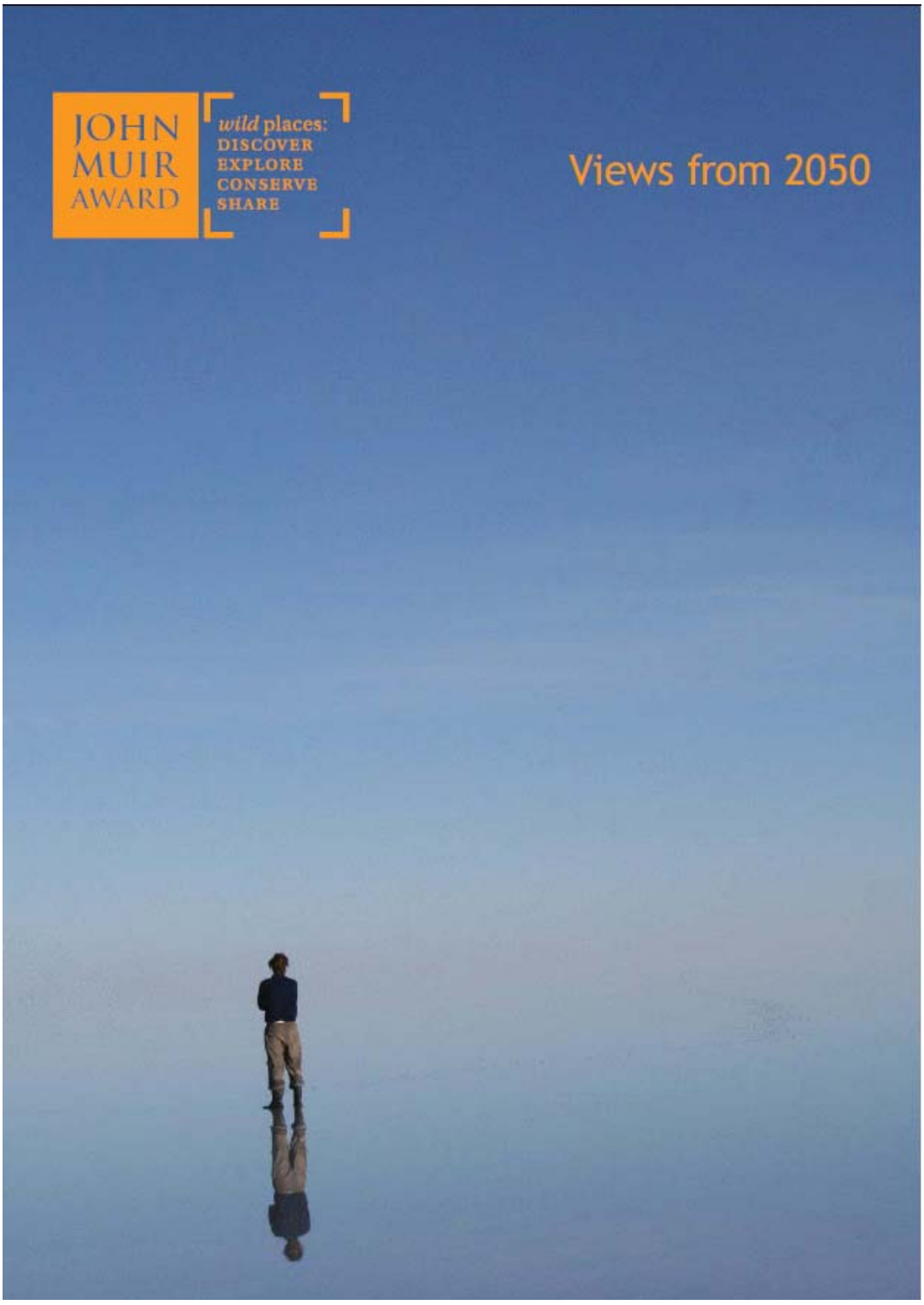


Views from 2050

Contributions of Nature, Landscape & Biodiversity to a low carbon society

March 2010

Recreation

Learning, Values, Art and Media

Cover image:
Tomas Saraceno, *Endless Series*, 2006 (detail)
Courtesy of Studio Saraceno, Andersen's Contemporary, Tanya Bonakdar Gallery and pinksummer contemporary art.
'A major concern of Tomas Saraceno's work is to consider the challenges of the way we live…His *Endless Series* of photographs, taken in Bolivia at Salar de Uyuni, the world's largest salt flat, develops this notion further by depicting a figure in this imagined environment, exploring the possibilities of creating a secure future in this new home.' Curators' Notes, Royal Academy of Arts, Earth: Art of a changing world.

The John Muir Award is an educational initiative of the John Muir Trust.
Views expressed are not necessarily those of the John Muir Trust.

www.johnmuiraward.org
info@johnmuiraward.org
0131 554 0114

John Muir Trust: Scottish Charitable Company limited by Guarantee
Registered Office: Tower House, Station Road, Pitlochry, PH16 5AN, Charity No. SC002061, Company No. SC081620

Ministerial Foreword

Huw Irranca-Davies
Minister for Marine and Natural Environment,
Department for Environment, Food and Rural Affairs

'Views from 2050' is an interesting way of engaging people. We all depend on the natural environment. It provides us with the essentials of life, contributes to our economy, inspires our lives, and is central to our health and happiness.

But we are currently not using it sustainably: we know that human activity is causing loss of biodiversity at a greatly accelerated rate.

Growing pressures are demanding a fresh approach to how we manage and use our natural environment. We know how to do things in a better way, and there is a strong economic case to drive action too. We get a lot from our natural environment and from biodiversity: resources and raw materials to use, services to support us and personal benefits from interacting with it.

As a society we need to value these benefits. By considering how different aspects of the environment are related, we can make better decisions that open up new opportunities for both protecting and enhancing our environment and our lives.

To achieve our vision of a diverse, healthy and resilient natural environment, which provides the basis for everyone's well-being, health and prosperity now and in the future, we will need to work together, understanding how our individual and collective actions affect the natural environment upon which we depend.'

Huw Irranca-Davies
November 2009

Introduction

Rob Bushby
John Muir Award Manager, John Muir Trust

'Views from 2050' is a discussion about the value of nature, landscapes and biodiversity.

It's a response to a report (1) that asked a broad canvas of people to consider themselves as being in the year 2050, with the Government's 80% greenhouse gas emission reduction targets having been met.

Jeremy Peat, Director of the David Hume Institute, invited further debate:
'Your views would be welcome. This topic will remain with us for a while!'

The John Muir Award, the educational initiative of the John Muir Trust, responded to this invitation, focusing on a particular aspect relating to the Trust vision that 'wild land is protected and wild places are valued by all'. What might the contribution be of nature and landscapes to meeting this target? And what of our relationship with the natural environment in the process? It seemed to be a neglected area of the 'low carbon society' debate that merited more prominence.

> *'Clearly Scotland's natural landscape is a key component of our heritage and indeed of the heritage that we seek to pass on to other generations. More power to the elbow of the John Muir Trust in following through the debate'.*
> Jeremy Peat, Director of the David Hume Institute

'Views from 2050' has attempted to sidestep some of the more dominant areas of focus in the debate about a low carbon society – such as renewables, consumption and carbon footprints. As Dr. Sarah Kyambi, David Hume Institute Deputy Director puts it, 'it's evident that there remain many aspects of the debate on the environment that are currently rather occluded by climate change.'

To make a conceptual leap to 'imagineer' two generations into the future has been both challenging and exciting. On a couple of occasions, at the mention of society in 2050, noted commentators on the outdoors have shrugged their shoulders and grunted 'I'll be long gone'. To juggle timeframes has been confusing to some. And, with notable exceptions of Natural England and Flora of the Fells, we've found a lukewarm degree of organizational commitment to real visionary thinking in relation to the natural environment. As the Futerra team articulate in 'Sell the sizzle',
'We must build a visual and compelling vision of low carbon heaven' – that incorporates relationships with the planet at its heart.

> *'Climate change is already occupying mind space and heart space, and for biodiversity to occupy the same space is going to be a challenge.'*
> Pavan Sukhdev, Project Leader for UNEP's "Green Economy" initiative

The exercise has been an attempt to be positive and engaging, to focus on contributions, values and benefits, rather than degradation, threats and doom laden scenarios. In this approach we've found a raft of like-minded commentators, from Joe Smith's Creative Climate initiative to Chris Loynes' Natural Values work to the communications focus advocated by Futerra.

Thanks to all who have contributed, supported and taken an interest in this initiative. It would have been a non-starter without your energy and insights. In particular, a tip of the hat towards Toby Clark for managing a sprawl of web contributions; to Linda Coupar and Will Williams for early encouragement; to the John Muir Award team for ongoing commitment to the idea.

Using this report

A note on the collation of items. The exercise has been open to contributions rather than a carefully curated piece of work. These include perspectives from non-experts, which prompts the thought: when we look back in 40 years time, how will we judge the views of our contemporary 'experts'? Some inputs have been created specifically for this exercise, some have been adapted from existing pieces of work, and others were spotted in a different context but seemed to have something to say on the topic.

It is not an exhaustive overview. It is varied but undoubtedly not comprehensive – there is no overt piece on the contribution of our marine environment, for example. It is not a policy statement for the John Muir Trust or any of the other organizations mentioned. Unless otherwise stated, the content should be viewed as personal expressions and not necessarily as statement of fact – no-one was issued with a foolproof crystal ball in the assignment of these pieces.

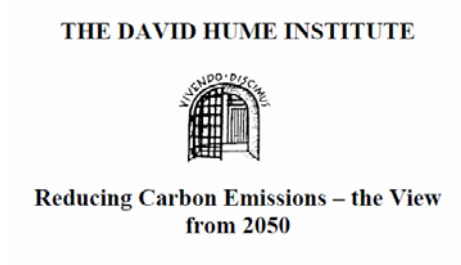
This collection of contributions, and its summary leaflet, is available to prompt further discussion. You can follow the links associated with each item for further background and context.

Dip into them or read through from start to finish. Tap into views on biodiversity, recreation, learning media and values – through essays, poetry, photography and art. Although diverse in theme, they all promote the idea that the natural world - and our relationship with it - should be prominent in discussions about a future 'emission-lite' society.

To finish where we started, the aim of the exercise was to stimulate thinking. In the words of Professor Anne Glover, Chief Scientific Advisor for Scotland, the 'Views from 2050' initiative 'is the catalyst for debate and that is what all good thinking thrives upon.' If you, or your organization isn't going to take this debate forward, who is?

(1) Reducing Carbon Emissions – the View from 2050, October 2008, The David Hume Institute, Edinburgh

Reducing Carbon Emissions - the View from 2050
David Hume Institute Occasional Paper no. 79
October 2008



Excerpts:

Foreword
Professor Anne Glover

As we look ahead just over forty years to 2050, it is interesting to remind ourselves what life was like if we look backwards the same amount of time to the 1960's. It was very different. How interesting it would have been if the David Hume Institute had decided upon a report and seminar in the 1960's on "The View from 2008". Forty years ago the world was embarking on space travel and exploration of our solar system. In the UK we were marvelling over colour television for the first time, we had installed a new nuclear reactor at Dounreay and were discovering the first oil fields in the North Sea. Would we have been able to predict then that in 2008 we would witness the commissioning of the Large Hadron Collider in Switzerland which supports international research collaboration by fifty countries to allow us to create the conditions prevailing a trillionth of a second after the Big Bang. Understanding the fundamental nature of matter is within our grasp. Would it have seemed possible that our walls would be decorated with plasma screen TVs receiving a multitude of channels which we could record and play any time we wanted and that we could access and send information almost instantly around the world? What we did look forward to was a supply of sustainable energy being delivered by the newly discovered oil fields of the North Sea. We didn't give much thought to the environmental cost.

So what is the value of looking into the future to imagine what our lives might be like in 2050 and how we might have met current energy challenges and what new ones we might have encountered?

Human survival on the planet depends upon our ability to imagine, to be aspirational in what we want for our future and then to apply our thinking to develop the means of how we might get there. At the moment there is a lot at stake but we can give ourselves the best chance of a future on the planet by continuing to grow our science engineering and technology base. Without this platform we will be lost. But biological and physical sciences cannot deliver on their own; we need much more integration with social science and economics. We need future generations of engaged, scientifically literate people who know what questions to ask and are able to appreciate risk and uncertainty. Science, engineering and technology can be part of a solution but cannot deliver without a society that is prepared to be challenged by new technologies and able to respond to difficult choices.

This major David Hume Institute report is exciting, timely and captures some of our best thinking from the wise to the provocative. It is the catalyst for debate and that is what all good thinking thrives upon. I hope as many people as possible are stimulated by the essays in this report and use the ideas to create their own imaginative pathways to 2050.

Professor Anne Glover
Chief Scientific Adviser for Scotland
October 2008

Excerpts from contributions to the David Hume Institute Occasional Paper 79 ‘Reducing Carbon Emissions - the View from 2050’ relating to environment

Jan Bebbington, Vice-Chair Scotland, Sustainable Development Commission, extract from 'Carbon reduction trajectories: the Scottish story':
'Early on we created a virtual parliament that was accessible to all, our political leaders became respected and trusted and we hot-housed them through a series of active ecological, economic, social and cultural think tanks....

We also paid very particular attention to our land use policies to ensure that carbon was sequestered in soils and carbon rich soils were protected from adverse changes that would cause them to release carbon.'

Geoffrey Boulton, Vice Principal and professor of Geology and Mineralogy, University of Edinburgh, extract from 'A tale of misplaced optimism':
'Now, in 2050, flooding of large areas of coastal lowland and of river valleys has become a reality, and together with other impacts of climate change, has had a massive impact; politically, economically and socially. But although a large part of the necessary transformation of the global energy system has been achieved, and although global emission rates have been dramatically reduced, and atmospheric concentrations have been stabilised at about 550ppm of CO2 equivalent, (and they now need to be reduced), the Earth's climate and environment are very different from what they were 50 years ago, and future changes, possibly associated with a still warming ocean, remain difficult to predict.'

'In the last 100 years or so, the human species has become a major geological agent. We have massively engineered the planet, but out of ignorance. With a population of 6 billion, rising, barring accidents, to 9 billion by 2050, there is no way back to the simple life. We will have to continue engineering the planet, but this time through knowledge and, hopefully, wisdom. Economic theory and practice that regard the planet as 'an externality', as if the human economy were a bubble, detached from time and space, need to be changed. Our economic system is not separate from the environment, but part of it.'

Martyn Evans, Director, Scottish Consumer Council, extract from 'Climate change target met in Scotland - how did we get there?':
'Scotland is now self-sufficient in timber - our main construction material now that wooden buildings are the norm - and, as forests mature, is supplying increasingly large proportions of England's timber too. Mixed use forests provide recreational opportunities, but have to be sited to help reduce the impacts of flooding and storms.
An early example of the new recreational use was the combination of 'Electro-cycling' and camping. This became fashionable for weekend activity and also longer holidays all over Europe following the lead of the 'Easterhouse Riders'. This group of formally unemployed young men and women started electro-cycling for fun on bikes they cobbled together themselves with discarded lithium batteries. They recaptured the spirit of their great-grandparents in a longing for learning and the outdoor life. They also saw the commercial possibilities of exploring the new 'great highland forest' and glens.'

Campbell Gemmell, Chief Executive, SEPA, extract from 'Magnificent pretensions':
'At that time [2008], the oil price and the credit crunch had the attention of the public, politicians and policy makers. After a phase where former Vice President Gore, supplemented by the work of the IGPCC and Sir Nicholas Stern, had managed briefly to get attention for the big Earth picture these more conventional economic shocks came back to the fore. Neither terrorism, nor wars of ideology or resources or bad humoured intolerance and plain low politics nor the challenges of environmental damage or climate change seemed to command media, political or public interest beyond the headline and a short news cycle.

Taking a longer term view and riding and seeing through the short term, especially if it seems to be taking a retrograde step, flowing against the predictions, has always been hard. The visionary leader or advisor can easily be seen as the fool in such a superficial, short term, ignorant (or at least inadequately educated in science and environment), or simply self-interested realm. When the economic going gets tough, the tough get digging and the environment is really just a factor of production, even the air we breathe. Today, the planet is a much sadder place than it was in the 'noughties'. Many more species lost, less fresh water except when we have too much or the city water recycling units pack in. Air in our community domes for our core facilities, protected from floods and heatwaves, and where the old folks live with the kiddies, thank goodness. The air that is like the air in the recycled interiors of the old jet aircraft we used to be able to think we could afford as we scurried to see other places that increasingly became like the places we left.'

'And maybe one more thing came to the fore...'loyalty to our single, beautiful and vulnerable Planet Earth''. (Quoting Ward and Dubois 'Only one Earth', 1972)

'I think it was probably one of the sequence of devastating heat waves in the US North-east and across north-west and central Europe that finally did it, coming on top of the dramatic coastal damage in the 20s after the final decline of the Greenland Ice Sheet triggered the collapse of what was left of the West Antarctic Ice Sheet. That extra 3 metres sea-level rise did the trick.

Catastrophes are great because they allow the incrementalists to say it was all so unexpected. But why is it that we have always had to have the catastrophe before we change, before we take the risk seriously and by then non-polar permanent ice was history. To be fair, even catastrophes don't always work. I wonder at what we really learned from New Orleans. We used to worry about ephemeral snow on the putative ski-slopes in Scotland, but Norway and Switzerland losing their glaciers, virtually nothing left in Alaska, the permafrosts melted, CO2 and methane and chelates released from the soil, ice and water bodies and all the infrastructure damage across Russia...

The drivers were clear and the risk of continued overshoot *very* clear but given the 'me now' world, our democratic traditions and the painful models for seeking global agreement...and then global oil and global capital, who would lead? To put it another way,

"Climate has always shaped civilisation, but not by being benign. The unpredictable whims of the Holocene stressed human societies and forced them either to adapt or perish...The collapses often came as a complete surprise to the rulers and elites who believed in...infallibility and espoused rigid ideologies of power." (Fagan, 'the Long Summer - How climate changed civilisation', 2004)

Even if it is just the market that is the ideology...are we really paying attention to this supertanker's direction? Scotland gave the world Adam Smith, David Hume **and** John Muir.'

'So, we headed for higher ground and learned to adapt and made sure that we lived 'with the

grain' of nature as much as possible, designing win-win solutions for climate change, urban design, transport, flooding, water management etc....

For the landscape it was dramatic. In a lower quantity and more expensive protein world post-old agriculture, if not kangaroos, then certainly not cows and sheep. And intensive went out way back, the deer and the trees filled the countryside. The Earth Food movement brought health benefits and lowered the local and the global footprint, even helping us win more in sport! Diffuse pollution disappeared, really! And Scottish beaches became joys to behold either side of monsoon summers when the really warm weather dominated February to May and October to the solstice. The hurricane season did become a pain, however.'

Ian Marchant, Chief Executive of Scottish and Southern Energy, extract from 'Going backwards and forwards':
'The world changed in the past 40 years because of changes in attitudes and behaviour, and the human capacity for ingenuity and survival. That is the important story. Humanity put its own future on the brink - and it was people who turned it round.'

'Everyone had to do something to make the change happen. The professionalised environmentalists played an increasingly leading role as they realised that climate change threatened everything - and the arguments of some of their own, to oppose all windfarms as 'blots on the landscape' for example, became untenable. Energy does not come for free. Those in the environment movement who preferred academic discussion lost out to those favouring practical action.'

'Positive action came when leading politicians put forward a compelling message that economic prosperity depended on environmental stewardship. Those who could communicate this, and crucially those who delivered on their promises won the argument and the votes.'

Michael Northcott, Professor of Ethics, University of Edinburgh, extract from 'Finding Celtic Ecotopia':
'Locally generated power enabled many rural villages and subsistence farming communities in the developing and developed world to recover a level of self-sufficiency and local governance that had been lost...

In the farming and estate sectors in Scotland land use emissions taxes and eco-footprint accounting had dramatic impacts on land use. Sporting estates were forced to end their over-dependency on deer shooting for income since the excess weight of deer on the land had turned soils in many highland areas from carbon sinks into carbon emitters. Tax credits for working carbon sinks and for land area biodiversity counts encouraged estate managers to replant indigenous forests, shrubs and plants. But many of the estates were eventually put up for sale and were bought by local crofters and residents under land reform legislation. Like the pioneering land reformers on the Isle of Eigg the new community owners planted indigenous forests. On the mainland these forests provided home to reintroduced species including beavers and wolves. Many community trusts also installed local renewable electricity supplies, again on the Eigg model. The new forestry and energy projects provided many opportunities for small businesses including ecotourism and craft-based activities such as wood carving, furniture making and the manufacture of zero carbon wooden kit houses.'

'Local councils in Scotland played a significant role in the agrarian revolution as they used compulsory purchase powers to create new market gardens on the edge of cities and towns.

Every Scottish city and town is now surrounded by a green belt of between one and fifteen miles width constituted of allotments and huts where urban residents grow much of their own food, keep chickens and pigs in free range common areas, and camp out on long summer evenings and enjoy communal eating and ceilidhs.'

'The lifestyle and business changes provoked by oil price rises, carbon and waste taxes, and ecological footprint accounting were more dramatic than politicians or business leaders had anticipated. As citizens engaged in practices which reconnected human dwelling, eating, making and travelling with the renewable capacities of the planet they began to find sources of satisfaction in the activities of daily living that had diminished in the advertising-fuelled wastefulness of the late twentieth century. This provoked a new eco-consciousness and was accompanied in Scotland by the resurgence of Celtic religious practices of both pre-Christian and Christian varieties.

The Protestant revolution birthed capitalism in Scotland and in other parts of Europe which eventually led to the disconnection between consumer society and the earth system by the late twentieth century. The post-carbon revolution stimulated a reconnection with the renewing capacities of the earth system, and a new respect for the available energies of sun. People once again learned to live off the daily benison of the sun's energy on the earth, and the living biomass it produces. And they no more did violence to the earth system by burning stored sunlight from under the ground. This new 'dwelling in the light' for pagans and Christians alike occasioned a renewed appreciation of ancient festivals of light from the mid-winter festival of Christmas to the summer solstice. And the Celtic cross, with its superimposition of the cross on the sun, became the defining symbol of the post-carbon revolution in Scotland.'

Simon Pepper, Lord Rector, University of St Andrews, extract from 'Climate Change - How did we meet our targets? A retrospective from 2050':
'2008 was the threshold year, when the gap between awareness and action was greatest... But while a small segment of the public embraced the challenge with a zeal heightened by fear of catastrophe, the majority (often deterred by the zeal) refused to cotton on. The target of an 80% cut (albeit over more than 40 years) was too much of a challenge to comfort zones in what became known as the Age of Excess.'

'Rural parts of Scotland saw their own changes. Settled areas became populated more densely than at any time in the last 5000 years, supporting the new low carbon/low cost lifestyle dependent on vegetable growing and harvesting of wild meat from hill and sea, with internet-connected businesses exploring many a profitable niche. Hill farms in the north and west had collapsed under rising costs and declining profits in the absence of subsidy; wild land has become wilder, and a source of wild food for the populations in the hills and glens....

In the hills and windy coastal areas, energy has been added to the range of farm enterprises, in response to a generous feed-in tariff to the grid. Forests, some planted, some naturally regenerated under reduced levels of grazing, now cover 25% of Scotland, sequestering carbon, replenishing soils, and providing many other benefits to increasingly self reliant local communities and the wider economy.'

'So the real changes have been in society itself. The biggest challenge we faced was not so much technological but cultural - the reform of our human systems of organisation and values. People yearned for new ways of thinking about life and its purpose; religions adapted, as they always have, to new imperatives; liturgies emerged to comfort the fear of change and re-direct ambition.'

Richard Wakeford, Director General, Environment, The Scottish Government (personal views), extract from 'Breakthrough Solutions on the way to Climate Change Outcomes':
'Initiatives such as public awareness campaigns, eco-schools, the early 'eco-demo-towns' and government action on issues like procurement all served to demonstrate that economic growth could be more sustainable - reflecting environmental and social equity.'

