

Introduction

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Science, or progress in science, may be regarded as a means used by the human species to adapt itself to the environment.

Karl Popper, *The Rationality of Scientific Revolutions*, 1975

Adapt or perish, now as ever, is nature's inexorable imperative.

H. G. Wells

Is this just another book about global warming?

Adapt or Die proposes a framework for thinking about how to respond to potential threats to humanity and the earth which might result from change. Climate change, and in particular global warming, is the subject of this book, but the proposed framework could apply equally well to other global or local environmental problems.

Human welfare is inextricably linked to the earth's climate, and just like all other life forms, the manner in which we respond to change is critical not only to our survival, but to our well-being. The prospect of global warming offers an opportunity to re-evaluate how we address global problems, and how we ought to prioritise our efforts to cope with them.

The debate about climate change has been largely driven by the assumption that the impacts of global warming, if unmitigated, will pose threats to humanity and to the environment. These threats could include rising sea levels, changes in agricultural production, severe weather events, the spread of disease, and environmental effects such as the loss of biodiversity.

Those who are involved in formulating climate policy at national and international levels are faced with the enormous task of evaluating

the evidence, and devising possible solutions to global warming. Most have taken the view that humanity's emissions of greenhouse gases have exacerbated the earth's natural greenhouse effect, which has in turn led to warmer temperatures. Thus, the conventional wisdom suggests that temperatures will continue to rise so long as we continue to emit greenhouse gases and the only way to deal with threats is to drastically reduce our emissions.

At the international level, the Intergovernmental Panel on Climate Change (IPCC) was established to evaluate the extent of the problem, and proposed solutions such as the Kyoto Protocol, an agreement negotiated during the 1990s as the primary global strategy to address global warming. The IPCC has produced three assessment reports, and as of writing the Kyoto Protocol has not yet gone into force worldwide.

Kyoto has often been called an 'insurance policy' against global warming. But against what exactly is it insuring, and at what price? It is not clear that Kyoto will have any effect in terms of reducing global temperatures – and thus would it actually be an effective insurance policy? A discussion of adaptation measures, and the institutional framework to support adaptation, has been largely missing from this debate. More broadly, and as this book's authors show, it is uncertain that mitigation strategies are the best way to reduce our vulnerability to the impacts of a warmer climate.

About this book

The spirit of this book is implied by its title: *Adapt or Die*. Humanity has, over the past 12,000 years (since the advent of fire, the wheel and modern agriculture), adapted to changing circumstances, and there is no reason to believe that such adaptation will not continue. The challenge is to create an environment in which adaptation can flourish without being stifled.

The book's contributors evaluate proposed strategies to mitigate global warming and its potential consequences and compare these with strategies focused on adaptation. In various ways, they suggest that we ought to prioritise our efforts and responses – mainly by reducing the vulnerability of humanity to the effects of a warmer climate in a way which promotes maximum flexibility to cope with change, and with the fewest negative consequences for human well-being.

What this book is not

This book is not an attempt to disprove that global warming is occurring. While there is good reason to have an informed, rational debate about global warming, individual contributors may be more or less convinced that global warming is occurring, or that models of climatic and economic change are accurate in their predictions. Those authors have expressed their own views based on evidence which they believe is important and relevant. All the contributors share a belief that policy makers, the news media and the public should have a better understanding of the evidence for and the potential effects of a warmer climate.

Likewise, the contributors to this book do not suggest that we simply do nothing to respond to climate change. They believe that we should carefully consider our approaches to potential problems which could result from a warmer climate.

The book does not credit, blame or implicate any particular interest group – whether business, government, environmental groups, scientists or the news media – for the state of climate debate. However, it is important to understand the role of those groups in the formation of climate policy. Certain vested interests benefit from climate policy, while the costs are widely dispersed to consumers, small businesses and taxpayers.

This book's contributors do not suggest particular outcomes, nor do they advocate particular technologies to deal with a warmer climate. They show that new technologies of all kinds are desirable to deal with change, including global warming, and in various ways they have suggested an institutional framework which would encourage the development of and access to new technologies, but avoid the consequences of outcome-based sustainable development.

Structure of the book

Adapt or Die is divided into several parts which examine various aspects of the climate change debate. Since much of the debate has promoted the potential negative impacts and consequences of global warming, Part I examines those claims, including a specific focus on disease and the historic city of Venice.

In Part II, the authors evaluate various strategies and policies which have been pursued to deal with climate change – both those of

‘climate control’ and those of adaptation – given knowledge and expectations about the future. Two authors in this section focus on how climate policy could potentially affect poor countries.

Part III examines the economic consequences of climate policy for businesses and international trade.

