

AN ETHICAL FRAMEWORK FOR CLIMATE CHANGE POLICIES

DRAFT FINAL REPORT
revision n° 1

Table of contents

I.	Preface.....	3
II.	Introduction	7
III.	Review of ethical issues in climate change response	9
IV.	Ethical principles to address climate change	15
IV.1	Arguments against the language of universal principles	15
IV.2	Relevance of currently recognized international principles	16
IV.2.i	Comments on a human rights framework.....	17
IV.2.ii	Comments on development.....	18
IV.2.iii	Comments on sustainability.....	19
IV.2.iv	Comments on the precautionary principle	20
IV.2.v	Comments on the polluter pays principle.....	20
IV.2.vi	Comments on other principles	20
IV.3	Possible new ethical principles	21
V.	Operationalizing ethical principles for policy responses	23
V.1	Ethical principles and decision-making.....	23
V.2	Options to embed ethics in practical policies.....	26
V.2.i	Education and awareness-raising.....	26
V.2.ii	Policy support	27
V.2.iii	Scientific cooperation.....	28
V.2.iv	Voluntary commitments	28
VI.	Conclusions.....	30
VII.	References.....	31

I. PREFACE

In 2008-09, the Environmental Ethics Working Group of the World Commission on the Ethics of Scientific Knowledge and Technology (COMEST) conducted a study on the ethical implications of global climate change. The study started from the observation that it is generally both naïve and unworkable to attempt to move directly from definition of a problem – even on the basis of evidence – to adoption of solutions. The policy relevance of ethics lies precisely in its ability to facilitate reflexive questioning about both problems and solutions.¹ Ethically grounded policies may be expected to be more robust and more inclusive than those that short-circuit ethics, whether by science or by political fiat.

The report of the study was discussed and approved in general terms at the 6th Ordinary Session of COMEST, held in Kuala Lumpur, Malaysia, from 16 to 19 June 2009, and the text was subsequently submitted as an information document to the Executive Board and to the General Conference of UNESCO.² Following minor revisions, the report was published in June 2010 under the title *The Ethical Implications of Global Climate Change*.³

From the outset, COMEST has considered that ethics has a vital role to play not just in analyzing climate change, but also in shaping responses: “climate change cannot be dealt with adequately and properly if [its] ethical dimensions ... are not highlighted, well understood, and taken into account in decisions about responses”.⁴ The main objectives for follow-up of COMEST’s first phase of work were thus clearly defined in practical terms: the challenge was not simply “to make climate change a (new) theme of ethics, but rather to make ethics a core and necessary element of any debate about climate change and its challenges”.⁵

With this in mind, on the basis of its discussion of the draft report on *The Ethical Implications of Global Climate Change*, the 6th Ordinary Session of COMEST judged that “in view of the nature and extent of the scientific, social and human challenges of global climate change, which necessitate adoption of policies at the global level to address the pressing needs of the most vulnerable in the face of major uncertainties and the exigencies of international cooperation, it is

¹ *The Precautionary Principle*, Report by the World Commission on the Ethics of Scientific Knowledge and Technology (COMEST), UNESCO, 2005, offered a detailed statement of this procedural approach to ethics as a contribution to policy formulation. COMEST argued that the value of the precautionary principle lies precisely in its capacity to favour critical and participatory dialogue between scientists, policy-makers and the concerned public on possible risks and on provisional and revisable solutions. [Available online at: <http://unesdoc.unesco.org/images/0013/001395/139578e.pdf>]

² The version of the report submitted to the 35th UNESCO General Conference is available online as document 35 C/INF.31 [<http://unesdoc.unesco.org/images/0018/001849/184907e.pdf>].

³ *The Ethical Implications of Global Climate Change*, Report by the World Commission on the Ethics of Scientific Knowledge and Technology (COMEST), UNESCO, 2010. Available online at: [<http://unesdoc.unesco.org/images/0018/001881/188198e.pdf>].

⁴ COMEST, *Ethical Implications of Global Climate Change*, p. 38.

⁵ *Ibid.*

urgent to determine universal ethical principles to guide responses to such challenges” and adopted a recommendation to the Director-General of UNESCO “that UNESCO should develop an ethical framework of principles in relation to climate change”.⁶

However, on that occasion, the precise nature of the ethical framework proposed and its specific policy implications were not explored.

The report and recommendation of COMEST were among the factors that led the 35th session of the General Conference of UNESCO, in October 2009, to adopt a resolution⁷ requesting the Director-General to report on the desirability of preparing a draft declaration of ethical principles in relation to climate change, following consultation with Member States and other stakeholders, including relevant United Nations’ agencies, and further study on the matter by COMEST and the UNESCO Secretariat.

In response to the request from the Director-General, COMEST participated in a series of regional workshops in 2010, organized in conjunction with the UNESCO Secretariat, to discuss the key ethical and policy issues with experts from a wide range of disciplinary and geographical backgrounds. COMEST was also represented in certain governmental consultation meetings organized by UNESCO. This work provided the basis on which, at its Extraordinary Session in June 2010, COMEST adopted the following recommendation to the Director-General of UNESCO.

1. Determination of universal ethical principles in relation to climate change would complement other efforts under way within the United Nations system, subject to explicit articulation of UNESCO action with discussion on implementation of the United Nations Framework Convention on Climate Change.
2. Relevant universal ethical principles would provide invaluable support to climate change responses at various levels, and in particular to design of appropriate equitable adaptation policies.
3. There is a significant body of internationally recognized principles that bear directly on climate change or could be adapted to apply to it. However, many of these principles require further elaboration on the basis of extensive consultation.
4. Therefore, preparation of a draft declaration of ethical principles in relation to climate change would not be feasible for submission to the 36th General Conference.
5. With the objective of favouring genuine consensus, COMEST should conduct a systematic review, including consultation with Member States, of ethical principles identified as requiring further elaboration in relation to climate change. COMEST’s report thereon to the Director-General should be available for the consideration of the Executive Board at its 189th session, on the basis of which it will be in a position

⁶ Recommendation of COMEST to the Director-General adopted at its 6th Ordinary Session.

⁷ 35 C/Resolution 36.

to reassess the desirability of preparing a declaration of ethical principles in relation to climate change⁸.

Having considered the findings of the study and consultation process requested by the General Conference, and having taken note of the recommendation of COMEST, the Executive Board of UNESCO, at its 185th session (October 2010) declined to initiate a process to prepare a draft declaration of ethical principles in relation to climate change. However, in its decision 185 EX/Decision 13, the Executive Board did ask for the matter to be followed up. In addition to requesting a follow-up report to be submitted at its 186th session, the Board specifically invited COMEST to continue its exploration of an ethical framework for climate change policies.

At its 186th session, in May 2011, the Executive Board was in a position to take account of the outcomes of the 16th Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC), which had met in Cancun, Mexico, in late 2010, along with further assessment of the substantive and political issues raised by the possible preparation of a declaration of ethical principles in relation to climate change. In light of these elements, the Executive Board confirmed the position adopted at the 185th session. On the one hand, the preparation of a normative instrument was judged to be inappropriate; on the other hand the practical importance of ethics in responding to climate change was affirmed, and COMEST was requested to continue its work in this regard.

