Muslims to experience hunger and thirst, and to appreciate the peace and closeness to God that abstinence can bring. Muslims not only do the obligatory month-long Ramadan fast every year but also voluntary fasting on various other days and even regular fasting on Mondays and Thursdays. People educated in this way learn to appreciate food and not to waste it. The Qur'an condemns those who live extravagantly and urges people to 'eat and drink, but do not be wasteful' (7:31). Younger people brought up in the affluent countries sometimes need to be reminded about all this. IFEES's DVD *Clean Medina*, with a rap commentary, shows a group of Muslim children and young people having fun cleaning up one of the messiest Muslim areas of Birmingham, Sparkbrook and Alum Rock—a green *jihad* with brooms instead of weapons!

Wind and Water Power: Windmills were brought to Europe by Muslims, the first one being commissioned from a Persian engineer by the second successor (*khalīfa*) to the Prophet Muhammad, 'Umar ibn al-Khattāb. (Persia was also the home of the wind-tower as a feature of homes—an ancient form of air-conditioning. This technology found its way to Dubai where many of the new buildings, including blocks of flats, are now built with wind-towers.) In fact, the whole 1,000-year Islamic global civilisation (from the eighth to the eighteenth century), which was founded on Islamic usury-free finance and principles of trust, honesty and friendship, was powered by wind, water, animal and human energy.[48] Mills were used to power machinery, not just for grinding corn but for making paper, steel, textiles and many other products. Any industry that depends on wind and water is spread throughout the rural areas, it is clean (mostly), and it provides rural employment so that people do not need to be corralled into city factories and offices, although great cities holding millions of people did exist in the Islamic civilisation, with

bazaars, libraries, hospitals, running water, street lamps and baths. In Europe, mills continued to power industry and, even after coal and steam replaced wind and water, factories continued for centuries to be called mills.

Pottery was always a smoky industry (smoke still hovers over the traditional potteries of Fez in Morocco), as were the early iron works, such as those in rural Coalbrookdale, Shropshire and elsewhere. These and other industries required furnaces powered by charcoal and coal. In the eighteenth century, coke was brought in to replace charcoal and coal as a fuel, so enabling cheaper production of iron and starting the industrial revolution. In the twentieth century, oil and then gas partially replaced coal but these are all fossil fuels which cannot be renewed. Even nuclear fuel is a diminishing resource. All these fuels contribute to pollution of the earth and the atmosphere, affecting human and animal health and well-being. Now that we have the ability to make electricity from solar energy, wind power, waves, tides and others, there is no good reason why industries should not return to being clean and rural, enabling the nineteenth and twentieth-century trend towards urbanisation to be reversed. Perhaps these rural industries may also be more sustainable than the city-based factories.

Restoring craftsmanship: Ibn Khaldun (1332–1406), writing after the expulsion of the Muslims and Jews from Seville in the mid-fourteenth century, pointed out that production in crafts and industries depends on craftsmen and skilled artisans. Those who were expelled from the great Spanish cities took their skills with them to North Africa, and to other parts of southern Europe and the Islamic world. Production can only be sustained when there are trained workers, imaginative and creative leaders, and willing and able investors. Production is no longer sustainable when it stagnates, when producers are made redundant and disperse because of economic, political or military disruptions, and investors prefer more abstract and questionable ways of making money. Recent and past wars have robbed Muslim countries of their treasures, killed and displaced whole populations and destroyed industrial and agricultural infrastructure, as well as leaving lasting pollution. When Muslims conquered lands, they did not kill the goose that laid the golden egg, but allowed people to stay and carry on their livelihoods, thus sustaining themselves and many others besides.

Return to a more sustainable way of life

This chapter has attempted to give an Islamic viewpoint on some of the questions surrounding sustainable production. In the Qur'an, we read: 'The life of this world is nothing but a game and a distraction' (6:32). Yet God was not playing when He created it: 'He created death and life to test you [people] and reveal which of you performs best' (2:255). Muslims believe that it is only by our actions in this world that we are to be judged in the next. This is our one chance. There is no mention of reincarnation. If we do wrong in this world, we can still repent, but after we die it is too late for anything but regret. The destruction we have already wrought and continue to wreak in this world already bears testimony to our collective misdeeds.

Nevertheless, while we are still alive we can learn from our mistakes, take responsibility for mitigating the consequences, and seek a more sustainable way of life—one not based on pursuit of money, profit, growth or debt but on respect for the balance of productivity God created on the earth. Only in this way will the earth continue to support us and all God's creatures who share it with us.

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[7] Qur'an quotations are taken from M. A. Abdel Haleem, *The Qur'an: A New Translation* (Oxford: Oxford University Press, 2004).

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Part 4

Governance for sustainability

10

Governing for sustainability—winning battles but losing the war

PAUL CHAMBERS

In this chapter, we will introduce the broad theme of how we govern for sustainability, consider how well this is being done both in the UK and globally, and then look at some potential ways forward, including how faith communities might engage with the issues. Although the author is a civil servant, this is a personal viewpoint, from the perspective of a practitioner—rather than an official position.

The environmental 'footprint' of humanity is the sum of the impacts of all human activity now and in the past. This can take the form of direct impacts—such as habitat destruction or resource extraction—or more indirect impacts, such as diffuse pollution or the introduction of alien species. For a citizen of the global consumer class, this footprint is the outcome of a very long and complex web of inputs—starting with the global supply chains for the resources and products that we use, the direct impacts of our own activities, and then the impacts of all our waste. Actors from every part of our society are implicated, so any successful transition towards greater sustainability must involve changes of behaviour at every level—personal, household, community, national and global. It must involve every kind of institution—businesses, civil society organisations, and government at all levels from local councils to the EU and other transnational bodies. Any discussion about governing for sustainability, therefore, has to go much wider than what many people would regard as 'government'. It is about influencing the behaviour and choices of citizens, communities, companies, schools and universities, through all the different institutions of government, and using levers and drivers outside of government as well.

Progress towards sustainability?

How well are we doing on a transition towards sustainability in the UK? Though many see the situation as deteriorating, there has been progress in many areas. It is possible to highlight many positive trends. Levels of water and air pollution have improved considerably since the mid-twentieth century. Otters have returned to rivers in every county in England, for example, and the red kite has successfully been reintroduced in several areas. Vehicle exhaust fumes are now lead-free and have lower particulate emissions due to improved engine technology and catalytic converters. Recycling rates are growing and have now exceeded 40%, with the UK's performance rising the fastest of any country in Europe. Issues such as sustainable fisheries and forestry are now much more in the public eye, with many major retail chains taking very progressive positions.

Of course, this is a selective group of examples—but it does demonstrate that, for many individual issues, we have mobilised both the will to act and the means to do so. It is instructive to see how often those examples of positive progress come from instances where one or both of two key preconditions apply: either they have very *visible local impacts*, so there are clear tangible benefits from taking action, such as local air pollution; or there are *technical substitutes* that allow us to reduce environmental impacts without loss of utility or significant behaviour change, such as lead-free petrol.

There are positive developments internationally too. Tough emission limits for sulphur dioxide and other acidic gases have successfully tackled acid rain across western Europe. In 2011, over 20 years since the Montreal Protocol on ozone-depleting substances came into effect, scientists reported the first measurable signs that the Antarctic ozone hole is beginning to repair. Action has also been taken to limit the use of chemicals such as DDT, PCBs and some of the other worst persistent organic pollutants, and we are seeing the positive impacts—although the damaging effects will still last for decades.

However, despite these glimpses of light, even the most superficial analysis shows that our current patterns of consumption, of waste and pollution, and of natural resource depletion, are far from sustainable. It is clear that almost every global environmental indicator is going in the wrong direction—including overfishing most of the world's fisheries;

widespread destruction of critical ecosystems including forests, wetlands and coral reefs; species extinction and loss of biodiversity; disruption of nitrogen and phosphorus cycles; rising local air pollution; topsoil loss; over-abstraction of freshwater; and, of course, rises in levels of greenhouse gases in the atmosphere. Earlier this year we passed, for the first time, the symbolically significant level of 400 parts per million CO_2—up from around 280 ppm in pre-industrial times.

More widely, as reported in the World Wide Fund for Nature (WWF) *Living Planet Reports*, global demand for natural resources has doubled since 1966. Our environmental footprint has also doubled in the same timeframe, having passed the point of the planet's capacity in the 1970s, and now exceeding it by over 50%.[1] While there are some concerns about how these footprint figures are calculated, there is no doubt that all the trends are going in the wrong direction. So it is hard to avoid the conclusion that we are witnessing a slow-motion catastrophe, as we systematically deplete our planet's natural capital and erode its life support capacity.

There has been no shortage of international activity—with numerous political statements, treaties and international conventions on biodiversity, desertification, fish stocks as well as climate change. But, with only a few exceptions, it is hard to judge our performance to date as anything better than woeful—and there are few signs yet that we are doing the right things to put us onto a more sustainable path.

To begin to think about how to respond to this, I will start with a more detailed look at the UK's policy on climate change. The UK has one of the world's most comprehensive frameworks for climate action. It is not perfect, of course, but may have some useful pointers to what works.

The UK's policy on climate change

Efforts in the UK to shift away from fossil fuels date back some decades, and were initially driven by factors other than climate change. Its nuclear programme was driven by a combination of military and technology objectives, whereas action on energy efficiency stemmed mainly from the high energy prices after the oil shocks of the 1970s. More recently, it was economic and industrial policies that led to a shift away from coal use, mainly to gas.

High-level awareness of human influence on the climate and the need to take action dates back at least to the early 1970s—with the first United Nations Convention on the Environment being held in Stockholm in 1972. Widespread public awareness of the issue did not come until later in the 1980s. Margaret Thatcher, the then UK prime minister, took a lead on speaking on the issues both domestically and at United Nations conferences. The UK took an active lead in negotiating early agreements on climate change, including the 1997 Kyoto Protocol, and started to implement a domestic policy programme to meet its international targets.

Chancellor Gordon Brown commissioned the 2006 *Stern Review* on the economics of climate change. This report has had huge impact nationally and globally by showing that the costs of potential damage from climate change greatly exceed the costs of action. A year later, Foreign Secretary Margaret Beckett pressed to get the first ever debate on Climate Change at the United Nations Security Council.

By this point, it had become clear that tackling climate change would require very long-term decisions—such as infrastructure investments in buildings, transport and the energy sector—so a policy framework which would give stability over multiple election periods was needed. The UK's existing political target of 60% greenhouse gas reductions by 2050, although world-leading, was not seen as robust enough to reassure private investors. With a major contribution from NGOs such as Friends of the Earth and the Stop Climate Chaos coalition, the 2008 Climate Change Act was passed with cross-party support. The Act increased the UK's long-term carbon target to 80% and made it legally binding; it also introduced the framework of binding five-year carbon budgets, set 15 years ahead. The fourth such budget was set in 2011, covering the years 2023–7, requiring a 50% emissions cut on 1990 levels.[2] The Act also established the Climate Change Committee—to provide independent advice to government and to monitor and report on progress.[3] So, the Act provided a statutory basis for two key functions: setting both long-term and short-to-medium-term targets and thus reducing political risk; and the provision of impartial, apolitical advice to government.

So far, the UK is on track to meet its targets. Overall emissions have fallen 26% since 1990, and the UK met both Kyoto Protocol targets and those in the first carbon budget.[4] Early progress was undoubtedly kick-

started by the 'dash for gas', which led to the transition away from coal and greatly reduced emissions from the power sector—but this accounts for only about half of the emission savings during that early period. The rest of the savings have come from the UK's climate change programme. This included incentives to reduce the amount of energy used by energy-intensive industries, through a combination of taxation and voluntary agreements—incrementally improving building regulations, phasing out incandescent lamps and a push towards high efficiency white goods and boilers. Individuals were helped through public information and campaigns and an obligation on energy suppliers to provide energy saving measures and advice on household efficiency.

As an aside, any apparent success in reducing emissions may be overlooking big increases in outsourced emissions. UK statistics exclude the emissions embodied in imported goods and also international aviation and shipping. This does raise the question as to whether the UK has genuinely tackled the issues, or simply exported the problem.

Looking forward, a key aspect of reducing emissions further to meet the UK's carbon budgets is to decarbonise the UK's electricity supply. This will, in turn, enable many different end uses from transport to appliances and buildings to reduce their carbon intensity. This will be done through the deployment of low carbon power sources and, in time, through carbon capture and storage. The outcome of the Energy Bill currently passing through Parliament will be an acid test of the UK Government's ability to deliver sustained momentum and investment in low carbon growth in the UK. Any retreat from past levels of ambition would both threaten the domestic transition to a low carbon economy and undermine the strong example set by the UK's genuinely world-leading legislative framework.

The international response

Turning from the UK to the wider international picture, it is clear that to tackle climate change successfully, only global action is sufficient. No country alone can make sufficient emissions reductions, and ambitious unilateral action is politically difficult without international cooperation. So, the successful negotiation of an effective international agreement is of paramount importance. Governments have committed to reach such an

agreement in 2015 under the United Nations Framework Convention on Climate Change, building on negotiations in Cancun, Durban and Doha.

Such an international framework is needed for three main reasons. The first is to help to coordinate national action between countries so that all know that others are taking appropriate action—based on the principle of 'common but differentiated responsibilities'. Many climate actions make sense in terms of immediate benefits, but others are costly and difficult, and countries need to know that others are sharing the effort before they will commit to domestic action. For this reason, the treaties contain a large focus on monitoring, reporting and verification—among the most contentious points of the negotiations. But the alternative is that we are all trapped by the tragedy of the commons. The second reason that an international framework is needed is to help developing countries who might not otherwise have the capacity or the means to take action on their own. So, funding and the sharing of low carbon technology form a critical element. The third reason is the need to address transnational emissions—like those from aviation and shipping—which do not take place within national boundaries. These can only be addressed within a multilateral policy framework.

To see action in other countries we need to see appropriate shifts in their domestic political situations, and this is now a major emphasis for diplomats in the UK's Foreign Office. As well as the more traditional issues such as security and trade, their agenda now includes climate change, energy and other environmental issues.

While we slowly put together the pieces of an international framework, it is crucial that we get on with the task of supporting practical action, particularly in developing countries. The UK has contributed £2.9 billion through its International Climate Fund which will help developing countries to fund: adaptation to the climate change impacts; climate mitigation in the forest sector; and low carbon development.

Practical action in the UK

One particularly significant need is for a technology revolution in the energy sector. Around two thirds of global greenhouse gas emissions result from energy use, and most of this is determined by energy infrastructure, both on the supply side and demand side. The way we get

our energy, the way we transport it, and then use it—especially in the power sector, in industry, in buildings and in transport—locks in emissions for decades when we build new infrastructure, on the assumption it will continue to be used for its intended lifespan. The International Energy Agency (IEA)'s *World Energy Outlook 2012* suggests that on current trends we will reach the point of 'no return' for a 2°C rise in global temperature by around 2017 due to 'lock-in' from high carbon infrastructure.[5] In its recent report on energy and climate change, the IEA calculated that delaying action until after 2020, when the new international climate agreement will come into force, would reduce costs before 2020 by $1.5 trillion, but raise costs afterwards by $5 trillion.[6]

Low carbon electricity, on the other hand, can reduce the emissions footprint of a very wide range of activities right across the economy, including transport and buildings, and can do this in a way that is very painless for end users. This is an example of technical substitution mentioned earlier. We need nothing less than a new energy revolution, with a concerted effort to raise both public and private investment in research and development on energy—including in energy efficiency, carbon capture and storage and enabling technologies like smart grids, electricity storage and long-distance electricity networks. The potential role of nuclear power in that mix is controversial, and has become even more so after the Fukushima disaster. The UK government is still convinced that nuclear energy should play a role, and several prominent environmental commentators like George Monbiot and Mark Lynas now maintain that nuclear power is a 'least-worst' option.

As we face increasing resource depletion across a number of critical natural inputs to our economy, one might conclude that scarcity and rising prices would send the necessary signals, to improve efficiency and seek substitutes. So can we rely on the forces of supply and demand to reshape our environmental performance and shift our economies onto a sustainable trajectory? A brief examination of the situation for oil and gas reveals the danger of relying on this. A few years ago, I naively thought that 'Peak Oil' (when new discoveries or proven reserves no longer match the rate of depletion) might be the sort of wake-up call that the economy needed. Many analysts now think that we have already passed this point for oil. But the effect is to raise fuel prices, which in turn pushes the industry to exploit ever more difficult sources of fossil energy, such as oil

reserves in deep water or the Arctic, or oil shale, or unconventional gas sources. All the world's known fossil energy reserves add up to thousands of gigatonnes of carbon, with much of that coming from coal and unconventional oil reserves like oil sands. This is far more than we can afford to put into the atmosphere, as revealed by the Carbon Tracker initiative.[7] Fossil fuel scarcity will not save us from the worst effects of climate change. We need to find a way to leave fossil carbon either in the ground unburned, or permanently re-buried through carbon sequestration. Another reason why we should take action before resource scarcity bites is one of equity. Inevitably it is the world's poorest people who are affected the most when the prices of basic commodities rise, or when rich countries or companies make 'land grabs' to secure supplies for the future.

There are no simple answers to how we can govern for sustainability, and I can only outline some key points which may help to guide our collective efforts.

The importance of information and evidence

A foundational point is the importance of information and evidence. Jared Diamond's book *Collapse* explores the comparative history of a number of past civilisations which appear to have collapsed.[8] In a number of examples, a decision-making elite were insulated from the signals that could have been providing information about the increasing degradation of their local environment and they failed to take action in time. In a similar way, the combination of our wealth and globalised supply chains means that the global consumer class is incredibly insulated from real feedback from natural systems—and hence from the consequences of our lifestyles. We should systematically gather comprehensive information on key sustainability indicators, and ensure that this is available in an accessible way to the public and decisions-makers in government and elsewhere. Information on stock prices or exchange rates are visible everywhere—with the latest movements of the FTSE or Hang Seng index or the value of the Yen being part of everyday news. But how often do we hear about fish stocks, or bee populations? How many politicians do you think know that Arctic sea ice has reached record low points every summer in recent years?

An example of the kind of informational tool which would help with long-term decision-making is the DECC 2050 calculator, developed by their chief scientist David Mackay.[9] It enables experimentation with different potential energy scenarios and their cost implication, exploring the different trade-offs.

On the economics of climate change, the *Stern Review* has had a huge impact globally by using hard-nosed economic analysis to demonstrate that it will cost less to act now to address climate change than it will to deal with the consequences. There is great value in Stern-type analyses for other issues, hence the launch of programmes such as The Economics of Ecosystems and Biodiversity (TEEB), which make a compelling case for the value of ecosystem services.[10]

A key challenge within this is to find better ways of dealing with science and uncertainty. At the heart of tackling many environmental issues lies the difficult task of taking uncertain science, particularly about future impacts, and then generating sufficiently robust outputs such as scenarios or advice on potential costs of impacts, or the cost of mitigating actions. This is particularly hard in the case of climate change because of the long time-lags involved. The Intergovernmental Panel on Climate Change pulls together thousands of scientists to draft reports every few years—but even they struggle to communicate risk and uncertainty in an effective way. I do not know the answer, but I am convinced that we are not winning the battle at the moment. Yet being able to take precautionary action on the basis of uncertain information is a critical element if we are to realign the trajectory of our development.

However, building public consensus for ambitious action cannot be just about facts or building an ever stronger evidence base, or even finding the perfect 'smoking gun' in the climate records. The evidence of the phenomenon of climate scepticism suggests that many people are very unlikely to change their mind on the need for action on climate change based on reasoned arguments. Instead, we need to influence societal norms and values, and to engage with people on a different level. We need to find a better story or 'narrative'. It is clear that climate fear does not work. We need to find ways of speaking to individuals, companies and governments about the attractions and benefits of a more sustainable society. We need to create and communicate visions of a sustainable civilisation with attractive lifestyles.

Establishing suitable decision-making frameworks

My second point is that we need to get our decision-making frameworks right. It may sound unimportant, but I truly believe that it will only be by influencing the framework in which all decision-makers operate that we will make a successful transition to sustainability. I interact with officials from many different governments, as well as with staff from international institutions like the World Bank. When I reflect on decisions made about the economy, our cities or transport systems, or energy infrastructure which do not give full weight to issues of sustainability, it often strikes me that these are not being made by people who are bad, or incompetent, or who are wilfully trying to destroy our future well-being. They are each trying to take decisions under the circumstances in which they find themselves, and within their own framework of values and objectives. So, one of the keys to changing their decisions must be to change the wider framework or systems within which they operate. Inside government, this framework is most often a product of formal structures like regulations, government targets or political pressure—but it is also influenced by personal values and societal norms. The same applies to other decision-making—whether individuals choosing the products they buy, the car they drive or the flights they take, a company investing in a new product or facility, or some financial institution deciding where to put our savings or pensions. All of these individual decisions are made within a context that is set by a web of influences—regulations, societal values and norms, and so on.

To use an easy illustration, it is obvious that if ministers and officials in government see short-term economic growth, as measured by GDP, as their main measure of success, then the choices they make are unlikely to be optimal in terms of long-term well-being and sustainability. We can, of course, lobby to influence single decisions one by one, but in the long term, we are pushing water uphill if we do not change the frameworks within which those decisions get taken. As already argued in this book, one obvious way is to get away from growth as a defining objective, particularly growth narrowly framed in economic measures like GDP.

The role of faith groups to influence the frameworks in which people make decisions can be critical, both in terms of their personal behaviour—I think we should not underestimate the power of example to

shape societal values—but also directly influencing decision-makers, both in government and the private sector. From my perspective inside government, they have had influence on issues like the Climate Change Act that I mentioned earlier, and also the big international events like the Earth Summit or the UNFCCC conference—although, to date, churches have tended to focus on international development issues, rather than climate change.

There are many ways in which governments can influence the behaviour of citizens, companies and other decision-makers. One major way is through carbon pricing—the idea that we impose, either through carbon taxes or emission caps, some value on greenhouse emissions. This has the potential to change decisions on resource allocation systematically, in a way that aligns well with the market-based economies that we operate in. It can also be effective to apply a value for emissions in policy appraisals, imposing a 'shadow' price for carbon on decision-makers.

A second method open to governments is the linked pairing of labelling and information, combined in some cases with regulation. There is a huge value in the softer side of that spectrum—so, approaches like energy labelling or the provision of information on environmental performance like pesticide-free cotton, or Forest Stewardship Council (FSC) timber or Marine Stewardship Council (MSC) fish, or Fair Trade status and so on. There are many examples of this working and making a difference to behaviour right up the supply chain, but there is a very real danger that we end up overloading products with information, and leave people confused about what is the best thing to do. So, there is a role for regulation simply to take the worst products off the market—this has happened for things like light bulbs, fridges and boilers.

It was not the actions of wilfully bad people who got us into the unsustainable place we are currently in and, in a similar way, I believe that we cannot rely on the 'environmental virtue' of citizens or businesses and other institutions to get us out of it. Most people and institutions are far too busy focusing on more day-to-day issues, so only a framework which nudges, guides or even constrains their choices and decisions can hope to get us on the path towards sustainability.

The challenges of sustainability

Making the transition to sustainability within a democracy brings unique challenges. First, attaining sustainability requires us to balance access to good things *now* against *future* benefits. So how do we treat the future seriously, particularly in democracies where politicians are elected for just a few years at a time? How can we take decisions based on long-term issues, and give stability to decision-makers? I think the answer comes down to getting the frameworks right. The UK's legally binding Carbon Budgets and Climate Change Committee provide a useful model—so could a similar approach be applied to other issues? We should also harness other agendas where they align. Energy security, economic growth, local air quality and health, for instance, all work as drivers of energy efficiency or low carbon energy supply—and we should use them to help strengthen the personal and political drivers for change.

Secondly, governments cannot be significantly out of step from their own population. Governments can lead, and they should—but they can never get too far ahead. Securing a sustainable future can never just be the vision of an enlightened elite—it will only ever happen when it is reflected in both the personal behaviours and democratic choices of the population.

Finally, the power of corporate lobbying is a very negative influence. As the *Stern Review* analysis shows, we may be able to mitigate climate change for a reassuringly small proportion of GDP, but this masks significant distributional impacts. In other words, there will always be winners and losers. Where these losers are very wealthy individuals and companies, their ability to resist change and to co-opt national decision-making for their own benefit is of huge significance. Unless we can find ways to help our elected representatives face down vested interests, tackling climate change is likely to remain a very difficult issue. Governing for sustainability is far more aligned with governing for the interests of the bottom 99% of the world than the top 1%, so addressing the undemocratic concentration of power based on resource lobbies is profoundly critical to the sustainability challenge. In fact, we need to go further, and govern for the children and unborn descendants of the 99%, making it even further removed from prevailing practice.