To conclude the book, Part IV analyses climate policy using political economy principles, and evaluates justifications for climate policy based on how past civilisations may have been affected by a changing climate.

Part One: Possible Impacts of Climate Change

Perhaps the most ominous aspect of global warming is the negative effects that have been promoted as its consequences. The conventional wisdom is that storms will damage our seafront properties, low-lying countries will be inundated, and that malaria and other diseases will spread to Europe and North America. Part One examines these claims in detail.

Indur Goklany (Chapter 3) analyses potential human and environmental vulnerabilities to the impacts of climate change. First, he examines the consequences of climate change in the past few decades, arguing that:

Despite any warming, by virtually any climate-sensitive measure of human well-being, the average person’s welfare has improved over the last century ... Most of these improvements are due to technological progress driven by market- and science-based economic growth, technology and trade.

He examines the possible future impacts of a warmer climate, including extreme weather, sea-level rise, biodiversity loss and the spread of disease, and then analyses the relative merits and disadvantages of pursuing strategies based on mitigation and adaptation.

One of the impacts claimed by some is the spectre of the spread of mosquito-borne diseases, such as malaria, yellow fever and dengue, to Europe and North America as a consequence of a warmer climate. Interest groups have utilised such claims to bolster their calls for urgent mitigation strategies to control the earth’s climate.

Paul Reiter (Chapter 1) analyses these claims, in the historical

context of malaria in Europe. Malaria was prevalent in ancient Greece and Rome, and across Europe until the second half of the nineteenth century, when it began to decline in much of northern Europe. But its decline, says Reiter, ‘... cannot be attributed to climate change, for it occurred during a warming phase, when temperatures were already much higher than in the Little Ice Age’.

Reiter points to numerous factors which contributed to the decline of malaria in northern Europe, such as new farming practices, which helped to eliminate mosquito habitat; new livestock breeding processes, which separated livestock from human beings; improved human living conditions due to better construction methods and improved materials; and better medical care.

Reiter suggests that:

[while] there is much talk of efforts to improve the health of poorer nations, at the same time, erroneous concepts of mosquito-borne disease are used as an argument to spend colossal amounts of scarce resources to ‘halt’ global warming, even as climate experts confess that the true contribution of human activities to the present warming trend is uncertain.

Dominic Standish (Chapter 2) reviews how Venice has become an emotive issue in the climate change debate. Unlike traditional cities, Venice consists of a series of canals in a lagoon which borders the Mediterranean Sea. This fact, combined with its Renaissance architecture and plundered treasures, have made it a place of wonder for many. Sadly, Venice’s construction has made it vulnerable to flooding – especially because it appears to be sinking. But now some are claiming that rising sea levels might be making things worse.

Unfortunately, this has created a strange conflict for Venice, because certain groups in Italy oppose physical measures which would help to protect the city from flooding – specifically, a system of mobile barriers in the lagoon called Project MOSE.

Project MOSE is intended to save this historic – but artificial – city. Opponents, including environmental groups and campaigners, say that the project is ‘unnatural’ and ‘risky’. Yet without such measures, Venice may be more drastically affected by rising sea levels, and also subsidence. Standish believes that this strange dilemma has resulted because ‘balanced risk assessments have been replaced by the precau-

tionary principle, which encourages extreme caution but may indeed exacerbate safety concerns by attempting to deny that risks exist.’

Part Two: Strategies for Adapting to Climate Change

In Part Two, the authors evaluate various strategies which have been proposed to solve the problem of climate change. Taking into account our present knowledge, and uncertainties about the future, they ask whether we know enough today to understand the potential human welfare impacts of climate change and climate policy. They question whether actions taken today to limit carbon emissions are justified, especially in light of various real problems today which could be solved in part by cleaner energies of all forms.

The most comprehensive policy solution proposed to climate change is the Kyoto Protocol. So-called ‘industrialised’ countries in Annex I to the agreement have committed to reducing their emissions of greenhouse gases, carbon dioxide in particular. Martin Ågerup (Chapter 4) analyses Kyoto, and asks whether it is ‘a good idea’, given reasonable expectations of future conditions, based on the best available current knowledge.

He shows that the potential benefits of Kyoto are extremely uncertain, not least because its effects on climate will be negligible. Likewise, the costs of Kyoto will be extremely high, especially for Europeans between 2008–12, when the first Kyoto commitment period ends. He concludes: ‘Without any clear benefits, Kyoto could actually be bad for human welfare, even if it had no costs.’

There has been much discussion about policy strategies after the Kyoto Protocol expires in 2012. Ågerup speculates that:

Given the mechanisms of the Kyoto Protocol and the current political agenda, it’s possible that future commitment periods will imply deeper cuts in GHG emissions in order to stabilise CO₂ emissions or global temperatures at some future level by some future date.