A number of follow-up activities have been organized to give substance to the work of COMEST on the practical implications of environmental ethics for climate change policies. In particular, an international conference on “Environmental ethics: biodiversity and climate change” was held in Monaco, with the support of the Government of the Principality, from 8 to 10 December 2010. The COMEST environmental ethics working group met on the occasion of the conference to discuss progress with its work. Subsequently, COMEST was represented at a high-level meeting on “Climate Change Adaptation in the Caribbean: Science, Ethics and Policies”, held in Basseterre, Saint Kitts and Nevis, 8-9 March 2011, at which participant ministers and delegates confirmed the importance of developing ethically grounded capacity-building tools in the areas of science and adaptation and affirmed the necessary connection in this regard between ethics and the social sciences, inviting UNESCO specifically to “promote and support regional scientific cooperation in the social and human sciences directed at analysis of climate change impacts and adaptation, inter alia through the mechanisms of the intergovernmental program on Management of Social Transformations (MOST)”.

In addition, COMEST has been able to rely on the outcomes of two meetings organized by the UNESCO secretariat on ethical issues in relation to extreme events, including but not limited to those induced by climate change, held respectively in Bled, Slovenia on 1-2 March 2011 and in Paris on 4 July 2011.

⁸ It should be noted that the Executive Board, while noting the recommendation, has not specifically requested COMEST to present the report proposed in paragraph 5 thereof.

This report builds on and extends the work done previously by COMEST in the context summarized above. An interim report was adopted and published following the Extraordinary Session of COMEST held in Paris in June 2010, reflecting the main outcomes of the study on the desirability of preparing a declaration of ethical principles in relation to climate change, and reviewing some of the key issues to be resolved if an ethical framework for climate change policies is to be adopted.

II. INTRODUCTION

There is widespread agreement that climate change poses serious challenges to humanity and the environment that require urgent policy responses from nation states, international organizations, business corporations, NGOs and governmental structures within nations cooperating with and supporting one another on a multiplicity of levels and across conventionally drawn sectoral boundaries. It is of equal importance to consider these challenges and policy responses from an ethical and not simply a scientific or political perspective. In fact, it can be argued that climate change first and foremost constitutes an ethical challenge to which we respond on the basis of scientific knowledge and with the tools of national and international policy. The ethical dimension of climate change, however, is not only related to its effects, but also to the manner in which we respond to these challenges. Furthermore, important ethical issues are raised by the manner in which we define the challenges of climate change.

The reason for this is that policies to respond to complex problems such as climate change depend on assumptions that rarely if ever derive directly from the issues to be addressed. Such assumptions typically include judgements about the nature and causal dynamics of the phenomena that constitute the problem. Even when firmly based on evidence, the judgements that frame policy are rarely immune from challenge, because they also include fundamental value choices about the kinds of lives and the future that we envision for ourselves and our descendents; indeed, there is often serious debate about what counts as “evidence” or “a problem” in the first place. Policy deliberation, therefore, inevitably has an ethical and not simply a factual thrust. Deeply held value assumptions and principles shape the definition of “problems” and the priority given to them, the kinds of “facts” that can be regarded as the basis of these problems, as well as the criteria that serve to map acceptable solutions. These ethical dimensions of policy deliberation, however, are usually not made explicit, and thus it is mostly very difficult to scrutinize and to critically discuss them rationally.

In light of these challenges, COMEST has considered in some detail the basis on which an ethical framework for climate change policies might be established. There are several related tasks in this regard.

- To identify and as required to specify the available, and as far as possible consensual, ethical principles by which problems and potential responses can be framed. The COMEST report on *The Ethical Implications of Global Climate Change* established that this is not a trivial task. The distinctive features of climate change challenge traditional ethical assumptions about causality, temporality and capacity to act, and thus call into question well-established ideas of responsibility. Responding adequately to climate change at the conceptual level calls for new and sharper tools.
- To reflect on the operational implications of such principles, and in particular the methodologies by which ethics can be connected to practical policy-making. It is a direct implication of the earlier work of COMEST that even when principles are well established and widely accepted in their abstract

form, their specific application to climate change may be either indeterminate or controversial.

- To consider the processes that could ensure, in real-world conditions, that decisions take account of relevant ethical criteria. It follows directly from the ethical analysis developed by COMEST in its the report on *The Ethical Implications of Global Climate Change*, that ethics needs to pay careful attention to options for practical action that could be taken up by States, international organizations, corporations, civil society, and other stakeholders, and could enhance the capacity of societies to respond effectively to the present and future challenges of climate change.

The combination of principle, methodology and process undoubtedly does not suffice to exhaust the subject, but it would, if successful, offer a coherent and potentially applicable framework within which practical policies can be designed, implemented and assessed. To this extent, the work reported on here responds directly to the recommendation adopted by COMEST at its 6th Ordinary Session. In calling for an “ethical framework”, COMEST did not specify its form, legal status or level of application. Focusing on the policy level is one way of giving substance to this idea.

III. REVIEW OF ETHICAL ISSUES IN CLIMATE CHANGE RESPONSE

The work of COMEST since 2008 has made considerable progress in clarifying what is at stake, ethically, in thinking about and acting against climate change. This section summarizes some of the key points addressed in earlier reports and relates them more explicitly to the policy-oriented concerns that are the central focus of this report.

The first and most important to be made is that the ethical issues raised by policies to respond to climate change cannot be reduced to a set of specific problems that might be dealt with independently on the basis of well-defined principles operationalized through appropriate processes. Rather, ethics bears on the whole structure of climate change as a matter of concern, and therefore on all aspects of response and, most importantly, on the connections between them.

The ethical issues related to climate change are thus not circumscribed to specific policy sectors. Nor can they be meaningfully compartmentalized to correspond to pre-existing divisions of responsibility between institutions, such as United Nations agencies, at the international level, or sectoral ministries, at the national level. The most characteristic feature of climate change is, on the contrary, that it cuts across the policy agenda in ways that call into question familiar framings and may require new forms of thinking as well as new modes of organization.

This is not a new finding. Indeed, it has been widely discussed in policy literature since the mid-1990s. Climate change has, in particular, been identified as a “wicked” problem – one of a class of policy issues that tend to become more complex, controversial and difficult to solve the more knowledge is accumulated about them. It follows that ethics does not serve merely to “frame” a set of technical issues that can be studied and acted on independently. On the contrary, ethics is not one specific area of climate change policy, or an external perspective on it, but rather runs through all climate change policies.

There is thus a fairly broad expert consensus, confirmed by the work of COMEST itself,⁹ that the challenges of climate change are not being adequately met – in terms both of understanding and of action – because they continue to be addressed in a fragmented manner that distorts their most significant features. Evidence of this fragmentation is clearly visible in the manner in which mitigation policies have, until fairly recently, been given priority over adaptation policies, the manner in which carbon reduction has been given centre stage in the design of mitigation policies, and the manner in which ethical considerations are virtually absent in international negotiations about climate change responses.

