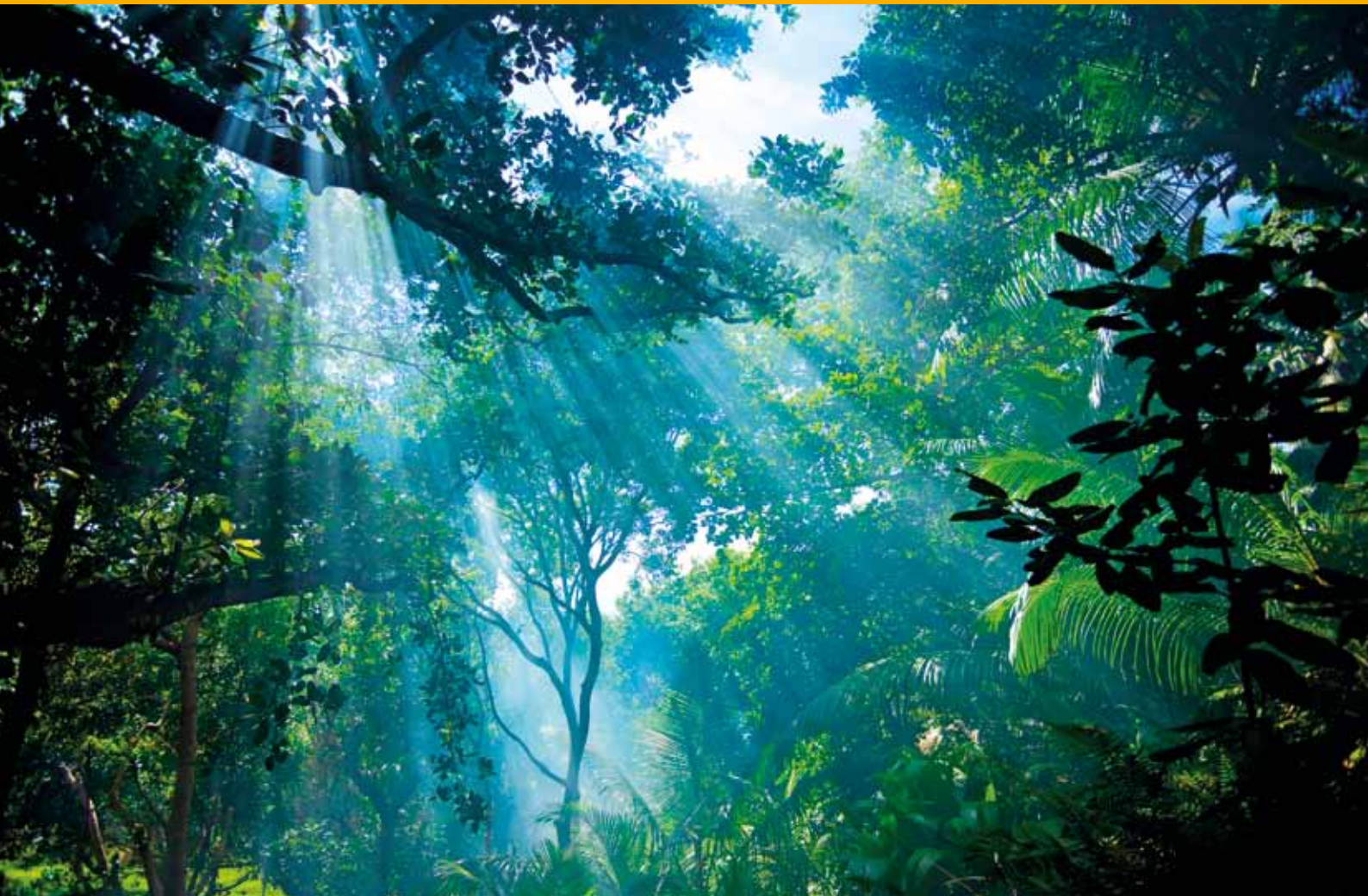# Mapping a route from a planet in peril to a world of well-being

How we can stop acting stupid and live up to our billing as the smartest species of all time

Picture credits

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Foreword: Smart optimism

Humans are ingenious. We've done amazing things. Medicines to cure many ills. Men on the moon. Cities that support billions of people. Communications systems that enable us to work, socialise and share information across the globe.

We're doing some amazing things right now. Across the world we're rapidly increasing the use of solar panels, we're beginning to mass-produce electric cars, and we're cutting deaths from malaria. Far-sighted companies are putting sustainability at their core. Digital technology is racing ahead, improving democracies and delivering huge efficiencies and innovation. Our leading cities are collaborating to forge real solutions.

Yet we're also ravaging the natural world – our natural life-support systems. Climate change is causing extreme weather events. Species are disappearing 100-1,000 times faster than the normal extinction rate. Acidification of oceans and degradation of soils threaten food production. Meanwhile billions of people already go hungry, lack basic services, are excluded from full participation in society and don't have decent work. At the other end of the spectrum the developed world faces crises of obesity and over-consumption in fearful, gated communities.

On our current course, in the next two decades we'll do profound damage to human welfare, economies, and ecosystems.

We urgently need to turn this situation around. We must enable people everywhere to achieve well-being – those freedoms and capabilities that enable us all to live healthy, fulfilled lives on a planet that can sustain us (see page 12). But we must also recognise that unless we look after the planet it will be impossible for people now and in the future to achieve personal well-being.

That's why Friends of the Earth has embarked on an unprecedented three-year research project. The Route Map Project will identify what needs to change to focus some of humanity's amazing abilities – to be collaborative, ingenious, and empathetic – on solving the environmental and social challenges we face and building a brighter future for everyone. This research will inspire the beginning of a new campaigning journey for Friends of the Earth.

We know change won't be easy: there's a dangerous and growing gap between scientific understanding of the challenges and public and political responses. But there's also an explosion of interest – especially in business, politics and academia – in finding a new path. Increasing numbers of people recognise that the damaged economy, gross inequalities and environmental crisis of the world today are untenable. But the right kind of change won't happen without a shared vision of a better world. A vision backed up with a compelling route map to get there, and coupled with pressure from civil society, businesses and thinkers.

We know change is possible. History tells us that. Without change women wouldn't have the vote, slavery would still be commonplace, the National Health Service wouldn't exist, and there would have been no industrial or green revolutions. Without the digital revolution I wouldn't be writing this on a computer.

