Part 5
The responsibilities and ethical challenges in tackling global environmental change

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59. Towards greater fairness in sharing the risks and burdens of global environmental change

Introduction to Part 5

by

Diana Feliciano and Susanne Moser

Global environmental change is one of the most challenging problems facing the world today. This section illustrates how global environmental change threatens fundamental values, and how action to address it raises serious concerns of ethics and responsibility.

Global environmental change raises deep challenges of ethics and equity. Many argue that it will particularly affect populations who are already vulnerable and who are not the most responsible for it. Global environmental change is especially dangerous for people who are overwhelmed by existing economic problems and other social and ecological stresses because they are highly exposed and particularly sensitive to risk, lack coping resources, and have only a limited capacity to defend themselves against the loss and harm that environmental change may bring (Dow, Kasperson and Bohn, 2006).

There are several reasons why global environmental change should be a matter of ethical responsibility. They range from taking responsibility for the harmful effects that humans cause, to a fair distribution of consequences, to assuming responsibility on the basis of a commitment to a general harm prevention principle or to the humanitarian requirements of solidarity with the most vulnerable (Gardiner, 2004; Garvey, 2008).

The atmospheric concentration of greenhouse gases is still growing and these will remain in the atmosphere for years or centuries, meaning that the greatest problems are yet to come. This raises important ethical issues because the mitigation of greenhouse gas emissions might require the adoption of technological interventions and market mechanisms that affect the environment or the economy in unequal and unjust ways, and involve unequal burden sharing within societies. Thus, one important question is: who will bear the responsibility for the legacy of environmental problems such as climate change, resource extraction and depletion, or the irreversible loss of species?
In relation to climate change there are two main challenges. One is that climate change is a truly global phenomenon, and the other is that greenhouse gas emissions can have climate effects anywhere on the planet, independently of their source (IPCC, 2007). The contributions to this part offer insights into the ethical dimensions of global environmental change and bring them to life in specific cases.

**Equity in what?**

Many argue that the uncertainties that surround global environmental change should not eliminate the ethical obligation to act sooner rather than later, especially because the potential costs to society may not be fairly compensated for by subsequent responses. Others argue that future societies will be richer and thus more capable of dealing with environmental challenges if and when they unfold. Practitioners and policymakers may be tempted to postpone politically inconvenient and possibly expensive actions, but will also need to understand the ethical implications of their choices. Social scientists can offer methods and evaluative systems to help with such choices, and can help to understand the trade-offs and identify policy mechanisms for sharing rights and responsibilities fairly. They can also help identify opportunities for safeguarding the most vulnerable from serious risks, and ways to stimulate intergenerational solidarity and justice.

To this end, Kasperson and Dow (1991) offer an analytical framework to clarify the range of equity issues associated with global environmental change, including climate change, based on an extensive review of the literature. They define equity as “the fairness of both the process by which a particular decision or policy is enacted and the associated outcomes” (Kasperson and Dow, 1991: 151). This definition suggests that two major types of equity need to be considered in an analytical framework for this issue:

- **Distributional equity** refers to the fairness of the distribution of the impacts of a particular project, set of activities, developmental path, or impacts of environmental change. It can be subdivided into geographical equity, cumulative geographical equity, intergenerational equity, and social equity.

- **Procedural equity** refers to the fairness of the procedures used for policy-making and decisions on the management of global environmental change. The critical issues will be the determination of legitimate interests, the process by which they are considered, and the allocation of rights and responsibilities between them.

Contributions to this part address both types of equity concerns.

**Distributional equity**

With regard to distributional equity, Pillay is concerned with the harms associated with a particular set of activities in the Lower Mekong Basin, stemming from large-scale landscape modification and resource extraction. In this part of the world, building a dam will cause loss of land and the inundation of villages located along the riverbank, requiring local communities to bear an inequitable share of the burden while they will not benefit from this development of energy resources.

Vanderheiden writes about cumulative geographical inequities, particularly the additional impacts from the increase in greenhouse gas emissions on disadvantaged societies and marginal groups who are already suffering the most. He argues that equity and responsibility should be considered in international climate policy design, but recognises that a just global climate change policy remains a difficult challenge for
policymakers. In his opinion, climate change mitigation should be considered a shared problem. National greenhouse gas emissions should be subject to principles of distributive justice and developed countries should lead climate change mitigation actions, given their greater current capacity and their historical benefits from emission-intensive economic development.

Another set of contributions to this section of the Report focuses on distributional equity over time, or intergenerational equity. The ethical principle of intergenerational equity is well-established as central to sustainable development (Beder, 2000). Similarly, Weiss (1990) argued for equality among the generations and for members of any given generation to share fairly both the rights to use and benefit from the planet and the obligation to care for it. Macer and Feliciano’s contributions can be linked to issues of intergenerational equity. Macer discusses the right to universal access to energy to reduce poverty, the potential increase in greenhouse gas emissions that this will cause, and the responsibility and moral obligation towards future generations. Feliciano highlights the unknown risks for future generations posed by geoengineering, but also touches on procedural equity issues, which arise because decision-making and fair governance mechanisms for potential geoengineering interventions are yet to be determined.

Monreal Gonzalez, Godazgar, and Aversano-Dearborn, Freyer and Leipold’s contributions on sustainability issues can also be grouped with those concerned about intergenerational equity, given the well-established understanding of sustainability as “meeting present needs without undermining the ability of future generations to meet their needs”. Monreal Gonzalez describes the José Martí Project, which aims to ensure that ethics are the core driver of sustainability in the Caribbean. The identification of central ethical issues pertinent to the formulation of sustainability policies at national and regional levels by academics has been an outcome of this project. It heeds Beder’s (2000) finding (and warning) that sustainable development policies are implemented all over the world that tend to remove decision-making powers from the community and promote inequity between different sections of the community. One of the recommendations of the José Martí Project is to foster social learning through participatory engagement at the community level, to create greater social inclusion and more equitable sustainability.

A successful example of the effectiveness of participatory approaches in promoting sustainability is then given by Aversano-Dearborn, Freyer and Leipold. They find that transdisciplinary research processes have increased awareness of the sustainability dimensions of the Bible and the Rule of St. Benedict among monks in four Austrian and two German monasteries. Similarly, Godazgar claims that in Iran, where religion is strongly embedded in government policies and people’s lives, Islam should play a more transformative role in giving attention to the importance of environmental problems and sustainability.

Other contributors to this part focus more on procedural equity. Mabon and Shackley stress the importance of effective public engagement in decision-making about carbon capture and storage technologies, in order to have a fairer implementation process for this mitigation option. Monks focuses on the impact of businesses on the environment, especially extractive industries that largely depend on natural resources to operate and make a profit (for instance, fishing, forestry and the pharmaceutical industry). He examines the impact and effectiveness of the UN Global Compact, a policy initiative that commits
businesses to respect the environment for its biodiversity. Considering that companies have responsibilities to address the needs and wishes of society, while shareholders and owners do not necessarily prioritise those responsibilities, he finds that companies committed to the UN Global Compact have fewer negative impacts on biodiversity than those that do not commit.

The resolution of global environmental problems through science can also raise issues of procedural equity. The issues here are concerned partly with the adequacy and appropriateness of the decision processes that lead to these problems, but also with the development of the research agenda and other responses to climate change. St. Clair’s contribution revolves around procedural equity in science. She argues that science should be moral, political and public, and responsive to the needs of society. This would involve framing scientific questions about climate change through the lens of the social sciences, or better still, through the lens of societal needs (through a process of co-production of frames and relevant research questions). At present, however, the traditional concept of knowledge is still separated from action, leaving climate change framed first and foremost by the physical sciences.

**The role of the social sciences in addressing the ethical challenges of global environmental change**

Global environmental change raises several challenging ethical issues, especially those concerned with sharing fairly the benefits and burdens of climate change, and policy responses to it. Social science research is essential to understanding the values, ethical judgements and trade-offs that influence policy design and choices, and consequently the fairness and equity of living with the consequences of environmental change and the possibilities of true sustainability. Throughout this part, several contributors point out the key role of social sciences in addressing equity issues of global environmental change mitigation and adaptation strategies. Public engagement in decision-making (Mabon and Shackley), the open publication of research results (Feliciano), the construction of alternative futures under incomplete information conditions (St. Clair), the socio-economic impacts of natural resource exploitation (Monks) and the effectiveness of co-operation between different stakeholders (Pillay) are some of the examples given in this part. The methods highlighted in these contributions are mostly directed towards education and policy. They aim to ensure that the ethical dimensions of global environmental change are understood by policymakers and the general public, that people around the world, especially the most vulnerable to global environmental problems, participate in ethical inquiry about responses to global environmental change, and that interdisciplinary approaches are adopted towards ethical inquiry into global environmental change.