⁹ When no specific source is given for claims about opinions on various aspects of climate change ethics, reference is made to the outcomes of the study and consultations conducted in 2010, as reported on by COMEST in *Towards an Ethical Framework for Climate Change Policies*.

With this emphasis on policy transversality in mind, a number of specific policy issues demand discussion in ethical terms.

Broadly speaking, it is widely agreed that *energy*, *transport*, *urban planning* and *agriculture* can all be fruitfully addressed by explicit ethical consideration. Similarly, climate-driven *migration* raises issues that should be addressed in ethical terms, especially if – as seems likely – no structural changes are made to the international legal regime of asylum.¹⁰

Certain other issues that would benefit from more explicit ethical consideration are not sectoral and do not correspond to specific or urgent problems, but rather constitute the backdrop against which all problems must be framed. These include *access to an adequate scientific knowledge base*, *risk assessment* and *the integrity of climate science*. What connects these three themes is the notion of *uncertainty* as reflecting not just the limits of scientific knowledge – though these are real – but also the fundamental characteristics of the socio-ecosystems to which such knowledge applies. Decisions in the face of uncertainty give rise to specific burdens of responsibility, which are inherently ethical in nature. While this general point is probably fairly consensual, there are sharp controversies at both technical and political level with respect to specification and particularly differentiation of the attendant responsibilities.

A further, and rather different, cross-cutting issue is *education*, which provides the basis on which the challenges of climate change can be grasped by relevant stakeholders. Action is undoubtedly required, within the framework of education for sustainable development, to enhance awareness of the ethical challenges of climate change and build capacity for appropriate ethical reflection to enhance the ability of policy-makers and of societies generally to deal with them.

Among the controversial policy issues to be considered in this report, two deserve particular mention.

It is often argued on ethical grounds, with respect to the duties that may fall on some states or communities in terms of *international development assistance* for the more vulnerable, that climate change cannot be addressed at all if the fundamental structures of production and consumption within the global economy are not profoundly rethought. However, such claims are clearly not consensual, and may be contested on ethical grounds. Furthermore, they give rise to a paradox, which is a politically radical agenda of this kind calls into question both the language of “development” and that of “assistance”, and therefore does not necessarily imply support for an ethical approach to international development assistance.

¹⁰ Policy formulations in these areas do not fall within the competence of UNESCO. Action on the basis of ethical principles would thus necessarily depend on national policies or on coordinated action by other UN agencies. Nonetheless, clarification of ethical principles across sectoral boundaries would contribute to effective policies in response to an inherently cross-cutting agenda. Any questions bearing on the appropriateness of action by UNESCO therefore do not undermine the ethical significance of the issues themselves.

In related manner, questions of *international justice* in relation to climate change are raised by consideration of the controversial claim that “compensation” could be owed by major historical emitters of greenhouse gases to those, particularly in Africa and in Small Island Developing States, who could suffer disproportionately from the consequences of a problem to which they have contributed little or nothing. The compensation agenda is further related to concerns about a reduction of international development assistance if funding for climate change mitigation – and even adaptation – was not allocated in addition to existing funds for development. In the absence of a criterion such as additionality, it might be argued that international assistance for climate change mitigation and adaptation will primarily benefit emerging economies with fast growing emissions rather than the most vulnerable developing countries. What is at stake in this regard is both the background framework of justice appropriate for international consideration of climate change and how justice should be weighed against other ethical imperatives with which it may clash.

Alongside these specific issues, the direct relevance of which to climate change is fairly obvious, a number of other broad areas of ethical concern can be identified that combine to map what – in order to be relevant – an ethical framework for climate change policies would have to deal with.

There are, first of all, two fundamental and interconnected debates that appear highly controversial and challenge, *prima facie*, the very possibility of an agreed ethical approach to climate change, or indeed to environmental issues in general. These two debates concern, on the one hand, the ethical status of human beings within the cosmos or the biosphere, and on the other hand the ethical significance of diversity or difference, understood in primarily cultural terms. At a general level, both debates are very familiar from the academic literature and from policy controversies. For present purposes, they will simply be summarized very briefly with specific reference to environmental issues, including in particular climate change.

Among general views of the origin of value in environmental ethics, one option emphasizes the central and privileged position of human beings who, as the only entities capable of ascribing value to others, necessarily give ethics its basis. Such a view is often summarized by the word “anthropocentrism”. However, it does not imply, logically, that human beings should necessarily be valued higher than non-human entities. It is perfectly consistent to argue that humans are the only source of value but that they should, for instance, give greater value to the Earth, or to the cosmos, or even to specific animals or plants, than to themselves. Indeed, many strictly anthropocentric statements of strong obligations incumbent on humans in their relations with non-human entities may be found in everyday practice from various spheres, as well as religious scriptures and academic literature. However, there does tend to be a connection between the ontological status granted to human beings and the practical priority given to their interests. A widely accepted statement of this position may be found in Principle 1 of the 1992 Rio Declaration on Environment and Development, which states that: “Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature”.

While it is generally recognized that anthropocentrism, in this sense, does not necessarily imply practical indifference to the fate of non-human entities, it is nonetheless widely criticized as culturally biased (effectively, as “Western”) and as philosophically indefensible in principle. From a conceptual point of view, the alternative perspectives proposed in Asia, in the Pacific, in Africa and in Latin America are quite diverse. What they share is an argument that the moral status of human beings derives from their position within a cosmos that has independent ethical standing. According to this view, human perspectives cannot offer a “basis” for environmental ethics. In practical terms, opposition to anthropocentrism supports criticism of human rights and the rights of sovereign states as implying or authorizing neglect of the rights of non-human entities and of duties towards them. It can also lead to a rejection of economic approaches to environmental valuation and of market-based solutions, such as carbon trading, premised on pricing of “externalities”.

The criticism of anthropocentrism as “Western” points to the intersection with the parallel debate on diversity or difference. While different readings of the cosmos and of the position of human beings are sometimes offered as alternatives for a potentially shared framework, the more common approach is to reject the search for any single, overarching framework that would establish a unique and potentially universal basis for environmental valuation. What is defended in the name of diversity is the entitlement of peoples, traditions, communities and others to have distinctive ethical perspectives, that cannot without loss – and therefore should not – be reconciled within a single universal framework.

Such arguments obviously bear on the very possibility of developing a universally acceptable framework of ethical principles in relation to climate change, whatever its precise normative status. It is certainly clear that, in order to be widely acceptable, any ethical framework for climate change policies would need to be flexible and sensitive to the variety of national and local circumstances. Nonetheless, COMEST, is of the opinion that there are two strong reasons to think that debates about anthropocentrism and diversity (i.e. debates about anthropocentrism and other world views) do not render ethical agreement impossible.

First, the challenge of universalism, from the perspective of an international organization such as UNESCO, is not to reconcile fundamental philosophical, cultural and religious differences but on the contrary, taking those differences as they are, to explore the possibility of practical consensus, both in those areas where background views actually intersect and in those areas where common conclusions can be drawn from contrasting premises. Given the strength of background disagreement, this approach to consensus-building is obviously demanding in procedural terms. With sustained efforts to promote dialogue between different cultural and religious frameworks, though, it is foreseeable that a shared framework can emerge to address the ethical issues related to climate change – with a broadly based support from different perspectives.

