



Communicating climate change: challenges ahead and action needed

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Abstract

Purpose – Even though climate change is a matter of great scientific relevance and of broad general interest, there are some problems related to its communication. The purpose of this paper is to outline some of the problems inherent to the communication of climate change, list some of the challenges ahead and describe some of the action needed in order to allow it to be better and more widely communicated.

Design/methodology/approach – A description of trends related to education and communication on climate change is made and some recent trends are outlined.

Findings – Finding practical, workable and cost-efficient solutions to the problems posed by climate change is now a world priority and one which links government and non-government organisations in a way not seen before. In order to yield the expected results, current initiatives need to be complemented by sound education and communication strategies.

Originality/value – The paper describes the barriers seen when one tries to communicate climate change and outlines some of the current misconceptions of what climate change is. It also suggests a set of measures to address the existing deficiencies.

Keywords Communication, Education, Global warming, Climatology

Paper type Research paper

Introduction

Although concerns related to climate issues are not new, much has happened during the past two decades. Firstly, a world body which evaluates the risks of climate change brought about by humans and which issues periodical reports on the world's climate – the International Panel on Climate Change (IPCC) – was established in 1988. It was a joint effort of the World Meteorological Organization and the United Nations Environment Programme, which has found since its establishment worldwide acceptance and recognition.

Secondly, the UN Framework Convention on Climate Change (UNFCCC) was adopted on 9 May 1992 by the Intergovernmental Negotiating Committee established for its negotiation. In early June 1992, the UNFCCC was opened for signature and entered into force on the 21 March 1994. The UNFCCC has over 200 parties and observer states, which makes it one of the most universally-supported and most influential multilateral environmental agreements.

The last ten years have shown a particularly intense increase in the degree of emphasis to climate issues as a whole and the level of attention pay to climate change in particular. The Kyoto Protocol, which was adopted at the third Conference of the



Parties to the UNFCCC (COP 3) in Kyoto, Japan, on 11 December 1997 and entered into force on 16 February 2005, has provided an extra impulse to the international debate on climate change. Over 180 parties have ratified the treaty to date. The conference of the parties of UNFCCC (COP 13) held in Bali, Indonesia in December 2007, was attended by over 10,000 people. These developments illustrate the fact that climate change is a matter of worldwide concern and relevance. Dow and Downing (2006) have mapped the various elements related to the global debate on climate change and outline the main areas where they think action is needed.

When objectively analysed, climate change is seen as related to a set of natural causes such as:

- solar radiation;
- volcanic activity;
- continental drifts; and
- earth's tilt.

These are complemented anthropogenic action such as emissions of greenhouse gases from industry. The combination of natural and human-induced causes in turn lead to a set of effects (e.g. global warming, ozone layer depletion, changes in socio-economic conditions) and consequences (e.g. disruptions in agriculture, sea level rise, increases in the frequency of draughts/floods) as shown in Figure 1.

Finding practical, workable and cost-efficient solutions to the problems posed by climate change is now a world priority and one which links government and non-government organisations in a way not seen before. Stern (2007) has reiterated

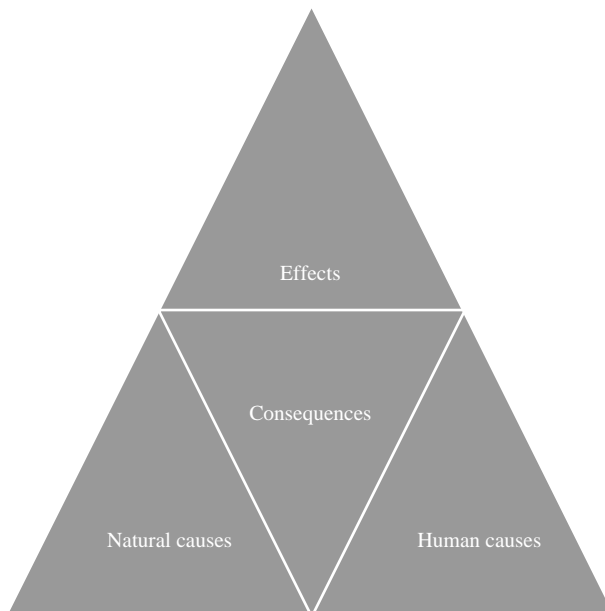


Figure 1.
Schematic linkage of
causes, consequences and
effects of climate change

the fact that a sound understanding of the economics of climate change is needed in order to underpin an effective global response to this challenge.

