

**T869 Climate Change: from science to lived
experience**

Module 2: The lived experience of climate change

WORKBOOK

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Disclaimer

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Module 2 workbook

Welcome to the workbook for Module 2 *The lived experience of climate change*. This workbook complements the *textbook* for this module and also makes use of the *Water Case Study* which is used in all three modules, audiovisual links, and links to additional reading

This workbook assumes *either*:

That you have at least read quickly the textbook for Module 2, and preferably also the Water Case Study.

Or

You are currently reading the textbook for Module 2 and are attempting to do the workbook activities as and when they are suggested in that textbook.

This workbook should help you realise the learning outcomes as set out at the start of the textbook. More generally it aims to:

- Enable you to deepen your understanding of the ideas, concepts, frameworks and issues that are raised in the textbook.
- Gain a critical appreciation of the concepts and frameworks, and develop them further.
- Apply the ideas, concepts and frameworks to new situations and use them to make your own arguments.
- Develop ‘transboundary competence’ (see Box 1 below) through participation via the virtual learning community in group work and engagement with others.

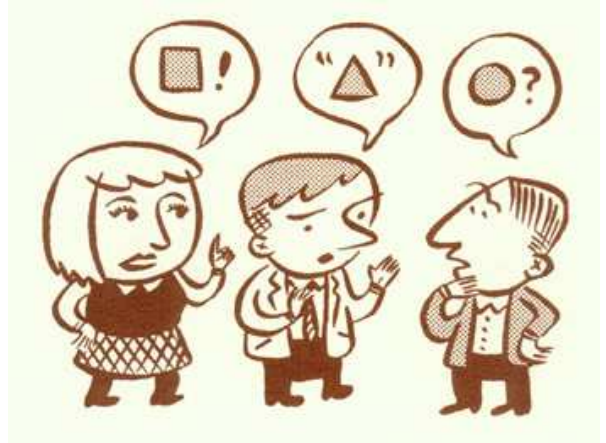
These aims lead to the overall purpose of the workbook: to increase your satisfaction of studying this module through your active and deep engagement with it. The workbook is not confined to academic frames of reference, therefore, and is equally appropriate for registered Masters students and for those who are studying it more informally as a ‘lifelong learning’ experience.

The workbook is structured through a number of Activities for you to undertake. These Activities are designed for you to extend and deepen your learning, and with one possible exception¹, not directly for formal assessment. Apart from the possible exception noted, you do not have to do them, but I hope you do for the aims and overall purpose cited above.

¹ The exception concerns any workbook activities which might be deemed compulsory by your accrediting institution. The obvious example is workbook activities which are designed for group work. If the key skill of transboundary competence or similar formulation is part of the learning outcomes of the accrediting institution, satisfactory participation in activities that deliver that learning outcome is likely to be a requirement.

Box 1 Developing transboundary competence

Given the scale and complexity of climate change, many uncertainties surround the issue, whereas its lived experience is largely contextually determined. As a consequence, there is a valid diversity in perspectives on the issue. To use this diversity as a source of inspiration and better solutions instead of conflict and political paralysis, one should learn to think, communicate, collaborate and learn across the boundaries of the different perspectives. I refer to this ability as ‘transboundary competence’.



Transboundary competence is important for professional practice, because it constitutes the basis for achieving common ground among stakeholders and the development of broadly acceptable and supported interventions for sustainable development.

In this module, development of transboundary competence is stimulated in various Activities by a combination of actual practice and explicit reflection on what and how to learn from that practice. The actual practice involves exposure to a diversity of perspectives on climate change issues, understanding, elaborating and debating different perspectives, and eventually negotiating common ground. This will be practised in individual Activities and in group work. The latter is preferred, as the experience of the diversity in perspectives is more direct and authentic.

The Activities are fairly varied. Some simply ask you to test your own understanding of parts of the textbook and are accompanied by no further comment from me. Others ask you to apply critically the textbook ideas and concepts to new areas, such as the water case study, selected readings and audiovisual links, and to areas which you have identified yourself through, for example, an internet search. Related Activities ask you to apply critically these ideas and concepts to your personal context.

