



# Environmental decision-making in a technological age

A Consultation held at  
St George's House, Windsor Castle  
12-14 April, 2002

This Consultation builds on a 1999 review, which identified some of the ways that human beings interact with their environment and how this is affected by a Christian understanding. A follow-up in 2000 examined the notion of Stewardship in enabling human beings to fulfil their God-given role within the created order.

The current Consultation examined the role of religious assumptions in environmental decision-making. It focused on two aspects of human influence on the environment, namely the rapidly increasing demand for energy and the need of the agriculture to provide food while minimising environmental damage. This involved looking at a range of examples, from global carbon economy to land use, both urban and rural.

Human lifestyles and numbers are making ever-increasing demands on the earth's resources and having expanding and often negative influences on the environment. There is a growing concern to find ways of addressing this situation.

To understand or influence any system we need to identify the key decision-makers and assess who is in the best position to effect any particular action. In the case of the environment there are a number of possibilities: rule-setting politicians, market-led industrialists, determined activists or motivated and informed consumers.

At the same time, any examination needs to be aware that public policy is intrinsically linked to private attitudes and behaviour. Although there is scope for leading by example, most Western governments won't make changes until they perceive that they have public interest and support in an issue. Therefore, to be successful, any approach needs to take into account two key interest groups - the individual and his or her community - as well as considering the impact of any decision on future generations and nature itself.

<sup>1</sup> Genesis 1:28

<sup>2</sup> Genesis 2:15

*The John Ray Initiative promotes responsible environmental stewardship in accordance with Christian principles and the wise use of science and technology.*

## Focus on energy

Energy consumption is an essential part of contemporary life, enabling us to produce far more than could be achieved by ourselves or with the aid of domesticated animals. While efficiency could reduce significantly the demand in the developed world, the developing world's thirst for energy is increasing. Since 1970 demand has risen by 80%, with developing countries taking an increasing proportion.

Energy companies have to deliver. Their role is to supply energy now. Two questions are; How can they be encouraged and enabled to plan for the future? and What would enable them to supply more energy from renewable resources and from resources that make less impact on the environment in general and on global warming in particular?

## Crisis in agriculture

Although agricultural production only contributes 1% of the UK's GDP, agriculture occupies 75% of land. Farmers are therefore at the forefront of living out the Genesis injunctions to subdue<sup>1</sup> and to tend and care for the land<sup>2</sup>.

We have to realise that there has never been a golden time when the land was well-treated and everyone who worked on it was happy and healthy. Agricultural landscapes are subject to constant change and new technologies like genetically modified (GM) organisms are one more step along this process. Between 1996 and 2000 there has been a 10-fold increase in GM crops, such that currently 12% of cotton is now GM. Foreseeable developments raise the possibility of GM cotton that grows coloured,

sturdier fibres, and produces wrinkle resistance or fire retardant fabrics.

Each time new technologies are introduced they may change the environment. Problems occur when change becomes damage, and the issue becomes a case of judging how much damage is acceptable.

Throughout the developed world, farming is in crisis. UK farm incomes in 2000 were as low as £2.40 per hour, despite substantially lower labour levels than in earlier times. Emotional stress has reached extreme levels to the extent that some in the countryside see suicide as the only way out. One consequence is that there are fewer, larger farms staffed by contract workers or part-time employees, resulting in the risk of a reduced interest in caring for the countryside. Farmers are countryside custodians as well as food producers and as such they are the often unwilling focus of public attention and scrutiny.

The consequences of farming changes are not confined to the developed world. Banana growing and marketing illustrates how global pressures are now complicating the market place by favouring agribusiness and being blind to the needs of communities, or their producing countries. Incorporating agriculture into the World Trade Organisation (WTO) has added problems that will have to be resolved if agriculture is to move forward in an environmental and sustainable way.

There is a clear need to find new ways of looking for global solutions within the agricultural industry. A mentality that places the environment high on the agenda could enable decision-makers to reach workable outcomes.

## Key values in society

Exposing the values held by a society enables us to understand how it makes decisions. People who are concerned about the situation are then in a better position to influence those decisions.

## Markets and self-interest

The underlying principle in developed countries is one of market-led materialism. The market's task is to deliver high convenience at low cost, so that consumers can buy and own. Few politicians seriously expect their supporters to give up aspects of the lifestyles they enjoy for the sake of some poorly defined moral choice. On the other hand, most observers believe that current rates of consumption in the developed world, particularly the United States of America, are unsustainable.