However, it is currently impossible to evaluate the costs of a post-Kyoto regime, because it depends entirely on the quantity of emissions cuts, the methods for cutting emissions and the time frame in which such policies are pursued.

Climate and poor countries

The IPCC and others in the climate debate have argued that poor countries will be more vulnerable to the impacts of a warmer climate. Several contributors have a keen interest in ensuring that climate policies pursued by wealthy countries do not adversely affect poor countries.

For the majority of people on the planet, ‘sustainable development’ means economic development and all the benefits it brings: escaping from subsistence agriculture, less hunger, better health and longer lives, as well as greater creature comforts. This also includes the development of new, more efficient technologies, through voluntary actions of the private sector rather than through government subsidies.

Many people in wealthy countries experience daily the benefits of clean, reliable and affordable energy. They may be unfamiliar with the lifestyles of extremely poor people, and in particular the dire need for cleaner, more efficient and affordable sources of energy in poor countries.

Barun Mitra (Chapter 5) explores how millions of poor people in India rely on low-intensity traditional fuels – mostly wood and cow dung – and how regulations have prevented them from accessing cleaner energy. Mitra argues that:

There are huge opportunity costs which have not been given enough consideration in the climate change debate – particularly because these are urgent problems today rather than hypothetical long-run problems that might be caused by global warming.

He shows that traditional fuels cause indoor air pollution, which contributes heavily to about 2 million childhood deaths in poor countries every year as well as to poor health for women and young children. Likewise, the use of traditional fuels is contributing to environmental problems such as erosion, deforestation and loss of biodiversity.

Reliance on traditional energy also means that women and children spend much of their time collecting wood or making dung cakes, and thus cannot spend time in other more valuable economic activities or in school.

Mitra argues that poor people need to consume more energy to improve their lifestyle and health, to add value to their economic activities and to eliminate poverty. He believes that

The immediate need of poor people in India and other poor countries is to consume more energy, in any form ... More energy consumption will lead to more energy efficiency, which will lead to environmental benefits and sustainable energy consumption ... A truly 'clean' path of development would involve little government, and instead would rely on the initiative and ingenuity of people to solve energy needs.

Andrew Kenny (Chapter 6) argues that the global-warming debate is being used to mislead poor countries into pursuing policies that will harm their development, and thus perpetuate poverty.

Kenny contends that:

Climate change now looms over all official considerations of energy use at both international and national levels, and it is casting a shadow over the energy policies of poor countries, who are being encouraged to buy into agreements which will ultimately limit their energy consumption.

He says that there is 'excessive anxiety about industrial pollution ... [but very little concern for] household pollution', in particular pollution which results from fuels (such as paraffin) used for home cooking and lighting in Africa, Asia and Latin America. The health hazards resulting from these fuels are much larger than those posed by large power stations or industry.

Kenny also discusses the United Nations' Clean Development Mechanism (CDM), which is part of the Kyoto Protocol and will allow rich countries to meet their own emissions cuts through projects that reduce emissions in poor countries. However, he believes that

The most ominous feature of the [Clean Development Mechanism] ... is the possibility of choosing entirely unsuitable CDM projects based more on the interests and ideology of the wealthy supplier than of the poor recipient.

Part Three: The Economic Consequences of Climate Change Policy

This section evaluates the economic consequences of both 'climate control' policy and alternative strategies to deal with global warming.

In particular, the authors evaluate the intended and unintended effects that climate policy could have on the ability of businesses (both small and large) to achieve their core functions. The authors also examine the effect on consumers, and the broader economic consequences.

One group that has been and will continue to be affected by climate policy is business. Martin Livermore (Chapter 8) explores how European climate change policy has affected businesses and their decisions. Large businesses are able to influence the political process through lobbying, so that regulations may even give them a competitive edge. However, it is small and medium-sized enterprises which generally suffer the negative impacts of climate policy.

Businesses have responded to climate policy in various ways – by advocating the Kyoto Protocol, by investing in ‘renewable’ energies and by increasing their own efficiency. Some environmental campaigners have accused business of ‘greenwashing’ and are advocating new global rules on corporate accountability to force business to comply with their demands.

But Livermore says that business is ‘an agent of change’ and believes that in the next 50 years, business will turn scientific developments in the energy and transport sectors into ‘huge benefits [for] society’. To do that though, requires

[Enabling] business ... to do what it does best: innovate and produce goods and services in a manner which ensures that humanity’s footprint on the earth is ever-lighter. And companies should realise that consumers are also citizens – they care about protecting the environment, and want to feel secure that the activities of business are not undermining that goal.