The above state of affairs illustrate the fact that, unlike other themes whose levels of global concern seem to be short-lived, climate change, as a topic, is likely to continue to occupy a high position in the world agenda for decades to come and will compete hand-in-hand with some of the conventional issues such as taxation, health, unemployment, housing or education. Adapting to climate change is important (Abramovitz *et al.*, 2001; Adger, 2003), so as to reduce vulnerability (McCarthy *et al.*, 2001) and so is a better understanding of what this means.

In trying to explain what the expression “climate change” means, it is important to define it. To the purposes of this paper, the UNFCCC definition of climate change is used. According to UNFCCC, climate change is:

[...] a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods (UNFCCC, Geneva).

Climate change can thus be regarded as:

- a process which studies the implications of climate variations;
- a phenomena influenced by natural processes and by human activities;
- an issue with impacts on nature and on quality of life; and
- a problem with wide-ranging economic and social implications.

Owing to its scope, it is necessary to consider climate change as a process influenced by various variables, as shown in Figure 2. Therefore, the search for solutions to the problems caused by climate change cannot be uni-dimensional: it needs to be pursued in an integrated way.

A further sign of international recognition of the need for integrated approaches towards tackling the challenges posed by climate change is the fact that at the 2005 G8 Conference in Scotland, the G8 Partners agreed on a plan of action to speed the development and deployment of clean, sustainable energy technologies to achieve the combined goals of addressing climate change, reducing harmful air pollution and improving energy security throughout the world. According to this agreement,

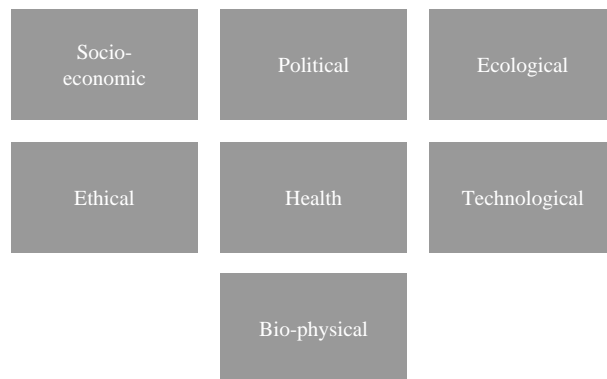


Figure 2.
Some of the variables that influence climate change

formally titled “Plan of action on climate change, clean energy and sustainable development”, emphasis should be given to:

- transform the way we use energy by improving efficiencies in power generation, transportation, buildings and appliances;
- power a cleaner future by promoting the use of nuclear power, clean coal technologies, clean diesel and methane, renewable energy, bioenergy, and more efficient power grids;
- strengthen research and development of hydrogen-powered vehicles that emit only water, not fumes;
- finance the transition to cleaner energy through a strengthened World Bank and national policies that support markets, remove barriers to direct investment, leverage private capital, and promote investment;
- manage the impact of climate change through strong funding of climate change science, improved scientific and monitoring capabilities of poorer regions such as Africa, and full implementation of the ten-year plan developing the Global Earth Observation System of Systems; and
- combat illegal logging by working with poor countries struggling to enforce their own forest management laws to prevent harm to ecosystems and land use changes that are a factor in climate change (The White House, 2005).

The latest G8 meetings held in Germany and Japan have reiterated the need for integrated approaches to climate change and have been instrumental in persuading countries to become involved.

Communicating climate change

In order to better understand climate change, it is important that one has an understanding of what it means to different people in different parts of the world. A recent study undertaken in the UK by the Department for Education and Skills and disseminated by the British Broadcasting Corporation (BBC) has shown that climate change “worries children”. A sample of young people was asked about the world’s problems and climate change was often referred to as young people’s biggest concern for the world’s future.