'Our economy increasingly reflects the environmental leadership found nationally and locally throughout the nation. That we have the green leaders nationally is a matter of national pride.'

David C. Watt, Director, IoD Scotland (personal views), extract from 'Well we made it then!'
'It has always been thought that young people needed lots of education to push forward innovation and change but there has been an almost opposite paradigm in the case of climate change where the future generations have been educating and driving the older generation - with arguably less to lose - to do something to safeguard the planet for the years to come. The young have been the ones who want things done urgently.'

http://www.davidhumeinstitute.com

A view from 2050 - a shared vision for the English National Parks

a) Community Engagement

In 2050:

National Parks are one of the prime ways in which everyone can discover England's natural and historic environments and be inspired by them.

The Parks are held up by everyone as one of the best features of England, a source of pride. Resident communities are keenly aware of the special value of their own locality. They take an active role in decision making, which helps deliver this vision for National Parks.

Our visitor communities are able to learn about what makes the Parks special, and make that personal connection to these great places.

b) Health, well-being and enjoyment

In 2050:

All young people living in England have the opportunity to enjoy an experience of a National Park at first hand. This helps with their emotional development, their confidence in facing challenges, and their ability to assess and take risks.

The Parks play a role in changing people's behaviour, helping them adopt healthier lifestyles, find inspiration and engage with the spiritual side to their existence.

National Parks are the country's biggest venue for bringing together people from varied communities to experience the wonder of landscapes, wildlife and heritage, to share a range of different activities, and to form new relationships and networks.

c) Climate change

In 2050:

The wildlife and natural systems within the Parks are managed in ways that create resilience and allow adaptation. The Parks also play a critical role in helping species to migrate in response to changing conditions.

The Parks' special qualities have changed as we have adapted to a new climate and new ways of life. Where this has been inevitable, Parks have demonstrated successful adaptation strategies to seek to manage the transition for the landscape, for the economy, and for the individual.

The National Parks are energy neutral. This has been achieved through cutting energy use (as a result of changing life-styles and greater energy efficiency) and low impact renewable energy supplies, generated close to where it is used. Businesses in National Parks implement appropriate climate change mitigation strategies, which are seen elsewhere as models of good practice. The National Parks are carefully managed to act as major carbon stores, and this role is widely recognised.

National Parks are delivering a key role in water resource management that sees them supporting water catchments to conserve water supply, provide for improved water quality, and reduce flood risk.

d) Natural environment and cultural heritage

In 2050:

National Parks are characterised by their rich, distinctive and highly valued landscapes and cultural heritage. Their landscapes and historic environment are conserved and enhanced to protect their cultural identity and aesthetic value, and to inspire creativity.

There is much greater diversity and abundance of wildlife living within the Parks.

National Parks continue to be large tracts of countryside and coast that are managed to provide tangible services to the nation including the protection of water resources and improved air quality.

e) Sustainable Development

In 2050:

'Sustainable Development' is a visible reality within the National Parks. Other parts of England – especially rural areas – see National Parks as models for the way they too might develop.

Careful management has enabled the incorporation of new developments that are progressive in architectural design, take their inspiration from the Park landscape, whilst respecting distinctive character.

There is a much better awareness of the links and interdependencies between urban and rural areas, and of the services and products provided by one to the other. Residents and visitors alike are able to learn how their own consumption of natural resources can affect these special areas.

National Parks are exemplars in demonstrating sustainable, low carbon, transport and travel in rural areas. This has been achieved by reducing the need to travel and through provision of quality public transport and cycle infrastructure.

Decision making is underpinned by sound and clear evidence. Environmental limits to development are well understood and respected by decision makers and others, and lead the way the Parks are looked after.

f) Community and economy

In 2050:

Thriving rural communities living within the National Parks better reflect the diversity of English society as a whole with opportunities for young people, families and those of all ethnic backgrounds to benefit from and contribute to life in National Parks.

There is a diverse mix of profitable small and medium scale organisations doing business within the National parks, alongside a thriving tourism and land-based economy. Economic activity, in harmony with the Parks' special qualities, is welcomed and encouraged.

Rural communities and businesses in National Parks have good access to technology and other services so their specific needs are met.

Livestock farming continues to play a central role in conserving and enhancing the highly valued landscapes, wildlife, cultural heritage, natural resources, carbon sinks, opportunities for access and enjoyment, and other public benefits provided by England's National Parks.

English National Park Authorities Association Vision for National Parks

In 2050 English National Parks are places where:

- everyone can discover the rich variety of England's natural and historic environments. People value them as places for escape, enjoyment and reflection. National Parks are loved by everyone and are a source of national pride and identity.

- local communities and those who visit are keenly aware of their special value. They are outstanding examples of how people can access our finest countryside and coasts, so helping people gain the health and spiritual benefits of being in the great outdoors. All young people have the opportunity to experience a National Park at first hand, facing the risks and challenges they offer.

- addressing climate change is central to our thinking and actions. Communities and businesses use only renewable energy, generated close to where it's used. They are exemplars of best practice in a variety of low impact renewable energy technology. Landscapes are managed to create resilience and enable adaptation to the impacts of unavoidable climate change. As part of this carbon and water resources are carefully managed. National Parks are exemplars in demonstrating sustainable, low carbon, transport and travel.

- wildlife and natural processes are encouraged, leading to greater diversity and abundance of species. The landscape has evolved, retaining its cultural richness and respecting the past.

- sustainable development is a visible reality, underpinned by sound and well understood environmental limits. A diverse and successful economy, in harmony with the Parks' special qualities, is welcomed and encouraged. Local communities take an active role in decision making on their future, ensuring their sustainability.

www.enpaa.org.uk

Global Drivers of change to 2060
Natural England

Foreword
Natural England commissions a range of reports from external contractors to provide evidence and advice to assist us in delivering our duties. The views in this report are those of the authors and do not necessarily represent those of Natural England. They are intended to provoke discussion about possible futures, and are not formal predictions. They do not represent the policy or strategy of Natural England or SAMI Consulting (St Andrews Management Institute).

Background
The world in which we live and work is constantly changing and evolving – the precise nature of the future that actually unfolds is inherently uncertain. Surprise is inevitable.

Natural England needs to be aware of the wide range of potential circumstances that could affect its operations to deliver its goals for the natural environment and the benefits it delivers to everyone.

For this reason and as a tool to aid thinking and stimulate new ideas about the future, a set of scenarios – stories setting out a range of possible pictures of the future – that are plausible and represent the breadth of possible circumstances have been developed.

This report provides a synthesis of global drivers of change that represent the most significant trends, factors and pressures that could affect the natural environment to 2060. Some factors should be regarded as wild cards – highly improbable events but with significant impact should they happen.

By focusing discussions on the major factors likely to affect the natural environment at a series of scenario creation workshops held in January 2009, the findings directly influenced the creation of basic storylines for Natural England‘s scenarios.

Containing information grounded in evidence, this report provides an underpinning base for Natural England‘s scenarios work. The findings will also be used to develop our wider futures thinking.

Two related scenario reports are available online:

- **Natural England Research Report NERR031 ‘England’s natural environment in 2060 – issues, implications and scenarios‘.** This describes how the future could unfold; the factors that might shape the future; how we might live; and the implications for the natural environment.

Download this document here (pdf 562KB).

- **Natural England Commissioned Report NECR031 ‘Scenarios compendium‘.**
This describes what other scenarios exist and how ours complement/plug gaps that these do not.

Download the scenario document here (pdf 1.1MB).

The authors would like to thank the numerous Natural England staff and external stakeholders who contributed and reviewed material. Natural England Project Manager - Nicola George, Natural England, Harbour House, Hythe Quay, Colchester, CO2 8JF Nicola.George@naturalengland.org.uk

Further information: This report can be downloaded from the Natural England website: www.naturalengland.org.uk. For information on Natural England publications contact the Natural England Enquiry Service on 0845 600 3078 or e–mail enquiries@naturalengland.org.uk.

ISSN 2040–5545 © Copyright Natural England 2009

Timeline: 2000-2050

2000-2010 Decade of Denial
Short term perspectives and long term target setting dominate
We reuse plastic bags, turn TVs off standby, and save water whilst cleaning teeth.
'Don't be distracted by the myth that 'every little helps'. If everyone does a little, we'll achieve only a little.' David McKay, Chief Scientific Advisor.
NIMTO (Not in My Term of Office) emerges as a government approach.
'Climate change is the greatest long term threat to our planet' – Tony Blair.
The proportion of Scotland unaffected by artificial visual intrusions drops from 41% to 31% between 2002 and 2008 (SNH study).

2010-2020 Decade of Misdirection
Human-centred perspectives dominate
'We need to start challenging the misanthropic extremists who would put the welfare of invertebrates above the welfare of people'. Gillian Bowditch, Sunday Times.
'…the arguments of some of their own [environmentalists], to oppose all windfarms as 'blots on the landscape' for example, became untenable. Energy does not come for free.' Ian Marchant, Scottish and Southern Energy.
Flooding & storm damage lead to high insurance costs; 'peak' oil hits lifestyles.
Halting biodiversity loss targets are missed. By the middle of the decade 1000s of climate change immigrants are employed to pollinate crops by hand due to critically low bee numbers.

2020-2030 Decade of Reaction
A sense of resilience dominates
42% emission reduction targets missed, leading to Wind at Altitude Compulsory Purchase Orders (WACPOs) and wind turbines on the UK's highest summits.
Large-scale tree-planting projects initiated to meet 25% UK coverage targets.
Mountain biking combines recreation and business, bike dynamos generating the power to run biking tourist hubs.
60% of urban greenspace is used for allotments/food production for local consumption.

2030-2040 Decade of Ecodurability
The value of natural capital dominates
Biodiversity value and opportunity costs are incorporated into global finance systems.
Global drought creates a new form of wealth. Water exports from uplands become a mainstay of rural economies – 'liquid gold'.
Lord Clarkson of Silverstone pushes through the Rewilding Act to clear wild land areas of renewables, grid and communications infrastructure.
Bee reintroduction programme successful.
Forests act not only as carbon sinks; woodland maturity brings increasingly effective flood control.
2038 marks celebrations of 200 years since John Muir's birth, and a renewed relevance of Muir's ethos: 'When we try to pick out anything by itself, we find it hitched to everything else in the universe.'

2040-2050 Decade of Equilibrium
Ecological perspectives dominate
Technology, ecology and collaboration merge effectively at local and global scales. Ecosystems and biodiversity are harnessed to genuine sustainable advantage. Nature had many of the answers after all.
80% carbon emission reductions are met.
After decades of hardship, recreation is valued – close to home. There is occasional skiing in the Highlands but you have to be quick off the mark; it's all cross country as the last tow closed over a generation ago.
Solo time – as individuals and families - is common. On a summer weekend (out of the wet and windy seasons) tents and bivis are dotted around the countryside. Surfing, canoeing and kayaking are popular - we learned to value our marine and aquatic environments – which makes sense for an island, really.

2050 TIME CAPSULE

What objects, images, messages, artwork and stories from 2009-2010 capture key messages about the value of wild places and should be in a time capsule to be opened in 2050?

MESSAGES & QUOTES FOR 2050

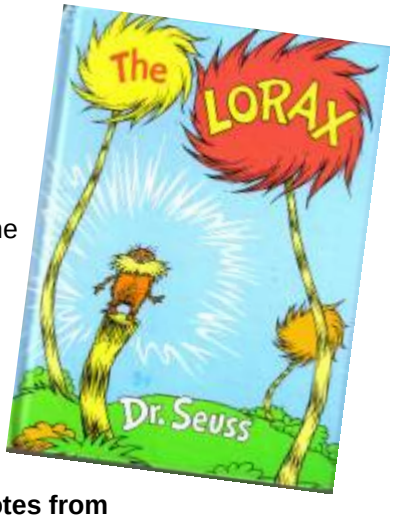
"If you're still there…hello, glad to see the scare mongering didn't work and people have learnt to change."

"Retain a sense of wonder, amazement and care for the natural environment – it's the only one we've got. Good Luck!"

Jim Perrin
Article: 'Change in the Landscape', TGO Magazine, February 2009
"We need the wild places now; we need to face down the threats to them with an obduracy and a persistence which take their force from the intensity of our love for them; we need their continuing presence and survival for the spiritual well-being of our children and the generations beyond them….make contact with nature; go into the wild bearing the crucial, visceral sense of its importance in our lives; and the fervent desire to protect it at all costs; be still; attend; observe…"

Henry David Thoreau
from his essay on an ascent of Mount Katahdin posthumously published in 1864
"*Talk of mysteries! Think of our life in nature, - daily to be shown matter, to come into contact with it - rocks, trees, wind on our cheeks! The solid earth! The actual world! The common sense! Contact! Contact! Who are we? Where are we?*"

PUBLICATIONS AND POEMS



The Lorax by Dr Seuss
"UNLESS someone like you cares a whole awful lot, nothing is going to get better. It's not."

'Published in 1971, and perhaps inspired by the "save our planet" mindset of the 1960s, The Lorax is an ecological warning that still rings true today amidst the dangers of clear-cutting, pollution, and disregard for the earth's environment. In The Lorax, we find what we've come to expect from the illustrious doctor: brilliantly whimsical rhymes, delightfully original creatures, and weirdly undulating illustrations. But here there is also something more - a powerful message that Seuss implores both adults and children to heed.' Amazon.com Review

Curator's Notes from
"Earth - Art of a changing world"

This significant exhibition at the Royal Academy of Arts in London (3 Dec 2009-31 Jan 2010) brought together the work of 35 artists, representing a cultural response to the way human activity is affecting the natural balance and physical cycles of our planet.

What If?
a poem by Lemn Sissay
(an extract)

From butterfly wings to the hurricane
It is the small things that make the big change
What if the question towards the end of the lease is
No longer the origin but the end of species

Let me get it right. What if we got it wrong?
What if we weakened ourselves getting strong
What if the message carried in the wind
Was saying something

Video performance of the full poem (3mins)
http://www.darwinoriginals.co.uk/LemnSissay.html

Full poem on page 41 of Curator's Notes
from "Earth—Art of a changing world"

Leaflet on 'Bees, biodiversity and
the John Muir Award' by Rhu Primary School

"The class decided that it was time to wake up the local community to the plight of the bees and design an advice leaflet." Teacher

Sharing Nature 30th Anniversary booklet
Joseph Cornell

Established in 1979 by naturalist and author Joseph Cornell, Sharing Nature uses creative activities to give people joyful and inspiring experiences of nature.
This booklet celebrates 30 years of sharing nature with the world.'

Schools Out!
a poem by Juliet Robertson
Creative STAR Learning Company
(an extract)

We wrote to politicians, we begged and we pleaded
Eventually they listened and that plan succeeded
In 2030, an Act of Parliament was passed
The 'Leave No Child Inside' Law came about at last!
This innovation motion clearly stated
The indoor classroom was overrated
A programme of change was put in place
A long term plan to help teachers face
The prospect of spending 50% time outdoors
Regardless of the age or stage of the children of course!

www.creativestarlearning.co.uk

Grown Ups
a poem by Peter Dixon
(extract)

Where are your trainers and where is your coat
where is your pen and where are your books
where is the paper and where is the key
where is the sugar and where is the tea…

Dad.....Mum.....
Where are the woodlands, the corncrake and the whales
where are all the dolphins, the tigers and dales
where are the Indians, the buffalo herds
fishes and forests and great flying birds

Leaflet and DVD
'Choosing our Tomorrows'
Macaulay Land Use Research Institute

In 2009 The Macaulay Land Use Research Institute created three visions of Scotland in 2050 seen through the video diaries of members of the same East Lothian farming family.

These voices from the future reflect the radically different choices society has made in response to climate change and out attempts to meet 80% greenhouse gas emission reduction targets.

'Choosing our Tomorrows'
http://www.macaulay.ac.uk/videos/cc/

John Muir Award Autumn 2009 Newsletter
- a Retrospective from 2050

In Autumn 2009, the John Muir Award produced a special edition of its newsletter based on its 'View from 2050' initiative.

The newsletter included poems, pearls of wisdom from experts and specialists, a timeline from 2000-2050 and a look back to the Award as it was in 2009.

'Views from 2050'
summary leaflet

Published in March 2010, this A5 leaflet gives an overview of contributions to the initiative.

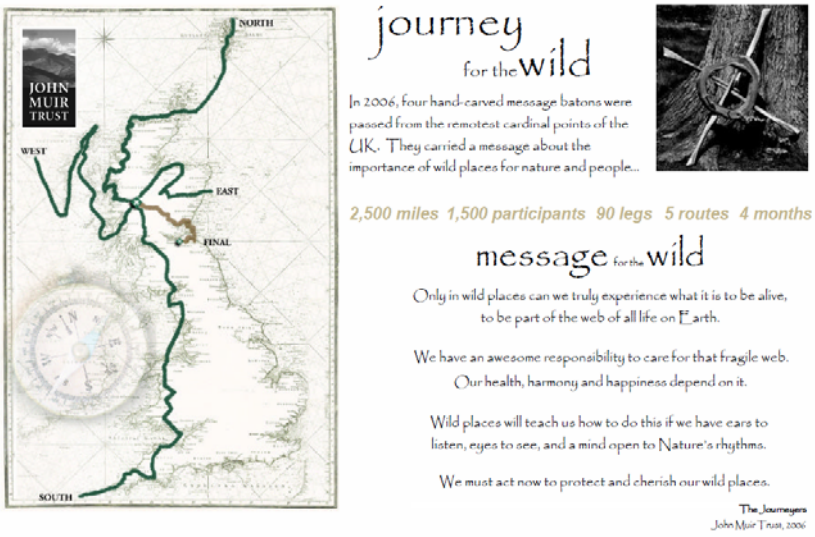
Wild Land Photography project - Keith Brame

"The John Muir Trust is the leading wild land conservation charity in the UK. It works with people and communities to ensure that wild land is protected, and that wild places are valued by everyone. Since 1983, the Trust has worked to conserve, campaign and inspire.
My brief is to photograph the land that the Trust protects, and the people who live, work and volunteer on that land."
Keith Brame
Wild Land Images at Photo Shelter:
http://www.photoshelter.com/c/brame
http://kbrame.blogspot.com/

The John Muir Trust
Journey for the Wild
Message for the Wild & DVD

In 2006, the John Muir Trust sent four hand-carved wooden message batons to the remotest cardinal points of the UK. They were then passed from wild place to wild place over 4 months. 1,577 participants travelled with a minimal environmental impact over 2,500 miles of land and sea, carrying a message about the importance of wild places for nature and people.

This DVD provides a legacy to the Journey.



Declaration for the Wild, the John Muir Trust Sustaining Wild Land Conference, October 2004

'The UK and devolved Governments must actively demonstrate that they recognise the importance of large areas of wild land and of all wild places as an integral part of our national culture and heritage…'

BIODIVERSITY

A Forth oyster
Surveys of the Firth of Forth in 1957 reported that the species was not only commercially extinct but biologically extinct, as not a single living oyster was found. A Forth oyster (real - but not live) was submitted to the time capsule on 4 November 2009. On 5 November 2009, BBC Scotland reported the discovery of live Forth oysters in the Firth of Forth, over fifty years after they were declared extinct.
For the full story visit http://news.bbc.co.uk/1/hi/scotland/8343331.stm

Broad Bean Seed

A packet of saved broad bean seed swapped with a stranger' to represent the movement for people growing food.

The Official Video of 2010 International Year of Biodiversity

2010 has been declared the International Year of Biodiversity by the United Nations. Leading with the statement that 'Biodiversity is life, Biodiversity is our life' a video was created to highlight the initiative around the world and that 'the Time to act is Now'.

Find it at Youtube: 'Official Video of International Year of Biodiversity 2010'

2010 International Year of Biodiversity

CLIMATE CHANGE AND POLITICS

A copy of Opening Address at the United Nations Climate Change Conference
by Ban-Ki Moon, General Secretary of the United Nations
December 2009 in Copenhagen

(extract)
'We know what we must do.
We know what the world expects.
Our job, here and now,
is to seal the deal, a deal in our common interest…
These talks in Copenhagen are among the most complex and ambitious ever to be undertaken by the world community.
Once again, we are on the cusp of history.
Once again we are present a the opening of a new era.
Our future begins today.'

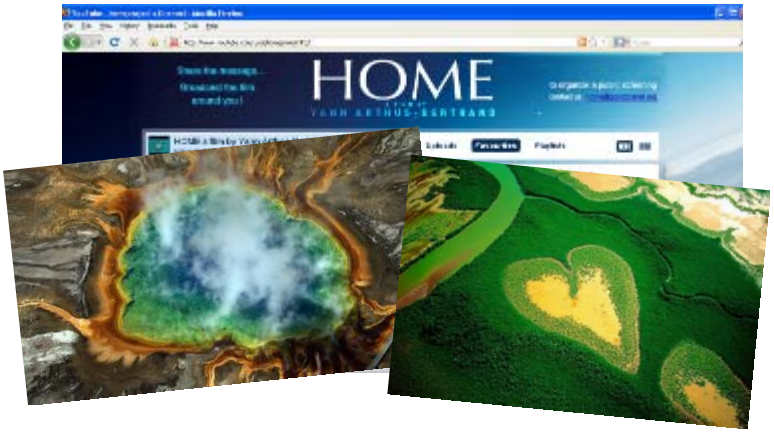
BBC News Article - Hijacked by climate change?
by Richard Black, Environment correspondent, 27 August 2009

'As the UN climate summit in Copenhagen approaches, exhortations that "we must get a deal" and warnings that climate change is "the greatest challenge we face as a species" are to be heard in virtually every political forum. But if you look back to the latest definitive check on the planet's environmental health – the Global Environment Outlook (Geo-4), published by the UN two years ago – what emerges is a picture of decline that goes way, way beyond climate change.'
'…society needs, urgently, to see the wider picture of global decline in all its complexity - and that climate concerns have hijacked the broader agenda, to the detriment of us all.'
http://news.bbc.co.uk/1/hi/8223611

MISCELLANEOUS

Home - a film by Yann Arthus-Bertrand

"We are living in exceptional times. Scientists tell us that we have 10 years to way we live, avert the depletion of natural and the catastrophic evolution of the Earth's The stakes are high for us and our children. Everyone should take part in the effort, and been conceived to take a message of out to every human being."
Yann Arthus-Bertrand
http://www.home-2009.com and
www.youtube.com/user/homeproject



Card Game
Ardroy Outdoor Education Centre

This thought-provoking card game is designed to help understand the concept of food miles.

John Muir on a Californian quarter

The 2005 California State Quarter issued by the US Mint and selected by Governor Arnold Schwarzenegger, depicts naturalist and conservationist John Muir admiring Yosemite Valley's monolithic granite headwall known as Half Dome with a soaring California condor.

Choosing our Tomorrows
Macaulay Land Use Research Institute

The Macaulay Land Use Research Institute has developed a film resource centred around the challenge of Climate Change but specifically addressing the idea that we have choices in the ways that we individually and collectively respond to this challenge.

The key message is that these choices will result in very different outcomes. To illustrate this we use the device of "video diaries" but based on the diaries of members of a farming family in the future Scotland of 2050. The diaries are collectively entitled: "Choosing our Tomorrows".
This film resource has been used quite extensively and has been adopted as part of the resources for the Transition Towns initiative. However, we felt that the resource needed to be seen by a much wider range of people and also be used in a more interactive way. Accordingly, we have created a new, exciting interactive exhibit (installation) which will allow members of the public to view the diaries, interact with the information they provide and consider their own behaviours in relation to climate change. The eight foot spherical, interactive exhibit was unveiled on Wednesday, 24 February 2010 at the Scottish Parliament in Edinburgh.
Read more about the Climate Change Installation

http://www.macaulay.ac.uk/videos/cc/ - This page will run a short broadband streamed trailer. In this, you see three visions of Scotland in 2050 seen through the video diaries of members of the same farming family. These voices from the future reflect the radically different choices society has made in response to climate change.