Issues of sustainability, environmental impact and resource depletion must be seen as top rank issues for government. All too often, they are seen as secondary, with environment ministries being in the lower tiers of power and influence. It is sobering to compare the rapidity with which governments around the world mustered hundreds of billions of dollars to head off collapse when the financial sector threatened to implode in 2009, yet do not act upon the warning signs coming from our planet's life support system. If one imagines the first human colony on Mars, would responsibility for monitoring the levels of food, oxygen and water be delegated to a junior sub-committee?

A holistic approach

My very final point is that in all this we have to be holistic. We cannot solve single issues in isolation—they are all linked together. So we cannot tackle climate but ignore food security, for example. I am very concerned about the role of biofuels which I think, despite good intentions, will inevitably pitch the interests of 'rich world' car drivers against the food needs of some of the world's poorest people. We are already seeing that—in the form of high commodity prices and increasing land grabs in places like Africa, and it is particularly perverse that some of this is being done in the name of climate change.

That leads me on to a point about social sustainability. My focus has been mainly on technical and economic solutions—but we cannot ignore the social side. Currently, there are over four million households in the UK that suffer from energy poverty, and globally there are a billion people with no access to electricity, for example. We must try to solve the environmental issues around energy, land use, fisheries and biodiversity while also addressing the needs of the poor.

As the financial crises in 2008 and 2011 demonstrate, any economy that lives beyond its means is not sustainable and eventually, despite any number of fancy hedges and derivatives, the chickens do come home to roost. This is equally true for our environment. Ultimately, we *will* be forced to live within environmental limits. This will either be on our terms—and I do believe that there is still time for this—or we will hit environmental limits on nature's terms, in which case we are in for a very rough ride.

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11

Campaigning for sustainability

ANDY ATKINS

In one way or another I have been involved in campaigning for policy change for the last 25 years—around human rights, around international development issues, around environmental issues. They are all linked—and no issue links them more comprehensively than climate change. So, while climate change is not the only challenge of sustainability, it is a perfect demonstration of how *unsustainable* our current economic model and way of life is. It is therefore a good—if complex—subject to focus on to explore issues around how we can achieve greater sustainability, what gets in the way, and the role of governance.

Currently, I lead Friends of the Earth, the environmental charity that has promoted sustainability since its founding in 1971. A central approach of its work has been to campaign for policy change, locally, nationally and internationally, including on climate change for the last two decades. It has a strong relationship with the Department of Energy & Climate Change (DECC) involving regular contact with politicians and civil servants; sharing analysis, proposals and criticism; collaborating in advancing proposals which are agreed with, but opposing DECC very publicly when Friends of the Earth thinks it is wrong. One of our historic victories was a central role in bringing about the 2008 Climate Change Act.

My purpose in this chapter is primarily to give a campaigner's perspective on the challenges and opportunities for tackling sustainability, by improved governance, through the lens of addressing climate change. I will first highlight some important features of the current social and economic context which shape possibilities for progress. I will then develop some important themes about the roles and interaction of government and civil society in the UK's response to climate change, commenting on the performance of the current government and DECC in particular, and what we can learn from that. Lastly, I will reflect

on what faith groups in particular could do next to help drive sustainability, including by exerting greater influence on the government and DECC.

The context of campaigning on climate change in the UK: some key features

Campaigning on climate change faces two challenges. First, scientists tell us that something is already going very wrong—and we are already beginning to see the early signs of change. Further, change to our climate is now unavoidable, and we must adapt to it. Above all, if we wish to prevent totally catastrophic climate change, humanity needs to make major changes urgently.

But alongside this scientific context, we are now faced with a second, very challenging economic context. This has weakened politicians' never-adequate focus on climate change—along with other issues—still further. Instead, politicians are focused on economic crisis management, deficit reduction and rebooting conventional growth—with little success in many countries!

In this economic context of downturn and unemployment, the public is understandably insecure, with immediate household security uppermost in their mind, not long-term planetary survival.

Yet there are a few positives—in countries like the UK, levels of awareness of environmental issues remain high, and more organisations, businesses and communities beyond the 'green' non-governmental organisations (NGOs) are committed to taking action on climate change. Sections of business and communities, in particular, are increasingly seeing the wider economic and well-being advantages of switching to a low carbon economy. Yet they are not receiving the wholehearted support of government to reap those advantages for themselves, or the country at large, so the transition to a low carbon economy is impeded.

The UK has, in some respects, taken a leading position in its response to climate change, passing the world's first Climate Change Act in 2008, and thus setting a hugely important national framework for addressing the issue. However, in recent years, the UK has fallen far short of what needs to be done to address climate change and other issues of sustainability. The current Coalition Government, despite promises to be

the 'Greenest Government ever', seems to be in great conflict internally and to be, if anything, backtracking on environmental protection put in place by previous governments.

Any campaigning for sustainability over the next few critical years—and around climate in particular—is going to have to contend with these powerful currents and contradictions. Indeed, it is going to have to reverse some of them to win the day. It must navigate a complex context, and assess who must do what. Of particular interest is the role of government (national, local or intergovernmental bodies) versus those of civil society, the individual and business.

The government's primary role is to set frameworks

The most important power that governments have is to set the formal frameworks in which decisions are made: the legislation and taxation regimes which enshrine values and objectives and aim to influence how individuals and companies act. Of course, these formal frameworks are themselves influenced by informal, cultural frameworks. For example, the assumption that economic growth is the most important thing and should automatically trump the environment, influences government actions. Consider the Coalition Government's attempts to alter the planning system, so that local councils are forced to put narrow economic growth considerations above protection of the environment.

If we wish to see systemic change, not just tinkering around the edges, we need to change the frameworks in which decisions are made. I wholeheartedly agree that frameworks and changing them are critical. This can be difficult but it is not impossible. But because it is difficult, most government effort and a lot of NGO effort is expended in relatively minor changes.

In 2008, the UK broke new ground internationally by bringing in the first national law (the Climate Change Act) committing the current and future governments to legally binding targets to radically cut carbon emissions over subsequent decades—to 80% below 1990 levels by 2050—beginning immediately. In short, a strong framework was put in place for decision-making in relation to the economy and its impact on climate change in the UK. If properly implemented, it will put the UK firmly on

the path to a low carbon economy, cutting its fair share of global carbon emissions. So, frameworks can and do change.

There are two important points to be made. First, civil society and civil society organisations can have huge influence in creating new frameworks. Governments have a responsibility to lead, and they have more power than they often acknowledge. We shall return to this below. But where government leadership (in terms of initiating action, at least) is weak, it is only civil society or business pressure that can spark and drive a fundamental shift in the framework.

This was the case with the Climate Change Act. It did not happen out of the blue because a senior politician woke up one day and thought, 'Let's bring in a law to ensure that the UK reduces its carbon emissions.' It came about because, in a context of growing civil society concern about climate change, a specialist civil society organisation (in this case, Friends of the Earth), which had long been working on climate change, realised the need to get a leading industrial country to take much bolder action on climate change. It judged that passing a law might catalyse that action and that the political opportunity to do so might be emerging. It then not only proposed such a law but, crucially, mobilised its own supporters and a coalition of other organisations into a high profile campaign to raise public awareness and undertake extensive lobbying of MPs. Partners included groups as diverse as RSPB, Oxfam, Tearfund, the Anglican Church and the Women's Institute.

The changed framework came about because citizens gathered together, facilitated and encouraged by civil society organisations, to demand that their politicians take action. We simply would not have a Climate Change Act otherwise, and this law has since inspired civil society and politicians elsewhere in the world to develop similar legislation.

But the Climate Change Act, important as it was, is not the end of the story. The second point about frameworks is that they need to be defended and strengthened. There is an urgent need to bolster the political will in the UK to wholeheartedly implement the Act. In 2008, it was passed through an extraordinarily strong cross-party consensus: only three MPs voted against it. In particular, the support of the then new leader of the Conservative Party, David Cameron, was critically important.

However, this cross-party consensus and government drive has frayed and weakened subsequently. For example, the Act established an independent Committee on Climate Change (CCC), composed of scientists, economists and others, to advise the government on the implementation of the Act and monitor their performance. The CCC has repeatedly stated and shown in its modelling that for the UK to meet its legally binding 2050 carbon reduction target, it must almost entirely decarbonise its electricity generation by 2030. Yet, in the mouths of the Coalition and DECC civil servants, this has become 'largely decarbonise during the 2030s'. Some Conservative backbenchers have openly called for the abolition of the Act—emboldened, it would seem, by a Chancellor who is on record stating that the UK should not attempt to lead on climate change.[1]

This shows that new frameworks can be created. But they must be defended, especially when new and not deeply imbedded—at the peril of returning to either the old framework or a new one, based on austerity and short-term cost-cutting without much thought to the long-term future.

Governments should take the lead

One reason for this is that government policy has an effect on public behaviour which is greater than often claimed. In Chapter 10, Paul Chambers of DECC observed that governments have surprisingly little direct leverage over citizens' behaviour and decisions. At one level this is true—government 'behaviour change' campaigns around, for example, drug taking and smoking have a chequered history, to say the least. However, the *indirect* impact of government action can be game changing—when government regulates so that people have little choice other than to do the right thing, or find it much harder to do the damaging thing. It is much easier to recycle now that regulation means councils must provide facilities, and UK recycling rates have risen dramatically since the Household Waste and Recycling Act 2003 came in. In-car road deaths have plummeted since the government made wearing seat belts compulsory and enforced it.[2]

Claiming that the government has no ability to interact with, engage with, challenge or change public opinion through what it does—no ability

to do what is unpopular but right—is often little more than an excuse. The current government has frequently and publicly made the case for the Coalition's (unpopular with some) commitments on overseas aid or deeply and widely unpopular reform of the NHS. It is all a matter of political will.

So while it is true that a civil society campaign is often necessary to create the public and political space for more timid leaders to act, we should still demand that politicians lead, boldly and vocally, on sustainability. People notice what senior politicians talk about. The media picks up on their initiatives. This does shape public awareness and attitudes to what is important or not. Bolder leadership would move us faster toward sustainability with less need for civil society groups to expend so much time and resources trying to influence policy. Much as I love campaigning, I would far rather governments did the sensible thing without me and cohorts of others having to press them to!

It is clear, at least to us, that it is important to reduce the UK's reliance on fossil fuels, and in particular on oil and gas. These will help address climate change and the threat of Peak Oil, as well as increasing our energy security. But there are other huge benefits in taking these actions too. For example, the small but growing renewable energy sector in the UK is currently providing one of the few sources of economic growth and has the potential to provide thousands of jobs, if Germany's experience is anything to go by. The Confederation of British Industry (CBI) has calculated that, in recent years, a third of the UK's economic growth has come from the green economy.[3] In Germany, renewables already provide around 382,000 jobs and this figure is predicted to rise to as much as 600,000 by 2030.[4] A mass programme of home insulation would not only reduce emissions but reduce the public's fuel bills and tackle the plight of many in fuel poverty. Even those who deny the reality of human induced climate change should recognise the wider societal benefits of jobs and better public health. So why does our government hesitate?

Challenges: worsening fuel poverty

One reason is the claim that a switch to more renewable energy would make the issue of fuel poverty even worse. Fuel poverty has become a more prevalent problem as energy prices have risen sharply in the last few years, while many have lost income through unemployment or

underemployment in the recession. But it is important to understand what lies behind these price increases. Some newspaper campaigns have pointed the finger at 'green policies', like the Feed-in Tariff for solar panels that is paid for by a levy on everyone's bills. Irresponsible statements by the Chancellor George Osborne, playing to the anti-regulation, climate-sceptic elements of his party, have strengthened this myth. It is not surprising, therefore, that so many people believe that soaring prices are caused by our attempts to tackle climate change. In fact, the government's own data shows the biggest single cause of increasing energy bills has been the country's dependence on gas to generate electricity, and the fact that international gas prices are linked to the international price of oil.[5]

But that transition to energy efficiency and clean energy, which the UK must make to reach its carbon cutting targets, must also be made fairly if it is not to face a backlash. Part of the backlash against wind farms is that communities feel they have had little say in where they were located and gain no direct benefit. As noted by Juliet Davenport in Chapter 8 and found in Germany, community-run, local generation has proved much more successful. One area where civil society, including faith groups, has a huge role to play is in advancing energy access and control over local environment as an issue of social justice.

Challenges: realistic metrics and embedded emissions

A second problem is that the government can claim successfully to be on track to meet carbon emissions targets under the Climate Change Act, but the vast majority of our progress on emissions is due to outsourcing emissions to manufacture abroad. Embedded emissions, those caused by making goods and transporting them to this country, are not counted in our statistics. Again this is an issue where selective use of facts can skew the debate. The government needs to be honest with itself and the public. It needs to start tackling embedded emissions much more seriously, through a combination of reducing our consumption, barring the most carbon-inefficient goods, and assisting those who manufacture on our behalf to switch to low carbon energy and manufacturing technologies—and insisting that they do so via regulation if necessary! EU legislation, of course, plays a huge role in driving domestic change, as we have recently seen with the restrictions on incandescent light bulb use. By 2020, these

restrictions are predicted to save 39 terawatt-hours of electricity across the EU every year, while in the UK they will amount to average net energy savings of £108 million a year between 2010 and 2020.[6] Similarly, EU regulations on car emissions are having an impact, with new cars in 2011 emitting around 27.2% less carbon dioxide equivalent than those of 15 years ago.[7]

Challenges: corporate lobbying and 'regulatory capture'

A third and more severe issue is that of corporate lobbying in preventing faster action on climate and sustainability. Chambers refers briefly to this issue: he is right—but much more needs to be said on this. This is an absolutely fundamental problem, which puts a real brake on the country moving fast in the right direction in cutting emissions and on other matters.

How does this *regulatory capture* happen? One simple way is that companies with a stake in the status quo can threaten to withdraw investment or services. For example, big energy companies can imply to government that they will simply turn the lights out if they depart from the straight and narrow of supporting new gas and nuclear plants. Another, much more subtle way is to second large numbers of staff to work within government. Research by Guardian journalist Damian Carrington exposed that, in the past four years, at least 50 employees of companies including EDF Energy, npower and Centrica have been placed within government to work on energy issues.[8] Given these influences, it is easy for government to return to the old frameworks rather than stick to the new climate-friendly ones.

An example of regulatory capture can be seen in the Energy Bill of 2012–13 which, at the time of writing, is before Parliament. This Bill presented government with an important opportunity to promote reform of the electricity market and to decarbonise the electricity sector by 2030. According to the government's independent adviser, the Committee on Climate Change, this would be by far the cheapest and most effective way of meeting the 2050 emissions reduction target established by the Climate Change Act. However, the pre-legislative draft was little more than a blueprint for a new 'dash for gas', with no decarbonisation target, and little on demand management or reduction. Its proposed mechanisms for

paying for new electricity generation capacity would have greatly disadvantaged renewable energy, new entrants to the market and particularly smaller community energy operations. In addition, it included a clear subsidy for nuclear energy (which would otherwise not be built because it is simply uneconomical compared to newer alternatives like onshore wind), despite the Coalition Agreement being explicit that there would be no such subsidy. In short, the draft Bill seemed to have been written precisely to preserve the status quo of big firm control on our energy supply. It appeared wilfully blind to the possible (and necessary) shift to clean, decentralised, community-owned energy, coupled with a perfectly possible reduction in consumption. Campaigning by Friends of the Earth, other environmental organisations and businesses has made some headway in redressing these failures, ensuring that parliamentary debate stayed focused on stopping climate change and building the green economy. At the time of writing, there is now a chance that the House of Lords will overrule the government as the Bill moves to the next stage.

The media and civil society organisations, including faith groups, have an important role to play in countering the influence of corporate lobbying, exposing regulatory capture and holding politicians to account. Needless to say, this is a daunting task when one considers the resources corporate lobbyists have at their disposal, but it is vital if progress is to be made on climate change.

A review of current government performance

Faced with the challenge of climate change, how is the current government doing? With the health warning that these observations are made in mid-2013 and things change fast in politics, there are nevertheless some important general points to be made. Experience has shown that even when governments have good rhetoric, formal commitments and a whole department with named responsibility for managing a critical aspect of sustainability—as the Department of Energy & Climate Change (DECC) is for climate and energy—effective national action requires much more. It particularly requires not just a department with civil servants and politicians broadly committed to the changes required, but also cross-departmental commitment and national leadership. In reality, DECC has been challenged on both fronts.

Internally, the department is nominally new, but in fact hamstrung by past energy policy—in particular, the UK's nuclear legacy. Although DECC was only established in 2008, it inherited responsibility for overseeing nuclear clean-up and decommissioning of old reactors, which accounts for about around half of the department's entire budget. Expertise and mindset in the department tends to be focused on large-scale nuclear and fossil-fuel-generated electricity which has hindered a radical shift towards both small-scale and renewable energy. Such changes are difficult and slow in government departments in any case, despite some able and committed people, and efforts by some ministers.

The department also faces external challenges, as is typical for departments dealing with environment or climate matters. And the main external 'enemy' is, at the time of writing, the Treasury. As part of the general austerity measures, the Treasury and Chancellor George Osborne have taken an iron grip on energy policy. Not only have they reduced DECC's budget settlement through the Spending Review of 2013 but, via the mechanism of the 'Levy Control Framework', the Treasury has limited the amount that can be raised on consumer and business energy bills for social and environmental policies. This has clearly been more than an even-handed cost control measure at a time of budget deficit. Rather, the Chancellor appears to be playing to strands of the Conservative Right by frequently acting to block or weaken measures that would give more support to the green economy and carbon reduction efforts. Instead of setting clear long-term carbon reduction targets, the Chancellor has insisted that the 2027 carbon reduction target must be reviewed in 2014. And the Green Investment Bank is currently prohibited from borrowing from the capital markets until 2015, and can start then only if national debt is declining as a percentage of GDP, which on current trends may not be until 2017 or later.

Can the costs of decarbonising the UK's energy, homes and transport be justified, particularly at a time of austerity? They are not small sums: for example, the Committee on Climate Change estimates that required investment in the electricity sector alone would be £100 billion by 2030. Being alert to these costs, and minimising their impact on, in particular, the poorest in society, is clearly important—which only makes the absence of a flourishing Green Investment Bank all the more frustrating. But it is

divisive and irresponsible to present, as the Chancellor repeatedly does, these costs as little more than a millstone around the neck of the hard-working British public. In fact, climate change economics are inherently a long-term game: on that scale, these are not in any meaningful sense *costs*, but extremely wise investments.

Lord Stern's hugely influential *Review of the Economics of Climate Change* in 2006 was clear that *not* preventing runaway climate change will lead to a bill which is orders of magnitude greater (at least 5% of global GDP per year, maybe as much as 20%) than the costs of preventing it.[9] As many countries are realising, the economic opportunities and job creation potential for the UK presented by what Stern describes as the next 'energy-industrial revolution' are tantalising: the global low carbon and environmental market is worth more than £3 trillion worldwide, and growing at 5% a year.[10] And climate change aside, against a backdrop of ever-rising prices of fossil fuels—largely to blame for painful rises in energy bills over the last decade—switching to clean, limitless energy is a no-brainer.

In fact, the UK is already demonstrating the short-term benefits of investment in the green economy in terms of growth and job creation. Confederation of British Industry data shows that there are now nearly a million people working in low carbon and environmental jobs.[11]

How the relationship between the Treasury and DECC works out in this government will depend critically on the internal politics of the Coalition (and its eventual successor) and the individuals involved. Under the leadership of the highly confident and plain-speaking, though now disgraced, Chris Huhne, DECC put up a bold and often public fight against Treasury blocking. Huhne was a big hitter in the Liberal Democrats, and a competent economist who could argue with the Treasury in its own language. Without him there would probably not have been even a caveated fourth Carbon Budget, or any sort of Green Investment Bank. His successor, Ed Davey, began with a more collaborative approach only to learn the hard way that the Treasury and George Osborne seem to have little interest in collaborating. This has blunted the potential radicalism of DECC's radical carbon-cutting agenda.

This salutary description of the real power in government and Whitehall, and the way it can significantly affect the effectiveness of 'governance' in addressing serious sustainability issues like climate

change, is not the end of the story, however. Rather, it only emphasises the need for other players to influence policy and practice on the ground—a vital role for civil society.

The role of civil society

As I have noted above, governments should lead. But when they do not, they have to be made to, or made to accept and back the right leadership from others. Civil society can play a role in both. While I have given evidence of the important role that civil society in the UK has already played in setting our national framework on climate change (the Climate Change Act and the current Energy Bill), it is clear that so much more needs to be done. And at the time of writing, popular pressure for faster action on climate change has diminished sharply since the peak of the 'noughties', culminating in the Copenhagen climate negotiations of 2009. So, clearly something different needs to happen. Let me briefly set out some ideas, including about the potential role of faith groups.

Vision: First, civil society groups could play a much bigger role in shaping societal expectations, hopes for, vision of the future. Whether they be faith groups, large or small charities, trade unions or local community groups, such groups have direct access to members of the public who support or belong to them. They can play a significant role in influencing their constituents' world view. And the emerging planetary emergency suggests that we need as many people as possible to have a world view that sustainability is vital, not just a 'nice to have'; that it is urgently needed and must not be postponed; and that solutions are available and must become the new normal. We urgently need civil society organisations that nominally care about sustainability to be proactive in developing and communicating to their constituencies a vision of what that would look like, how it fits with their values and what actions they can take as individuals and as groups to get there.

Playing to their strengths: All civil society groups have a role to play in helping shift society onto a sustainable path. But faith groups have some particular attributes to bring to the table. First, there is a clear mandate, in Christianity and in other faiths, to care for the environment. Although this has often been buried, forgotten or confused by mainstream Christianity in the West, it is being rediscovered. In addition, faith groups

together have a large constituency, so could reach many people. Third, if one takes the main Christian denominations in the UK as examples, they have a huge infrastructure of buildings (churches and schools), as well as governance structures, channels of communication etc. that could be deployed to reach people. Many also have strong international linkages. In some cases, they have their own major implementing charities that can campaign for change—like Christian Aid, CAFOD, Scottish Catholic International Aid Fund or Tearfund.

Of course, many church communities, denominations and the charities mentioned above are taking committed action on sustainability. But I believe there is still huge untapped potential for action and influence within just the Christian faith group in this country, to say nothing of others. And urgent times demand different approaches. What is needed is for clear leadership and agreement within the churches and their allied agencies for a much more long-term, collective action that draws consciously on their huge assets of faith, mandate, infrastructure, and local and international presence to envision, demonstrate change and demand it of government.

Determined collaboration: My second challenge to the churches is to move collaboration to a new level, befitting the urgency and scale of action needed on sustainability. It is heartening that there is now an expanding ecosystem of Christian environmental organisations and networks, from A Rocha to Operation Noah and the John Ray Initiative, as well as some Christian development NGOs, showing a deepening commitment to environmental sustainability. My challenge to them is to move beyond information-sharing to deepening and ongoing collaboration. But collaboration needs to be with a purpose. I would propose two key strategic purposes for the next decade—one internal to the wider church, one external for UK society.

The first is to collaborate to make concern for the environment the norm for twenty-first-century Christians in the UK. There is no end of things that could be done. One issue that many people instinctively grasp—unlike climate change—is the threat to wildlife and nature, including the seriousness of the decline of the bee. It is a simple icon for the link between humans and nature, not only providing honey, but much more importantly acting as a critical pollinator of much of our fruit and vegetables. What a difference it would make to our urban and rural areas,

for example, if churches routinely planted part of their land—even just a small flower bed—with bee-friendly flowers, creating nature for all to enjoy, and making the association of 'church' and God's creation a visible norm to Christians themselves.

The second purpose would be to contribute their combined weight to even wider efforts, with secular NGOs, to shift key policy frameworks. Christian groups have already done this with significant effect in campaigns like Jubilee 2000 and Make Poverty History. They have not yet done so to quite the same extent on environmental campaigns, though churches' participation in the Stop Climate Chaos coalition in the run up to Copenhagen was considerable.

This will need to be reproduced in the various political debates on sustainability issues as they come up, to encourage the kind of radical rethinking needed to read a more sustainable society.

Christians and churches played a key role in other previous movements—to abolish slavery, end child labour and provide universal primary education in the UK. They could make an equally huge contribution to the increasingly urgently-needed movement for sustainability, at the heart of which lies addressing climate change, not least by ending our economy's addiction to fossil fuel.

