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CAPITALISM

AS IF THE WORLD MATTERS

*'A message that businesses may find
they are surprised to agree with'*

FINANCIAL TIMES

JONATHON

PORRITT

FOREWORD BY AMORY B. LOVINS



Jonathon Porritt, Founder Director of Forum for the Future, the UK's leading sustainable development charity, is an eminent writer, broadcaster and commentator on sustainable development, and a leading adviser to business and government.

In July 2000, he was appointed by the Prime Minister as Chairman of the new UK Sustainable Development Commission, the Government's principal source of independent advice across the whole sustainable development agenda. He is also Co-director of The Prince of Wales's Business and the Environment Programme, a member of the Board of the South West Regional Development Agency, and a Non-executive Director of Wessex Water. Porritt was formerly Co-chair of the Green Party (1980–83), Director of Friends of the Earth (1984–90), Chairman of UNED-UK (1993–96), Chairman of Sustainability South West (1999–2001) and a Trustee of WWF-UK (1991–2005). Porritt received a CBE in January 2000 for services to environmental protection.

Praise for *Capitalism as if the World Matters*

‘The world is on the brink of a vast and mostly unpleasant change that may mark the end of the present civilization. To renew and rebuild, we need to listen to the voices of the few truly selfless and thoughtful individuals among us, and Jonathon Porritt is one of them. His vision is much more optimistic than mine, which sees the need for a massive retreat from all development, sustainable or otherwise, if we are to avoid another dark age on a torrid and mostly uninhabitable Earth.’

James Lovelock, creator of the GAIA theory

‘We need more people like Porritt ... prepared to ... find the best ways to save both the environment *and* the capitalist system’

Professional Investor

‘Jonathon Porritt’s book could not have come at a more timely and critical moment ... A vital contribution to the most compelling issue of our times.’

Will Hutton, author of *The Writing on the Wall: China and the West in the 21st Century*

‘No US authors have matched this book’s treatment of the interconnections between the environment, finance and economy, industry and technology, psychology and politics. Porritt depicts chilling vignettes, and decries greed and unbridled materialism without impugning business as a whole ... The book, which closes with persuasive philosophical evocations and tactical guidelines, invites and repays detailed study.’

F. T. Manheim, George Mason University, in *Choice*

‘... provocative and always interesting manifesto for a society that will not destroy the conditions for its own survival ... he is vigorously passionate in describing the catastrophic dangers of global warming or the unsustainability of the “growth fetish” in current capitalism.’

Steven Poole, *The Guardian*

‘This is a genuinely important book by one of Britain’s most eminent environmentalists who is also both a realist and, cautiously, an optimist. On our present course, Porritt argues that we are heading towards global catastrophe, but that there is a way of escape. In a challenging but carefully reasoned analysis, he charts a way forward that promises sustainable prosperity within the framework of the global market economy. It is an urgent “must-read” for policy-makers and business leaders who have the power and influence to determine whether we all sink or swim.’

Jonathan Dimbleby, political commentator and broadcaster

‘Trade in those lightweight summertime paperbacks for something with a bit more bite. Jonathon Porritt looks at how capitalism could create a future where wealth and ecological integrity aren’t mutually exclusive.’

Book of the Week, *Scotland on Sunday*

‘As the distillation of unparalleled experience on the frontline and formidable reading, it is the best account of where we are now and how we might move ahead. Porritt’s book is a brave and important working draft for an essential positive alternative.’

Simon Caulkin, *The Observer*

‘Too many environmentalists see capitalism as the enemy. Porritt grapples with its reality – a system capable of delivering sustainability and enhancing wellbeing, but only if we think carefully about what form of capitalism we want. This book stimulates that thinking.’

Adair Turner, Chair of the Economic and Social Research Council

‘This book is excellent, readable, comprehensive and ultimately quite optimistic. Essential reading for anyone interested in the world, the environment, humanity or the future.’

Warmer Bulletin

‘All too often, NGOs have to campaign against commercial activities that cause environmental degradation around the world. Our message about unsustainable lifestyles is increasingly understood, but greater thought leadership among business and governments is needed. In this refreshing observation of capitalism, Porritt positions the opportunities provided by sustainable development brilliantly.’

Robert Napier, former Chief Executive, WWF-UK

‘As ex-chair of the Green Party, one-time director of Friends of the Earth, and co-founder and Director of Forum for the Future, Porritt is possibly the best person to write a book such as this. The reader can feel confident that his views are based on a desire to create a sustainable future rather than less laudable reasons ... an important factor when dealing with such a revolutionary book.’

Pauline Thomas, *The Waste Paper*

‘This is a very thoughtful and timely book. Many of those working towards a more sustainable future for our planet see capitalism as a big part of the problem. And with good reason. But if capitalism and free markets cannot be bent towards sustainability – towards being part of the solution – then I believe there is no solution. Hence the importance of this book. Read it.’

Lord May, President, The Royal Society

‘A message that businesses may find they are surprised to agree with.’

Financial Times

‘This book may well challenge any Christian environmentalists that see capitalism as the enemy.’

Methodist Recorder

‘Here’s a compelling book that should sound the trumpet for a whole new generation of engaged and optimistic young people, establishing once and for all that we still have choices – we don’t have to sleepwalk our way into the future.’

David Puttnam, film producer and politician

‘In this brilliant and timely book Porritt has thrown down the gauntlet and provided the necessary data and analysis on our collective dilemma.’

David Lorimer, *Scientific and Medical Network Review*

‘Porritt has applied a decade of experience with business and government to address the dilemma that, while capitalism is the most effective system for satisfying human needs, that process is putting intolerable strains on our ecology and climate. The book is a lively and penetrating discussion of how we can build on growing business interest in the challenges and opportunities.’

Mark Moody-Stuart, Chairman, Anglo American plc

‘a significant contribution to sustainable development literature and it deserves the attention of business and political leaders on both sides of the Atlantic.’

Inspire (e-magazine of The European Bahá’í Business Forum)

‘Capitalism, like the Tin Man on the Yellow Brick Road, needs to prove it has a heart. Jonathon Porritt, like the Wizard of Oz, is doing his best to help!’

Tim Smit, Chief Executive, The Eden Project

Capitalism
as if the World Matters

Capitalism as if the World Matters

Jonathon Porritt

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for ELEANOR and REBECCA

and for a generation
that depends so much
on our generation
coming to its senses

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Foreword

When my friend Jonathon Porritt asked me to introduce this British book to a largely American audience, I hoped it might build on the foundation of Hawken et al's *Natural Capitalism* (1999). There we laid out a new way of doing business by applying the essence of orthodox capitalism – productive use of and reinvestment in capital – not just to two forms of capital, money and goods, but also to two even more vital ones: people and nature.

Jonathon's important book has not just built on but *expanded* that foundation, synthesizing how to value and revitalize not just four but five or even six kinds of capital (adding social and perhaps spiritual capital to our oversimplified list). Its masterly overview of sustainability, its trenchant critique of environmental politics and its skewering of pathological materialism are all solidly rooted in the moral philosophy of the much-misrepresented Adam Smith.