Business as usual - Despite repeated high-profile warnings in the early half of the century, global responses to climate change have proved too little, too late. In Scotland, summers are much warmer and are very dry. Winters are extremely wet. Violent storms are common. Many low lying areas are permanently flooded.

Living off the land - As a response to increased climate change and dwindling fossil fuels, electricity is now supplied by nuclear, and transport is mostly run on biofuels. In the 2010's, heavy investment in GM, agricultural engineering, and biotech research provided a way to use the available land to meet spiralling food and energy needs. Most people now live in cities or towns which are powered by the resources provided from an industrialised countryside.

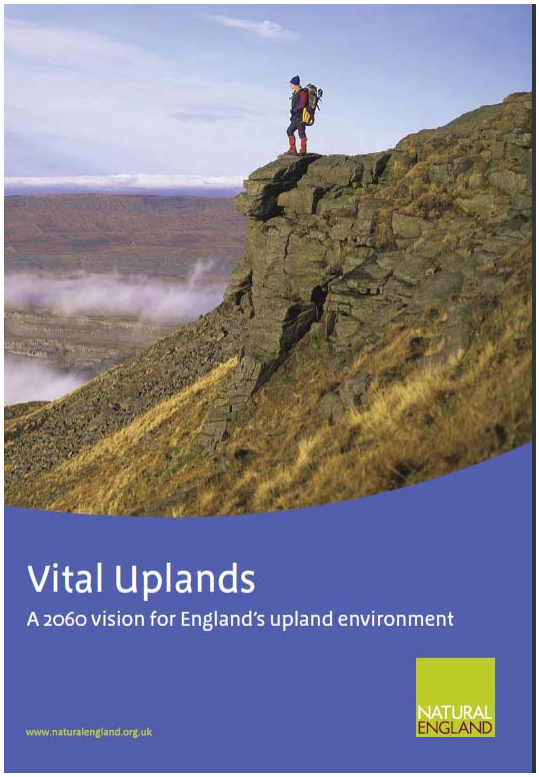
No place like home - Rural communities across Scotland have invested in new energy sources such as wind, solar, hydro, heat exchange pumps or tidal. High transport fuel costs have favoured a move towards locally produced food, but have also constrained personal travel – leading to most people working remotely from home. By acting early, the worldwide effects of climate change have been minimised.

The Macaulay Land Use Research Institute is an international centre for research and consultancy on the environmental and social consequences of rural land uses. Their interdisciplinary research across the environmental and social sciences aims to support the protection of natural resources, the creation of integrated land use systems, and the development of sustainable rural communities.

http://www.macaulay.ac.uk

Landscapes and Biodiversity

Vital Uplands:
A 2060 vision for England's upland environment
Natural England



Vital Uplands sets out Natural England's long-term vision and ambitions for England's upland environment.
[John Muir Award staff particularly like the comparison between a 2009 and a 2060 landscape on pages 8 and 9].

Download the document here (pdf 2.21MB).

What is this vision for?
Vital Uplands sets out Natural England's long-term vision and ambitions for England's upland environment. We are indebted to our upland partners and stakeholders for their input of evidence and views whilst we were developing this vision.

Our upland environment has been formed through centuries of people's interaction with nature. The uplands are a national asset, prized by people as places of inspiration and enjoyment, as well as a source of vital benefits such as food and clean water.

They are a working landscape for farmers and others who derive a living from the land. However, the environment, and the vital benefits and services it provides, is under pressure – from climate change, from changing social and economic circumstances, and from the impacts of unsustainable use.

We hope the changes we propose here will:

- highlight the importance of the upland environment to society as a whole;
- provide a common goal that inspires everyone to embrace future change and play their part in achieving this vision;
- stimulate new thinking and action about how to deliver this vision – including funding sources and practical changes on the ground; and
- encourage those who farm and manage upland landscapes to seek out new opportunities for sustainable business ventures that will be central to the Vital Uplands of 2060.

Natural England will use the vision to set the direction for our work across the uplands, nationally and locally. It will inform and shape our delivery of agri-environment schemes, and other plans, projects and research in the uplands; our work with partners and stakeholders; and our advice in support of the upland environment.

Follow the Vital Uplands debate here (PDF 29.5KB) or visit
http://www.naturalengland.org.uk/about_us/news/2009/121109.aspx

Natural England launches Vision for securing the future of England's uplands

Press Release 12 November 2009

On-the ground trials launched to pioneer new forms of sustainable upland land management.

Natural England today launched Vital Uplands - a 2060 Vision for England's uplands - which examines how the uplands could be sustainably managed over the next fifty years to secure the food production role that they have played in recent decades while delivering a wide range of other public benefits.
Natural England's Acting Chair, Poul Christensen said, "Our Vision is the starting point for a dialogue we want to have with upland stakeholders up and down the country about how we can all work together to shape the future of the uplands. The uplands provide society with a huge range of services – they are vital for food production, carbon storage and climate regulation, flood management, and water supply, as well as providing inspirational landscapes for recreation and homes to many rare and important species. Working with partners and stakeholders we want to explore ways in which hill farmers and other upland land managers can deliver a wider range of environmental services that will put them and upland communities onto a more sustainable and economically successful footing".

Poul Christensen continued, "The vulnerability of upland environments, the delicate economic state of many upland hill farms, and the ongoing challenge of climate change mean that a debate about the future direction of upland management is timely. It is increasingly clear that a business as usual approach will be less and less able to address the challenges of the future and that we urgently need to consider how best to sustain the value of the uplands. We hope the publication of our Vision will be a catalyst for a wide-ranging discussion among all those with an interest in the future of the uplands on how these vital landscapes can be managed in the future."

The Vital Uplands report – and the detailed description of environmental services that goes with it* - describes how the Uplands might look and be managed in fifty years' time, with future land management targeted towards delivering:

- Sustainable production of food, wood and other raw materials
- Mitigation and reduction of climate change
- Resilient upland ecosystems
- Vibrant upland communities and economies
- Clean water supplies from upland rivers and lakes
- Reduction of 'natural' hazards – such as flooding and wildfire
- Health and wellbeing benefits

To achieve these goals, Natural England is looking to explore how upland communities can be better supported by focusing land management on the following critical food and environmental services:

- Upland soil and peat resources need to be managed sustainably.
  Action is needed to ensure that eroding peat soils and blanket bog are stabilised, properly vegetated, and can actively absorb carbon. At present - because of erosion, oxidation, and burning - up to 4 million tonnes of carbon dioxide are being released per year from English peatlands, comparable to CO2 emissions from domestic aviation.
- Open upland heaths, bogs and grasslands are a major part of what makes our upland landscapes distinctive and these habitats need to be sustainably managed alongside grouse moor management that involves sustainable grazing and burning.
- The level of upland grazing needs to be matched to deliver different environmental services.
  In some areas, higher grazing levels will be needed for food production; in others, lower grazing is required to secure benefits such as water quality improvement and peatland re-vegetation.
- More, and better managed, woodlands.
  Grazing levels may need to be adjusted to allow natural regeneration of native woodlands, increase woodland cover and link existing woodland areas. In 50 years' time Natural England would like to see up to 25% of the uplands with some form of woodland cover.
- Green energy.
  The uplands can provide green energy in the form of renewable wood-fuel, water power, ground source heat, solar and wind technologies in appropriate locations.

- Low-carbon growth.
  More can be done to promote upland business, built development and transport focused on low-carbon growth.

Accompanying the Vision, Natural England also announced three pilot projects – in Cumbria, the South West uplands and Yorkshire – which will explore how the provision of a broader range of environmental services can be turned into genuine business opportunities for farmers and land managers. The pilots will go live in 2010 and will trial ways in which local upland management can be geared to the delivery of multiple public benefits.

Poul Christensen continued, “The uplands provide a range of critical environmental services that deliver wide-ranging public benefit and that need to be sustained. By adapting the way the uplands are managed there are real opportunities to maximise these benefits and to strengthen the economics of upland hill farming, helping secure the livelihoods of hill farmers and upland communities. The uplands face many challenges and in the face of this we need a 21st century approach which recognises that food production, a healthy natural environment and the economic stability of the uplands go hand-in-hand.”
- ends -

Notes to Editors
* Copies of the 'Vital Uplands' Uplands Vision, and 'Mapping Values' - a major report detailing the environmental services that the Uplands provide - can be found at http://www.naturalengland.org.uk/ourwork/securefuture

The debate

The Upland Vision is looking to kick start a debate about ways in which the uplands can be managed and Natural England has held an important conference today in Ilkley, Yorkshire. A wide range of opinions have been expressed about the Vision and what needs to be done, with a selection of comments from the conference as follows:

The National Trust: “The outcomes of National Trust’s forthcoming Policy for Land and NE’s Vital Uplands are closely aligned. In partnership, National Trust will: Restore over 20,000 ha of peatlands; diversify the structure and composition of habitats; practice sustainable land use through Whole Farm and Moorland Management Plans and work at the catchment scale to stabilise soils and produce clean water.”

NFU uplands spokesman Will Cockbain said: “Extensive livestock grazing has shaped and conserved the English uplands for generations. The effort of hill farmers has ensured a productive and accessible countryside, rich in cultural and environmental heritage - an outcome that we should all celebrate."
“We are in no doubt that farmers and farming will remain central to any future vision of the uplands. Over the next 50 years, farming will matter more than ever in a changing climate, with increasing demand for food and high quality environmental care. The primary purpose of the uplands will remain food production; as a source of high quality meat and breeding stock for lowland livestock producers. Alongside this primary purpose, Natural England’s vision correctly highlights the many public benefits that farming provides in addition to food production – sadly little of this value resides within farm businesses. So the challenge for our organisations is to capture the real value of these benefits and translate them into an economically sustainable bottom line for the current and future generations of upland farmers.
"In short the marketplace and agri-environment schemes must be given equal recognition for their dual contribution to the future of the uplands.”

Lake District National Park Head of Environmental Heritage, Andrew Herbert said: “Vital Uplands is a compelling vision for the future of the English uplands and the value of these places to the whole nation. We feel strongly that it is a vision that we and the people and partner organisations in the Lake District National Park can work together to deliver. The reality is that it will only work by everyone with a stake in the uplands - farmers, foresters, communities, businesses and government – working together. It encourages all of us to rise to the new challenges of the 21st Century and create and take advantage of new opportunities.
“The National Parks themselves are up for this challenge and we commit to working with all interest groups

to promote the importance of the uplands to society as a whole. We also want to stimulate new thinking about delivering their benefits and services and encourage farm and land managers to build profitable and sustainable businesses."

Martin Gillibrand, Secretary of the Moorland Association said: "It is good that Natural England is taking time to consider the optimum state of the Uplands in 2060.It would be better if it recognised what a fantastic asset we now have in our managed heather moorland, and committed itself to building on that asset in co-operation with the Moorland Association."

CLA President Henry Aubrey-Fletcher said: "Upland land management is hanging by a thread so this Vision is timely to stimulate debate. We all depend on the uplands for a range of products from food and fibre to clean water and carbon sequestration. "However we are in completely the wrong mind-set to be able to deliver any vision for the uplands without first acknowledging the massive, pervasive set of market failures that characterise these areas, and therefore the scale of remedial policy action and resources to put it right."

Chris Woodley-Stewart, Director of the North Pennines Area of Outstanding Natural Beauty (AONB) Partnership said: "We welcome the vision for the uplands as the beginning of a debate about the future of this most special part of our countryside. We're already working hard towards achieving many of the things that the Vision sets out, from our work on peat and hay meadows, to supporting sustainable tourism and helping people get out and enjoy upland landscapes. We're happy to work with partners new and old to maintain our uplands as special places to live, work and visit."

Sue Armstrong-Brown, the RSPB's Head of Countryside and Species Conservation, said: "The future of the uplands is too important to be left to chance. Managed properly, our upland soils can continue to store huge amounts of carbon, soaking up thousands of tonnes a year. They can store rain water, releasing it safely and reliably.
"All this, while offering a physical refuge for some of our best loved plants and animals and a spiritual refuge from the pressures of modern life."
"We have to give proper recognition to the services our uplands provide and proper reward to those who manage the land in a way that delivers them."

Sandra Bell food campaigner for Friends of the Earth said: "England's uplands are crucial for our food supplies now and in the future so it's great to see that Natural England have a positive vision for them.
"Farmers have shaped the uplands over centuries and now they have the potential to be a key part of the farming future we need – producing good quality meat without relying on damaging imported animal feed.
"To ensure that these farmers can contribute to Natural England's vision they need the right support from Government - a watchdog to ensure that supermarkets treat them fairly and rewards for planet-friendly farming practices."

Uplands facts and figures

- The uplands cover around 12% of England, and only 1% of the population live there.
- Uplands are nationally and internationally important for a range of wildlife habitats, geology and outstanding landscapes.
- 53% of SSSIs lie within the uplands. Only 3% of the uplands are covered by native woodlands
- 75% of uplands have been designated as National Park or AONB.
- There are 70 million day visits to upland National Parks alone each year.
- 70% of the UK's water supply is collected from upland catchments
- They are home to around 3 million sheep – 45% of the total number of breeding ewes in the country; and in addition to meat produce around 5 million kilos of wool every year.

About Natural England

Natural England is the government's independent advisor on the natural environment. Established in 2006 our work is focused on enhancing England's wildlife and landscapes and maximising the benefits they bring to the public

- We establish and care for England's main wildlife sites, ensuring that over 3,500 National Nature Reserves and Sites of Special Scientific Interest are looked after and improved.

- We work to ensure that England's landscapes are effectively protected, designating England's National Parks, Areas of Outstanding Natural Beauty, and Marine Conservation Zones, and advising widely on their conservation.
- We run England's Environmental Stewardship green farming schemes that deliver over £400 million a year to farmers and landowners, enabling them to enhance the natural environment across two thirds of England's farmland.
- We fund, manage, and provide scientific expertise for hundreds of conservation projects each year, improving the prospects for thousands of England's species and habitats. We have recently committed £6m to develop wetland areas and have detailed biodiversity action plans covering 75% of England's species
- We promote access to the wider countryside, helping establish National Trails and coastal trails and ensuring that the public can enjoy and benefit from them.

For further information contact: The National Press Office on 0845 603 9953, press@naturalengland.org.uk out of hours 07970 098005. For further information about Natural England please visit: www.naturalengland.org.uk

The Natural Environment in 2060
Natural England

http://www.naturalengland.org.uk/ourwork/securefuture/default.aspx

Never before has the environment been under so much pressure (driven by rising populations) and never before has it been subject to so much change (driven by climate) as it is today. The natural environment is not a luxury for society – it critically underpins and delivers a wide range of goods and services, from food and water, to flood defence and carbon storage. Significant changes are happening now to these services, and more are on the way.

What does that mean for decisions that we make today?
There are three elements to making the right choices for the future of the natural environment;

- understanding how nature supports our everyday lives
- identifying future trends – both risks and opportunities

and

- having a goal or vision for what we want to achieve

Making the most of space – an alternative to the traditional garden or wall

How nature supports our everyday lives
The natural environment is essential for the well being of people, so decisions made today must safeguard our natural resources.
Our report No charge? Valuing the natural environment sets out the contribution that nature makes to our economy (such as clean water, carbon storage) to ensure that its value is recognised.
Read Helen Phillips' speech from the launch on 14 October 2009.

Identifying future trends
Whilst we cannot predict what the future holds we can look at long term trends and consider what these might mean for us and the environment we live in, in 2060.
Within Natural England we have:

1. Undertaken a rigorous analysis of data on future trends to identify key factors that will impact on the natural environment. [NECR030 - Global drivers of change to 2060]

2. Developed four scenarios of how the world might look in 2060 and carried out an initial assessment of the long term risks and opportunities that could influence the natural environment by 2060. [NERR031 - England's natural environment in 2060 - issues, implications and scenarios with associated research note RIN031.]
The report explores how our behaviours and factors such as technological progress may play out and what that might mean for the natural environment.

3. Looked at other related scenarios and compared these with ours. [NECR031 - Scenarios compendium]. We have used these scenarios to inform the uplands vision.

Defra Land Use Project: Demonstrator Case Studies Workstream
The study, to demonstrate multi-functional use of land, was developed through discussions between Defra, Natural England, Foresight, Department of Communities and Local Government. A series of seven case studies were selected from over 50 land use initiatives and used to

produce an evidence base. This evidence base was then used to inform the Foresight Land Use Futures project due to be launched in February 2010.

Two outputs from the study are the Final Report, funded by Defra Land Use Team, and its associated Executive Summary.

A goal or vision

We are also keen to create a vision of what a healthy environment should look like, something to aim for and inspire action – by people, government at national, regional and local level, public bodies and the private sector. Natural England is developing an integrated vision for how the natural environment of England should look in 50 years time and how it will contribute to the needs of society. We want this to be more than a Natural England view, we want others to contribute and with us build a vision of the future. We will do this by working with others to develop a vision and a plan (strategy) for achieving it. Our ambition is that it will inspire and motivate decision-makers across society to take decisions in ways which will secure a healthy future for the natural environment.

Upland futures

The initial element in developing our vision for the natural environment to 2060, from mountain top to sea bed, has begun with the launch of Vital Uplands, Natural England's vision for the upland environment in 2060, on 12 November 2009.

This builds on the multiple benefits that the natural environment provides, advocated in our 'No charge?' report above.

The specific contribution of the uplands is detailed in:

- Mapping Values: the vital nature of our uplands – an atlas linking environment and people which describes, through maps, many of the benefits people derive from The upland environment and how we might secure these for the future.

Ullswater catchment – providing a range of ecosystem services
(English Heritage/NMR/Aerofilms Collection)

- Economic Valuation of Upland Ecosystem Services -explains a method for exploring the economic implications of land use change in the uplands at a variety of scales. Contains 6 upland case studies.

- Upland Ecosystem Services - assesses the links between environment, land management and service delivery which explain our understanding of the evidence behind 4 key upland ecosystem services.

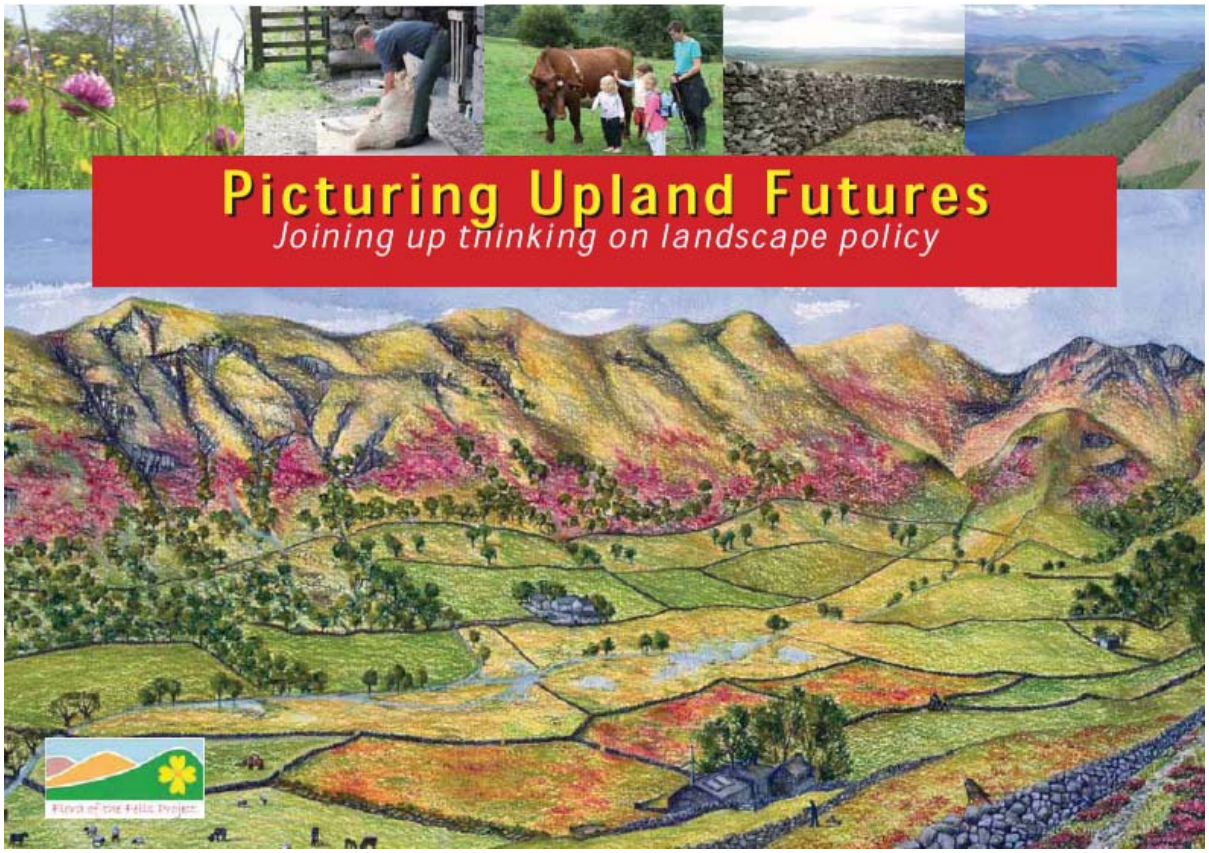
Delivering nature's services is a pioneering, demonstration project which will show how the upland vision could work in practice in 3 different upland areas.

Contact us

If you have any comments please contact the vision project directly at vision2060@naturalengland.org.uk

Picturing Upland Futures –
Joining up thinking on landscape policy

Flora of the Fells
www.floraofthefells.com



'The Flora of the Fells Project has attempted to raise awareness of the many values of upland landscape, particularly with reference to Cumbria. A first step for the project was to establish a range of different values for upland landscapes and then create pictorial 'visions' of future upland landscapes in the Lake District and the North Pennines based on the enhancement of these values. This was done to help extend our concept of the uplands and the role they play beyond simply impacting on those who use them directly.

The pictorial representations form the basis of this guide (pdf 934KB), accompanied by an assessment of the value of our upland landscapes and ways in which changes to policies shaping their future management can maximize their contribution to the nation.'

Introduction
The uplands are landscapes of constant change, responding to society's use of the range of resources they offer. We need to agree a direction of change which delivers positive outcomes, sustaining livelihoods, offering enjoyment and contributing to health and well-being. New ways of thinking are needed if the role of upland landscapes is to fully recognised and realised in the future.

The Flora of the Fells Project has attempted to raise awareness of the many values of upland landscape, particularly with reference to Cumbria. A first step for the project was to establish a range of different values for upland landscapes and then create pictorial 'visions' of future upland landscapes in the Lake District and the North Pennines based on the enhancement of these values. This was done to help extend our concept of the uplands and the role they play beyond simply impacting on those who use them directly.

The pictorial representations form the basis of this guide, accompanied by an assessment of the value of our upland landscapes and ways in which changes to policies shaping their future management can maximise their contribution to the nation.

Joining-up thinking

Upland management today reflects a myriad of diffuse policy drivers, both past and present. Although the features that make up an area of landscape are shaped by human activities, those activities are often a result of local economic factors. The prevailing economic climate is shaped by a variety of agencies and organisations. EU, national, regional and local sources are all responsible for distributing significant funds for rural development and land management, with the target of that funding relating to the different functions and powers of each organisation or programme.

The result is a sectorial approach to land management, governed more by the aims and objectives of individual organisations rather than by looking at the landscape as a whole. This impedes joined-up action on the ground. Hence the current emphasis on trying to overcome this through working in partnership. More importantly, this sectorial approach presents farmers and landowners with a multitude of demands and messages in terms of future management, all too often pulling their decision-making in different and sometimes conflicting directions.