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60. Winning environmental justice for the Lower Mekong Basin

by

Cassandra Pillay

Construction of a mega dam in Southeast Asia’s Lower Mekong Basin has had detrimental effects for biodiversity and millions of people who depend on it. The use of successful case studies, and collaboration with non-governmental organisations (NGOs) to empower people and increase awareness of their rights, may help win environmental justice for the people of the Lower Mekong Basin.

Shifting the balance of power

The Xayaburi Dam in Laos – one of Southeast Asia’s least developed nations – is being built to supply electricity to Thailand. Its construction on the Lower Mekong Basin, one of the world’s longest and most resource-rich rivers, will instigate the construction of ten more dams (Cronin, 2012). This will have a hugely detrimental effect on the lives of the poorest and most marginalised people of Laos, Viet Nam, Thailand and Cambodia. Millions of these people depend on the river for their livelihoods.

The decision to build the Xayaburi Dam was the first significant breach of the 1995 Mekong Agreement, signed by Cambodia, Laos, Thailand and Viet Nam, and intended to promote the shared use and management of the river basin (Hebertson, 2013). In November 2012, Laos decided to continue constructing the Xayaburi Dam, and to ignore concerns by Viet Nam and Cambodia that this project breached the agreement.

The Lao government’s decision to continue with the project is negligent. The finished dam will impact heavily on local people who depend on the river’s rich natural biodiversity and who rely on fishing for food and to earn a living. According to the United Nations Declaration on the Rights of Indigenous Peoples (UN, 2007) and the World Bank’s corporate responsibility standard (2005), this is a violation of human and environmental rights.

A way forward

Social science studies in disciplines such as sociology have found that learning with others has a powerful effect on attitudes and behaviour (Denrell, 2003). Sharing relevant knowledge and spreading awareness of previous cases could empower local people to exercise their rights. A possible benchmark case comes from Ecuador. Here people won
a judicial case worth USD 18 billion against the oil company Chevron (Handelman, 2011). A shift in the balance of power may also be possible in Laos, if local NGOs work with people living along the Mekong Basin who would be affected by the new dam. What is needed is education, awareness raising and positivism of attitude and behaviour.

How effective is such co-operation with local NGOs and with their learning approaches? To find out, a random sampling of two groups of people would be carried out. The first group would include people selected to work with the NGOs, but who have yet to undergo the necessary training; the second would serve as the control group and would not undergo training. Each group would be asked questions on their belief in their ability to change a situation; a post-measurement test would ask the first group the same questions again after having co-operated with the NGOs. The results could reveal differences in people’s level of belief in their ability to bring about change.

Measuring the effectiveness of such social tools can provide sound evidence within the social sciences on their use in similar environmental conflicts. As the Chevron case in Ecuador shows, joint efforts by NGOs to empower people by encouraging greater awareness of their rights may help win environmental justice for the Lower Mekong Basin.

Bibliography


Cassandra Pillay is a Ph.D. candidate in environmental science at the Universitat Autònoma de Barcelona. She is particularly interested in researching how to achieve climate change consensus.
Climate change can be seen as an issue of intergenerational justice, and the ideals of equity and responsibility identified by the 1992 UN Framework Convention on Climate Change are a useful framework for debating the architecture of international climate policy. Theories of justice from philosophy and political science allow competing proposals and objectives for climate justice to be evaluated.

The 1992 United Nations Framework Convention on Climate Change (UNFCCC) identified anthropogenic climate change as a problem of injustice, and proposed international cooperation, bounded by ideals of justice, as a response. Signatories agree to “protect the climate system for the benefit of present and future generations of humankind”. The convention also states that international action should be agreed on the basis of equity and in accordance with the “common but differentiated responsibilities” of nation-state parties (Article 3, Principle 1). Identifying the climate system as an international and intergenerational public good, the UNFCCC maintains that protecting the climate system is imperative in the name of justice, and that failure to do this would harm those most vulnerable to climate change but least responsible for causing it. To determine who is responsible for lessening the damage, equity and responsibility require remedial liability principles, based on specific theoretical accounts of justice, which have served as the main points for international policy debates.

Given the range of environmental, social and economic impacts expected as a result of the accumulation of greenhouse gases (IPCC, 2007), the UNFCCC identified the “stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system” (Article 2) as its “ultimate objective”. One way to set the threshold of what is dangerous involves setting limits to maximum global temperature increases. Indeed, the unratified 2009 Copenhagen Accord aimed to limit warming to 2°C this century. Scientists estimate that this would require a reduction in greenhouse gas emissions of approximately 80% by 2050, meaning that every country would have to take significant action soon. Decarbonisation targets far higher than the average 5% decrease in emissions demanded by the 1997 Kyoto Protocol would be necessary.
Equity

The failure to mitigate climate change and avoid its most serious negative impacts would disproportionately harm those most vulnerable to changes in rainfall patterns or sea levels. Poor people are the most vulnerable to climate change and contribute relatively little per capita to greenhouse gas emissions. Similarly, future generations have not yet contributed to climate change but are expected to suffer from its effects: their protection can be described in terms of equity imperatives.

In this way, mitigating climate change can be seen as a resource-sharing problem in which national emissions are subject to principles of distributive justice (Caney, 2005; Vanderheiden, 2008). With climate change, the resource to be shared between and within states is the absorptive capacity for emissions, in other words the capacity of the Earth to absorb greenhouse gas emissions so that they do not accumulate in the atmosphere and affect the climate. This would also determine the level beyond which further emissions would have a detrimental impact on the climate. Much of this capacity lies within national borders in the form of carbon sinks (such as forests), which can be improved or supplemented with artificial sequestration technologies. However, these resources are shared in the sense that carbon sinks absorb greenhouse gases no matter where the gases originate. Determining at what level national emissions should be capped can be seen in terms of allocating shares of this resource, informed by principles of justice.

Carbon dioxide emissions absorbed by sinks are benign, while other greenhouse gas emissions accumulating in the atmosphere are harmful. Equitable access to carbon sinks is therefore concerned with equity in terms of the levels of emission, often stated in terms of per capita national emissions entitlements under an international regulatory scheme. Alternatively, equity could refer to the sharing of decarbonisation burdens, in terms of mitigation costs or of percentage reductions in relation to a baseline.

The Kyoto Protocol is a modified version of this burden-sharing approach, with national emissions caps assigned an average reduction of 5% from 1990 baselines. This equity imperative from the UNFCCC is rejected by most climate justice scholars, as it does nothing to change the highly inequitable resource sharing among developed countries and between developed and developing countries. Whether this is a problem of the equitable allocation of a common resource, or of burdens in trying to protect the climate system, assigning national emissions targets implies the application of justice principles to one or the other. The problem is how (if at all) such principles can justify inequality in the benefits or the burdens.

Responsibility

However, the UNFCCC language that immediately follows the reference to equity identifies a second criterion for assigning remedial obligations, by apportioning responsibility. Responsibility focuses on past and present contributions to climate-related harm. This requires the costs associated with avoiding or correcting the harm to be assigned in proportion to the role played by each party in it (Shue, 1999). The UNFCCC takes this to mean that the more responsible developed countries should take the lead in mitigation efforts, or in other words, that the differences in developed countries’ responsibilities warrant differentiated remedial burdens. Those with higher emissions may have to pay more to lessen the damage, given their greater responsibility for it.
Countries have different views on the role that historical emissions should play in assessing current liability. India embraces the idea of “climate debt”, which bases current liability on a country’s full historical emissions and applies a strict liability standard. Under this scheme, recently industrialised countries appear less responsible than they would under schemes based on current or recent emissions only. The United States rejects the concept of differentiated responsibilities even when based on current or recent past emissions only. Others only take into account current and recent emissions, not including those emitted prior to the first Intergovernmental Panel on Climate Change (IPCC) assessment report, in 1990. The question remains whether or how much a country’s past emissions record requires it to pay for future remedial obligation, through either mitigation or adaptation.

Conclusion

Whether responsibility for climate change should be determined by a country’s full emissions or just some of them, and whether equity is a resource-sharing problem of distributing national entitlements to absorptive capacity or a burden-sharing exercise, determines how we should measure climate change and helps us identify potential solutions. Research into climate justice has highlighted the distributive questions that mitigating climate change raises, as well as the key issues involved in linking remedial action to past responsibility. Research has also offered various ways to examine fairness and responsibility. Yet there is still no agreement that climate justice requires significant action to mitigate climate change, because such justice demands that developed countries take action to decarbonise to a far greater degree than other nations.

