



**Presentation by Martin Lees**  
**Secretary General of the Club of Rome**  
**to the 27<sup>th</sup> Economic Conference of the Progress Foundation**  
*Zurich, 30<sup>th</sup> September 2008*

**Sustaining Human Progress on a Fragile Planet**

***Check against delivery***

I would first like to thank Dr. Marcel Studer, Chairman of the Board of the Progress Foundation for his invitation to address such a distinguished group of leaders from business, finance and the intellectual community.

I am also honored to share this presentation with Professor Josef Reichholf of the Munich Technical University, Leiter der Zoologischer Staatssammlung München.

I am particularly pleased to be making this presentation in Zürich. As many of you will know, the Club of Rome has recently moved its international secretariat to Winterthur. I am here expressing my personal views which do reflect the broad views of the Club but do not of course engage its Members across the world.

I will outline the realities and risks of climate change within a broader perspective of the challenges facing humanity at the start of the 21<sup>st</sup> Century. This is particularly important because climate change is one of an array of inter-connected challenges facing the world community today: it cannot be properly understood or effectively managed in isolation.

***Introductory Remarks***

The Club of Rome became internationally known in the early Seventies through the publication of a report to the Club, "Limits to Growth." It has become evident in recent years that the issues which will determine the future of humanity and of the planet are even more critical and urgent today than they were forty years ago. This has re-energised the international debate. Let me give two short quotations which indicate the nature of the current debate.

First, an article in the Wall Street Journal of 26<sup>th</sup> March 2008 explains that "*Now and then across the centuries, powerful voices have warned that human activity would overwhelm the world's resources. The Cassandras always proved wrong. Each time, there were new resources to discover, new technologies to propel growth. Today, the old fears are back. Although a Malthusian catastrophe is not at hand, the resource constraints foreseen by the Club of Rome are more evident today than at any time since the 1972 publication of the think tank's famous book, "The Limits to Growth"....As the world grows more populous, it also is growing more prosperous....the result is that demand for resources has soared. If supplies don't keep pace, prices are likely to climb further, economic growth in rich and poor nations alike could suffer, and some fear that violent conflicts could ensue.*"

Second, the Economist responded to the Wall Street Journal article cited above as follows: *“It is worth asking how we have gotten ourselves into this situation. One obvious point is that scarcity has not been a problem in the past and so there has been no reason to allow markets to prevail for things like water or carbon. It is no surprise, then, that an infrastructure built on the notion of limitless supplies eventually began to come undone.... Not surprisingly, the newly middle-class residents of China and India would like to begin consuming as developed nations have for some time now. And it is one thing for 800 million people to consume like westerners, and quite another for 4 billion to do so. There is a chance that technological progress will bail us out of this mess. If that does not take place however, the world will have to find some way to reduce demand and redistribute global consumption...”*

### ***1. Environmental Issues in a Global Context***

We are confronted today by an array of urgent, rapidly evolving and interconnected problems, many of them on an unprecedented scale. It is evident that new concepts, new strategies, new partnerships and new patterns of cooperation will be needed to contain and manage these threats to the future of humanity. And, as we struggle to sustain economic progress, we must take proper account of the real environmental and ecological constraints and potentials of our planet.

However, we have for many years been destroying the environmental and ecological foundations on which our current prosperity and our hopes for the future must rely.

We are now challenged to find a sustainable balance which reconciles our intense drive for economic progress with the inescapable imperative to preserve the environment on which our progress rests.

We know of course that Planet Earth has experienced many cycles of warming and cooling over millennia. These have been driven by known natural forces, such as sunspots, volcanic action and changes in the orbit and attitude of the Earth. But it is now becoming evident that the activities of mankind have reached a scale where they provide significant added stimulus – additional forcing – changing the thermal balance and leading to global warming of the atmosphere. Climate change has therefore become a central focus of concern.

Planet Earth will of course adapt. It is indifferent to the fate of human civilization. And other civilizations have come and gone in the past. What is at stake in fact is whether the physical, environmental and ecological conditions on which our particular civilization rests can be preserved for successive generations.

If we are confident that climate change will not disrupt or destroy the fabric of our civilization then we can continue with “business as usual.” If on the other hand, we recognize that there is a degree of uncertainty and that there may well be grave risks to the future of humanity, then we must take prudent, precautionary action to contain global warming within safe limits. This is a personal judgment and responsibility which each of us must face.