At root is the feeling that for most people,

self interest is the primary driving influence, and the markets operate by fostering this, thus satisfying the demand. There is a general perception that actions that do not affect lifestyle are unlikely to reduce impacts on the environment.

An alternative view is that if markets were given the right incentives they could find ways of delivering 'lifestyle' with less impact on the environment.

## Science

Science underpins much of our understanding of the world, including the ways to exploit it and potential solutions to such exploitation. But science is more than the collection and analysing of data. Science has its own set of values.

While at one level scientists simply uncover the way that the world works, the understanding generated is not neutral. Once new data are accepted, they influence worldviews, altering attitudes and behaviour. As such science plays a powerful role in shaping society.

Scientists tend, however, to be unwilling to admit that they have their own agendas, and many ecologists believe that their comments have no political content. This is plainly not the case. Both the selection of subjects for study, and the persistence of ideas that seem to work, are integral elements of scientific practice. These features may give stability, but they can also block innovation and self-examination.

At the same time, science is perceived to be open to manipulation by vested interests, with increasing numbers of scientists working within privately-funded, commercial research groups and companies, where the self-interest is more apparent. International markets compound these effects, removing any concept of boundaries, and leaving cultures and communities open to unguided change.

The foundation that science gave to late-twentieth century society has developed a few cracks. Our current post-modern society increasingly queries the motives of decision-makers, frequently starting with a question like "what is in this for you?" This is exacerbated by commonly held misconceptions about science,

*At root is the feeling  
that for most people, self  
interest is the primary  
driving influence, and the  
markets task is to  
foster this, thus  
satisfying the demand*

believing that it is capable of giving unequivocal answers, and seeing hesitation in answering questions as signs of hidden agendas, subterfuge or weakness.

The result is that while science and technology are driving change, science is no longer simply accepted as the definitive arbiter, and is only one of the values that will drive future environmental decision-making.

## Trust

Being trustworthy and honest is the glue that enables people to live side-by-side with a sense of harmony. Lose this, and society degenerates into factions that guard themselves against each other, put up barriers to communication and become increasingly aggressive. One of the losers in this sort of breakdown will be the environment, as it will cease to be a shared resource, but will become an asset to be controlled and exploited for personal benefit.

Currently, there is a marked loss of trust in industrially funded technologies. Companies are seen to be interested in domination and profit. There is, however, still a relatively high trust of publicly funded government scientists and it will be these groups of people who will be in the best position to bring about changes in environmentally-related policies.

## Humans come first

A basic assumption has been that we can use the earth's resource wholly to satisfy the needs of the human population, and at times the Abrahamic religions (Judaism, Christianity and Islam) have been accused of fostering this notion. The result of purely satisfying human immediate needs can be vividly seen in the rampant deforestation currently underway, as people seek short-lived gains by plundering non-renewable resources.

What is emerging is a new value system that sees caring for the environment as an important goal of human existence. This may be driven by self-interest, in that there is no pleasure living in a polluted and denuded world, or from a basic enjoyment of seeing the whole earth prosper alongside humanity.

## Do we need a new basis?

We are at risk from the crumbling walls of modernity. Whereas decision-makers used to look almost exclusively to science for inspiration, they now look elsewhere. The Christian church has on occasions been slow to accept some of science's findings, and even slower to become involved. Nevertheless one of its roles should

be to give guidance and inspiration. Post-modernity could relax the rigid reductionism prevalent in science and may re-open the opportunity of 'knowing' that places God at the core of decision-making.

## Principles to use

A variety of approaches could improve decision-making within society.

### Precautionary principle

The precautionary principle is often invoked as the caring and thoughtful approach to decision-making. In some circles, it has become elevated to a Human Right. These are, however, poorly defined in law (including the Treaty of Rome) and can lead to outcomes that in hindsight might look anything but precautionary.

One warning lesson comes from the coal industry. In its early days, dreams of harnessing mechanical technology fuelled a massive demand for controllable sources of energy. The risks associated with mining were considered trivial in comparison to the benefits, and the widespread pollution that would result was not foreseen. We know that past understandings were terribly wrong. It is extraordinary to recall that coal dust was once suggested to be beneficial because it stimulated lung secretions; it is now known to cause serious lung damage.