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62. Ethics and energy consumption

by
Darryl Macer

Climate change casts the issue of equitable access to energy in a new light, because fossil fuel use damages poor communities that use little oil, coal or gas themselves. A range of approaches exist to thinking about these issues and developing more ethical and just patterns of energy use.

Energy security as a human right

This World Social Science Report 2013 could not have been produced without energy; academic reflection and dialogue require energy to allow communication. However, one-sixth of the world’s population lacks access to electricity and struggles to meet basic and essential needs fundamental to health and well-being, such as heating, lighting, cooking and hygiene, let alone to reflect on social science policy. Electricity has enhanced global reflection on social science.

How can we respond to global ethical dilemmas?

Some people find it difficult to identify with the problem of climate change. In response, Markowitz and Shariff (2012) have proposed strategies for communicators to use to appeal to our moral reasoning and persuade people to take action to address climate change. The recognition that we are one cause of climate change is the first step towards modification of our ethical choices.

Rai et al. (2010) found that although international normative texts (such as those from the United Nations) agree on a number of ethical principles, most communities find it difficult to adopt them, because ordinary citizens have a different perspective on life from that expressed in UN rhetoric. However, every society has some ethical concept of justice and of responsibility to future generations. A growing number of publications reflect on these issues for our future and help policymakers combat global environmental change.

The problem of access to essential energy services for all can be viewed through a human rights perspective. Access to energy is important for a reasonable quality of life. Many poor people are dependent on traditional biomass fuels (wood, dung and so on) for their heating and cooking needs. Indoor air pollution from the burning of solid fuels is
responsible for more than 1.6 million premature deaths each year (Wilkinson et al., 2007). Access to reliable and affordable supplies of modern energy – liquid fuels such as kerosene, liquid gas or electricity – enhances public health.

The concept of human security relates to multiple dimensions of human freedom. Human security encompasses more than the possibility of military threat: it includes food, health, personal, political, community, economic and environmental security (UNESCO, 2008). The Asian Development Bank (2009) lists important energy security concerns as:

- a lack of energy access
- a lack of diversification of energy resources
- high dependence on traditional fuel
- an increasing gap between energy supply and demand
- an overdependence on imported energy
- a lack of adequate infrastructure.

The risks to human security posed by dangerous climate change are not only the result of ecological risk. Existing global inequalities in the distribution of power, opportunities and resources mean that climate change will have a greater impact in some countries than in others (Moss et al., 2011). Social scientists have also questioned the necessity of people’s overdependence on consumerism, high levels of energy use, and widespread use of industrial products (Ilich, 1973).

**Social justice and energy policy**

Inequality raises important questions of social justice. Those who will be most adversely affected by climate change are also the least responsible for creating the threat to human security from greenhouse gas emissions. The poorest 1 billion people are responsible for only 3% of emissions (World Bank, 2010). All cultures also attach a high value to biodiversity (Bosworth et al., 2011). However, the survival of many plant and animal species and the integrity of entire ecosystems are also at risk from pollution and the burning of fossil fuels. Environmental security encompasses far more than just human security.

It is essential to ensure that everyone’s basic and essential energy needs are met, whilst also reducing our carbon footprint and energy consumption levels and changing behaviour (Schroeder and Pisupati, 2010). We have to consider the rights of others in the pursuit of our choices, arguing for a more frugal lifestyle than most of us adopt.

Energy poverty therefore should be a matter of social justice. Egalitarianism implies the need for redistributive justice, given that it is not right for some people to have poorer life chances than others through no fault or choice of their own. Welfare egalitarians argue that being disadvantaged means reduced opportunities for well-being. Resource egalitarians argue that being disadvantaged means having fewer resources than others. The capability approach views disadvantage as having fewer opportunities to achieve various “functionings” which are seen as critical for people to flourish and be free (Moss et al., 2011).

A “sufficientarian” approach permits a limited level of inequality in people’s access to energy resources. This ensures that everyone has the opportunity to lead a minimally decent life. Once this is achieved, it is of no moral consequence if some are better off than others. “Ability security” points out that people with disabilities are especially vulnerable to energy price increases and to supply shortages. For example, a household in Australia
where one member suffers from multiple sclerosis will spend almost ten times as much on air-conditioning as the average (Moss et al., 2011).

The challenge of adopting an equity-based approach to energy policy is to agree on a workable understanding of what constitutes a decent minimum of well-being (Moss et al., 2011). An egalitarian or sufficientarian approach to energy equity will favour some level of government intervention in the energy sector to protect essential energy usage, for example by providing concessions on electricity tariffs for low-income households or through rural electrification programmes. An egalitarian energy policy would impose obligations on governments to reduce energy poverty and to promote universal access to an affordable and reliable supply of electricity. These goals could come into conflict with the targeted approach that many governments currently adopt for rural electrification and grid extension projects. If we apply the ethical principle of autonomy, local alternatives – such as solar or wind energy operated at the local community level – could empower communities and free them from future increases in the price of grid electricity.

Energy policy initiatives must target the reduction of energy poverty in existing generations while taking the interests of future generations and of other species into consideration. Carbon-intensive energy use involves risks to human and environmental security (World Bank, 2010). This means that not all ways of reducing energy poverty are sustainable, or consistent with the moral obligations we have towards future generations and the environment. Moss et al. (2011) review several ethical approaches that help explain the responsibility and moral obligation we have towards future generations.

**Who should pay?**

For example, if person A has taken unfair advantage of person B by imposing costs on them, person A should take responsibility for those costs – this is the polluter-pays principle. Applying this principle in distributing the costs of climate change mitigation is problematic. One issue is that many people now living in affluent, developed countries are migrants with little in common with the earlier citizens of these countries (Caney, 2006).

People who benefit the most from polluting activities should be obliged to pay for climate change. But this approach faces a number of difficulties. One is the issue of how to divide the costs of pollution among beneficiaries if many of them are no longer alive.

A further motivation for requiring affluent countries to contribute to the costs of sustainable development in developing countries is their greater ability to pay for it. Rich countries can help developing countries in various ways, ranging from technology transfer, to knowledge transfer, to capacity building and resource transfers.

**Ecocentric approaches to environmental security**

The interests of future generations and other living organisms, as well as the integrity of ecosystems, suggest that global and local energy needs should be met when possible through sustainable technologies. Environmental security takes an ecocentric ethical approach towards the value of the living and non-living environment. This suggests that the damage done to nature by energy production and use should be minimised. By contrast, the anthropocentric approach to human security underestimates human integration into ecosystems. It is important to appreciate that ecosystems are also crucial for human survival.

Individual lifestyles and attitudes have to become more austere and frugal. The consumerist myths of market economies have to be questioned. Social scientists have played
important roles in exploring the linkages between happiness, quality of life and greater consumption, although there is solid evidence that greater socio-economic empowerment generally enhances the well-being of vulnerable groups, such as women (Blumberg, 1995). If we want everyone to have equal access to energy, we have to understand that there are limits to sustainable energy provision. Intergenerational equity requires us to secure the energy needs of future generations and consider the injustices done to those alive in our own generation. In every culture and tradition, the social sciences and humanities have a strong role to play in challenging assumptions of what a good life consists of and our reliance on energy to achieve it.

Notes

1. “Functionings” include various things that people can be or do, like being nourished or being part of a community. It includes things that people are actively able to do, such as reading and writing, and things that are passive states such as being free of disease.


Bibliography


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63. The ethics of geoengineering

by

Diana Feliciano

This is a brief literature review of the ethics of geoengineering – the intentional manipulation of the climate system to counteract greenhouse gas emissions. The social sciences have a role to play in clarifying the moral hazards associated with geoengineering, given that future generations may have no other choice but to implement such projects.

Over the past two decades, climate change has emerged as a major challenge to the planet. The Intergovernmental Panel on Climate Change (IPCC)’s Second Assessment Report (AR2) showed compelling evidence that much recorded climate change is anthropogenic in origin (IPPC, 1996). The Stern review concluded that the benefits of taking strong early action to reduce greenhouse gas emissions outweigh the costs of climate change effects considerably (Stern et al., 2006). However, most technical solutions to mitigate climate change have environmental, social and economic effects, and raise additional issues regarding ethics, justice and moral hazard. Geoengineering is one example.