I will now outline the interplay between environmental and economic issues in their global context in some more depth. First some good news:

Humanity has made remarkable progress to achieve a better world and to improve living standards and opportunities for hundreds of millions of men and women.

- The global economy grew at 5.4% in 2006, reaching a total value of \$66 trillion (PPP) while population grew by 1.1%. Thus world per capita income grew by 4.3%. (State of the Future Report 2007.) (*A Trillion here is a thousand billion: a Billion is a thousand million.*)
- Additional hundreds of millions of people are joining the middle class.
- The number of people living in abject poverty has declined.
- The world's average life expectancy is increasing (from 48 years in 1955 to an anticipated 73 for those to be born in 2025, WHO.)
- Illiteracy has fallen from around 37% in 1970 to around 18% today, (UNESCO).
- We are living in a time of explosive growth in knowledge and of the capability to disseminate it cheaply and effectively.

But we live in a world of contradictions: over 1 billion people live on \$1 per day, the benchmark of absolute poverty; around 1.5-2 billion people live on an income of \$1-\$2 per day (The Economist) – in a \$66 Trillion economy! Around 930 million people (FAO) are suffering from hunger and this figure is increasing as escalating food prices impact the poor. And we live in a world of rising inequality: 2% of the world's richest people own some 50% of the world's wealth while the poorest 50% own around 1%.

And this economic and social progress which is unprecedented in human history, has been achieved at enormous cost to the environment.

The damage is clear:

- Ecosystems are under assault and species are becoming extinct at an unprecedented rate;
- the degradation of soils and desertification is widening;
- we are overusing the ecological capabilities of the planet;
- forests across the world are under threat;
- oceans are becoming polluted and coral reefs are dying;
- fresh water resources are under increasing stress from overuse and contamination;
- the production of waste of all kinds is exceeding the absorptive capacity of the planet;
- competition for energy and other resources is intensifying as supply is overtaken by demand;

As the Millennium Ecosystems Assessment states: *“The bottom line of the Millennium Assessment findings is that human actions are depleting Earth's natural capital, putting such strain on the environment that the ability of the planet's ecosystems to sustain future generations can no longer be taken for granted.”*

We are depleting natural capital at a rate estimated to be 25% greater than the annual capacity of the earth to regenerate such resources: we are living in large part off our biological capital and this is clearly unsustainable.

The degradation of ecosystems is profoundly linked to climate change in both directions: currently, oceans and forests absorb around half of the human emissions of carbon into the atmosphere. As ecosystems degrade, so will their capacity to absorb emissions thus accelerating the processes of climate change and degrading the ecosystems further. Also, the rise in temperature – and particularly the rate at which temperature rises – is critical to the survival of ecosystems. A 0.1°C temperature rise in one decade puts at risk 15% of the species affected (IPCC). A more rapid rise will have even more damaging effects.

This is where we are today. Let me now present a forward view of these issues but first, a preliminary remark.

It is easy to be skeptical about efforts to look ahead. But in our daily lives we do this all the time. When we buy a house, invest in education, take a job or bring children into this world, we are implicitly or explicitly making judgments about the future. It is commonplace and necessary for corporations and governments to establish investment plans and policies for 10 or 20 years ahead. These are not of course predictions. They are informed assessments and scenarios for the future on which our decisions and actions depend. And we revise them as events unfold.

In this sense, I will indicate a few key trends.

- **Demographic trends.** *We must be prepared for the arrival on this planet of an additional 2 Billion people in the next forty years.*
- **Growth of the world middle class.** *Perhaps an additional 2 Billion people will aspire to the living standards of the present middle class by 2050. If China and India were to achieve per capita ownership of automobiles comparable to those in the US, the number of vehicles in the world would nearly triple.*
- **Demand and supply of energy.** *Energy consumption has risen 47% in the last 20 years, (USDOE). It is estimated that, based on current trends, world demand for energy could reach around 140 million barrels per day,( bpd) in 2030, while the IEA and USDEA view is that around 118 million bpd may be feasible. An industry view is that 100 million bpd is optimistic. The present level is around 90 million bpd.*
- **Availability of fresh water.** *Global water consumption is doubling every 20 years, an unsustainable rate. (The Economist). IPCC expects by 2020 an increase of about 75-250 million people suffering from climate induced water shortages in Africa alone, with a potential falloff in rain fed agriculture of up to 50%. In South America, the water resources of Lima depend over 80% on the glaciers of the Andes which have lost a third of their volume between 1970 and 1997 and may disappear in the coming decades. (DIE) The Yangtse river absorbs around 40 million tons of pollutants each day.*
- **Forests.** *Deforestation has massive impacts on biodiversity. It is responsible for around 20% of global carbon emissions, more than all the cars, boats and planes in the world, (The Economist). Around 13 million hectares of forest are destroyed each year.*
- **Oceans.** *The number of dead zones in the oceans has doubled every ten years since 1960 as a result of nitrogen runoff from fertilizers, (Science.) Sea temperatures have risen on average 0.5°C over the past 40 years. Fish provide protein to hundreds of millions of people but stocks have declined to an alarming and in some cases, irreversible extent.*