The coming decades will throw up huge challenges and extraordinary uncertainty. As the world becomes increasingly inter-connected, we'll cross thresholds in environmental, social and economic systems. Unforeseen events, so-called black swans, will happen. We do know the world population will grow, food production will be challenged, and the supply of some resources will struggle to keep up with demand.

But opportunities are bound to emerge from these challenges. If we seize the opportunities we could produce a much more stable, equal and healthy society by 2050.

We could provide well-being for everyone and for our planet.

The pyramids at Ghiza, Egypt. We need to harness humanity's ingenuity – evidenced through centuries of civilisation – to meet the challenges of the 21st century.

This project

Through a series of linked research pieces (see page 17 onwards) this project will bring new thinking to the challenges ahead, learning from the past with a view to the future.

We'll use these pieces to identify key interventions and to shape Friends of the Earth's campaigns. These campaigns aim to affect decisions made by people and politicians everywhere, as well as the campaigns of others. It's the beginning of a new campaigning journey for Friends of the Earth – one born of urgent necessity.

We'll carry out the research working with others – academics, businesses, non-governmental organisations, opinion-formers and the public. We expect this collaborative approach to generate new insights and creativity.

At the end of the project we'll have set out what needs to change, why it would be better, and what needs to happen to get us there.

Over the next few pages we describe the starting point and the key trends before outlining our 10 related research topics.

If you're interested in working with us on or funding these research topics we'd very much like to hear from you.

Please contact me:
mike.childs@foe.co.uk or my co-leader **joanna.watson@foe.co.uk**

Mike Childs
Head of Policy, Research and Science
Friends of the Earth

The Route Map Project aims to identify what needs to change in order to focus some of humanity's amazing abilities on solving some of the environmental and social challenges we face.

The starting point

Our journey starts with the conclusion of the 2012 Rio +20 Earth Summit. It's not an ideal starting point. Progress has been limited since the first Earth Summit in 1992, or indeed since the 1972 Stockholm Conference on the Human Environment. With a few exceptions such as the Montreal Protocol agreement to phase out ozone-depleting substances, progress on environmental issues has been patchy at best. Local air and water quality has improved in many parts of the world but this has often been outweighed by massive increases in global pollutants such as greenhouse gases. Forest areas have increased in temperate regions – although mainly in the form of monoculture plantations which are bad habitats for wildlife – but the loss of tropical rainforests and all their biodiversity has continued apace.

Progress on social and even economic goals has also been patchy. Dramatic economic growth in China and many other parts of Asia has contrasted with stagnation in much of sub-Saharan Africa. Good progress towards delivering some of the United Nations' Millennium Development Goals (MDGs) has been put at risk by the financial crisis which started in 2008. This has ushered in an era of austerity in some parts of the world, exacerbating widening inequalities in these countries.[1] Although big political and social changes like the recent Arab Spring have given some people new freedoms, people in many countries still lack equal participation in society and an ability to shape decisions that affect them, in particular women and minorities.

Awareness of the scale and global nature of environmental, economic and social challenges among politicians and business-people has probably never been higher.[2] But the gap between understanding and necessary action has probably never been wider.[3]

This starting point is important to understand – not for recriminations, but to ensure we're realistic about the challenges ahead. The trends shaping the future are vital to understand too. These trends are not immutable and they're not all negative. But they are powerful and must be shaped to ensure our path leads to a better world.

The trends shaping the future are vital to understand too. These trends are not immutable and they are not all negative. But they are powerful and must be shaped to ensure our path leads to a better world.

Aftermath of Hurricane Sandy, Long Island, NY, United States. The choices we make in the next 20 years will avert or accelerate the environmental crisis – and its impacts on people.

Trends

In the following three pages we set out six mega-trends with profound consequences for human futures. These trends are not the only things changing in the world, but they appear to be the most far-reaching and universal. We also identify some other important trends.

- **Shifting power, the clamour for political freedoms, and declining trust in politicians**

Economic and political power will shift relatively from the United States and European Union to new superpowers, notably China. Although the United States will remain a superpower it will have decreasing scope for unilateral action. Other developing powers in Latin America and Asia will erode Europe's influence.[4]

It's likely that:

- The relative power of states will wane while the influence of corporate giants will increase.[5] Already a small number of multinational companies wield significant influence and power.[6] Other non-state actors – such as international agencies, city networks, civil society organisations, organised religions, and even organised criminal networks – will also gain influence by utilising the opportunities of international networking and collaboration,[7] and this might temper the power of corporates.

- The consequences of these changes for global decision-making, economic control, culture and the ownership of resources and businesses will be very significant.

- It will become even more challenging to secure effective multilateral agreement on issues as complex as trade and climate change. There will continue to be a retreat from multilateral global diplomacy in favour of so-called minilateralism, where a few countries separately attempt to establish new approaches or global norms.[8]

It's almost inevitable that public pressure for greater political freedoms will continue to grow in particularly repressive states. We might see more countries overtaken by peaceful revolutions, or civil war, and more incidences of widespread protest or unrest. China's rise to power could be accompanied by democratisation internally.

Yet in many established democracies we've seen declining trust in democracy as well as in governments and politics (this is in part the result of greater power accruing to supra-national bodies and non-state actors).[9] We've also seen a growing, dangerous and complex political polarisation in the way people of different political persuasions see the environment. These trends may well continue.

- **Bigger, more integrated economies but greater instability**

The global economy will continue to grow even though in wealthy countries – especially where they pursue austerity enthusiastically – real growth rates might slow near to zero for a decade or more. Growth is likely to be driven by more producers and consumers entering markets, particularly in developing countries, and by new technologies and increased productivity.

Some policymakers will promote the extension of markets such as carbon trading and the economic valuation of ecosystem resources as the way to deal with environmental problems while pursuing economic growth – albeit with greater oversight since the failings of financial markets have become clearer.

Many will regard these increases in international trade and economic integration as positive. But there are likely to be downsides such as more economic instability – in part due to the influence of the opaque financial sector[10]; and pressure to lower environmental, health or safety standards. Weakening global governance systems only increases these risks.