Would other forms of energy supply be deemed acceptable if introduced now? Would we encourage or fight nuclear-generated electricity if it was coming new to the scene? For that matter, would we allow anything as potentially dangerous as electricity into our homes? What about antibiotics, which were sold over the counter and prescribed in a cavalier manner. As a consequence so-called superbugs resistant to all known antibiotics are now giving enormous problems showing a need for restraint.

Antibiotics highlight the need for intelligent foresight. One of Alexander Fleming's first discoveries about antibiotics was that

*The current post-modern society increasingly queries the motives of decision-makers, frequently starting with a question like "what is in this for you?"*

bacteria readily become immune to them. There was therefore early evidence of the potential problem, which should have led to a more cautious use of these valuable resources.

If they are going to work well the precautionary principle and intelligent foresight need to be combined and involve methods of responding to early warnings. Part of this process is applying scientific method to assessing the impact of technology.

## Sustainability

It is counter-productive simply to demonise technology. The challenge is to use and control it in ways that are sustainable in the long-term. The challenge for regulators is to guide marketplaces in sustainable directions and harness their competitive drive to meet environmentally sustainable goals. This is a fine balance; regulations can all too easily limit possibilities and stall innovation.

Using tax to drive policy has not been generally effective. The UK's landfill tax is an example of one way of raising revenue, but has not prevented people pouring waste into holes in the ground. A carbon-tax is feasible, but decision-makers fear that it is politically unacceptable.

The Performance and Innovation Unit Report<sup>3</sup> pointed out that delivering sustainable goals in terms of energy-use is achievable without huge costs to the economy. A 60% cut in fossil fuel use by 2050 would only cost 6 months loss of growth, and innovation could reduce this further. The resulting innovation could even boost the economy.

While there is clearly a need for international agreement, there is still an argument for taking the lead. Global leadership would enhance a country's moral stance in the world, particularly at a time when the USA seems unwilling to take a lead.

A sustainable future demands setting widely acceptable levels of greenhouse gases; the recent

*Global leadership would  
enhance a country's  
moral stance in the world*

PIU report suggested that a stabilisation level of 550ppm of CO<sub>2</sub> was going to be hard, but probably achievable. Even so this could result in a 30cm rise in sea level. The political decision is assessing what 'cost' would be 'worth' this rise in sea level. Furthermore, policy makers have to avoid the trap of concentrating solely on carbon dioxide. Methane is a potent greenhouse

*The challenge for regulators is to guide  
marketplaces in sustainable directions and  
harness their competitive drive to meet  
environmentally sustainable goals*

gas emitted by ruminants. If agricultural practice does not change there will need to be proportionately greater adjustments to industrial and domestic production.

It is worth noting that the Intergovernmental Panel on Climate Change (IPCC) has consistently refused to state what are 'dangerous' levels of emission, arguing that their task is to explain the risks and consequences of any decisions - level-setting is a task of politicians.

<sup>3</sup> <http://www.cabinet-office.gov.uk/innovation/2002/energy/report/>

## Environmental Justice

True environmental justice demands that decision-makers consider the total cost to the environment of any technology. The polluter pays principle must, for example, include disposal costs. Very little attention is given to this, because our monitors of economic growth are inadequate. One option would be to replace the current reliance on Gross National Product (GNP) by Net National Product. This would necessarily take the cost of disposal into account.

Furthermore, distributive justice requires that the developed world can not expect the developing world to do something that it isn't prepared to do. It demands that we look for equity if not equality. If we are concerned for justice it seems unlikely that agriculture can be simply treated just like any other industry. A just system of integrating the needs of different countries and communities, makes it difficult to see how it can be well-served by the WTO as it stands at the moment.

## Decision-making tools

Throughout history, humans have sought inspiration from a number of different sources, and have developed different intellectual and philosophical tools that can enable good decision-making.

### Wisdom

A potentially valuable approach to decision-making is via virtue ethics. Four specific virtues can be readily applied to environmental thinking – wisdom, wonder, humility and love - with the most relevant in the context being wisdom. The precautionary principle blocks certain actions, but informing it by wisdom, as well as knowledge, can have a compensating positive influence that can cause advantageous actions.

Many people perceive a need to introduce some sort of spirituality into decision-making and wisdom could guide this thinking. It is currently fashionable to seek a spirituality dissociated from Christianity. Until recently, ideas of creation have been played down in much Christian teaching, but there is a renewed interest in exploring an earth-centred Christianity. A creation-based wisdom could draw from, and lead people to an understanding of Christ incarnate in creation.