Secondly, and perhaps more importantly for present purposes, the specific features of climate change shift the terms of debate to a certain extent. On the one hand, there is no disagreement that the challenge is a shared one that establishes a common world and, thus, at least a minimal basis for solidarity. On

the other hand, both the causal dynamics and the possible impacts of climate change give rise to new connections between people from different cultural and political backgrounds, as well as between humans and non-humans that cut across any crude distinction between anthropocentrism and its alternatives.

Whatever one may think, philosophically, about cultural differences or the place of humans in the cosmos, it is hard to deny at a practical level that human and non-human interests are intimately intertwined in the face of climate change. This does not guarantee that universal agreement could be reached on an ethical basis for thinking about and responding to the challenges of climate change. There is however no reason *a priori* to dismiss such a possibility.

Other key ethical issues for policy consideration are more consensual, in line with the conclusions drawn on conceptual grounds in COMEST's report on *The Ethical Implications of Global Climate Change* (2010).

The first is the crucial importance of *equity* as a cross-cutting issue that bears in particular on the position of vulnerable populations, access to vital resources, climate-related disasters, future generations and the position of women. In other words, each of those areas raises distinct technical issues, and certainly requires specific modes of action, but they also have shared ethical significance in terms of the distribution of burdens and benefits. There appears to be broad agreement that the tendency of climate change, in the absence of appropriate policy responses, will be to aggravate existing inequalities and thereby subject already poor and vulnerable populations to additional pressures that will severely impair their access to basic human needs. All policy responses should therefore have the key objectives of, minimally, not aggravating existing patterns of maldistribution and, in so far as possible, contributing to more equitable distribution.

The second key point, which bears on the process issues that will be discussed in section V, is that policies are generally viewed as being not just ethically more acceptable, but also practically more effective, when they are based on *empowerment* and *genuine participation* of those affected by them. Principles 10 and 20-22 of the Rio Declaration give a consensual expression of this basic idea in general terms and with respect to women, youth, and indigenous peoples respectively. This agreed requirement deserves to be extended by making it a key issue for climate change policy development in general.

Thirdly, the position of *indigenous peoples* constitutes a key policy issue, consistently with the Declaration on the Rights of Indigenous Peoples. Concerns in this regard, which have been expressed in many international arenas, are multi-faceted. Indigenous peoples are often specifically vulnerable to climate change, particularly because of the connection between their cultures and their landscapes. But they also have specific knowledge relevant to adaptation to climate change that should be drawn on, and indeed shared when relevant. Furthermore, in line with the earlier comments on pluralism and diversity, indigenous peoples are often the bearers of distinctive worldviews that deserve recognition within the global conversation on responses to climate change – both uniform and differentiated. It follows that they should be seen as legitimate participants rather than merely as potential victims. And participation refers here

not just to a fairly narrow range of traditional “indigenous” issues, though many may be of enduring importance, but to all the policy areas that affect indigenous people – which, for the reasons given above, constitute a very wide spectrum.

IV. ETHICAL PRINCIPLES TO ADDRESS CLIMATE CHANGE

In the previous section of this report, an overview was given of the main ethical issues to which climate change gives rise. Some are related to climate change as a practical challenge, while others are related to ethical issues embedded in the policies currently available to respond to them, but often not widely recognized. Therefore our report next discusses the ethical basis for adequate response to those identified challenges. This will entail a review of the principles on which ethical response could be based and which could also, more broadly, serve to analyze real-world situations and policy options that are being planned.

With these objectives in mind, COMEST has proceeded along two complementary lines, first reviewing a list of currently agreed principles, largely drawn from the report on *The Ethical Implications of Global Climate Change* (2010), and secondly considering possible new principles proposed in international debate, but not yet formally recognized in agreed international instruments.

Before analyzing and discussing specific principles, it is however necessary to take stock of certain objections to the language of principles itself, and thus to the basic structure of COMEST's approach.

IV.1 Arguments against the language of universal principles

Two complementary may serve to reject the language of universal principles as an appropriate basis for ethically inspired responses to climate change. To a considerable extent, these arguments are generic: they refer not to any distinctive about climate change, but rather to broader concerns about they way in which the space of ethical deliberation is structured in the international arena.

First, it is often judged that emphasis on “principles” as underlying practical commitments represents a bias towards a certain form of abstract, deductive reasoning that is culturally specific and therefore inappropriate for the purpose of seeking broad consensus. In many cultural settings, it is argued, the suggestion that ethical behaviour is inherently reflexive, and should thus involve a search for the abstract principles that underlie particular actions or orientations, is inimical to the form of embedded ethics by which individual integrity and social belonging are defined. Given that claims about the rational basis of ethics are, indeed, put forward strongly in the COMEST report on *The Ethical Implications of Global Climate Change*, this is clearly an area that requires further reflection.

Secondly, it is argued that basing ethics on “principles” entails a bias towards universalism that conflicts with forms of diversity and pluralism that, as noted in section III, are often regarded not simply as facts about, but as desirable features of, the world. Far from the search for practical agreement on commitments to act being facilitated by the emphasis on principles, it might actually be impeded by it. This, again, is an area that requires further reflection, although it should be noted that, with specific reference to climate change,

international attempts to reach practical agreement on action *without* specifying underlying principles have not been conspicuously successful in the past.

It is not clear what might be an alternative to a language of shared principles. Since there are far reaching implications in letting go of a language of shared principles, or even of a shared discourse about principles, a number of specific questions require consideration in this regard: To what extent are objections to a language of principles based on a rejection of the content of certain principles? For example: does a rejection of a language of principles actually entail a rejection of principles based on human rights? Or is a rejection of a language of principles rather a rejection of the assumption that it is possible to universalize certain principles? What alternatives are available for a language of principles? And what are the alternatives to consider in the place of a human rights framework?

IV.2 Relevance of currently recognized international principles

In order to assess the relevance to the ethical challenges of climate change of currently recognized international principles, COMEST has explored in some detail thirteen principles in order to ascertain whether they are relevant to the challenges of climate change (as identified in section III) and, if so, whether they require specific elaboration or development.