The Flora of the Fells Project has sought to approach upland management in a non-sectorial way. We considered upland landscapes as being multi-functional, having different values for different users. We all view landscape from our own perspective. So, in order to be relevant to as wide an audience as possible, the project has described the uplands in terms of a range of values, which hopefully embraces as many perspectives as possible (see box right). Decisions can then be considered in the light of their impact upon all of the values attributed to landscape rather than just one or two values, as is often the case with a sectorial approach. The use of these landscape values helps in understanding the motivation and justification behind different policy objectives and decision making which underpin land management practices and changes.

Analysing how different organizational strategies and plans related to each of these value showed that often there is a focus on only one or two values and commonly no coherent vision for the future role of upland landscapes. Often strategies and plans are linked to initiatives with short-term funding, whose target-driven focus may lack a longer term perspective or an understanding of project implications at a multi-sectorial level.

Many short-term, target-driven policies tend to be sectorial and their delivery on the ground is site specific and scattered, ultimately reducing their overall impact. However, describing the uplands in terms of a range of related values encourages joined-up thinking on upland land management.

The 'landscape-scale' approach

Good examples of joined-up thinking can be found where organisations and decision-makers consider management at a 'landscape-scale' (e.g. landscape character assessment, water catchment studies, mountain massif management). The whole valley pictorial view, used in this publication shows how the landscape value concept can be applied at a landscape-scale. It is

not a recommended blueprint for every Lake District or North Pennines valley. Each valley's distinctiveness needs to be respected and diversity is critical in the operation of landscape character. However, these illustrations are one way of representing what the future landscape might look like, in say ten years time, based upon the direction of current policy.

The Flora of the Fells Project

The Flora of the Fells Protect was initiated in 2002 as a partnership between Friends of the Lake District and Natural England (previously English Nature). This enabled us to overcome the traditional, yet artificial division between 'landscape' and 'nature conservation', thus exemplifying the removal of sectorial boundaries. We were two organisations working in the same area. Although in a purely aesthetic sense, reading of the landscape is very different from its understanding through ecology, when assessing landscape change the two perspectives should be integrated and support each other.

The Flora of the Fells Project has attempted to adopt a much wider perspective than simply landscape and nature conservation, seeking to cover the economic and social, as well as the environmental, values of landscape. Conserving landscapes, and the quality of life associated with them, is part and parcel of sustainable development in a rural context. By providing a vision of future landscapes, showing what they might look like in an artistic form rather than with maps or words, we hope to encourage a more creative approach to rural policies, particularly in the uplands.

The aim of the Flora of the Fells Project vision was to create a future landscape based on enhancement of special qualities, which delivered a wide range of benefits. This reflects what should be the aim of today's rural policies. Presenting a pictorial vision to different audiences stimulate discussion and debate more easily than the written word - 'A picture speaks a thousand words'. Discussing the future brings personal values to the fore, which in turn can help to build consensus around common points and areas of agreement. We see this catalytic role as being central to the Flora of the Fells Project, which not only applies in the Cumbrian context, but also to the North West and landscapes more generally.

The Flora of the Fells Vision - A Tool for Visualising Landscape Policy

Visions as Tools

The idea of creating a view of a future landscape is becoming increasing common and there are more than 40 visions currently being developed in the UK. Motives for visions are varied. While many are driven by nature conservation concerns, such as biodiversity action plan targets, there is an overarching desire to integrate visions within the wider realms of landscape scale land management policy such as local development frameworks, regional spatial strategies and agri-environment targeting. Visions are also being used as a collaborative tool for land users to gain consensus about the future direction of land management.

Visions tend to fall into two categories. Firstly the written vision, a series of aspirational statements about a given landscape. For example, the Solway Coast Area of Outstanding Natural Beauty's vision is for a landscape 'of extremely high quality with all land in good condition'. A similar statement can be found in the management plans for the North Pennines Area of Outstanding Natural Beauty and the Lake District National Park. These general statements are accompanied by more specific description of how the land will look. These statements then act as drivers for management plan action plans and project work.

The second form of vision is map based, taking a given area and projecting into the future what aspirational changes are to take place. These predominantly focus on enhancing biodiversity e.g. Cambridgeshire – 2050 Vision, Norfolk Biodiversity Action Plan vision. They provide a clear destination around which policy outcome may be shaped. *An assessment of visions in England can be found in Natural England Research Report No 641* Best practice study - 'opportunity' maps for landscape scale conservation of biodiversity – A Good Practice Guide.

The Flora of the Fells Vision

While written and map-based visions have their uses, the fundamental problem of what the vision landscape would look like in reality remains. To overcome this the Flora of the Fells Project chose a pictorial representation of the present and future landscapes, commissioning artwork based on generic Lake District and North Pennines valleys. It is easier to engage people if they have something with which they can relate, and presenting a picture of the future landscape brought an immediate response during consultation.

The pictures were specifically designed not to represent specific locations in each area to avoid subjective assessments of today's landscape. The vision is not about rights and wrongs of past management, but about how we can move forward constructively towards a future incorporating all landscape values and recognising links between them. Our philosophy was that a healthy landscape is key to a healthy economy and quality of life for local communities. But above all what we wanted to do was to get people talking about what they wanted tomorrow's landscape to look like, whether current policies and funding would deliver that landscape and if not how we could get there. Ultimately it became a catalyst for discussion on the direction of rural policy and land management, rather than an end in itself.

Clearly a pictorial vision of a generic landscape has limitations of its own and it is important to understand the underlying assumptions behind it. The future landscape illustrations only represent a part of the countryside and only deal with local economic, social and environmental aspects. Obviously there will be a relationship between the landscape in the vision and the surrounding countryside and settlements, but this is outside the scope of this work. Furthermore, not every landscape change is expected to suit every valley. Landscape-scale rural policy clearly needs to be set in the context of individual landscape character.

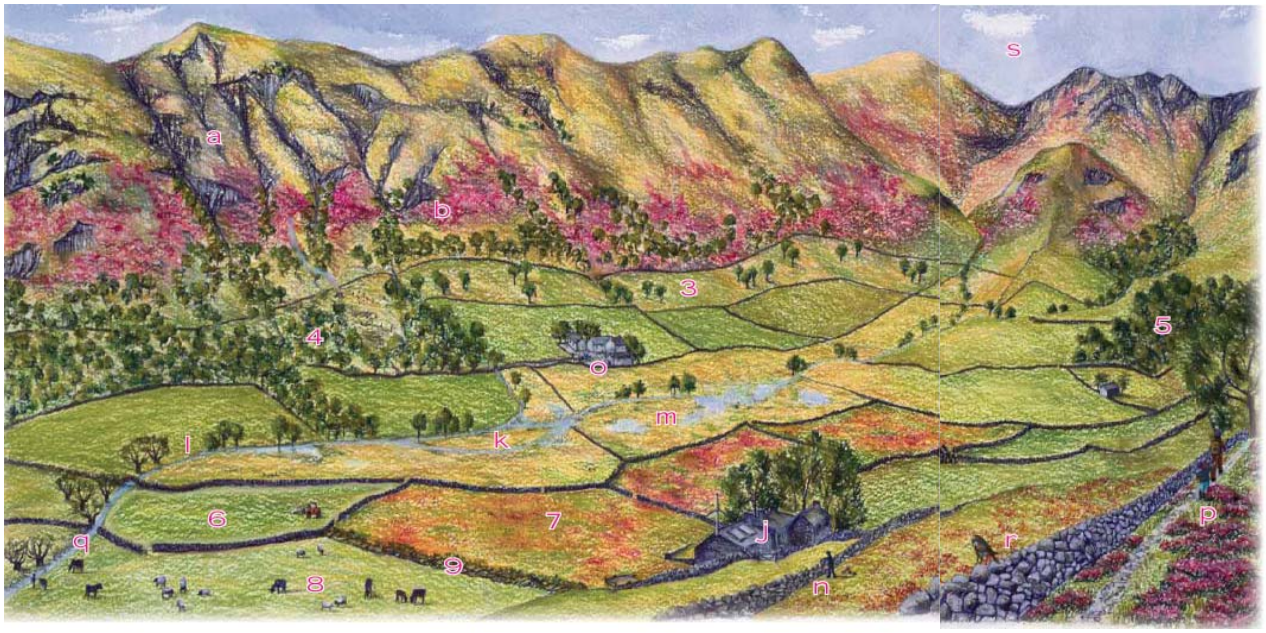
However, there were four key objectives to visualisations:
1. Illustrate the diverse role of the uplands and the broad range of options for their future management.
2. Demonstrate that landscape scale management is most effectively achieved through a joined-up, multi-sectorial approach.
3. Identify the role of farming in the future landscapes and explore the relationship between current agricultural policy and future landscapes.
4. Stimulate discussion on the nature of upland landscapes in Cumbria in the future and the direction of related rural policy.

Once draft artwork had been drawn up the vision landscapes were widely consulted on, which resulted in changes to their content and presentation. Consultees included: Friends of the Lake District, Cumbria Wildlife Trust, Lake District National Park Authority, North Pennines Area of Outstanding Natural Beauty Partnership, National Trust, English Nature, RSPB, Cumbria Federation of Commoners.

See pdf link for pictorial versions of today's Lake District, and a North Pennines current and future scenario.

‘The pictorial representations form the basis of this guide (pdf 934KB), accompanied by an assessment of the value of our upland landscapes and ways in which changes to policies shaping their future management can maximize their contribution to the nation.’

Extract:



Tomorrow's Lake District

Changes in the way the uplands are managed means that the landscape will look different in the future. The landscape enhancement envisaged by the Flora of the Fells vision for the Lake District are outlined below. Each one increases one or more landscape value identified on page 3 (see page 17).

a Regeneration of ledge, crag and gill vegetation.

b Increased heather.

c Regeneration of wood pasture.

d Woodland re-creation with commercial use of woodland - coppicing, charcoal, biomass where appropriate.

e Restoration of non native conifer woodland to native woodland.

f Intensively managed and grazed grassland.

g Restoration of upland hay meadows.

h Mixed grazing of sheep and cattle.

i Repair of field boundaries/planting of new hedges.

j Use of small-scale renewable energy/ sustainable building materials on farms, e.g. wind power and solar panels.

k More natural watercourses.

l Enhanced riverside vegetation.

m Restoration of wet meadows.

n Increased opportunities for land-based employment as a result of a broader range of activities taking place on the land.

o Potential for farm diversification into landscape based activities (tourism/education/ workshop based), or affordable housing for workers.

p Added colour/texture to landscape enhances recreation experience.

q Improved opportunities for fishing and water based recreation where appropriate.

r More opportunities for wildlife.

s Reduction of the impact of climate change as habitats 'lock-in' carbon and new 'wildlife corridors' facilitate species migration.

Towards the Vision:

10 Steps to unlocking the potential of Cumbria's uplands – see pdf for full description

a) Reward farmers and land managers for delivering environmental products that the public value.

b) Promote a vibrant rural economy.

c) Encourage management enhancing the adaptation to and mitigation of climate change on the landscape.

d) Restore natural watercourses and protect the role of upland landscapes in providing clean water.

e) Increase the recognition of the link between farming and tourism.

f) Restore the full range of natural vegetation communities.

g) Provide opportunities for public access and recreation.

h) Promote the link between food production and the upland landscape.

i) Promote small-scale, renewable energy production.

j) Increase the recognition given to cultural features and activities.

www.floraofthefells.com

‘Mission Possible?
Can we save Cumbria from the impact of climate change?’

Flora of the Fells
www.floraofthefells.com

‘Everybody’s talking about how the world is going to be different because of climate change, but what does that mean for places closer to home, somewhere we know and love to enjoy like the fells of the Lake District and North Pennines? This booklet (pdf 3MB) tries to unravel the reality from the often impenetrable wall of science surrounding climate change and lay down what it might mean for Cumbria.

What will happen to our lakes and rivers? How will farming be affected? What about wildlife? Will our woodlands survive?

All of these topics are explored, along with simple suggestions for how we can all make a difference, minimizing the consequences of global warming for the much loved landscapes of Cumbria.’

Foreword by Jonathon Porritt
Founder Director, Forum for the Future

Climate change challenges the way we think and act. On the one hand, its impacts will affect all our lives through changing the planet’s life support system upon which human beings ultimately depend. On the other, the science and information on greenhouse gas emissions seem very remote from ordinary, everyday decisions.

The impacts in the UK may be less obvious than in many parts of the world, and the language used can also exclude people: ‘one planet living’, ‘low carbon lifestyles’, ‘environmental limits’ and ‘carbon proofing the countryside’ – what does all that mean? Here in Britain as well, the changes we experience are not as dramatic as melting glaciers and ice caps or rainforest destruction.

Taking another special area of the planet – the mountains of Cumbria and the Lake District - this Flora of the Fells publication tries to show what climate change might mean closer to home. What we enjoy today, we can not take for granted in the future. Arctic char, Arctic Alpine flowers, bluebell woods and winter snow may disappear from Cumbria. How will these and other losses impact on our perception of wildness and local distinctiveness in our upland landscapes?

Importantly, climate change also challenges us to think more into the future: what landscapes will we hand over to our children? Alongside social and economic needs, planning and land use decisions need a better understanding of the demands we place on the natural resources connected with our climate. For example, which land uses and habitats are good for ‘locking-in’ carbon and reducing run-off and flooding from storm events? Climate change ‘mitigation’ and ‘adaptation’ now need to be added into the mix of uses competing for our land resource.

The Climate Futures section identifies six key elements of what the uplands provide for society. It sets out from the best available evidence how climate change will affect these and what we can do individually to help reduce its impacts. I believe that reflecting on climate change can help us realise more healthy and sustainable lifestyles. And now is certainly the time to start acting - think globally, understand your lifestyle’s contribution and get on and act!

Extract:
Adaption and Adaption and mitigation Page 14

For all the predictions about what will happen to our world, the only real certainty is that things will change in our lifetime, locally and globally, and they will change quickly. And all the signs point to our mountains being one of the first places where these changes are seen. As well as reducing the causes of climate change, we need to bolster nature's resilience to it, by improving its ability to adapt to the pace of change and managing our land in a way which mitigates the seriousness of its consequences.

Nature will need to be more natural: rivers will need to flow where they like; new woodlands will be needed to help bind the soil; and our peatlands will need to be in a condition where they work for us and not against us. Mountains need to made 'fit for purpose', with each part working as it should.

Over the centuries we have moulded our landscapes to fit our needs. We may need to get used to different looking landscapes if we want to make our mountain 'climate-proof': less intensively managed, wilder looking places, where carbon management is part of the job description of anyone working the land. Not only will this give nature the best chance to respond to global warming, it will also make the mountains more healthy, more diverse and more interesting places.

Extract:
What have mountains ever done for us?

WHAT HAVE MOUNTAINS EVER DONE FOR US?

(THEN TURN THE PAGE TO SEE WHAT IMPACT CLIMATE CHANGE MIGHT HAVE)

Illustrations: Joanna Ve

a LAKES, RIVERS AND TARNS

- Fill our taps – 70% of the UK's water resource come from our uplands. We expect it to be of high quality and a lot money is spent by water companies ensuring we get the water we want.
- Stop flooding – In upland areas rivers following natural watercourses meander across the land and when they get too full they spill onto surrounding fields. This slows the passage of water from the uplands to lower lying areas, buffering the effect of heavy rains and reduced the risk of flooding downstream.
- Shelter wildlife – Cumbria's lakes, rivers and tarns are home to many special types of wildlife, such as otters and Arctic char. Many of the lakes are deep, cold and have very low nutrient levels, making them particularly unusual and the wildlife within particularly sensitive to change.

b FARMING

- Produces food – The sight and sound of the Herdwick and other sheep are familiar to any one who has visited the Lake District and sheep farming has long formed a part of the local economy. Wild foods, such as venison, are also a product from our uplands.
- Produces landscape – Fell farmers have helped shape the landscape of the Lake District and North Pennines over centuries. Their animals have grazed the fells and the culture of farming is etched into the character of dales and valleys.
- Supports vegetation – Soil is the basic living resource underpinning the uplands, providing support and stability for plants to grow. Trees, grass, heather, bracken all have their roots firmly anchored in soil. Soil also holds nutrients vital to plant growth and aids the process of decomposition.
- Controls floods - Uplands soils absorb rainfall, slowly releasing it into the rivers. This controls the amount of water flowing downstream across floodplains, reducing the vulnerability to flooding of towns and villages.

c WOODLANDS

- Natural protection – Trees protect upland soils from being washed away. Their leaves soften the impact of the falling rain and their roots help to bind the soil. Trees also store carbon.
- Makes money – Many of Cumbria's woodland have been planted like a crop, to grow and be harvest as an economic commodity. Other woodlands are coppiced and the wood made into hurdles, charcoal, baskets and other products. Woodland can also be used for biofuel.
- Records the past – Few places record human history quite like woodlands, which in Cumbria were once sites of thriving activity, supplying products for industries as diverse as ironworks and gunpowder factories. Ancient trackways, ruins of buildings and charcoal burning pits are all signs of days gone by.

d BIODIVERSITY

- Arctic leftovers – The uplands of Cumbria are storehouses of genetic diversity, whose cold, isolated environments are a home to a number of rare species found nowhere else in England. Arctic-

Upland areas, like Cumbria's Lake District and North Pennines, are more than just beautiful places to be

Alpine plants, like purple saxifrage and mountain sorrel, and cold water fish like the vendace have been here since the ice age.

- Woodland wildlife – Although less than 10% of Cumbria is wooded, woodlands in the uplands are home to rare wildlife, like red squirrel and nesting osprey and many other animals. The Atlantic oakwoods of the Lake District are especially important for their ferns and lichens.
- Bog wonders – Peatlands are harsh habitats for wildlife and so have become home to some of the more unusual plants and animals, like carnivorous sundew and the elusive hen harrier.

e PEATLAND

- Stores carbon – Upland peatlands are a hugely important store of carbon. The UK has about 10% of the world peatland, much of it in upland areas like the Lake District and North Pennines. There is more carbon stored in these peatlands than in the forests of UK and France put together.

f THE GREAT OUTDOORS

- Great getaways - The mountains of the Lake District are one of the most popular places in the UK for walking and other outdoor activities. Each year more than 12 million people visit the area.

20

21

Lakes, rivers and tarns

· **Fill our taps** 70% of the UK's water resource come from our uplands. We expect it to be of high quality and a lot money is spent by water companies ensuring we get the water we want.
· **Stop flooding** In upland areas rivers following natural watercourses meander across the land and when they get too full they spill onto surrounding fields. This slows the passage of water from the uplands to lower lying areas, buffering the effect of heavy rains and reduced the risk of flooding downstream.
· **Shelter wildlife** Cumbria's lakes, rivers and tarns are home to many special types of wildlife, such as otters and Arctic char. Many of the lakes are deep, cold and have very low nutrient levels, making them particularly unusual and the wildlife within particularly sensitive to change.

Farming

· **Produces food** The sight and sound of the Herdwick and other sheep are familiar to any one who has visited the Lake District and sheep farming has long formed a part of the local economy. Wild foods, such as venison, are also a product from our uplands.
· **Produces landscape** Fell farmers have helped shape the landscape of the Lake District and North Pennines over centuries. Their animals have grazed the fells and the culture of farming is etched into the character of dales and valleys.
· **Supports vegetation** Soil is the basic living resource underpinning the uplands, providing support and stability for plants to grow. Trees, grass, heather, bracken all have their roots firmly anchored in soil. Soil also holds nutrients vital to plant growth and aids the process of decomposition.
· **Controls floods** Uplands soils absorb rainfall, slowly releasing it into the rivers. This controls the amount of water flowing downstream across floodplains, reducing the vulnerability to flooding of towns and villages.

Woodlands

· **Natural protection** Trees protect upland soils from being washed away. Their leaves soften the impact of the falling rain and their roots help to bind the soil. Trees also store carbon.
· **Makes money** Many of Cumbria's woodland have been planted like a crop, to grow and be harvest as an economic commodity. Other woodlands are coppiced and the wood made into hurdles, charcoal, baskets and other products. Woodland can also be used for biofuel.
· **Records the past** Few places record human history quite like woodlands, which in Cumbria were once sites of thriving activity, supplying products for industries as diverse as ironworks and gunpowder factories. Ancient trackways, ruins of buildings and charcoal burning pits are all signs of days gone by.

Biodiversity

· **Arctic leftovers** The uplands of Cumbria are storehouses of genetic diversity, whose cold, isolated environments are a home to a number of rare species found nowhere else in England. Arctic-Alpine plants, like purple saxifrage and mountain sorrel, and cold water fish like the vendace have been here since the ice age.
· **Woodland wildlife** Although less than 10% of Cumbria is wooded, woodlands in the uplands are home to rare wildlife, like red squirrel and nesting osprey and many other animals. The Atlantic oakwoods of the Lake District are especially important for their ferns and lichens.
· **Bog wonders** Peatlands are harsh habitats for wildlife and so have become home to some of the more unusual plants and animals, like carnivorous sundew and the elusive hen harrier.

Peatland

· Stores carbon Upland peatlands are a hugely important store of carbon. The UK has about 10% of the world peatland, much of it in upland areas like the Lake District and North Pennines. There is more carbon stored in these peatlands than in the forests of UK and France put together.

The great outdoors

· Great getaways The mountains of the Lake District are one of the most popular places in the UK for walking and other outdoor activities. Each year more than 12 million people visit the area.

For descriptive pieces on each of these themes, in a series of 'Climate Futures' articles, see the pdf download:

- **Lakes, Rivers and Tarns: What no more picnics?**
- **Farming: Wheat fields in Wasdale?**
- **Woodlands: Farewell to bluebells?**
- **Biodiversity: The great nature experiment**
- **Peatlands: Friend or foe?**
- **The Great Outdoors: Fire in the fells**

The new look Lakeland – climate change could bring new type of farming to the Lake District

Further information

Information, fact and figures for 'Mission Possible' came from a range of sources including:

Agriculture and Climate Change, National Farmers Union (www.nfuonline.com)
Centre for Ecology and Hydrology, Lancaster Environment Centre, Lancaster University (www.lec.lancs.ac.uk)
Climate Change and the Greenhouse Effect - A briefing from the Hadley Centre (www.metoffice.gov.uk)
Climate Change and the Visitor Economy - Challenges and Opportunities for England's Northwest (www.snw.org.uk)
Cumbria Climate Change Strategy (www.cumbriacc.gov.uk)
Department for Environmental Food and Rural Affairs (www.defra.gov.uk)
Dept. for Business Enterprise and Regulatory Reform - UK Energy Sector Indicators 2006 (www.berr.gov.uk)
Forestry Commission Bulletin 125 - Climate Change: Impacts on UK Forests
International Panel on Climate Change Fourth Assessment (www.ipcc.ch)
Lake District Still Waters Partnership
Modelling Natural Resource Responses to Climate Change - A Synthesis for Biodiversity Conservation (www.ukcip.org.uk)
Natural England (www.natural-england.org.uk)
North Pennines Areas of Outstanding Natural Beauty Peatscapes Project (www.northpennines.org.uk)
UK Climate Impacts Programme (www.ukcip.org.uk)
UK Environmental Change Network (www.ecn.ac.uk)

Renewable living - A Polyhome View from 2050
Dr Bob Stewart

Dr Bob Stewart lives on the Isle of Mull off Scotland's West Coast, he has an interest in life, and the way we live. His view from 2050 focuses on Polyhomes or Membrane Envelope Buildings.

Now there are 3400 polyhomes, and there are villages mostly everywhere springing up we hear, or hope. It was different at the start, the subject of jokes made mostly by people disconnected from the real world, and in severe denial. Some of them eventually went for it, sadly a fair number left to find fortune elsewhere on this resource depleted planet. We don't know what happened to them, the Carrington event in 2012, Solar cycle 24, and the now wonderful glinting motes of reflected starlight at night above us means we never will. No near earth satellites work any more, shattered sparkling debris is all that remains, and nobody has the need to send more up, if they ever could get through tumbling debris travelling at 17,000 mph. The kids can't get the idea of not having sparklenight, we've told them often that the night skies were once dark with the odd flash of meteor activity, but they just find that funny. Robbie the photographer says it wasn't really dark then, but who are we to argue, his strange jumbleboxes made from old bits and pieces, work well and record our lives, for that we are grateful.