This brief outline has made clear, I hope, that we have already created major ecological and environmental problems as a result of sustained growth in production and consumption. And we can realistically expect these problems to worsen in coming years, constituting real threats to the future, unless that is, we take effective action. We need not be pessimistic or alarmist, but we must be realistic and we need calm and considered debate.

We may of course take the view in the rich countries that our progress and security are independent of the progress, peace and security of the rest of humanity. This may be true in the short term but in the longer term, it is a dangerous illusion in an increasingly interdependent world.

This then is the context within which we must understand and act on the issues of climate change.

## 2. *Understanding Climate Change*

The Fourth Assessment Report of the IPCC presented at Bali emphasised that “*warming of the climate system is unequivocal...;*” and that “*observational evidence from all continents and most oceans shows that many natural systems are being affected by regional climate changes, particularly temperature increases.*”

I will summarise its conclusions as follows.

- Climate change is in progress and the earth is indeed warming.
- This warming is driven significantly by humans through emissions and other activities.
- If we continue on a path of “business as usual” or do not reduce global emissions to a safe level, the rise in temperature will have dangerous and irreversible consequences for humanity and the natural systems of the planet.
- Effective action must be taken as soon as feasible to limit emissions of greenhouse gases, together with other measures so that the rise in temperature can be kept within safe limits.
- As climate change is a global phenomenon affecting all countries, international agreement is essential to ensure a fair and effective strategy to control worldwide emissions.

Of course there are scientists and experts with differing views who contest this analysis. This is a normal – and essential – component of the scientific process. Nevertheless, the IPCC process is extensive – engaging some 3,000 scientists. It is peer reviewed, cautious and transparent. I firmly believe that the scientists involved are motivated by concern for the seriousness of the issues at stake and by a deep scientific commitment to understand the processes at work.

Let me explain further the logic of the analysis. The pre-industrial level, (1750), of greenhouse gases, (GHG) – which include not only Carbon Dioxide but other gases also such as methane, – is estimated to have been around 280 parts per million, (ppm of CO<sub>2</sub> equivalent, CO<sub>2e</sub>). As a result of industrial development based on fossil fuels, the level today is around 385 ppm and it is increasing at about 2.5 -3 ppm per year, in spite of all the efforts and negotiations to date. Between 1970 and 2004, human-originated emissions increased by 70 %. If we continue on the present path of “business as usual” (BAU), global warming by 2050 could lead to a rise in temperature of up to 6.4°C. The level actually attained will of course depend to a large extent on the effectiveness of the action we take to limit emissions in the intervening years.

We are pumping into the atmosphere around 9.9 Gigatonnes of carbon, (GtC) per annum, of which around 4GtC are absorbed by the Earth's carbon sinks, the terrestrial and ocean ecosystems. As a result of these emissions, there has been a net rise in global average temperature of 0.8°C so far, with a further 0.6°C already built into the system as a result of the emissions which have already taken place. (There is a long lead time or delay, measured in decades, between the emission of gases into the atmosphere and the consequent rise in temperature.) We are thus already committed to an increase of at least 1.4°C.

In order to move from the business-as-usual path to meet such a concentration path for CO<sub>2e</sub>, it is envisaged that global annual emissions should peak by 2020 and then be reduced by at least 50% compared to 1990 levels by 2050. This evidently will require major reductions in emissions towards a low-carbon economy, emitting not more than 20 billion tones by 2050. This would require profound behavioral and technological change.