The book's structure is powerful, its logic clear, its language graceful and its political perspective unapologetic. As well as penetrating insights into their own country, American readers will find here a wealth of valuable British and Continental thought and action that's too little known here.

This book's policy prescriptions reflect the widespread European view that a sound policy framework is indispensable to leading and supporting business. Federal gridlock may rather incline US readers to the view that while government should steer, not row, it usually lags far behind the enormously more dynamic private sector. Working mainly with large firms, co-evolving with civil society, I see extremely fast, accelerating, powerful and exciting shifts, led by business for profit – especially when policy focuses less on proper pricing (helpful though that is) than on 'barrier-busting' so people can respond to price.

Seeking a level of integration rarely attempted, the book's ambitious scope necessarily sacrifices detail for breadth. The challenges posed often do have specific solutions described elsewhere. For example, my own work *Winning the Oil Endgame* (www.oilendgame.com) didn't just claim a solution to the oil problem is valuable and possible, but presented a detailed roadmap for eliminating US oil use by the 2040s. That strategy is now well along in quiet implementation through innovative technologies and competitive strategies; its business logic is proving too compelling to need new national laws, taxes, subsidies or mandates. This makes the peak oil argument irrelevant: nobody can know if it's true, but it doesn't matter, because we should get off oil anyhow, at a cost of one quarter of its current price, just to make money. Similarly, as every practitioner proves daily,

climate protection is not costly but profitable, because energy efficiency costs less than the fuel it saves; governments will be the last to know.

Natural Capitalism's analysis of how to wring many times more work from each unit of energy and resources is described by Jonathon as 'hugely optimistic', and the realistic potential is said barely to outpace economic growth. This merits the gentle rebuke that *Natural Capitalism's* findings are actually proving very conservative. Our recent redesigns of \$30 billion worth of facilities in 29 sectors, for example, have consistently found a practical potential for 30–60 per cent energy savings with 2–3-year paybacks in existing facilities, and for 40–90 per cent savings in new ones with nearly always *lower* capital cost. And attentive firms are very profitably cutting their energy intensity by 6–8 per cent per year – several times faster than is needed to stabilize the climate.

Since 1975, even the wasteful US has cut its primary energy consumption per dollar of real GDP by 48 per cent, oil by 54 per cent, directly used natural gas by 64 per cent and water use by slightly more. Yet this just scratches the surface of what's now practical and worthwhile; those savings keep getting ever bigger and cheaper as technologies and design integration improve faster than we apply them.

I therefore feel that efficiency's role in meeting the formidable challenges this book describes has been understated. But that's an empirical question. In a few decades, we'll know whether it was efficiency or other factors – mindful markets, enlightened policies, the grassroots revolution described in Paul Hawken's new book *Blessed Unrest*, a spiritual revival, or others – that ultimately proved decisive. And of course efficiency, though the cheapest, fastest and biggest part of the integrative solution, is only a master key, not the whole toolkit: it can't substitute for many other and complementary methods, any more than technology by itself can triumph without sound policy.

However we get there, Jonathon Porritt has done us all a service by synthesizing a compelling vision of the goals we must steer towards, the main stages of the journey, and how each of us can joyfully bend to our oar. The breadth and incisiveness of his vision oblige us to be grateful, attentive and engaged.

The world does matter. It's all we have. Smarter capitalism can be our most effective tool in making it work, for all, for ever.

Amory B. Lovins
Chairman and Chief Scientist
Rocky Mountain Institute
Snowmass, Colorado
May 2007

Acknowledgements

This book started out as a collaborative enterprise involving a large number of colleagues at Forum for the Future. Having worked hard since our inception in 1996 to operationalize the concept of an economic framework based on five different kinds of capital (natural, human, social, manufactured and financial) through our various partnership schemes, we subsequently felt the need to develop some of the intellectual foundations behind that Framework – a rare example, perhaps, of theory following practice!

That work was done during 2002 and 2003, and particular thanks are due to James Wilsdon for his work on social capital, to Rupert Howes and Brian Pearce for their work on financial capital, to David Bent and David Aeron-Thomas for their work on environmental cost accounting, to Mark Everard and David Cook for their work on manufactured capital, to Martin Wright for his work on security issues and sustainability, and to Peter Price-Thomas and Simon Slater for their work on spiritual capital.

But the real origins of the work go back to discussions between myself and Paul Ekins in the mid-1990s when we were drawing up plans for the organization that would eventually become Forum for the Future. Paul had already done substantial work on the whole question of economic growth and sustainability, and the degree to which the two could be reconciled within a capitalist economy. The idea of using the five different kinds of capital to demonstrate what a genuinely sustainable economy would look like in practice emerged from those discussions, and an internal Forum paper written by Paul in 1997 became the source document for a lot of the work that the Forum has done in this area since then.

I should add that Paul's own book, *Economic Growth and Environmental Sustainability*, has done more to help me get my head around these issues than any other single work.

And there have been many other works over the last couple of years as what started out as a quite self-contained presentation of the Forum's Five Capitals Framework broadened out into an exploration of many other aspects of the economics and politics of sustainability. This book could not have been written without that intellectual feast having been available to me, and I have drawn on it unhesitatingly to lend substance and coherence to my own exploratory journey.

Where I hope I've been able to add something a little different is in the synthesizing of all those different inputs. It is only fair to say, in that context, that

for all the guidance I've drawn on from colleagues both within and beyond the Forum, *Capitalism as if the World Matters* is an expression of my own personal views rather than those of Forum for the Future as an organization. It's there that responsibility must lie for any misinterpretations or analytical inadequacies.

FORUM FOR THE FUTURE

Forum for the Future is the UK's leading sustainable development charity. Its mission is to accelerate the change to a sustainable way of life, taking a positive, solutions-oriented approach in everything it does. That mission is shared with partners drawn from business, finance, local authorities, regional bodies and higher education. We communicate what we learn with our partners to a wide network of decision-makers and opinion-formers.

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All royalties from the sales of *Capitalism as if the World Matters* are being paid to Forum for the Future to support its ongoing work.

Introduction

The old world is ending, and the new, hesitantly, is emerging. It's a painful process, and it's going to get a lot more painful before it starts getting better. This is not good news for those who believe that the threats to today's dominant model of progress can still be resolved with a few minor economic tweaks and political fixes. But it *is* good news for all those who know that we could be doing something so much more effective in terms of fashioning better lives for the vast majority of people all around the world.

To some, such assertions will sound simply preposterous, given that we've been enjoying the fruits of the triumph of capitalism over communism for little more than twenty years. And the idea of there being some kind of successor to capitalism waiting in the wings is quite understandably dismissed out of hand. But as a citizen of Europe, there's one historical parallel I can't get out of my head. On 11th November 1918, the triumphant allies signed the Armistice with a crushed and humiliated Germany. On 1st September 1939, Hitler invaded Poland, and the world was cast once more into devastating war. The analogy may be somewhat stretching, but twenty years after the collapse of the Berlin Wall, a triumphalist axis of capitalist nations has so profoundly mismanaged and abused its triumph that something much, much worse than the Cold War it brought an end to now looms in our midst.