He warns that it is consumers and small business who will suffer if European businesses are constantly lambasted and over-regulated.

In international circles, some have speculated that at the behest of European businesses who are shackled with regulations that make them less efficient and less competitive, European countries might employ the Kyoto Protocol as a barrier to trade with countries who have not ratified the agreement, such as the USA and Australia. Julian Morris (Chapter 7) argues that there is an evolving conflict between multilateral environmental agreements, such as Kyoto, and the rules-based trading system of the World Trade Organization.

Environmental groups believe that the process of trade causes environmental problems such as global warming. They have pursued a strategy to limit trade on the basis of how goods are produced, and have been joined in coalition by businesses who face more and more stringent regulations, and who are less and less competitive as a result.

Morris argues that if the Kyoto Protocol is used to restrict trade, it will lead to poor decisions about the use of natural resources, higher consumer prices, lower economic growth, less expenditure on high-value environmental protection and lower welfare for Europeans and others.

Part Four: The Broader Context of Climate Change Policy

Climate policy has not been developed in a vacuum – it has been motivated by varying interest groups, and justified for a variety of reasons, including to avoid the threat of civilisation collapse.

Similar to other regulatory policies, climate policy has been motivated by vested interests who believe that they can gain a competitive advantage by lobbying for regulation. In other cases, these interest groups believe that they are promoting the public interest. The Kyoto Protocol has been no exception.

Bruce Yandle and Stuart Buck (Chapter 9) explain the political economy of climate change, using the analogy of a ‘bootlegger and Baptist’ coalition to explain negotiations on the Kyoto Protocol.

According to Yandle and Buck, during the negotiations of the Protocol, ‘some nations and at least one community of nations dictated Kyoto’s terms in strategic ways to enhance their positions relative to other nations.’

To the public’s eye, the ‘Baptists’ (environmental groups) appear to be motivated purely by the public interest, even though they simultaneously promote the interests of ‘bootleggers’, who are ‘special interest groups who are positioned to gain from regulatory enforcement and stringency or who must fend off losses that spring from proposed rules’. The authors explain:

Day after day, newspapers and television continue to report the alarmist pleas of the ‘Baptists’ urging world leaders to ‘do something’ about global warming, but the machinations of the ‘bootleggers’ largely go unnoticed.

In Europe, climate control through the Kyoto Protocol has been accepted at face value as the appropriate solution to global warming. According to Carlo Stagnaro (Chapter 11), vested interests in Europe have an incentive to ‘greatly exaggerate the risks deriving from climate change and the policies needed to address it’.

Stagnaro suggests that as a result of these vested interests, Europe has a poorly formulated climate policy which will drastically reduce the GDP of European countries. Today European countries face high unemployment rates, increasing public debt and stagnant economic growth rates. Meanwhile, environmental groups suggest that we must sacrifice economic growth to fend off climate change.

Stagnaro predicts that the Kyoto Protocol might have several negative consequences in 2008–12 (the first commitment period) for average European citizens:

Consumers would see rapid increases in living costs – food, durable goods, heating and cooling, transportation – because all energy, not just oil and gas, would be more expensive. If emissions limits were established, the cost would be passed on by businesses to consumers. Combined with the increased cost of energy, consumers would see the buying power of their salaries greatly weakened. Because economic production would greatly slow, many people might lose their jobs.

He suggests that European countries and the European Union ought to pursue policies which encourage flexibility and innovation, so that Europeans can adapt to change – whatever those changes may be. ‘By rationally facing potential problems, we will avoid wasting and diverting resources from more urgent and substantial needs,’ he concludes.

According to Benny Peiser (Chapter 10), the spectre of ecological apocalypse is one of the most powerful drivers of environmental gloominess and cultural pessimism. Ecological collapse caused by global warming is increasingly used to explain the collapse of past civilisations, even though there is scant evidence that that is the case.

Peiser shows that:

Warmer periods have had a considerably benign role in social,

economic and technological progress, but global cooling and cold spells have been largely detrimental to societies.

Though people may be tempted to worry about societal collapse because of global warming, Peiser suggests that such worries

... are based on misleading analogies with agricultural societies that were especially vulnerable to environmental stress and lacked the benefits of modern technologies to cope with changes.

The Epilogue explains some of the differences between ‘climate control’ and adaptation. It discusses, briefly, how global warming and ‘climate control’ became conventional wisdom amongst the public. However, there is a strong need to examine the trade-offs of different courses of action, and to allow our priorities to govern our actions and responses. Finally, the Epilogue discusses how adaptation is fostered best in an institutional framework which decentralises responsibility, provides for certainty and flexibility, focuses on processes rather than outcomes, and encourages wide sharing of benefits amongst people.