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12

Sustainability and food

PETER MELCHETT

Food and farming is a very significant—but often neglected—area of the climate debate. As a sector, it is responsible for about 30% (and rising) of emissions globally—if land-use change driven by agriculture, such as destruction of forests and grasslands, is included.[1] Even in the less agricultural, more industrial UK, farming still accounts for 9% of national emissions.[2]

However, farming is an area where there is very little consensus—either nationally or internationally—as to the route that might be taken to reduce emissions. Much of this is due to the way the debate is framed, as this has meant that certain possibilities have been effectively eliminated from consideration.

Agriculture is probably unique among major industries in that it can continue to function while simultaneously mitigating climate change, by taking carbon out of the atmosphere and putting it back into the soil. For example, experiments at Rothamsted in Hertfordshire run over the last 150 years have demonstrated that, with an appropriate use of farmyard manure and other methods, carbon content in the soil can be increased and remain high.[3] However, this kind of approach is unknown and alien to the mainstream debate on food.

In this chapter, we will look at how the debate is framed and the implicit assumptions that underlie it; what alternatives exist; and consider some positive examples to show the possibilities for change.

Conventional assumptions in the food debate

The current mainstream debate makes three interlinked assumptions about agriculture.

The first is that we should aim for ever cheaper food, and this should be a key driver in the marketplace. The trend is to larger and larger farms,

bigger machines, and fewer jobs in agriculture. One consequence of this is a move from complex agricultural systems to simpler monocultures, which tend to be more vulnerable to disease and poor weather.

The second assumption is that we should *manage* the relationship between nature and farming so that humanity has greater control. In practice, this leads to less wildlife and fewer opportunities for animals to live anything approaching a 'natural', 'decent' life. In both North America and Europe, research has shown how the nutritional content of the food we eat has declined in many respects since the Second World War.[4]

The third assumption holds that society needs to ensure these trends accelerate, because food production needs to be doubled to feed a growing population. This, in turn, requires the use of higher levels of technology and new techniques: GM crops, more natural fertiliser, bigger machines, animals living their whole lives indoors, or all grain being created in the dark. To me and others who value a more natural way of living, this sounds like a nightmarish and completely unnecessary vision of the future—but it is assumed to be necessary by many.

While these trends are, in some cases, explicitly acknowledged by the relevant government departments and international institutions, it is generally argued that 'this is the way the world works', and it is assumed that we have no choice in the matter. The general consensus seems to be that there is nothing that government, or indeed anyone else, can do to change this, short of a universally agreed global treaty—and the chances of such a treaty are considered remote. However, these are debatable views rather than certainties—and they ignore the impending problems that our agricultural system faces from current known environmental and economic factors.

Threats to the future of agriculture

Clearly, the disruptions to ecosystems forecast by climate change scientists will have major effects on what crops can be grown where. As well as the general consequences of temperature rises and changes in rainfall patterns, the increases in the variability of weather that some believe are already with us will mean more lost or poor harvests.

Equally problematic are the twin threats of Peak Oil and Peak Phosphorus. The former concept is reasonably well-known: as supplies of

oil begin to run short, prices of energy will increase and, since both agriculture and the transport of the resulting food use energy, food prices will increase. Peak Phosphorus, on the other hand, is less familiar. Phosphates are phosphorus-containing minerals which are crucial to non-organic agriculture, since phosphorus is crucial to all growing. In organic farming, it usually comes from animal manure (it could come from human waste) but most of the world's agricultural depends on mined phosphate and about half of it comes from one country, Morocco. According to some estimates, world production is likely to peak in 20 years' time.[5] Yields of non-organic crops without phosphate-based fertiliser are similar to those we last saw in the 1900s—well below anything an organic crop would yield nowadays. As a result, the substantial price rises or shortages of such fertilisers we can expect are likely to cause a dramatic crisis.

Potential government and consumer action

Can anything be done to avoid this bleak outlook? It has been suggested that governments have relatively little leverage, but I believe that to be wrong. Governments can have a very significant impact through what is said and done in their own departments. Two examples from the Soil Association's recent work will illustrate the point.

Some Soil Association representatives met with the Secretary of State of Health in the last Labour government, and spoke about the poor quality of hospital food.[6] When patients leave hospital—a time when good nutrition is vital for recovery—many are coming out of hospital malnourished, and this has been the case for decades. Politicians claim that it is nothing to do with central government—it is all to do with hospital trusts. The minister was then asked what they fed the civil servants working in their own department: they were responsible for that, at least! A look of sheer panic crossed over his face. They had identified something that he *could* do something about—he could not say it was someone else's responsibility.

A second example relates to organic food. During the recent recession, the market for organic food has continued to grow in every major EU country except the UK. There are two distinguishing features—one is the dominance of big retailers here, one is the lack of government support compared to other countries. Even in Greece, organic food sales have

continued to grow. Some might say that is a sign of irresponsibility—others, including myself, would say it shows good taste and good sense. So governments do have real leverage over what people do and how they behave.

As noted already, it is also generally believed that the whole issue of food is only resolvable globally, and there is no point acting just in the UK. However, some lessons can be learnt from the campaign to stop the destruction of the ozone layer. Like food, this was a global problem and needed addressing globally, and was not something that people could see or had a direct impact on them—unless they happened to be an Australian surfer and got skin cancer, or a sheep in Chile that went blind. In the Northern Hemisphere, at least, nobody was affected directly. However, a real difference was made by a single country: Germany, and its fridge manufacturers. They moved ahead of regulation or any international agreement and developed ways of making fridges which did not use gases that destroyed the ozone hole. They both gained competitive advantage and inspired huge industrial revolutions in China. Greenpeace helped broker these, because Chinese fridge manufacturers thought they should follow the Germans' example. So the largest fridge manufacturer changed its product, and the ozone layer is probably in a better state now as a direct result of that action.

What can the consumer do? Large multinational food companies are often named as major villains in the agricultural climate change story. But the interesting point about food is that everyone decides what to eat: it is not only decided by government or corporation. As the subtitle of an American film *Food Inc.* states, 'We vote three times a day' on this by what we decide to eat. If we make those decisions wisely, change is possible.

So, despite claims to the contrary, governments, businesses and individuals can take a lead and make a difference, without a global agreement in place. Of course, global agreements are required, but they tend to follow the leadership of individual countries and corporations, rather than set policy themselves.

Technological and other changes

Turning our consideration to the issue of technology, as in other aspects of sustainability, there is an assumption that in food and farming we will

need to develop new technology. But, in fact, there are plenty of studies looking at how we could feed the world in the future using existing systems, which are already working well and could be used to increase food production over most of the world. There is also an assumption often made that we need different policies in the Global North and South—that we have needs for certain foods to which we have become accustomed in Europe and North America, but in Africa they are going to have different needs, or can cope with less. There is no reason to assume this is necessarily true.

So, what action is really needed in the UK? This kind of question is raised all the time. We need to protect our fresh water, and bring back wildlife—populations of most species which have been measured are in decline, and many are in threat of extinction altogether.[7] We should be improving animal welfare, thinking about organic farming, and bringing jobs back into the countryside.

We do have to feed more people, but we do not need a lot more food production. Projections that we will need a 70% increase in food output generally contain a hidden assumption: not that we are trying to feed more people, but enabling a lot more people in the developing world, particularly in India and China, to eat more meat. In effect, we are producing more grain to feed beef, chicken and pigs for middle class people to eat more meat, rather than addressing the problems of malnutrition.

Malnutrition is already steadily dropping globally, albeit slowly. On the other hand, the number suffering from obesity and associated illnesses is rising quite sharply—not just in the developed world, but also in countries like India and China.[8] It is becoming a growing terror and health problem, and one we need to pay much greater attention to in the food and farming debate.

Although these are complex issues, studies have been done to propose methods to deal with them. A 2008 United Nations sponsored report, co-authored by 400 scientists from over 60 countries, concluded that current industrial food practices would not be able to feed the world in the long term.[9] By contrast, they are increasing hunger and fuelling climate change. Instead, we need to switch to small-scale sustainable agriculture, which can both feed everyone and reduce emissions. This gets little attention because it sits outside the current orthodoxy. Note that the

report does not propose purely organic farming, but organic farming is an example of the approach suggested, as noted in another report, *Agroecology and the Right to Food*.[10]

Behaviour change and positive case-studies

The final point I wish to address is that of behaviour change. Again, this is portrayed as something which we cannot do much about due to the complex and competing demands in the food industry.

It is important to distinguish carefully between behaviour change and values. The two are often conflated. Although values do drive behaviour, it is not necessary to change everyone's values to get change sufficient to address the problems. We do not require everyone to become an organic farmer, or a member of Friends of the Earth!

The Soil Association has been running a programme for about five years to try and change the food culture of schoolchildren and local communities: it is now working with about 20% of the schools in England. The aim is to get children to see how food is produced, visit farms, get to know a farmer, build relationships, and grow food themselves. They plant vegetables, tend and harvest them, and then eat them as part of their school meals. This has succeeded even in schools in deprived areas of inner London with very little space to grow things. A young boy in Hackney, London, provides a textbook example—he was eating a little tray of stir-fried vegetables grown in a patch the size of a table. He said 'I don't eat vegetables' but when asked, 'What are these?' he replied, 'They're different. I grew these!'

Schools have also been persuaded to change the dining room culture so that all sit down together at a table, with proper cutlery—ideally adults and children of mixed ages together—with decent food, and an unrushed environment, so all can talk together. Many schools were found to have no adults eating with the children, due to the children's food being of such a low standard that the head teacher would not expect the staff to eat it. The fact that someone responsible for the children's welfare is willing to serve them food that they would not eat themselves is disturbing.

The outcomes of the Soil Association's programmes have been encouraging. About 30% more children are now hitting the 5-a-day target of fruit and vegetables, and 45% of parents are eating more fruit and

vegetables themselves. A similar number are saying they have changed their shopping patterns. There have been a number of other related measurable outcomes, including the take-up of school meals, and better standards of behaviour and attendance records.

These examples show that those who declare that change is impossible—or only possible within the parameters of our current industrialised food system—are wrong. With some creative thinking, and respect for humanity, culture and other living organisms, there is the prospect of feeding all in a sustainable and healthy manner.

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13

The moral landscape of decisions in sustainability and climate change

DOUGLAS CRAWFORD-BROWN

Sustainability has suffered from a lack of quantification of performance of human and ecological systems designed to be (or become) more sustainable. This book—and the symposium on which it rests—uses the quite sensible definition of sustainability as 'a viable long-term future for humanity', which as a phrase has meaning. But one is left with the issue of how to make this phrase more concrete so one can determine when a particular state of the world satisfies it. The issue becomes more complex when one considers that viability, and hence sustainability, requires consideration of the 'three Es' (economy, environment, equity) or 'three Ps' (profit, planet, people). This chapter focuses solely on the environment, or planet, leg of sustainability, and the problem of knowing when this has been achieved.

Following Aristotle, statements should be tailored to the language of the phenomenon being explored, and at least the environmental leg of sustainability is inherently governed by quantitative laws. What more can we mean by the long-term viability of the use of energy than the balancing of rates of withdrawal of that energy from natural reserves, and the replenishment of those reserves; by the sustainability of forests than the balancing of rates of cutting with rates of regrowth; by the sustainability of air quality than maintaining concentrations of pollutants below those known to produce adverse effects? When quantification of the impacts of our actions on metrics of environmental sustainability is absent, we run the risk of moving forward qualitatively and producing a world in which our intentions were for a sustainable world but our actions led to anything but. We run the risk of falling afoul of St Bernard's caution that 'Hell is filled with good intentions and desires.' By this, he meant that it is not sufficient to intend our (climate) actions to reach good aims, we

must carry through with those intentions and achieve what we intended. A key argument of this chapter is that if we fail to be rigorous in our assessment of climate policy, operating on good intentions but failing to 'run the numbers', as it were, on how nature behaves when we implement policies, our achievements will be wide of the mark of our intentions.

This concern with speaking in the language of nature to run the numbers, however, misses another dimension to the challenge of climate policy—that is the landscape of decisions we must navigate to take actions intended to reduce climate risk. Here we find St Augustine, his City of God and the Drama of Salvation, in which he speaks of the need to understand that our decisions do not only affect the world but help define us as people. The quantitative language mentioned above—the running of the numbers—is necessary to understand the physical landscape of climate change. But as St Augustine told us, we did not create nature. It is a stage on which we act out our lives, and those lives are ones reflected in our decisions. That stage, which is not of our making, will determine how our actions ultimately affect climate. St Augustine points us to the decisions we take in navigating across that stage. He points to those decisions as the locus of our salvation or damnation, for it is in choosing how and where to navigate our lives—how we respond to climate change risks—that we express who we are. For St Augustine, climate change policy is as much about the kinds of people we want to become through our decisions as it is about the climate risks we hope to avert.

I am more concerned in this short paper with St Augustine than St Bernard, but the two are joined in sustainability and climate change. I will argue that both of these issues are fraught with significant uncertainty, and that both are leading to unintended consequences of our actions that prevent us from reaching our deepest aspirations. Part of the problem is that we are imperfect in our knowledge both of the world and the landscape of our decisions. That situation cannot be avoided because science is always tentative, contingent, changing and uncertain. I doubt St Bernard would have us in Hell for policies that looked good from the perspective of our best current science, but failed to deliver on aspirations, because we were partial in our knowledge of the ways of nature. He might, however, have us in Hell for failing to assess the world and our policies to the best of our capacities.

St Augustine points us towards doing what we think it is right to do even in the face of uncertainty. But there is uncertainty caused by the complexity of the world, and uncertainty caused by our failing to discharge our duties as scientists and thoughtful actors. Uncertainty caused by the latter means we could have understood nature and the impact of our actions better than we did, and so we are in part culpable for any failure to turn aspirations into performance. That is the issue I want to explore through the lens of UK climate policy, where we lead the world in setting targets through the Climate Change Act of 2008, but are a bit rubbish at hitting those targets. We have good intentions and desires as a nation (which is at least a good moral ground on which to sit), but those intentions and desires have been less effective than we need them to be.

Describing the landscape

Uncertainty comes in two flavours. The first is more closely captured by ambiguity, and here is where sustainability runs into difficulty as a programme of analysis, even if it retains usefulness as a framing principle for discussions. The National Indicators programme of the UK now has 68 indicators of sustainability, everything from air quality to housing to mobility to social cohesion.[1] These all are noble sentiments, and the list certainly brings in all three legs of sustainability. Any good planner should have them in mind when designing a community. But by trying to pack every noble sentiment into the concept of sustainability, the concept begins to lose its original and quite clear historical focus: that human use of materials and energy is beginning to exceed the capacity of nature to adjust and adapt. If natural capital is withdrawn at a rate faster than it is replenished, we will get to the end of the stock at some time. These are the historical roots of the term, and those roots are at risk of becoming buried under the sheer weight of indicators. So, at least in this chapter, I return to the original focus on the role of natural systems in ensuring humanity has a viable future.

Climate change fits comfortably into this more narrow focus of sustainability. We know what we mean by a climate; what an undesirable climate might mean for our lives; and how human uses of energy and material lead to change. We are, however, facing significant uncertainty. It is uncertainty of three kinds:

- We are uncertain about the degree of climate change we can withstand and still have a sustainable world, meaning a world in which we would be willing to live forever. The international climate science community has set the limit of climate change at a 2°C increase in mean global temperature, but that is based firstly on the ability of past societies to withstand such changes, and secondly on a concern that beyond this temperature change, there may lie unquantified 'tipping points' in the climate system that will cause rapid changes beyond our ability to adapt.
- We are uncertain about additional greenhouse gases we can add to the atmosphere to produce any given degree of climate change. In papers such as that by Meinshausen et al., this uncertainty has been quantified and is profound.[2] Such work shows that the target for reduction of greenhouse gas emissions is uncertain by a factor of more than 50%, and within this range lie actions that are easily achieved and those that are almost inconceivably difficult.
- We are uncertain about the relationship between our decisions and actions on the one hand, and between our actions and the rate of emission of greenhouse gases on the other. Each time we set in place a policy to reduce these emissions, there is 'leakage' throughout the global economic system, with reductions in the UK becoming increases in China. Our strategies to improve energy efficiency become an excuse for people to buy more energy efficient goods, by which I do not mean goods that are more energy efficient, I mean more of the goods that are energy efficient. This so-called 'Jevons Paradox' sees emissions rise even as our use of energy becomes more efficient.[3]

We are moving forward in international discussions, and in UK policy, under the assumption that we must reduce the rate of our greenhouse gas emissions by 80% between today and 2050, and that this rate of decline must be roughly constant over this period. And we are assuming that as we decarbonise our energy sources and improve the energy efficiency of our buildings, these greenhouse gas emissions will go down. And we are assuming further that if we put a price on carbon, or create feed-in tariffs for renewable energy, or develop increasingly stringent building codes, the market will respond by decarbonising and bringing about investments in

energy efficiency. But these assumptions are anything but well tested in consequences, making us profoundly uncertain about the path forward to reducing the risks of climate change. We are intending to do good, but have yet to see many signs that our intentions are being met with success.

Moving forward

Part of the answer to reducing uncertainty is more, and better, scientific study. We simply must better understand the landscape on which we make our climate policy decisions. But part of the issue—probably an even larger part—lies in better understanding how actions are taken in the world. To date, the focus on climate decisions and negotiations has been on public policy. We design public policies, whether national such as the UK Climate Change Act or international such as the United Nations Framework Convention on Climate Change (UNFCCC), as if the public sector is the majority shareholder in nature.[4] This is far from the truth. While public policies might frame and provide incentives for actions, it is largely the private sector that must respond. There are some exceptions, such as when the public sector owns and operates government buildings or social housing, and so can decarbonise these on their own initiative. But more than half the world's greenhouse gas emissions flow from complex chains of businesses, private building owners, individuals who drive about, and industrial actions under the control of shareholders.

Public policy has largely failed to understand this world of private decisions. It has failed to reflect the ways businesses take decisions on investments; how they are driven by concerns over investment risks; how businesses are linked together in supply chains; how individuals make decisions on which mode of transport is best; how those same individuals might use the improved energy efficiency of their homes to make themselves warmer in winter rather than decrease their energy use. A core lesson from Copenhagen, Cancun and Durban, the three most recent Conference of the Parties (COP) meetings under the UNFCCC, is that climate actions must become more of a public-private partnership. One might even imagine a world in which governments are the least important actors, where decarbonisation of the economy takes place through the top thousand global firms driving greener measures up and down their massive supply chains. This requires a very different landscape of decision;

one where public policies are not imposed on the private sector, but where there is collective action in which public policy facilitates, provides incentives for, and nudges forward, the actions of the private sector.

The challenge in reaching environmental sustainability—even in the narrow sense used in this chapter, and certainly in reaching it in the broader sense implied by the 68 National Indicators—is that one requires decisions that simultaneously encompass many human aims. We want a sustainable climate. But we also want democracy, economic vitality, justice, aesthetically pleasant communities, the rule of law, and so on through the long list of attributes of the good life which nestle within the broad concept of sustainability. All of these are affected by climate policy. No one individual or organisation in society has the capacity to plan for or take decisions on all of these aims at once. And so we divide the landscape of decisions into parcels, with the Treasury in charge of the economy; the Department of Energy & Climate Change in charge of climate policy; the Department for Communities and Local Government in charge of our buildings. We simplify the landscape for any one organisation, which then goes about finding an optimal path through that landscape based on the concerns and intentions they have been handed. This makes it difficult to find solutions to climate change that appropriately balance the many concerns of the good life increasingly packed inside the legs of sustainability. Some effort is being made to join up the decisions of these organisations through inter-agency panels (for example, the Adapting to Climate Change panel) but, at the end of the day, each organisation goes back home to a set of performance metrics against which it will be judged, and these metrics rarely reflect the full landscape of climate decisions. So these organisations achieve goals that are optimal for their small part of the puzzle, but are often in conflict with each other or are at least sub-optimal for achieving all of the goals of climate policy. Some reordering of the policy landscape, and perhaps the enabling legislation of these organisations, will be needed to find optimal solutions to climate change.

Action

What are we to do in the face of the profound uncertainty described above? Uncertainty need not paralyse action, or turn us into nihilists. As Mike Hulme has argued persuasively, we confront and reflect uncertainty

in every area of life, including public policy.[5] For some reason, uncertainty has had an unusually strong hold on climate decisions. It is useful to bear in mind that there are two sins of uncertainty: hiding the uncertainty (of which some in the climate policy world have been guilty) and hiding behind the uncertainty (the ploy of those seeking to slow climate policy). Uncertainty does not paralyse us in any other area of environmental protection or sustainability, and it need not do so in climate policy.

St Bernard and St Augustine carry somewhat similar messages: that we will be judged by the decisions we take and the effects of our actions. We are in complete control of the first, but nature has something to say about the second and our understanding here is limited. The solution lies in being completely truthful about the profound nature of our uncertainty, in avoiding the twin sins of hiding from uncertainty (pretending we are certain in our climate science) and hiding behind uncertainty (pretending that uncertainty precludes action). The solution lies in something like adaptive management, in which we take tentative steps forward on decarbonisation; monitor for success; change our policies and institutions when the results do not quite match aspirations; and move slowly across the landscape of decisions with humility in the face of a climate system and society that are complex beyond our current imaginings.[6] We do not have time for a lot of trial and error, or the worst impacts of climate change may be upon us. But we do have time to monitor how well our aspirations of effective climate action translate (or not) into reduction of the risks of climate change, and to change course when needed. That is probably all St Bernard and St Augustine are asking of us.

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[1] Department for Environment, Food & Rural Affairs, *Measuring Progress: Sustainable Development Indicators 2010* (London: DEFRA, 2010), available at http://sd.defra.gov.uk/documents/SDI2010_001.pdf.

[2] Malte Meinshausen et al., "Greenhouse-gas Emission Targets for Limiting Global Warming to 2°C", *Nature* 458 (2009): 1158–1162.

[3] Blake Alcott, "Historical Overview of the Jevons Paradox in the Literature", in *The Jevons Paradox and the Myth of Resource Efficiency Improvements*, by John Polimeni et al. (London: Earthscan, 2008), 7–78.

[4] For a review of the UK Climate Change Act, see the national Archives at http://www.legislation.gov.uk/ukpga/2008/27/contents.

[5] Mike Hulme, *Why We Disagree About Climate Change* (Cambridge: Cambridge University Press, 2009).

[6] Catherine Allan and George Stankey, *Adaptive Environmental Management: A Practitioner's Guide* (The Netherlands: Dordrecht, 2009).

Part 5

Sustainability potential

14

The environment and sustainability—an Islamic perspective

FAZLUN KHALID

It is argued in this paper that sustainable development is unachievable in the current growth model advocated by nation states where growth is fed by limitless credit created by the financial system. Sustainability can only succeed if there is a shift from the competing development mindset to one based on the recognition that the finite world we live in is threatened by the very model of financial intermediation that fuels modern civilisation.

In a quandary

The idea of sustainable development was popularised by the *Brundtland Report* which was published in 1987.[1] This report was an attempt at refocusing the nature of economic development following the discovery that the natural world was being denuded by human activity. Brundtland defined *sustainable development* as follows: 'Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.' It contains within it two key concepts:

- The concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given.
- The idea of limitations imposed by the state of technology and social organisation on the environment's ability to meet present and future needs.

Nobody would disagree with the first of these propositions as it is about meeting the needs of people, with emphasis given to the neediest. But the second idea appears to be missing something. It does not acknowledge that further limitations may be imposed by the carrying capacity of the planet, beyond those of technology and social organisation. There is no reference to the over-consuming developed

world and no indication as to how, in a finite world, resources could be shared more equitably. As Daily and Ehrlich wrote in 1992:

> Given current technologies, levels of consumption, and socioeconomic organisation, has ingenuity made today's population sustainable? The answer to this question is clearly no, by a simple standard. The current population of 5.5 billion is being maintained only through the exhaustion and dispersion of a one-time inheritance of natural capital ... including topsoil, groundwater, and biodiversity. The rapid depletion of these essential resources, coupled with a worldwide degradation of land ... and atmospheric quality ... indicate that the human enterprise has not only exceeded its current social carrying capacity, but it is actually reducing future potential biophysical carrying capacities by depleting essential natural capital stocks.[2]

The International Institute for Sustainable Development (IISD), in its attempt to define this term, proposes that we see the world as a system that connects both different points in space and different points in time. The idea of space helps us to understand that climate change does not recognise national boundaries, and the idea of time helps us to understand that the earth is a legacy we inherit and bequeath from generation to generation.[3] The IISD extends this idea of 'systems thinking' to the concept of sustainable development. The quality of life is a system too and it is essential to have food security, a healthy lifestyle, access to education and a secure income. Systems thinking helps us to understand our world and us. 'The problems we face are complex and serious and we cannot address them in the same way we created them. But we can address them.'[4] That is, the thinking that produced the problems cannot produce the solutions.