Hearing that, you may wish to read no further! But this is not just another eco-tract predicting the end of everything we hold dear, if not the end of life on Earth itself. After 35 years banging on about the need for radical change, I'm more optimistic now than I've ever been. There's so much to be hugely hopeful about – technologically, politically, spiritually.

To justify such improbable optimism, I've had to go way back beyond the symptoms of today's disordered world to investigate the root causes of that disorder, and to remind people that capitalism has always been a self-correcting system, capable of startling and seemingly 'unthinkable' shifts at precisely the moment when those shifts are most needed. This investigation has led me to the conclusion that it is indeed still possible for capitalism today to self-correct (or, more accurately, to be corrected) before traumatic collapse.

For all who believe, as I do, that market-based, properly regulated capitalism is still capable of meeting today's daunting challenges, that's our best hope. But this is no easy path. Anything vaguely resembling 'business-as-usual' is no less than a death warrant for the highest ideals of contemporary civilization. And that

means we have to dig down a lot deeper than today's superficial, febrile political debates seem inclined to do. Václav Havel, former President of Czechoslovakia and one of the wisest commentators on the lessons to be learned from the collapse of communism, has tirelessly pointed out that 'without a global revolution in the sphere of human consciousness, nothing will change for the better'.

And we will indeed need to engineer tomorrow's world, step by step, with great determination. It won't just happen by chance. The world we live in today is not unplanned; it's the way it is because that's the way earlier political elites wanted it to be. Track back to those extraordinary years after the Second World War where massive entrepreneurial energy was unleashed, particularly in the United States and Europe. In *good faith, without so much as an inkling of today's 'sustainability crunch', the goal was to liberate people the world over (and not just in the rich world) through increased consumption. This 1948 quote from Victor Lebow, one of the most creative retail analysts of that post-war era, will shock people today but was seen then as both visionary and progressive:*

Our enormously productive economy demands that we make consumption our way of life, that we convert the buying and use of goods into rituals, that we seek our spiritual satisfaction, our ego satisfaction, in consumption. We need things consumed, burned up, worn out, replaced and discarded at an ever-increasing rate.'

Sixty years on, this process of 'manufacturing desire' has proved to be massively successful. But two 'unintended consequences' now imperil everything we may aspire to in the future. First, politicians and wealth creators have so successfully risen to Lebow's challenge that the biological foundations of our human civilization are now at risk. Second, that success has enriched so minute a percentage of humankind that even if the world wasn't about to implode physically, it certainly is economically, even in the world's richest countries. For instance, the top 10 per cent of Americans today own 70 per cent of net US wealth, and the top 5 per cent more than everyone else put together. The average CEO in the US today earns in one day what an average worker earns in a year. This is *America* we're talking about, the nation that has made a bigger difference to the world's 'poor and needy', and offered more hope to the world's disenfranchised, than any other country on Earth. Tragically, however, the US today, at this dreadful moment in its eventful history, represents the biggest threat to everything the US once stood for.

Today's lethal cocktail of environmental, social and security issues poses an unprecedented challenge to world leaders. But I'm always slightly startled by the number of my colleagues, in both the US and Europe, who believe it's already too late to pull things back from the brink even if we wanted to. I shall examine the pros and cons of that case, particularly as it relates to climate change, in much more detail at different points in the book. However, in terms of what we

would need to do to restore the Earth's basic life-support systems (soils, forests, fresh water, grazing land, biodiversity, fisheries, etc.), this is in fact much more manageable than most people realize, with an asking price that is probably no more than US\$100 billion, according to Lester Brown, President of the Earth Policy Institute in Washington.

Does that sound too much? Astonishingly reasonable? What's your benchmark? Perhaps it would help to know that \$100 billion is less than 10 per cent of the \$1.6 trillion that is reckoned to end up every year in offshore tax havens, beyond the reach of any government, as a result of capital flight, widespread and often endemic corruption, and tax avoidance of every conceivable description (mostly legal). Our world is in fact rich beyond most people's wildest imagination, yet only the tiniest imaginable percentage of that wealth plays any part at all in securing a decent, dignified, sustainable life for the majority of people today.

Capitalism has always had its contradictions, but tax avoidance and 'off-shoring' on this scale warps the very foundations of market capitalism. When people like George Soros and even Zbigniew Brzezinski (a redoubtable neo-conservative who helped shape US foreign policy throughout the 1970s and 80s) begin to warn of a potential implosion in the system as a consequence of today's 'global political awakening around social injustice', then it's probably time to sit up and listen.

There's an interesting correlation here between climate change and poverty. Many scientists today are focused on the possibility of what is called 'non-linear climate change', where the *gradual* build-up of manmade greenhouse gases in the atmosphere leads not to a *gradual* increase in average temperatures, followed by a *gradual* increase in the severity of climate-related events, but rather to a dramatic ('non-linear') step-change in the climate. This hypothesis is underpinned by findings from ice cores in both the Arctic and the Antarctic which show earlier sea level rises of several metres in a single century. About 14,000 years ago, for example, sea levels rose approximately 20 metres over the course of 400 years, or about 1 metre every 20 years.

Far fewer people look to the possibility of 'non-linear social change' as a consequence of the very deep-seated, and still gradually worsening, levels of inequity in society. We'll see later that research today shows that nearly 60 per cent of people live in countries where the gap between rich and poor is still getting bigger, not narrowing. As with climate change, the effects of this are often indirect, diffuse, long-term; there's always something more pressing for politicians to deal with, and NIMTO (Not In My Term of Office) mindsets tend to prevail. But we've seen many examples of 'non-linear social change' in the past, most recently with the collapse of communism and the Iron Curtain in central Europe in the 1980s, over a remarkably short period of time. So just how unequal will things need to get before political instabilities and other knock-on consequences bring about further non-linear change?

For the best part of ten years, I have been fortunate enough to end up working with a large number of people at senior level in both government and business – through Forum for the Future, the UK Sustainable Development Commission and the Prince of Wales’s Business and the Environment Programme – who are increasingly open to seeking answers to those difficult questions. Although it is, of course, possible that the wool is being pulled over my eyes by all of these people all of the time, my overwhelming impression is that more and more of them are now intent upon seriously pushing forward with more sustainable ways of doing their jobs. These are not radical people. They are not activists. They would not dream of looking for change outside the system: if it can’t be made to happen inside the system, then for them it just won’t work. Given the urgency now required, both the length of time it takes to get the basics sorted and the extraordinary reluctance to take any real risks remain hugely frustrating – but it is still the case that almost all key policy processes continue to move slowly in the right direction.

And that, of course, means that the emerging solutions have to be fashioned within the embrace of capitalism. Like it or not (and the vast majority of people *do*), capitalism is now the only economic show in town. The drive to extend the reach of markets into every aspect of every economy is an irresistible force, and the benefits of today’s globalization process are still held by a substantial majority of people to outweigh the costs – however serious those costs may be, as we shall see. The adaptability and inherent strengths of market-based, for-profit economic systems have proved themselves time after time, and there will be few reading this book who are not the direct beneficiaries of those systems.