According to Scott (2012), geoengineering is the intentional manipulation of the climate system to mitigate global climate change, which is itself the effect of anthropogenic greenhouse gas emissions. Geoengineering methods and technologies seek either to reduce the amount of absorbed solar energy in the climate system or to increase carbon removal from the atmosphere, at a scale sufficiently large to alter the climate.

The first group of such technologies are referred to as solar radiation management. This includes pumping sulphates into the stratosphere to simulate volcanic eruptions and so brightening clouds to reflect more sunlight back into space. Fertilising the ocean with iron to remove carbon dioxide from the air is an example of the second approach.

Given the increasing scientific interest in geoengineering, the IPCC’s Fifth Assessment Report (AR5) will evaluate its ethics, feasibility, effectiveness, side effects, efficiency, legal and social acceptability, regulation, monitoring and verification (IPCC, 2012).

A report launched in 2009 by the Royal Society and entitled Geo-engineering the Climate: Science, Governance and Uncertainty, identified three main ethical positions regarding these techniques: consequentialist (value of the results), deontological (the issue of duty and “right behaviour”) and virtue based (dilemmas of pride and arrogance) (Royal Society,
2009). These ethical positions have shared concerns regarding the governance of research and its possible deployment, the unbalanced sharing of risks, the distributions of harms and benefits, the possibility of one-sided deployment and possible effects on the environment.

According to Scott (2012), the philosophers Dale Jamieson and Stephen Gardiner have provided the two most extensive treatments of the ethical issues to date. Jamieson proposed a list of difficult-to-meet ethical preconditions to allow the implementation of geoengineering projects (cited in Scott, 2012). Gardiner argues that it would be sensible to develop these technologies, as future generations might have no choice but to implement them in order to avoid the catastrophic consequences of climate change (cited in Scott, 2012). The Royal Society (2009) considers that in terms of justice and moral hazard, the mitigation of greenhouse gas emissions is preferable to geoengineering, but advises that research should continue.

Rayner et al. (2009) maintain that governance structures should be in place to guide research in this area and to ensure that any decisions ultimately made regarding deployment occur within an appropriate governance framework. They believe that such a framework should support transparent decision-making, public participation and the open publication of research results. Furthermore, it should take the views of scientists, policymakers, the public and civil society groups into account. The “Oxford Principles” (Oxford Geoengineering Programme, 2013) regarding the governance of geoengineering were drawn from the work of Rayner et al. (2009) and submitted to the British government in 2009:

- geoengineering to be regulated as a public good
- public participation in geoengineering decision-making
- disclosure of geoengineering research and open publication of results
- independent assessment of impacts
- governance before deployment.

The Royal Society (2009) also emphasises that the possible use of geoengineering will depend upon the public's perception of the risks, their level of trust in researchers and practitioners, the transparency and purposes of geoengineering actions, and the vested interests involved. It argues that many of the ethical issues associated with geoengineering are likely to be specific and technology dependent. If research shows that moral hazard is unlikely in some types of projects, the public’s objection to the implementation of these projects might disappear. Therefore one of the objectives of the social science research agenda should be to clarify the existence or extent of any moral hazard associated with geoengineering projects. Scott (2012) argues that as a pragmatic approach it might be sensible to research other options generated by geoengineering while political efforts are still inadequate.

Note

1. Ethics: how humans should act; justice: the concept of moral rightness based on ethics, rationality, law, natural law, religion, equity or fairness; moral hazard: a situation in which a party has a tendency to take risks because the costs that could incur will not be felt by the party taking the risk.
Bibliography


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64. Ethics as a core driver of sustainability in the Caribbean

by

Pedro Monreal Gonzalez

The José Martí Project for World Solidarity is addressing environmental issues in the Caribbean from a political and ethical perspective. The region is especially vulnerable to climate change. Concern about the environment varies even at the community level, depending on how close people live to the resources they rely on for their livelihoods. Yet local islanders have been excluded from devising responses to environmental degradation.

Ethics and sustainability

Sustainability is a political process and cannot be achieved by applying scientific knowledge alone. Many individuals and groups are involved, including national and local government, academics, the private sector and civil society, all with conflicting social and economic interests. Sustainability is also shaped by our values and belief systems and the moral outcomes we each want to achieve. Diverse and contradictory perspectives are inevitable. There will always be competing views of what is “right” or “wrong” concerning decisions about the environment and subsequent public action and development outcomes.

We do, of course, need decisions on sustainability and global environmental change. Garvey (2008) maintains that the problem is how to identify a rationale for action, and that while scientific, economic and social factors are important, the “right” answer is largely shaped by ethical considerations. Ethics should be the core driver of sustainability.

Focus on Caribbean states

According to UNESCO (2011), global environmental change is having a disproportionate impact on Caribbean states. Food security, housing, agricultural production, coastal ecosystems, tourism – the very fabric of social, economic and cultural life – are all affected.

José Martí Project

Several institutions in the region are working holistically to achieve sustainability, including the Jose Marti Project for World Solidarity. The project was set up in 2002, with support from UNESCO, to address the serious problems confronting humanity.
PART 5.64. ETHICS AS A CORE DRIVER OF SUSTAINABILITY IN THE CARIBBEAN

It includes representatives of different regions and is open to all religions, philosophies and beliefs of universal humanism. A Cuban national hero, Martí was an important social and political thinker in the late 1800s and forefather of independence in the region. He aimed to develop a more harmonious relationship between humans and nature, and supported public education, social justice and inclusion. Freedom, liberty and democracy are prominent in his work. His ideas about what is now called sustainable development offered a rich foundation for collaboration between the societies of North and South America in tackling environmental problems (Castro, 2001).

Since 2012, the José Martí Project has focused on improving policy responses to global environmental change in the Caribbean. It assists social science networks and civil society to rethink development processes in relation to climate change. Collaboration between social scientists, civil society and policymakers speaking different languages in distinct regions and sub-regions is an important part of the process.

The José Martí project prioritises participatory, community-based thinking, and aims to integrate environmental, social and economic issues within a long-term perspective. There are many different ways to achieve this based on multiple goals and perspectives, but the crux is to have a strong moral and ethical foundation.

The project has identified the following ethical issues as being pertinent to formulating policy on sustainability at national and regional levels:

- A rights-based perspective is crucial to transcending the limited but still dominant economic approach to development (Puig, 2013), as Amartya Sen’s work shows (1999).
- Given the serious impact that climate change is having on people’s livelihoods and the environment, a concerted effort at the international level is morally imperative (Naraine, 2013).
- Ethical concerns about scientific knowledge relate to the use or misuse of scientific knowledge and to people’s moral duty to act, or not act, on available knowledge. Who is responsible for improving data-gathering networks to ensure information is accurate? Should we mitigate against the risk of information not being accurate enough? What do we do about knowledge gaps (Naraine, 2013)?

The project recommends that at regional and national level, island states consider the following key ethical issues in formulating policy for sustainability:

- A process of political negotiation on sustainability outcomes that articulates the relevant ethical issues at the island, or even community, level is preferable to a universal approach across the Caribbean. Public authorities, business managers and other decision-makers must consider citizens’ attitudes toward new, large-scale economic activities when planning resource management. This is essential because people’s beliefs, concerns and behaviours vary according to how close they are to the resources critical for sustaining their livelihoods, such as coastal zones and wetlands (Baptiste and Nordenstam, 2009).
- Socially inclusive and equitable sustainability with solid ethical foundations requires new forms of social learning, such as participatory engagement at the community level.
- More people are getting involved in devising responses to environmental degradation in the Caribbean states. This should mean that people who have traditionally been excluded from decision-making processes now have more opportunities to share their opinions.
- Everyone, no matter where they live, has a responsibility towards the environment. However, their obligations may differ, reflecting uneven social and economic
PART 5.64. ETHICS AS A CORE DRIVER OF SUSTAINABILITY IN THE CARIBBEAN

circumstances, diverse historical contributions to global environmental problems, and various levels of ability to address environmental issues. Given this generally accepted concept of common but differentiated responsibilities (United Nations, 1992), the unique vulnerabilities of Caribbean island states should be weighed in any model of shared responsibilities.

- To be effective, international co-operation for sustainability needs to focus on individual island states within the Caribbean. Capacity building should be about developing knowledge and expertise, strengthening links between local organisations, engaging the local community, and involving academia and industry in community life.
- Caribbean island governments need to assess environmental and social demands from civil society – including marginalised groups – effectively through participatory policy processes, as Castro (2013) has pointed out.