Much of this economic expansion will continue to be underpinned by debt. We can't entirely rule out the prospect of widespread economic collapse in the coming decades.[11]

Alongside the trend towards bigger but less stable economies there is a very small but growing counter-trend towards localisation and

We can expect the world's population to become overwhelmingly urban.
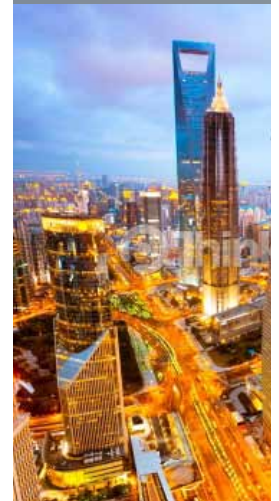
mutualisation in various forms. Some examples are community-owned energy, open-source technology and promotion of local economies.

• Environments stressed to breaking point

We know the world is already on the path to substantial climate change. The climate system could cross critical and irreversible tipping points in the next few decades. For example, we might witness the loss of summer ice in the Arctic Ocean[12] or the beginnings of the irreversible melting of the Greenland ice sheet.[13] It is also likely that further tipping points will be discovered, possibly after we've already crossed them. Research to identify tipping points in biodiversity or land-use change is increasing.[14]

Climate change, however, is just one symptom of humanity's over-use of global resources. Others include ocean acidification, soil erosion, nitrogen pollution, shortages of fresh water, biodiversity loss, and collapsing fish stocks. A range of measures indicates that humans are taking an increasing share of biological productivity of resources such as forests and fisheries.[15] This has potentially devastating consequences for those ecosystems and for the future value of ecosystems to humanity, such as when fish stocks crash[16] or soils erode.[17]

Despite improvements in efficiency in some areas, the rate at which we're consuming resources is accelerating, driving up prices.[18] Although the timing and significance of peak oil is hotly contested it is well understood that some resources are being over-exploited, such as water use in some places.[19] Supply sometimes struggles to match demand, as in the case of rare earth metals.[20]

Climate change, environmental tipping points and resource crunches are likely to make progress towards development[21] and economic stability much more difficult, if not impossible. These challenges could also provoke increased military, economic and social conflict. These trends could lead to repressive laws as states seek to maintain stability.

• A larger, older, more urbanised population

Although the rate of global population growth is slowing – in large part due to women's education, empowerment and economic participation – there is still a massive momentum in population growth. In coming decades the average age of the global population will increase, and populations will grow in numbers. We can also expect the world's population to become overwhelmingly urban – particularly through the continued growth of large cities in Asia, Africa and Latin America. Fifty per cent of people already live in urban areas and this is expected to rise to around 70 per cent by 2050.[22]

The world's population will grow to around 9 billion by 2050. By 2045, for the first time in history, the proportion of older people (aged 60+) will exceed that of younger people (less than 15).[23] In some countries the high proportion of old people to young will create significant economic and social challenges – for example in China, Japan, Russia, Germany, and Italy – threatening welfare provision and social cohesion. Encouragement of inward migration and technologies such as robotics and artificial intelligence will increasingly be deployed to mitigate these challenges.

Pressure on resources will grow alongside these demographic changes.

We must take into account this rapid growth in population,[24] changes in consumption following increased urbanisation and an aging population,[25] and greater numbers of middle-class consumers.

• Slowly declining discrimination in most places but increasing economic inequality almost everywhere

A trend in the extension of political and social freedoms to groups previously oppressed on grounds of ethnicity, gender, ability or sexuality will continue and probably accelerate, as evidenced by campaigns for gay marriage in many countries.

In the UK 200 years ago women couldn't divorce, didn't have a legal right to keep money they earned, and couldn't vote. Even 100 years ago women were effectively excluded from professions. Although there is still a pay gap and

In some countries the high proportion of old people to young will create significant economic and social challenges – for example in China, Japan, Russia, Germany, and Italy

many forms of social discrimination persist, there are now women in developed countries on the boards of major companies and in parliaments. In developing countries progress is slower; but thanks in part to digital connections and a slowly-increasing number of women in power, women's empowerment is probably an unstoppable trend.[26]

Economic inequality between countries is declining in some cases: GDP growth in China and India far outstrips that in developed countries. Yet economic inequality within countries is set to increase further with potentially serious negative impacts on human well-being.[27] Advisor to President Obama, Alan B Krueger noted: "As inequality rises, the prospects for intergenerational mobility fall."[28]

In a few countries such as Mexico and France income inequalities have narrowed over recent decades (as measured by the GINI Index). But in many countries income inequalities have increased and in some this increase is substantial (including the United Kingdom, United States, and China).[29] Around 1.4 billion people in the world still live in extreme poverty, and many more experience relative poverty. Meanwhile some of the super-rich strive to maintain their wealth – for example, through tax avoidance or funding political parties, think-tanks or ideological movements.

• **Accelerating development of new technology**

It seems likely that accelerating globalisation, alongside advances in computing and communications technology, will result in the world becoming increasingly economically and technologically inter-connected. We can expect technological advances in areas such as nanotechnology, 3D printing, synthetic biology, cloning, robotics, artificial intelligence and genetic engineering. We can also expect emerging technological aspirations towards the management of global environmental systems through so-called geo-engineering. Some new-technology developments might be resisted – for example, on religious grounds or because they might put people out of work. But the pace of adoption of new technologies is likely to increase rather than decline.

The fastest changes will come in those regions where new technologies benefit from rapid development cycles and decentralised, networked applications.[30] Such approaches could help decentralise economies with the spread of new models of co-production.[31] From these approaches the future economy could begin to emerge.

Whether technological advances help or hinder social progress and the environment will depend on how they are funded, governed and owned.

Other trends

Although the mega-trends outlined above are the most universal and dominant, some other potential trends for the coming decades are also worth identifying:

Health: Many diseases might be curbed and some eliminated by 2050, potentially benefiting significantly from genetics and nanotechnology. But there could be much higher incidences of diseases of affluence, such as heart disease, obesity, cancer and particularly mental-health disorders. This trend will intensify technical and financial challenges for health care.[32] Meanwhile, environmental change could hinder efforts to tackle diseases of poverty, such as malnutrition. Some diseases could be exacerbated if old and new technologies are deployed carelessly, for example antibiotics, nanotechnology or endocrine-disrupting chemicals. And it's plausible that growing populations, more urbanisation and intensive animal raising could increase the likelihood of a major global pandemic.