This is an instructive way of looking at the issues that surround sustainable development, but IISD notes a universal reluctance to deal with what we consider to be the root cause of the problems we have created for ourselves and which are now seen in increasingly dire terms by all the main international agencies involved in this matter. This is the financial system which we have engineered that drives our civilisation. Can the same system that has created the most advanced civilisation ever on this planet be the cause of its downfall? Our position is that any solution that is based on this system will fail because, as it is constituted today, it is deeply flawed and dangerous to the well-being of planet Earth.

At the root of this is our very notion of money and how we have managed to trick ourselves into believing that material progress can be endless, and how we have refused to face the fact that planet Earth is finite. Nevertheless, we will need to wade through the muddy waters of our current 'systems' to make some sense of it all and then take a look at how Islam deals with it.

Brundtland is clearly committed to redressing economic imbalances but we are prompted to ask if the 'needs' of the urban poor in Bangladesh are the same, say, as that of a citizen of Greece for example? Greek citizens are now overwhelmed by a financial crisis and are asked to tighten their belts because of the deep indebtedness of their country to the banks. But they protest, as the standard of living they have been used to has been undermined. The minimum need levels of the Greeks far exceed the maximum that the urban poor of Bangladesh can obtain for their survival. What are the values that drive one group of humans to look for extraterrestrial life on one of the moons of Jupiter, while another group scrambles for food in the dust in the Horn of Africa?

The UN has pledged to eradicate extreme poverty and hunger by 2015 in its Millennium Development Goals (MDG) launched in 2000 by:

- halving between 1990 and 2015, the proportion of people whose income is less than $1 a day;
- achieving full and productive employment and decent work for all, including women and young people;
- halving between 1990 and 2015, the proportion of people who suffer from hunger.[5]

But the UN's 2011 *Human Development Report* 'projects a disturbing reversal of … trends if environmental deterioration and social inequalities continue to intensify, with the least developed countries diverging downwards from global patterns of progress by 2050'.[6] One suspects a failure of comprehension at this point—if not irresponsible obfuscation—because redressing social inequalities on the scale envisaged requires such a massive effort that drastic environmental deterioration will follow as night follows day. But there is a way out of this conundrum: Will developed countries agree to an upper limit to growth—to a tightening of their belts, so the poor can loosen theirs a little?

If the climate talks are any indication, this is highly unlikely unless limits to growth are recognised as reality. There needs to be a radical shift in thinking from the current received economic wisdom, as there cannot be a perpetual increase in living standards and everlasting growth for all. The earth is finite. 'The 2011 Report concludes with a call for bold new approaches to global development financing and environmental controls, arguing that these measures are both essential and feasible.'[7] This again studiously avoids the global financial crisis that has been upon us since 2008, and there is hardly a mention of the irresponsible manner in which parts of the developed world have been conducting their affairs. Among the high profile victims of this kind of financial system thinking, which is long-term in its implications, are the ordinary people of Greece.

Rachel Carson wrote *Silent Spring* in 1962.[8] That was 50 years ago and it was a wake-up call that could not be ignored. She was the first to make the connection between pesticides, pollution and human health—and rightly given the credit for ushering in the modern conservation movement. The knock-on effect this triggered ultimately led to our flirtations with sustainability, and this 50-year time span has seen a revolution in matters environmental. A proliferation of organisations, conferences, declarations and a plenitude of platitudes framed in a background of perpetual crisis have emerged in this period, particularly at the top end of the institutional spectrum. In spite of the massive effort that has been put into reversing current trends, there is very little evidence of any significant change at governmental level, as in the US—nor of any significant behavioural change at the individual level, where ultimately it really matters. A brief foray into the workings of the international system in this area of human concern will give us an idea of how, never before in human history, has so much been done by so many with very little to show for it.[9] Or, one could say in mitigation that although much has been done, the strong tide of the problems caused by human 'progress' has more than cancelled out the gains made in the policy frontier.

Three streams

With hindsight, these international endeavours could be seen as three separate, but overlapping, streams attempting to resolve the issues that

Rachel Carson uncovered. The first of these could be described as *conservation and biodiversity*. In 1968, UNESCO convened the Intergovernmental Conference for Rational Use and Conservation of the Biosphere.[10] There was recognition here that resources were being irrationally used, and some early discussions on the ideas associated with ecologically sustainable development took place at this gathering. The report *Global 2000,* commissioned by United States President Jimmy Carter was released in 1980. [11] It recognises biodiversity for the first time as 'critical to the proper functioning of the planetary ecosystem'. The UN World Charter for Nature came out in 1982 and added to the work done by *Global* 2000 by adopting the principle that 'every form of life is unique, warranting respect regardless of its value to man'. It also calls for an understanding of our dependence on natural resources and the need to control our exploitation of them.[12]

The Millennium Ecosystem Assessment was published in 2005, the same year the Kyoto Protocol came into existence.[13] The bottom line of their findings was that human actions are depleting earth's natural capital and this is putting such strain on the environment that the ability of the planet's ecosystems to sustain future generations can no longer be taken for granted. At the same time, the assessment shows that with appropriate actions, it is possible to reverse the degradation of many ecosystem services over the next 50 years—but the changes in policy and practice required are substantial, and not currently underway. Scientific evidence concerning the consequences of ecosystem change to human well-being was provided by 1,300 experts from 95 countries.

The second of these streams could be described as *environment and development*. In 1971, a panel of experts meeting in Founex, Switzerland, called for the integration of environment and development strategies in their *Founex Report*.[14] This report identified industrially advanced countries, high levels of economic development and large productive capacities, among other factors, as being responsible for the damage caused to the human environment threatening the future of the whole world. That was 40 years ago. 1971 also saw the creation of the International Institute for Environment and Development (IIED) in the United Kingdom 'to seek ways for countries to make economic progress without destroying the environmental resource base'.[15] A contradiction if ever there was one—can we have our cake and eat it? Perhaps the

intention was to take up the challenge posed by the *Founex Report*. The venerable International Union for the Conservation of Nature (IUCN) released the World Conservation Strategy report in 1980.[16] The section addressing sustainable development identified the main agents of habitat destruction as poverty, population pressure, social inequity and trading regimes. The report called for a new international development strategy to redress global inequities. This is guarded language and a shift in emphasis from the *Founex Report*. Lifestyles and wasteful, unsustainable consumerism in developed countries are not directly addressed as matters of concern.

It would seem that, by the early 1980s, the fog that had clouded the connection between the environment and economic development was beginning to lift, and the International Conference on Environment and Economics convened by the Organisation of Economic Corporation and Development (OECD) in 1984 concluded that the environment and economics should be mutually reinforcing. This conference is reputed to have set the stage for the Brundtland Commission and the idea of sustainable development already noted.

The Independent Commission on International Development Issues published *North-South: A Programme for Survival* (*the Brandt Report*) in 1980, and called for a new economic relationship between north and south.[17] This report was about development and not sustainability and, in the little space it devotes to the environment, it concludes that the strain on the global environment derives from the growth of both the industrial economies and population. It called on all nations to 'cooperate more urgently in international management of the atmosphere and other global commons, and in the prevention of irreversible ecological damage'.[18]

The UN Conference on Environment and Development (UNCED), popularly known as the Earth Summit, was held in Rio de Janeiro in 1992.[19] Agenda 21 originated at this summit and it was described as 'a comprehensive plan of action to be taken globally, nationally and locally by organisations of the United Nations System, Governments, and Major Groups in every area in which human impacts on the environment.'[20] Agenda 21 was endorsed by 178 governments.[21] As a follow up to this, the UN Commission on Sustainable Development was established the following year to enhance international cooperation and rationalise

intergovernmental decision making capacity. In 1997, a UN review concluded that progress on Agenda 21 was disappointing. As if to reinforce this lack of success, the World Summit on Sustainable Development held in Johannesburg in 2002, was reported as a frustrating experience given the lack of progress. 'Instead, sustainable development was deemed to be whatever compromise governments happen to reach on trade, subsidies, investment and aid, and whatever projects corporations see fit to finance.'[22]

The UN Millennium Development Goals were launched in 2000 at the largest ever gathering of world leaders. It set 'time-bound and measurable goals for combating poverty, hunger, disease, illiteracy, environmental degradation and discrimination against women, to be achieved by 2015.'[23] There was no reference to sustainability in this laudable objective.

The third stream of concerns in the post-Carson world related to *climate change*. This aberration was first recognised as an issue in 1985 when global warming was predicted at a conference in Villach, Austria, attended by the World Meteorological Society, the United Nations Environment Programme and the International Council of Scientific Unions.[24] (The ozone hole over the Antarctic was discovered the same year). The Intergovernmental Panel on Climate Change (IPCC) was established after 1988, and the Kyoto Protocol, which committed national governments to reduce global warming, came into force in 2005.[25] It is commonly held that the climate change issue moved from the realm of science to the realm of politics in the mid-1980s and, since then, it has been high on the international policy-making agenda.

We have seen the expression of a broadly conservationist approach, but there is another approach at odds with this—that of expansionist growth and economic development. We will now take a brief look at this.

A parallel universe

If we are to take sustainable development seriously, then it behoves us to take a brief look at what drives the global system to which all nation states are committed. It will also be useful to remind ourselves at this point that what we are attempting to sustain are the resources of a finite planet that we deplete daily by our very lifestyles.

The International Union for the Conservation of Nature identified trading regimes as one of the main agents of habitat destruction in its report on World Conservation Strategy released in 1980. The push for international trade and, by extension, economic development comes from the World Trade Organisation (WTO) whose primary purpose is to 'open trade for the benefit of all'. A statement by the Director-General of the WTO contains the following concluding remarks

> The opening of national markets to international trade, with justifiable exceptions or with adequate flexibilities, will encourage and contribute to sustainable development, raise people's welfare, reduce poverty, and foster peace and stability. At the same time, such market opening must be accompanied by sound domestic and international policies that contribute to economic growth and development according to each member's needs and aspirations.[26]

It will not take more than a cursory examination of the first part of this carefully worded statement, which takes heed of all the diplomatic protocols, to come to the conclusion that 'sustainable development' is just one platitude among many—particularly in the absence of any mention of sustainable trade. But the concluding remark about the 'needs and aspirations' of member states bears some examination.

All nation states are committed to the kind of economic growth that leads to conspicuous rises in living standards that can be experienced by people in real time. There is, however, one major problem with this: with increased standards of living comes increased fierce competition between nation states for the declining resources of a finite planet. Nation states that are behind in the growth race are now playing catch-up with the so-called 'developed countries'—and, close on their heels, are Brazil, Russia, India and China (collectively known as the BRIC countries), with countries like Indonesia, South Africa and Turkey heading a queue at the back. Sustainability does not figure in this scheme and if the BRIC countries collectively manage to raise their living standards to anywhere near what is currently being enjoyed by the developed world, the consequences to the planet would be disastrous. One does not need a crystal ball to come to this conclusion.

The competition for scarce resources and the race to stay on top of the consumer league plays itself out in the climate change arena, and to be a

powerful country helps in the realm of international politics. Perceived national interest always wields a strong influence and this appears to lie behind, for instance, why the US withdrew from the Kyoto Protocol on Global Warming, and the reluctance by various countries (including the BRIC group) to sign up to strong binding agreements at the Conference of Parties (COP) in Durban in December 2011. Although the official communiqué was upbeat,[27] the NGO community regarded the outcome as verging on the catastrophic.[28] The conservatively neutral International Energy Agency pronounced that 'the world is locking itself into an unsustainable energy future which would have far-reaching consequences' when it published *World Energy Outlook 2011* in November 2011 just ahead of the Durban summit.[29] It would appear that no heed was taken of this. Although curbing carbon emissions will help the cause of sustainable development, it is seen as a hindrance to industrial expansion, the growth of international trade and, ultimately, to consumer lifestyles.

What is being played out in the international arena today is akin to conservationists trying to use little buckets to fill a large hole that is being dug by politicians and economists with the assistance of giant bulldozers. Will the more affluent nations behave sustainably and reduce their excessive consumer patterns? 'As long as the richest 20% of the world population continues to account for 86% of total personal consumption expenditure, it is unlikely that sustainable development will ever be achieved. The resulting pockets of wealth in a sea of poverty heighten tensions and overexploit resources.'[30] But given the nature of the environmental crisis, sustainable development at best presents us with the opportunity to look at what we are up against. As observed earlier, there is a race whereby the so-called underdeveloped world, led by the muscular BRIC countries, is pursuing growth policies, nowhere near sustainable, to catch up with the living standards of the developed world. As the 'haves' are not going to let go of what they already have, the question is, how far can the remaining 80% of the world's population go to achieve some degree of parity without destroying the planet for good? Sustainability does not figure in this equation.

The following cautionary statement by the authors of Global Environment Outlook 4 in 2007 still goes unheeded.

> History also shows that some policy decisions take many decades to unfold, for example, sustainable development and mainstreaming the environment. Both have been on the international and national agenda for the 20 years since the report of the World Commission on Environment and Development, *Our Common Future (Brundtland)*, was published, but increasing their uptake remains as urgent today as it did then.[31]

The problems that arise from the current model of growth and development and, by extension, from our political construct not only implicate politicians, economists, scientists and technocrats, but also the rest of us by default. The founder of The Club of Rome, Aurelio Peccei, says that there has been a large-scale overshoot in the way the human population and economy extract resources from the earth and emit pollution and wastes to the environment. Many of these rates of extraction and emission have grown to be unsupportable. The environment cannot sustain them. Human society has overshot its limits, for the same reason that other overshoots occur. Changes are too fast. Signals are late, incomplete, distorted, ignored or denied. Momentum is great, responses are slow.[32]

Sustainable development has yet to live up to the expectations of policy makers and turn into the practical reality that it is intended to be. In exponential growth, it has a muscular rival that it would find impossible to compete with. There is no longer any doubt that this exponential growth is the driving force causing the global economy to breach the physical limits of the earth.[33] The driver for this growth is the global financial system that has contrived to provide the liquidity that lubricates the kind of activity that is destroying the planet. The Muslim thinker Seyyed Hossein Nasr describes this condition thus, 'There is near total disequilibrium between modern man and nature as attested by nearly every expression of modern civilisation which seeks to offer a challenge to nature rather than to co-operate with it.'[34]

Money, banks and exponential growth

Nasr's comment is not intended to absolve Muslims from this condition, as they are as much a part of the problem as they are of the solution—Muslims have contributed substantially, both in the positive and negative senses, to what has been described in the preceding analysis. However,

there has been an erosion of the Islamic perception of the holistic and a withering of its understanding of the sacred nexus between the human community and the rest of the natural order.[35] The Qur'an reminds us that, 'The creation of the heavens and the earth is greater by far than the creation of mankind, though most people do not know it' (40:57).[36]

There is some serious thinking going on in the Islamic world about coping with modernity and responses are now evolving to the perceived brilliance of the modern economic model that has delivered high standards of living to the West and has the potential to do this for the rest. As what we now understand by 'modernity' advanced, as the secular ethic progressively seeped into the Muslim psyche, and as industrial development, economic indicators and consumerism became the governing parameters of society, the matching of this model—and even bettering it— has become an imperative on the part of Muslim politicians and economists. In doing this, however, they betray Islamic principles as they end up by aping their secular counterparts in their commitment to the growth and development model that has brought the earth to its present parlous state.

Mainstream economists tend to avoid the history and ethos surrounding money and its relationship to the ecological crisis. There is a burgeoning eco-economics specialism but this is still too small and weak to make its presence felt. Muslim economists fare no better. Steeped in the Western tradition, they seek to modify Islamic teachings to seek compatibility with the dominant model, chasing ever-increasing standards of living. This group has pioneered the creation of Islamic banks which are run ostensibly without charging interest (the terms interest and usury are used interchangeably), but its credentials are challenged because this model functions under the umbrella of mainstream banks and thus cannot shake off the influence of usury.[37] Muslim thinkers who take a different position reject this hybrid model altogether but this group, like their eco-economics counterparts, is far too weak to make its presence felt.[38] At best, the current model of Islamic banking will enable Muslims to come as close to what is *halal* (permitted) in their transactions. But this is like playing tennis with a cricket ball and it is hard to ignore the fact that Islamic banking functions under the aegis of the 'international fractional reserve system' which, as we will see below, is severely flawed and is at the root of our environmental dilemma.

Nevertheless, in the Muslim interspace between mainstream economists and purists, there is a group of scholars looking at sustainable development from an Islamic perspective. They hold that sustainable development is a move in the right direction and by 'emphasising justice, equity and redistribution, it has brought development theory much closer to Islamic concepts'.[39] They believe, however, that true sustainability can be brought about only by the implementation of the *sharī'a* (the Corpus of Islamic law based on the Qur'an and the practice of the Prophet) and by the abolition of the interest-based system of banking. It is asserted that the *sharī'a* 'will check forces leading to the concentration of wealth in a few hands, protect the rights of wage-earners, and take sufficient measures to guarantee a minimum standard of living for all those who are unable to get it'.[40]

The world has been witnessing an unprecedented series of financial crises that have lasted for over five years and shows few signs of coming to an end. It is noted that the old enemy, greed, that has brought powerful economies almost to its knees, is casting its spell on a grand scale. Over-extended debt has fuelled consumption patterns and economic growth that has been anything but sustainable is now creating nightmare visions of global collapse. This has focused people's attention on the banking system and the nature of money as never before and it is increasingly common to come across interesting appraisals of money like this, for example: 'in spite of all its fervid activity, money remains a naked symbol with no intrinsic value of its own and no direct linkage to anything specific'.[41] As Joel Kurtzman writes, money has come to be recognised as mere tokens and 'there is something quite magical about the way money is created. No other commodity works quite the same way. The money supply grows through use; it expands through debt. The more we lend, the more we have. The more debt there is, the more there is.'[42] The money we have in our pockets is the direct result of the creation of a debt by someone, somewhere. It is not difficult to come to the conclusion from this description that the financial system, as we know it today, is a mirage and it is this mirage that rules our lives.

The tokens of 'value' that Kurtzman describes are created by the banks from nothing, and grow exponentially *ad infinitum*. But we know that the natural world, which is subject to drastic resource depletion, has limits

and is finite. This equation is lopsided and the question is, for how long can we continue to create this infinite amount of token finance to exploit the real and tangible resources of a finite world? Looked at from this perspective, money, as the modern world has contrived it, assumes the characteristics of a virus that eats into the fabric of the planet. The consequences of this become visible as climate change and massive global environmental degradation. It is generally known that Islam prohibits usury or the taking of interest and the term used in the Qur'an for this is *riba*. This term has wide connotations and, simply put, it means one cannot have something out of nothing. Thus, prohibition on *riba* is also seen as prohibiting the creation of credit from debt. The Qur'an denounces these practices vehemently and we can see why from the foregoing discussion, 'Those who take usury [*riba*] will rise up on the Day of Resurrection like someone tormented by Satan's touch' (2:275).

To make the links between exponential growth, exponential creation of credit and environmental degradation, we need to take a brief look at the work of scientist and historian Henry Adams who propounded a theory over 100 years ago which suggested that the acceleration of technological change was forcing the acceleration of history.[43] It will suffice to say that Adams constructed a graph on a logarithmic time base to show that there was a relationship between the rate of consumption and use of energy, and what he described as 'technological progress'. The result was an exponential curve and he observed that the acceleration of the sixteenth and seventeenth centuries was rapid and startling, as seen in Figure 14.1. And he added

> The world did not double or treble its movement between 1800 and 1900, but measured by any standard known to science … the so-called progression of society was fully a thousand times greater in 1900 than in 1800. At the accelerated rate of progression since 1600, it will not need another century to turn thought upside down. Law in that case would disappear … and give place to force. Morality would become police. Explosives would reach cosmic violence. Disintegration would overcome integration.[44]

Henry Adams who lived most of his life in the nineteenth century had no idea of the emergence of nuclear fission as this was only discovered in 1938. He also said that we have until 2025 to turn things round. When he

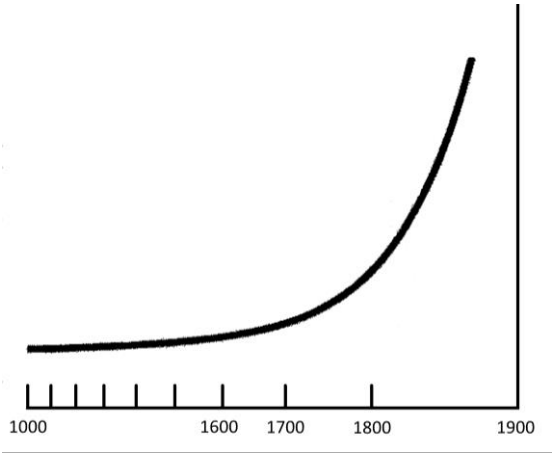

Figure 14.1 Law of Acceleration[45]

made these uncanny predictions, like everyone else at that time, he had no knowledge of the emergence of the 'new nuclear physics' and global warming as life changing issues.

All these forecasts have either already unfolded, or are in the process of so doing. The point of crucial interest for us, in this analysis, is the time at which the graph began to rise. Ever since man evolved from being hunter-gatherers to settled farming communities, human civilisation advanced gradually over eons of time. The acceleration graph shows an abrupt, upward trajectory from the sixteenth century onwards and it is during this time that we can begin to discern the appearance of factors lying at the source of this sudden surge. Adams, in his historical cultural context, was only aware of what we now see as secondary and tertiary causes. What was important to him was technological change allied to energy consumption and his valuable work 100 years ago produced the first exponential growth curve. A closer examination of this through an Islamic prism will, we believe, clearly show us the primary cause. What propelled the human race into an uncertain and unpredictable modernity was the legitimisation of usury in Europe. The banking system as we know it today began its evolution in northern Italy in the thirteenth century, but the statute of 1545 enacted during the reign of Henry VIII is 'of paramount importance in the history of usury and consequently in the history of

money'.[46] The puritan preacher John Calvin's letter supporting usury appeared the same year.[47]

What Kurtzman has described so eloquently is known as 'fractional reserve banking' which is the very same system that evolved in the principalities of thirteenth-century Italy. This system was entrenched by the creation of the Bank of England by an act of Parliament in 1694. Uniquely banks are the only institutions in the world that can charge its customers a fee (interest) for giving something they have created out of nothing and also demand collateral for it.

> The secret of creating money is being able to persuade people to accept one's IOU (a promise to pay in the future) as a medium of exchange. Whoever manages that trick can derive an income flow from the process (e.g., the medieval goldsmith's fees, or, today the interest on the loan that creates the money).[48]

A Muslim response

The primary duty of the Islamic state is to promote public welfare: 'Be a community that calls for what is good, urges what is right, and forbids what is wrong: those who do this are the successful ones' (Qur'an 3:104). As part of these functions, it has the mandate to protect land and natural resources from abuse and misuse, provide market spaces where free trade can take place, and mint gold and silver coins as means of exchange and stores of value. From its earliest years, the Islamic state established an agency known as the *hisba* whose specific task was to protect the people through promoting the establishment of good and forbidding wrong doing. This agency was headed by a learned jurist *(muhtasib)* who functioned like the chief inspector of weights and measures and chief public health officer rolled into one. She (the very first muhtasib was a woman) was also responsible among other similar duties for the care of the environment.

In broad outline, the Islamic principles governing trade, finance and environmental protection could be enumerated as follows:

- Equitable development based on the principle of establishing a just society is an imperative. The concept of *iqtisad* encourages moderation and simplicity; material benefits are not denied and

one group or individual cannot take undue advantage over others in the distribution of *limited* resources.

- Accumulation of wealth is discouraged. The Qur'an asserts in the chapter entitled 'Competition', 'Striving for more distracts you until you go to your graves. No indeed! You will come to know. No indeed! In the end you will come to know' (102: 1–4).
- Distribution and sharing are encouraged. The institutions used for this purpose are *zakāt* which is 2.5% of savings and is compulsory; *sadaqa* is the voluntary giving of surplus wealth; *al infaq* is an extension of *sadaqa* whereby the deprived are seen as having a right over the surplus wealth of others. 'Have you considered the person who denies the Judgement? It is he who pushes aside the orphan and does not urge others to feed the needy' (107:1–3).
- Caring for the environment is encouraged: 'Corruption has flourished on land and sea as a result of people's actions and He will make them taste the consequences of some of their own actions so that they may turn back' (30:41).
- Money broadly is any commodity that can be used as a medium of exchange. Gold and silver have historically been the precious metals used for minting coinage. Usury is forbidden and in Islam nothing like the current fractional reserve banking system and the issue of paper money is possible.
- Markets based on Islamic teachings must be free. Prices are determined by open transactions and produce must be open to inspection. Hoarding, monopoly trading, gazumping and false or misleading information are forbidden.
- Some examples of contractual obligations are: *shirka*—partnership in which lender shares in risk; *mudabarah*—agreement between the provider of capital and labour; *bai' al salam*—advance payment based on weight of produce and delivery time (futures trading of the variety practised today are prohibited); *qard hasan*—a beautiful loan (no interest is charged and there is no time limit; the onus of repayment is on the borrower and he is honour-bound to repay at the first opportunity).