The development of a shared vision is essential to allow Caribbean states to pursue effective sustainability policies. This will require integrating the complex processes of ecological degradation with the similarly intricate processes of human development. It must include philosophical and moral judgements to help define the relationship between humanity and nature.

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65. The role of religion, education and policy in Iran in valuing the environment

by

Hossein Godazgar

Iran faces many environmental challenges, including air pollution in cities and sand storms exacerbated by progressive drying out of the land. As a result, the government now has more sympathy for environmental concerns and there are some active green non-governmental organisations. The picture is complicated by varying interpretations of the Qur’an advice on human responsibility for the Earth. School textbooks refer very little to nature and with a dominant Islamic political ideology. Little space is left to discuss the environment in the classroom.

Environmental concerns are growing in Iran, and of these, air pollution in Tehran and other large cities is probably the most urgent. Tehran is one of the ten most polluted cities in the world. According to the Office for the Control of the Quality of the Atmosphere, the number of polluted days in Tehran has “increased greatly during the last six years and reached its peak with 218 [non-standard and unhealthy] days in 2011” (BBC Persian, 2012a).

As a result, the number of days in which schools, offices and factories have had to close has risen, as have the number of deaths related to pollution (BBC News, 2010). According to the deputy health minister, some 4 460 people died due to pollution in Tehran in the first nine months of 2012 (Asgari, 2013). The former president, Mohammad Khatami, recently mentioned that “It is not acceptable to have atmospheric conditions that lead to a state of emergency and danger in Tehran and other large cities for two-thirds of a year … the one person who can identify these most crucial issues and who can address them must step forward [as President]” (Khatami, 2013).

The main causes of pollution are population growth, migration to cities, the poor-quality fuels used by the mostly old cars on the road, industry, and most importantly, a lack of awareness and disregard of the environment. Economic sanctions have also made industry more polluting.

Air pollution is not the only problem. The Zayandeh-rood River in Isfahan dries up more frequently than in the past, as Foltz (2005) has described, and dryness has now penetrated areas once described as wet. For example Lake Urmia, situated in West Azerbaijan
province, is also now drying. This has sparked anti-government demonstrations and discussions at government and parliamentary level. Sandstorms are no longer limited to arid provinces, such as Sistan and Baluchestan, Kerman and Yazd in eastern and central Iran (Zakeri and Forghani, 2012; Omidvar and Khosravi, 2012). In 2012, sandstorms twice caused the closure of schools and offices in Tabriz in north-west Iran.

Government policies on dealing with these concerns have not always been systematic. Early Islamic governments in the 1980s paid considerable attention to rural development. They built roads to help rural people take their agricultural products to the cities. Ironically, this contributed to record rural–urban migration (Velayati, 2011).

Later, during Khatami’s presidency, a vice-presidency for the environment was established, encouraging the growth and recognition of about 300 local environmental non-governmental organisations (NGOs). This increased the role of the media, academic journals and the press in discussing issues of sustainability. Khatami allocated a “Green Day” on which the use of private cars was discouraged, although in practice people did not welcome this idea (Foltz, 2005).

Policies in support of civil society, including the Environmental NGO Network, were however questioned during the presidency of Mahmoud Ahmadinejad (2005-13) in the name of economic development. Indeed, Parviz Dawoudi, a former vice-president, has stated that support for sustainability and environmental preservation constitutes “colonialism” (Godazgar, 2011). The policy change appears directly related to the high incidence of urban air pollution in Tehran in recent years.

Iran under the presidencies of Rafsanjani and Khatami had been praised for aiming to reduce the rate of population growth from 4% per annum in the 1980s to 1% per annum by 2013 (Foltz, 2005: 5). This policy has continued, and according to a World Bank report (2012), the population growth rate reached 1.11% in 2011. However, the former president, Mahmoud Ahmadinejad, who called birth control “wrong and Western” in 2010, began to reverse the policy in favour of increasing population growth rate in 2012 (BBC Persian 2010, 2012b; USA Today, 2012). This new policy became even more inevitable when the Supreme Leader of the Islamic Republic, Ayatollah Ali Khamanei, publicly supported Ahmadinejad’s view of population growth in October 2012 and declared that “One of the mistakes we made in the 1990s was population control. Government officials were wrong on this matter and I, too, played a part. May God and history forgive us” (Khamanei, 2012).

The Islamic government’s disregard for the environment is also reflected in the state education system. Education in general, and religious education in particular, barely deal with these concerns. Of the 225 chapters written for Muslim pupils and 73 chapters produced for pupils belonging to the Christian, Judaic and Zoroastrian religious minorities in 2010-11, only three at the primary school level contain elements on the importance of the environment.

The environment or nature does not figure in the modern sense in the Islamic tradition. However, the Qur’an describes the Earth (ardh), its components and surroundings as signs of God (ayat allah) or as his gifts (na’amat).1 Shi’ite jurists have interpreted these verses as addressing unbelievers (koffar), asking them why they do not believe in God even though they see these signs (e.g. Makarem-Shirazi, 2008: 153-8, 203-10; Tabatabaei, 2003: 91-139, 170-86). However, in the ijtihad,2 these verses also have implications for contemporary understanding of the environment – tanqih-i manat in Shi’ite jurisprudence – and could mean that no one is allowed to change the environment (Earth) for the worse;
it is there for everyone of all generations and has to be valued and protected. Any damage to the environment may result in the peace of nature being disturbed. This would lead to “corruption on Earth” (fasad fi al-ardh), which is strictly forbidden under Shari’a law. This view has, however, never been adopted by Islamic or other religious education textbooks, the government, or Shi’ite jurists in Islamic seminaries.

Apart from a limited period during Khatami’s presidency, and to some extent during Rafsanjani’s presidency, post-revolutionary Iran – particularly under Ahmadinejad – has suffered from unfavourable policies for and attitudes towards the environment in general. Change in environmental practices will not happen without an increased awareness of the value of the environment among Iranian religio-political elites and people. As was mentioned above, Islam can be interpreted by the jurists in a way that it values the environment, at least instrumentally. If this interpretation of Islam is adopted by the Islamic government, it can also be reflected in the state-provided Islamic or religious education textbooks and curricula. This may lead to the contribution of Islamic education to the promotion of awareness and good practices towards the environment in most sectors of Iranian society. Aspects of these issues might be addressed during the presidency of the moderate conservative Rouhani in the years ahead.

Notes

1. “Who made the Earth a resting place for you and the heaven [atmosphere] a canopy…” (2: 22), or “He it is who created for you all that is in the Earth…” (2: 29) (author’s italics).
2. *Ijtihad*, in Islamic law or Shari’a, means an effort to understand or independently address an issue not explicitly covered in the Qur’an or Sunnah (the tradition of the Prophet). In Sunnism, the gate of *ijtihad* closed in the 9th century (3rd century of Islam), but it has remained open in Shi’ism.

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66. Sacred sustainability? Benedictine monasteries in Austria and Germany

by
Valentina Aversano-Dearborn, Bernhard Freyer and Sina Leipold

The focus of the transdisciplinary research project, Dealing with the Divine Creation, was to investigate the role of religion, spirituality and ethics in promoting sustainable development and the environment in four Austrian and two German Benedictine monasteries.

Religion, spirituality and ethics have received increasing attention from researchers all over the world, since many sustainability processes seem to have failed because of a lack of appropriate ethics (Inauen et al., 2010; McDaniel, 2002; Orr, 2002). For this reason, this research project studied the role of ethical principles transmitted through the Christian faith in promoting sustainable practices.

While monasteries are predominantly seen as centres of spirituality and charity (e.g. Carroll, 2004), they have also developed sustainable models for agriculture, food processing, forestry, tourism and employment. As Benedictine monastic communities are strongly guided by Christian ethics, we investigated to what extent their initiatives towards ecological sustainability (such as organic agriculture and renewable energy production) were predominantly guided by their spirituality and associated ethics.

As the Bible and the Rule of St. Benedict are the two central ethical references of Benedictine monks, we analysed their inherent connections to sustainable lifestyles and economic practices. These ranged from the responsibility for resources (such as sufficiency as a guiding principle) to the management of staff (for example, social responsibility) and governance strategies (see Feldbauer-Durstmüller, Sandberger and Neulinger, 2012; Rosenberger, 2011). We undertook 40 qualitative and semi-quantitative interviews, which documented that the monks identified multiple overlaps between their Benedictine ethics and spirituality, and the concept of sustainability. In contrast to these more general interrelationships, mainly connected to economic and social engagements, an ecologically responsible approach to dealing with the Divine Creation has only recently started to gain momentum in the monasteries studied.
The adoption of ecologically oriented practices very much depends on individuals with access to certain capacities and resources. As with other units of society, the capacities necessary to establish new organisational practices encompass access to relevant information and knowledge, an actor network of supporters from outside and inside the monasteries, the ability to use institutional options and foundations (such as the Benedictine Rules) to shape the monastic discourse, and access to technical and economic benefits and requirements (adapted from Jänicke and Weidner, 1997).