Religion: The prevalence of faith is likely to grow. The revival in the Former Soviet Union will continue, and there will be particular growth in evangelical, individualistic forms of Christianity in many countries.[33] There is also the potential for growing religious extremism in several cultures. There could be significant tensions between different religious cultures and between some religions and science.

Violence and conflict: The recent trend in decreasing numbers of conflicts and fewer violent deaths could be slowed by conflicts caused by resource scarcity coupled with climate change. Some speculate that as a result while the threat of terrorism is declining[34] the prospects of nuclear proliferation are likely to rise.[35]

The pace of adoption of new technologies is likely to increase.

Table 1 Summary of trends

Almost certain →	(Likely / plausible) →	(Uncertain) →	Reversing
Chinese / Asian political and economic dominance			
Multipolar world	Mini-lateralism		
	Business more powerful		
	Falling trust in representative democracy	Emergence of more participatory forms of democracy	
	Greater political freedoms in many countries	Chinese democratisation	
A larger global economy	Extension of markets	More mutualisation of economic actors	
Economic instability	A more integrated global economy		Potential economic large-scale crash
Significant climate change	Resource stress or scarcity of oil, water, productive land.		
Crossing of arctic summer sea ice tipping points	Crossing of Greenland ice sheet tipping point	Crossing of other irreversible climate system tipping points (eg forests, monsoons).	
Multiple species extinctions		Crossing of land-use or biodiversity tipping points	
Significant population growth			
An overwhelmingly urbanised population			
An aging population			
Significant empowerment of women	Widening economic inequality		
Technological progress in multiple fields	Disruptive / transformative effect of technologies currently unimaginable	Public resistance to many new technologies	
		Economic decentralisation and emergence of co-production	
Further progress in tackling infectious diseases	Increasing incidence of diseases of affluence, including poor mental health		
	More religious participation, especially in evangelical variants	Possible conflicts between religion and science	
	Rising prospects of nuclear proliferation		Resource conflicts reversing trend towards less violence

Where do we want to be?

Central Park, New York. By 2050 we need to see well-being for billions more people.

Our ultimate goal is clear and unashamedly optimistic.

We believe well-being is a goal that can be met by 2050 – with determination and a fair wind. At the very least by that date we should have made significant progress towards it. But because of the starting point, the trends and the inter-connected dynamic systems within which we live, we can be sure that the journey won't be simple or predictable. It will be more like a roller-coaster ride. But the destination will be worth the effort.

The goal:

• Billions of people have been removed from material poverty by 2030. By 2050 they will have joined others in enjoying well-being, the fruits of innovation and a healthy planet.

• Current trends in environmental destruction will have been reversed and the global population will have peaked. All people will be benefiting from clear air, clean water and a liveable climate. The restoration of habitats, soil and our oceans will be on-going but already the benefits will start to be felt through increased biological productivity and diversity.

• A focus on well-being will mean most people everywhere and of all ages will have good health, meaningful lives, adequate material comforts, good education opportunities, and time for leisure.

• Everyone, wherever they live and whatever their gender, race, religion or sexuality will enjoy the freedoms, rights, and opportunities of living in dignity without fear of physical, religious or political oppression. All people will be able to participate meaningfully in democratic societies and ensure their voice is heard.

• The potential benefits of inter-connectedness in trade, production, communications and leisure will have been realised. This will significantly increase understanding and empathy between people and thus reduce conflict and increase cooperation in solving global challenges.

• The social problems that can result from extreme income inequalities will have been substantially reduced. Extreme inequalities will have been slowly reduced and returned to the levels seen in modern-day Japan or Norway.

In other words: well-being for all.

> *Is well-being for all a credible goal for 2050? Human ingenuity and the accelerating pace of change must offer the possibility that we can achieve it.*

Why well-being? What is it?

Defining our outcome as "well-being for all" has important implications.

For a start, it is a much more ambitious goal than simply meeting people's basic needs[36] or simply living within environmental limits.

Focusing on meeting basic needs would risk pursuing a path that might not lead to well-being for all. It's also unlikely to engage many in the developed world or elites in developing countries; and we need these groups to be engaged, not only because of their influence on society but also because they too suffer from environmental degradation and from growing inequalities. If we don't address well-being for all we're unlikely to stay within critical environmental limits: some populations might reject that they should put up with meeting only their basic needs while others have higher levels of well-being.

Is well-being for all a credible goal for 2050? Human ingenuity and the accelerating pace of change must offer the possibility that we can achieve it.

The concept of well-being merits some elaboration, as the term is used in different ways.

Well-being is generally understood to refer to the combination of material welfare with mental and physical health that provides life satisfaction. But definitions will be culturally-specific and will change over time. Ereaut and Whiting conclude that "well-being is a cultural construct and represents a shifting set of meanings — well-being is no less than what a group or groups of people collectively agree makes 'a good life'."[37]

Nonetheless there are common factors and approaches that offer a reasonably universal framework.

The Well-being Institute at the University of Cambridge sees well-being as the "positive and sustainable characteristics which enable individuals and organizations to thrive and flourish."[38] Its definition incorporates not only how people feel such as the experiences of pleasure and satisfaction, but also how people function, including their sense of autonomy, competence, interest, engagement and purpose in life. It also emphasises inter-personal or social well-being as well as personal well-being. The New Economics Foundation's description of well-being emphasises capacities to function, feel and evaluate."[39]

In the so-called capabilities approach to human development,[40] well-being is seen as the product of the capabilities people enjoy to be or do the things that they value.[41] This approach prioritises peoples' opportunities to realise beings and doings[42] they value (such as their genuine opportunities to be educated, their ability to move around or to enjoy supportive social relationships). This stands in contrast to more conventional approaches to well-being, which typically focus on subjective categories (such as happiness) or on the material means to well-being (such as income). Instead it encompasses both subjective and material contributing factors.[43] The capabilities approach, although challenging to measure, can clearly be applied in all cultures, and does not fall into the trap of conflating happiness and well-being.[44]

For the purpose of this project we highlight the following dimensions (or capabilities) of well-being: freedom to be heard and have an influence; enough income to live with dignity; relationships; a purpose in life; a stable, healthy and bountiful environment to live in; respect for who you are as a person and not what you own or consume; and freedom from discrimination on grounds of gender, ethnicity, and sexuality.