Sometimes, after each ‘critical application’ Activity, I provide a ‘Discussion’ which comprises my personal attempt to do it and might also contain a further commentary on anything of interest the Activity has raised. Please do not take my Discussion as the definitive answer to the Activity, rather use it as a point of critical comparison with your own attempt. Do, however, attempt the Activity yourself before reading my Discussion. The nature of this module means that there are no objectively ‘right’ answers.

Each Activity contains an indicative maximum time which you should spend on it, assuming that you have read the textbook and relevant Chapters already, and what the Activity is aiming to achieve. I stress that this is the maximum time. You can cut corners, and you may be familiar enough with the ideas which an Activity is exploring to reduce the time significantly.

Finally, you do not have to follow the Activity format as set out exactly. Adapt it as you wish. All of the Activities can be adapted. I particularly recommend that, instead of attempting them in isolation, you adapt them where appropriate for collective discussion in the electronic forums. Then, for example, you might not write a given number of words as requested, but contribute to the electronic forum discussion instead. Also, instead of writing a given number of words, you might wish to make your own podcast to convey your message. Note that Activity 9 is specifically designed for group work.

However, having given you freedom to communicate in alternative, appropriate formats, you might decide in addition to write for yourself an individual answer as a short essay or report. You might decide to do this even if you have made a podcast or engaged in

electronic forum discussion of the activity, the reason being that you need practice in writing essays or reports. This might be a daunting task for some who have relatively little experience of communicating in this way, and especially if English is not your first language. Appendix 1 at the end of this workbook provides guidelines on writing essays or reports.

Activity 1 covering Chapter 2 of the textbook (maximum time 2 hours)

The aim of this activity is for you to collect a ‘bank’ of lived experiences, especially lived experiences that are relevant to your own country and in your first language. You can use these lived experiences as illustration in later activities if you wish.

Search from the internet and other sources up to 10 accounts which you can draw upon to illustrate answers to questions about the lived experience of climate change. Ensure that at least some of these relate to the country where you live or originate from.

I provide no Discussion to this Activity.

Activity 2 covering Chapter 2 of the textbook (maximum time 2 hours)

The aim of this Activity is for you to test your understanding of the 7 features of the lived experience of climate change that are derived in Chapter 2 of the Module 2 textbook.

1. Read the account of the Kenyan pastoralist in Section 2.3.3 of the Water Case Study, which concerns water stress experiences of recent years for people who live in the Nile river basin.
2. Go to the following website which contains accounts from ‘climate witnesses’ collated by the World Wildlife Fund for Nature (WWF):
http://wwf.panda.org/about_our_earth/aboutcc/problems/people_at_risk/personal_stories/witness_stories/
3. Scroll to and read the account of Mario Roy Magayon from The Philippines (Occidental Mindoeo)
4. Identify examples of the seven features of the lived experience of climate change in each account. Did you have difficulty identifying any of the features?

Discussion

I answered Question 4 of Activity 2 in the form of a Table as follows:

Feature of lived experience	Examples from the Kenyan pastoralist	Examples from Mario Roy Magayon
1. It is contextual, being bound up with where I live in the world, our degree of poverty/affluence, the degree of our dependence on natural resources for our livelihoods, and our capacity to adapt.	The person speaks as a pastoralist where animals are the means of livelihood. The person is obviously dependent on natural resources. He and other pastoralists are isolated – the nearest place to obtain unsalinated water can be 70km away.	Mario speaks as a person whose livelihood has been dictated by the sea. Incremental adaptation is recorded (e.g. fishermen preparing for rain earlier) and Mario declares that there is ‘a lot I can do to minimize the effects of climate change’.
2. It is both individual and	The experience is personally	The experience again is