Ecologically oriented concepts of sustainability were rarely reflected or established at an organisational level, but rather were found within the fields of activity of individual monastic actors. Accordingly, ecological practices were driven less by a collective ethical or spiritual mission than by economic or technical considerations, which were more readily accepted by the responsible councils and the abbot. Consequently, we conclude that while the central presence of ethical and spiritual principles provides entry points and interfaces for reflections and practices tackling sustainable organisational development, they are not in themselves a guarantee of sustainable ecologically oriented practices and their institutionalisation. Throughout the transdisciplinary-oriented research process, however, the participating monks and secular employees signalled that they became increasingly aware of the sustainable dimensions of the Bible’s ethics and the Rule of St. Benedict (the monks’ major frames of reference).

With respect to the role of ethics and spirituality for sustainable development in the overall societal debate, our results indicate that their mere presence is not sufficient to successfully accomplish sustainability processes. Ethical values need to be complemented by capacities and resources for intense organisational learning (see e.g. Argyris, 1990) as well as by far-reaching and participatory transdisciplinary discourses.

Notes

1. Here understood as internalized and practised faith based on certain religious value sets contained in the Rule of Benedict and the Bible.

2. For example, Forum on Religion and Ecology, Yale University, United States, http://fore.research.yale.edu.

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67. Public engagement in discussing carbon capture and storage

by
Leslie Mabon and Simon Shackley

Carbon dioxide (CO₂) capture and storage has significant climate change mitigation potential, yet has struggled to gain public acceptance. For it to become socially acceptable, underlying ethical issues need to be addressed. This involves engaging the public in ways that keep the terms of discussion open, that allow a range of possible outcomes, and manage expectations effectively.

It started in Holland ...  

Few people will have heard of Barendrecht in the Netherlands. For carbon dioxide (CO₂) capture and storage (CCS) developers, however, the town signifies a massive shift in how this low-carbon energy technology is considered. Barendrecht witnessed sustained and aggressive public opposition to a proposed CCS development, which partly led to its cancellation in 2010. Since then, public interest and engagement in this area have soared. It is clear that public support is vital for the successful use of this technology. In this article, we argue that despite the CCS community’s growing interest in public participation, key ethical issues still need to be addressed.

What is carbon capture and storage?

CCS is a process designed to trap the CO₂ formed by the burning of fossil fuels before it enters the atmosphere, and to store it underground in rock formations (see Figure 67.1).
CCS is best adapted to single-point sources of large amounts of CO₂. These might be power stations that burn fossil fuels, or industrial sources of CO₂ such as steelworks. One of the first CCS power stations is being built at Boundary Dam in Canada, with possibly another in Maasvlakte in the Netherlands. Many other projects are working on part of the process, including pioneering CO₂ storage under Norwegian waters and at onshore projects in Algeria and Canada. Many energy and fossil-fuel-extraction companies, national governments and certain environmental non-governmental organisations (NGOs) support development of the technology.

Why do ethical issues matter in energy production?

Energy is a fundamental aspect of people’s lives. The energy generation choices that society makes can have economic, environmental and practical effects. Such decisions can profoundly affect the way people live their lives. Ethical issues – what is socially acceptable and how decisions should be made – will inevitably be part of this.

Energy production is not alone in this regard. New technologies such as information technology and genetic modification can also have far-reaching effects, and the concept of responsible innovation has emerged in response. Von Schomberg (2011) explains that responsible research and innovation involve early societal involvement in the research and innovation process, to reduce the chances of a technology emerging that is unacceptable to society. Here we consider the ethical issues that need to be addressed to allow people to participate fully from an early stage and more broadly in discussions on CCS and low-carbon energy.
**Locking up more than CO₂? Closing down the discussion**

Perhaps because of events such as those at Barendrecht, the CCS community has in recent years shown a strong interest in how to communicate CCS and climate change to the public. The reasoning is, first, that if people understand the need for climate change mitigation, they will also understand and accept the rationale for it. In addition, the hope is that increasing this understanding will help to dispel concerns about the safety risks of storing CO₂ underground. In the past few years, the Global Carbon Capture and Storage Institute, the Commonwealth Scientific and Industrial Research Organisation (Australia), the United States National Energy Technology Laboratory, the World Resources Institute and others have all published detailed guidelines on how to ensure effective public engagement in these issues.

However, this approach limits the terms of public engagement to a discussion about the science of climate change and CCS. It arguably leaves little room for members of the public who want to discuss, say, the fairness of continuing fossil fuel use. Research with the general public in the United Kingdom and Italy, as part of the interdisciplinary European Union Seventh Framework Programme (FP7) ECO₂ project on the effects of sub-seabed storage of CO₂ – has found that people often express concerns about CCS in terms of issues such as trust, fairness and morals, rather than the technological detail (Mabon et al., 2013).

The limitations of the guidelines could be seen as unethical if, by closing down the discussion from the outset, they exclude those who might want to discuss CCS in different terms. This could lead to injustice. More ethical public engagement in the issues should allow for different framings of the discussion so that people can discuss concerns that may go beyond technical risks and safety. This leads to a second ethical point: what is the purpose of engagement?

**Is public acceptance acceptable?**

The concept of public acceptance underpins much of the public engagement in CCS. In other words, there is an implicit assumption that the best outcome is that the public accept the technology. There seems to be little room for other results, such as a community perhaps deciding that it is not appropriate for their area. This is arguably logical and to be expected. A project developer's goal is to implement a project. Even in academic research, the industries and governments that become involved are keen to develop knowledge that will allow CCS to progress.

Difficulties arise, however, when the general public take part in an engagement process – whether for a real-world development or an academic research project – and believe they can choose whether a technology such as CCS should be implemented, when in fact the major decisions concerning its location and technical characteristics have already been made. Indeed, citizens in Moray, Scotland, who participated in a discussion group for the European Union-funded SiteChar project, were surprised to discover that the Scottish government’s plans for CCS were at a much more advanced stage than they had expected. They questioned the purpose of their engagement, and were left with the impression that the fundamental decisions had already been taken (Moray Citizens, 2012).

Increased public engagement needs to be more open to a range of possible outcomes, including accommodating alternative views, and including the realisation that some
people might not want such projects to go ahead in their area. This leads on to a third, equally important, ethical imperative: managing public expectations.

Managing expectations

Public understanding of decision-making processes can often differ from reality. For example, people may believe that participating in government-funded research means that high-level decision-makers will be reading their contributions and acting on them. This can lead to an ethical dilemma regarding the gap between what people feel they can achieve by participating and what they are actually able to achieve. People’s expectations of their engagement in low-carbon energy issues may exceed the level of influence they would expect via democratic processes in other areas of their lives. Provoking feelings of disappointment or dashed expectations could be viewed as unethical, and may reduce a community’s trust in other low-carbon energy approaches that may be developed in the future.

To reduce the chances of this happening, it is important to be clear from the start what participation can and cannot achieve. Ashworth et al. (2010) believe that the community’s unmet expectations regarding their engagement contributed to opposition to the Barendrecht project in the Netherlands, and suggest that expectations need to be discussed as early on in the process as possible.

Social scientists too have a moral responsibility in this regard. Social science researchers often work with the general public, and need to be honest with consultation participants about the challenges of bringing about change. It is also important for social science researchers to reflect on what members of the public expect from them, and to encourage low-carbon energy developers to apply more rigorous and ethical public engagement procedures.

Conclusion

The development of CCS continues, and more recent projects under way in Australia, North America and Europe seem to be learning from the public engagement in earlier projects. There is now greater emphasis on building relationships with stakeholders and local communities at an early stage. These relationships are based not only on CCS issues but also on related wider contexts. Nonetheless, the empirical research reviewed here suggests that ethical questions regarding which energy options society should pursue, and how, still play a vital role in shaping the public’s views. Paying attention to these ethical considerations and ensuring effective public engagement are vital if projects are to achieve social acceptability.