Maybe it was that year, or the year of burning in 2015 that really got us (and everyone else) motivated, by that time we had 15 families perched on the exposed heather covered landscape, looking out over the western ocean, rough paths between them, at that point we had just enough knowledge to keep things going, powered from the wind and sun. We'd sorted out the hydroponics nutrient feeds from renewable sources, and were thoroughly enjoying the fruits of our efforts when the drought started. That year we realised we had to try and conserve water, who'd have thought it in West Scotland?. The gulf stream weakened, rain stopped late February, and didn't arrive again until late October, by which time large fires had damaged and destroyed millions of acres of terrestrial ecosystems. Across the planet the CO2 levels jumped terribly. It was not so bad here, but stories from elsewhere give the kids nightmares if you tell them.

Many thought it was the end, but the next year was not so badly affected by high pressure systems, and the returning rain turned the land green again. Luckily we had begun to think about water storage for our expanding community and had acquired a number of one tonne sticky-licky pot ale containers from local farmers who no longer had cattle or sheep, though a few had goats. Those went a long way that year, as we had cleaned and filled them without thinking in the winter before, more to hold them down in the winter storms! The burning reached the outskirts of the village, but never penetrated. We were lucky. We had the ponds, each polyhome has one, and 300 tonnes of water can put out any fire.

Nature did not fare well that year, if you lived a static life. The landscape around us had been planted with trees in an effort to re-establish native ecosystems, many of those woodlands perished, so the land returned to treeless for a few decades. The winds were better for windpower afterwards, flowing more smoothly across the land, so we never replaced the forests so close to the village afterwards, but looking back nature had an amazing ability to replenish itself. In the seas the same was true; the great crash that followed the great flu and the indirect effects of the Carrington event meant that fishing was poor for a while. The seas around here regenerated by 2025, and the kids still can't get over our surprise by the size of fish they catch now.

The whales are back again this year, now so many you can hear them sing from the beaches late at night. We saw orcas again, six types of dolphin, mackerel in quantities hard to believe, huge

shoals of herring too. The bounty astonishes, I suppose just in time really, as the oceans have had to take up incredible amounts of CO2 because nobody changed in time.

Now it's 2050, we are 3400 homes, a small number of communities. We have resurrected a lot of the technology nearly lost in the memories of the older ones before they went, basic electronics to control the boring parts of our lives, mechanics and metalwork to share with surrounding communities, many are still making an existence from scavenging the cities. The landscape around is mostly wild, the polyhomes make our food in shelter from whatever weather nature throws at them, we get fresh fruit right through the year, and in small months of winter dried fruit.

Polytunnel 2009 cherry trees ripen in June compared to outside trees that ripen in August.

Of the cities, Glasgow is nearly impassable due to tree growth, as are many of the central belt towns, Edinburgh still has a core of legislature paid for as it was in times past with the bounty of east coast farming. The fall in population has affected everyone, and loss of knowledge, but the wise argue it was going to happen anyway.

For those who travelled to distant lands in search of home, we do not get much news. Everyone has a relative or friend who decided to leave, rather than evolve and we know so little of what became them.

It could be a lot worse. We hear that many parts of the UK failed to thrive because they were not prepared. They did not have those few pioneers who tried against the wave, to start an evolutionary process where humanity at last lived in harmony with their environment. Here those individuals became the mainstay of confidence, an assurance that we would make it intact. With the help of their foresight in purchasing basic materials needed for the transition period years before, everyone had light at night, and a sense of confidence that the future would be better.

We need to thank the polythene chambered cairn builders who instead of throwing scrap polythene milk bottles away, or giving them away, melted them into in one tonne cubes and stored them buried for when we would need pure polyethylene for vessels and polythene for the polyhomes. We need also to thank the dead computer repository as they supplied the old chips we needed to make things work. The waste metal mountain particularly lead from old batteries in a pure form, made the difference between light and none, and the solar cells bought in their thousands in 2009 when there was a bounty, were enough to restart the manufacture of solar cells, luckily we had Lochaline quartz as well.

Things are not so bad now.

Imagineered by Dr Bob Stewart in May 2009

To find out more about Bob's 13 year ongoing experience of building and prototyping Polyhomes or Membrane Envelope Buildings, visit www.bobstewartphotography.com.

Farms and Forests of the Future
Marjan van de Weg, PhD Student, University of Edinburgh

Achieving an 80% reduction is quite an optimistic take on our emissions, but a very inspiring way of thinking about our future. Even if an 80% reduction in carbon emissions sounds utopic from a political or economic perspective (considering political willingness and the costs of putting emission reducing measures in place), I do think that technologically we are well equipped with reaching such a target.

The study of Sokolow and Pakala in 2004 already showed that with current technologies available to us, we are able to stabilize our carbon emissions. The power of this study was that if we are to reduce emissions we need to combine the technologies available to us and not just focus on one or two 'golden bullets'. In practice, this is not always easy, since it takes a broad understanding of a variety of topics and the coordination to implement them as well. Of course, it might just be human nature that we prefer a single solution to a problem. But the danger with wanting simple solutions is that we might consider technologies that can reduce greenhouse gasses by only a few percent, which are not adequate enough to solve our problem, even if they can contribute to the larger sum of reductions.

Therefore, what I would imagine for the Scottish landscape is a combination of factors of change, both in the urban, natural and the agricultural landscape.

To start with the latter, I would imagine that our land use is not only optimised in terms of productivity (both for crops and livestock), but also for reducing greenhouse gas emissions. Currently in 2009 we already have measures in place that reduce methane and N2O emissions, like optimizing cattle's diet and restrictions on fertilizer use. In 2050 we will have even more adaptations to keep farms as efficient as possible. Ploughing regimes will be restricted to avoid deep ploughing and hence restrict CO2 release. Cattle farms will have installed biogenerators to create biogas from the cattle's manure for their own energy use.

Furthermore, other farms will have installed micro-renewables, like solar heating and windmills. Also, new forms of farming will have developed. Since agriculture still causes a lot of biologically active nitrogen to enter our surface waters, there are opportunities to farm algae from this nitrogen rich waste water. These algae can be used to create bio-fuels. Basically, we will have optimised our agriculture in a way that as little CO2, CH4 or N2O will enter our atmosphere.

In the natural landscape, we will combine different functions for our forests. Not only will we have reforested areas to serve as carbon stocks, but this will be combined with recreational purposes. So these 'carbon stock forests' will consist of a variety of native species in order to offer an attractive landscape for hiking, cycling and camping. Other forests will serve for bio-energy purposes. Not for biodiesel, but for creating heating from woodchips. In order to keep the landscape attractive, these won't be hectares of willow mono-cultures, but these forests will be spread through the landscape, maybe even combined with other forest types. Furthermore, all places that offer possibilities for wind farming will have been used now. Though initially people might have resisted since it spoils the landscape, the urgency of reducing green house gas emissions will have higher priorities than the landscape in itself and it will only take a few years for people to get used to it.

In the urban areas, a transition from traditional design to sustainable design will have taken place. Not only will new buildings be energy efficient and use as much renewable energy as possible (e.g. using solar heating and good insulation), we will also 'upcycle' old materials and existing constructions in order to save greenhouse gas emissions from producing new building materials.

Like in agriculture, a major priority in developing new areas (be it for housing or for business parks) will be energy efficiency. New building materials will only be used if the manufacturer can guarantee it will be possible to reuse it in the future (either as wood chip for bioheating, or again as a building material). Also, in the city, people will be stimulated as much as possible to use micro renewables in their homes.

These are the things I would have expected to change on a landscape scale. Of course, it will need a lot of political changes, but overall, from a technological view point we have reasons to be optimistic. There are so many opportunities available to cut our emissions, now it's mostly up to us to change our attitudes and politics in order to make them work.

A Bryologist's View from 2050

Oliver Moore
BTCV Natural Talent

It had been a tough journey indeed to meet the government targets as laid out in 2009 with an 80% reduction in carbon dioxide emissions. Looking back from 2050 (as someone who was investing a bit of time in this area in the first decade of the century). I note the role that bryophytes played in helping to reach this figure.

Many people and eventually the government realised that building wind-farms on sensitive sites in the countryside, particularly on peatland, was actually counter-productive. Peat is primarily formed from the very slow anaerobic decomposition of bog-moss (in the genus *Sphagnum*). This is because of the extremely wet conditions required for *Sphagnum* to thrive and the high acidity induced by the physiology of these organisms, making the ground too hostile for earthworms. Consequently, the organic matter of bogs is not respired away into carbon dioxide and water. Therefore, peat represents locked-up or stored carbon (which is why it has been used as a fuel, albeit an inefficient one, for years). The damage to peatland, in order for turbine platforms to be built and road access to install them, in many cases contributed far more greenhouse gases (including the release of trapped methane gas) than the wind-farm saved, factoring in the amount of energy used to make, transport and maintain the turbines. The government saw sense and went a step further, banning the commercial extraction of peat for the gardening industry and any other land-use that was deleterious to bogs (such as forestry plantations).

Sphagnum Teres

This action raised the profile of bryophytes in general and the valuable role they play within ecosystems. Bryophytes have been around for approximately 400 million years, making them the oldest land plants. They include mosses, liverworts and hornworts – most of which are pioneer species, colonising bark, rocks and bare ground. Consequently, they represent an important stage in succession, modifying the environment enough for higher plants to colonise. There are just over a thousand bryophytes in the British Isles and 87% of these are found in Scotland. In fact, Scotland has about 60% of the European bryophyte flora. Thus, bryophytes make a massive contribution to the biodiversity of Scotland. Even more fascinating is that it is possible to have species usually associated with a tropical climate growing close to those with a more Arctic distribution. Species that favour continental conditions can be found in the drier east of Scotland and those requiring a wet and humid climate are found in the west. Scotland is unique in this respect – due to its geographical location, range of climate, varied topography and geology. Therefore, the bryophyte flora of Scotland is globally important.

It was recognised that mosses and liverworts were vital in increasing the lag time of rivers (by soaking up and retaining vast quantities of rain water in woodland, heathland and bogs). Following catastrophic flooding events in the early 21st century, people started to realise that managing the catchment areas thoughtfully was vital for dealing with the effects of climate change. Allowing moss to thrive and valuing our bogs was crucial in this. It also benefited the plants and animals that thrive in mossy environments.

Sphagnum austinii and Sphagnum capillifolium

The British Trust for Conservation Volunteers (BTCV) Natural Talent scheme played a role in this by encouraging the next generation of bryologists to fight the cause of the lower plant. Through workshops and public guided walks run by the BTCV bryophyte enthusiast an interest was fostered amongst a wider audience about just how beautiful and diverse bryophytes were. BTCV 'Wildlife Counts' events encouraged members of the public to get involved in recording bryophytes – providing useful information about the impacts of climate change. Conservation organisations such as the John Muir Trust and the Royal Society for the Protection of Birds valued the contribution bryophytes made to the overall diversity of their reserves. They too played a role in raising the profile of these captivating organisms. Gradually the importance of bryophytes reached a wider audience and the vast peatlands of Scotland and Ireland were protected and became vital in absorbing and locking up greenhouse gases such as carbon dioxide. (The Scottish government was determined they would not allow the loss of *Sphagnum* through poor management such as drainage, burning and pollution that put paid to many bogs in England).

The expertise of the BTCV bryologist was also put to good use in the monitoring and conservation of bryophytes. Charting the changes in the fascinating bryophyte communities that lie buried in snow for most of the year was integral in demonstrating the impact of global warming. These bryophytes had nowhere else to go beyond the high mountain summits that they hung onto in 2009. At one time they would have been much more widespread but as we have moved out of an ice age they have become more and more restricted to specific locations. Over the years, the famous snow beds of the Cairngorms, many of which used to remain from one year to the next, held snow for a much shorter period each year. In 2009, only one or two sites held snow into September. This allowed common higher plants to flourish at the expense of the rare bryophytes. In the International Year of Biodiversity (2010), this threat to the species-rich snow-bed communities was flagged up once more, but it was so difficult for people to connect with the impacts of their consumer choices. To demonstrate just how significant bryophytes are to the biodiversity of the British Isles – one square centimetre of a snow-bed bryophyte community can hold anything up to thirteen species of moss and liverwort. It was tragic that we had lost these organisms by 2030 due to enhanced global warming.

However, it was always going to be a tough battle to conserve and value bryophytes with a rapidly rising and materialistic human population, placing demands on every inch of space for food, fuel and water. Had the government not introduced incentives for smaller families and restricted what products could be made from a dwindling fuel resource, this would have been impossible.

The Natural Talent scheme was a marvelous idea to address the widening knowledge gap as existing experts reached their retirement. Nonetheless, it was still very difficult for 'graduates' of the scheme to find their way to a career that utilised and built on their expertise. The squeeze on funding to organisations such as Scottish Natural Heritage, meant that from 2010, the production of Red Lists of threatened species were very much in the NGO and voluntary sector (effectively

the experts were unpaid and under-valued). Ironically, as organisms became scarcer, due to pressures on space (habitat loss) from a burgeoning human population and accelerated global warming, more paid vacancies for champions of conservation were created to attempt to assist the survival of rarities (and indeed *Homo sapiens*).

Oliver Moore, BTCV Natural Talent Bryologist 2009-10

From the Natural Talent Blog in 2009
http://btcvnaturaltalent.blogspot.com/
'Oliver Moore, our new Natural Talent Bryologist, has no beard, although he may grow one in future years. However, he can certainly tell you a few things about Bryophytes.'

See http://blogs.btcv.org.uk/natural_talent/2009/06/into-ravine.html

'What I love about my placement is not just the opportunity to develop my expertise in bryophyte identification but also the chance encounters with other wildlife in the Scottish countryside. Being able to feel the soft fronds of beech fern or observe the bright orange glow of Bog Beacons amongst the gungy pools of *Sphagna* were a delight. Seeing an Argent and Sable moth for the first time in my life was a real thrill. Mossing is fun all round - I thoroughly recommend it.'

'In 2050 I hope that I will be fit and well enough to still be working in the field of bryology, since there will almost certainly be no pension. I also hope that I will be mentoring my own apprentice bryologists as that would mean two things at least i) bryophytes still existed and ii) people were interested in them.'

John Muir Trust

The John Muir Trust: A Trustee perspective from 2050
Will Williams

‘My term as a Trustee ended in 2009, just as the debate was hotting up, and one of my final contributions was to urge the John Muir Trust to think more about its position in the context of inevitable climate change. In establishing itself in 1983, the John Muir Trust was unique in promoting a holistic approach to protecting wild land. But the political and public concern 25 years on had moved on to include the need for clean air and water, healthy soils and vibrant biodiversity for natural systems as being critical for sustainable development. Once the dust had settled on the ‘credit crunch’, we found ourselves immersed in the ‘eco-crunch. Climate change adaptation, carbon sequestration, biodiversity restoration, sustainable energy sources, and putting a value on natural capital were some of the big issues of 2010 - 2020.

Although small scale, the John Muir Trust’s positive contribution to these issues as they became increasingly mainstream was a stepping stone to greater appreciation of the role of landscape and its biodiversity. Working collaboratively, a raft of environmental NGOs forged a wider role, beyond one that was sometimes perceived very narrowly in terms of the management and restoration of specific areas of wild land.

Local communities became increasingly engaged in understanding the value of their local landscapes. Models of good practice emerged, despite initial tensions as cultural perspectives and established practices took time to coalesce and focus on common goals. The community energy initiative on Skye and the joint working with the North Harris communities on small scale renewable energy schemes pointed the way towards low carbon lifestyles more in tune with local environments.

The work of the John Muir Award across the whole spectrum of society (as well as schools-based schemes Eco-Schools, Forest Schools and Grounds for Learning) had increasing currency. Politicians recognised the need for nature in daily lives, and the importance of greater engagement and understanding between people of all ages. The ethos of Muir found increasing favour and relevance – ‘everybody needs beauty as well as bread’. It was seen that the spiritual inspiration and creativity that emerges from this programme is the kind of nurturing that restores the interdependence of us and nature. That the John Muir Award also increased social cohesion by engaging directly with socially deprived and ethnic minorities was also key to this success.

In increasing numbers, people sought opportunities to ‘put something back’, and derive the ‘feel good’ factor from making a practical contribution when so many of the environmental problems seemed insurmountable. Such engagement with nature, fostered through the John Muir Trust’s conservation work parties, became the norm, with environmental volunteering becoming more popular than watching football by 2015.

VisitScotland awarded the John Muir Trust its first ‘Iconic Scotland’ award in 2015, recognizing the value of protected landscapes not only for tourism but for national and cultural identity. With its growing contribution to Gross Value Added, through land and woodland management, deer culling, path repairs, fencing etc., this was a significant contribution to the sustainability of rural economies. But so much more than this was the acknowledgement of ‘natural capital’ as a more prominent economic indicator. Wild land became interpreted in financial terms, with significant value placed on its provision of security (eg reducing downstream flooding), its contributions to climate change adaptation, tourism, and provision of healthy natural systems.‘

Back here in 2009, in what is being variously termed ‘the age of excess’, ‘the age of denial’, and ‘the age of stupid’, we should all be asking: How much more could be done to sustain nature and natural systems for the way it underpins quality of life? Will people in 2050 be able to recognise the contribution that the John Muir Trust will have made to the way that wild land and wild areas are valued and integrated into sustainable use and development for future generations?

Will Williams was a Trustee of the John Muir Trust from 2000 – 2009.

A summary of 'The View from 2050' Consultation at John Muir Trust Members' Gathering & AGM 2009

Around 80 John Muir Trust members 'imagineered' themselves into the year 2050 as part of the 2009 AGM discussion sessions. They looked back to 2009 to see how land and nature had contributed to the low carbon society they found themselves in, the governments 80% emission reduction targets having been met. Some approached their task with pessimism - 'Man is the greatest predator on earth, 41 years is too short to change behaviour' - some through spectacles slightly rosier of tint. There certainly was a sense that the world would be a very different place. Here's a collective, summarised 'view from 2050', the topics presented reflecting the balance of their responses.

John Muir Trust members in 2050 recognise the importance of **Behaviour and Values -** how these have been shaped by the natural environment, and how society's attitudes and collective actions have impacted on the planet over the past 41 years. 2009 was seen to be seminal time. The first recession of the century provided a point of change away from capitalist values. This was when the pendulum began to swing towards a moral framework and nature-based spirituality; activism initiated in 2009-10 persuaded a change of direction away from amoral consumerism. Failures in society's values around this time were acknowledged – failure to comprehend and act in the face of obvious disaster; lack of action at government and global levels; lack of individual and community concern or awareness; failure to plan ahead due to short term vision.

However successes subsequently emerged. Global effort and combined thinking increased, leading to larger scale actions and commitments, allied to individual and community effort and concern. Activism and lobbying persuaded society away from consumerism and overconsumption. Looking back, it was important that organisations were actively protecting habitats and wildlife, and promoting values-based awareness of them. Sense of community became increasingly important in building resilience and resource e.g. allotments, farmers' markets, opportunities for skill sharing. Such community-based participation and projects around nature-related values forced an attitudinal change, and encouraged a refreshed moral framework.

The role of nature in **Learning and Education** has been fundamental in achieving the shifts in society's values necessary to achieve reduction targets. It seems obvious now that participation in nature is a fantastic way to help develop children's wholeness, but this wasn't the case in the early 2000s. Certainly the new Scottish Curriculum for Excellence (as it was in 2009) encouraged teachers and children to think for themselves. Children were able to and encouraged to GET OUT (double underlined) – once risk assessments were sorted out. This provided a natural classroom to discuss species and plants – and how they'd changed over the decades since the turn of the century.

Landscape, as it has always done, has rolled with the punches. As the climate changed, so our landscape adapted. It was recognised early in the process that this shouldn't be resisted, and that to try to 'preserve' it would be futile. **Farming** became more intensive and locally focused. Councils adopted 'food plans' to ensure adequate planned use of land, reduced food miles, and less meat eating.

There is less flooding because we have valued and managed our water catchment areas better.

In 2015 we found ways to place proper value on **Natural Capital,** giving a monetary worth to landscape and ecosystem services. They became properly accounted for in land use decisions and their value in contributing to climate change mitigation. As a result, nature and natural

systems featured more significantly in the equation for decisions on land use and development from 2020 onwards.

Two key roles emerged for the **John Muir Trust** - to promote a change in values, and to protect habitats. For its members in 2009, the Trust was ‘a beacon of hope’. Aspects of its work at the time that can now be seen as important include generating scientific data (monitoring and recording baseline information), woodland regeneration, soil protection, deer management – all of which took time to have an impact. Increasingly, though, these practices were replicated in other areas, often through partnership and collaborative work with like-minded organisations such as RSPB. The John Muir Trust held more real meetings, more work parties, and attracted more young people to its cause. Its policies were based on pragmatism rather than nimbyism. It began to exploit web and other technological engagement opportunities to promote sustainability approaches and raise awareness. These approaches combined to result in better protected and improving habitats, wildlife corridors, more personal action (in gardens and allotments, for example) and better understanding and awareness of the fundamental role our landscapes and natural environment had to play in our journey to 2050.

This article is made up of members’ written comments arising from a very short session in relation to the following themes:

- Landscape use: Carbon Capture, Indicator of Change, Farming, Food Security.
- Biodiversity
- Learning & Education
- Woodlands
- Marine
- Behaviour & Values
- Cultural Significance
- Recreation
- Natural Capital
- John Muir Trust

Recreation

A view from the Lodge
George McEwan
Head of Mountaineering, Glenmore Lodge

A couple of key things happened that had a direct impact on Glenmore Lodge. The main one was energy issues and resulting restrictions on travel (in particular air, private car). People had to re-evaluate their means of getting around and where they wanted to get to. There was also a dramatic shift in society's perception of how we interact with our environment in a leisure sense. That was fundamental in the drive within education to get young people involved in outdoor activities and adventurous pursuits – both from a physical point of view and from the perspective of allowing them to be exposed to and to assess risk.

These two main events had a profound effect on how Glenmore Lodge developed in the first half of the twenty first century. Glenmore Lodge is still about developing self-sufficiency and self-reliance – that's always been its ethos – so it was well placed to take the initiative when political will started changing. Glenmore Lodge was ideally positioned to help affect that change…

Looking backwards to look forwards
In some senses the courses now are quite similar to those being run in 1948 – around 100 years ago. Just after World War 2 petrol was rationed, fewer people owned cars and those that did had travel restrictions due to poor road networks. Courses tended to be based in a fairly small geographical area, with the emphasis on adventuring into places. Rather than the journey element being seen as a necessary evil to get you into the places where you did the activity, the journey became incorporated into the experience and the development of skills. In some respects the climbing courses did go back to the very essence of mountaineering, which is journeying through the mountains.

Back in the late 1940's bikes were a much used means of transport. Now, in 2050, mountain biking has become a substantial part of Glenmore Lodge provision, primarily because it offers a great way of getting from A to B. Of course it's a very popular activity that covers a wide range of skill sets. It's adventurous, it's healthy, and Glenmore Lodge is ideally situated in Strathspey in the Cairngorms National Park to take advantage of the numerous world class biking opportunities in the area. None require vehicles to access, allowing people to bike from the front door to these locations.

Initially there was a lot of resistance because people had a perception of the type of outdoor experience they wanted. They wanted to fast track and get an immediate 'hit'. One of the things that started changing was that people were no longer looking just for the quick hit of a high impact experience. The whole idea of building up skill levels and learning about risk and adventure took hold. A more relaxed and integrated programme structure – that didn't involve whizzing around in minibuses from site to site - began to make more sense. People still wanted to go into the outdoors, to go climbing and paddling, but due to the impact extended travel had it just wasn't

feasible to travel vast distances to do this. So more creative programming – and marketing – allowed for a different pace of skills progression, and a stronger journeying element.