Research methods, team and topics

Research methodology

Our approach to identifying the key interventions that could set us on the path to well-being starts by exploring 10 related topics.

This project looks forward to 2050, using two lenses side by side. One focuses on that distant end point, and our aspirations for healthy and fair societies in a flourishing environment. The second focuses on current trends and capacities. From these we expect to be able to identify a set of key interventions.

We'll use both forecasting and backcasting to exploit the strengths of each but avoid their weaknesses.

Forecasting uses current and historical trend data to make predictions about the future. It can make good use of experience and history, but tends to miss the importance of extreme events[45] and tipping points.[46] It also tends to underestimate the scale and rate of decentralised and networked change.[47]

Backcasting, on the other hand, starts from a specific destination and maps the routes and rates of change needed to achieve it. It supports the forcing of new approaches and technologies, but can generate implausible trajectories for slow-to-change factors such as population or infrastructure.

In establishing a pathway from this point it is essential not to expunge history. So we'll explore what history can tell us about particular topics – and about change itself. If we are to identify key interventions for the coming decades it is important that we understand the historical context and look at what's been tried before.

We've already involved stakeholders to arrive at our topics and questions (see below).[48] We'll continue to involve them through seminars, peer reviews and other approaches, depending on the topic under scrutiny.

For each topic we'll carry out a review of the issue and of potential interventions, largely identified from academic and policy literature. We'll also seek an historical perspective.

Following analysis of these reviews we'll commission a relevant expert to work alongside Friends of the Earth to complete a short paper on the issue and the proposed intervention(s). This paper would be for wider discussion. The aim is to collaborate – drawing on experts within and outside Friend of the Earth.

Our package of topics won't be exhaustive. But together they'll enable us to identify interventions that would make the most significant difference.

We'll draw together the research findings on these topics into a coherent whole, so that the interventions act in synergy to deliver the desired outcomes. The output won't be a minutely detailed pathway or identify all the interventions needed; but it will pinpoint the major junctions where a wrong turn could be disastrous. As with any map, the larger the territory, the less detail we'll see. The territory here could scarcely be bigger.

Each paper is likely to interest people in specific fields. But the final collation will provide hope – that humanity as a whole can take the steps needed soon enough to ensure prosperity and freedom for all on a bountiful and healthy planet.

In establishing a pathway from this point it is essential not to expunge history. So we'll explore what history can tell us about particular topics – and about change itself.

Our 10 research topics

This section outlines 10 research topics and questions. These are our priorities for funding – and because we consider them critical to success.

There are a number of other topics which we would like to explore further should additional funding emerge. These are: democracy; justice; fresh water; health; education; psychology; and behaviour.

We've provisionally identified the topics which will be researched each year – although the order is subject to change as the research progresses.

The total operational budget for research and communications over three years is small at £260,000. This excludes staff time. Staff time is estimated at an average of 30-50 days per research topic and 30 days on the collation of all the research into a final document. The total project cost is therefore approximately £350,000.

Although the budget is small the research is not starting from scratch. It is also being led by some of Friends of the Earth's most experienced staff who between them bring decades of experience to the project.

Extensive work is being done on these topics by academics and others across the globe. In many cases the task is to bring together this research, facilitate a discussion with academics, campaigners, opinion-formers and others and produce a coherent document that forms the basis of future campaigning.

Project team

The research project is being led by Mike Childs. Mike has over 20 years of campaigning experience at Friends of the Earth and has been the lead campaigner on many of its most successful campaigns including: The Big Ask Campaign which achieved the passing of the Climate Change Act; Factory Watch which led to an 80 per cent reduction in release of human carcinogens; and the Landfill Directive from which doorstep recycling emerged. Mike is being supported by Elaine Gilligan, Head of Programmes at Friends of the Earth, who also has 20 years' experience in the organisation, and Duncan McLaren, a sustainability consultant with 25 years' experience of researching sustainability issues.

The communications team for the project is led by Joanna Watson, who has organised creative tactics and events for Friends of the Earth for over 20 years. Joanna organised a series of conferences and seminars in the 1990s to explore the ideas in Tomorrow's World, Friends of the Earth's vision for a sustainable future. She has also organised events that have brought together members of our international network to influence big political events, and recently organised an anniversary event that re-established relationships with many friends and allies from past decades to help inform this project. She is backed up by Adam Bradbury who has worked in publishing for Friends of the Earth for over 10 years.

Additional staff will contribute to particular topics.

The allocation of budget to each topic will be completed once final research terms of reference are ready.

Topic 1: How can we get cities driving positive social, environmental and economic change?

Challenge:

Half of the global population already lives in cities and towns and this will increase significantly in the next few decades.[49] Cities have the potential to support a high quality of life at a much higher level of environmental efficiency as they enable the efficient use of land, energy, transport systems and building materials, as well as the efficient sharing of public transport, education, health and social facilities. The introduction of smart buildings and networks only strengthens this potential. But to realise this potential will require substantial redevelopment and redesign in most cities.

Cities can provide opportunities for collaboration, sharing, and cultural exchange and provide opportunities for people's voices to be heard. Because of their size and political influence cities can be major drivers of change. However, cities often take a casual approach to their water, food, land, energy, climate, and biodiversity footprints (manifested in direct consumption and supply chains). The poorest people are often excluded from decision-making and their needs ignored while wealthy elites can control decision-making and finance flows. In cities consumer identities can more readily dominate.

Research questions:

What models of power, autonomy, organisation and responsibilities would result in redesign of the world's major cities to realise their social, environmental and economic potential, as well as driving positive national and global political change? What are the obstacles to achieving this goal?[50] Which professions and technologies are critical to delivering this goal, and how?

Use of the research:

In the UK and across many other developed countries Friends of the Earth's grassroots activists and supporters are predominately based in urban areas. This is where much of our influence exists. It is also where we see significant possibilities for rapid and positive change. Working with our grassroots, supporters, devolved nation groups and regionally-based campaign staff we will use this research to influence urban decision-makers such as in the city regions in the UK. We will also use it to influence national governments and networks such as the C40 Cities Climate Leadership Group or the Covenant of Mayors in the European Union.

Newcastle upon Tyne. Friends of the Earth sees enormous potential for rapid and positive change in cities.

Topic 2: What changes are necessary to prevent over-harvesting of the planet's bioproductivity?