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Simon Shackley is a lecturer in carbon policy at the School of GeoSciences, University of Edinburgh. He has been studying the social dimensions of carbon capture and storage for over ten years and was a founding member of the Tyndall Centre for Climate Change Research in the United Kingdom.
68. Biodiversity loss and corporate commitment to the UN Global Compact

by

Chris Monks

Companies operating in fields that have a significant impact on biodiversity often perform poorly in terms of their managerial response to this challenge. However, those businesses that commit to supporting the UN Global Compact’s principles perform significantly better in terms of biodiversity policies or systems than a wider sample of global, publicly listed, Financial Times Stock Exchange (FTSE) All-World Developed (AWD) Index companies.

Protecting biodiversity and the role of business

Evidence is growing that company activity has an impact on biodiversity loss and environmental degradation. The 2010 Global Biodiversity Outlook progress report on the UN Convention on Biological Diversity stated that businesses need to provide effective action to address biodiversity loss and the underlying causes or indirect drivers of this decline (CBD Secretariat, 2010: 11-12).

The Convention on Biological Diversity is based on the conviction that biodiversity has practical implications for business, directly and indirectly, and that biodiversity is important for the sustained delivery of environmental services for economic activity. Many businesses, such as forestry and fishing, depend directly on natural biological resources. The destruction of biodiversity is therefore a risk to their business models. In addition, diverse flora and fauna provide resources for a wide range of products. These include fibres and pharmaceuticals, and form the building blocks for biotechnological innovation. Biodiversity is also relevant for agriculture because it ensures a variety of crops and livestock.

Other businesses may depend on the quality of the local environment or require ecosystem services, such as the purification of sewage discharges by river systems. Some businesses operate near habitats that are under statutory protection; many own or occupy large land holdings which have the potential to conserve biodiversity. In addition, diverse ecosystems have environmental functions such as carbon absorption and cycling, the maintenance of soil fertility for agriculture, wider climate and surface atmospheric temperature regulation, and ensuring water flows. It is in the best interests of society that these interconnections be recognised and strengthened so that they become sustainable.
The UN Global Compact and stakeholder theory

The UN Global Compact (UNGC) is an independent standard of consensus building between different stakeholders, including corporations, non-governmental organisations (NGOs), trade unions and the public sector. It is a strategic policy initiative for businesses committed to aligning their operations and strategies with ten universally accepted principles pertaining to human rights, labour, environmental protection and anti-corruption. The UNGC includes over 8,700 corporate participants and stakeholders from more than 130 countries, who have all promised to support the ten principles.

Principles 7 to 10 of the UNGC require companies to act in an environmentally responsible way by reducing pollution, using environmentally friendly technologies, and understanding and respecting the connections between their operations and the natural environment locally and globally.

Stakeholder theory approaches view corporate activities as being fundamentally based on a theoretical “licence to operate” granted by society. This means that firms are responsible for addressing society’s needs, and that their shareholders and owners are no more important than any other group – employees, shareholders, suppliers, government organisations, trade unions and associations, local citizens and communities, and so on. Corporate commitment standards – such as the UNGC – support this principle, whereby companies maximise profits within an overarching commitment to corporate citizenship.

Additionally, companies demonstrating poor attitudes to corporate citizenship in areas such as protecting biodiversity can have significant implications in the issue of justice for affected communities and environments. For example, a 2012 Oxfam report on justice in the food system considers the effects of environmental degradation such as soil depletion and desertification caused by large food manufacturing activities on communities in some of the world’s poorest regions (Bailey, 2012).

Assessing company impacts on biodiversity

A number of assessments of companies’ approaches to biodiversity have been undertaken. Researchers typically consider a number of responses to be acceptable. A good assessment means the company has developed all of the following responses:

- a group-wide policy
- a biodiversity action plan, either site-based or group-wide
- a policy with a formal commitment according to the most important Convention on Biological Diversity principles
- evidence of a biodiversity policy relating to supply-chain sourcing, or a commitment to suppliers that belong to a relevant certification scheme, such as the Forestry Stewardship Council (FSC) or Marine Stewardship Council (MSC).

Analysis shows that companies operating in sectors with significant biodiversity impacts mostly perform poorly according to these assessment criteria. Only 6% of companies achieve a good assessment, while 44% achieve none of the above criteria (which means they are classified as poor).

Sector classifications – high- and medium-impact sectors

The assessment outlined in this article used a sample set of 2,611 companies in the FTSE2 All-World Developed (AWD) Index. Of the sample, 26% of companies are in a high-
impact sector, 16% in a medium-impact sector and 58% are in neither (see Table 68.1). Of the 863 companies identified as being in a high- or medium-impact sector, 119 are signatories to the UNGC.

Companies are defined as being in a high-impact sector if their corporate operations typically impact directly on the quality of the surrounding natural environment. The impact is largely negative (for instance, a property development company building in a previously undeveloped wildlife habitat, or an open-cast mine or resource extraction site).

Medium impact occurs in sectors whose activities affect biodiversity indirectly, perhaps through supply chain management or their control of large land holdings. An example is the product-sourcing policies of supermarket chains. All other sectors are classed as having a low impact on biodiversity, and are outside the assessment parameters for this research.

The high- and medium-impact sectors are categorised as shown in Table 68.1.

### Table 68.1. Biodiversity impact by economic sector

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<tr>
<th>High impact</th>
<th>Medium impact</th>
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<tr>
<td>Airports</td>
<td>Air transport</td>
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<td>Building materials</td>
<td>Chemicals and pharmaceuticals</td>
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<td>Construction</td>
<td>Building supplies</td>
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<td>Power generators</td>
<td>Supermarkets</td>
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<td>Energy and fuel distribution</td>
<td>Property developers</td>
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<td>Agriculture</td>
<td>Public transport</td>
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<td>Food, beverages and tobacco</td>
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<td>Forestry and paper</td>
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<td>Mining and metals</td>
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<td>Ports and shipping</td>
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A company is considered “good” when it has publicly shown evidence of (i) a written policy commitment relating to biodiversity, (ii) a group-wide biodiversity action plan, and either (iii) a voluntary commitment to CBD principles (for high-impact companies), or (iv) a commitment to only use suppliers with commitments to certified sustainable sourcing commitments, such as the FSC or MSC. Where a company has only demonstrated site-level biodiversity action plans, it is given a moderate score. A written policy only merits a basic grade. Finally, no evidence of any of the above results in a “poor” assessment.

High-impact sector companies do better than medium-impact sector companies (see Figure 68.1). In a subcategory based on impact, 8% of companies in high-impact sectors achieved a good assessment compared with 3% in medium-impact sectors, while 34% of high-impact companies had a poor assessment compared with 60% of those in medium-impact sectors.
PART 5.68. BIODIVERSITY LOSS AND CORPORATE COMMITMENT TO THE UN GLOBAL COMPACT

Figure 68.1. Corporate biodiversity assessment results

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<tr>
<th></th>
<th>Poor</th>
<th>Basic</th>
<th>Moderate</th>
<th>Good</th>
</tr>
</thead>
<tbody>
<tr>
<td>All</td>
<td>44</td>
<td>23</td>
<td>27</td>
<td>6</td>
</tr>
<tr>
<td>Medium impact</td>
<td>60</td>
<td>16</td>
<td>21</td>
<td>3</td>
</tr>
<tr>
<td>High impact</td>
<td>34</td>
<td>27</td>
<td>30</td>
<td>8</td>
</tr>
</tbody>
</table>

UN Global Compact participation versus non-participation

Companies that participate in the UNGC do significantly better than the wider sample of FTSE AWD companies at meeting the biodiversity response criteria and in how they respond to the potential impact of their operations on biodiversity.

Very few major publicly listed global companies participate in the UNGC. Of the sample of publicly listed companies in high- or medium-impact sectors, only 14% have voluntarily committed to the UNGC. However, comparing UNGC participants and non-participants side-by-side shows a considerable contrast in performance.

Although only 4% of non-participating companies produce good assessments, 22% of UNGC participants do so. This disparity continues in the moderate category, in which 50% of UNGC participants were graded moderate compared with 15% of non-UNGC participants. To look at the issue the other way round, 53% of non-participants achieved a poor biodiversity assessment, but only 13% of UNGC participants.