Wisdom has been integral to rational analyses from pre-scientific times. It is a mark of the way that Biblical writers thought. It is a spiritual gift that can be prayed for as well as a skill that can be learnt. For the Bible's writers, it was a complement to intellect and stimulated imagination. The 17th century biologist John Ray was an example of one who looked for wisdom in creation.

Proverbs 8 talks about Lady Wisdom, present at Creation. She has been variously interpreted as Christ or the Spirit, but it is probably inappropriate to locate wisdom with an individual member of the Trinity. Russian Orthodox theology places a high value on wisdom, with its liturgy frequently remarking: "Wisdom, let us attend". Certainly, justice without wisdom is no justice at all.

### What place religion?

We live in a multi-cultural society but important divisions are still affected by religious beliefs. One approach is to recognise that individuals belong to several different communities. At one level they belong to a religious or faith community; they are often employed to work in another group; and are part of their home community, as well as those of any clubs or organisations (including Non-Governmental

Organisations) they subscribe to. These divisions are often undercut by common concerns and interests in the environment, which may be a way towards consensus.

Religions often convey their messages using myths and metaphors. These can be useful, but can easily lead down blind alleys. Nonetheless political leaders need to understand that faith communities can be their allies in persuading colleagues that the environment matters.

### Digging into Judeo-Christianity

Genesis sets the scene by placing responsibility on us. There, God establishes a system of relationships in which God is responsible to his creation and visa versa. Within this scheme, humankind has a unique role. Genesis speaks both in terms of mastery and stewardship; it also talks of the value of all creation and the exceptional value of human life.

Within Christianity, these ideas have been moved forward. Christians see the extent to which God is committed to his creation. His death on the cross not only provided a route for salvation for human beings, but for the whole of his creation. God's call is to work in partnership with him in tending, maybe even improving, his creation. The Lord's Prayer can be described as an 'earthing' of heaven.

When we debate living standards, it should be remembered that at the heart of Christianity lies an act of sacrifice – and we need to remember that sacrifice can be liberating.

### Uniting aspects

Global issues need global solutions. Religions may provide a way to convey the required messages if we can find a convincing language that can unite people from different faiths.

This could arise from the values that underpin almost all religions, such as the high value of life, an appreciation of the integrity of the whole, acknowledgement of the value of the other and of the future, and an acknowledgement that we have an obligation to that future.

*God's call is to work in partnership with him in tending, maybe even improving, his creation. The Lord's Prayer can be described as an 'earthing' of heaven*

## Sabbath: a way forward?

The idea of Sabbath draws from the first chapters of Genesis, where God, having created everything, pauses for a day. It is this day of rest, rather than the days of work, that he chooses to bless and calls Holy.

A similar situation is found in the story of Elijah.<sup>4</sup> While hiding in a cave he sought God at work in mighty winds, earthquakes and fire, but found that God was present in the quiet.

Sabbath could provide a radical guide for challenging established working practices. Its message of liberation, freedom and justice could act as a counter balance within normally aggressive and self-seeking negotiations. It introduces a notion of constraint into habits of unbridled consumption and covetousness, providing a new way to live and encouraging protection to the poor and vulnerable. It could form a framework where we can live out the fact that, in God's sight, I am my brother's keeper. Life is more than producing and consuming; it is also about caring for neighbour, livestock and land. The related concept of Jubilee has powered the debate about world debt; in the Bible, Jubilee is a concept applied to land as well as to finances.

## The public ground

One recurring theme is the assumption that public policy and global behaviour will only change if individuals want it to occur. This implies that any radical changes to the way that humankind uses the environment must address the issues that motivate individuals.

## Self interest

Self-interest is a powerful motivator and there are two ways to make use of it. As is often the case, a combination of the two may well bring most benefit.

The first is to utilise self interest. People want access to energy, mobility and security. Unfortunately environmental awareness tends to be 'sold' in terms of giving up, suggesting that people's quality of life will diminish as a result. This is too negative, because environmental protection often comes in the form of alternatives rather than abstinence; it could be seen as eco-hedonism. The paradox here is that green consumerism works best when you are wealthy and healthy, whereas poor countries consume less. It begs the question, should we be encouraging life-style recession. Should we reduce the numbers of cars we own, or to live close to our places of work or travel a

shorter distance when we go on holiday?