The list of principles studied, along with indicative sources, is as follows:

- Protecting human rights [*Source*: Universal Declaration of Human Rights (UDHR), with related Covenants]
- The right to a standard of living adequate for health and well-being, including food, clothing, housing and medical care [*Sources*: UDHR (Article 25); International Covenant on Economic, Social and Economic Rights; United Nations Declaration on the Rights of Persons Belonging to National or Ethnic, Religious and Linguistic Minorities; United Nations Declaration on the Rights of Indigenous Peoples; Durban Declaration; Universal Declaration on Cultural Diversity]
- A social and international order in which the rights and freedoms set forth in the UDHR can be fully realized [*Source*: UDHR (Article 28)]
- The universal right to share the benefits of scientific progress (which may imply a correlative duty to share scientific capacity, resources and/or data) [*Sources*: UDHR (Article 27); United Nations Framework Convention on Climate Change (Article 4); Convention on Biological Diversity (Article 12); Universal Declaration on Bioethics and Human Rights]
- The principle of equitable access to medical, scientific and technological developments (which may imply a correlative duty to share scientific capacity, resources and/or data) [*Source*: Universal Declaration on Bioethics and Human Rights]
- The precautionary principle [*Sources*: United Nations Framework Convention on Climate Change (Article 3); Rio Declaration on the Environment and Development (Principle 15); Cartagena Protocol on Biosafety]
- The principle of sustainable development (i.e. development that meets the needs of the present generation without compromising the ability of future

generations to meet their own needs) [Sources: 1987 Brundtland Report; Rio Declaration on the Environment and Development (Principle 1); Johannesburg Declaration on Sustainable Development; Universal Declaration on Bioethics and Human Rights]

- The principle of safeguarding the interests of future generations [Sources: UN Framework Convention on Climate Change; Convention on Biological Diversity; UNESCO Declaration on the Responsibilities of the Present Generations Towards Future Generations]
- The principle of common but differentiated responsibilities [Sources: United Nations Framework Convention on Climate Change (Article 3); Rio Declaration on the Environment and Development (Principle 7)]
- The responsibility of States to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction [Source: United Nations Framework Convention on Climate Change (Preamble)]
- The principle that the polluter should pay [Sources: International common law since the *Trail Smelter* case (US v. Canada, 1931-1941); Rio Declaration on the Environment and Development (Principle 16)]
- The principle of sustainability (in so far as it is broader than or distinct from the principle of sustainable development) [Sources: 1972 Stockholm Declaration; 1980 World Conservation Strategy; 1983 World Charter for Nature; 1987 Brundtland Report]
- The principle of the common heritage of humankind [Sources: Convention Concerning the Protection of the World Cultural and Natural Heritage; United Nations Convention on the Law of the Sea]

IV.2.i Comments on a human rights framework

The status of human rights as a basis for an ethical framework for climate change policies raises certain questions that have not, at this stage, been resolved. Despite the clear priority given to human rights by the international system, they are not universally accepted as a normative framework. There appear to be two main objections in this regard, which operate differently in different contexts.

- A significant body of opinion rejects the basis of human rights, i.e. the assumed philosophical privileging of rights over responsibilities that is represented, for these purposes, as being powerfully anthropocentric. Effectively, emphasis on human rights is regarded, for these purposes, as enshrining the rights of humans over nature.
- A second body of opinion, connected with the first but not identical to it, challenges the universality of the human rights framework, even as it concerns only relations among humans. According to this argument, the human rights framework enshrines an individualistic conception of humanity that neglects in principle and tends to undermine in practice community attachments and the essentially collective nature of ethical life as conceived by many peoples and cultures. A truly inclusive ethical approach to climate change would, on these terms, need to start from entirely different premises, and would include human rights only as derivative from more basic concepts (e.g. of responsibility) – if at all.

Secondly, while these arguments are very generic and do not bear specifically on climate change, it can be argued that the specific issues of climate change make the human rights framework particularly inappropriate. The argument is, in essence, that climate change is one symptom of an instrumental and ultimately predatory approach to nature that derives philosophically from an individualistic and materialistic ontology of which human rights are one expression. On the other hand, clearly, this criticism does not just clash with the prevailing policy framework of the UN system, but would be regarded as profoundly objectionable in other cultural settings.

These preliminary indications point to two sets of questions. First, how significant in practice is the clash between a human-rights-based approach and responsibility-based alternatives? It could be argued at a theoretical level that exactly the same consequences follow – in terms of policies or in terms of individual obligations – whether one derives responsibilities from supposedly basic rights or rights from supposedly basic responsibilities. In the spirit of overlapping consensus, it should be explored whether the fundamental philosophical disagreements summarized here can be circumvented rather than resolved. The second challenge, at a more conceptual level, is to examine the extent to which human rights principles can be restated without distortion or erosion in terms that make them immune to the dual charge of anthropocentrism and ethnocentrism. This is obviously a long-term challenge for COMEST in necessary association with other expert bodies and agencies within the UN system.

One indication that the clash between human rights and alternative frameworks might be less severe than sometimes claimed is that there is less controversy about two specific areas, viz. access and benefit sharing with respect to science. Indeed, some objections to a human rights framework are linked precisely to serious concerns about intellectual property right regimes and their consequences. Given that access and benefit sharing in respect of science are clearly principles of equity, designed to regulate relations between humans, and which if mobilized would serve primarily, in practice, to protect developing countries, indigenous communities and other non-hegemonic groups, they are more or less immune from the charge of ethnocentric and/or anthropocentric bias.

IV.2.ii Comments on development

“Development” needs to be problematized as one dimension of the worldview and social structure that has produced the problems of climate change. The principle of “sustainable development”, from this perspective, perhaps deserves critical scrutiny rather than endorsement – even though it too enjoys universal support, at least in principle, within the international community. Scepticism about development relates to considerations about the “carrying capacity” of the planet which entail, minimally, that any formulation of a “right” to development requires the elaboration of a development model that does not simply replicate the destructive potential of its historical antecedents. More ambitiously, but also more controversially, it can also be argued that *any* notion of “development” is deeply problematic, for instance on grounds related to demographic issues.

While the view that, from the perspective of the planet, humanity is part of the problem not the solution is subscribed to only by a minority, it nonetheless addresses a challenge to traditional humanistic ethics that deserves to be taken up.

It hardly needs to be emphasized radical views on these subjects clash sharply with what is politically acceptable within the international system. In addition many of these views relate to areas that are not related to science and technology. Nonetheless, such concerns about development do point to the connections between science and technology and issues of globalization, and therefore deserve to be noted. While it is not appropriate for COMEST to either endorse or reject this radical critique of development, further study and reflection on the ethical significance of this radical critique in the context of responding to the challenges of climate change, and more generally environmental issues, do seem to fall within the ambit of COMEST's future work.¹¹

IV.2.iii Comments on sustainability

Even without reference to development, sustainability requires further critical thinking in terms of its underlying ethical thrust. Assuming the standard formulation, derived from the Brundtland Report (1987), that something is "sustainable" if it entails meeting the needs of the current generation without impairing the capacity of future generations to meet their needs, it becomes apparent that, conceptually, specification of sustainability depends entirely on specification of "needs". It follows that critical reflection on the category of needs is required and would, furthermore, have important and direct policy implications.¹² Beyond a bare physiological minimum, needs should perhaps be regarded as primarily socially constructed and therefore open to social critique.¹³ A specific implication in this regard, which deserves further reflection, is that needs satisfaction might be made conditional on "frugality" (a notion that obviously requires more precise definition).

¹¹ [In August 2011, UNESCO organized a conference on "Ethics of Development" in Mexico City at which COMEST was represented, the outcomes of which could serve to enrich the analysis on this point. It will be matter for discussion whether development issues in the broad sense should be considered by COMEST, or avoided on the grounds that they do not relate directly to science and technology.]

¹² [On this point too, the relation with science and technology is uncertain and requires careful consideration.]