Table 68.2. Comparison of UN Global Compact participators and non-participators

<table>
<thead>
<tr>
<th>Sector impact</th>
<th>Poor</th>
<th>Basic</th>
<th>Moderate</th>
<th>Good</th>
</tr>
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<tbody>
<tr>
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<td>177</td>
<td>13</td>
<td>135</td>
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<tr>
<td>Medium</td>
<td>8</td>
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<td>5</td>
<td>47</td>
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<tr>
<td>All</td>
<td>16</td>
<td>363</td>
<td>18</td>
<td>182</td>
</tr>
<tr>
<td></td>
<td>13%</td>
<td>53%</td>
<td>15%</td>
<td>28%</td>
</tr>
</tbody>
</table>

Conclusions

Companies that support the UNGC are better at handling their potential operational impact on biodiversity than non-UNGC companies, offering us a glimpse of how UNGC signatories compare with non-signatories in the area of biodiversity protection.

Our consideration of the impact of business activities on biodiversity in the natural world, in a world of finite natural resources, shareholder demand for continuous profits and political desire for steady economic growth, is a useful starting point for understanding how economic practices compound and promote global inequality. Earlier, this article touched
on the issue of justice and implications for affected communities, as a consequence of companies failing to protect the natural environment. This issue is particularly apposite to the “responsibilities and ethics” cornerstone of social sciences.

Notes

1. Data for this analysis has been provided by EIRIS Responsible Investment Solutions (www.eiris.org).
2. Top 100 companies listed on the London Stock Exchange.

Bibliography


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Towards responsible social sciences

by
Asuncion Lera St. Clair

Deciding how to respond to climate change involves value choices and dealing with constantly changing uncertainties and realities. A holistic view of knowledge is needed, where knowledge is seen as tentative, and in need of constant refining. It is also necessary to reclaim the transformative role of science in making decisions and co-producing policy. Responsible science can respond to these changing realities, but only if knowledge is co-designed and co-produced across the sciences, collaboratively with non-expert sources of knowledge.

Introduction

John Dewey (1930) argued that understanding knowledge should be a process of framing and reframing issues that are of central importance for society. Science is both theoretical and practical; knowing is always imperfect, requiring constant testing and refinement. Dewey (1930) advocated knowledge with clear normative purposes — to improve society, which requires awareness of how others interpret reality and of their needs and demands. It also requires the acknowledgement that science has limits, and that many societal issues entail value choices which need to be made not by experts only but through public debate and discussion. In this article, I use John Dewey’s conception of knowledge as action to argue for the need for responsible science: action-oriented, public, deliberatively normative, but aware of its limits and able to direct the transformations needed to respond to climate change.

Social action and visions of progress

The gap between science and action in dealing with climate change is not solely caused by the poor communication of scientific facts, or by a lack of understanding of Earth system science by the public and policymakers. We also lack a social science framing that tells us what climate change implies in human and social terms.

Interpreting climate facts as a human challenge helps us view climate change as the result of unsustainable models of progress and development, including individual and collective choices, values, beliefs and assumptions about what it is to be progressive, modern and developed. This differs from the dominant view that climate change is an environmental crisis that Earth system science discovered and that new technologies can
solve. A social and human framing shows the causes, the risks involved and the opportunities. It forces us to acknowledge that past and present development pathways have led to highly uneven results, including massive inequalities in people’s voice and access to resources, and in the power within and between countries, all of which combine to create vulnerabilities.

Viewing it from a social and human perspective, climate change is also revealed as the negative effect of a particular notion of growth – of understanding quality of life and well-being as consumption and the accumulation of material possessions through the use of fossil fuels. Many persist in maintaining that we need more growth of this kind to reduce poverty and that poor countries have a right to develop. This argument hides the social dimensions of growth and of environmental degradation, disregarding the relationship between wealth creation and poverty, and the interaction between human action and the natural environment (Lawson and St. Clair, 2013).

Knowledge as action

The gap between climate risks and current responses is often seen as being the result of the perception that science is distanced from users and other non-scientific sources of knowledge, experience and meaning. This perception leads to a view of science as being dislocated from the world of action. It is seen as being produced in a fragmented way, often in isolation from the “real” world. Rather than co-operating and producing integrated research to solve concrete problems, scientists often compete with each other to create valid descriptions of the world. This produces a haphazard array of scientific and disciplinary “information”, telling us little about what to do (McMichael, 2012).

Drawing on a literature review of the links between climate science and policy, Lemos, Kirchhoff and Ramprasad (2012) argue that the interplay and interactions between science and users are the most important characteristics in narrowing the gap between climate information and its usability.

I suggest that incentives should be created that defragment and recouple knowledge and action. This will allow the co-production of knowledge and policy, and will reclaim the role science has in making decisions and implementing policy. Climate change is urgent and uncertain: we have to respond to a reality that is constantly in flux, where the associated knowledge is always tentative and in need of refinement. Science needs to be linked directly to action. It should be informed by and knowledgeable of the insights, demands and characteristics of decision-takers and users.

Mechanisms are needed to co-produce knowledge and policy that are based on trust (Jasanoff, 2005). Innovation is crucial, as is exchange between policy, civil society and research institutions, which should lead to co-designed research that offers responses and engages people in action. In these processes the social and human sciences are central. Take climate adaptation: many donors use civil society organisations as their only intermediary between policy and action, because policymakers feel pressed to act quickly, and use whatever evidence is easily available. Scientific knowledge is seen as slow, distant and removed from action. Methodologies do exist, such as action research, for practical action and policy-oriented research, but they tend to be marginal in climate change discussions, which are still dominated by quantitative methods and theories. Moreover, bypassing scientific research may lead to misguided policy, inefficiency or outright wrongdoing. There is a danger that the distance between scientific results and action may result in society
disregarding results that could have led to better policy decisions. Improving mechanisms for co-production and co-design could enable responsible knowledge to emerge. Such knowledge would respond to real needs, take responsibility for its usability and help society to achieve transformative processes.

The Global Framework for Climate Services (GFCS) is an example of current interest in producing scientific knowledge that is helpful for users. A climate service is “climate information prepared and delivered to meet a user’s needs” (WMO, 2011: 8). The GFCS views climate information as natural science research results that meteorological offices provide and share with users. But while the GFCS is an important initiative, it still makes the traditional assumption that knowledge is separated from action. It excludes the central role of the social sciences in identifying prerequisites for decision-making, especially when scientific results, such as hydro-meteorological information, are still uncertain.

From the perspective of responsible science, the GFCS needs to be expanded to include social science “services” and the co-production of information from the bottom up. It requires more contextual and nuanced assumptions of real-world action, and the power implicit in the ability to decide what is or is not useful information, for whom and for what purpose. The social sciences, and the humanities, need to be included in climate services, as do other sources of knowledge such as indigenous knowledge, and people’s assumptions and perceptions of risks and of desirable futures. Two-way interaction between researchers and research users, instead of delivering research to users in one direction, will be essential.

A process-oriented, sociologically aware conception of knowledge that goes beyond research-as-usual requires integrated research across the sciences, working together to co-produce knowledge and politics. In this way, we can rethink climate services so that knowledge is not only shared with users, but also allows a shift in decision-making and in management strategies concerning user-relevant context. The goal of climate services is normative: to increase adaptive capacity and promote sustainability.

**Responsible science**

Producing knowledge to address climate change is a normative exercise, as solving the climate crisis presumes valuing some risks and some visions of the future over others, judging what is feasible, directing societies along particular pathways, and identifying and considering alternative choices. But the uncertain character of Earth system processes, the many unknown feedback loops and the uncertain nature of social consequences combine to make responses tentative. Solving the climate crisis calls for an iterative learning process where new co-created knowledge is constantly being fed into policy processes and is tested, which then generates new needs and new responses. If the value choices embedded in these processes are transparent, this may help identify and build consensus on the direction that change processes should take. The normative dimensions of seeking a sustainable future can be made visible through self-reflection and identifying who loses and wins, whose values are considered more important and whose visions of the future will succeed. It also requires identifying the limits of expert knowledge and decoupling value choices from expert recommendations. Responsible science then becomes responsible in an ethical sense too, because paying attention to scientific uncertainty and value conflicts may be the best way to prevent the politicisation of the moral worth of people, actions or institutions (St. Clair, 2007). Responsible solutions to climate change require democratic deliberation and – precisely because of their complexity – more rather than less democracy.
The term “responsible science” also implies an ethical content to scientific work. Scientists and knowledge institutions, as an elite constituency, are responsible for using their skills and privilege for the benefit of humanity, and in particular for protecting those who are most vulnerable. Responsible social science is moral, political and public. These characteristics do not compromise the quality of science; rather they ensure that science responds to societies’ needs, that it is more effective and aware of its limits. Responsible science recognises the role of the sciences as crucial in building alternative futures.

Bibliography


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