Likewise, presenting a disaster scenario is probably counterproductive. It implies that things are so bad, that nothing can be done. If so, why bother changing what you are doing? A better message would be that technology can deliver and we need to start action now.

The second way to address self-interest, is to challenge it, on the grounds that cutting back can enhance rather than diminish lifestyles. Central to Christianity is the theme of service, with the paradox that serving God and his interests can bring about perfect freedom; that sacrifice can be liberating. This approach would require a concerted campaign aimed at making virtue fashionable. In this, restraint becomes 'cool'. A key big question is, how much is enough? This approach would have to challenge the usually sacrosanct assumption that growth is unreservedly and inevitably good.

## Public-led

Politicians often claim that environment does not feature high in the public consciousness and is therefore not a vote-winner. Whether or not this is true, there is no attempt by most politicians to make the environment an issue. They appear paralysed by fears that any measures will cost too much and while the public might be worried, they are not prepared to make cuts. They comfort themselves that the time-span of any action is beyond the normal electoral span.

There is a need to raise the curtain that cloaks environmental awareness, perhaps with Ministers giving a lead by using dual-fuel, high efficiency cars and resisting the current fashion for energy-hungry 4x4 cars. While engine efficiency is constantly improving, making cars bigger and heavier merely cancels these gains. The market needs pointing in the direction of helping people to conserve energy, while retaining the utility and mobility it confers. This is a theological as well as a practical task, as creativity is part of the way that humankind reflects God's image.

One issue is to unleash ingenuity to create solutions. Over-regulation can stifle innovation, while the market can deliver solutions if guided

<sup>4</sup> 1 Kings 19:11-15

*A better message would  
be that technology can  
deliver and we need to  
start action now*

in the right direction. A system of 'portfolio standards' could facilitate this process. For example, a country could decide that by a certain date 10% or so of electrical power should come from renewable energy. Those who distribute power are then obliged to achieve this either by generating it themselves or by buying it via a trading system. This system would require appropriate sanctions to encourage compliance. The UK's non fossil fuel obligation is a step in this direction.

A similar approach would be for policy-makers to set efficiency standards and then rely on the market to achieve them.

## Knowledge is participatory

While there is a definite need for expert analysis of situations, there is often an irrational dependence on expert opinion. This diminishes individual responsibility and involvement.

This needs to be replaced by systems that can enable a sophisticated involvement of the public, so that technology can become seen as a social contract. It would be comparable to a form of planning permission in technological decision-making; when making decisions, the public sets the sorts of criteria they expect to be satisfied.

Participation all too often becomes nothing more than objecting to positive decisions driven by advisors. This not only excludes many people from the process, but also fails because decision-makers are often ill-informed about all relevant issues. Advice from different, and often conflicting sources, is poorly co-ordinated. All too often this results in poor decisions.

## Role of mass-media

The mass-media plays a large role in shaping public opinion and in helping people address issues. Too often, however, campaigning groups see their task as manipulating the media rather than working with it, or even serving it.

Anyone engaged with the media needs to understand that the media is a business that is required to make money by grabbing people's attention. Anyone who works with the media needs to make use of the banner headlines and sound bites, rather than fight them.

It is also important to remember that individuals working within the media industry are normal people who are trying to hold on to their jobs and further their careers. They often feel as insecure as the people they are reporting on. Solving this demands developing a long-term relationship of trust between interested organisations and serious parts of the media; it is too late to build friendships once a crisis hits the headlines. One approach is to respond

regularly to issues by sending out brief, balanced and informative press releases. Media outlets will grow to trust and consult you as a reliable voice.

Media outlets need help in addressing the communication of risk. It may be that we should be looking at alternative concepts such as prudence, wisdom, courage or adventure.

## Education

Our educational system creates people skilled in presenting consequentialist arguments, but poorly equipped to use other techniques. This is likely to inhibit debates that look at wider issues and big pictures.

Churches have a role in enabling the perception of spiritual issues and they may be able to influence teaching in schools. There needs to be a more determined effort to introduce notions like wonder into conversation. This could occur by introducing children to the environment within their playground or perhaps helping to run a nature reserve. People can find that they are serving God in the muck and mundane of path building and pond clearing.

## Trust

Too often focus groups are ostensibly set up to learn from each other, but merely attempt to indoctrinate each other. This can end up increasing the level of mistrust.

Breaking down barriers demands that different interest groups find ways of meeting together, listening to each other and responding appropriately.