We should also recognize that some 80% of all the greenhouse gases which have been emitted by humans into the atmosphere, and which are driving the present rise in temperature, are the result of the development of the industrialised countries to their present high standards of living. It is also the case that the emissions per capita vary enormously in different countries. These two simple facts are key considerations in the search for an equitable international agreement.

The current strategy which underpins the global negotiations and also the policies of the European Union is based on two key premises: that the rise in temperature globally should be held to a maximum of 2° C so as to avoid dangerous climate change; and that, to contain the rise at 2°C, the level of greenhouse gases in the atmosphere must be limited to 450 ppm.

In other words, it is assumed that, if we can reach international agreement and implement measures to limit emissions to 450 ppm, we can ensure that the temperature will not rise more than 2°C and we can therefore control the impacts of global warming within acceptable limits.

Two critical points must be made at this stage:

- First, even if we can hold emissions to 450 ppm, this does not guarantee that the rise in temperature will be limited to 2°C. In fact, it gives us only a 50% chance of limiting the rise to 2°C: the rise in temperature could be substantially more.
- Second, an average rise of 2°C on a global basis implies very different levels of temperature rise in different locations. It implies, for example, a 4°C rise at the Greenland icecap, and, according to a recent report by the Swiss Advisory Council on Climate Change, (OcCC), it implies also a 4°C rise in the Alpine region of Switzerland, with “massive consequences for the environment, society and the economy.” Further, according to the OcCC, “to control global warming to 2° to 2.5°C compared to pre-industrial levels (which means for Switzerland around 4° to 5°c), global CO<sub>2</sub> emissions must be reduced by 2050 by between 50 and 85% compared to the year 2000.”

### *Economic Aspects*

Let me now add an economic dimension to the presentation so far.

A major step towards identifying the economic implications of climate change and the costs and benefits of alternative measures in response was made by the Stern Review, presented to the British Government in 2007 following several years of detailed analysis by a group of experienced economists.

Two key points stand out. First, the review emphasised that the costs of early action to reduce the risk of dangerous climate change, estimated to be around 1% of global GDP, will be substantially less than the costs of action delayed. Second, the review considers that a strategy to stabilise emissions at around 450 ppm is unlikely to be feasible and considers that a pathway between 450 ppm and 550 ppm may be possible, recognising economic and political realities.

An intense debate is now in progress in order to reconcile the view of scientists and experts that emissions must be held to not more than 450 ppm to avoid the risk of dangerous climate change and the view that that it will not be feasible to cut emissions much below 550 ppm because of political and economic realities.

This debate has been intensified as a result of deepening concern in the scientific and expert communities that we may in fact already be on the edge of dangerous and irreversible climate change. Consequently, some new scientific assessments and a wide range of expert institutions are now calling for a level as low as 350 ppm to ensure that the climate system does not pass the threshold to unstable and dangerous climate change.

A further important economic perspective has been advocated by Professor Bjorn Lomborg who focuses on the opportunity cost of the substantial financial resources required to achieve the targeted reduction of emissions, in comparison with the benefit to be gained by devoting these resources to other priority goals of world development. He concludes that ecosystems preservation, conservation of water resources and poverty reduction for example must be given proper priority in relation to emission reduction. This approach has underlined the need to establish a judicious and coherent strategy which should integrate longer term and short term measures for mitigation with measures for adaptation and to integrate these with the broader objectives of sustainable world development.

### *International Negotiations*

Intense international negotiations were launched in December 2007 at the Bali Conference, setting out an agenda and a timetable to agree on a climate treaty for the post 2012 period. The negotiations should conclude in Copenhagen in December 2009 with a treaty engaging all the parties, including such major emitters as the United States, China and India, in a concerted effort to achieve deep cuts in global emissions to agreed targets by a fixed date.

This process of negotiation is based on the comforting assumption that the process of warming is gradual and predictable and that we therefore have the time to deliberate, to negotiate, to ratify and to take action over a number of years. But there is deepening concern that this gradual approach is inadequate and that we may have to act more rapidly to prevent the onset of dangerous climate change on a scale which would constitute a clear and present danger to the future of humanity.