Locations
Instructors' roles have evolved, but are still underpinned by a requirement for high levels of technical excellence necessary to be able to go outdoors and to both look after and coach people in the relevant outdoor skills. What has changed is the emphasis on recognising the environments we venture into and the pressure on them. This element of environmental awareness and appreciation of place gradually became in many ways as important as the technical skills used in that environment. How we bike, how we climb, and how we paddle are coached not just from a technical skills perspective, but also from a philosophical perspective, with a strong sustainability message. People learn not just how to operate in the environment and minimise their impact but also to appreciate the places we adventure in. It all goes hand in hand.

Incidentally, as travelling distances became more challenging, the more remote hills became less popular while the mountains close to the densely populated central belt and expanded northern conurbations came under far more pressure.

Sea kayaking/paddling courses – already a strong element of our course provision at the turn of the century – used to travel to the coastal venues. We now have two standing bases, fully equipped with boats and equipment at Inchree and Skye on the West Coast of Scotland. These two bases allow sea kayaking courses to operate from there. Clients can travel up using public transport and virtually get straight into their boat on the sea. Of course this limits the range of locations that are accessible compared to before, but the important thing is that we're teaching the skills that then enable individuals to go off and explore these other venues – within their own abilities and under their own paddle.

An evolved portfolio of courses
We no longer run courses abroad, mainly because there's no more ski touring in the Alps. Irregular weather patterns and unreliable conditions made it impossible to programme trips months in advance. This became an obvious shift after 2015 from an ethical and carbon footprint standpoint as well as the prohibitively high price of flying.

Our winter climbing and mountaineering programme is a shadow of what it was at the start of the twenty first Century. The catastrophic season of 2040, when the temperature only fell below freezing once, required a bailout from SportScotland to refund all the cancelled courses. After that our winter climbing programme was significantly reduced. We still get out and run winter courses as and when the unreliable conditions allow but the writing is on the wall for winter climbing and mountaineering as an activity in Scotland.

As this was a major chunk of our programme it necessitated some of the change of emphasis mentioned earlier. We now focus more on developing leaders and instructors, supporting an outreach network across the UK of skilled and environmentally sensitive instructors. The key, and most direct organisational link that we have is with the Cairngorms National Park Authority. We couldn't operate in isolation, and because we're in the heart of the National Park we work very closely both in promoting access to the landscapes and places in the park and educating people how to make best use of these places and minimise their impact on them.

We're also closely linked to National Governing Bodies such as the Mountaineering Council of Scotland, Scottish Mountain Bike Leaders Association and Scottish Canoe Association and have had to be at the forefront of thinking about how we respond to the changes in society over the past two generations. We've had to ask 'what are hillwalkers, climbers, mountaineers, bikers and

paddlers wanting, and what can we do to service that?' So we now have instructors going to the larger populations to cut down on overall travel requirements. In many ways we're still doing the same job, but we've had to think differently about how best to meet the needs of our participants.

George McEwan MIC has been Senior Instructor and Head of Mountaineering since May 1998 at Glenmore Lodge.

2050: The view from a hostel window?

Amy Boud
YHA John Muir Award Manager

Scene setting: The John Muir Award has invited individuals and organisations to focus our thoughts on 2050, a distant point on the horizon, when targets for reducing man made harmful emissions are met. More specifically, we are asked 'how might our relationship with wild places have changed to support that shift?' This is a great opportunity to visualise how YHA might evolve and contribute.

Presented here is a vision (unofficial!) for that, and what this will mean for our customers on the ground…

2030 – 2050 is a golden era for YHA as business booms in the growth of 'Staycationing'!

- From 2010 onwards, awareness of the challenge of climate change and peak oil leads to ever increasing oil prices and a renewed interest in exploration and travel within the UK. More and more young people come to YHA for their first experience of travel, exploring the wider environment and in the process learning about themselves. In our countryside locations, the often rural and remote feel of hostels is a major draw as people seek opportunities to appreciate and enjoy nature for health and recreation…

- Hostels act as gateways to those landscapes and our activity packages make them more accessible to the increasingly diverse range of people seeking outdoors experiences. Young people are fitter and healthier and better informed than ever about their place in the world and the impact they have on the environment. Through their experience of YHA they are better able to contribute to the change around them as cultures and communities grapple with living more sustainably. They have learned to interact with people from different backgrounds and communities so that they all work together more effectively, seeking more and more from YHA - from conservation volunteering weekends, to wild food and cookery weekends, to adventure experiences and expeditions for families and individuals – and YHA is more sustainable thanks to their involvement, financially and environmentally!

- As part of YHA's responsible business practice we help to manage the increased impact on the landscape through working with local conservation organisations to safeguard the landscape and our cultural heritage, supported by education to influence customer behaviour. Our 'Off the beaten track' marketing campaign reduces the pressure on tourist hotspots and spreads the impact of increased numbers throughout the network. UK based travel is managed by the 'Adventure starts at home' project which encourages people to take part in sponsored events and holidays from their own front door using non car based transport.

YHA strengthens the links between hostel operations and the maintenance of a healthy environment. Our business model becomes an exemplar for businesses far and wide…

- Ecological sustainability is linked closely to financial sustainability and is a thread running through all our work. It is embedded in our organisational culture, rooted in a sense of respect for landscape, cultures and people upon which our business relies. In this way we

continue to fulfil our object to help all, particularly young people to a greater knowledge, love and care for the countryside and appreciation of the cultural values of towns and cities.

All hostels have an Environmental Representative, (as trialled by the North West Environment group in 07/08) who have strong central support resulting in a massive push to reduce energy use, greater energy efficiency, as well as renewable energy projects that sensitively draw on natural potential in the local landscape (Eskdale woodfuel project, which sources all of its wood from a community owned sustainably managed woodland, used as a model).

Hostel grounds are managed for wildlife, and to fuse with the local landscape. Each hostel has its own Biodiversity and Engagement Action Plan to educate hostel visitors and the local community in our work for wildlife, and provide opportunities to get involved.

- Economic savings, due to greater self-sufficiency, allow other eco (and landscape) friendly measures to be implemented, such as reed bed sewage systems that merge into the local landscape. 95% of our hostels are now Green Beacons!

- YHA is a key driver of a range of local projects to create a more sustainable tourism sector, from creation of an effectively marketed shuttle bus network (run on used kitchen oil) to reduce traffic in the countryside and towns and cities…to a 'local purchasing pact' which makes support of local food producers more financially viable.

YHA runs the most successful environmental education programme ever and becomes the UK market leader in provision of out of classroom environmental education…

- Again, the inspiring locations of most hostels are a key factor to this success. We recognise the power these locations have to connect us to something greater than ourselves, bring perspective to our lives on earth, and instil a sense of wonder and stewardship for the planet we live on. Educational packages link this to our own consumption and lifestyle choices in a celebratory and empowering way. Hundreds more people have the opportunity to achieve the John Muir Award and to 'connect with enjoy and care for wild places, in the spirit of fun and adventure'.

- YHA's reinforced and visible commitment to ecological sustainability of hostel operations is the key to making the links and to creating powerful contextual learning opportunities. This meets national curriculum targets that emphasise sense of connection and value of the natural world as a crucial stepping-stone to building sustainable societies. Evaluation of programmes shows strong behaviour change amongst participants, supported by the ongoing relationship and support from the YHA once participants return home.

- Our environmental education expands beyond residential school groups to other organisations and businesses and corporate groups (who need their staff to quickly embrace their new more 'sustainable' direction and YHA presents a leading business model for that). Hostels forge stronger links with local schools as the value of learning outside the classroom is increasingly recognised and venues for that are sought.

www.yha.org.uk

Environmentalism and Climbing: An Uneasy Partnership
Es Tresidder

Adapted article from **UKClimbing.com** –
see http://www.ukclimbing.com/articles/page.php?id=2038 for full article.

Two years ago I was sitting with friends in a high mountain hut in the Bernese Oberland. We had just completed a fantastic day of ski-touring over The Arpelistock, enjoying fresh, deep powder on the descents. We arrived at the hut by early afternoon and played a game of cards in the warmth of the final rays of sun. My thoughts drifted to a university assignment I had postponed to come skiing. The subject was 'alternative energy sources' and even the smallest bit of reading had left me feeling daunted and overwhelmed – not so much for my essay, but for my future.
I voiced my fears:
"What with climate change, do you think we'll still be able to do this in 20 years?"
"What, play cards?" came the first reply.
"No, ski tour."
"No."
An emphatic response, shortly qualified by someone else with
"Maybe... maybe in the same way as you can still go ski-touring in Scotland today, Occasionally and only then by carefully picking your venue."
I was shocked. Up until then I'd assumed that most people managed to avoid the grimness of this sort of thing by simply ignoring the evidence. Yet here we were, a merry band of British ski-tourers, and none of us was prepared to say that they thought ski-touring was going to be a viable alpine sport in two decades' time.

There's a lot of emotive stuff kicking around about climate change, indeed I may be about to add to it, so let's take a cool, calculated look at where we are at, and where we might be heading.

Where we're at
The **Intergovernmental Panel on Climate Change** (IPCC) is the world authority on climate change matters. In its 4th assessment report, published in 2007, it produced updated predictions for climate change impacts under business-as-usual scenarios:
"*Continued GHG emissions at or above current rates would cause further warming and induce many changes in the global climate system during the 21st century that would very likely be larger than those observed during the 20th century."*

Specifically of interest to mountaineers, they predicted that there would be effects of regional climate change *"on some human activities in the Arctic, and in lower-elevation alpine areas (such as mountain sports)."*

So far not too scary, but later they set out projected impacts by region that include, for Europe:
"Mountainous areas will face glacier retreat, reduced snow cover and winter tourism, and extensive species losses (in some areas up to 60% under high emissions scenarios by 2080.)"

The useless emotion
As climbers, we're used to facing uncertain dangers and great challenges. We're used to standing at the bottom of something, and looking up, unsure of whether we will succeed or fail. We're used to tackling problems that to the rest of the world seem insurmountable.
Every climber recognises the paralysing effect of fear; your shaking legs threaten to wobble the toe of your boots off the small edges, your sweaty hands threaten to grease off the rounded holds, your field of vision narrows to just a few degrees and you miss protection opportunities to the side. When you climb in this state success only comes if you are either way below your physical limit, or with a healthy dose of luck. Instead, the ideal state is one of calm, rational detachment, weighing up the dangers and difficulties ahead, mitigating them with available protection, retreating safely if continuing looks too dangerous, and

occasionally, realising you have pushed too far and have no choice but to swallow your fear and push onwards and upwards to safety.

Standing beneath the north face of climate change is a sobering and frightening experience. It becomes more frightening when you realise that we are no longer standing at the bottom of the face, we are some way up it, climbing upwards into the heart of the face and wondering if we have the skills to escape before the storm clouds on the horizon roll in. Frightening as it may be, as in climbing, if we are to successfully tackle the difficulties ahead, then neither fear nor denial will play a useful part in the process.

One of the first people I interviewed was Patagonia founder and legendary climber Yvon Chouinard, who summed this up nicely: "*For me there's no difference between a pessimist who says; "it's all over don't bother doing anything" and an optimist who says; "oh it's all going to be fine don't bother doing anything". Either way nothing gets done."*

CO2 and other greenhouse gases
Carbon Dioxide (CO2) is by no means the only, or even the most powerful, greenhouse gas. However, it is the one that bears most responsibility for climate change caused by human activity. Throughout this article, I use "carbon emissions" as shorthand for all greenhouse gas emissions.

Sacred cows – why flying?
Greenhouse gas emissions come from every corner of our economy. Globally, and even as a nation, flying is accountable for a relatively small percentage of greenhouse gas emissions (just under 5% of global anthropogenic climate forcing, according to a recent study). So why have I picked on flying? If I was to write an article about how we could reduce the greenhouse gas emissions from our whole lives, I might bang on about eating less meat and dairy, switching to organic farming methods, improving the efficiency of our housing and changing energy-use behaviour, but I'm not, I'm writing an article about climate change and how it relates to climbing. Of all the things we do in climbing, travelling by plane has by far the biggest impact.

To see a comparison chart of carbon emissions during travel to Chamonix by car, train and plane - see this UKC News Item.

In addition, there is a philosophical element to my thinking. While there are clear and coherent low-carbon solutions, or at least ideas, for most of the things that constitute a modern lifestyle, there simply aren't any low-carbon solutions to air travel. We know how we could dramatically reduce emissions from road and rail transport through electrification; we know how we could reduce personal car use through improved public transport; there are coherent ideas of how we could move to a form of agriculture involving much lower greenhouse gas emissions; we know a lot about improving the efficiency of our buildings and providing renewable energy. What we lack is a coherent view of how we might substantially reduce the impact of flying – planes are already close to as efficient as they are going to get (because the incentive to minimise fuel costs is already a strong one). Passenger planes already run close to capacity and I'm yet to see a convincing account of how we might replace kerosene with more environmentally benign alternatives. The only idea on the table that holds water is to dramatically reduce the amount we fly.

The present
Four years ago I went to climb the north face of the Eiger. The year before I had been on two overseas trips – one to Kyrgyzstan and one to Lofoten, and had begun to feel uneasy with how wedded my adventures were to high emissions of greenhouse gases. It felt all the more potent that the route I was going to climb on the Eiger was widely reported as being in severe danger itself with the onset of climate change, with the famous "white spider" icefield having disappeared during a recent summer. I felt that flying there, knowing what I knew, would've tainted my whole experience. I decided that from then on I would travel within Europe without flying.

Other mountaineers out there were coming to similar conclusions. UIAGM Guide Rob Collister describes reading *Heat* by George Monbiot (a book that puts forward a reasonably coherent plan of how and why we should reduce UK CO2 emissions by 80%) while in Antarctica, and an uneasiness he had felt for a long time over the amount of flying he was doing coming to a head - "*I just couldn't live with myself and ignore*

the things that he was making clear". Rob asked himself *"if I were never to fly again, would it be such a hardship?"* As a professional guide, deciding to reduce the amount he flew must have felt a big step to take, but he has managed to continue to work as an alpine guide without flying "*I've got it pretty much wired now - it was daunting at first, but once you learn how to negotiate the metro, learn you need to book the Eurostar 110 days in advance, and the European tickets 90 days in advance, or else you're going to pay a fortune, it's ok, I can do it comfortably in one day."*

But things aren't easy for a keen mountaineer wanting to minimise their environmental impact. After four years of climbing exclusively in Europe, I wanted to go further afield, and a trip to Greenland was too tempting to resist. Flying home after the trip, over the Greenland icecap I had a moment perhaps similar to Rob's in Antarctica – looking down on a vital and beautiful part of our planet after visiting by a mode of transport which is contributing to severely threatening its, and our own, future. I decided I would try and extend my no-flying experiment to expeditions outside of Europe. Top of the list were a return to Kyrgyzstan but going overland by train, and a return to Greenland by sailing boat. This resolution was quickly met by the twin problems of not finding a partner who was interested in spending a week on a train to central Asia, and instead receiving a very interesting offer of a trip to Patagonia, somewhere that was much harder to get to without flying.

The future

"I think that the things we do right now will be seen as a real luxury - jet setting around the world to climb and ski mountains. Peak oil will kick in and petroleum products and travel will get very very expensive... We will all do more climbing and skiing closer to home." **Alison Gannett**

"*I think it will become more difficult to get to the places we want to climb. Transcontinental climbing trips will become a rare experience that very few will be able to afford. We'll have to make the best of British and European venues but that's not so bad."* **Steve Taylor**

Why change now?

If we are about to have these dramatic changes forced upon us in the near future, either through the impact of oil production peaking, or through self imposed global restraint, then why should we bother changing what we do on an individual level right now? This question stems from a feeling that whatever we do as individuals is too small to make a difference to a problem that is endemic in every corner of the modern world. You could counter such an assertion by saying that since the problem is caused by the sum of billions of individual actions, it can be solved by persuading billions of people to change their lifestyles, but such an argument is flawed on many levels. The issues are too complex, and there is so much else going on in people's lives that even if it were possible to get everyone to care enough, it would be impossible to get them all educated to such a level that they made an adequately informed low-carbon choice in every single decision in their life.

So if the changes we can enact as individuals, while important are ultimately insufficient, why change now? The first reason is one of conscience. Yvon Chouinard makes an extreme analogy: *"Imagine you were a German living in Nazi Germany, and you didn't agree with what was going on with Hitler and the Nazi movement, but you just went along with everything that was going on and didn't in your own way try to either get out, or do something, like some of the people did, you would end up losing your soul. You have to do something."*

Can I feel happy watching the alpine world that I so love being so damaged by climate change when I know I am still very much a part of the problem? What about when I realise the disappearance of alpine glaciers is going to mean a lot more than it ever can to me to the millions of people living in the lands surrounding the mountains who depend on them for a reliable water supply? What about when I realise that water is essential to all the food produced in the foothills, and the further millions of people this supports? What about when I realise that climate change is going to mean a lot more than just the loss of mountain glaciers?

The second reason is one of credibility. If, as a society, we are going to call for the sorts of solutions necessary to tackle climate change, and if we are going to ask other countries to follow suit, our voices will be much more persuasive if we are already making some of those changes in our own lives.

Towards a new form of adventure
I love adventures. I love sitting down and coming up with a plan that seems so audacious that I giggle at the idea that I'm contemplating it at all. I love working out how to make the success of that plan as likely as possible. I love the moment when you actually start the adventure that you have spent so long dreaming about. I love the single-mindedness when in the midst of the adventure, and I love looking back on adventures, whether or not they were a "success" when measured by the narrow parameters of achieving the initial goal. But I'm also deeply concerned about climate change, and I recognise that the sort of adventures I am currently involved in are impossible to square with a low carbon future.

In Europe we are very lucky - we have a huge variety of rock climbing, alpine climbing, ice and mixed climbing and world-class skiing, all within a day's train journey. Granted, for those wanting to do new routes, there are fewer obvious plums on the big faces of the Alps than the greater ranges, but that doesn't mean an end to adventure; those wanting to push the limits could be doing existing routes faster, or linking them by human power, or doing them in better style... The list is virtually endless. And the greater ranges needn't be completely off limits in a low carbon future – back in the seventies expeditions often travelled overland to the Himalaya, and even to Patagonia by boat. If it's truly adventure you're after, what could be more exciting than starting the adventure from the moment you leave your front door?

As climbers and mountaineers, perhaps it's time we started viewing the challenge of moving to a low-carbon style of adventure as an adventure in itself.

Es Tresidder is an alpinist, mountain runner and environmentalist. He supplements this with lectures about his climbing and running. He is currently the record holder for running the Cuillin ridge on Skye, and climbs and runs to a high level in a variety of disciplines.

His personal webpage is: **Es On Ice**. You can find out more about his environmental consultancy at **leangreenconsulting.co.uk**

School's Out!
by Juliet Robertson

40 years ago I was told that dreams are free
Freeing my dreams meant a lot to me.
For many months I'd harboured a vision
But to tell the world, filled me with derision
I know many would mock, many would despise
My future plans and suggest they were lies
Great big stories of unrealistic expectations
For I wanted children in all of our nations
To be able to learn outdoors everyday
Come rain or shine, what would people say?

Luckily one or two listened and did agree
That my dream, my vision should be a reality.
Because dreaming alone is only a dream
When you dream together, it is like a laser beam
Being switched on – there's focus and direction
For community, education and political action.
We started by growing trees and giving them away for free
Trees create greenspace, people had to see.
All over Scotland school children planted birch, oak and ash
At the edges of their playing fields with very little cash

The habit was made, the natural habitats grew
The impact was positive about what people could do
Year after year, the greening of grounds went on
The roots of our vision were firm and strong
As the children ventured outside, teachers began to see
That this was a much better place to be!
Fresh air is good for the brain, children's focus increased
Staff and kids' stress levels decreased
Attainment improved, absence rates dropped
The decline in school standards was permanently stopped.

We wrote to politicians, we begged and we pleaded
Eventually they listened and that plan succeeded
In 2030, an Act of Parliament was passed
The "Leave No Child Inside" Law came about at last!
This innovative motion clearly stated
The indoor classroom was overrated
A programme of change was put in place
A long term plan to help teachers face
The prospect of spending 50% time outdoors
Regardless of the age or stage of the children of course!

Digital technology, now solar powered and free
Was used to share lots of ideas you see
Cross-curricular and developed with a sense of place
The children loved the freedom and feeling of space!
Explorations and adventures were a natural part of lessons
That sometimes lasted more than several sessions
Over the years, schools moved slowly outside
Into the woods, onto the beaches – no place to hide
One school was even set up on a boat
Learning through sailing – whilst keeping afloat!

So in 2050 forty years on,
Outdoor schools are still going strong
It is quite ironic to think that my dream did last
That children stuck inside is a thing of the past
For the first children planting trees outdoors
Became responsible caring adults – of course!
Who were keen to ensure
Learning outside forevermore.

Juliet Robertson
Creative STAR Learning Company.
Blog: http://creativestarlearning.blogspot.com

New Media: Navigating white noise
Toby Clark, John Muir Award Manager, West Scotland

Toby Clark looks back at the new media landscape in 2009….
With 80% of UK households having access to the internet, and most new mobile phones having web browser functions, the shift from paper to pixels in 2009 was in full swing. Just as television allowed individuals to speak to millions of viewers thousands of miles away, social media such as MySpace, YouTube, Twitter and FaceBook gave people the opportunity to interact with anyone anywhere as long as they had access to the internet.

This should have been good news for people, groups, organisations and companies using 'new' media to communicate their message. In 2009, however, people were already looking for alternatives, complaining of 'white noise' - too many shouters, too few ears. Perhaps it was the sheer volume of people flocking to web sites to poke, tweet, and blog that lost browsers in a soup of irritating shout-outs and big-ups.

Filtering noise
An example of the reaction to this web 'white noise' was TrueTube, which described itself as 'technology to help you think, speak out and act on important issues happening in the real world'. It claimed to be an antidote to the 'passive, voyeuristic internet world where the tendency is to look, laugh, play & judge without doing or saying anything of any consequence' (www.truetube.co.uk).

Adding value
Others looked to tackle the emerging juxtaposition between predominantly indoor sedentary websurfing and celebrating the great outdoors. PlaceBook Scotland aimed to capture the spirit or special sense of a place, in words, pictures, videos and music. It looked to add value to our first hand experiences of wild places rather than replace them with online experiences (www.placebookscotland.com).

Supporting rather than replacing
Adding value to learning outdoors rather than replacing it was very much how Learning Teaching Scotland (LTS) viewed Glow, the world's first national intranet for education. LTS saw Glow as not a separate curriculum element for Information Technology, but a cross-curricular support and teaching resource (www.ltscotland.org.uk/glowscotland/).

Despite the concerns about a virtual world replacing real world learning, more and more people gathered and shared information with their communities through new evolving media ecosystems. But what was the cost to this?

Internet giants Google claimed that the energy cost was very small, producing 0.2g of carbon per search, and that efficiencies afforded by networking technologies - faster communications, fewer trips made by car, more productive working - far outweighed the energy footprint of the internet. The Climate Group, which consists of 40 corporations and numerous local and national governments, supported this technologically smarter way of working and suggested energyaware buildings and more efficient energy grids could help reduce emissions by 15% overall.

In 2009 British Gas piloted a programme that allowed its customers to control their home heating systems via mobile phones (Source: Cleantech.com). With heating taking up nearly 50 per cent of the total energy consumption in the UK, technology is being increasingly used to shape behaviour and help form solutions to the more wasteful aspects of our lives.

Environmental engagement
Throughout the early 2000s, behaviourists recognised the importance of a connection with the natural world as a means of engaging people with wider environmental issues. Having first hand

experiences of wild places local to you was seen as vital in helping people make sense of the global natural picture. Therefore technology was used in more innovative and creative ways.