¹³ For the avoidance of misunderstanding, it should be strongly emphasized in this connection that reference to a "bare physiological minimum" is not a trivial qualification. Hundreds of millions of people in the developing world currently lack access to that bare physiological minimum, where measured in terms of nutrition, clean water or sanitation. Furthermore, if the bare physiological minimum is defined in terms of the requirements for *healthy* living, it constitutes a fairly demanding standard. Nonetheless, it remains true that a significant proportion of the world's population commands resources far in excess of any conceivable "minimum".

IV.2.iv Comments on the precautionary principle

As applied to climate change, the precautionary principle is deeply problematic even when circumscribed by the specifications proposed in the COMEST report on the subject. The difficulty is not at the intuitive level, where it is widely accepted that a precautionary attitude or approach is required in the face of scientific uncertainties involving the potential for serious and irreversible harm. Rather, the difficulty is to derive from this approach a practically applicable decision-making criterion. In so far as the requirement to take “proportionate” measures to prevent potential harm is indeterminate on the assumption that the likelihood of the harm cannot be specified, something akin to a vicious circle arises. This is of particular significance with regard to the ethical position of future generations, since the precautionary approach is often the only one available to deal with possible harm over very long timeframes. The requirement of proportionality reintroduces the familiar difficulties of cost-benefit analysis (e.g. the problems of discounting, as discussed in the COMEST report on *The Ethical Implications of Global Climate Change*), but in the absence of some criterion of proportionality (or of something playing the same role), the precautionary approach cannot specify any unique course of action – although it can, of course, point to the procedures required to make reasonable collective decisions on such matters.

IV.2.v Comments on the polluter pays principle

It is not clear whether the *polluter pays* principle is adequately grounded in ethical terms or leads to acceptable conclusions on issues relating to climate change. The point is not that polluters should not be required to cover the costs of cleaning up their pollution. On the contrary, the strongest critics of the principle are often the most ardent proponents of compensation to be paid (in one form or another) by those who have historically contributed most to greenhouse gas emissions. The concern is rather that payment, especially when defined by market-based mechanisms, should not be regarded as legitimizing pollution. It appears that there is considerable lack of clarity about what “polluter pays” actually means, and in particular confusion between regulatory, tax, and incentive-based schemes that have different practical and ethical features. Historically, the “polluter pays” principle is a “clean-up” principle: it specifies how responsibilities should be assigned to deal with pollution problems that have arisen, and serves in particular to protect taxpayers against *de facto* liability for oil spills, environmental rehabilitation of former mining areas, and other problems that may be uninsured and for which no ongoing business may be legally liable. What is more difficult is to turn the same principle into a prevention principle. Conceptual clarification in this area is likely to be a useful direction for the future work of COMEST.

IV.2.vi Comments on other principles

The work of COMEST has not, at this point, produced clear outcomes with respect to certain other principles. This is the case in particular of the principle of *common but differentiated responsibilities*, which remains ethically incomplete or even vacuous in the absence of specification of the basis for differentiation. The basic principle of *historical responsibility* as one ground for differentiation is fairly

uncontroversial, but other grounds are also clearly relevant (e.g. the general obligation to help those in need regardless of one's contribution to their plight). Furthermore, historical responsibility does not give unambiguous answers to all the conceptual or practical problems raised by international response to climate change.

In addition, there is one bundle of principles, not discussed in the COMEST report on *The Ethical Implications of Global Climate Change*, that deserves emphasis, especially as it bears on the question how policy processes should be structured in ethical terms, which is further discussed in section V below. This is the need to emphasize the *principles of participation* as enshrined in the Rio Declaration (Principles 10 and 20-22). There is some debate, as yet unresolved, whether such principles, which are primarily political, deserve to be regarded as “ethical” in nature. However, it is clear enough that outcomes compatible with general ethical principles of equity or justice are more likely to be attained when interested parties are fully involved in their development and implementation. In that minimal, instrumental sense, the connection between ethics and participation is unquestionable.

IV.3 Possible new ethical principles

In order to underpin coherent and ambitious action to address the challenges of climate change, a clear statement would need to be developed about the interconnectedness of the global socio-ecosystem and the responsibilities that are incumbent upon humans as a consequence of their position within it. In practical terms, this could be regarded as a critical reassessment of the Rio Declaration, with a view in particular to reconsidering the anthropocentric orientation of Principle 1. Such a statement, for the reasons already discussed in previous sections, should not necessarily take the form of an overarching “principle”: indeed, ensuring its sensitivity to the diversity of worldviews would precisely be an ethical priority in this regard. Neither the nature of the “interconnectedness”, nor the position of humans within the ecosystem, biosphere or cosmos so understood, can be regarded as consensual across regions, or even necessarily across philosophical and ideological divides within each region. Therefore, while the Earth Charter might be regarded one source for such a statement – especially in view of its recognition by the UNESCO General Conference as a relevant source of ethical principles –, it has also open to criticism on the grounds that its language and frame of reference, although subjected to wide-ranging consultation, are culturally specific in so far as they are in some respects bound up with a secularized Christian perspective.

Other points that deserve to be further explored at the conceptual level are as follows:

- the need for an adequate conceptual and practical basis for diversity,
- the need to rethink the basis of international solidarity in the face of new international challenges, beyond the conventional framework of “development” and “aid”,
- the need to provide a much more precise specification of the issues relating to forbearance, frugality or “enoughness”, as it was specifically phrased by

- one group of experts, in order to lay the foundations for a systematic ethical analysis of consumption and production, and finally
- the need to think beyond a rights framework about the ethical duties of guardianship or trusteeship with respect to non-human entities or the distant future along with – possibly – the practical modes of institutionalization that could be envisaged in this regard.

V. OPERATIONALIZING ETHICAL PRINCIPLES FOR POLICY RESPONSES

Even assuming, for the sake of argument, that the various conceptual challenges pointed to in section IV have been resolved, the formulation of principles does not, in itself, ensure a practical basis for action. To achieve that objective, it is necessary to develop awareness of the principles, to establish practical reasons to subscribe to them (which is not the same as justifying them in abstract terms), and to check that they can actually guide action by giving determinate answers to real-world questions.

V.1 Ethical principles and decision-making

A key link in this chain is the connection between ethical principles and decision-making which, in the case of climate change, is direct and constitutive. The reason is that climate change is essentially defined as a policy problem by the uncertainties that surround it. And making decisions in a context of uncertainty requires assessing possibilities and taking responsibility – which is nothing if not ethical – for choices.

It is tempting to imagine that exhaustively accurate examination of possible outcomes, combined with an adequate decision calculus, would make things easier. But this is simply not true. With respect to climate change, there is no such thing as an “exhaustively accurate examination of possible outcomes”, and there is no such thing as the kind of decision calculus that would make a certain choice, subject to a certain procedure, incontestable.

Establishing these claims has some important implications for foresight, scenario building and decision-making, which are of particular significance in the case of the long-range, poorly understood and potentially catastrophic consequences of climate change. In the face of uncertainty combined with complexity, it is sometimes considered that simplified decision rules, focusing on certain selected outcomes, and in particular on worst cases, can provide ethically acceptable outcomes. In fact, this is highly misleading.