- Wages—should be paid before the 'sweat dries on the labourer's brow' (Hadith according to Ibn Majah, 2443).[49]

The development and application of these principles and institutions have seen a decline over the past two centuries as aggressive European colonial policies, creeping globalisation, the fractional reserve banking system, the economics of industrialisation and the profit motive gradually overtook this model. We are experiencing the consequences of this now. However, there are clear indications as to how this Islamic heritage could again be put to good use in order to address the issues surrounding sustainable development. We also need to consider that, in today's global order of which Muslims form a significant part, conspicuous consumption tops the list of priorities. Muslim nation states, of which there are now about 60, willingly cooperate with this consumer ethic.[50] It should be obvious from this that it becomes almost impossible for Muslims whether individuals or nation states, to live according to a normative Islam today. There is now a schizoid tendency in Muslim society whereby it strives to maintain its deep attachment to Islam while it insists on enjoying the fruits of the consumer society.

One could say with a reasonable degree of certainty that the environmental problems we see today would not have arisen in a society ordered in accord with Islamic principles, because its world view 'defined limits to human behaviour and contained excess'.[51] Safeguarding against human excess had the effect of protecting the natural world. Human behaviour is governed by the *sharī'a* which evolved holistically and there is nothing to stop its further evolution to address contemporary issues. However, there are important impediments to its proper application today in what is now a complex political climate. They are:

- The *sharī'a* is marginal even in Islamic states because of the dominance of the global system now in place. The influence of international trade and finance is a case in point.
- The *hisba* is an agency that has the potential to set down environmental guidelines and act to resolve conflict in matters relating to natural resource use but it is now virtually non-existent.
- The state and the apparatus of government have separated themselves from the body of Islamic scholars (*ulema)* who are

coming to be known as 'the religious authorities', a euphemism for a clergy, which is not recognised in Islam.[52]

- Following the Western model, experts and government officials of Muslim states increasingly function in independent and separate spheres. As a mirror of what is happening in the West, Muslim economists and environmentalists tend to be two separate species with opposing perspectives.
- The nation state model, which is now the universally accepted form of governance which all Muslim countries have adopted, considers economic development as its highest priority. Coping with issues relating to sustainability is much lower down the scale.

While there are impediments to the implementing solutions based on the Islamic world view, it is important for Muslims to engage in the debate concerning sustainability and, at the same time, work in partnership with the other traditions and like-minded groups and organisations. At the root of the crisis is personal behaviour and, if Muslims were true to themselves, their spontaneous inclination would be to prioritise the welfare of others with whom they share a finite planet—a planet which needs to be cared for in the interests of the generations to come.

The present system of financial intermediation that originated in western Europe to run planet Earth could be likened to a fortress being built on quicksand. Everything looks solid and the people, living inside seemingly impregnable walls, feel protected. And yet, there is unease; feelings of uncertainty prevail; there is an odd rumble here and a tumble there; breaches appear in the walls. Politicians and bankers feverishly carry out running repairs. The problem has been fixed—or has it? There is yet another breach in the wall just around the corner and it is usually bigger than the last one. As observed earlier, in the words of the International Institute for Sustainable Development, we cannot address the problems the same way we created them. The banking system is like a prop that supports the civilisation we have created for ourselves. A sudden tug at this prop will cause global collapse and will drastically disrupt the lives of people living mainly in the 'advanced' world. Witness Greece. The least affected will be the poor, as they have little or nothing to lose. On the other hand, leaving the prop in place will increase the problems we are

now witnessing, as in the current financial crisis in Europe and North America.

The future is said to be in the hands of the advancing BRIC countries, with others in close pursuit. But the route they take is the familiar one already trodden by the advanced economies, signposted by development, prosperity, consumerism, high *per capita* incomes, high GDP and unsustainable economic growth. The exponential law being in play, it would not be unreasonable to assume that the BRIC countries will arrive at the point the advanced economies are now in sooner than they think. It took the developed nations almost 300 years to get to this point and arguably the BRIC countries will get there in less than 30, given their frightening rates of growth. In GDP terms, Brazil is already ahead of the UK. During this period, the banking fissures will widen—and possibly crack open altogether, if nothing else is in place to keep a functioning civilisation alive. In the meantime, climate change will have set in, the oceans will have further acidified, the earth will have lost its forests, and we will be warring over water. A way out of this conundrum is possible. 'With appropriate actions it is possible to reverse the degradation of many ecosystem services over the next 50 years, but the changes in policy and practice required are substantial and not currently underway'.[53] In this regard, we could pay heed to Eric Schumacher. In his *Small is Beautiful,* he 'maintains that Man's current pursuit of profit and progress, which promotes giant organisations and increased specialisation, has in fact resulted in gross economic inefficiency environmental pollution and inhumane working conditions.'[54]

It will get a lot worse before it gets better and, as always, wisdom comes after the event. Paradoxically, it seems that the new innovators are looking at old ways that have stood the test of time. First principles like 'you can't have your cake and eat it', 'cut your coat according to your cloth' and 'if you care enough to share enough, we will all have enough' if not exactly fashionable at the moment, are being noticed. The idea of degrowth is now creeping up the agenda and not too late at that. It promotes voluntary simplicity and localisation as a counter to globalisation. Perhaps the time of 'small is beautiful' has come. Then there is the burgeoning Transition Movement, working out how we should live as oil wells begin to run dry. Underpinning these movements are the alternative currency activists. We have LETS (Local Exchange Trading Systems), the Brixton

and Totnes pounds, Time Banks and a proliferation of other innovative ideas for exchanging goods and services, usually in localised situations—and the emerging evidence suggests that some of these ideas can work across national boundaries too. Even *Time Magazine* carried a piece on the alternative currency movement.[55] Muslims have their own version of this the most notable being the Gold Dinar Movement.[56] The Prime Minister of Malaysia proposed the establishment of the Gold Dinar standard in the Islamic world in 2002. Working within the principles of Islamic law, the gold dinar was introduced in the Malaysian state of Kelantan in 2006.

Muslims have their own unique part to play in finding solutions to our current dilemmas. Not only that, they could be strongly motivated to work with others, if only for the fact that future unborn generations have a common inheritance. If anything, this crisis should remind Muslims of the deep ecology of their faith—that is the unified and holistic nature of creation. Climate change makes no distinction between race, religion, culture and lines on the map. As they comprise a fifth of the world's population, potentially they should at least be contributing a fifth part of the solution.

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15

Religion and sustainability in global perspective

ELAINE STORKEY

In November 2009, a month before the Climate Change Conference in Copenhagen, a curious and colourful procession of bishops, imāms, monks, Buddhists, Sikhs, priests and rabbis walked through the town and into Windsor Castle, near London. They had come to a three-day summit organised by the Alliance of Religions and Conservation where they would hear one another's plans to tackle climate change.

The UN Secretary-General Ban Ki-Moon recognised the significance of this Alliance. For, as he pointed out, religions had established or helped to run half the schools in the world, were among the world's biggest investors; and the global output of religious journalism was comparable at least to Europe's secular press. That had to mean that they could also have a crucial role in warning people about climate change. His words to these delegates were unequivocal: 'You are the leaders who can have the largest, widest and deepest reach.'[1]

This reach of religion had to be used if the contradictions of the world were to be addressed. For the issues we faced as the population topped seven billion were full of challenges. Two years later, on World Population Day July 2011, Ban Ki-Moon spelled out the problems very clearly:

> We have enough food for everyone, yet nearly a billion go hungry. We have the means to eradicate many diseases, yet they continue to spread. We have the gift of a rich natural environment, yet it remains subject to daily assault and exploitation. All people of conscience dream of peace, yet too much of the world is in conflict and steeped in armaments.[2]

With these incongruities writ large, it made sense to recognise that if we are to bring hope to the future of both the planet and human life, we need more than materialist solutions. In each area, and not least in the area of ecology and the environment, we need access to the new thinking which has come out of long-established faith traditions, involving billions of people. And those who are most able to contribute philosophical, spiritual

and practical insights from their own religious perspective must be invited to the discussion table.

The secularist response

Sceptics and secularists argue differently, of course. They are more likely to see the problems of the world as exacerbated by religion, and to hold little confidence in religious leaders. They point to the damage done by religious wars, repressive theocracies, and brutal terrorists who claim to act in the name of God. They also point to the fact that the current trend, especially in the affluent countries of the North, is a shift away from religious adherence towards indifference or apathy with regard to faith. And they would claim that it is this waning, rather than the influence of religion, which has led to more benign attitudes towards the environment. Drawing religious groups into the issues of climate change or ecological harm would, for them, be at best a distraction and, at worst, counter-productive.

This response has often been muted, as religious groups have had relatively little input into global ecological discussions. But it is made more forcefully when the issue of their inclusion arises. We can see this in the reaction to a statement by Lord May, the former chief scientist of Britain. *The Economist* reported:

> When Lord May, the former chief scientist of Britain, said in September that religion might be needed to secure humanity's future, he was denounced by fellow secularists as a traitor. 'Such talk would open the way for theocrats to terrorise humanity anew with divine wrath', his critics said.[3]

This response might be exaggerated and in bad taste, yet the fears of secularists cannot be dismissed or ignored. Religion has often had a very bad press. But the issues are more complex and people who do not understand the strength of religion very often get it wrong. They might rejoice, for example, at the 'ebbing away' of religious identities but it would be a grave mistake to overestimate this, or write off the impact that religious faith still has on the population of the world today. Any drop in the ratio of belief to unbelief in the world's population must be seen in perspective. Though it has undoubtedly taken place over the last century, the decline is most pronounced in the secularised societies of the Global

North or as the consequence of agnosticism and atheism in former Communist countries. Despite this, the overall ratio of religious adherence to unbelief remains very high, since, out of seven billion people, over six billion people identify themselves with a religious faith. At the beginning of 2011, roughly a third of the world's people were Christians, and just under a quarter were Muslims. Hinduism, Buddhism and Chinese folk religions formed substantial minorities, and a proliferation of more minority religious expressions brought the total percentage up to almost 90%. And even if a considerable proportion of these are nominal rather than focused believers, religion is still undoubtedly a formidable presence in the global make-up.

Other points raised by secularists must also be seen in perspective. The point that inter-religious wars, militancy and terrorism have been a tragic and shameful blot on the history of human societies has to be conceded. Often the picture which religious zeal and bloodshed have portrayed of God has been far from that of a loving Creator, and far more reflective of the worst aspects of human pride and arrogance. Yet, the vast proportion of the six billion believers are neither militant nor brutal, but people of worship who struggle with the conviction that God asks us to be just and peace-loving, but face the reality of sin in the world and their lives. When religions get things horribly wrong, it is not because they believe they are accountable to God and encourage disciplined prayer. It is because they face the problem of all institutions, ideologies, structures and societies: they recruit from the human race.

So although those with the strongest part to play in economic and political decisions often remain suspicious of religion, the suspicions themselves can fuel the problems rather than provide any solutions. They can drive a wedge between those who could well work together across the traditional belief-unbelief divides. It is a grave mistake to believe that public debate and policy-making in these key areas of global concern should take place without the active involvement of faith groups.

Climate change as a religion

Many affluent-world climate sceptics, however, see no discontinuity between climate science and religion, and attack them both together. Their approach is very different, for in their irritation with the relentless

warnings from climate scientists, they allege that climate science is itself a religion. And their response is to heap scorn and derision upon the carefully sifted evidence, treating it like dogma which must be rejected. Two examples make this point. One American critic lambasts what he sees as the failure of accurate prediction with regard to global warming. He makes no attempt to engage with the careful details of the data, but instead resorts to anti-religious abuse and applies it to climate science.

> With so many past failures you might think that environmental predictions would become more cautious. But not if it is a religion. Remember, the nut on the sidewalk carrying the placard that predicts the end of the world doesn't quit when the world doesn't end on the day he expects. He just changes his placard, sets a new doomsday date, and goes back to walking the streets. One of the defining features of religion is that your beliefs are not troubled by facts, because they have nothing to do with facts.[4]

A similar assault is made in the Australian magazine, *Quadrant Online,* in August 2012. John McLean attempts to portray the Climate Change Commission as a religious cult, dismissing a Climate Change Conference in Australia (attended by 600 delegates from business, agriculture and science) as a 'travelling salvation show' and a 'revivalist meeting'.

> On Tuesday, 24 July, Melbourne was treated to Brother Tim's Travelling Salvation Show, aka the Climate Commissioners, calling on the faithful to force carbon sinners to repent.
>
> It was a revivalist meeting, complete with pictures and snake oil.
>
> The elixir from Brother Tim and his brethren offered the solutions to all our ills. It was the remedy to rising temperatures, rising sea levels, the threat of extreme temperatures, drought and lo, it would save the planet for future generations. Glory be![5]

After challenging the authenticity of the data, the professionalism of the scientists and the seriousness of the problem, McLean resorts to further insult:

> No religion is fully supported by logic; there's always a gap somewhere, before, if we are lucky, internal consistency returns. Brother Tim's climate religion doesn't have a gap but a chasm, one that he tried hard to ignore. Or maybe he thinks he can walk on water. … It was all such a revivalist meeting that I almost expected some of the audience to stand up, wave their arms in the air and shout 'I believe'.[6]

Careful engagement with serious argument, within either environmental science or religious perspectives, is so absent as to make these observations devoid of value. So there is no justification to devoting further time here to this kind of invective, except to note that even when misinformed, these attitudes can discourage others from careful exploration of the issues.

A growing awareness across religions

Over the last decade, more and more religious scholars have challenged the silence within their community on the issues of climate change and ecology and have encouraged a greater probing. This is true even in those traditions whose ethos has been particularly world-denying or inward-looking, and which have consequently ignored or downplayed the significance of science and the world in which we live. Progress has been late, and slow, but even within these groups there has been an opening up to issues of climate responsibility. Most religious thinkers have recognised that evacuating believers from the battle zones of environmental care is self-defeating, for then the debate is conducted without the input of those who might have important insights to contribute.

A growing chorus of voices has been calling for a broader outlook, acknowledging particularly the need for religious traditions to review their sacred texts and consider how they address environmental concerns. This has been relatively easy for Judaism and Christianity as the Hebrew Scriptures, from the beginning, provide a strong theological framework for respect for creation. The Law, the Prophets and the Psalms steer us strongly in the direction of God's authorship of creation and our stewardship and accountability. Lee Levett-Olson, however, believes it is possible for most religions to open these issues up.

> Strong traditions in Christianity, Islam, Buddhism and Confucianism and perhaps the most dominant strand of Judaism all share the idea that human beings are called to help regenerate the cosmos and restore its original harmony. There is a spectrum of belief about the relative effectiveness of human vocation or the more direct intervention of the deity, but for all these faiths the future can be better than the present, in part because of human choices and behaviours.[7]

Christian responses

This is good news for those scientists whose work on climate change has long been integrated with their respect for creation and their underlying faith. Within Christianity, for example, such scientists have been active for several decades—not least the physicist Sir John Houghton[8] and the botanist Sir Ghillean Prance.[9] Sir John Houghton has been Professor of Atmospheric Physics at Oxford University, Chief Executive of the Meteorological Office and co-chair of the science working group for the Intergovernmental Panel for Climate Change; Sir Ghillean Prance has worked in the Amazon rain forests, was the Director of Kew Botanical Gardens, and is now the scientific director of the Eden Project and chair of A Rocha. They are also both evangelical Christians whose research, writing and speaking over many years has brought the issue into full public view in Christian circles. John Houghton, for example, has founded the International Society of Science and Religion, and the John Ray Initiative—an organisation 'connecting Environment, Science and Christianity'. He, along with Prance and many other scientists, has challenged others to see environmental concern as a holistic part of Christian calling. The response has been very significant, winning support from those within the evangelical movement who had once been resistant to it including, in 2003, Richard Cizik, the Vice President of the conservative National Association of Evangelicals in the USA. This spawned the Evangelical Climate Initiative (ECI) drawing in 300 evangelical leaders across America to a common agenda for sustainable living and action.

There has been accompanying progress in both the theoretical underpinnings and programmes of conservation among Christians over the last decade. Theologians have grappled with a biblical theology of the environment, church schools have developed wild gardens, and Christian associations have begun to preserve natural habitats, eliminate waste and reduce carbon emissions. It has been, effectively, a global movement, drawing in fellowships, denominations, youth groups and many faith-based development organisations. In October 2011, for example, the Catholic development charity CAFOD joined with evangelical Tearfund, and Christian Aid in Manchester UK to stage a whole day of witness and challenge about climate change. Representatives from Africa, Asia and

Latin America made clear the impact of global warming on their own communities. This significant event even attracted people outside the Christian faith to join the march through the city, and attend the candlelit vigil in the large city square.

This working together is replicated at every level. In March 2012, a host of denominational Christian leaders including Cardinal Keith O'Brien and Anglican Archbishops Rowan Williams and Desmond Tutu put out an Ash Wednesday statement calling for repentance over indifference to climate change. They made it clear that reducing dependence on fossil fuels was 'essential to Christian discipleship'.

> The likelihood of runaway global warming, which will diminish food security, accelerate the extinction of huge numbers of species and make human life itself impossible in some parts of the world, raises questions that go to the heart of our Christian faith … Continuing to pollute the atmosphere when we know the dangers, goes against what we know of God's ways and God's will. We are failing to love not only the earth, but our neighbours and ourselves, who are made in God's image. God grieves over the destruction of creation and so should we. Repentance means finding creative, constructive and immediate ways of addressing the danger. It happens when God's Spirit enables a change of mind and change of heart, prompting a turn from past wrong and a decision to change direction.[10]

For many Christians, therefore, the reality of climate change and global warming is now undeniable, and responding to the issues is part of our calling. The sobering fact, however, is that some stay resistant to the call, as we shall see later.

Jewish responses

My own focus is within Christianity, yet there has been activity and engagement across the religious spectrum. The Coalition on the Environment and Jewish Life was founded in 1993, drawing on very long-established theological roots. Both in Judaism and Christianity, the biblical legacy begins with the book of Genesis, where humans are put in the Garden of Eden to be 'stewards' of the earth. Many Jewish writers point out how ecology and religion are completely intertwined and evident both in action and text. Connection to the land, the intricacy and connectedness of nature, and awareness of the things that only God can

create from nothing (*borei*) are woven into the structure of Jewish life. Hava Tirosh-Samuelson, Professor of History and Director of the Center for Jewish Studies at Arizona State University, USA, reiterates the key notion of responsibility—that the responsibility for the well-being of the earth given to the human carries considerable consequences. For him, 'the way humans till the earth relates to moral integrity; lose their moral compass, and humans will harm the earth, themselves, and their society.'[11] Sarah Chandler, Education Director of West End Synagogue in New York City, cites Biblical and Talmudic rules which have important environmental consequences—rules, for example, regarding pollution, soil conservation and the blanket prohibition on wasting (*bal tashchit*).[12] Other examples come from Jewish dietary laws. *Eco-kashrut* (a term coined in the 1970s by Rabbi Zalman Schachter-Shalomi, but developed in the 1980s by Rabbi Arthur Waskow) includes a host of requirements that food be healthy, sensitively produced, environmentally sustainable and so on.[13]

All this has been reflected in Jewish institutions for some decades. In the USA, the Shalom Centre, Philadelphia, was set up in 1983 to be a prophetic voice in Jewish, multi-religious and American life, addressing issues of social justice and protection of the earth. Rabbi Waskow, its founder and director, has been a perceptive critic of accepted climate policies, even arguing that burning fossil fuels violates the covenant with God. Julie Halpert reported Rabbi Waskow's views:

> He draws parallels between the way the Pharaoh of Egypt, addicted to his own power, refused to stop oppressing humans and as a result suffered the plagues—all ecological disasters. 'Today the Pharaohs are giant corporations: big coal, big oil, and big natural gas,' he says. 'The only way to deal with a modern-day Pharaoh is to organise the people.'[14]

Different branches of Judaism vary in their embrace of climate change issues, yet there is evidence of active concern across the spectrum. In America particularly, the number of Jewish environmental initiatives has continued to grow over the decades. We could mention the Isabella Freedman's Adamah fellowship, which integrates three months of Jewish learning and working on a functioning organic farm, or the Teva Learning Center, which hosts Jewish day school students for experiential environmental education. Programmes like Hazon run two bicycle-rides

each year to raise money for environmental causes, the Jewish Environmental and Energy Imperative encourages sustainability, and the many environmental education centres at camps and day schools work consistently with students.[15]

In the UK, the Board of Deputies launched a joint programme with the main Jewish environmental organisation Noah in 2002, with the aim that environmentally sustainable practices should be integrated into all main levels of traditional Jewish life. A decade later, the Big Green Jewish Website continues to deepen awareness and encourages people to do their own environmental audits and instigate action.[16] Although Jews form only a tiny percentage of the global population, their green programmes offer a challenge to all faiths and societies.

Islamic responses

Other faith traditions have also been on the move. Witness, for example, a key article on Islam and climate change in 2007. In it, the author, Muzzamal Hussain, lamented the lack of a comprehensive analysis of climate change from an Islamic viewpoint, especially considering the 'growing awareness of the seriousness of the threat that climatic change presents to the planet'.[17] Because of this, it was rare for the 'connections between spiritual elevation and environmentally friendly behaviour … to be discussed within Islamic forums.'[18] For Hussain, the shortcomings of this position were evident. Without leaders to develop these issues in their own communities, Muslims would not be aware of the part they could play in the public arena. His own scholarship aimed to meet that challenge.

There were reasons, however, why environmental ideas were slow to be aired in the Muslim world. According to Iranian-born intellectual, Seyyed Hossein Nasr, Professor of Islamic Studies at George Washington University: 'Like all of the other non-Western religions, Islam did not take a serious interest in the environmental crisis in the beginning. Because these were societies engaged with very immediate problems … So even thinking people thought this was a kind of Western problem, created by Western industrialisation and capitalism and so forth. And it wasn't their problem.'[19]

Islam has had its own pioneers in forging the change in attitudes, opening up these issues to Muslim communities. In the USA, Nasr's once isolated message about the urgency of conservation is now part of the Muslim agenda. Sri Lankan-born Fazlun Khalid has also done very significant work in the area. As Founder and Director of the Islamic Foundation for Ecology and Environmental Sciences in Birmingham, and with his pioneering expertise on ecology from an Islamic perspective, he has travelled the world urging Muslims to allow their faith to inform debate and action.[20] Recognised as one of the world's leading eco-theologians, Khalid has played a key role not only in the development of ecological thinking within Islam, but in working constructively with other faiths.

Arwa Aburawa is convinced that Islam has the 'capability of helping to solve one of the greatest problems of our time—that of *the environment*'. Scholars of the Qur'an can see 'the link between Islamic ethics and the need to curb our excessive use of non-renewable resources such as fossil fuels which are poisoning the air and land.'[21] She explains why:

> Nature is portrayed as God's glory, a gift of sustenance and humanity is divinely ordained responsibilities to care for the natural world and keep the harmony and balance placed within it. In the Qur'an there are 'ample instructions as well as warnings to the faithful not to abuse their power in dealing with the environment. Distortion of the natural order and ill-treatment of God's creatures, whatever they are, are considered as sins that lead to punishment.' Wastefulness is discouraged and excessive consumption or greed is actively prohibited.[22]

As within Judaism and Christianity, the task of education, scientific involvement and theological appraisal is being carried out on many fronts within the Muslim faith. At the Windsor Castle meeting, mentioned earlier, the Muslim plan was optimistic and far reaching. To be monitored by the Muslim Association for Climate Change Action, it was endorsed by more than 50 Islamic leaders in Istanbul, and ranged from suggesting compulsory teaching in the training of imāms on environmentally-friendly practices and programmes, to 'greening' the ten most sacred cities in Islam. As Martin Palmer, the Secretary-General of the Alliance for Religion and Conservation observed: 'if [something] can be proved to be Islamic, then it will almost certainly be the practice of if not the majority,

then a highly significant minority'.[23] The next few years will reveal what impact this has made in the task of sustainable development.

Hindu responses

I want to mention one more response—that from the Hindu faith. The Hindu Bhumi Project, launched in the UK in November 2009, has developed a nine year plan to help Hindu organisations and temples focus on their lifestyles and follow a more environmental approach.[24] Through education, action and networking, the aim is eventually to export it to other parts of the world where it can make an impact on a larger scale.