It’s as well to acknowledge both the power and the enduring appeal of capitalism up front. Much of what follows will seek to harness the strengths of that system to the pursuit of sustainable development, while simultaneously challenging our dependence upon *today’s* particular model of capitalism. For fear of arriving at a different conclusion, there is a widespread though largely unspoken assumption that there need be no fundamental contradiction between sustainable development and capitalism. That assumption will be rigorously tested in Part I, as will the relationship between most governments’ good intentions on sustainable development and the prevailing political and economic framework through which they seek to deliver on those good intentions.

Sustainable development is still a relatively young and unfinished concept, and has had to establish itself over the last 20 years or so at precisely the time when those political philosophies which would have given it more space (social democracy and democratic socialism) have surrendered the field to today’s dominant, neo-liberal free market ideology. Organizations and individuals championing sustainable development as a radically different model of progress for humankind have had their work cut out simply trying to mitigate the worst externalities of today’s global economy. There has been little time or opportunity to map out more positive visions of what a sustainable world would look like, to stop hammering on and on about the *necessity* of change and start focusing

instead upon the *desirability* of change in terms of improved quality of life, greater security, and more fulfilled ways of working and living. We are so preoccupied with avoiding nightmares in the future that we have pretty much given up on offering our dreams of a better world today.

Capitalism as if the World Matters sets out to address that imbalance. It does so on the basis of a new political convergence that I believe is beginning to emerge around the twin concepts of *sustainability* and *wellbeing*. Governments around the world are now struggling to reconcile the legitimate material aspirations of their citizens with the need to protect the natural environment far more effectively than we have been able to do until now. They would, of course, prefer it if there were no such environmental constraints; but the costs of mismanaging our natural capital are now so great as to demand a new and lasting resolution to this long-running dilemma.

At the same time, though even less purposefully, governments are beginning to wake up to the problems of trying to achieve *everything* via the medium of constant economic growth. As we'll see in Chapter 3, growth clearly provides the wherewithal for delivering many of the improvements that people ask of their governments (better public services, security, renewed infrastructure and so on), as well as many of the material benefits that people seek through increased personal wealth and consumption. But it also gives rise to substantial social and environmental costs, and does not appear to be making people any happier or any more contented with their lot in life. So should governments be shifting the focus more towards the promotion of wellbeing and contentment, rather than towards economic growth per se?

The problem is that economies are now so geared towards year-on-year increases in personal consumption (partly in order to keep business growth buoyant and tax revenues flowing) that politicians are extremely reluctant even to question this particular paradigm of progress. At the same time, companies have been equally hostile to the notion that people might actually be better off by consuming *less*, and see any such discourse as a direct attack on the self-evident benefits of free market economics. For many business people over the last fifteen years, this has positioned sustainable development in the wrong psychological boxes – the ones labelled 'regulation and red tape', 'constraint on business', 'increased costs' or 'high risks'. Only during the last few years have we seen the other boxes – labelled 'opportunity', 'innovation', 'increased market share' and 'stronger brands' – opening up in such a way as to provide wealth creators with an entirely different and far more positive proposition. Given the dominant role of business in the world today, this particular mindset transition is critically important: however necessary or desirable something may be, it is unlikely to obtain the necessary traction in today's world unless the business community can be persuaded and inspired to get behind it.

Opportunity is, thus, the third key element in the case made for a rapid transition to a very different variant of capitalism: capitalism as if the world matters.

The politics of sustainability makes change *necessary*: we literally don't have any choice unless we want to see the natural world collapse around us, and with it our dreams of a better world for humankind. The politics of wellbeing makes change *desirable*: we really do have a choice in finding better ways of improving people's lives than those we are currently relying upon. And responding to both those challenges will generate extraordinary opportunities for the wealth creators of the future. When something is both necessary and desirable, and can be pitched to demanding electorates in terms of both *opportunity* and *progress*, then it becomes politically viable – and that's the threshold that I believe we have now, at long last, reached.

PART I

OUR UNSUSTAINABLE WORLD

Conflicting Imperatives

INTRODUCTION

Wouldn't it be great if any book dealing with sustainability could open with a resolutely upbeat account of the state of the planet? But that's just not possible – not in this decade, at least. As this chapter confirms, things *are* going from bad to worse, and they'll get worse yet. Despite a growing number of countervailing success stories, almost all of the trends are still heading in the wrong direction.

There is no mystery here: burgeoning human numbers, a spectacularly vibrant, consumption-driven economy, and a continuing inability to accept that there really are natural limits, make for a lethal combination. But no politician can currently gainsay that drive for increased prosperity – offering people more (at almost any cost) – has become the number one political imperative. The resulting impasse poses the greatest challenge we face today: we know that change is necessary, but that doesn't necessarily make it desirable. Nevertheless, this chapter ends with a brief and optimistic account of what it would be like to live in a more sustainable world, just to show how close that already is to most people's idea of a better life.

THE ASSAULT ON NATURE

At the start of the 21st century, our lives are bounded by two very different and *potentially* irreconcilable imperatives. The first is a biological imperative: to learn to live sustainably on this planet. This is an *absolute* imperative in that it is determined by the laws of nature and, hence, is non-negotiable – this side of extinction, it permits no choice. The second is a political imperative: to aspire to improve our material standard of living year on year. This is a *relative* imperative in that it is politically determined, with a number of alternative economic paradigms available to us. These imperatives are therefore very different in both kind and degree.

The need to find some reconciliation between these imperatives has never been more urgent. The world has been completely transformed over the last 60

years, with a combination of rapid population growth and massively increased economic activity (driven by access to relatively cheap sources of coal, oil and gas) exacting a harsh and continuing toll on the physical environment.

It has become fashionable in some quarters to disparage this kind of sweeping assertion. Predominantly right-wing media in the US and the UK have taken to their hearts a succession of dissenting scientists and commentators anxious to reassure people that the environmental and social problems we face today are not nearly as serious as environmental activists and poverty campaigners make out.

Accusations of exaggeration and scaremongering abound. Given that environmentalists started talking in these apocalyptic terms back in the 1970s, how is it that there has been no hint of any terminal breakdown during the last 30 years? The understandable consequence of this barrage of complacency is that many people really don't know who to trust in terms of gauging just how serious things are, especially on issues such as climate change (to which I will return at the end of this chapter) where the ongoing controversies about both the science and the politics are at their fiercest.

Yet, these days, most of the information about the state of the physical environment (and, indeed, about the state of people living in the world's poorest countries) comes from government departments, the United Nations (UN) or other international agencies, and independent academics. Non-governmental organizations (NGOs) are rarely involved in commissioning original research, and concentrate primarily upon disseminating and interpreting the data that comes into the public domain from official sources. With the best will in the world, I find it very difficult to explain how these official sources might have been subverted to falsify information, peddle untruths or generally seek to play games with the general public by exaggerating the seriousness of today's environmental dilemmas. For most environmentalists, this continuing denial on the part of 'contrarians' such as Bjorn Lomborg (2001) is but the last gasp of a 40-year endeavour to make out that all is well with the world, even as our impact upon it grows exponentially year on year.