Even within the narrow perspective of decision procedures, “worst” cases are not objective features of situations that demand to be considered on their merits. They are themselves the consequence of a decision, and reflect underlying attitudes and imaginaries that may be poorly understood or entirely implicit. As decisions, they thus entail responsibility no less than do the specific options ultimately chosen on the basis of them. In this sense, worst cases raise profoundly ethical issues.

The point is not that, because there is no unquestionable objective basis for assessment of the weight to be given to worst cases or extreme scenarios, all approaches are equally valid. Rather, consistently with the work of COMEST on the precautionary principle, a serious ethical approach to issues such as climate change requires a conception of decision-making that is prudent, knowledge-driven and reflexive – sensitive to the inherent uncertainties of the knowledge

base and to the radical asymmetry between worst cases and best cases when potential catastrophes are at stake.¹⁴ The worst case can be, in a word, a *distraction*. For instance, with respect to small island developing states, the issue of concern is not so much the worst that might happen, but the bad things that are rather likely to happen, on a timescale of possibility only 20 to 30 years. Indeed, the problem of saltwater aquifer intrusion is already undermining agricultural productivity in Pacific islands. Furthermore, worst-case planning tends quite naturally to regard catastrophes as external – something that hits human societies without being connected to their internal processes. Yet most of the threats associated with climate change do not affect humanity from the outside – they are intimately bundled up with the characteristic structures and processes of contemporary societies.

Once one accepts that ethically adequate decision procedures are knowledge-intensive, seeking the best possible basis to make judgements that weigh – as far as possible – all relevant interests, the question of *value* becomes central. Valuation raises three distinct problems, each of which turns on a problem of *comparison*. Each, furthermore, points to an intimate connection between the knowledge and ethics: understanding how systems work is decisive with respect to determination of what constitutes ethical behaviour within them.

- Making ethical sense of global environmental change requires comparing humans across space, in terms of their needs, dignity or rights, or with reference to the scope and content of solidarity. Incommensurability – on the lines of the impossibility of interpersonal comparisons of welfare often postulated on theoretical grounds – simply tends to paralyze ethical reflection; commensurability, on the other hand, depends on a scale of value the basis of which is far from obvious. Needless to say, these principles are highly controversial both in principle and in practice.
- It is an essential feature of global environmental change that it requires comparisons across time that have no unarguable or objective basis. On extended timeframes, questions such as discounting, the nature of reciprocity, and even the limits of moral imagination (e.g. with regard to assessment of what might be the “needs” of future generations for the purpose of operationalization of the principle of sustainability), throw up puzzles that are equally difficult to solve and to avoid.
- No approach can be adequate that does not involve a coherent basis for comparison between humans and non-humans (including not just living beings but abstract entities such as ecosystems, species and climates). Yet no consensual basis for valuation is available that neither grants humans unwarranted privileges nor denies their irreducible status as moral agents.

These considerations bear on how knowledge should be produced, how it should be used, and how coping with “wicked” problems – those that cannot be resolved simply by increasing the knowledge available about them – can or

¹⁴ In purely technical terms, this has been extensively analyzed by reference to the “possibility of ruin” (e.g. for a gambler), which makes a pure expected utility approach to decision-making untenable in real-world situations

should be built into the functioning of policy systems and societies. The fact that climate change cuts across sectors and established epistemic communities, and is constantly defined and redefined within the policy process itself, is neither an argument for inaction nor a counsel of pessimism. The point is, however, a caution against simple, one-off, technical solutions.

The case of sea-level rise, which is a consequence of global warming of great concern in the Caribbean, may serve as an illustration here. The possible impacts of sea level rises over the next 50 years have been studied in some detail in recent reports by UNDP and by the World Bank,¹⁵ considering various points in the 20 to 80 cm range by 2100 that represents the IPCC's plausible confidence interval in the 4th Assessment Report. (Much higher figures are possible in certain scenarios, some rather speculative, but one should be wary of the ability of improbable worst cases to distract attention from likely outcomes that are bad enough.) The main issues concern the vulnerability of infrastructure, including but not limited to tourist infrastructure, to the rise itself, to induced coastal erosion, and to related bad weather events. There may also be indirect effects on agricultural productivity, via saltwater aquifer intrusion, although the impacts on agriculture appear likely to be greater from changing temperature and precipitation patterns. The scale of the consequences can, in certain scenarios, range as high as a cumulative 30% of GDP by 2050, and even milder assumed outcomes correspond to annualized adaptation costs that could rapidly reach 3 to 5% of GDP.

The question, then, is what to do. The scale of the issues, combined, with the crowding-out effect of any particular option, put a very high premium on not getting the answer wrong. Experience is limited, and many points remain controversial, but there is a broad emerging consensus that the easy options – those based on changing “hard” infrastructure or protecting it with more steel and concrete – may not be a good idea. “Soft” infrastructure, for these purposes, is simply the range of social, human and cultural processes that make the hard infrastructure work. For example, in those areas where freshwater scarcity is likely to be aggravated by climate change, adjusting the social patterns of water use, using technologies geared to more efficient water management, is likely to be a cheaper and more effective adaptation strategy than higher dams, deeper boreholes or highly energy-intensive desalination.

With respect to tourist infrastructure, the best option may thus be neither to protect it at all costs, nor to rebuild it in places where it will be less vulnerable, but to rethink it, with a view to inventing a model, or a diversified set of models, that depend less on specific localized assets (such as beaches for instance) and more on a soft infrastructure of service provision. This is precisely what has become known in the technical and increasingly in the policy literature as “resilience” – not adapting to one particular change, but enhancing the capacity of society as a whole to respond positively to change in general. It seems fairly clear that enhancing resilience is an essential feature of ethical responses to climate change.

¹⁵ [References to be added]

It follows from these points that climate change is an opportunity as well as a well as a challenge – even in particularly vulnerable societies. Many policies that are required to enhance climate resilience are desirable in any case for other reasons. The example of irrational water use has already been given. The problem of black carbon, which is both a direct contributor to radiative forcing and glacier melt and a major public health hazard in many developing countries, has also recently received considerable visibility, notably in the work of UNEP.¹⁶ More generally, it is increasingly recognized that inappropriate urban design, leading to heat islands, extensive unsought mobility and other features, is both a direct contribution to climate change and a source of avoidable loss of social welfare. Similarly, agricultural systems highly sensitive to climate change are often unsustainable in other ways as well, and policies to promote climate resilience (including less input-greedy cultivation techniques and different approaches to crop choice) are often entirely justified without reference to climate change. This way of thinking about the interaction between climate change adaptation and other social development processes has become known as the “co-benefits” approach, because it emphasizes how the costs of adaptation may sometimes be exaggerated by relating them exclusively to climate change. If we were more sensitive to the ways in which climate change reflects the whole functioning of modern societies, we would perhaps better grasp the opportunities it offers.

These points do not mean, of course, that each society should be able to fund all of its adaptation costs from associated co-benefits in a painless way. There is no guarantee whatsoever that a co-benefits approach can deal with the entire challenge of climate change, even at the global level, and still less in the most vulnerable societies. Nonetheless, dealing with the costs – including the necessary burden sharing – would be much easier if key co-benefits in the areas of public health and social inclusion were exploited. The results would also be much more sustainable over the long term.