A month later, in December 2009, a Convocation of Hindu leaders meeting in Melbourne was presented with a declaration on climate change. It spoke of the Hindu reverence for life and its awareness that the great forces of nature along with the plants and trees, forests and animals are all bound together. Once again, the themes of morality, responsibility, misuse of the environment and potential destruction were put in the context of faith and the underlying religious tradition.

> The Hindu tradition understands that man is not separate from nature, that we are linked by spiritual, psychological and physical bonds with the elements around us ... Now centuries of rapacious exploitation of the planet have caught up with us, and a radical change in our relationship with nature is no longer an option. It is a matter of survival. We cannot continue to destroy nature without also destroying ourselves. The dire problems besetting our world—war, disease, poverty and hunger—will all be magnified many fold by the predicted impacts of climate change.[25]

The pattern of rediscovering the significance of faith in addressing key environmental issues of today has therefore been an important one. This spread of awareness is being replicated in so many faith communities, including Sikh, Jain, Buddhist and Daoist. Embracing an ecological agenda often involves inviting followers to turn away from 'other-worldliness' which has held up engagement with these crucial issues, and take on new responsibilities. Always, it asks us to look beyond our own communities, to the wider needs of human beings and of the rest of creation. With so many examples of scholarly engagement in theology,

ethics, philosophy and science issuing in significant initiatives, there can surely be little doubt of the need to involve faith communities in future thinking and action on climate change.

Resistance from within religion

I have been painting a positive picture of the resources available through religion with regard to climate change science and action. Yet, here I need to note that not everyone within religious circles is convinced. Some have become increasingly resistant to the growing consensus within their faith communities. The result has been that climate sceptics have, all too often, been able to mass support for their own disbelief about climate change from religious believers. There are several reasons for this. My illustrations here will be largely from Christian sources, but those in other religions may be able to identify parallel problems.

first, just as secularists are suspicious of religion, religious believers have often been suspicious of science, dismissing the careful work of scientific analysis and rejecting technological invention as inherently evil. Especially among fundamentalists of all religions, scientists can be portrayed as part of a huge (Western) conspiracy to eradicate faith and replace God with rational materialism. This fear has been recently fuelled by the rise of New Atheism and the belligerence of some atheistic scientists who have been at the forefront of attacks on religious belief.

Yet, although such attacks do exist, this fear ignores the truth that a considerable number of scientists are also people of faith, and see their work as an intrinsic part of their calling before God. There are probably more Christians among practising scientists, for example, than in most other professions who see nothing incompatible with biblical revelation and the scientific enterprise. The need is not to attack science, but to work for a more thoughtful engagement with the scientific community, so that the faith foundations of all knowledge can be exposed, and stereotypes of religion shown to be false.

Second, some other sceptics champion the minority of scientists who are not yet convinced that climate change is affected by human activity, and downplay the scientific consensus. Small points of uncertainty on specific findings are magnified and offered as justification for ignoring all

other, heavily weighted, evidence. For example, in their article, *A Call to Truth, Prudence and Protection of the Poor: An Evangelical Response to Global Warming* writers for the Cornwall Alliance for the Stewardship of Creation challenge the research undertaken over decades and attempt to discredit both the scientists involved and those evangelicals who have embraced their concerns.[26] Yet, though the Alliance insists that its repudiation of global warming is endorsed by 'more than 100 leading evangelical scientists, economists, theologians, and pastors', its reading of scientific data is very selective, and its key critic is not a scientist but a theologian.

Third, eschatological views also fuel the religious resistance to issues of climate change, producing passivity or an endorsement for inaction. Within some minority Christian groups, teachings on 'the tribulation' are often distorted to mean that we must do nothing to stop what needs to happen before the world ends; natural disasters and catastrophes are all seen as part of the divine plan—hurricanes, tsunamis and floods simply mean that the end is drawing near. Similarly, God has created a world where there will be just enough resources to last to the end of time, so if fossil fuels are running out or biodiversity declining, then time is coming to a conclusion. Yet, even if this were true, Christian teaching never endorses a *laissez faire* attitude, but challenges us to remain faithful in our work for God to the very end.

Fourth, many who reject environmental concerns do so because they believe that to focus on climate change is simply a distraction, shifting the focus away from the proper concerns of faith to 'issues that draw warm and fuzzies from liberal crusaders.'[27] This was the allegation hurled at Richard Cizik of the American National Association of Evangelicals when he changed his position on climate change. A letter accused him of diverting attention from the central concerns for the evangelical community, namely: 'the sanctity of human life, the integrity of marriage, and the teaching of sexual abstinence and morality to our children.'[28] Yet, however important these other issues, it seems extraordinary that something as central as the biblical theology of creation should not also be allowed to inform our lives and behaviour.

Fifth, in some quarters, the growing strength of a religious consensus on issues of climate science is seen as its greatest danger. The concern is that this itself will blur religious differences, bring in relativism and

compromise truth. Distinctiveness and uniqueness of truth will be replaced by an ungodly consensus. The fear is of a 'one world' megastructure, a new 'Tower of Babel', which will be syncretistic and ultimately envelop everything. Some even read this as part of prophecy and as something which true believers must vehemently oppose.

Yet this surely again misunderstands the nature of religious faith and the point of cooperation. It is perfectly possible, indeed desirable, to cooperate on matters which concern the common good, without even beginning to distil the differences in creedal faith. In the highly fragmented world we live in, the danger of any 'one world order' comes less from religions working together for the common good, than through monolithic commercial empires. And if different religious groups are committed to finding peaceful solutions to environmental crises, this in no way diminishes their differences in creedal faith or their own internal coherence. In my own experience, Christians can still hold firmly to the uniqueness of Christ, believe in the three persons of the Trinity, and see the urgent need for prayer and evangelism while working constructively with those of other faiths. To recognise that, despite our very many differences, people of faith have a common calling in our joint human task of being stewards of God's creation is not apostasy or an abandonment of doctrine. It is a mark of humility and a recognition of our common humanity created by God.

Finally, behind many expressions of climate scepticism among believers, political leanings are often more influential than religious commitment. This is especially true in the United States in organisations like the Cornwall Alliance, mentioned above. The Alliance has maintained a constant assault on any proposals for restrictive legislation, for instance on carbon dioxide emissions from electric power plants. It has verbally attacked the Evangelical Environmental Network for its support of environmentally-friendly Congress members, accusing them of obscuring the meaning of 'pro-life' by applying the term to restrictive regulations on mercury emissions. (For the Alliance, the term belongs properly only to the stance against abortion.) In its right-wing, free-enterprise stand, the Alliance has more in common with Republican politics than with theologically conscious faith, and allegations that these political interests are reflected in its funding have not helped its credibility.[29] Yet, it

continues to attract support from conservative Christian and Jewish quarters, and to persuade many who share its political allegiances.

In response to the fears of sceptics, I want to reiterate that Christianity's embrace of climate concerns takes biblical revelation seriously and is an integral part both of its theology and its response to God's world. It is not an 'optional extra' for those with 'left-leaning tendencies', but is woven into every aspect of Christian mission and discipleship. Whether we focus on our theology of God, of human personhood, of creation care, of redemption, of justice, of equal significance, of neighbour love, or of judgement, each of these areas has something to say about our responsibility for the earth and its people. Issues of justice are involved, because continued negligence from the affluent world inevitably brings much greater suffering to those societies already struggling with poverty. Issues of neighbour love are involved, for we are required not to act out of narrow (and often mistaken) self-interest, but to consider the needs of our neighbour. Issues of judgement are also involved, because we remain accountable to God for how we use or abuse what is entrusted to us. Responsible creation care and sustainable living are issues that touch both our faith and our humanity and require active, obedient response.

What can we do?

We return to the challenge given by the Secretary General of the United Nations. As members of faith communities, spread across the globe and encompassing billions of people, we must offer our voices in creating sustainable alternatives. It is our responsibility to expose the reality of the consequences of inaction for global warming, loss of biodiversity, water shortage, encroachment of deserts, spread of disease, and massive loss of livelihood for the world's poor. It is for us to draw attention to the consequences for those fellow believers who live in vulnerable areas, and whose health and well-being will suffer most. Just as it has always been the task of religious prophets to engage in critical dialogue with the surrounding culture, that prophetic calling is even truer for us today.

But we need also to learn how to network better with each other, not simply in planning more marches or campaigns, for those are costly and time-consuming, but in sharing information and our knowledge base. If we know what initiatives are underway, and what needs immediate

attention, we will be better able to work together for the common good. We need to keep abreast of what is happening in our different traditions, where there are successes in getting the message across, and where more work needs to be done. We need to learn how to mobilise energy to respond to issues as they arise. We need to readdress the education of our young, to make environmental issues a priority in the teaching in our faith schools, and to encourage our young people to develop lifestyle patterns which respect the resources which we have been given. We need, in short, to recognise, as Ban Ki-Moon has pointed out, that we can have the 'largest, widest and deepest reach' and that we can mobilise global resources. All this requires neither abandonment of our differences nor erosion of our own faith heritage, but goodwill and mutual respect. And, that in itself, can make a significant contribution to peace in our world, and help sustain good health for our planet.

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[29] Michael L. Westmoreland-White, "Follow the Money: Calvin Beisner, ExxonMobil, and Global Warming", *Levellers*, August 23, 2006, http://levellers.wordpress.com /2006/08/23/follow-the-money-calvin-beisner-exxonmobil-global-warming/.

Part 6

Spirituality and sustainability

16

Hopeful virtue: living in response to a world in crisis

RUTH VALERIO

A little while ago I received a text from a friend. The evening before, she had watched a programme about palm oil and the deforestation in Indonesia. The text simply read, 'Never knew about palm oil before. Programme awful. Tell me what I can do'.

The question, 'what can I do?' is the most natural question to ask. As we read about the terrible situation that we find ourselves in regarding the world around us, and as we face the reality of the intransigence of government, business and so many individuals to face up to the problems and respond adequately, 'what can I do?' becomes a question that we cannot help but ask.

Alongside the 'what can I do?' question, however, I want to suggest that there is another, equally important one based around the notion of the virtues. Christine Firer Hinze states: 'economic justice requires both good institutions and virtuous actors, that is, people who are habituated to proper judgements, desires and practices'.[1] We have been looking at issues around economic justice and what we would like our institutions to do. In this chapter, I want to focus on the individual and consider what it means for us to be 'virtuous actors' (although it will be obvious that what is covered here is also appropriate to governments and businesses).

The notion of 'virtue ethics' has become popular in recent times, associated particularly with the writings of Alasdair MacIntyre and Stanley Hauerwas. Virtue ethics is an approach that takes the focus away from questions of 'what is the right thing to do?' and 'what will be most effective?' to look more fully at the question 'what sort of person ought I to *be*?'[2] While this chapter is not the place for an indepth treatment of this ethical approach, I want to propose that a consideration of the virtues can be a helpful way to take us through the paralysis that sometimes occurs

when we ask ourselves only the question, 'what can I do?'[3] It can help in two ways. It can help because sometimes the answers to 'what can I do?' seem so huge and insurmountable that we find ourselves like rabbits caught in the headlights, overwhelmed by the enormity of the problems and hence unable to take any action. Secondly, it can help because a question that runs alongside, 'what can I do?' is, 'what's the point?' What's the point of not flying abroad on holiday when my next-door neighbour goes skiing every half-term and China is building five coal-fired power plants every week? Of course we want our actions to make a difference, but I find myself taking the position that asking, 'what kind of follower of Jesus will this help me become?' is actually a far more important question than, 'is this going to make any difference?' A virtue ethics approach thus breaks us out of a utilitarian framework that can easily lead to inaction.

The aim of this chapter, therefore, is to provide us with a framework for looking at how we can respond practically to the many challenges presented throughout this book. We will do that by surveying six key virtues. These virtues are found in many religious and philosophical contexts, but my aim is to expound them from my own Christian setting, so I will look briefly at where they are rooted in the Hebrew and Christian Scriptures. We will then focus on what they might look like when lived out. I will often use myself as an illustration of what we can do, not because I am the world's best example or because I think I have it all sorted out (far from it), but because, for many years now, I have been travelling along a path of trying to live in ways that do as little damage as possible to our world and have learnt a few lessons along the way that might be helpful to pass on.[4]

Humility

This is where we have to start: with a sober appraisal of who we are as human beings and what our capabilities and limits are. It is not something that we have been very good at, and so much of the ecological damage that we see around us is a result of our pride: of our belief that we can do what we want, where we want, to the extent that we want, without having any care for the consequences of our actions. We have believed that whatever problems we create will be solvable through technology and that any damage we cause is worth it if we see our lives improved as a result.

We have believed that land is worth destroying, water worth polluting, seas worth contaminating, air worth polluting if it furthers our own ends.

Of course, in following this route we have failed to see that our ends are in fact tied up in the well-being of that land, water, sea and air. Here we begin to find a true appraisal of who we are. On the one hand, biblically, we are indeed separate from the wider creation. Psalm 8 famously sets us out as 'ruler' over the works of God's hands and a little lower than the angels. But too often we have failed to see our links with the wider creation. We do not have our own separate 'creation day', but are created on the same day as all land creatures; we are given the same things to eat; the same blessings; and even the 'breath of life' breathed into Adam by God (Gen. 2:7) is the same as that breathed into the other creatures (1:30). We are *'adam*, formed from the *'adamah*.

Our difference comes in that we are the only species to be made 'in the image of God' (Gen. 1:26–28). This is not so much about ontology as about function: we are made in God's image *so that* we might look after the rest of what God has made.[5] I find it incredibly humbling to think that one of the key reasons I am here is to look after the rest of what God has made. Therefore I come to this role with humility, recognising that I neither *have* all the answers nor *am* all the answers. We are constantly discovering that our best attempts at solutions have hidden downsides that we did not foresee (look at the problems caused by biofuels) and so exercising caution and precaution should be enshrined in all we do. And so we should always carry with us the question, am I acting with humility or with arrogance in what I am doing?

Frugality

We live in a consumer culture that has taught us that choice is the most prized possession. I started a dialogue with Tesco a few years ago about the chicken products that they stocked and asked them why they continued to sell factory-farmed chickens and eggs when they knew about the awful conditions in which the birds were being kept. Their answer: consumer choice. Their customers did not want to have their choices limited.[6] Frugality is a word that sounds most alien to us nowadays. We are used to having what we want, when we want. Why shouldn't I have

strawberries and asparagus in January? Why shouldn't I use chemical L'Oréal products if they make my hair look beautiful?

A word that sounds deceptively similar to frugality has crept into our usage: austerity. But austerity carries with it connotations of harshness and severity, whereas frugality is a much more positive word that talks of limiting oneself out of respect for the other. I am currently doing my doctoral research on the concept of simplicity, and talking with people who are deliberately trying to live a more simple life. The two Biblical passages to which they refer constantly are God's provision of manna in Exodus 16 and Jesus' words that we ask God to 'give us each day our daily bread' (Luke 11:3). Frugality gives us what we need, but we recognise that, in a world of limits, we also have to place limits on our own consumption if we are not going to destroy the land that we live on and the creatures that depend on that land.

On a personal level that has meant being continually aware (some might call it obsessively so) with what I am using throughout the day through all the different things that I do, whether that is petrol, gas, oil, plastic, electricity, water, chemicals and so on. And, of course, a lot of those uses are hidden. I will use more energy by eating one cheeseburger than I will if I take a plastic bag from the supermarket every week for a year. Frugality for me has meant drastically reducing my car-usage; eating food that has been produced using much less energy than would be found in a regular supermarket shop; heating the house less; trying my best to get things mended rather than replaced and a host of other things besides. The question, am I being a frugal person in what I am doing? is an excellent one to ask yourself as you go about your day.

Generosity

I believe it crucial to accompany frugality with the virtue of generosity in order to ensure that frugality is not an excuse for being cheap. Seven years ago I was involved in setting up a pig cooperative with a group of friends. We keep the pigs on land that belongs to a residential centre for adults with learning disabilities, and, together with the residents, we buy about twelve weaners (in other words, pigs about eight weeks old, just weaned from their mother) and rear them through to slaughter weight, keeping them from about May to October. It has been one of the best experiences

of our life as a family, and I have gone from someone who only bought meat in a plastic container in the supermarket to someone who understands the issues behind rearing animals and knows all about the different cuts and what to do with them, not to mention experiencing the wonderful pleasures of looking after pigs.

One of my very favourite things to do is have people round for a big roast dinner, where everything that goes onto the table has been home (or locally) produced: my own pork, potatoes and vegetables from my allotment, elderberry sauce from the bushes at the back of the house, fruit for pudding from my garden or the hedgerow.

Those meals, for me, sum up generosity. We worship a God of abundance, who loves to give us good things, who has created a world 'teeming' with His creation. And he calls us to reflect His generosity by the way we live too. The Israelites were instructed to leave the edges of their fields at harvest time in order that those who were poor could go and help themselves (Lev. 19:9). This sort of behaviour does not come naturally to all landowners. An attitude of generosity is needed for a person to do that and it is a lovely parallel with those generous farmers today who set aside pieces of land to provide homes for wildlife, rather than trying to squeeze profitability out of every square metre. In the New Testament, Paul instructed those who are rich, 'to do good, to be rich in good deeds, and to be generous and willing to share' (1 Tim. 6:18). This applies to each one of us reading this since each one of us is rich.

When I spend a little more on a FairTrade product than on its 'regular' equivalent, I am being generous to the person who grew or made that product rather than worrying about spending as little as possible. When I go outside into the cold to fill up the bird feeder and break the ice on their water, and when I take the compost to the end of the garden instead of throwing it into the bin, I am being generous to the birds and worms and other wildlife that share my little bit of space with me. We are to practice generosity, then, in how we live our lives and be asking ourselves, am I being a generous person in what I am doing?

Justice

A little while ago I wrote a Bible study course entitled, *Rivers of Justice: Responding to God's Call to Righteousness Today.*[7] I wanted it to be a

foundational Bible study asking the basic question, what does the Bible say about issues of justice and how we should respond? but I was nervous of taking an approach that simply cited a few familiar texts (such as Isaiah 58 and Matthew 25) without putting them into the broader story of God's plans for the redemption of His creation. So instead, the booklet takes a more narrative approach and simply follows the story as we have it in the Bible, showing how justice is not a concept that is just found in a few oft-cited texts, but is a central theme that weaves like a thread all the way through the Biblical text (and, of course, passages such as Isaiah 58 and Matthew 25 are essential parts of that).

One of the things that I often speak on is how the Old Testament holds together strongly a right relationship with God with the practice of social justice and the well-being of the land. To put it simply, where the Israelites are in a good relationship with God (are 'righteous'), this will be outworked in the practising of social justice (taking care of the widow and the stranger, and so on). The result is that all will go well in the land. Conversely, one of the surest signs that Israel is not righteous is that they are not practising social justice (they are selling the needy for a pair of sandals, using dishonest scales etc). The result is that the land revolts and there is, as we would call it today, environmental degradation (see, for example, Amos 8 and Hosea 4:1–3).

As followers of Jesus we must hold these three things together and remember that our relationship with Him is demonstrated by our relationship with others, both human and non-human. And so as I go about my life and think about different actions that I take I ask myself questions like, is this fair? Who or what benefits from me buying this product/doing (or not doing) this thing? How am I treating others by my actions? Will this purchase or act bring about greater or less justice? Crucially, this operates not just on the level of the day-to-day but has to work on a systemic level too so that we are not only concerned with our individual actions but with being involved in pushing for structural change as well.

Hope

To me, this is the most challenging virtue and the one with which I struggle the most. As I look around me, read the news and see what is

happening it is very easy to lose all hope and be on the verge of giving up. Can we really talk about hope in the midst of our crisis situation? Somehow I still believe that we can, and that belief is rooted in my confidence in the physical resurrection of Jesus Christ, the Son of God, which simply refuses to dislodge itself from the central position that it occupies in my life and my faith.

There is a difference between proximate hope and ultimate hope. Proximate hope concerns our immediate hopes: for food to feed the hungry, for corals not to disappear, for deforestation not to continue apace … Ultimate hope is our hope in 'the coming of God'—to use Moltmann's phrase—to reconcile all things to Jesus and bring about the transformation of heaven and earth. The former is built on the latter. Hope looks to the future and asks what sort of future are we living for? If we are living for a future that has Jesus in the centre and all creation reconciled to him then that must impact how we live now. As Bauckham and Hart express it in their groundbreaking book, *Hope Against Hope*, we are to live as 'realised anticipations' of that future.[8] The reality is that we may not see much of it now, and sometimes proximate hope is hard to maintain. And yet there is an overlapping of proximate and ultimate hope, based again on the resurrection of Jesus, which means that we do not just hole up somewhere and 'wait for the end', but we expect to see glimpses of that future brought into the here and now. To my mind, it is these glimpses that keep hope alive.[9]

So I carry this question around with me through my days, how can I live as a hopeful person? When I choose to cycle rather than drive somewhere, or when I choose not to fly on holiday, or when I put on a jumper rather than turning up the heating, or when I buy British organic potatoes, I see myself as living in anticipation of a future when we will not live in ways that harm the wider creation.

Interestingly, I have found most hope in the proximate vision of the future expressed in the Transition Towns movement, of which I am a part in my hometown of Chichester. The first Transition leaders worked out early on that you do not inspire people to change through fear, but through giving a positive picture of what a post-oil-dependent future could look like. It is a wonderful vision of people working together to create communities that are, to a large degree, self-sufficient in terms of food and energy and that are focused not on individualised, consumer

lifestyles but on relationships. Being involved in the movement in Chichester has been a fantastic experience for me, as I have met all sorts of new people (and developed some good friendships) and been inspired by the energy and creativity that has emerged.

Duane Elgin, guru of the Voluntary Simplicity movement, wrote about being 'visible examples of alternative ways of living and working that creatively respond to the situation'.[10] That is what I see happening through the Transition initiatives. My prayer is that this could be said of the Church too.

Love

At some point in my adult life I must have had some spare time, because I made a beautiful William Morris tapestry of a peacock. I had it professionally finished off and it now hangs proudly on our sitting room wall. I love it. If I were to come home one day and find that my children had taken it off the wall and were using it to wipe their dirty shoes on I would be devastated. How could they do something like that to something that I love so much? I thought they loved me.

A recent survey conducted by the Evangelical Alliance found that 94% of the more than 17,000 participants agreed that 'it is a Christian's duty to care for the environment'.[11] That is an astonishing statistic for those of us accustomed to viewing the Church as a brick wall to bang our heads against. Even more astonishing to me, though, was the wording. When I think about how I want to live with respect to the wider creation, I do not think of it in terms of duty, I think of it in terms of *love*. It is a pleasure and a privilege to play my part in this amazing world that God has created.

As a Christian, I worship a God who loves the world and who looks at all that He has created and says, 'that's fantastic' (Gen. 1:31, my translation!). He is intimately involved with what He has made—just read Psalm 104. And we are to follow Him in how we view this world that we live in. I am struck by Proverbs 12:10, usually translated similarly to 'a righteous person cares for the needs of their animal'. An alternative reading is 'a righteous person *knows the soul* of their animal'. What a beautiful expression of the relationship that we are to have with the wider community of creation around us (and what a desperately sad indictment of the way we treat our animals today through things like factory farms).

The opposite of love, as is often pointed out, is not hate but apathy: literally, *a pathe*, 'without feeling'. My mother used to tell me regularly that love is an active verb. Where we know, where we love, where we have relationship; there we will act. Where we do not know, where we do not love, where we have no relationship; there we will not act.

And so throughout my days I ask myself the question, are my actions (or non-actions) forming me into a loving person? If I buy 'regular' prawns am I demonstrating love for God and his creation? If I keep quiet about human rights abuses rather than joining in a letter writing campaign, am I demonstrating love for God and his creation?

What should I do?

Throughout this chapter we have come across a number of questions that I believe are helpful to keep in our minds at all times. These questions are focused around considering what sort of person I become through the actions that I do, and do not, take. It hardly need be said that the more obvious 'what should I do?' question forms an integral part of how we answer those questions and that, in order to answer them as best we can, we also need to be as informed as possible. But I hope you find it as helpful as I do to look at our response to a world in crisis in this way.

And as we do, one sees an interesting process taking place: the virtuous circle. We do not all naturally inculcate these virtues all of the time, and they need to be developed within us. Oftentimes, the question is 'what sort of person do I want to *become*?' rather than 'what sort of person am I now?' Discipline is thus an essential part of virtue. It may not feel natural for me to do something virtuous, but when I undertake a virtuous act as an act of discipline, and practise it regularly, that discipline changes into a habit, which then forms me into a more virtuous person. The virtues thus help us bridge the gap between knowing what action to take, to actually taking it.