Challenge:

The productive biosphere provides humans and other species with food and shelter. Humans also harvest biological materials for uses such as cloth, paper and energy. In addition, bioproductivity supports ecosystem services such as water purification and climate regulation. Yet human use of bioproductivity is perhaps already at unsustainable levels, and increasing. It is also unevenly distributed, leaving billions of people with inadequate resources. The biosphere's productivity is threatened by overharvesting, climate change, ocean acidification, soil degradation, biodiversity loss and other factors.

We're likely to need interventions to restore environments such as soils, reduce damaging activities (for example over-fishing and over-intensive agriculture), enhance yields sustainably (eco-intensification) and manage consumption (for example by cutting levels of meat in diets). Yet political processes focus only patchily on these critical issues.

Research questions:

With wise use and appropriate and practical management to replenish the planet's ecological productivity[51] what level of sustainable harvesting is possible? What interventions are required to ensure humankind lives within this so as to ensure sufficient and plentiful bioproductivity services[52] for all people? What would be the consequences of failing to achieve this?

Use of the research:

The issue of how to feed a growing population is quickly emerging as a priority issue for governments and the international community. While there's been much talk of methods for increasing yield, little attention has been paid to the multiple threats to bioproductivity. The research will pull together evidence on the threats to bioproductivity and for the first time identify a level of sustainable harvest. Interventions and campaigns on how to live within this limit will emerge out of this research – for example on diet. The research will directly feed into Friends of the Earth's food campaigning which is led by the organisation's Land, Food and Water Security Programme.

Harvesting, Bangladesh. Food vs fuel, wilderness vs development. What's the right balance for the planet?

Topic 3: What is a better foundation for people's identity than consumption?

Challenge:

This project aspires to provide well-being for all people. The economic model pursued in the majority of countries seeks to deliver well-being by maximising incomes and consumer choice.[53] Consumption has become central to both the prevailing economic model and individuals' personal identities, yet it has significant negative side-effects including pollution, loss of green spaces, inequalities and impacts on self-worth. The current paradigm requires high levels of consumption and involves active promotion of the consumer identity (my self-worth comes from what I own and display).

In most countries it also encourages aspirations rooted in economic inequalities which are reinforced by marketing, advertising, and the media. In many societies, both developed and developing, aspiration-driven people are very influential on societal norms. They also express strong consumer identities. Unless alternative forms or models of identity can be found[54] to motivate aspiration-driven people it is likely that material consumption[55] will continue to be a major driver in societies. This will lead to massive increases in consumption as global populations grow and become wealthier, and will result in the breaching of environmental limits.

Research questions:

What drives consumption as the foundation for identity? What can effectively replace it as a foundation for identity while increasing well-being, particularly for aspiration-driven people? How can this be promoted? Which possible interventions will most weaken the consumer-consumption identity, and what impacts would they have on the associated economic model?

Use of the research:

This topic is an emerging area of interest for non-governmental organisations and academics. It is broadly accepted by academics and many others that not only does consumption need to get more efficient but that economic models and role models predicated on ever-higher levels of consumption are not tenable in the long-term. Yet there is little research to date on how to address this. The research will influence future campaigning by Friends of the Earth and others, as well as open up a debate among opinion-formers. It will also be of interest to people in the policy-making community charged with considering responses to cross-cutting sustainability issues.

Are we really what we consume?

Topic 4: How can we apply lessons from the past to the challenges of today?

Challenge:

Rapid and transformational economic, cultural and political changes are needed to deliver well-being for everyone while staying within planetary boundaries. There is no single adequate historical comparison for the scale and speed of change needed. The basic conditions for change are well known:

1. The current situation must be recognised as untenable by people with power.

2. There has to be significant pressure for change from civil society, businesses and the public.

3. There has to be a compelling vision for the future.

The first of these conditions is emerging as current broken economies and gross inequalities threaten social stability. However, the urgency of the ecological threat is either poorly understood or that understanding is not translating into action. The pressure required under the second condition is not yet strong, and the third condition does not yet exist. Moreover change is strongly resisted by many people, and not just those with vested interests. Denialism – the active choice to deny reality – is rife. Whether because of individuals' politics, religion or psychology, irrational decision-making is influential. Yet substantial change has occurred in the past from which we could learn lessons. These lessons and their application to current challenges have not been widely explored.

Research questions:

How has rapid and transformative change happened in the past? What can we learn from these past changes to help us identify the interventions needed now to accelerate and direct change towards sustainability, social justice and well-being for all? Are interventions which increase people's agency and freedoms – such as through democracies, internet freedom, and human rights – essential to initiate and deliver such change, or do they actually hinder the potential for rapid change? How can the influence of denialism and irrationality be overcome?

Use of the research:

This research does not have obvious immediate applicability to any one topic area but has lessons for all of the research areas, as well as for all campaigns. Historians are consistently frustrated that lessons from the past are not considered more in policy-making. Campaigns of all sorts are often thought to be of the moment and fail to take into account the historical context within which they sit. This research brings together historical researchers and present-day campaigners to learn from each other and identify how the lessons of the past may be applied to the unprecedented challenges of today.

Topic 5: How do politics and governance need to change to address global commons issues such as climate change?

Challenge:

The climate is warming to the point where extreme weather events are occurring. We are rapidly approaching tipping points that could lead to the irreversible melting of the Greenland ice sheet and forest die-back. Solving global commons[56] issues like climate change, fisheries, and biodiversity requires concerted action, including at the global level. Yet recently there has been no progress towards effective global agreements[57] and regardless of the evidence and dire warnings, politicians are giving these issues low priority. This is despite the fact that the technologies to solve the problems are typically either already available or likely to be within the necessary time limits.

There's a range of reasons including: vested interests; pressure for development; lack of confidence in solutions; economic drivers such as cheap fossil fuels; and avoiding uncomfortable truths. The current trend towards bilateral or so-called minilateral action might create new momentum but on its own will not be sufficient.

There is potential for change through businesses, markets and voluntary societal efforts, but it is highly likely that without much greater political action from across the political spectrum at city, national and global level the transition to a low-carbon society will be far too slow to avoid temperature increases of 4 degrees or more. But the interventions needed to produce widespread political action on climate change and other global environmental issues, including those in governance regimes, are not yet clear.