Countryside Rangers at the Tywi Valley Landscape Project texted messages to visitors to help interpret its biodiversity and landscape. A FaceBook profile kept the Staffordshire Wildlife Trust in contact with youth volunteer rangers. Educators were also engaging walking audiences with natural and social history trails via ipod and mp3 downloads (www.audiotrails.co.uk).

However, this interaction was not a one way street. Journalists and social commentators were increasingly seeking and receiving reviews and comments from readers. More often the final sentence of an article signalled the beginning of a debate. No longer was journalism passively consumed, it was now something to actively respond to (www.guardian.co.uk/commentisfree/2009/feb/10/severn-barrage-environment).

Improved, faster, and cheaper new media technology captured the imaginations of independent film makers too. 2009 witnessed the prophetic 'Age Of Stupid' (www.ageofstupid.net), followed by the Yann Arthus Bertrand film 'Home' (www.home-2009.com). Both highlighted that the Earth, the place we call home, was in trouble, and we were largely responsible. They both encouraged active debate and campaign.

How have we got to today?
From our 2050 perspective it is perhaps difficult to remember that there was a time when you could not connect with every individual on the planet on a personal level. Can you imagine asking UK people in 2009 if they have any trouble receiving energy from a megawatt power-station?

They would laugh. Just as we now laugh at the idea of being asked if we have trouble receiving information. We take it for granted that information has always been pumped to us directly, to the point where we rarely question how it has got to us.

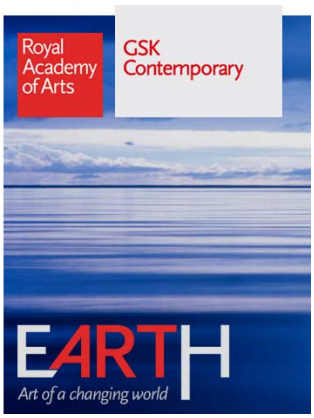
We smile too at laptop cases and mobile telephones, a throw-back to when portable still meant you carried something. It was 2015 when the last electronic buttons were produced; life was pressing enough without the need to press. Your Nan was the only one making phone calls by 2020, and two years later the telecommunication network was as obsolete as bees (consigned to the electronic nature archive www.arkive.org). Satellite bleep and wireless hum buzzed across the airwaves instead.

By 2025 we were drowning in information and starving of knowledge, but slowly technology was no longer the focus for our future. We began to realize that the information itself was more valuable, and was in danger of being sunk. The principle of editorial impartiality was worth fighting for. Independent news groups rafted together to distribute unbiased information so that people could begin to regain control of their own lives. Transparent and trusted moderation responsibilities now acted as a faithful compass for people on a sea of information uncertainty.

Lessons
Returning to 2009, and the move from paper to pixels. The signs were that this shift was already not going unchecked, people were questioning the purpose, quality and amount of communication and information. They questioned the culture and lifestyle associated with surfing the net, and the real energy cost involved. However, it was clear that the new media age was gathering momentum, and that technology would be embraced as a useful tool to assist more sustainable lifestyles.

Looking back, it is clear now that what makes new media communication work, are the facts, relevant stories, and impartiality. These beacons must remain as people navigate through the white noise soup if the full potential of this technology is to be realised.

Reflections on 'Earth: Art of a changing world' exhibition, Royal Academy of Arts
David Buckland, Edith Devaney and Kathleen Soriano, Exhibition Curators



The works in this exhibition were an immediate creative response to what was arguably the greatest challenge humankind has ever faced: anthropogenic climate change. This piece offers a reflection on the theme, and the role of the artist:

'By attempting to navigate the complexities of the problem, the artists bridged reason and intuition. They were helping to translate the findings of the scientific community, usually elucidated as data and often mystifying to the greater public, into a comprehensible reality.'

Artists have traditionally engaged with, reflected upon and been inspired by important events in our history. In 2009-2010, through its 'Earth: Art of a changing world' exhibition, the Royal Academy set out to explore the challenges posed by climate change by bringing together works of art by 35 leading contemporary artists from around the world. They were invited to respond to what was perceived as the most pressing concern of our time , an issue that was forcing us to engage with our relationship with our planet, and one that highlights the role of the artist as *provocateur,* upholder of the collective conscience, observer.

Many addressed climate change directly; others allowed the subject to find a resonance within their work. By connecting issue with art and presenting works of art whose themes are powerful and thought-provoking, the exhibition aimed to translate notions that can appear scientific and abstract into human terms.

The work of the 35 artists represented a cultural response to the way that human activity was affecting the natural balance and physical cycles of our planet. A wide range of subject-matter was covered within the overall theme; from planetary equilibrium and perceived security, to the role of the artist as interpreter, recorder of disaster and *provocateur*, holding up a mirror to mankind. Each work was a narrative on a human scale – emotional, eloquent, often interventional – and each offered a unique vision.

In 2009 it was too soon to say whether these works would signify a change in the role of the artist in society. There was no doubt, however, that a cultural shift in priorities was required for the human race to address the problems facing its overheating planet. Historically, whenever there has been such a cultural shift, artists would be found working, thriving on the mobility and liquidity of human change. The works in this exhibition were an immediate creative response to what was arguably the greatest challenge humankind has ever faced: anthropogenic climate change.

In curating this landmark exhibition, we were surprised and excited to discover how many international artists had been independently focussing their attention on the challenge of climate change. It is clear that they had been quick to embrace and respond to the theme of the exhibition, and indeed that artists had been engaging with it for many years, long before it became as familiar as it is to us today.

Few of the artists showing in the exhibition held the reality of climate change at the centre of their practice. They were not activists *per se.* But each had been moved to address this defining issue of our time. From Gormley's multitude of earthenware figures that stared out their challenge from

the very substance of the planet itself, to Ackroyd & Harvey's works on carbon transformation, to Burtynsky's chilling reflections on the scale of human impact, and Parker's floating burnt forest – each brought a human insight and dimension to a question otherwise unquantifiable in its magnitude.

Our planet is surrounded by a very thin layer of atmosphere, barely 20 miles thick. The composition of this blanket of gases is unique in the solar system in that it has permitted life to evolve and, over the past 10,000 years, has enabled human civilisation to flourish. Our atmosphere is a mix of mostly oxygen, hydrogen and nitrogen, with a very small but essential quantity of the greenhouse gas carbon dioxide. Over hundreds of millennia, the earth's ecosystems have produced a combustible by-product in the form of oil, coal, gas and frozen methane. Human expansion and wealth creation over the previous two centuries had depended on burning these resources to produce 'free' energy to fuel runaway population growth and activity. The exhibition was held at a time that it was established that 6.5 billion human beings leading a generally polluting lifestyle had the capability to inflict serious damage to our seas, land and atmosphere, upon which living organisms rely. We were, as Ian McEwan aptly put it in his contribution, "spoiling our nest" on an epic scale. We knew that the path of inertia, submission and denial would reap disaster, for our children to inherit. Worldwide, a strengthening body of action was mitigating the causes and effects of the crisis.

The artists showing in this exhibition were not jumping on a political bandwagon of outrage but rather narrated and made physical on a human scale a cultural response to the climate challenge. By attempting to navigate the complexities of the problem, the artists bridged reason and intuition. They were helping to translate the findings of the scientific community, usually elucidated as data and often mystifying to the greater public, into a comprehensible reality. As curators we took into account these complexities and the artistic diversity that existed, devising a flexible narrative in which to accommodate different types of work.

An issue-based, thematic exhibition fitted perfectly into The Royal Academy's remit as the home of artistic creativity and debate in this country. The presentation of 'Earth: Art of a changing world' was both timely and relevant to our lives in 2009-2010.

Different sections of the exhibition explored broad themes. These included:

- Perceived Reality
In the 200 years since the Industrial Revolution, human endeavour achieved extraordinary advances in science, medicine, culture and technology. Our confidence in the future and our dependence upon 'progress' had continued unwaveringly and unquestioningly.

In this section of the exhibition, works of art invoked a dialogue around our confidence that our existence was secure, as we imagined a world that responded to our authority and control. They encouraged a deeper consideration of our relationship with Earth's stability and of our duty of care towards our planet.

- Re-reality
As the world and our sense of beauty became redefined by the impact of climate change, artists had begun to envision different futures and altered realities. Future generations would have no choice but to confront the results of climate change, and the challenge for them would be to find ways of living hopefully, within a new, altered reality.

As human knowledge and understanding had grown, several changes in our view of the world had taken place. A defining moment in the modern era came in December 1968, with the Apollo 8

mission. The images of Earth taken from that manned space flight around the Moon indelibly established in hundreds of millions of minds a new awareness of the beauty and fragility of the planet. Climate change was now moving us inexorably towards a second defining moment, as it forced us to re-evaluate our passed and present responsibilities towards the future.

Specific exhibits in 'Earth: Art of a changing world'

Beuys's Acorns
Heather Ackroyd and Dan Harvey

Extract from Ackroyd and Harvey contribution to booklet of Curators' Notes, 2009

'Beuys, an artist and a teacher, was hugely influential among artists of the postwar generation. Through his multi-faceted practice he brokered new relations between art, performance, teaching, ecology, economics, politics and philosophy. In the 1970s he was also a founding member of the fledgling German Green Party, refusing to draw a line between art and life. To our mind his most inspiring work is *7,000 Oaks*, a time-based sculpture for which Beuys initiated the planting of 7,000 trees, each marked by a basalt column, a monumental artwork living and breathing with generations of people as they pass through life.

In its formative stages our own incipient project *Beuys's Acorns* is dedicated to growing the saplings in parallel with ongoing research into the cultural, biological and climatic significance of trees.

Dr Roland Ennos of the University of Manchester has shown that what is known as the 'urban heat island' – higher temperatures in urban areas – can be significantly reduced by a ten-percent increase in green space and trees in cities and towns. As water evaporates from the leaves of trees it cools the surrounding air reducing the air temperature by up to four degrees Celsius. More trees would help mitigate the predicted rise in the Earth's temperature over the next 75 years caused by global warming. This is compelling research in light of the acknowledged loss of too many veteran trees from our urban landscapes.

The idea that city planning could include planting many more trees reflects Beuys's vision of towns and cities becoming 'forest-like'. He saw *7000 Oaks* as a catalyst for change, a symbolic start of the transformation of consciousness, of life, of society, of the whole ecological system of which the biosphere as a healthy atmosphere would be consistent with human needs. Beuys's aesthetics could be regarded as remaining as sensitive to the living tissue that covers and nourishes the earth as to the skin that covers our own flesh.

Twenty-three years after Beuys's death in 1986 the world picture is deeply troubling. Bio-diversity is being lost at an overwhelming rate and 70% of biologists believe that we are in the early stages of a mass global extinction caused by habitat degradation, over-exploitation, agricultural monocultures, human-borne invasive species and human-induced climate change. As climate emissions increase, vast areas of primal forest – the lungs of the planet – are razed to make way for mechanised plantations.

The seismic shift that is needed in out attitude towards the planet is akin to the revolution brought about by Copernicus when he demonstrated that the earth moves around the Sun. The gathering call is to change our perspective from a human-centred mechanistic one to a more holistic, ecological world view.'

‘What if?’
by Lemn Sissay

A lost number in the equation
A simple understandable miscalculation
And what if, on the basis of that
The world as we know it changed the matter of fact

Let me get it right. What if we got it wrong?
What if we weakened ourselves getting strong
What if we found in the ground a vial of proof
What if the foundations missed a vital truth

What if the industrial dream sold us out from within
What if our impenetrable defence sealed us in
What if our wanting more was making less
What if all this wasn’t progress

Let me get it right. What if we got it wrong?
What if we weakened ourselves getting strong
What if our wanting more was making less
What if all this wasn’t progress

What if the disappearing river of Eritrea
The rising tides and encroaching fear
What if the tear inside the protective skin
Of earth was trying to tell us something

Let me get it right. What if we got it wrong?
What if we weakened ourselves getting strong
What if the message carried in the wind
Was saying something

From butterfly wings to the hurricane
It is the small things that make big change
What if the question towards the end of the lease is
No longer the origin but the end of the species

Let me get it right. What if we got it wrong?
What if we weakened ourselves getting strong
What if the message carried in the wind
Was saying something.

3 minute video at:
www.darwinoriginals.co.uk/LemnSissay.html

www.lemnsissay.com

Reflections on the 'Creative Climate' Decade: 2010-2020
Dr Joe Smith, Senior Lecturer in Environment,
Open University, and Director of Creative Climate
February 2010

Creative Climate is an ambitious 10-year diary project that will record how people understand and respond to environmental change over the next decade.

'Creative Climate is a ten year media, participation and research project. It aims to generate a groundbreaking longitudinal record of how societies learn about, respond to, and learn to live with global environmental change. In its tone, dynamism and interactivity it seeks to overcome some of the weaknesses of other prominent representations of environmental change.
The project will present and archive a body of stories of people's experiences and experiments with environmental change over a ten year period (from 2009). A body of these stories will involve people with specialist knowledge, or who work in institutions that are particularly significant for understanding and action on climate change and biodiversity loss. I am integrating social science research objectives into the project in order to generate new knowledge about interactivity, participation and environmental change. Creative Climate is founded in partnerships within and beyond The Open University.'
Extract from The Open University Staff Directory: Joe Smith, 2009.

We're in 2050, four decades on from the conception of 'Creative Climate'.
What was the legacy of the decade long Creative Climate initiative?

My hope at the outset was that, in documenting a very wide range of creative, determined and imaginative responses to environmental change issues, we did three things:

- helped to accelerate change
- built confidence in the idea that we can run the economy and society differently,
- made space for stories that didn't start from fearfulness or threats about the future but rather started from highlighting humanity's fantastic ability to pull a rabbit out of the hat when under pressure and when applying our best talents.

The project was set up to be about developing realistic and honest accounts of human capabilities, and in doing so to build up some confidence around the need for faster change. It aimed to counterbalance some of the environmental messages of the preceding 10-20 years that were far too focused on fear.

Hosting by the Open University provided a secondary but important dimension to Creative Climate. As both a teaching and a research institution it provided an opportunity to further promote our freely available environmental learning. This is pitched at introductory but still higher educational appropriate to adults, globally, any time anywhere. On the research side it offered a space within which we could experiment with new ways of documenting environmental and social change - as researchers, as collaborators with other researchers, and with other kinds of documentary makers.

What was the inspiration for Creative Climate?

The 'view from 2050' exercise was looking 40 years ahead of its baseline of 2009/2010. One of the inspirations for us was looking back 60-70 years from 2010 – to the '30s and 40s and the Mass Observation Project – a radical anthropology project that told a rich and full story of Britons and a changing Britain. (1)

I was very inspired by the way that they set out to apply all that you could, in terms of audio, photography, and film to document the country in a fresh way. I was interested in applying our new found democracy of documentation in the early twenty first century. Digital media was so cheap and widely available, and the web was a convenient place for people to hold their thoughts, feelings and reflections. Even aside from the environmental aspect I found it fascinating that we could use the media that we had available to us to give an account of ourselves, whether a Cabinet Minister or a grassroots village campaigner.

At its outset, the Creative Climate project called 2010-2020 a 'critical decade'. Why?

In terms of a timescale for a project that is comprehensible – to an institution and to individuals who created the project - 10 years felt about a maximum. It's unusual for any project to stretch that long in its ambition because of job insecurity and institutional change, amongst other things. At the same time there were lots of practical considerations. It's a round number – media can cope with round numbers.

But actually, if you put all that to one side, it was clear that there were some things that could come into play to create better chances of making big progress than ever before. Looking at climate change, the fact that we started the decade with China, the US, Australia, Brazil, all in a new place on the topic, all willing to talk about emissions reductions (or avoidance of projected emissions) - these were big steps forward at the time. We started the decade with a sense of possibility. It was politically difficult, but there was a sense of possibility.

At the time of its UN-designated 'International Year' status, 2010, Biodiversity was a kind of Cinderella. My hope then was that across the decade we'd begin to see people really make the joins between questions about urbanisation, biodiversity loss, resource depletion and climate change. People did begin to 'fill out' what that word 'sustainability' meant. People sought cultural references that lifted 'sustainability' out of the grip of the technocrats and planners. We all needed to find a way of imagining what sustainability might mean, and to move towards it.

My feeling at the time was that this was a decade that, with the wind behind us, the historians of 2050 would identify as a very important stretch in getting to grips with these key issues.

How would you summarise our attitudes to landscape and nature, and how have they changed since 2010? Do we value them differently in 2050?

As we started looking at what might motivate people to help us put together a working majority for sustainability then there were clearly lots of different factors and interpretations. The economists' attempts to put numbers on this had always been inadequate, and the honest ones were beginning to admit that themselves at this time. There's a bit more to it than that.

The way we think of humans as interdependent with the fate of the natural world – that we're in it and we're of it – that was actually a really revolutionary thought that we hadn't fully absorbed. This was a period in which we began to realise the potential for that thought to really roll out. We began to think of that word landscape treated not just as a distant, separate entity. When I was

growing up ‘landscape’ meant the Derbyshire Peak District or being out in the Fens or north Norfolk Coast. Something valued, but either through being in it or thinking of it as ‘protected’. But increasingly we came to connect ourselves with the idea much more vigorously. And we also came to think in more fluid ways about landscape, and to value cities as both natural and cultural. Not all of this was new thinking in the 21st century: it had simply been forgotten. In my home town of Derby visionary philanthropists created the world’s first public park. By the 1980s and ’90s that park had become a scary and neglected wasteland.

At the heart of rethinking what quality of life is, day to day, we increasingly explored an idea of humans constantly getting nourished by that idea of interconnection and interdependence, whether from strolling through Derby Arboretum to get to work or play or school, or cycling along roads that put such ‘green modes’ first.

A powerful aspiration at the time was for us to reach 2050 having managed to place human beings ‘inside’ natural landscapes – to bring an idea of the value of the natural world closer to everyday lives whether those landscapes are near or far.

Profile – Dr Joe Smith

‘All of my work seeks to promote better understanding of - and action on - global environmental change issues. This breaks down into three areas of research and commentary: the history of environmental politics; public engagement and the media, and the politics of consumption. These three areas are not separate – each informs the others. My research practice across these areas has a strongly collaborative and interdisciplinary quality and an experimental edge.

In much of my work I have combined thinking and writing about these issues with direct engagement. Hence I draw on the term ‘action research’ to describe projects that generate research but are simultaneously designed to make a difference to the way the world is. These include a long running strand of work on media decision-making and environment (1996-), the experimental public engagement and research project Interdependence Day (2006-) and the communications, participation and research project Creative Climate (2009-) (a ‘Mass Observation’ of climate change over ten years, 2010-2020). All of these seek, in different but related ways, to advance public understanding and debate about environmental change, and to place them within the context of wider political, social and cultural change.

Together these strands of research contribute to an understanding of the dynamic relations between media, publics, democratic institutions and environmental change.

I teach environmental politics at both undergraduate and Masters level, and have four current or recent PhD students in the areas of environmental politics, and cultural work on climate change. In addition to my academic research I write popular materials on environmental issues and have consulted on numerous broadcast projects on BBC1, BBC2, BBC4 and Radio 4 over the last ten years.

(1) The Mass Observation Archive specialises in material about everyday life in Britain. It contains papers generated by the original Mass Observation social research organisation (1937 to early 1950s), and newer material collected continuously since 1981. The Archive is in the care of the University of Sussex and is housed in the Library in Special Collections. www.massobs.org.uk

http://www.open2.net/creativeclimate/index.html

‘Where Now ‘Hell and High Water’?’
Alastair McIntosh, Fellow of the Centre for Human Ecology

Extracts from article published in ECOS – Journal of the British Association of Nature Conservationists, Vol. 30 No. 3/4, December 2009

Full article at www.alastairmcintosh.com

In “Hell and High Water” Alastair McIntosh described the harrowing process of being asked to write a book that spoke truths about climate change and the human condition challenging even to the green movement. ECOS asked him to reflect on where he currently sees the cutting edges of the debate.

Extract:
Science – Rigorous or Adventurous?
Fifteen months ago my book *Hell and High Water: Climate Change, Hope and the Human Condition* was published by Birlinn. Now into its second edition, the editor of ECOS has invited me to write a personal take on how I see the debate moving.

First some background on the book. Part One is a run-of-the-mill take on climate science with illustrative anecdotes and a chapter that assesses the democratic latitude for radical political action. The science I use is the mainstream consensus where, “if it ain’t peer reviewed, it ain’t science.” I take as my baseline the evaluations of bodies that have a reputation worth losing such as the IPCC, the Royal Society and the Met Office. I acknowledge but generally keep some distance from the climate change sceptics on the one hand, and those with a radical scientific position such as Lovelock and Hansen on the other. Although I have a first degree in Earth sciences I am not a climate change scientist. My main interest is to take the consensus view on climate change and employ it as a springboard to much deeper questions about the human condition, as developed in Part 2 of the book.

Having said that, it is difficult to give a public lecture on climate change without being pushed to give a view on perspectives that deviate from mainstream science – the position of climate change “sceptics”, “contrarians” or “denialists”. My first response is to say that I hope they might be right! Beyond that, I’m just not able to debate in depth because, as a generalist human ecologist, I just don’t understand the arguments on either side deeply enough. Often I’ll listen to a contrarian argument and find it very persuasive. But when I listen to an informed counter-perspective the glamour falls away. I have observed that much contrarian science, even when based on reputably peer-reviewed work, stands on a narrow evidential base. But we need to remind ourselves that in science, as we know from biology, one swallow doesn’t make a summer. Solid science must be built on findings that triangulate and replicate.

For these reasons I find myself weighing up the credibility of published authorities as much as the ostensible logic of their arguments. I therefore try and avoid basing my work on expertise that’s outside my bounds of ability to appraise. For example, when challenged from the floor during a public lecture with the theory that global warming is caused not by CO_2 but by solar activity, I usually don’t try to tackle the objection head on. Instead, I defer to a higher court, such as the UK Met Office’s recent climate change factsheet. This refers to Myth No. 1 of climate change as being the “purely speculative and unquantified” notion that “the intensity of cosmic rays changes climate.”[i] If the Met Office boffins are happy to sit with that on their web site, then who am I, and usually my interrogator too, to argue otherwise?

The weakness of this approach is that can appear to be an evasion of doing my own scientific thinking. That must be infuriating to my critics, even though I'm not doing it to wind them up. But the strength of such prudence is that it gives a springboard for deeper argument; if I might mix my metaphor perhaps all too fittingly, a *solid springboard* from which to address hope and the human condition in Part 2. The result is that a number of reviewers (including climate change scientists) have praised HHW for its grasp and communication of the science. BBC Radio 4's *Open Book* called it "very scientifically rigorous." That's what I wanted: rigorous, but not adventurous in its presentation on which to base the psychological and spiritual issues that I wanted to tackle in Part 2.

Extract:
Confusion of Focus
But I don't think it's just my pushing out of the spiritual boat – whether skippered by the faeries or otherwise - that disturbs a few of my readers. It's also the tectonic question – the one that also disturbs me - of whether there actually is a politically and technically achievable way out of the situation we're in.

In London last March just before the G20 protests I gave a talk that ruffled the feathers of some of the audience. I was challenged as to what I thought of the planned G20 demo and I replied, "Well, who are you going to be marching with? Will it be the environmentalists, urging zero or negative growth to save the planet, or will it be the trade unions, urging the stimulation of growth to save jobs?"

Ideally this should be a false dichotomy. Ideally we should all be advancing to a "green new deal" that both saves the Earth and produces material wellbeing. My worry is that the socio-environmental backdrop to the green movement has changed in ways that have confused our focus. We find ourselves straddled between adjectives of the ideals and nouns expressed as some brutal numbers. As the Cambridge physicist Professor David MacKay says in his acclaimed new book:

I'm concerned about cutting UK emissions of twaddle – twaddle about sustainable energy. Everyone says getting off fossil fuels is important, and we're all encouraged to "make a difference," but many of the things that allegedly make a difference don't add up.[iv]

Extract:
The Happy-Clappy Green Bubble
Consider, for example, the current proposal to upgrade the railway line between London and Scotland and halve the journey time. Superficially it makes for impeccable green logic. Astonishingly, the rail:air market share on this route is 15% to 85%. That means, leaving aside those who travel by road, about six times as many people fly as go by train. A faster line should change that ratio and presumably cut carbon emissions.