It may be helpful to briefly review the official position on some of these key environmental problems. In country after country, the data reveals a similar state of affairs: we are continuing to destroy natural habitats of every kind through conversion for human purposes. More than half of the world's original forest area has been lost and one third of what is left will be gone in the next 20 years at current rates of deforestation. A report from the Food and Agriculture Organization (FAO) in March 2007 (FAO, 2007) described the destruction of forests in the developing world as being 'out of control'. Africa lost more than 9 per cent of its trees between 1990 and 2005; the world as a whole lost another 3 per cent of its total forest area. An even larger proportion of original wetlands has been destroyed, and more than one third of the world's coral reefs are either dead or severely damaged. Not surprisingly, this habitat destruction has had a

huge impact upon wild species, with various estimates of loss of biodiversity from the World Conservation Union (IUCN) and other international bodies a source of intense concern. This situation has often been exacerbated by the impact of alien species on many indigenous ecosystems, with billions of dollars now being spent across the world on control and eradication programmes.

This litany of bio-devastation has been shouted out so often that it's clear politicians have simply switched off on hearing it. After the relative failure of the 1992 Convention on Biological Diversity, and the near silence that greeted publication of the Millennium Ecosystem Assessment report (MA; see below), perhaps we should be rethinking our entire approach to biodiversity. In July 2006, leading biologists from around the world called for the creation of a new international body for biodiversity to match the impact of the Intergovernmental Panel on Climate Change (IPCC) – for whatever you may think about the IPCC's overall impact, it has compelled governments to take the advice of their scientific institutions far more seriously than they would otherwise have done. And with a 'potentially catastrophic loss of species' now unfolding in front of our eyes, the IPCC's Fourth Assessment Report (IPCC, 2007) couldn't possibly have contained worse news: up to 30 per cent of all plant and animal species are likely to be at increased risk of extinction if global temperatures rise by more than 2°C.

In terms of managed (rather than wild) areas, we have seen little improvement in management techniques over the last two decades. Soil erosion is a chronic problem in many parts of the world, as is salinization, often caused by hugely wasteful and poorly designed irrigation schemes. There are different estimates as to the collective impact of all this upon farmland, but the UN FAO believes that a minimum of 20 per cent of total cultivated acreage is now seriously damaged. Overgrazing of grasslands has resulted in a similar loss of productivity in literally dozens of countries.

More recently, there has also been growing concern about freshwater impacts, both in terms of quantity (with severe water shortages now affecting a large number of countries) and quality, as both rivers and groundwater aquifers are increasingly affected by diffuse pollution of many different kinds. It is true that river quality has often improved substantially in many Organisation for Economic Co-operation and Development (OECD) countries during the last decade through much tighter regulation and a growing reluctance to allow companies to use rivers and streams as their private sewers. But the situation continues to worsen in most developing countries. The same is true with local air quality.

When the will is there, it has occasionally proved possible to get on top of major environmental problems. Quite rightly, the phasing out of gases such as chlorofluorocarbons (CFCs) that were having such a damaging impact upon the protective ozone layer in the upper atmosphere is seen as one of the most effective examples of international diplomacy working to protect the environment and people's health. But even here, we're not exactly out of the woods. There is a

thriving black market in banned CFCs, and growing resistance in the US and elsewhere to further measures to phase out other ozone-depleting substances such as methyl bromide. The United Nations Environment Programme (UNEP) still reminds politicians that it is likely to be another 40 years before levels of ozone in the atmosphere are restored to where they were during the 1980s.

One of the biggest problems in all of these areas is that the deterioration is usually incremental, acre by acre, town by town, pollution incident by pollution incident, species by species – and hence all but invisible to people living in the midst of this progressive decline. The position in any one year may not be much worse than in the preceding year, but go back 30 or 40 years and the changes are stark. It is death by a thousand cuts, rather than by some traumatic shock to the system which would be far harder for citizens and politicians to ignore.

Nowhere is this demonstrated more clearly than in the MA released in April 2005 (MA, 2005). This extraordinary study took four years to compile, involving hundreds of scientists all over the world, assessing literally thousands of peer-reviewed papers covering the principal aspects of the relationship between ourselves and the natural world, and bringing those findings together in a single, extremely powerful analysis. Its principal focus is on what are known as ‘ecosystem services’ – in other words, the benefits that we humans obtain from different ecosystems.

The MA describes ‘services’ in four categories: ‘provisioning services’, such as food, water, timber and fibre; ‘regulating services’, which affect climate, flood control, disease, waste and water quality; ‘cultural services’, which provide recreational, aesthetic and spiritual benefits; and ‘supporting services’, such as soil formation, photosynthesis and nutrient cycling. This serves to remind us, however buffered against the impact of environmental damage we may think we are through new technology, that we are still fundamentally dependent upon the constant and reliable flow of ecosystem services to secure our own wellbeing. The MA identifies the essential constituents of human wellbeing as having access to the basic materials for a good life (such as food, shelter and clothing), sound health, good social relations, security, and freedom of choice and action, and its overall conclusions are deeply disconcerting:

- Over the past 50 years, humans have changed ecosystems more rapidly and extensively than in any comparable period of time in human history, primarily in order to meet rapidly growing demands for food, freshwater, timber, fibre and fuel. This has resulted in a substantial and largely irreversible loss in the diversity of life on Earth.
- The changes that have been made to ecosystems have contributed to substantial net gains in human wellbeing and economic development; but these gains have been achieved at growing costs in the form of the degradation of many ecosystem services.
- Approximately 60 per cent (15 out of 24) of the ecosystem services examined are being degraded or used unsustainably, including freshwater, fisheries, air

and water purification, and the regulation of regional and local climate, natural hazards, and pests.

- The full costs of the loss and degradation of these ecosystem services are difficult to measure, but the available evidence demonstrates that they are substantial and growing.
- The harmful effects of this degradation are being borne disproportionately by the poor, are contributing to growing inequities and disparities across groups of people, and are sometimes the principal factor causing poverty and social conflict.
- The degradation of ecosystem services is already a significant barrier to achieving the Millennium Development Goals, and the harmful consequences of this could grow significantly worse during the next 50 years.
- There is established but incomplete evidence that changes being made in ecosystems are increasing the likelihood of *non-linear* changes in ecosystems (including accelerating, abrupt and potentially irreversible changes) that have important consequences for human wellbeing.

Blind optimism in the face of such a litany of continuing destruction and mismanagement is a strange phenomenon. It is premised on the hope that the planet's self-healing capacity remains resilient enough to weather these constant assaults, despite growing evidence of irreversibility in terms of lost productivity and diversity. There is something deeply unhistorical about this cornucopian optimism, as if there wasn't a robust body of evidence available to us – captured authoritatively in Clive Ponting's *A Green History of the World* (1991) and, more recently, in Jared Diamond's *Collapse* (2005) – demonstrating that there really are 'points of no return' when ecosystems are systematically overexploited and abused. A rather more historical perspective would be helpful in all sorts of ways.

Over the last 550 million years, there have been five mass extinctions on planet Earth, the last one just 65 million years ago when the dinosaurs disappeared. For one reason or another (meteor or asteroid impact, dramatic climate change, volcanic or other planetary traumas, or the normal process of speciation and extinction as evolution unfolded), most life-forms that have appeared on planet Earth have turned out to be unsustainable. We are the first species (as far as we know) that is able to reflect upon where we have come from and where we are headed. We are, therefore, able to conceptualize the necessary conditions for our own survival as a species and, in the light of that understanding, so shape our living patterns in order to optimize our survival chances.