Research questions:

Which are the major interventions (and at what scales) needed to overcome the barriers to political action to spur sufficient, speedy and cooperative action on global commons issues such as climate mitigation, particularly in developed countries? Is the privatisation of global commons a barrier or an opportunity to action, and if it is a barrier then how can the trend towards it be reversed? Are changes to governance, for instance to incorporate future generations' rights, essential to delivering political action?

Use of the research:

Campaigning by Friends of the Earth and other non-governmental organisations on global commons issues is not creating the momentum needed to ensure that societies live within environmental limits. A change in approach is clearly needed. This research will suggest alternative options which Friends of the Earth will discuss with sister groups in Friends of the Earth International as well as other non-governmental organisations. It has the potential to lead to a significant change in campaigning approach.

UN Conference on Sustainable Development, 2012.
What will it take to kick start concerted international action?

Topic 6: How can we focus economies and mainstream businesses on long-term sustainability?

Challenge:

Maintaining and growing the economy has become the principal political goal of almost all governments. Growth has accelerated the environmental impacts of economic activity. At the same time this policy focus has in many cases failed to produce stable, secure and resilient economies.

Modern economies have failed to deliver well-being for all or to actively channel creativity and innovation towards solving humanity's social and environmental problems. Instead economic activity has increasingly focused on short-term rewards, particularly where private equity and shareholder-owned businesses predominate.[58] Meanwhile the growth of large businesses, including oligopolies and monopolies, has created a powerful influence on politics – at worst dominating it through systems such as political party funding.

This has created a closed circle of vested political and business interests which prioritise short-term rewards. Yet businesses could be a powerful force for good in society: rewarding stakeholders by creating jobs, driving innovation and solutions to enhance well-being for people and the planet, and acting as effective long-term stewards.

Research questions:

Which interventions[59] could encourage environmentally-damaging businesses currently focused on high-return and short-term profit to adopt business models that deliver longer-term returns on investments – returns which protect the environment and enhance human well-being? Can this be done without major changes to the way our economies are structured and run? Would the resulting economy be stable and sustainable? If not, what additional interventions might be necessary?

Use of the research:

This work will inform the development of campaigns by our Resource Use and Economics Programme. Our campaigns in this area are likely to work closely with others to institute reforms to the way businesses operate and are regulated. This work will involve lobbying as well as campaigning by the public and through the media.

Topic 7: Could women's empowerment transform the chances of achieving sustainability?

Challenge:

Discrimination against women is widespread in the developed and developing world.[60] This is morally unacceptable and makes it impossible to achieve well-being for all. It hinders efforts to slow population growth and, by shutting out women's views, dramatically reduces the perspectives, knowledge, value sets and experiences available for solving pressing environmental, social, economic and political problems. Women's empowerment alone might not guarantee a society which lives within environmental limits but is it possible that it would significantly increase our chances of achieving this?

Research questions:

Could empowering women significantly increase the likelihood of a society living within environmental limits, and if so how? Which interventions would have the greatest transformative impact? Could any of these interventions also benefit other disadvantaged communities of people?

Use of the research:

Women's empowerment is often only considered in environmental circles as a driver in reducing global population growth. While this is a necessary component of living within environmental limits, it positions this as an issue only for developing countries and neglects continued male dominance in politics and policy-making in developed countries and businesses.

Some evidence suggests that empowering women could have a huge transformative impact, resulting in higher priority for social goals than male-dominated systems usually afford.[61]

This research will influence future campaigns by Friends of the Earth's Just Transition Programme, as well as aiming to broaden the debate around women's empowerment beyond simply child-bearing.

Aung San Suu Kyi, of the National League for Democracy, Myanmar. Is more power for women the key to a sustainable future?

Topic 8: How can we provide resilient, affordable, low-carbon energy for all?

Challenge:

Energy consumption is essential to human well-being. The availability of concentrated forms of energy (notably fossil fuels) has enabled substantial technological progress and supported the development of civilisations. Energy use is currently dominated by fossil fuels and this is leading to dangerous climate change. Many people in the world do not have access to adequate and/or affordable energy while others use it profligately.

Even taking into account the potential for energy efficiency, well-being for everyone will require increased aggregate energy use. Renewable energy in the form of solar, wind, water, geothermal and bio-waste (such as sewage) is plentiful in comparison with fossil fuels.

The levels needed, and the technical means to concentrate and store this energy largely exist.[62] However, as most energy systems are currently configured in the design, management and ownership of large-scale, centralised energy supply it seems impractical to provide low-carbon energy for everyone from renewables. On the other hand, energy systems that are much more decentralised and with more community ownership could offer multiple benefits, for example: strengthening local economies; resilience to extreme weather; stronger social networks; and greater environmental awareness.

Research questions:

What interventions are needed in design, management and ownership of energy systems to give everyone an affordable and adequate low-carbon energy supply (with effective storage), as well as the multiple benefits that flow from decentralised energy and energy efficiency? Could these interventions also encourage innovation in areas such as waste management?

Use of the research:

Friends of the Earth has led the way in the UK on decentralised energy, with the successful campaign to introduce a feed-in tariff for small-scale renewables and successful legal challenges to prevent the Government fatally weakening the financial incentive. We are now working with sister groups in Friends of the Earth International to secure the delivery of a global feed-in tariff to enable poorer communities across the globe to benefit from decentralised energy. This research will support the campaign and inform future campaigns in related areas such as waste management.

Energy from the sun in Tarialan soum, Mongolia. Well-being for everyone implies higher energy use globally.

Topic 9: How can we foster innovation in technology and thinking to focus it on well-being without risking the environment?

Challenge:

The potential to further enhance and spread well-being through technological innovation is high. Although we have many of the technologies we need to live in a sustainable world we do not yet have them all. We should foster rather than stifle inventiveness, not only in technologies but in how we do things. However, there are risks associated with our ability to develop new technologies, particularly as new technologies link together in complex systems with unpredictable and emergent properties.[63]

Potential impacts include: unintended side-effects, such as in the case of toxic impacts of PCBs; rebound effects where despite technological innovations in factors like efficiency the overall impacts of consumption actually increase; misplaced beliefs that behavioural or institutional change can wait as miracle technologies will be found to solve problems; the discounting of old learning and knowledge; reduction of employment opportunities – for example through advances in computing and robotics; and increased or reinforced inequalities where new technologies are only readily available to the wealthy.