Some 24 per cent of the sample believed it is the greatest threat faced, while 19 per cent think it is crime and violence, the study found out. Of the 1,000, 10 to 18-year-olds questioned, 18 per cent nominated terrorism and 12 per cent said it was lack of housing around the globe which concerned them most. In this context, it is important to acknowledge that there are some factors that influence attitudes towards climate change (Table I) and that, at the same time, there are some barriers seen when one tries to communicate climate change. One of such barriers is related to some misconceptions of what climate change in fact is. If not addressed, they may lead to a negative view of climate change or to a wrong assumption of what it means.

Leal Filho (2000) undertook a study, where an analysis of some misconceptions of what the process of sustainable development is and what sustainability represents to an institution was performed. The study has allowed the identification of some of the misinterpretations associated with them, which in their turn are usually translated into a negative view of sustainable development. Owing to the complexity of matters

Table I.
Some factors which
influence attitudes
towards climate change

Knowledge	Information on the meaning of climate change and its implications
Background	The nature of one's education or training often influences an individual's degree of understanding in relation to the topic of climate change
Experience	Previous experiences with other environmental and social issues facilitate understanding on climate change and the role of sustainability
Perception	An integrated view of environmental, political and economic elements enable a broader perception of climate change and ways to address it
Values	Differing from the previous factors due to its high degree of complexity, an individual's values often determine whether his/her attitudes are favourable to climate change or negative to it
Context	Climate change is not only related to climate or ecological components <i>per se</i> , but also entails items such as economics, politics and social matters. However, such contextual links are often ignored

Note: Details at: <http://news.bbc.co.uk/1/hi/education/4123884.stm>

Source: Modified from Leal Filho (2000)

related to climate change and the closeness of such a complexity with the subject matter of sustainable development, some analogies are possible. Some of the most common misconceptions related to climate change are:

- climate change is too abstract an issue;
- climate change is too broad a topic;
- climate change is mostly a technical matter where calculations and forecasts are made;
- there are no trained people to handle the approach of climate change topics in an understandable way;
- the amount of resources needed to communicate climate change do not justify it; and
- climate change has too wide a scientific basis.

If one carefully examines them, the above outlined misconceptions have quite deep roots. It is thus important to understand them so as to allow misconceptions to be overcome. The existing misconceptions have led to various problems, which have been preventing the wider communication of issues related to climate change. Some of these problems as follows:

- *Abstraction*: a substantial number of people see climate change as an abstract issue, not connected to the day-to-day reality. Most people do not think they can, as individuals, do anything against climate change and hence are reluctant to engage in related initiatives.
- *Lack of qualified personnel*: institutions of higher education (i.e. universities and colleges) have largely failed to give due emphasis to climate change out of the traditional areas of physics or meteorology. As a result, great opportunities to inform and educate students from other fields such as biology, sociology or economics, are being lost. In addition to upgrading their teaching plans so as to cater for the handling of matters related to climate change in general university teaching, there is much universities can do (Eagan *et al.*, 2008; National Wildlife

Federation, 1998; Rappaport and Creighton, 2007). For example, it is important that staff (e.g. professors, teaching assistants) discover themselves the connections between their respective areas and climate change as a whole. Unlike the widely spread belief, climate change is not the sole domain of climate modellers or physicists. It is much more than that. The scope of climate change means that it is a matter of interest and relevance to teachers, sociologists, economists and biologists, to name all but a few. If long-term changes in attitudes and behaviours are expected and if new technologies are to be developed, it is crucial that climate change is embedded into the curriculum of universities.

- *Lack of documentation*: most of the good and well-working initiatives on communicating climate change which are happening on the ground, are not sufficiently documented. Moreover, many interesting projects are not widely disseminated. This is a problem stated many times before. The lack of dissemination of such initiatives – which may be referred to as good practice – means that also here great opportunities to document and promote such good practice are being missed.

Although some individual, one-off measures outlined by Brown (2006) on the volume *Global Warning: The Last Chance for Change* such as less water in the kettle, switching off the lights, going for a jumper before putting the heating on, etc. are important, they do not *per se* suffice. Dessler and Parson (2006) acknowledged the need to help scientists, policy makers, and the public sort through the conflicting claims in the climate-change debate and explain in the volume *The Science and Politics of Global Climate Change: A Guide to the Debate* how scientific and policy debates work, summarize present scientific knowledge and uncertainty about climate change, and discuss the available policy options.