It is only in the last few decades that our survival as a species has become an issue. Slowly, painfully, we are coming to realize that there is nothing automatic or guaranteed about our continued existence. If we don't learn to live sustainably within the natural systems and limits that provide the foundation for *all* life-forms, then we will go the same way as every other life-form that failed to adapt to those changing systems and limits. Deep down in our collective psyche, after

hundreds of years of industrialization that systematically suppressed a proper understanding of our continuing and total dependency upon the natural world, that atavistic reality is beginning to resurface.

All else depends upon this. If we can't secure our own biophysical survival, then it is game over for every other noble aspiration or venal self-interest that we may entertain. With great respect to those who assert the so-called 'primacy' of key social and economic goals (such as the elimination of poverty or the attainment of universal human rights), it must be said loud and clear that these are *secondary* goals: all else is conditional upon learning to live sustainably within the Earth's systems and limits. Not only is the pursuit of biophysical sustainability non-negotiable; it's preconditional.

Having said that, these are really two sides of the same coin. On the one hand, social sustainability is entirely dependent upon ecological sustainability. As we continue to undermine nature's capacity to provide humans with essential services (such as clean water, a stable climate and so on) and resources (such as food and raw materials), both individuals and nation states will be subjected to growing amounts of pressure. Conflict will grow, and threats to public health and personal safety will increase in the face of ecological degradation.

On the other hand, ecological sustainability is entirely dependent upon social sustainability. With a growing number of people living within social systems that constrain their ability to meet their needs, it becomes increasingly difficult to protect the natural environment. Forests are cleared to make way for land-hungry farmers; grazing lands are overstocked, aquifers depleted, rivers over-fished; and the rest of nature is driven back into ever smaller reserves or natural parks.

Fortunately, all species have a deep survival instinct. Ultimately, they do everything they can to secure their own survival chances. And that is as true of humans as it is of the Siberian tiger or the lowliest of bacteria. We humans have now coined a name for our survival instinct: it's called 'sustainable development', which means, quite simply, living on this planet as if we intended to go on living here forever.

With the publication of Rachel Carson's *Silent Spring* in 1962, it started to dawn on people that in order to generate rising prosperity we have been literally laying waste the planet, tearing down forests, damming rivers, polluting the air, eroding topsoil, warming the atmosphere, depleting fish stocks, and covering more and more land with concrete and tarmac. And as our numbers grow, by an additional 75 million or so a year, the pressures on the planet and its life-support systems (upon which *all* species depend, including ourselves) continue to mount year by year. We can no longer go on ignoring the challenge of biophysical sustainability.

ECONOMIC PROSPERITY

Even as we witness this reality unfolding in front of our eyes, it seems that we have no choice in the rich world but to seek to go on getting richer. On current projections, the global economy will grow from around \$60 trillion today to around \$240 trillion by 2050. Historians will reflect upon the fact that the current model of progress, premised on year-on-year increases in material prosperity, can only be traced back a couple of centuries; life without any expectation of increased prosperity has, in fact, been the historical norm. And anthropologists might point to the Kalahari Bushmen or other indigenous people as living proof that constant improvements in our material standard of living are not a *necessary* condition of human existence.

Environmentalists argue that the pursuit of increased prosperity is a second-order political aspiration rather than a first-order imperative, and should in no way be set alongside the pursuit of sustainability – a point to which we return later. Exponents of the art of ‘voluntary simplicity’ (maximizing one’s quality of life while minimizing one’s dependence upon a wasteful, energy-intensive standard of living) point to the falsehood that increased prosperity automatically leads to a higher quality of life. And adherents of the world’s leading religions are able to call upon concepts such as ‘right livelihood’ or warnings about camels passing through eyes of needles to demonstrate that God and Mammon still inhabit different spheres.

That’s all well and good; but the vast majority of people alive today both want to be better off themselves and want their children (if they have them) to be better off than them. This would appear to be as true of citizens in the world’s richest nations as of those in the poorest.

There are clearly enormous differences in different people’s material aspirations, however. Although there is still serious poverty in almost all OECD countries, what are defined as ‘basic human needs’ are now largely met in those countries. But as far back as 1930, John Maynard Keynes pointed out that our *absolute* wants (those which we feel regardless of our relative position in society) are limited and finite; it is our *relative* wants (those which we feel in comparison to what others have in society) that are apparently insatiable – and it is these relative wants that keep the wheels of our growth machine spinning merrily away.

This is eloquently summarized in the United Nations Development Programme’s (UNDP’s) *Human Development Report*, published in September 2005. It describes progress as ‘depressingly slow’, despite some encouraging signs – an extra 30 million children in school, child deaths cut by 3 million a year, overall life expectancy up by two years, and so on. But more than 460 million people now live in countries with a *lower score* on the Human Development Index (HDI) than in 1990 – an ‘unprecedented reversal’, as the report puts it.

In the midst of an increasingly prosperous global economy, 10.7 million children every year do not live to see their fifth birthday, and more than 1 billion people survive in abject poverty on less than \$1 a day. One fifth of humanity live in countries where many people think nothing of spending \$2 a day on a cappuccino. Another fifth of humanity survive on less than a dollar a day, and live in countries where children die for want of a simple anti-mosquito bed net. (UNDP, 2005)

Reaffirming that ‘deep-rooted inequality is at the heart of the problem’, the report pointedly comments that for every \$1 spent on aid in rich countries, \$10 is spent on arms and military expenditure. Just the *increase* in defence spending since 2000, if devoted to aid instead, would have been sufficient to reach the UN’s target of 0.7 per cent of Gross Domestic Product (GDP) being devoted to international aid. It concludes: ‘this development disaster is as avoidable as it is predictable’.

In rich countries and poor countries alike, though with different justifications, it is the pursuit of greater prosperity that drives the political process. Those who claim that many people, deep down, know that increased prosperity won’t necessarily make them happier may well be right. But that is not the way they vote. Those who inveigh against today’s ‘ideological vacuum’ (where the pursuit of economic growth has become an all too inadequate surrogate for real politics) may do so with overwhelming justification. But such protestations would appear to count for little across the political scene as a whole.

It was, after all, 35 years ago that two of the world’s most eminent economists, William Nordhaus and James Tobin, published a landmark study criticizing the use of Gross National Product (GNP) as the sole indicator of economic progress: ‘... maximization of GNP is not a proper policy objective. Economists all know that, and yet their everyday use of GNP as the standard measure of economic performance conveys the impression that they are evangelistic worshippers of GNP.’ Yet mainstream economists have done next to nothing over those 35 years to challenge the illegitimate ascendancy of GNP, with paralysing consequences for policy-making at every level – as we will see in Chapter 3.