However, the Department of Transport has now released findings that the embodied energy required to upgrade the line, including 170 new bridges and 34 miles of tunnels (more than the Channel Tunnel), would take 60 years to repay its own embodied carbon footprint. What's more, the cost, which started off at £12 billion is now widely pitched at £34 billion, and a specialist rail technology website brings it in at £60 billion.[v] Even if we take the £34 billion figure, that's the same as the annual government cost of running Scotland, or the same as the entire British defence budget for a year – including our nukes and Afghanistan! We're therefore left with the question: how many such "green" projects could the nation afford? The Severn Barrage loosely at £14 billion … and what else? And if we assume that the mainstream climate science is broadly

right, what happens when the carbon-saving benefits of such projects simply aren't "in time" to stop the anticipated "tipping points" of runaway climate change?

I believe there's a historical problem here in the green mindset. It was one of the hard knocks I confirmed while writing HHW and it goes back half a century. As a green movement (if I might generalise about "us"), we tend to circulate in what I call the "green bubble". Faced with the burden of ecological awareness we mutually buoy up optimism. Greens maybe never get much more than 5% of the vote, yet we're often like one of those fringe "happy-clappy" churches where, "if only" everyone stopped doing this, and started doing that, we'd all be "saved".

What easily slips our notice is that many of our cherished green scenarios took shape in the 1960s. Their roots extend even further – remember that the like of Frank Fraser Darling published his seminal back-to-the-land stuff actually during World War 2. We've thereby been left imprinted by the sustainable green idyll that the American artist, R. Crumb, in one of his cartoon scenarios called "Ecotopia".[vi] We've been enraptured, and rightly so, because it's a beautiful vision. But what's not occurred to us, until now when the world is asking us to stand and deliver on a green new deal that politically stacks up, is that it no longer adds up. It might have done so if our society had chosen those pathways immediately following World War II when frugality (as distinct from destitution) was no stranger to the body politic. But instead we chose Harold Wilson's "white heat of technology" – the scenario that Crumb represents as his high tech energy intensive "Futurama".

Now that we're faced with climate change we're trying to reverse engineer our way back to Ecotopia. The wind farm debate says it all. What was and is a perfect component of a back to the land solution becomes a recipe for turning the landscapes that we need to feed the soul into whirling industrial monstrosities. It's the scale that's gone wrong, and as a green movement we've only woken up to it after it's split us down the middle, and in my own case, divided me within myself as well. For the mainstream agencies the name of the game is all the "green new deal" understood not in terms of an holistic human ecology, but in terms of sustained growth. For example, UNEP's *Global Green New Deal Policy Brief* of March 2009 explicitly calls for "future sustainability, while stimulating the economy for growth, jobs and tackling poverty."[vii] Talk to the people who write such reports as I do, and they'll tell you they have to work within the politically acceptable ballpark. Also, I suspect, within the ballpark of their own highly-salaried comfort zones.

The happy-clappy wing of the green movement colludes with this "because we must stay optimistic". Thus, for example, my confidence in the scientific peer review process of the esteemed Worldwatch Institute was severely dented by their 2009 *State of the World* report, "Into a Warming World." Here a chapter by Betsy Taylor, "Not Too Late to Act", looks back from 2025 where "we defied the doomsday prophets" by an array of green hopeful fixes. Included is one where, "Pedestrians generate electricity just by walking on energy-generating sidewalks, while health clubs produce electricity through treadmills and aerobics classes."[viii]

Leaving aside such abject green wackiness that eschews all sense of thermodynamic quantification, my general point is that pathways of possibility have closed and a one-way ratchet has tightened. We've only been able to garner a world of nearly 7 billion people, half of them urban, because carbon-intensive energy drives a high-velocity just-in-time commodity supply system which is predicated on the competitive application of global comparative advantage with alarmingly long chains of seamless supply … and virtually zilch resilience to systemic shock!

To talk of "the transition to a zero-carbon economy" as Taylor and many green hopefuls do, is all very well, and very necessary … but in my view, utterly undoable enough to make a difference unless we are also willing to entertain real hits to our quantitative material standard of living, and

learn to substitute qualitatively. As part of the new Green Economy Coalition of international environment, development, labour and business agencies, my question is always, "A green new deal for what?"[ix] To sustain current levels of consumerism? At growing levels of population? No can do! Because oil and its associates have become our lifeblood. We can't suddenly expect to run our bodies on one pint of blood instead of eight! We therefore have to factor in not just carbon, but what renders it so intensive.

My critic will say that this ignores substitution by renewables, but I'm impressed by David MacKay's presentation of the physics, and he reckons that renewables, even in the UK, can only credibly add up to about 15% of *current* energy demand.[x] In my experience most international climate change agency personnel take the view that "we just can't go there" in terms of the politics of cutting consumerism – for example, banning the advertising of profligate products. I experience such bounding of the debate as a leakage of energy. The optimism it professes actually conceals pessimism because it keeps us in the displacement activity of barking up the wrong tree. It is an evasion of reality, and with it, the need to fundamentally appraise the human condition in order to seek the roots of hope.

Extract:
Nature – Wild and Human
Finally, where does that leave us as people who are variously involved in the nitty gritty practicalities of nature conservation?

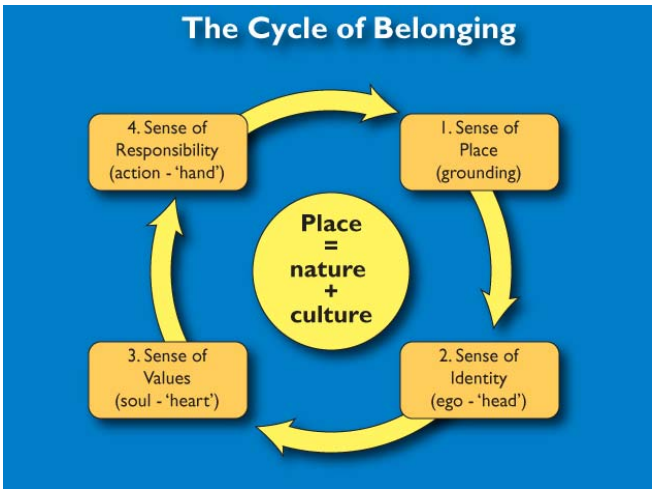
To face come-what-may in the come-to-pass with dignity, wisdom and love, we must be humble. Assuming that the science is broadly correct, we have only been walking this planet in our evolved state as *Homo Sapiens* ("wise, or knowing humankind") for some 200,000 years. We are planetary infants, and the travail we currently experience, the upset we're currently causing, could be seen (albeit at grave risk to the Mother) as evolutionary birth pangs. Our challenge now is to grow up fast. In this I believe that nature, and not just human culture, is our teacher.[xv] For conservation work in the widest sense I think this means:

- Connect the science of nature – the properties of matter and of biology - with the full beauty and emotional engagement of human nature. I recommend studying the management of psychological depth in undertaking this.[xvi]

- Teach children elemental literacy of fire, air, earth and water including exposure to carefully managed danger. I recommend Roszak's book, *Ecopsychology*, and also Meredith Sabini's remarkable anthology of Jung on nature, *The Earth has a Soul*.

- Reveal community as soil, soul and society, and with it deepen the Cycle of Belonging. I explore this in both HHW and, expanded, in *Rekindling Community*.

- Teach the value of ecosystem services such as the replenishment of aquifers, carbon sequestration in bogs, and photosynthesis bubbling oxygen up through a pond to sustain the atmosphere. And teach such science as David Orr suggests, in a spirit of wonder, gratitude, and even reverence.



- Cherish nature reserves as ecological islands. Given climate change, work to reconnect them via wildlife corridors. And bugger the excessive health and safety that would have kids putting on rubber gloves to pick things up outdoors!

- Through the arts and direct encounter, encourage “animal spirits” to touch human consciousness perhaps as understood by totemic cultures. And if that’s a problem for a certain sort of Christian, invite them to deliver a sermon on the Eagle of St John, or the Lion of St Mark, or chapter 12 of the Book of Job which says, “But ask now the beasts, and they shall teach thee; and the fowls of the air, and they shall tell thee; or speak to the Earth, and it shall teach thee…”

…because this is about the sacred work of our times. And it will only succeed if the science, and the hard work, are grounded in that nothing less than … I’m sorry if this seems a bit too full on … the muddiness of the pond and the fire of love. For these are the things that give life: and in that I carry little optimism for what often feels like doing planetary hospice work, but constant hope.

Alastair McIntosh is a Fellow of the Centre for Human Ecology and Visiting Professor of Human Ecology at the Department of Geography & Sociology, University of Strathclyde.

www.alastairmcintosh.com

Sell the Sizzle - the new climate message
Futerra sustainability communications

Original article adapted for John Muir Award 'Views from 2050'
www.futerra.co.uk/downloads/sellthesizzle.pdf

Selling the idea of human-influenced climate change - and engaging individuals, communities, business and government (local, national and global) in associated awareness and action - was a major communications challenge in the early 2000s. As a 'new' concept to many, and one that seemed set to impact massively on living and lifestyle, it wasn't an easy pitch. 'For years we tried to 'sell' climate change, but a lot of people weren't buying'.

Here's an article from 2009 that was seeking to refocus our communications – away from 'rising seas, scorched earth, failing food supplies, and billions of starving refugees tormented by wild weather' towards 'a visual and compelling vision of low carbon heaven'.

To many, our natural environment was the 'sausage'. Were we doing enough to sell its 'sizzle' – the benefits, enjoyment, cultural and aesthetic value derived from it? Did we fully appreciate and communicate the utilitarian benefits of our biodiversity and landscape?

'We believe that climate action is no longer a scientist's job; it's now a salesman's job. You must get out there and sell the solutions we already have. And if you've ever worked in sales, then you know how hard that is.'

We have two main metaphors in this guide. One about sausages and the other about hell. Although that might make us sound like fiendish barbeque obsessives, both make important points:

Sell the sizzle not the sausage

In the 1940s a supersalesman named Elmer Wheeler made what *TIME* magazine called 'a handsome living' advising U.S. businesses: "Don't sell the sausage – sell the sizzle!" Elmer knew that the big secret to successful selling is that you don't advertise the sausage itself - because it's the desirable sounds and smells which get the juices flowing and the people hungry. For years we've tried to 'sell' climate change, but a lot of people aren't buying. Despite a strange recent resurgence in denial, the science is unequivocal. So climate change is no longer a scientist's problem - it's now a salesman's problem, and we can all learn a thing or two about selling from Elmer. For all of us desperately promoting action, finding ingenious ways to communicate climate change or just banging our heads against the hard brick wall of climate denial – we need to find the sizzle.

Climate change sounds like hell, so where is heaven?

Climate change itself isn't the sizzle, it's the sausage. That's where our second metaphor comes in. The most common message on climate change is that we're all going to hell. That's what climate change looks like when you get right down to it; rising seas, scorched earth, failing food supplies, billions of starving refugees tormented by wild weather. But contrary to every expectation, hell doesn't actually sizzle. Hell doesn't sell. Although these Armageddon climate scenarios might be accurate and eye-catching, they haven't changed attitudes or behaviours nearly enough. Threats of climate hell haven't seemed to hold us back from running headlong towards it.

Heaven sizzles

But there is one message that almost every audience responds to. A narrative that changes hearts, minds and even behaviours. An approach needed now more than ever before. And it's the opposite of climate hell. We must build a visual and compelling vision of low carbon heaven. This guide outlines how to communicate that new positive vision. We've built this approach on global market research including specific studies in China, the USA, the UK, over ten years psychological wrangling about climate messages and Futerra's own experience communicating climate change everywhere from stadiums in Moscow, schoolrooms in Chongqing and (in one notable case) on Ipanema beach in Brazil.

Cynics versus activists

If you think the climate argument is won, then think again. Myriad climate battles continue to rage. On the science, or the policy response to the science, on the responsibilities of business, government and people, on the right moment to act, on who gets the blame, on who pays, on who benefits…

However these battles have largely taken place beneath the public's radar. Played out between Climate Cynics and Climate Activists in boardrooms or staterooms but only recently in living rooms.

The picture of the 21st Century depends on the outcome of these arguments. And it will be the people, not the leaders, who decide that outcome. Without changes to our daily lives, and enthusiasm for macro-change, the fight against climate change doesn't have a chance.

So we need to talk to people. And in this world of mass communication we probably need to talk to all of them. Without public support the Cynics win by default. All they need is inaction, whereas we need something to actually happen.

A new climate message

People have been asking for a new message on climate change. Around the world, wherever we ask, the answer is repeated again and again. We've tested how far to 'turn up the dial' on the problem, showing the threat of climate change to our children, our lifestyles and our lives. Doesn't make any difference. We've appealed to both logic and ethics. Doesn't shift a thing. We've tried to change values. That just makes people angry and justifiably so.

But one simple narrative actually makes a climate change focus group a nice place to be. It cuts straight through apathy and into enthusiasm. And it's pretty simple:

Vision – Choice – Plan – Action

Vision

This is a four-step narrative. First, we open all and every communication with the promise of heaven. In just one sentence you can describe a desirable and descriptive mental picture of a low carbon future. This captures the imagination and taps into those starved and withered emotions: hope, a sense of progress and excitement about tomorrow. The vision also wins us the right to hold people's attention long enough to get to the call for action. A major problem with most climate messages isn't that people disagree with or misunderstand them, it's that they don't even listen to them. Many climate messages are dull or depressing and audiences have an inbuilt veto: the veto of their attention.

But we all listen to sizzle, and your vision can sizzle. In the full guide (www.futerra.co.uk/downloads/sellthesizzle.pdf) you'll find a host of tactics and tools, but these four are a good (and often neglected) start:

Make it visual Create pictures in 'the mind's eye'. What will a low carbon economy look like? Here's a useful trick – could someone easily draw a picture of what you said? Or take a short cut, and actually use pictures!

Make it national or local The vision must be as local as possible. Don't describe a vision of a sustainable Delhi when you're in Durban – or vice versa. Refer to places and spaces where you are.

Make it desirable Spice it up. If the vision isn't more desirable than what we've got now then why bother reaching for it? Think about what your audience want (not what you want them to want) and then show how the vision will make that happen.

Cut the dates and figures Dates, percentages and figures come in action plans, not visions. A 20% cut by 2020 isn't a vision, it's a target. Put all the targets together and imagine what the world would be like if we met and exceeded them: that's a vision.

Share the dream Although you might develop the vision, it doesn't belong to you. Show how it reflects common values and needs.

Choice

The second step in our narrative is 'choice', because now we've got heaven we've got to show hell. Today we have a choice between that positive picture and the alternative of unmitigated climate change. It's extremely important to hammer home that this moment is the moment of choice between the two paths. You don't pull your punches here – lay out the climate chaos we're trying to avoid. People can actually listen to this now, because they are sitting in the life raft of a positive vision watching the Titanic of climate chaos.

Introduce hell You've sold the sizzle so now show the alternative. If you lead with a positive vision, you don't then have to pull your punches on climate chaos.

The choice is now Make clear that change won't wait, and that the decision moment is now.

Link the problem and solution This might sound obvious, but be clear about the linkage between problem and solution. Carbon is the problem, and cutting carbon is the solution.

Personal hell Climate change doesn't just affect weather patterns and polar bears. Lay out the impacts on hospitals, schools, and the local environment. Hit lifestyles and aspirations. The more powerful and compelling your vision, the more hard-hitting you can make the threat of climate chaos.

Plan

Most people's reaction at this point in the story is a forthright 'so buddy, what are we doing about it?' A low carbon future looks pretty good, and climate change looks decidedly unattractive. So then we offer a strong and simple five year plan. The public stays with you if you offer a few memorable yet significant achievements. They've got to be big, they've got to be meaningful, and you'd better live up to them. This five year focus is opposed to the usual twenty to thirty year targets (often even generational targets) which breed mistrust and simple dismissal. Do you know what you'll be doing in 2030? Nor do most of us. Stick to five years, or even less if something meaningful can be achieved that fast.

Short list of big actions Plans to combat climate change can be extraordinarily complex – and rightly so. But what are the three biggest headlines that someone might remember ten minutes after being told? Try it out. If no one can remember your plan, then its odds of succeeding are pretty faint.

Complete in five years What will you be doing in 2030? No, we don't know either. Put the plan in a human timescale of five years (that also happens to be a political and business one). You can always outline the full plan for the experts.

Show me the money How are you going to pay for it? This is the reality check. If you don't cover the cost of change in the narrative, then the audience might suspect they are being hoodwinked.

Climate cheats Equity only works one way in climate narratives. We all assume we are the good guys who deserve to be protected. Showing how your plan is fair means showing how freeloaders and climate cheats won't get away with it.

Action

Finally the narrative sets forth specific personal actions so everyone can help steer us away from danger and towards progress, freedom and a 21st century that looks better than the 20th. This is your 'ask'. Make it specific, make it clear how it will help reach the vision, and build in an immediate payback if you can.

Direct link to heaven Give everyone something to do. But make sure there is a direct link to the vision. Show how every positive step brings us closer to the goal.

Use numbers here Numbers might kill a vision, but they sizzle in a specific programme. If you're promoting specific policies, initiatives or schemes then don't be afraid of detail. How many homes will be insulated? How much will the energy meter cost? Exactly when will the community turbine start paying back? Embrace the numbers.

Personal payback Always, always, always answer 'what's in it for me?'

The very next action If you've done it right, with a bit of sizzle, then make the sale. Give your audience something to do right now. Not tomorrow. Not when they are next in a hardware store. Right now.

All the other general rules of communication still apply of course. Language should fit the target audience, people must have agency to act and messages should be maintained over time. Use the new narrative with good communications tactics and research shows the response can be excitingly powerful. Pitch it right and the heart lifts, the loins are girded and suddenly actions that would have been dismissed are embraced.

From Climate Cool in China to PowerShift across the USA, the 10:10 campaign in the UK to 20:20 in Brazil; there is a lot of sizzle out there. The people we met sizzled. The passion, wit, warmth and sparkle of climate activists worldwide constantly uplift us. If you are a climate activist then you're in good company. Hundreds of thousands, and probably millions of people are standing shoulder to shoulder with you. Individually each of you is a powerhouse of sizzle.

The building blocks of your vision should be valuable, irrespective of climate change. Upgrading our energy sector, protecting our big green spaces (like the Amazon) and little green spaces (like our parks), living healthier lifestyles and cutting pollution; we'd want these whatever the circumstances.

These desirable outcomes are at the heart of a sizzling vision. Although the transition to a low carbon economy might be a bumpy ride, the destination is worth it. You need to see beyond the

fight, and beyond the threat, in order to find a sizzling vision. There are plenty of resources, research and examples to help:

Economic visions Many of the major campaigning NGOs and some of the big research organisations (like McKinsey) have weighty tomes on the macro-economic world in 2050ish. Lots of heavy data to underpin sizzling visions.

Product and technology visions We are impressed every year by the winners of the various green-tech awards. Several newspapers and online blogs also run product awards and recommendations. Even if this stuff isn't on the market yet, it makes for good vision-fodder.

Lifestyle visions Look out for people already living the visionary lifestyles. From transition townsfolk to innovative entrepreneurs, to committed individuals, there are millions globally already living up to the infamous William Gibson comment "The future is here, it's just not equally distributed yet".
That's it. That's the sizzle, the plan, the checklist.

This new heaven narrative can be a few short sentences, a long speech, or the basis for a fully integrated campaign. It will work whether you're enjoying a five-minute chat waiting for a train, or making an address to the United Nations.

So go out there and use it. Or read the full article for a bit more polemic and a lot more tactics, tools and guidance.

See Rules of the Game and New Rules New Game at www.futerra.co.uk

You know how to communicate it, but what does your vision actually look like? Some people find this hard to answer. We've all spent so long fighting off climate change that we don't take enough time imagining what the world would look like if we succeeded.

About Futerra

Futerra is a communications agency. We do the things great agencies do; have bright ideas, captivate consumers, build energetic websites one day and grab opinion formers' attention the next. We're very good at it. But the real difference is that since our foundation in 2001, we've only ever worked on green issues, corporate responsibility and sustainability.

For more information on our services, or to see if we could help you,
visit www.futerra.co.uk or call +44(0) 207 549 4700

For further copies of this guide please email info@futerra.co.uk

A word from the authors

We are deeply passionate about our business and our message. We believe that fighting climate change will preserve our freedoms and open the door to a better future. A sustainable and secure energy supply is infinitely more attractive than reliance on sources that fluctuate wildly in price and originate in unstable or unsavoury regimes. The financial benefits of energy efficiency are enormous, regardless of where that energy comes from. Climate change must be mitigated, but the opportunities must also be maximised.

Why are communications, psychology and clever messages needed to bring that about? The brutal truth is that rational arguments alone don't change behaviour, even when people want to change. Health campaigners have known this for some time. Most of us know the risks of smoking, over-eating and drinking alcohol to excess, yet millions of us still do these behaviours – despite rationally knowing they are bad for us.

Herein lies the rub.

Without being incentivised, excited or inspired by an aspirational ideal of where we might go as a society, few of us will act. We need to enthuse people about the potential benefits of a better way of living and overcome the vocal voices of delay and denial.

Progress has always required the creation of powerful visions in the public mind, such as the images of heroic workers in the New Deal as America emerged from the dustbowl depression. We need these powerful visions to help us move towards a better tomorrow.

In the words of Victor Hugo "There is nothing like a dream to create the future."
Best wishes from **The Futerra team**

My Gran and Me
Liesel Harvey

My Gran and Me are the best of friends,
We do many things it just depends,
We play games and have lots of fun
And she tells me stories of when she was young.

Of all the tales and stories she tells
The one I love and know so well
Is all about our community wood,
And how my Gran wanted to do some good.

When Gran was young in about 2010,
Things were pretty bad said all the news men (and ladies)
Global warming was really big news,
And people wondered what to do.

Some scientists said it was far too late,
That if the earth could be saved, it was up to fate,
But other people thought things could be changed
And my Gran was among those names.

In schools teachers started to spread the word.
About biodiversity, of the trees and birds
And how the environment was in a bad way,
But they had to act fast if it was going to be saved.

So Gran decided she'd get involved
And slowly an idea began to evolve.
If saving wild places could do some good,
Perhaps she could start a new urban wood.

She'd learnt about a man in a lesson at school,
If you ask me he sounds pretty cool.
He stood up for what he thought counted,
'SAVE WILD PLACES.THEY'RE IMPORTANT' he shouted.

His name was John Muir and he lived long ago
But his name lives on for all to know,
Because he stood up not sure if he'd win
And Gran decided to be just like him.

She wrote a letter to the John Muir Trust,
To plant an urban wood to her was a must,
'It's easy' they said' Discover, explore, conserve and share'
'This will make a difference if you really care'

So she discovered a site near her home,
Filled with rubbish and bricks and stones.
She explored the area to see what was there.
This little wild place was in such despair.

She conserved the best bits and planted more trees,
Lots of plants to encourage the bugs and the bees.
Bird boxes for homes for little birds too,
And curvy paths for folk like me and you.

When we go walking Gran still likes to Share,
How the Earth is our planet and we should all care.
How people did small things and shared their ideas,
Began to take action and stopped hiding in fear.

And forty years on it's now 2050,
Gran's generation changed things so swiftly.
They started small and all believed,
It's amazing what they started and what they achieved.

I listen to Gran and the things that she's done
I love her story of how it all began,
And I wonder if I'd been alive back then,
What would I have done to change things in 2010?