Based on the relevance of the subject issue of climate change, it is important to address these problems in a holistic way so that they can be solved and the identified solutions can be widely disseminated.

Challenges ahead and action needed

Houghton (2004) explored the scientific basis of global warming and the likely impacts of climate change on human society, before addressing the action that could be taken by governments, by industry and by individuals to mitigate the effects. Leal Filho (2006) explored the links between education and communication on sustainable development and climate issues, whilst the volume *Information, Communication and Education on Climate Change – European Perspectives* (Leal Filho *et al.*, 2007) specifically looked at examples of projects and initiatives on the ground across Europe.

From a perspective of education and communication related to climate change, there are many challenges ahead and various sets of action that need to be taken, in order to improve current trends and addresses the various deficiencies. Four crucial elements need to be taken into account in order to promote education and raise awareness on climate change and hence allow it to be communicated more efficiently. These elements are:

- (1) *The need to develop personal accountability in rich and in poor nations*. A recent survey by the consultancy company Accenture (2008), has identified the fact that people in Brazil, China and India seem to care more about climate change than those living in Europe and in North America. Therefore, they seem

sufficiently motivated to become engaged. Yet, the study has at the same time established that willingness from institutions in these countries to be engaged in global efforts to tackle climate change needs to be paralleled by the willingness from industrialised nations to take the lead. Therefore, an increase in personal accountability in industrialised nations seem to be necessary, so as to also motivate people in developing countries to become involved.

- (2) *The need to engage the relevant stakeholders.* Owing to its scope, climate change is not a matter of concern exclusive to scientists. Politicians, economists, teachers, health officials and many other stakeholders need to be involved in the climate change debate due to the fact that it does have implications to them. Current experience shows that topics which involve a variety of stakeholders and – in particular – the general public – tend to be much better understood if the ir specific information needs are taken into account. Technical information on temperature increases (or decreases) are unlikely to generate much interest unless it becomes clear the effects such variations may have on the fauna, flora, health or agriculture.
- (3) *The need to combine technical expertise with communication approaches.* It has to be acknowledged that there are limits to the contribution that technical expertise can provide to handling climate change. Nonetheless, if the problems linked to climate change are to be holistically understood, they need to be complemented by information on its social and economic dimensions.
- (4) *The need to identify and promote solutions.* There is a perceived need to integrate information on climate change with practical measures people –, i.e. each individual – can take, so as to provide their own contribution to the problem-solving process. Most people feel frustrated when they realise that climate change as a whole and phenomena such as global warming in particular, are matters distant from their day-to-day lives. Yet, they feel more motivated to become involved if it is shown what they can do in order to help to address the problem, be it in respect of sustainable transport use, in the purchase of products or simply by having energy savings at home.

Figure 3 shows some elements which need to be considered in order to catalyse more public engagement on climate change as a whole and on climate change management in particular.

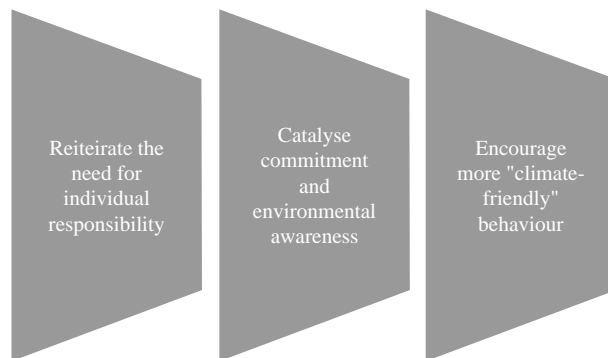


Figure 3.
Some elements to consider in catalysing engagement on climate change

There are some encouraging signs that communication on climate change in Europe is becoming mainstream. One example is the European Union (EU) consultation on the post-2012 climate pact. In the summer of 2008 The European Commission performed a public consultation asking individuals, businesses and NGOs what position the EU should take in UN-led talks on a post-2012 global climate agreement. The basis for the consultation is a 2007 (<http://ec.europa.eu/yourvoice/ipm/forms/dispatch?form=climatepost2012>) Commission policy paper on limiting the global rise in temperature to two degrees Celsius. Views were also being sought on the main elements of a road map for international talks agreed in Bali in December 2007.