Francis Fukuyama was clearly a little premature when he asserted that the demise of communism heralded ‘the end of history’. Nothing lasts forever, and there’s little doubt that viable alternatives to capitalism (or, at least, a very different model of capitalism) will emerge over time. The question is ‘when’ not ‘whether’, and in which direction. In mapping out the kind of transformation that I believe is now both necessary and desirable, I will be emphasizing the potential of a ‘soft landing’ for contemporary capitalism, seizing hold of the wealth of opportunity entailed in fashioning genuinely sustainable livelihoods for the 9 billion people with whom we will be sharing this planet by the middle of the century.

Capitalism is a complex, adaptive system, and is clearly capable of profound and rapid shifts. Even those who do not share my views have good reason to be concerned about the durability of this particular model of capitalism. A

combination of different factors – the deregulation of cross-border capital flows; the emergence of currency trading on an unprecedented scale in today's 'casino economy'; increased liberalization exerting downward pressure on wages and prices; growing disparities in wealth both within and between countries; extraordinarily high levels of debt in so many countries and particularly in the US; oil trading at around \$70 dollars a barrel – makes the maintenance of our current global economy look like an extremely dangerous high-wire act, with the prospects of a vertiginous collapse ever more likely.

Indeed, many of today's most trenchant critics of global capitalism believe that the collapse of capitalism could be upon us far sooner than anyone anticipates, often summoning up the analogy of the dramatic collapse of communism in a manner and at a time that defied all of the prognostications of the world's smartest think-tanks and academics. And the collapse of global capitalism, it is often argued, would usher in more self-reliant, compassionate and sustainable economies, with none of today's frenetic consumerism or aggressive self-interest.

Looking at the state of the world today, this seems an improbable scenario, both in its assumption of a rapid rather than a long-term transition, and in its assumption that such a transition would be benign. Whatever personal or ideological sympathy one may feel for these alternatives, prevailing geopolitical reality would seem to indicate a very different prospect – in which the process of globalization accelerates still further, the phenomenon of mass denial continues as the majority of people in the world today continue to press for improvements in their material standard of living, and 'reform from within' remains the most realistic of all of the political options available.

For anyone concerned about sustainability, such *realpolitik* is extraordinarily challenging on two counts. First, the reconciliation (in part or in whole) of these two imperatives (sustainability and increased prosperity) must therefore be achieved through market-based systems in predominantly capitalist economies. By implication, the more 'market friendly' any proposed reform may be, the greater the likelihood of its adoption. Yet, as we will see, many of the changes that are now required can only be twisted to fit these market disciplines with great difficulty.

Second, it means that measures to achieve reconciliation must win widespread political acceptance within the democratic systems that set the boundaries for those economic markets. They cannot be imposed against the wishes of an electorate; they must be agreed to be either necessary or desirable (and preferably both) given the nature of the challenge we now face. What is more, the public policy measures required to achieve that level of democratic ownership are unlikely to come about through a simple return to the tried and tested precepts of 'top-down' social democracy. As Tom Bentley, former Director of the UK think-tank Demos, says:

The values of individualism, diversity and open exchange, which have been fought for over centuries, have won out in the modern world. They are embodied in the structure of capitalism, which now constitutes the only viable possibility for organizing economies. This combination of forces will not go away: the impulse to personal choice and freedom of expression is more deep-rooted than any specific political project and has a long way to run. It is aided and fuelled by the progress of consumer capitalism, which systematically promotes the idea that the use of individual purchasing power to make lifestyle choices creates fulfilment since such choices are the key engine of capitalism's growth and renewal.
(Bentley, 2002)

That puts the highest possible premium on political leadership in an age when such leadership seems more and more elusive. As we will see in Chapter 3, ecological reality is usually ignored if it is identified as any kind of serious barrier to increased material prosperity. Nowhere has this been more evident than in the response of the US to the phenomenon of climate change. Its basic rule of thumb was definitively mapped out by George Bush senior when he arrived at the 1992 Earth Summit in Rio de Janeiro, warning all and sundry that 'the American way of life' was not up for grabs in the negotiations around the United Nations Framework Convention on Climate Change (UNFCCC). The US did, eventually, sign up to the Convention; but that was the last positive thing it has done on the international climate change agenda since that time.

OUR CHANGING CLIMATE

Since the first edition of *Capitalism as if the World Matters* came out in 2005, by far the most dramatic change has been the shift in global opinion on climate change. Indeed, interest in and coverage of climate change is now so widespread that some protagonists of sustainable development as an overarching framework feel that this bigger picture is being eclipsed by an almost exclusive focus on climate change. However, as proxies go, climate change is about as good as it gets in terms of understanding the degree to which today's dominant political and business models are becoming less and less relevant in such a rapidly changing world.

Until now, however, the politics of climate change has been a slow, frustrating process. Serious concern first surfaced in the 1970s, slowly gathering momentum through until the late 1980s, when the debate in the US really took off after three years of extremely severe drought. That led directly to the original UNFCCC, agreed at the Earth Summit in Rio de Janeiro in 1992 and ratified in 1995 by 189 nations – including the US. Those nations all signed up to the goal of 'stabilization of greenhouse gas concentrations in the atmosphere, at levels that would prevent

dangerous anthropogenic interference with the climate system'. Since then, no specific limit has been set, and the Americans spent the next ten years trying to prevent the Kyoto Protocol (the first legally binding agreement emerging from the UNFCCC) getting off the ground. Fortunately, they failed in this endeavour, and the Protocol came into force on 16 February 2005.

The hard evidence that our climate is already changing as a consequence of emissions of carbon dioxide (CO₂) and other greenhouse gases had been getting firmer and firmer during that time. Computer models of what *might* happen have come increasingly in line with what *is* happening; even the US Administration now accepts that the 0.6°C warming that has occurred since the middle of the last century is, 'in all probability', the direct consequence of man-made emissions – a huge step forward in terms of the US beginning to acknowledge the scale of the problem.

All around the world, people are witnessing climate change for themselves in terms of extreme weather events or natural phenomena 'out of sync' (for instance, early flowering of trees and plants, or egg-laying in birds); and scientists are tracking in enormous detail the shrinkage of glaciers, the thawing out of the permafrost, the accelerated melting of ice sheets in both the Arctic and the Antarctic, and the late freezing and earlier break-up of ice on rivers and lakes. *High Tide* by Mark Lynas (2004) records the very personal accounts of the impact of changing weather and seasons upon the lives of people in China, the Pacific, Peru, Alaska and elsewhere. Behind the dry scientific data are the real-life stories of people already devastated by a phenomenon too many of us still think of as one of those problems for tomorrow, not today:

If there's one message above all that I want people to take from these pages, it's this: that all the impacts described here are just the first whispers of the hurricane of future climate change which is now bearing down on us. Like the canary in the coal mine, those who live closest to the land – the Eskimos in Alaska and the Pacific islanders – have been the first to notice. But they won't be alone for long. As I suspected when I first began to undertake this mission, the first signs are evident to anyone who chooses to look. (Lynas, 2004).