The aim of this book is to increase our awareness about what the current state of our world is, and about what different sectors can do and are doing. Governments, businesses and civil society all need to be working together in our time of crisis and we can play our part by encouraging our governments and businesses to change, applauding them when they do, and creating change within ourselves too.

So, when this book comes to its end and you put it back on the shelf, please do not put the virtues on the shelf along with it. My prayer is that all of us will discover more and more how we can be humble, frugal, generous, justice-loving, hopeful and loving in our relationship with the whole community of creation.

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[1] Christine Firer Hinze, "What Is 'Enough?' Catholic Social Teaching, Consumption and an Ethic of Sufficiency", in *Having: Property and Possession in Religious and Social Life*, ed. William Schweiker and Charles Mathewes (Grand Rapids, MI: Eerdmans, 2004), 171.

[2] For a helpful introduction, see Jean Porter, "Virtue Ethics", in *The Cambridge Companion to Christian Ethics*, ed. Robin Gill (Cambridge: Cambridge University Press, 2001), chap. 7.

[3] This idea was first suggested to me on reading Steven Bouma-Prediger, *For the Beauty of the Earth: a Christian Vision for Creation Care* (Grand Rapids, MI: Baker Academic, 2001). His writing on ecological ethics informs a lot of what is in this chapter and I cannot recommend it too highly.

[4] For more on this see my book, Ruth Valerio, *"L" Is for Lifestyle: Christian Living That Doesn't Cost the Earth*, rev. ed. (Leicester: IVP, 2008).

[5] Christopher J. H. Wright, *Old Testament Ethics for the People of God* (Leicester: IVP, 2004), 119.

[6] We should not place all the blame on the consumer here, of course, and there is a complex nexus of issues at work here around the search for company profits, consumer behaviour, the role of advertising, and so on.

[7] Ruth Valerio, *Rivers of Justice: Responding to God's Call to Righteousness Today* (Waverley Abbey: CWR, 2002).

[8] Richard Bauckham and Trevor Hart, *Hope Against Hope: Christian Eschatology in Contemporary Context* (London: Darton Longman & Todd, 1999), 134.

[9] For reasons of space I am not focusing on this here, but it would be remiss not to comment that there is much that could be said at this point about the role of the Holy Spirit in all of this, as the 'seal' of the future and the one who works in the present, bringing creation through to its fulfilment. As Peter Hocken has said, 'the Spirit has given both the first fruits and the hope of full liberation, and we are stretched between the two.'

[10] Duane Elgin, *Voluntary Simplicity: Toward a way of life that is outwardly simple, inwardly rich* (New York: Harper, 1993).

[11] Evangelical Alliance, *21st Century Evangelicals: A Snapshot of the Beliefs and Habits of Evangelical Christians in the UK - Summer 2013* (London: EA, 2013).

17

The role of the church in the coming 'crisis of sustainability'

COLIN BELL

One conclusion from the other chapters in this book is clear: one of the greatest challenges facing humanity in the twenty-first century will be the moral and practical imperative to transition to a more sustainable way of living. Difficult enough in itself, it will be made even harder due to the need to deal with the consequences of our failure to take adequate action to date. As John Holdren, president of the American Association for the Advancement of Science, noted 'We basically have three choices: mitigation, adaptation and suffering. We're going to do some of each. The question is what the mix is going to be. The more mitigation we do, the less adaptation will be required and the less suffering there will be.'[1]

It is equally clear that neither mitigation nor adaptation is a purely technical or technological issue. Instead, our unsustainable behaviour goes to the root of our humanity, and so the transformation requires a rethink of our individual and cultural values. For many in the UK, these are influenced by religious belief, even for those who would not self-define as adherents of a religion.

The challenge

We thus address the following: what action the Christian church in the UK should be taking now, in the light of these issues; and how the church should be planning a generation ahead. Of course, the future we face is highly uncertain—this is itself a problem.

However, in order to explain the eventualities the church may be facing, we have assumed some projections. Our forecast is deliberately towards the more pessimistic end of reasonable possibilities, to help bring greater clarity to the situation. However, even if the future is more positive

than this, many similar issues will need dealing with, to a lesser extent. For the purpose of this discussion then, we will assume that the world of 2030 is facing major reductions in carbon emissions (whether voluntary or forced upon us) but with the increased effects of climate change that we know are already inevitable. The consequences will be worst in the Global South, with problems in the food supply and an increasing number of climate refugees. But the UK will not be immune: a likely combination of increased food, energy and transport costs combined with at least some decline in economic growth from the historical average would leave the typical citizen see their standard of living stall, if not fall.

Although we do not discuss the details at length, we make the assumption that the church will be willing to take these issues seriously and make them a priority. It is taken as read that, as a major social grouping, it will work to improve its own practices, encourage its own members to take action, and use its influence to campaign—building on what is happening currently, but on a much wider scale. The chapters by Tim Cooper, Andy Atkins and Ruth Valerio discuss the way various ways in which the church can do this.

So, in such a world, what particularly distinctive role can the church have? I will discuss two major but interlinked opportunities the church should consider as it prepares itself for the future. First, action on sustainability issues can form part of its mission to serve those around them: in times of suffering the church rightly reaches out to those in need. Historically at least, they are also times when more people have sought religion and the church, and the church ought to be ready to understand their struggles and fears and receive them.

Secondly, as Bill McKibben has noted, unsustainable living has gone hand in hand with individualisation and the breakdown of community living. The church, rooted theologically and historically in relationships between believers in a locality, has the opportunity to help reverse this trend, and to rediscover its traditional role as a hub for its community.[2]

Various theological images could be applied to the church's role: one helpful one is Paul's concept of 'new creation' which, as Douglas Moo explains, includes remaking human society as well as the natural world.[3] In 2 Corinthians 5 this phrase appears, preceded and followed by 'Since … we know what it is to fear the Lord, we try to persuade others' (verse 11)

and 'We are therefore Christ's ambassadors, as though God were making his appeal through us' (verse 20). How then should the church make the appeal to wider society to recreate itself into a more sustainable form?

Preparing the church

While the church may have much to offer, it cannot just sit by and expect all to come to its door: there are some obstacles that need to be overcome first. Many in younger generations tend not to see the church as a place of refuge, as their forebears might have done. The church risks being seen more as part of the old establishment that needs to be left behind than as part of a new future.

One reason for this is that unbelievers often consider Christian theology to be confused and out of date. The mainstream church may believe in taking action on sustainability but, to date, it has generally failed to express it clearly as a high priority, or to be seen to be taking much action. Meanwhile, contrary views held by a relatively small but influential wing of evangelicalism—that God will provide everything we could want and would never curse humanity with climate change, and that the earth is there for human exploitation—are given excessive currency, and taken to be the majority opinion of evangelicals, if not the church at large.

Christians need to give serious thought to how sustainability fits into wider theology, what practical implications this has for individual and social life both now and in the kinds of future that can reasonably be expected, and how this can be all presented to the wider world both in theory and practice. In particular, local churches and individual Christians need to model the kinds of lives they believe are appropriate for the future. This forms a further challenge, since we are embedded in a wider world which remains unsustainable. However, the general Christian principle of living distinctive lives inside a society which does not share our beliefs on other issues gives us experience in how to do this, and hope that it is possible.

All of this is also now a matter of some urgency, given the likely timescale of events. What follows must necessarily be somewhat idealistic, but at least it provides a goal at which to aim.

Sustainability action as mission

The most helpful recent explorations of how action on sustainability can be seen as an integral part of wider mission have been carried out by the Lausanne Movement, in discussions arising from the 2010 Cape Town Commitment. The conclusion reached was that creation 'must be included in our response to the gospel, proclaiming and acting upon the good news of what God has done and will complete for the salvation of the world.'[4] Restoration of relations with the non-human creation is crucial both for its own sake and to complement restored relations between humanity and God, as part of the participation in Christ's redemptive work.

This manifests itself practically in various ways. Caring for creation clearly helps improve humanity's relationship with it—which, in turn, helps humanity. Caring for creation also lends support to other Christian work which seeks to benefit the poor and disadvantaged, who will be disproportionately affected by future environmental damage and unsustainability. Social mission, including care for the poor (in a wide sense), will also come to include helping the poor adapt to a new, different, and potentially difficult world. As we will see later, this will include those who struggle with perceived poverty if their living standards fail to improve: a far larger group than those in absolute poverty, at least in the UK.

Finally, as with Christian social mission generally, many who are assisted may come to see something positive in those who help them and become believers themselves, although others may just be happy to have their needs met.

Practical and social needs

The first strand of this mission is to meet practical needs. As already noted, the cost of the type of lifestyle we generally have today is almost certainly going to increase faster than typical household incomes. Those on the lowest incomes will find it a struggle to meet the cost of basic heating and food. Already, the prevalence of 'fuel poverty' has increased markedly in the past few years, and many towns and cities are setting up food banks—even in prosperous areas such as Cambridge—with churches

often at the heart of these initiatives. It seems inevitable that the numbers forced to rely on such help will increase.

A second group of people needing assistance will be those seriously affected adversely by climate change effects—tens or hundreds of millions worldwide. Many will stay in their home countries but will require support; others will become refugees and migrate to places with better prospects, including the UK. Aid to such people has been one of the church's historic strengths, but the combination of the scale and permanence of the problems likely to emerge will probably go beyond the humanitarian crises seen to date.

On a more positive note, many—both inside and outside the church—may see the need for a more sustainable lifestyle, but lack the knowledge and skills to carry it out. Local churches have the potential to act as places where people can learn things—from growing food and mending clothes, to appreciation of nature. They will often also have the space and resources to organise schemes following the principle of 'collaborative consumption' including sharing tools, toys and the like, lift-shares, and task-swapping services. Finally, churches can be places which facilitate discussions about future hopes and fears for the locality.

These are only examples of the way the church can act as a strong geographically local institution, which most commentators see as a necessity for a sustainable future, given the need for sharing resources and the likelihood that long-distance transport will have to diminish. A significant challenge to this transformation is that people will need to interact more with those living near them, rather than looking further afield for those more like-minded.

Local churches are in a better position to facilitate this than most other contemporary institutions, since they usually function effectively as a social hub for people having little (except for a shared faith) in common. They also tend to be more welcoming to those more on the margins of society, who often get further pushed away when times are difficult.

A multifaceted crisis

But as well as the church reaching out to meet these more practical needs, there is increasing evidence that there will be considerable psychological and spiritual support needed too.

Once again, there is uncertainty and disagreement about what will be required. Much depends on what kind of future is considered to be viable or desirable. It is true that many believe that something akin to our present way of life can continue for the foreseeable future—either by believing the issues are less difficult to solve, that further advances in science and technology will provide sufficient energy and resources[5] or that society can be transformed by sufficient collective willpower.[6] But these views are on the wane and, as argued in this volume and elsewhere, our lack of sustainability is probably largely a symptom of a wider cultural malaise. Our current entire societal mindset has failed and is breaking down. We will need to make—or be forced into making—a major cultural shift, with the best outcome being a 'managed descent', an intentional walking away from the worst of our current practices, towards something better. Some however see a degree of collapse as inevitable, whether economic, environmental, social, or some combination.[7]

Such a shift, whether made voluntarily or forced upon us by circumstances, will take its toll on many individuals. The UK has enjoyed decades of relative stability and of steady increases in already high living standards. For centuries, people have experienced the 'progress' of moving to an increasingly technological way of living, cut off from the natural world. They have experienced greater individual freedom, a decreasing need to rely on others, with identities largely defined by what people own and achieve. The expectation in society currently has been that these trends will continue indefinitely. Most see this as positive, although some identify a wider trend towards a lack of faith in the future or general dissatisfaction with our lifestyle: that we have gone too far in one or more respect.[8] However, if our scenario is true, all these trends will soon stop or go into reverse, and our future will be much more uncertain.

We are facing a crisis which is both personal and societal. We have little experience of the latter: the last crisis which is remotely analogous was the threats faced during World War II, now almost out of living memory. But, as Stephen Gardiner argues, the crisis we currently face is both far more severe, and unprecedented in human history.[9] With the exception of nuclear weapons, it is the first time humanity has been capable of doing substantial damage not only to itself but to life on the planet itself. Unlike that issue and many others, it is one for which we in

the UK have to take collective responsibility: we cannot divest blame to our leaders. The impact—and whether solutions are helping to alleviate the problems—is knowable only in broad terms. Finally, and perhaps most crucially, the most substantial impacts will fall on the least culpable: those in the Global South, and those in future generations.

The transition to acknowledging and making the sacrifices required for a more sustainable life have been found psychologically difficult by many who have attempted to change their lifestyle or write about the issues. It has been described in different ways: a loss of faith in the story we live by,[10] a process of grief,[11] or fear at looking 'into the frightening abyss of collapse'.[12] What all have in common is that a major part of what we thought was our identity is being lost and needs to be replaced with something new. This applies both to individuals and our culture as a whole. Michael Meade describes this state as an emotional rawness that can lead to either 'deep vulnerabilities, wild fantasies, and extreme attitudes', or discovering 'a centre that cannot hold as things fall apart'.[13]

Psychological and spiritual support

A second area of work for the church is thus to help people in general through these same kinds of transition. This involves helping them to process and handle these various emotions—and, simultaneously, enabling them to move on to a more sustainable mindset.

We will be faced with people who have come to the realisation that our recent Western standard of living has been built on environmental abuse that is causing damage; that we will be spending the rest of our lives periodically receiving unpleasant surprises as the results of our abuse become known; that this damage will persist for centuries; and that, while we can improve things, in many respects the harm has already been done.

The natural reaction to this is shock, then guilt and despair. What can the church offer? A helpful framework to consider is that which lies at the heart of its faith: the cross, and the gospel, the good news resulting from Jesus Christ's death and resurrection. The gospel can be summed up in five aspects: a recognition that the previous lifestyle needs to be dealt with, restoration and forgiveness, a new way of living, a welcoming and supportive society (the church), and a source of hope. We will use these as a framework for responding to those suffering climate guilt.

We are assuming that most will acknowledge that our past exploitation of environment and resources is unsustainable. However, it is something the church will need to continue referring to: admitting in particular that it too had been ignorant of the effects of its role, and slow to change behaviour even when it became clear that this was needed.

But this admission should be done in a manner which also talks about how we can now move on and live in a better way. While past behaviour may have caused irreversible damage, we have a positive choice now to make—to live in a way that is as sustainable as possible, and render the future as good (or as least bad) as we can.

Christian faith and practice provides considerable material to consider when thinking about what this new sustainable lifestyle might be like. This is addressed at length by two other authors in this volume. Ruth Valerio suggests that reflection upon the Christian virtues gives insight into how the sustainable Christian (or non-Christian) should act. Tim Cooper list various other themes: Sabbath theology and the importance of putting limits on action, social action and the care for others, and the call to not put too much weight on material goods.

The same themes apply to us collectively, Christian or not. Just as Christianity is at its heart a relational faith, the church can form a hub of sustainable activity, as has already been noted, a place where the values noted above are lived out together, in the light of hope for the future.

Sustainable hope

But this hope itself needs to be sustainable and realistic. There is little point in hoping that we will return to the circumstances of a few decades ago when energy was plentiful and the environment seemed able to take anything we threw at it. That is an optimistic delusion. While scientific and technological advances will certainly assist, the hope that they will provide the energy we desire or solve all our climate issues seems almost as fanciful.

Given that, at least when looked at from the perspective of 'progress', our future looks bleak, what meaning can hope have? Here, the two separate concepts of hope described by Richard Bauckham prove helpful.[14] He distinguishes *ultimate hope* (hope in the final purposes of God to bring the whole world to a redeemed, perfect state) from

proximate hope (our hope that the future will be better than the past, preferably through our effort). We have come to believe as a species that we can always succeed in this, but we are coming to a realisation that this is not always the case. Nevertheless, we should not give up: our efforts still have value, even if the effect is merely to make things less bad than they would otherwise be. 'Distinguishing ultimate hope and proximate hope enables us to be appropriately modest and realistic about what we can hope for here and now in particular contexts.'[15]

Perhaps this conclusion needs to be applied too to the ideas in this chapter. What we have presented is the ideal and it is not achievable in full. Yet there is nevertheless a new role and opportunity for the church, if not to 'solve' the crisis of sustainability, to help alleviate it. There is the potential for the church to play a fuller part in society and influence it for the good. It can bring light and hope into what might seem dark now, but can lead to a longer-term renewed and more sustainable future.

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[1] Quoted in James Kanter and Andrew C. Revkin, "World Scientists Near Consensus on Warming", *The New York Times*, January 30, 2007, sec. International, http://www.nytimes.com/2007/01/30/world/30climate.html.

[2] Bill McKibben, Preface, 21 in this volume.

[3] Douglas Moo, "Creation and New Creation: Transforming Christian Principles", in *Creation in Crisis: Christian Perspectives on Sustainability*, ed. Robert S. White (London: SPCK, 2009), 243ff.

[4] Lausanne Movement, "The Lausanne Global Consultation on Creation Care and the Gospel: Call to Action" (November 9, 2012), http://www.lausanne.org/en/documents/all/2012-creation-care/1881-call-to-action.html.

[5] For instance Mark Lynas, *The God Species: How the Planet Can Survive the Age of Humans* (London: Fourth Estate, 2011).

[6] Lester Brown argues this explicitly in Lester R. Brown, *Plan B 4.0: Mobilizing to Save Civilization* (London: Norton, 2009). This seems to be the implicit position of most people writing on the subject before the late 2000s.

[7] There is a whole spectrum of such views. Three influential writers are Nicole 'Stoneleigh' Foss on economic collapse http://www.theautomaticearth.com/finance/the-world-according-to-the-automatic-earth-a-2013-primer-guide.html; Daniel Drumright on the 'near-term extinction' movement: http://guymcpherson.com/2013/04/the-irreconcilable-acceptance-of-near-term-extinction/; and John Michael Greer in *The Long Descent: a User's Guide to the End of the Industrial Age* (Gabriola Island, B.C.: New Society Publishers, 2008) on a more widespread social collapse. Greer argues that we are more likely to see a sequence of smaller collapses than one large one.

[8] Charles Eisenstein, "Everything We Tell Ourselves About America and the World Is Wrong", *AlterNet*, December 29, 2012, http://www.alternet.org/visions/everything-we-tell-ourselves-about-america-and-world-wrong.

[9] Stephen M. Gardiner, *A Perfect Moral Storm: Understanding the Ethical Tragedy of Climate Change* (Oxford: Oxford University Press, 2011).

[10] Eisenstein, "Everything We Tell Ourselves".

[11] For instance Kathy McMahon, who writes an entire blog http://www.peakoilblues.org/blog/ on the subject.

[12] Carolyn Baker, *Sacred Demise: Walking the Spiritual Path of Industrial Civilization's Collapse* (New York: iUniverse, 2009), xl ff.

[13] Michael Meade, *Why the World Doesn't End: Tales of Renewal in Times of Loss* (Seattle, WA: Greenfire Press, 2012), 7—the latter being a quotation from William Butler Yeats.

[14] Richard Bauckham, "Ecological Hope in Crisis?", *Anvil* 29, no. 1 (September 2013): 43–54, doi:10.2478/anv-2013-0004, http://www.degruyter.com/view/j/anv.2013.29.issue-1/anv-2013-0004/anv-2013-0004.xml?format=INT.

[15] Bauckham, "Ecological Hope", 47.

18

Spirituality and sustainability

SATISH KUMAR

Spirituality and sustainability are very favourite subjects of mine. I believe that spirituality and sustainability are two wings of the same movement. I feel that much of the sustainability movement, environmental movement and the green movement is driven by fear. I do not want to be part of a movement which is driven by fear. I want to be part of a movement which is driven by love. The most wonderful thing about nature is that it inspires love. When we see flowers blossoming, fruit ripening, the wonderful birds in the sky, the trees and forests and animals on the land, I am filled with wonder and love.

I made a film for the BBC's Natural World series called *Earth Pilgrim* which was based on Dartmoor, one of England's most beautiful wild spots. When you are in nature, you are inspired by love of nature. Love of the earth, love of animals and plants and flowers and butterflies and bees and 8.7 million other species. So I would like the environmental movement to be inspired by spirituality and by love, not by fear.

Science and spirituality

We now have a good scientific case for global warming, against the demise of biodiversity, against so many other environmental problems. But having a scientific case is not enough. Einstein said that science without spirituality is blind, and spirituality without science is lame. So we need science and spirituality together. One without the other leads us astray. If you have science with no spirituality, then you end up with the kind of world we have today. How could a scientist invent nuclear weapons? If there was a moral compass, a spiritual compass, there would be no such misuse of science. But if you have only faith and no science, it can be blind faith. And it can lead to dangerous fundamentalism, whether it is Islamic fundamentalism or Hindu fundamentalism or Christian fundamentalism

or any other kind of fundamentalism. Blind faith is blind! So we need science and we need spirituality together. And the environmental movement at this moment is largely subscribing to scientific views, to empirical views. But an empirical view of environmental problems is not enough, we need spiritual values and vision and a positive inspiration behind the green movement.

Global warming or no global warming, what kind of life do we want to live on this earth? Global warming is only a symptom of the disease, not the cause. Why is our entire environmental movement hijacked by one single issue of global warming? I am a great supporter of campaigning to stop global warming, but when you have a mere scientific view, you can exchange global warming with nuclear energy or some other technological fix. But when you have a spiritual view, then you ask, what is our place and our role in this world and on this planet Earth? What kind of life do we want to live? What is the meaning and purpose of our lives? What is the proper relationship between humankind and the natural world? That is the kind of area where sustainability and spirituality can be and should be addressed together. Spiritual and philosophical understandings of sustainability help us to see the bigger picture rather than the narrow single issue obsession, be it global warming or population explosion or demise of biodiversity or something else.

One particular place in which a bigger picture needs to be seen is in the disconnection between economy and ecology. And this I think is perhaps the most fundamental question of our time.

Disconnection between economy and ecology

Not long ago I was invited to speak at the London School of Economics. When I arrived, I asked the learned professor who was going to be chairing my session, 'Where is your department for ecology?' Do you know what the answer was? 'We don't have one.' This is the supreme example of disconnection. They are teaching economics but have no department for ecology. During my speech I explained the meaning of the words *economy* and *ecology*.

The words *ecology* and *economy* are made from three Greek words: *oikos*, *logos* and *nomos*. *Oikos* means home. The great wisdom of the Greek philosophers was that the entire planet is our home, not just the

place where we have our bedroom, bathroom, living room, etc. Therefore, *oikos* means earth home, and home means a place of relationships.

The word *logos* means knowledge. Thus *oikos* and *logos* put together formulate the word *ecology,* which means knowledge of the home and all its relationships and activities. We are all related. We are all kith and kin. The birds flying in the sky are our relations, brothers and sisters, as St Francis believed. He was the first great ecologist, a patron saint of ecology. Then *nomos* means management. Thus *oikos* and *nomos* put together means management of our planet home, the earth home and all its relationships.

During my talk, I asked the students and professors, 'Please tell me, how are you going to manage your home if you don't know it?' Can you manage something without knowing it? You are sending thousands upon thousands of half-educated graduates around the world to manage a household of which they have no knowledge. No wonder the world economy is in a mess. What do you expect if you have half-educated people, highly half-educated! Like half-baked bread. If you eat half-baked bread, what do you get? You get indigestion. So our world economy is suffering from indigestion. That is the result of disconnection between ecology and economy. We need to reconnect. We need to understand that human beings are as much a part of nature as the nature out there. Nature is not just the trees, the rivers, the birds, the forests, the mountains—we are nature too. The word nature means to be born—*natura*. When a mother is pregnant, she goes for prenatal checks. After the birth, she goes for postnatal checks. The words natal, native, nature, nativity, they are all related.

So nativity and nature come from the same Latin root implying birth. So are we not born? How can we say we are not nature and nature is only out there? That is the disconnection. We need to realise that we are nature and what we do to nature out there, we do to ourselves. Nature does not belong to us. We belong to nature. That is the fundamental reconnection we need to make. If we reconnect with nature then there is no dualism, there is no separation, and there is no superiority of human beings. We humans, at the present time, behave like an imperial power. It's a human empire that we have built and we believe that the natural world is there for our benefit. We can do what we like with animals, we engage in the cruel treatment of animals by putting them in factory farms, we cut down the

rainforests to develop more agribusiness, we over-fish our oceans. We do whatever we like because we consider ourselves the rulers of the natural world.

The principle of *ahimsa*

This arrogant dualism needs to be brought to an end. I, as a Jain, believe in the principle of non-violence, *ahimsa* we call it. *Ahimsa* is compassion and kindness to all living beings, what Albert Schweitzer called 'reverence for all life'. At the moment we have lost that reverence. I want to establish what I would call *reverential ecology*, which goes a bit further than deep ecology.