The Commission asked whether the EU's long-term goal of halving global greenhouse gas emissions from 1990 to 2050 is "appropriate", given the latest scientific evidence. Respondents were also asked what criteria should be used for dividing emission reduction efforts among developed countries. The Commission also wanted to know what commitments developing countries should make as part of a global agreement, and to what extent their efforts should be supported by technology transfer and financial assistance from richer nations. Other issues covered include the future role of the current Kyoto protocol's flexible mechanisms, and how to address the issue of carbon leakage. The Commission says the results of the survey will "help shape the EU's position on the global post-2012 agreement".

To underpin Europe's commitments, EU leaders set three key targets to be met by 2020: a 20 per cent reduction in energy consumption compared with projected trends; an increase to 20 per cent in renewable energies' share of total energy consumption; and an increase to 10 per cent in the share of petrol and diesel consumption from sustainably-produced biofuels. Appropriate measures in respect of information, communication and awareness-raising on climate change are needed in order to fulfil these goals.

Communicating climate change and renewable energy at schools: the project INSPIRE

The Faure-commission of UNESCO stated that informal learning forms about 70 per cent of all human learning processes. Thus, strengthening informal learning at schools is likely to improve the overall impact of school education. There have been to date few studies which quantify and qualify the positive impact of informal learning, a learning which often takes place at out-of-class and in learning locations such as museums, centres of environmental education or sciences centres, which are known to foster learning and knowledge transfer by means of entertainment and hands-on experiences.

When one considers themes which are of increasing relevance and great importance to pupils such as renewable energy or climate change, it can be seen that information education can offer a welcome complement to the usual classroom-based programmes. Climate change and – connected to climate change – the efficient use of energy, have become important features, especially after the latest IPCC-reports and the climate change conferences in Bali (December 2007) and Bangkok (April 2008). It is on the basis of the perceived need to foster information learning on renewable energy and climate change that the project "Inspire school education by non-formal learning" (INSPIRE) has been conceived.

The efficient use of energy and renewable energies, as well as climate issues will serve as the subject matters of this project. It will analyse the current potential and

information/material needs on these issues and create tailor-made training materials and organise training courses for teachers. The approach of energy and climate issues covers social as well as scientific competences and – regarding the threat of the climate change – also outlines some of the European problems to be solved.

In addition to being a concrete project in the field of education for sustainable development, one unique feature of the project INSPIRE is that it reinforces the contribution of lifelong learning to social cohesion, active citizenship, intercultural dialogue, gender equality and personal fulfillment.

The project INSPIRE (Figure 4) is led by the Faculty of Life Sciences, Research and Transfer Centre “Applications of Life Sciences”, Hamburg University of Applied Sciences. The other project partners are:

- Naturgut Ophoven e.V. (Germany).
- Panstwowa Wyzsza Szkola Zawodowa W Raciborzu (Poland).
- University of Daugavpils (Latvia).

INSPIRE is funded by the European Commission’s Lifelong Learning Programme (2007) by means of the COMENIUS Multilateral Projects budget line. The project’s initial period is from October 2007 to September 2009.

The main objective of the INSPIRE project is to create synergies and links between out-of-school places of learning and curricular learning, thus improving the base of



Figure 4.
Home Page of the project
INSPIRE

Source: www.inspire-project.eu/rationale.html

knowledge of European pupils on matters related to education for sustainable development. In addition, it aims to prepare a set of materials which may support teacher training on renewable energy and climate issues, as well as test such materials with a view to a subsequent use in support of information education.

INSPIRE's goals are therefore very much in line with the objectives of the UN Decade of Education for Sustainable Development. The project partnership in Germany, Latvia and Poland will develop approaches, methods and materials which may be used in other countries in Europe and beyond.

The main target groups of INSPIRE are teacher training institutes, and non-formal education institutions such as museums and environment centres, etc. It is expected that school teachers and education officers working in on-formal education outlets will access the new pedagogical methods developed as part of the project and use the practical information on teaching approaches here developed, which may optimise non-formal learning processes.