### 3. *The Special Nature and Threats of Climate Change*

There is intense and widening concern in the scientific and expert communities, and in government and civil society, that climate change may pose a unique and imminent threat to the future and therefore that it demands urgent and radical action. This view is based on three main considerations:

- First, physical evidence from all over the world, from Australia, the Andes, Africa, Greenland, the Arctic and the Antarctic, is indicating an acceleration of the impacts of global warming on water resources, rainfall, ice cover, forests and ecosystems. For example, whereas the IPCC Fourth Assessment Report anticipated that “late summer (arctic) sea ice is projected to disappear almost completely towards the end of the 21<sup>st</sup> Century”, the area of sea ice actually declined by 22% in the two years, 2005 – 2007 together with a major reduction in its thickness.
- Second, it is now widely recognised that the processes at work are in fact non-linear. This means that a small additional temperature rise or the interaction between two or more processes may, at a “tipping point”, trigger dramatic and irreversible change, leading even to systems breakdown. We cannot plan on steady, gradual change. Such behaviour is common to many physical and ecological systems.
- And third, a deeper understanding is emerging of the dynamic systems at work and their interconnections. In particular, the profound effects of a number (8) of longer-term, positive feedbacks are becoming better understood. (For example, as the area of white sea ice declines in the Arctic due to warming, the amount of sunlight reflected back into space (80%) diminishes and more heat is absorbed, leading to a further increase in warming leading to a further decline in ice cover and so on.)

Taking account of these three insights – evidence, non-linearity and positive feedbacks – climate change is now understood as a systems problem of great complexity and urgency. And it is of global extent. For the first time, the activities of mankind can put at risk the prospects for continuing progress and for a decent life for future generations.

The point is well made as follows:

*“The possibility of a tipping point in the Earth system as a whole which prevents the recovery of equilibrium and leads to a process of runaway climate change is now the critical research agenda, requiring the concentration of global resources in a “Manhattan Project” style engagement. All other work on impact assessment, mitigation and adaptation depends on the outcome of this overarching issue.”* (John Schellnhuber, Director PIK Potsdam, June 2006.)

In the light of these new perceptions, the debate is moving from focus on an assessment of the costs and benefits of remedial action – which remain important – to the evaluation of the level of risk to the future of our civilisation. This is adding a new sense of urgency to understand the processes at work and to take rapid action to prevent irreversible and potentially catastrophic climate change.

There are currently three schools of thought in the expert, scientific and policy communities:

- There are those who are broadly comfortable with the present “Bali Roadmap” and the proposed long-term targets and thus with the pace and timing of the planned processes of negotiation towards action on climate change;
- There are those who are convinced that new evidence is accumulating which indicates that we have little time to deal with what is termed the “climate change emergency.”
- And there are those who maintain that climate change is not occurring or that it is unnecessary or futile to take action in response.

The outcome of this debate – or in the terms of this Conference, of the Controversy over Climate Change – is of the most profound importance to the future of humanity. Even if those who are sounding the alarm are wrong, this must be established beyond doubt. For if they are right, we are gambling with the future of the planet. The precautionary principle must apply.

#### **4. Concluding Remarks**

If our concern was only that the planet is gradually warming, this in itself would be manageable, especially in the rich countries which have the resources to adapt to problems as they arise. Indeed, in certain areas, a gentle and limited warming may be welcome and beneficial to agricultural production, to species and to the ease of living. However, we now understand that the effects of this warming, already evident in many regions of the world, may be disastrous.

The fundamental causes of concern, and the motivation for action are:

- first, that the rate of warming is no longer gradual but rapid, with destructive effects on ecosystems which cannot adapt fast enough;
- second, that the practical and actual impacts of warming across the world – the melting of glaciers, the increase in water stress, desertification, changes in rainfall patterns, rising sea levels etc – are aggravating poverty, destroying prospects for development and inciting violence;
- and third, that the gradual process of warming can lead, once past a tipping point, to dangerous and irreversible climate change beyond the influence of mankind.

How we respond to the challenge of climate change raises profound practical and moral issues which we cannot evade.

This point was well made by William Morris, a great designer, artist and social activist of Victorian times, who wrote, while sitting in his warm study in London: *“It was my good luck only of being born respectable and rich, that has put me on this side of the window amid delightful books and works of art, and not on the other side, in the empty street....”* He saw his own good fortune as an obligation to assist those less fortunate than himself.

We can in fact, only achieve security for ourselves if the world around us is peaceful and prosperous. Our security and progress are, in the long term, indivisible from the security and progress of others.