I was speaking with my friend the late Arne Naess, about deep ecology. I said, 'Deep is not necessarily good, you can dig a deep hole for yourself. So reverential ecology is to cultivate deep reverence for all life.' Arne agreed. The moment we have that reverential ecology and a deep respect for nature, then there will be an abundance of gifts from nature. We can receive the gifts of nature with gratitude and celebrate nature; we can enjoy the gifts of nature. In the autumn, we can have an abundance of apples. I'm an orchard keeper, I have 15 apple trees and I make juice every week—fresh apple juice is like nectar. If you have not tasted real, fresh apple juice you are missing something truly wonderful. All those apples come from one small apple seed. What a miracle that, in that tiny seed, thousands upon thousands of apples are hidden. This is the abundance of nature.

This industrial civilisation is very fragile. Just look at the world going through this current debt and economic crisis. We are in turmoil—such a fragile system and nobody knows how to solve this problem. G20, European Union, World Bank, IMF—they are all completely incompetent! They do not know how to solve the problem of the economy, because if you disconnect from ecology, economy becomes a problem. The problem is not even of economy, it is just a financial bubble. We confuse money with wealth—but money is not wealth. The real wealth is nature. Land, labour, capital—that was the old classic economy. They've forgotten the land—now the land is just a commodity to buy and sell and invest. They've forgotten people too. They just think of capital, capital, capital!

We need to understand that money is only a *measure* of wealth. The real wealth is nature: land, animals, water, clean air, human creativity and imagination, communities, skills. So we have to restore the true meaning of wealth.

The change will not come from 10 Downing Street. The leadership will not come from the White House. There were great expectations of Obama. I was in the USA while he was campaigning for presidential nomination. I had great hope; I had read his book *The Audacity of Hope*. The minute he arrived in the White House, he lost the audacity. Where is that audacity, where is that courage, where is that fearlessness? Real change will not come from the White House. Change will come from the grass roots leaders. That is us. We are all potential leaders. We have to take responsibility upon ourselves and lead this great movement of transition and transformation towards a sustainable and fulfilling future.

My journey

My own ecology, my environmentalism and my love of the earth began when I walked from India. I was inspired by a British philosopher Bertrand Russell who, at 90 years of age, protested against nuclear weapons and went to jail. I was 25 years old and sitting with a friend, in a cafe reading a newspaper in Bangalore and I said to my friend, 'The 90 year old philosopher Bertrand Russell is in jail because he is protesting against the bomb. What are we doing here—young men drinking coffee? Let's do something!' Then and there, inspired by Russell, my friend and I said, 'Let us go to the four nuclear capitals of the world—Moscow, Paris, London, and Washington DC—and protest against the bomb and for peace.'

We walked through Pakistan, Afghanistan, Iran, Armenia, Georgia, Russia, Eastern and Western Europe, America and Japan. We walked 8,000 miles without money and we did it as human beings. If we had walked as Indians, we would have met Pakistanis or Russians. If we had walked as Hindus, we would have met Christians or Muslims or Jews. If we had walked as Gandhians, we would have met Communists or Capitalists. But we walked as human beings—and so we met human beings everywhere.

Identity, diversity and unity

What is our true identity? Who are we? A Muslim, a Hindu, a Christian, a Jain, a Communist, a Capitalist, a Gandhian, an environmentalist? All these identities are secondary. A writer, a lawyer, an accountant, a professor, a priest, a vicar—all these are secondary identities. The primary identity is we are all human beings—whatever our religion, our politics, our skill, our colour, we are all children of nature. That is our true identity. That is my spirituality and we need such spirituality if we truly want a sustainable future.

We have these artificial divisions. Division is not the same as diversity. Diversity is a wonderful thing—biodiversity, cultural diversity, religious diversity. If you had only one colour in a garden—red roses, red roses, red roses—it would be a boring garden. We want many different kinds of roses, flowers and trees. In the same way if everyone upon this planet was Christian, Christian, Christian, or Muslim, Muslim, Muslim, or capitalist, capitalist, capitalist, it would be a boring world. It's wonderful that we have so many religions, so many cultures, so many colours, so many languages. Each of us has a unique face. Every one of us has a unique voice—whatever language we speak. The simple wonder of diversity. Why do we despise this diversity and want to create a monoculture of the mind? Evolution favours diversity.

Of course, within diversity there is the unity of life. But unity is not uniformity. Diversity and unity are two sides of the same coin and we need both of them. Through spirituality I gained such an inclusive world view.

Pilgrims and tourists

My friend and I started our journey from the grave of Gandhi and ended it at the grave of John F Kennedy—to make the point that if you believe in the *gun*, it kills not only the bad guy it also kills a Gandhi, or a Kennedy. So let us not believe in the gun, let us believe in *peace*.

I learnt this nature spirituality by walking the earth, by being an *earth pilgrim*, a *peace pilgrim*. If we live on this earth as pilgrims, and not as tourists, then there will never be any problem of sustainability. But if we live as a tourist and not as a pilgrim, then there will always be a problem of sustainability, regardless of how many technological fixes we create. The

tourist mind is an egotistical mind. As a tourist, you want the best hotel for yourself, the best taxi, the best museum—but whatever you get as a tourist, you are never satisfied, you always complain. Nothing is good enough. But a pilgrim never complains. Whatever is given is a gift, a gift from God, a gift from nature, a gift from the universe, a gift from people. In the two and a half years of walking, we stayed in palaces, in paupers' houses, outdoors. Sometimes we had food, at other times we had none. Whatever came to us was a celebration. When we had no food, we took that as an opportunity to fast; and when we had no shelter, we slept under the sky which we took as a million star hotel!

A spiritual matter

Sustainability is truly a spiritual matter as well as it is a scientific matter. The universal principle is harmony, and the knowledge of that harmony is science. You have to know your universe. You need to know how all the species are related. Evolution, gravity, complexity, Gaia, chaos—these are wonderful scientific theories. And when you express that harmony of the universe through words, through music, through pictures, through architecture, through all kinds of works, that expression of harmony is art. The practice of harmony in your daily life, in your family life in your social life is spirituality. Spirituality is not when you go to church on Sunday or the mosque on Friday or a temple every morning. That is only a symbolic act that is just to keep you in practice. But spirituality is in every breath, every step, every moment, everyday life. Cooking is a spiritual action, gardening is a spiritual practice**.** In the Buddhist tradition, even breathing is a spiritual action. Spirit in Latin means breathing: *inspirare*, *expirare*—you breathe in, you breathe out, and when you've stopped breathing, you've expired. When Richard Dawkins interviewed me, he said, 'I don't believe in spirituality.' I said, 'Mr Dawkins, don't you believe in breathing?' Spirituality is something you cannot measure. Think of love—can you measure how much love and respect I have for you? Science can *measure*, spirituality can give you *meaning*. Having measure and meaning together is much better than having only one or the other. Why have only half when you can get the whole?

Spirituality is the essential ingredient of sustainability. The environmental movement has failed to change the direction of our society,

because we have been using the same tools of empirical and scientific data which everybody in government and business use. We have been willing to see ecology and economics as separate, rather than as two sides of the same whole. We have allowed ourselves to be cut off from the nature we are truly part of. We have to have something more—a greater vision—and that greater vision can only come from spirituality. Let's not be shy to speak about the 'S-word'. I know the intellectual world is full of empirical knowledge and that pure reason is guiding that world, but I think that is not enough. We have to proclaim that without the love of the earth, the earth cannot be sustained. We love the earth and we are pilgrims of the earth.

19

Sustainable production

HARFIYAH HALEEM

At the Sustainability in Crisis conference, I read out a poem based on the idea that God is the one who created the earth and all its creatures, including trees, and the one who produces everything from the earth, providing for all His creatures.

Most pear trees, like the one in the poem, and many other fruit trees are in fact the result of careful horticultural practices, like grafting, going back thousands of years. A pear cutting is usually grafted into a quince root stock. The purposes of this are to speed up the propagation of the fruit tree, which would take many more years to grow naturally from seed, and to perpetuate successful cultivated varieties of fruit, which would revert to their wild forms if grown from seed.

In our own time so far, 'genetic engineering' is only a way of using DNA taken from one living creature and combining it with DNA or genes taken from another living creature. The building materials are still created by God. The Qur'an states that human beings will not grasp any of God's knowledge without His permission (2:255).

It is to the cycle of God's provision that we need to return, to work within its limitations rather than trying to maximise production out of all proportion, like broiler chickens, in order to satisfy the demands of the usury-based money market.

Here is the poem, entitled *Sustainable Production:*

The pear tree in my garden
was there before I came.
In spring it blossoms, white with hope,
spurred on by light and rain.

Untimely frosts may harm some
flowers
but bees and insects still
transfer the pollen to the seeds
so we can eat our fill.

All through the Summer, lush green
leaves
turn sunshine into food:
biochemists study how
to store it outside wood.

In August ripe pears start to fall—
they're food for insects first,
then birds and mammals all,
and wasps get drunk at last.

We humans try to catch our share
before it turns to mush:
we eat and cook and give away
or sell to make some cash.

And when it's done, the pear tree's
leaves
and fruit remains decay
into the earth from which they came
to feed and warm the clay.

Allah, Creator, made the sun,
the earth, the rain, the snow.
The pear tree's roots dig deep to reach
the watery food below.

By day it soaks up CO_2
and gives us air to breathe.
Its excess water vaporised
makes rain to grow more leaves.

It shades us from the summer sun
so keeps the garden cool
and when it rains too much
it holds the flood back in the soil.

In Autumn, winds blow, scattering
the dead sticks on the ground:
fuel for fires to warm our homes
as Winter comes around.

And decades later, when it dies,
the pear tree's life's not done—
it gives us wood and logs to burn;
fungus and insects feed and turn
the unused wood to loam.
Allah creates, sustains, repeats—
Let's plant another one!

Photograph from:
www.en.wikipedia.org/wiki/file:Pears.jpg

Reading list

This is an annotated list of books, websites, online resources and organisations which we suggest will be useful in exploring further the issues raised in this book, in addition to the sources listed in individual chapters.

We make no claim that this list is in any way definitive—the amount that has been written on many of these themes is enormous. Similarly, the organisations are representative of numerous others working in the field. Those selected have been chosen mainly on the basis of the information provided on their websites.

While we have tried to cover the range of debates, we have not attempted to balance the number of sources. In general, we assume the conventional positions are well-known, and provide references to more opinions that challenge them.

General resources

Resilience, www.resilience.org/

> Run by the Post-Carbon Institute (www.postcarbon.org), this is the best clearing-house for online sustainability news and writing more widely.

Sustainable Consumption Research and Action Institute, www.scorai.org

> A network of academics and practitioners working in sustainability. Invaluable for finding out what is going on in the academic realm.

Richard Heinberg and Daniel Leach, eds., *The Post-Carbon Reader* (Healdsburg, CA: Watershed Media, 2010)

> A book of essays by many leaders in the field providing an excellent introduction to the various issues involved in sustainability (mostly with a developed world focus). Some chapters are freely downloadable at www.postcarbon.org/reader/downloads

The Worldwatch Institute, www.worldwatch.org

> Research on environmental and sustainability issues with a focus on the whole world. Publishers of the annual *State of the World*. Good resource for looking at issues in this book as they apply to the developing world.

Environment and recommendations for future macro-level action

Guardian Environment, www.guardian.co.uk/environment

> The most comprehensive source of UK environment news and journalism.

Nafeez Mosaddeq Ahmed, *A User's Guide to the Crisis of Civilisation* (London: Pluto, 2010)

> Quite a provocative book linking many sustainability themes with issues such as Western militarism. Written from a pro-Marxist and pro-Muslim World perspective, although not talking about faith to any substantial extent. Worth looking at for a somewhat different take on the issues.

Lester Brown, *Plan B 4.0* (London: Norton, 2009), and *World on the Edge* (Abingdon: Routledge, 2011)

Brown, the founder of the Worldwatch Institute, has written a series of books warning of a coming set of crises in climate change, energy, food and water, and providing practical plans to address them.

Mark Lynas, *The God Species* (London: Fourth Estate, 2011)

Influential and controversial recent book. Presents the nine 'planetary boundaries' model, and suggests a generally technological approach to fixing them, going against much of what the green movement has previously argued.

Bill McKibben, *Eaarth* (New York: Times Books, 2010)

McKibben proposes that we have changed planet Earth so much that it needs a new name, hence the title. He argues that handling the change and increased instability requires us to cut back, consider what we really need and attempt to rebuild stable and supportive communities.

David MacKay, *Sustainable Energy—Without the Hot Air* (Cambridge: UIT, 2009), and The Centre for Alternative Technology, *Zero Carbon Britain* (London: New Economics Foundation, 2010)

Two publications looking at the possibilities for a low carbon economy, particularly focusing on energy supply. See www.withouthotair.com and www.zerocarbonbritain.com.

George Monbiot

Journalist and author on the environment and other political issues, writing in the Guardian and at www.monbiot.com. Known for well-researched and often strongly argued pieces.

Andrew Simms, *Cancel the Apocalypse* (London: Little, Brown, 2013)

Wide-ranging book considering the implications of the obsession with economic growth and a skewed economy and ecology, with a variety of possible future options, both large and small scale.

TEQs and the All Party Parliamentary Group on Peak Oil (APPGOPO), www.teqs.net/

Most of the proposed policies on trying to limit or trade carbon emissions are well-known. Tradable Energy Quotas may not be. Also listed this because of the link to APPGOPO—under the radar, but a group trying to get consideration of Peak Oil and related issues more into the heart of government.

Michael Klare, *The Race for What's Left* (New York: Metropolitan Books, 2012)

The supply of many key resources is running low and remaining supplies are increasingly in ecological or geopolitically fragile areas, leading to damage and the risk of new conflicts respectively.

Cultural trends and local-level action

John Michael Greer, *Not the Future We Ordered* (London: Karnac, 2013) and blog at www.thearchdruidreport.blogspot.com.

Argues that our present industrial society is beginning an inevitable long-term decline as a consequence of Peak Oil and overcomplexity, and that we need to discover and rediscover a mix of old and new skills for a simpler life. The blog contains a lot of

thought on contemporary and future culture, and what it may mean to be human in the new world. Often provocative, but an essential voice in the debate.

Transition Movement

A worldwide movement thinking seriously about future life in a lower-energy future, exploring practically how these issues work out locally, and creating the beginnings of the future communities we may need. Several books and a lot of online resources. See in particular *The Transition Handbook*, www.transitionnetwork.org/ and its blog, and the US-based Transition Voice blog, www.transitionvoice.com.

Tom Crompton and others, *Common Cause Handbook* (Machynlleth: Public Interest Research Centre, 2011) and www.valuesandframes.org

An examination of how people make decisions based on values they hold, and how to work with those values to encourage 'good' behaviour. A handbook and plenty of supporting information is available via the site, together with the original Common Cause report on which it was based.

Juliet Schor, *Plenitude* (London: Penguin, 2010)

Our current growth-based economic system is unsustainable and we need to reconsider our lifestyles. Schor presents a vision where we work less, consume less, but in a more thoughtful way, and end up with lives 'richer' than at present: sustainability does not necessarily mean sacrifice. Similar in feel and argument to Tim Jackson's *Prosperity Without Growth* but more sociological in spirit.

Cecile Andrews and Wanda Urbanska, *Less is More* (Gabriola Island, BC Canada: New Society, 2009)

A book of short essays on the theme of voluntary simplicity. Inspiring and practical for those who feel challenged to readdress their personal lives.

Economics and Politics

Tim Jackson, *Prosperity without Growth* (London: Earthscan, 2011)

Influential book which argues that continued economic growth is both impossible and undesirable. He maintains that an alternative no-growth economy is possible, and will require a challenge to consumerism, stronger localism and the need to help people think about what they really want out of life.

Peter Victor, *Managing without Growth* (Cheltenham: Edward Elgar, 2008)

A more technical book which provides intellectual underpinning for the economic no-growth movement, including models that demonstrate that no-growth economies both work and can be transitioned to.

Laszlo Zsolnai, ed., *Ethical Principles and Economic Transformation—A Buddhist Approach* (Dordrecht: Springer, 2011)

Applies Buddhist principles to economics, in particular that we should regard the development of personal relationships and the reducing of suffering in others as primary, rather than the promotion of individual wealth and the acquisition of material goods.

Richard Heinberg, *The End of Growth* (West Hoathly: Clairview, 2011)

Heinberg is one of the leading Peak Oil thinkers. He argues that human society is hitting numerous limits—in terms of resources, ecology and economics—and that

growth is neither desirable nor possible. He also considers what effects this will have culturally.

nef, www.neweconomics.org/
: Alternative economic think tank, analysing both economics and ecological policies critically. Its archive of reports is worth browsing.

Business, management and education

An increasingly large amount is being written on how individual businesses and sectors are becoming more sustainable, or could be. Much of it is technical and specialised, aimed only at those working in the field—we list a few selected titles in the next section. A good source of both specific and general information and networking is the Guardian's Sustainable Business Network: www.guardian.co.uk/sustainable-business. The sources we list here look at increasing sustainability literacy in business, and the opportunities for marketing sustainable behaviour.

Sara Parkin, *The Positive Deviant* (London: Earthscan, 2010)
: Effectively a textbook for the course that Parkin runs, to inspire and equip business leaders for more sustainable behaviour. Of interest to leaders more generally too.

Arran Stibbe, ed., *The Handbook of Sustainability Literacy* (Dartington: Green Books, 2009)
: Subtitled *Skills for a changing world*, this provides introductions to new ways of thinking and skills that will become helpful in moving towards a more sustainable existence, together with ideas for teaching them. Contains extensive bibliographies on the areas covered.

Green Alliance, www.green-alliance.org.uk
: Environmental/sustainability think tank, looking at how to get the general public and organisations to address these issues. An important thread relevant to our theme is how to partner with community organisations. Numerous publications available on the website: *New Times, New Connections* and *From Hot Air to Happy Endings* are recommended.

Futerra, www.futerra.co.uk; and Brook Lyndhurst, www.brooklyndhurst.co.uk/
: Two of the larger sustainability marketing consultancies, both with interesting websites and blogs talking about their work and wider themes.

Cross-faith groups

Association of Religions and Conservation (ARC), www.arcworld.org
: Important group bringing together people from different faiths to share views and campaign together on environment and conservation issues.

The Yale Forum on Religion and Ecology, fore.research.yale.edu/
: The largest international study project in this area, producing numerous publications and organising conferences. Published the ten-volume *Religions of the World and Ecology series* between 1997 and 2003.

Christianity

Richard Bauckham, *Bible and Ecology* (London: Darton, Longman and Todd, 2010)

A clear biblical theology of the intended relationship between humanity and God's creation.

Steven Bouma-Prediger, *For the Beauty of the Earth* (Grand Rapids, MI: Baker, 2001)

A theological reflection on the need for a vision for caring for creation, also putting things in the context of wider secular thinking on the subject.

Nick Spencer and Robert White, *Christianity, Climate Change and Sustainable Living* (London: SPCK, 2007)

One of two books that came from the previous *Hope for Creation* conference, considering the state of play of the environment and sustainability action, and providing a Christian response to it, both in theory and practice.

Robert White, ed., *Creation in Crisis: Christian Perspectives on Sustainability* (London: SPCK, 2009)

The other *Hope for Creation* book, more academic in style, with essays on important particular themes in the sustainability debates.

Hilary Marlow, *The Earth is the Lord's: A Biblical Response to Environmental Issues* (Cambridge: Grove, 2008)

A Grove Booklet, typical of the series, providing a good brief introduction into thinking about what the Bible says that is relevant to our relationship with the environment

Michael Northcott, *A Moral Climate: The Ethics of Global Warming* (London: Darton, Longman & Todd, 2007)

A wide-ranging book discussing the theology and ethics behind climate change and many of the associated cultural factors. Provides challenges and principles rather than practical solutions, but will certainly inspire reflection on how our faith, theology and lifestyles should inter-relate.

Robert S. White and Jonathan A. Moo, *Hope in an Age of Despair* (Nottingham: IVP, 2013)

Describes how the Christian gospel has something distinctively positive to say about our relationship with the planet, while remaining realistic about the crisis we are likely to face.

Richard Bauckham, *Ecological Hope in Crisis?,* http://www.degruyter.com/view/j/anv.2013.29.issue-1/anv-2013-0004/anv-2013-0004.xml?format=INT.

A paper also analysing hope, arguing that Christians should neither despair nor have unrealistic levels of hope. Hope should recognise that there is potential for the world to be better rather than 'perfect', but this should still inspire us to love and care for creation and each other.

Mark Powley, *Consumer Detox* (Grand Rapids, MI: Zondervan, 2010) and the Breathe Network, www.breathenetwork.org/

A popular-level book providing a Christian challenge to consumerism, and inspiration and practical ideas for living more simply. The Network is an online community of Christians trying to live out these principles.

William Cavanaugh, *Being Consumed* (Grand Rapids, MI: Eerdmans, 2008)

A short but deep book, looking at how consumption can influence identity, often opposing the ideals of our identity in Christ and our part in a Christian community.

Brennan Hill, *Christian Faith and the Environment* (Eugene, OR: Wipf and Stock, 2007)

Survey of Roman Catholic thinking on the subject, linking a historical view of care for creation with contemporary ethical thought.

A Rocha UK, www.arocha.org.uk, Christian Ecology Link, www.greenchristian.org.uk/, and the John Ray Initiative, www.jri.org.uk/

Three significant UK-wide Christian environmental groups. (A Rocha UK is part of a worldwide group.) All three have the mission to inform individual Christians and churches and inspire them to more environmentally-appropriate living. There is a wealth of resources available through the websites.

Other faiths

This section provides links to (what we understand to be) the main organisations or sources of information for the major faiths in the UK, or in some cases internationally.

Hinduism: the Bhumi project: bhumiproject.org

An initiative of the Oxford Centre for Hindu Studies, but being applied around the world, consisting of a nine-year plan to apply Hindu principles to environmental and related issues.

Islam: the Islamic Foundation for Ecology and Environmental Sciences (IFEES): www.ifees.org.uk.

International group, but based in the UK, involved in education and practical work around the world. Among their publications is the *EcoIslam* magazine, downloadable from the site.

Judaism: the Big Green Jewish website: www.biggreenjewish.org

Website of the Climate Change group of the Board of Deputies of British Jews. Provides resources, organises events, plus links to other Jewish groups worldwide.

Quakers: Quakernomics blog: www.quakerweb.org.uk/blog

Quakers have a history of taking environmental and sustainability issues seriously. Perhaps more than any other group, they are now looking at economics 'institutionally', and Quakernomics collects much of that thinking. (Listed here for convenience; there is considerable debate as how to classify Quakerism.)

Sikhism: Ecosikh, www.ecosikh.org/

International group with links to the Association of Religions and Conservation, giving practical and theological information to Sikhs on care for the environment.

Buddhism:

Laszlo Zsolnai's book listed in the Economics section also discusses wider sustainability issues. While there are many articles on specific topics, there is no organisation or website we are aware of that attempts to provide a systematic or representative overview of Buddhist thinking on this topic.

Spirituality, psychology, philosophy and ethics

Clearly these areas are covered in many of the previous books, but the following books consider them more specifically.

Carolyn Baker, *Sacred Demise* (Bloomington, IN: iUniverse, 2009)

Aimed at people who see forthcoming collapse, decline or major change as inevitable, to help them reflect on what this means for them as a person and spiritual being. Not written from a particular faith perspective. Also a blog at www.carolynbaker.net on related themes.

Stefan Skrimshire, ed., *Future Ethics* (London: Continuum, 2010)

Essays from a philosophical and/or ethical perspective on how to think about the future, again assuming a fairly negative outlook. Fairly academic. The same group has made a film called *Beyond the Tipping Point* which introduces the same principles to the non-specialist.

Stephen M. Gardiner, *A Perfect Moral Storm* (Oxford: OUP, 2011)

Analyses climate change as a uniquely problematic and complicated ethical crisis encompassing multiple difficult dimensions, making it a very hard problem to resolve.

Sally Weintrobe, ed., *Engaging with Climate Change* (Abingdon: Routledge, 2012)

A book of essays looking at how people relate to climate change psychologically and emotionally, and how psychotherapists and related professions can help such people.

Michael Maniates and John M. Meyer, eds., *The Environmental Politics of Sacrifice* (Cambridge, MA: MIT Press, 2010)

Addressing climate change must involve sacrifice by the well-off, which is often assumed will not happen. The essays analyse what is and is not realistic in various spheres and come to some more positive conclusions than one might expect.