V.2 Options to embed ethics in practical policies

This section review a number of policy options to respond ethically to climate change, which deliberately cover a wide range of levels and modalities.

V.2.i Education and awareness-raising

Policy-makers and the general public should of course be better informed about climate change, which would potentially simply duplicate existing UNESCO activities in education for sustainable development and in media communication about climate change. In addition, however, *ethics* has a specific role to play in education and awareness-raising.

The issue is not, primarily, the teaching of ethics as a specialized discipline, although graduate-level training in a range of courses with environmental relevance (including engineering and economics in particular) would undoubtedly be enhanced by the inclusion of ethics modules, which would in

¹⁶ [Reference to be added]

turn enhance capacities to deal with climate change at the required comprehensive and cross-cutting level. Rather, key ethical considerations should be built into education about environmental issues, including climate change, at all levels. Needless to say, this is a major challenge, which calls *inter alia* for critical thinking about the teaching of a range of disciplines including history, geography, biology, chemistry, physics and economics.

The connection with education is, however, not only pedagogical. It also concerns awareness-raising. If individuals are to take responsibility for their environmental “footprint”, it is of considerable importance to note that individuals, especially considered as consumers, are often unaware of the implications of their choices for the broader socio-ecosystem of which they are part and therefore cannot be expected to take full and informed responsibility for their actions. It is open to question whether a radical rejection of consumerism can be justified in this regard. Nonetheless, the more modest proposition that climate change cannot be adequately addressed at the required comprehensive level without a much broader approach to responsibilities, including those of individuals in particular, remains persuasive.

A final point about awareness-raising is that it itself has ethical requirements. The issue, for the reasons discussed above, is to improve understanding of science, including the uncertainties of climate change and other sciences, and of ethical issues raised by climate change and the interaction of humans with their environments, and thereby to promote what might be called in general terms responsible environmental citizenship. It is reasonable to assume that these objectives might be undermined by poorly designed educational or awareness-raising campaigns, however well intentioned. More detailed consideration of ethical specifications for education and awareness-raising will be a matter for further work at a later stage, in conjunction with existing UNESCO programmes in the relevant areas.

V.2.ii Policy support

The ability of ethics to contribute directly to policy formulation is viewed very differently in different contexts. In some developing countries, and particularly in Africa, there is clear interest in the development of guidelines that can assist in the elaboration of national policies, especially with respect to adaptation, that take due account of key ethical objectives such as prioritizing the needs of the most vulnerable, safeguarding the interests of future generations, and reflecting the interconnectedness between human and non-human requirements. The possible role of UNESCO in contributing to such guidelines, within the terms of existing cooperation and policy support programmes, seems also to be recognized. In other regions, on the other hand, the need appears not to be perceived in the same way, possibly because national capacities are felt to be adequate, and possibly because there is resistance, on the “diversity” grounds discussed in previous sections, to the idea of any uniform framework, even expressed in the form of indicative guidelines.

V.2.iii Scientific cooperation

There appears to be disagreement among stakeholders on scientific cooperation. On the one hand, there is unanimous agreement that it is valuable and that it is UNESCO's role to enhance it. Indeed, COMEST is also expanding its role in scientific cooperation through regional mechanisms formulated in terms of conceptual clarification and of enhancement of regional capacities to contribute to and to influence international intellectual debate. Academic objectives relating to the teaching of environmental ethics, including exchanges of staff, students and curriculum-relevant resources, are generally also put forward.

On the other hand, such initiatives are often not regarded as having a *policy* dimension. This is understandable in one sense, in so far as ethics is in the first instance the subject matter of a proposed set of activities. However, it is also somewhat misleading to disconnect the strengthening of academic capacities in the area of environmental ethics from the reinforcement of public awareness and policy capacities in the area of ethical response to climate change. In principle, scientific cooperation could be regarded as a key upstream contribution to the other policy objectives that are generally supported and, on that basis, can be granted valuable dual legitimacy. It is likely that these minor problems can be resolved in the process of implementing specific ideas for scientific cooperation at regional level.

V.2.iv Voluntary commitments

Ethical objectives do not necessarily need to be pursued by "policies" in the strict sense – still less by regulation that gives legal form to specific principles. Ethics can also be embedded in concrete social practices, and thereby have real effects on behaviour and social structures, by means of voluntary commitment, the essence of which is that those actors who subscribe to certain principles or values act unilaterally, without waiting for any requirement or incentive to do so. Both the power and the limitations of voluntary commitment are well attested from numerous examples at local, national and international level. It is a matter of judgement in particular cases whether voluntary commitments, on the part of individuals, business or civil society groups, are likely to produce significant outcomes or not. With respect to climate change, one can certainly make a *prima facie* case that sharp disagreements about the issues within and between societies, and major barriers to comprehensive and consensual regulatory frameworks, create the conditions in which voluntary commitments might be relevant, for those subscribing to a certain view of the urgency of action. How UNESCO or other international bodies might contribute to such voluntary frameworks is, at this stage, an open question.

On the other hand, the key challenge is to give a binding character to ethical principles. While the emphasis on developing binding instruments is not *ipso facto* incompatible with promotion of voluntary commitments, it does nonetheless direct attention in a very different direction. What remains is to discuss in much more detail the potential of voluntary commitments, focusing on what exactly might be done, how and by whom to further such an objective. It

appears therefore that further work is needed to reach practically relevant conclusions in this area.

VI. CONCLUSIONS

Establishing an adequate basis for addressing global environmental challenges calls not just for new knowledge, derived from dynamic relations between the sciences, but also for a new approach to knowledge as a component of reflexive political systems. Such an approach neither subordinates democracy to science nor dissolves science in majority opinion. On the contrary, it establishes certain key *internal* connections between knowledge, policy and ethics that point to a possible alternative model of what has sometimes been called “epistemic democracy”.

Within this general framework, which is itself ethically informed, a number of key principles can be established that provide practical ethical guidelines for policy-making in response to climate change. In very general and preliminary terms, these can be stated as follows.

VII. REFERENCES

- *The Ethical Implications of Global Climate Change*, World Commission on the Ethics of Scientific Knowledge and Technology (COMEST), UNESCO, 2010.
- *Towards an Ethical Framework for Climate Change Policies*. Interim Report. COMEST, UNESCO, 2010.
- *Document 35 C/INF. 31*, Report by the World Commission on the Ethics of Scientific Knowledge and Technology (COMEST) on the Ethical implications of Global Climate Change, General Conference of UNESCO – 35th Session, 2009.
- *Proceedings* of the 35th session of the General Conference of UNESCO, 2009.
- *Recommendation* to the Director-General, adopted by the World Commission on the Ethics of Scientific Knowledge and Technology (COMEST), 6th Ordinary Session, 2009.
- *The Precautionary Principle*, World Commission on the Ethics of Scientific Knowledge and Technology (COMEST), UNESCO, 2005.
- *Our Common Future*, Brundtland Report, World Commission on Environment and Development (WCED), 1987.