At its 40<sup>th</sup> Anniversary Assembly in Rome in June 2008, the Club of Rome launched a three year programme of international research cooperation and consultation to define the elements of a New Path for World Development in an effort to propose responses to the challenges which lie ahead. As the first step, an international conference will be convened in Winterthur in November on the topic: "Managing the Interconnected Challenges of Climate Change, Energy Security, Ecosystems and Water." As the work of the Club and its international partners proceeds, we hope to make useful contributions on the issues I have raised today.

In conclusion, the risks of runaway climate change are real, and the potential consequences are so profound that it is prudent and urgent to take effective, precautionary action, moving rapidly towards low carbon economies. Historians will be astounded and critical that, when the threats to humanity from the ecosystems crisis and climate change were becoming so evident, we assigned such a low priority to the preservation of the natural systems and resources of the planet.

We have seen in recent weeks the collapse of venerable financial institutions and the foundations of the international financial system have been shaken. Our capacity for self-delusion is enormous: we can often see the problems building up but evade the necessity to take proactive action. We cannot afford to make this mistake with the existential issue of climate change.

We have enormous potentials of knowledge, skill, ingenuity and resources of all kinds if we choose to deploy them. We still can avert the most serious threats. We can reverse the processes of environmental degradation and ecosystems destruction and we can achieve sustainable progress while respecting the constraints of our fragile planet. But we will have to act soon. According to Dr. Rajendra Pachauri, Chairman of IPCC: "*If there is no action before 2012, that's too late. What we do in the next two to three years will determine the future. This is the defining moment.*"

We are confronted by the enormous challenge to restructure and reorient our economies and our larger societies away from the reliance on cheap and plentiful oil and on the free emission of pollutants into the global commons, the oceans, rivers and the atmosphere. We must move away from the intensive use of energy and physical resources, towards new patterns of productive activity which are less environmentally devastating and where costs and benefits, rights and responsibilities are more equitably shared.

A large section of the world business community has recognised what is at stake. The World Business Council in Geneva has stated that "*it is acutely aware of the challenges of living in a carbon-constrained world and has advocated that if we do not significantly change the ways by which we produce and consume energy, the adverse impacts on our climate and environment will become both unmanageable and irreversible.*" Shell considers that "*Environmental sustainability does not have to conflict with wealth creation: in fact, there is a direct relationship between corporate social investment and corporate financial performance.*"

We, in the rich countries have benefited over centuries from the resources of the planet. And we have contributed most to the emissions in the atmosphere which are driving climate change. We must now assist the developing countries to improve the welfare of their citizens while at the same time reducing the impact of their growing populations on the planet. And we must urgently help them to adapt to the inevitable impacts of climate change which are already destroying the livelihoods and hopes of the poor across the world.

The transition towards low-carbon economies will entail costs for those with strong interests vested in the present system and it will offer immense opportunities for others as we create a new economy based on the use of new and renewable sources of energy, on scientific and social innovation and on responsible use of the environment and resources of the planet. We have a long way to go. According to the Economist, *“America’s power generation business, arguably the world’s biggest single polluter, spent a rather smaller proportion of its revenues on R & D than did America’s pet food business.”*

The transition to new patterns of economic activity and behaviour will be very difficult, particularly in democracies. It will demand vision and leadership from our elected leaders to explain the need for strong action to reduce the risk of dangerous impacts on society and the economy in some years ahead.

These are not empty hopes. All over the world individuals, cities, states, organisations, corporations, investment funds and insurance companies, nations and international organisations are already engaged in the movement towards low-carbon, sustainable economies. And, in the industrialised countries, we have made such transitions many times before. We moved successfully from sailing ships to coal; from horses to automobiles; from typewriters to word processing; and we have moved from economies based on agriculture, through industrialisation, to the modern service economy. Each time the transition was contested and difficult, but the costs were vastly outweighed by the overall benefits. This will be the case once again as we move towards low-carbon economies to meet the real threats arising from rapid climate change.

The history of science and the history of social and economic development demonstrate that there is always disagreement and controversy when societies are confronted by the need for profound change. We now need the vision, the confidence, the commitment and the solidarity to overcome our differences in a higher purpose, which is to avert the threats arising from the impacts of environmental degradation and runaway climate change. We must appreciate the longer-term benefits to be gained from a more respectful and responsible relation with the natural systems of the planet. We must see beyond the costs of the transition of our economies to recognise that huge opportunities are opening up to achieve sustainable social and economic progress for the benefit of all mankind.