Interventions have been proposed that could reduce these risks[64] but they are typically resisted as threats to innovation, and thus to economic growth. National policies on innovation tend to focus on ways to attract early-stage funding like venture and angel capital, and corporate investment. Much technology research is funded by military interests. The challenge is therefore to identify ways of better fostering and steering innovation while integrating effective checks and balances.

Research questions:

How could new technologies enhance well-being and how can we foster innovation towards this? At the same time, how can we establish robust governance to reduce the risk of unwelcome, dangerous or emergent and unexpected side-effects?

Use of the research:

What's needed is a broader societal discussion about how to focus innovation with appropriate safeguards towards useful ends. We'll use the research to stimulate a debate among non-governmental organisations, policy-makers and opinion-formers – with the aim of harnessing human inventiveness for the common good.

Watch this space. How can we direct innovation so that it helps create well-being for everyone?

Topic 10: How can we get money flowing to socially useful activities?

Challenge:

The financial system is unstable, ineffectively regulated, [65] and subject to boom-and-bust cycles with severe negative social impacts. Banks have become "too big to fail": their size and complexity contributes to the sense that they will always be rescued. This reduces their incentive to avoid the dangerous risk-taking that permeates the financial system.[66]

Yet paying for the activities needed to prevent breaching of planetary boundaries will cost a lot of money. Delivering this finance is likely to require significant reform of financial regulations as well as public sector involvement. But public and political understanding of the finance system is very limited and this creates fear of substantial change.

Lobbying from the financial sector is strongly against significant reform. We can count on active resistance to efforts to transform the sector into a more robust banking system based on a community of interest.[67] Other parts of the financial sector such as pension and insurance funds have been slow to adopt responsible investment.

The challenge is to identify short-term transformational actions – ones that will start money flowing to key responsible investments now while facilitating larger interventions required for more fundamental change to the system over time.

Research questions:

Which are the critical interventions required to focus mainstream finance towards socially useful ends and introduce stability into the financial system? What is the role of the public sector in these interventions? What barriers are there to these interventions being put in place? Which of these interventions most effectively open up the opportunity for longer-term transformation of the financial system?

Use of the research:

Friends of the Earth is actively campaigning with others to increase flows of money towards renewable energy and energy efficiency through our Clean British Energy Campaign and the Energy Bill Revolution Campaign. So far these campaigns have focused on short-term political opportunities such as electricity market reform and the use of receipts from emissions-trading auctioning. This research will identify further campaign opportunities for following years.

Canary Wharf, London. What the barriers to finance for sustainability – and how can we bridge them?

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43. In that respect well-being is distinctive from quality of life, which is typically seen as a concept that can be separated from and taken in contrast to material standard of living.

44. The literature distinguishes 'hedonic' approaches to well-being, based in subjectively assessed measures such as happiness, from 'eudemonic' approaches in which not only are goals such as self-fulfilment and autonomy seen as important too, but the potential for hedonic consumption to fail to deliver well-being is brought into focus, see Ryan and Deci (2001) 'On Happiness and Human Potentials: A Review of Research on Hedonic and Eudaimonic Well-Being,' Annu. Rev. Psychol. 2001. 52:141–66.

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49. United Nations (2012), op cit.

50. Especially in the current direction/planning and funding of city redevelopment.

51. For example, degraded environments are restored to resilient, sustainable and productive environments; yields are increased sustainably in managed non-degraded areas; no expansion of managed areas into current unmanaged areas occurs; management practices adopt multiple use goals, sustain diversity and avoid monoculture; some re-wilding occurs in some managed but degraded low productivity areas; and fisheries are managed sustainably.

52. Including products and services meeting psychological needs as well as physical needs.

53. And is simultaneously driven by strong marketing and profit-maximising behaviour by businesses.

54. Consumption identities are not immutable: historically, identities rooted in location or occupation have been prevalent. Some commentators see new opportunities emerging in models of co-production.

55. We distinguish material consumption (the physical materials and energy needed to produce goods and services) from economic consumption (the economic value of those goods and services, as measured, for example, in GDP).

56. So-called global commons issues concern resources that have to be shared between all humanity, such as the climate system, the oceans.

57. Not just on climate, but more widely, including trade and investment. Some argue that multilateralism as a whole has become impractical.

58. Mutual or state-owned enterprises have competed in similar ways, externalising their costs onto other stakeholders to maximise profits.

59. Examples might include changes in the rules of corporate personhood, restrictions on political lobbying, new accountability rules or director representation requirements.

60. Forms of discrimination include unfair access to health care, control over family planning, poor income or lack of control over income, lack of self-determination, reduced land and inheritance rights, lack of agency and participation in decision-making, promotion of unattainable models (looks, work), overwork (including poor male involvement in childcare), a lack of value given to non-paid work, poor childcare provisions, domestic violence and poor educational opportunities.

61. United States National Intelligence Council, op cit.

62. Except that innovation could significantly reduce costs and provide economic solutions for high-density liquid fuels used in aircraft, ships and heavy lorries.

63. In particular the convergence of artificial intelligence, robotics, nanotechnology and smart systems technologies would appear to have the potential to make the 21st century as different to the 20th, as the 20th century was different to the 18th.

64. Such as funding only 'responsible innovation', responsible science (see Robert Winston's 14-point manifesto in his 2010 book, Bad Ideas? An Arresting History of our Inventions, Bantam Press), a well-funded early warning system, public participation (with future-generations proxy) in public funding of research, no private intellectual property rights for developments from public funding; and encouragement of open-source research.

65. In that innovation and evasion outpaces regulation.

66. The moral hazard is that if they fail they will always be rescued and therefore this reduces the incentive to avoid dangerous risk-taking.

67. A community-based approach which extends beyond communities of place.

Mapping a route from a planet in peril to world of well-being.

Humans are ingenious and compassionate – but we're also doing some stupid things.

On our current course we'll do profound damage to eco-systems, economies and human welfare.

If you're smart, when you're in a hole you stop digging.

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Friends of the Earth England, Wales and Northern Ireland

For more than 40 years we've seen that the wellbeing of people and planet go hand in hand – and it's been the inspiration for our campaigns. Together with thousands of people we've secured safer food and water, defended wildlife and natural habitats, championed the move to clean energy and acted to keep our climate stable. **Be a Friend of the Earth – see things differently.**

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see things differently