The vision of the project INSPIRE is to improve the quality and attractiveness of in-service training of teachers at extracurricular learning places. This process will lead to the following outcomes:

- An overview about existing concepts of combining learning at out-of-school places with formal learning at school in the participating countries, focused on the subject of environmentally friendly energy use and climate issues. Based on these concepts, examples of best practice will be identified and disseminated.
- The preparation of a set of new training modules, which will be designed in co-operation with out-of-school learning places.
- A set of new training courses for teachers will be developed and tested. In this context, existing curricula, learning conditions at school and the needs of the teachers will be taken into account and will be used in designing effective strategies for implementing elements of out-of-school learning in formal school education. In a later stage these courses will be conducted, evaluated and improved.

Finally, INSPIRE will provide a basis upon which other projects focusing on education for sustainable development as a whole and renewable energy and climate issues in particular, may be undertaken in the future. The materials prepared as part of the project will be distributed among teacher training institutes, and out-of-school places of learning. There will be various distribution channels to be used, among which a web site, publications and seminars can be mentioned.

Conclusions

As outlined on this paper, although some significant developments have been made, much needs to be done in order to foster communication on climate change and catalyse the participation and public engagement needed. As an attempt to contribute to this cause, the Research and Transfer Centre "Applications of Life Sciences" of the Hamburg University of Applied Sciences has launched the "International Climate Change Information Programme" (ICIIP). The aim of ICIIP is to analyse the problems which are connected with the communication of matters related to climate change and find ways to address them. In addition, ICIIP shall undertake integrated communication and education projects, as well as organize events aimed at bringing about a broader understanding about climate change.

An example of an initiative organized by the Research and Transfer Centre “Applications of Life Sciences” as part of ICIP is the world’s first online research conference on climate change titled “Climate 2008/Klima 2008” (Figure 5). The rationale behind “Climate 2008/Klima 2008” is the fact that, although the subject matter of climate change is regarded as a critical issue and sound scientific knowledge is needed in order to address the problem in a holistic way, there is a paucity of events focusing on the different aspects of climate change. Therefore, an internet-based (and therefore largely CO₂-neutral) scientific event concerned with approaches, methods, strategies, and other types of action needed in order to cope with the challenge of climate change, is a welcome development.

The aims of the Conference “Climate 2008/Klima 2008” are:

- to introduce the latest findings on scientific research on climate change, including elements related to its environmental, social, economic and policy aspects;
- to introduce projects and other initiatives being undertaken in both industrialised and developing countries by universities and scientific institutions, government bodies, NGOs and other stakeholders; and
- to discuss the problems, barriers, challenges and chances and potentials related to sustainability research projects in general in Europe.

Last but not least, the “Climate 2008/Klima 2008” conference, which will repeated in 2009 under the heading “Climate 2009/Klima 2009” will encourage more networking

The screenshot shows the homepage of the Climate 2008 / Klima 2008 conference. The browser window title is "Klima 2008 / Climate 2008 - Mozilla Firefox". The URL is "http://www.klima2008.net". The page features a large header with the title "CLIMATE 2008 KLIMA 2008" and a "REGISTER FOR FREE NOW" button. Below the header, there is a navigation menu on the left with sections for Information, Conference, and Search. The main content area includes a welcome message, a "What to expect" section, a "Call for papers closed" notice, and a "Best Paper Award" announcement. The page is hosted by Hochschule für Angewandte Wissenschaften Hamburg.

Figure 5.
Home Page of “Climate
2008/Klima 2008”

and information exchange among participants and hopefully catalyse new cooperation initiatives and possibly new projects.

It is widely known that the Kyoto Protocol was only a first step and that its targets expire in 2012. International negotiations are now taking place under the UNFCCC with the goal of reaching a global agreement governing action to address climate change after 2012. Information and education on climate change as a whole and initiatives such as ICIP in particular, will play a key role in this process in support of the various policies and measures which have already been agreed and will no doubt be agreed in the future. They will also be important in ensuring the success of emissions reductions and trading systems, which are some examples of the future global efforts to mitigate climate change.

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