Courtesy of the IPCC, we now know a lot more about the scale of this 'hurricane of future climate change'. Its Fourth Assessment Report in February 2007 laid it on the line for politicians still prevaricating in the face of residual uncertainty:

- CO₂ levels at their highest for 650,000 years;
- Climate change 'unequivocally' happening;
- 90 per cent certain that it's due to man-made emissions;
- 10–15 years to put in place serious measures to start reducing emissions of CO₂;

- 'Best guess' indicates global temperature will rise by 1.8°C to 4°C by 2100;
- Worst case 'indicates up to 6.4°C';
- Policy responses geared to hold temperature increase below 2°C; and
- Urgent need to agree on global stabilization target for CO₂ and other greenhouse gases.

True enough, 90 per cent isn't 100 per cent, and a small number of dissenting scientists (many of them funded directly or indirectly by US corporations, and by the oil industry in particular) continue to give the impression that the science of climate change is still hotly contested and that no real consensus exists. When the science historian Naomi Oreskes analysed the 928 peer-reviewed papers on climate change published between 1993 and 2003, she came to the very different conclusion that today's consensus is almost universal: 'politicians, economists, journalists and others may have the impression of confusion, disagreement and discord among climate scientists, but that impression is incorrect' (Oreskes, 2004). In *An Inconvenient Truth*, Al Gore (2006) graphically captures the stark disparity between what scientists have concluded and what media commentators make of these conclusions:

*Number of peer-reviewed articles dealing with climate change
published in scientific journals during the previous 10 years:* 928

Percentage of articles in doubt as to the cause of global warming: 0%

*Articles in the US popular press about global warming during
the previous 14 years:* 636

Percentage of articles in doubt as to the cause of global warming: 53%

A particularly galling example of this hit the news both in the UK and the US when a one-off documentary, *The Great Global Warming Swindle* (Durkin, 2007), paraded a line-up of dodgy scientists peddling one particular theory (that it's increased radiation from the sun that is causing the Earth to warm up, releasing more greenhouse gases in the process) that has been demonstrated time after time to be without any empirical basis whatsoever. The only serious scientist among them, Professor Carl Wunsch, shamefacedly acknowledged that they 'completely misrepresented' him, a trick well known to the writer and presenter of this particular travesty, Martin Durkin, whose earlier environmental programmes have involved such devious misrepresentations that Channel Four was forced to issue grovelling public apologies.

Having been routed scientifically, most contrarians have now shifted their argument to the *economics* of climate change: even if it is happening, and even if it is going to have extremely severe impacts upon humankind in terms of rising

sea levels, extreme weather events, disrupted agriculture and so on, the costs of doing anything to mitigate these impacts are deemed by contrarians to be far too onerous. Marshalled by Bjorn Lomborg in Europe, and by a host of right-wing think-tanks in the US (such as the Cato Institute and the Competitive Enterprise Institute), they are succeeding yet again in giving politicians a pretext for delay and half-hearted half-measures.

Even this 'final contrarian redoubt' has now been smoked out by the report from Sir Nicholas Stern, *The Economics of Climate Change*, published in November 2006. In describing climate change as 'the greatest market failure the world has ever seen', this UK Treasury-funded report does for the economics of climate change what the IPCC has done for the science. What Stern seeks to demonstrate above all is 'that there need be no irreconcilable clash between securing increased economic prosperity and addressing the challenge of climate change' (Stern, 2007). The report estimates the cost of action in addressing climate change at around 1 per cent of global GDP every year; 'business as usual' will result in economic damage of between 5 per cent and 20 per cent of global GDP every year, and Stern comments that 'the appropriate estimate is likely to be in the upper part of this range'. In terms of getting one's head around what this actually means, he contrasts that level of damage with disruption on a scale similar to that associated with the two world wars and the economic depression of the first half of the 20th century.

Nonetheless, 1 per cent of GDP is not immaterial. In March 2007, the consulting firm McKinsey published one of the first estimates of the costs entailed in meeting the EU's new target of a 20 per cent reduction in CO₂ emissions by 2020. This was assessed at up to €1.1 trillion (£747 billion). It showed that simple technology (such as energy-saving light bulbs and wind power) will be capable of providing up to 75 per cent of the required reductions in greenhouse gas emissions, and that politicians should concentrate on implementing the most cost-effective environmental measures first, rather than coal-fired power stations with Carbon Capture and Storage (CCS).

No doubt further studies will emerge, both here in Europe and in the US, providing alternative economic projections. But the reality is that things are now moving, all around the world, and the politics of climate change have at long last moved to the very centre of the political stage. It was interesting that in setting the target of a 20 per cent cut in CO₂ emissions (on 1990 levels) by 2020, the 2007 EU Summit also agreed that it would ratchet that up to 30 per cent if other countries (particularly the US, China and India) follow suit. It also determined that 20 per cent of Europe's energy will be required to come from renewable sources by 2020. Bizarrely, however, the category of renewables has been expanded to include nuclear power (primarily to keep France on board), although it's blindingly obvious that the reserves of uranium on which nuclear power depend are no more 'renewable' than reserves of oil or gas.

For all that, different EU countries are bound to take different paths to the same end. Sweden has set the highest ambition level in determining to make itself 'all but fossil-fuel free' by 2020 – it currently relies on fossil fuels for around 35 per cent of its total energy consumption. Sweden's 'green gold' (its huge and well-managed forests) will fill a lot of that gap in terms of biomass and biofuels, but every available technology will be expected to play its part. The UK may lack Sweden's forests, but it too has taken a very strong lead, setting CO₂ reduction targets in a legally-binding framework (at least 26 per cent by 2020 and 60 per cent by 2050, with firm 'milestones' along the way), creating an independent advisory committee to determine appropriate targets in the future, and building in all sorts of 'enabling powers' to ensure that future governments do not have to keep going back to Parliament with primary legislation every time they want to bring in new measures.

Many critics believe that this is the turning point as far as the UK getting its climate change act together in its own backyard is concerned. Hitherto, it has been content to rely on the inspired international leadership of the former Prime Minister Tony Blair, who undoubtedly did more than any other individual to maintain at least some semblance of forward progress with other world leaders. By bringing countries like India and China into the G8 process at the Gleneagles Summit in 2005, he created space for the kind of persistent and less threatening diplomacy that the formal UN-driven negotiations had failed to bring about.

Not that the US took advantage of that space. From the time they went back on their campaign pledge, in 2001, to legislate to control emissions of CO₂, and then pulled out of the Kyoto Protocol shortly after that, President Bush and Vice-President Cheney have remained sunk deep in their denial of the science of climate change, aggressively defending the narrow interests of the US economy, suppressing reports, corrupting advisory bodies and blocking even the most modest of reforms. It is no exaggeration to say that these two figures (supported by the likes of the notorious Senator Inhofe, who describes climate change as 'the greatest hoax ever perpetrated on the American people') have come to represent a quite unique 'axis of evil' regarding climate change. Americans often complain about being 'singled out' for unfair calumny in the climate change 'hall of shame'. They shouldn't – as Joseph Stiglitz explains through these astonishing statistics:

The US emits close to 25 per cent of all greenhouse gases. Wyoming, the least populous state, with only 495,700 people, emits more carbon dioxide than 74 developing countries with a combined population of nearly 396 million. The CO₂ emissions of Texas, with a population of 22 million, exceed the combined emissions of 120 developing countries with an aggregate population of over 1.1 billion people. (Stiglitz, 2006)