## Concluding comments

Throughout history, people have been influenced by technology, starting with wood, stone and steam. The twenty-first century has an increasing reliance on technology, but otherwise is no different. Automation and information now dominate home, work and play and determine our perceptions of life; people tend to see life as founded on the information stored in their genes and see status in their opportunity to buy and own more and more possessions. With this, the world becomes a playground, and information becomes a resource to be owned, patented, manipulated and traded.

There is no going back. The challenge is to manage our consumption and technologies in sustainable ways, recognising that we are not owners, but stewards of our finite world.

## Main papers

The main papers from this consultation are published on the web, in Ethics in Science and Environmental Politics: [www.esep.de](http://www.esep.de)

Berry RJ & Thompson B. Environmental decision making in a technological age.  
[www.esep.de/articles/esep/2002/E11.pdf](http://www.esep.de/articles/esep/2002/E11.pdf)

Berry RJ. Environmental decision making in a technological age: prudence, wisdom and justice.  
[www.esep.de/articles/esep/2002/E12.pdf](http://www.esep.de/articles/esep/2002/E12.pdf)

Osborn D. Stretching the frontiers of precaution.  
[www.esep.de/articles/esep/2002/E13.pdf](http://www.esep.de/articles/esep/2002/E13.pdf)

Moody-Stuart M. The challenges of energy.  
[www.esep.de/articles/esep/2002/E14.pdf](http://www.esep.de/articles/esep/2002/E14.pdf)

Houghton J. The challenges of energy — response to Moody-Stuart.  
[www.esep.de/articles/esep/2002/E15.pdf](http://www.esep.de/articles/esep/2002/E15.pdf)

Atkinson D. Agriculture-reconciling ancient tensions.  
[www.esep.de/articles/esep/2002/E16.pdf](http://www.esep.de/articles/esep/2002/E16.pdf)

Carruthers SP. Farming in crisis and the voice of silence — a response to David Atkinson.  
[www.esep.de/articles/esep/2002/E17.pdf](http://www.esep.de/articles/esep/2002/E17.pdf)

Deane-Drummond C. Wisdom with justice.  
[www.esep.de/articles/esep/2002/E18.pdf](http://www.esep.de/articles/esep/2002/E18.pdf)

Bruce D. GM ethical decision making in practice.  
[www.esep.de/articles/esep/2002/E19.pdf](http://www.esep.de/articles/esep/2002/E19.pdf)

## Key Contributors

**Professor David Atkinson**, Vice Principal, Scottish Agricultural College.

**Professor Sam Berry**, Emeritus Professor of Genetics, University College London.

**Professor Celia Deane-Drummond**, Director, Centre for Religion & the Biosciences, Chester College.

**Dr Donald Bruce**, Director, Society, Religion & Technology Project, Church of Scotland.

**Dr Peter Carruthers**, Executive Director, The John Ray Initiative.

**Sir John Houghton**, Chairman, The John Ray Initiative; Former co-chairman, Scientific Assessment Working Group; Intergovernmental Panel in Climate Change.

**Sir Mark Moody-Stuart**, Former Chairman of Shell, UK.

**Dr Pete Moore**, Writer and Visiting Fellow at Trinity College Bristol (meeting rapporteur).

**Derek Osborn**, Chairman of UNED for the UK.

## Other JRI Publications

### JRI occasional papers

1999 JRI Theological Consultation, Transformation **16**(3) Magazine, 8 papers, 40 pages

Response to BBC 2000 Reith lectures, 8 pages

### Briefing papers

1. The Christian challenge of caring for the earth
2. Global pollution and climate change
3. Creation's destiny in Jesus Christ
4. Biodiversity loss
5. Genetically modifying crops
6. Playing God? Christians and genetic modification
7. True 'Creation Spirituality'; a critique of Matthew Fox's 'Original Blessing'
8. Biblical basis for creation care
9. Sustainable consumption
10. Lifestyles
11. Renewable energy
12. Whale and dolphin conservation

## Contact

The John Ray Initiative,  
University of Gloucestershire,  
Room QW212,  
Francis Close Hall,  
Swindon Road,  
Cheltenham  
GL50 4AZ  
UK.

Tel: 012 4254 3580  
Fax: 087 0132 3943  
Email: [jri@glos.ac.uk](mailto:jri@glos.ac.uk)

*The John Ray Initiative is a company limited by guarantee and a registered charity.*  
*Company Registration No. 3420063*  
*Registered Charity No. 1067614*