<p>collective (all accounts). The collective dimension concerns socially influenced impacts on groups of people who are more or less vulnerable to climate events and/or those who are involved in collective action to mitigate the impacts.</p>	<p>felt, but the pastoralist usually refers to 'we', meaning a collective of pastoralists bound together by their means of livelihood</p>	<p>personally felt, but Mario slips easily into the plural when he talks about vulnerability to climate-related events, using 'I' and 'our', fishermen and older villagers.</p>
<p>3. The biophysical, and consequential social and economic impacts are key dimensions of people's lives, but lived experience is also rather more.</p>	<p>The lack of rain and the river drying up are the biophysical impacts.</p> <p>Socio-economic impacts include having to travel long distances for water and loss of livelihoods through animals dying.</p> <p>But the pastoralists are not simply passive victims (see feature 6).</p>	<p>Biophysical impacts comprise changing rainfall patterns, a warmer sea (and its consequent effects on fish and corals), floods and rising sea level.</p> <p>Socio-economic impacts are the livelihood changes being wrought by the biophysical impacts. However, a large part of Mario's account illustrates that the community is not passive in the face of these threats.</p>
<p>4. Experience is knowledge gained over time through living our lives.</p>	<p>The recent history of when it last rained, what used to be the normal rainfall pattern, and the length of the current drought are all embedded in the pastoralist's mind. The situation has grown worse in the past 6 months.</p>	<p>Mario refers to the older villagers who note how the climate has changed. Mario himself remembers the trees that used to be in front of his house, now uprooted by the sea.</p>
<p>5. It evolves through action.</p>	<p>The pastoralist cites migration to cities (the capital Nairobi is named).</p> <p>The paragraph below the interview highlights the adaptation strategies: changed movement patterns for their animals (also mentioned in the interview); introduction of goats because they are more drought resistant than cows; livelihood diversification into trading and handicrafts.</p>	<p>Mario himself has resettled due to declining fish yields in his original home.</p> <p>He has also formed an NGO (SHARKS) which has engaged in action to protect the coral reef.</p>
<p>6. It also evolves through our engagement with other knowledges, which may be codified or experiential.</p>	<p>This feature is more implicit than explicit. Some of the adaptation strategies can conceivably only have come into existence through engagement with others. The paragraph below the interview does explicitly</p>	<p>Although not mentioned explicitly, Mario almost certainly engaged with other knowledges to set up SHARKS. His emphasis on collective action to minimise impacts also suggests engagement with</p>

	mention working with an NGO to construct sand dams.	other people and their knowledges.
7. It is interwoven with many other 'lived experiences' which are sometimes more immediate and it is difficult/impossible to isolate the 'lived experience of climate change'.	The most immediate lived experience does concern the drought and is therefore climate related. However, it is obvious that this is bound up with the lived experience of their livelihoods.	Mario did not set up SHARKS originally because of climate change, but to protect the coral reefs from poachers. Generally, his lived experience of climate change is bound up with that of livelihoods.

Note that I had difficulty identifying Feature 7 in the account of the Kenyan pastoralist.

Activity 3 covering Chapters 3 and 4 of the textbook (maximum time 4 hours)

The aim of this Activity is to ensure that you have a basic understanding of the textbook and in particular the framework it develops for analysing the lived experience of climate change.

Re-read Chapters 3 and 4 of the textbook and check your understanding of the framework for analysing the lived experience of climate change. The development of this framework is summarised through Figures 3.4, 3.6 and 4.2.

I provide no Discussion of this Activity.

Activity 4 covering Chapter 4 of the textbook (maximum time 6 hours)

The aim of this Activity is to apply the framework summarised in Figure 4.2 critically to a number of accounts of lived experience (including your personal account) in order to check its utility and develop it further.

1. Apply the framework for analysing the lived experience of climate change to one or more accounts provided in the 'business diaries' section of the Creative Climate website.
<http://www.open.ac.uk/openlearn/nature-environment/the-environment/creative-climate/explore-the-diaries/business-diaries>
2. Apply the framework to other accounts which are likely to be familiar to you. Do an internet search to identify these accounts, or use one from the 'bank' you created in Activity 1. Note that these accounts may be in the form of podcasts or other media than written text.
3. Write up to 500 words on your personal lived experience of climate change (or make your own podcast) and apply the framework to it.
4. Drawing on your responses to previous questions in this Activity, to what extent do you find the framework useful for analysing:
 - Personal lived experiences
 - Collective lived experiences
5. In what ways, if any, would you adapt the framework to capture lived experiences better?

This is a substantial Activity and you do not have to do all parts in a single session. When you have completed it, compare your answers with mine in the discussion below.

Discussion

I hope that your attempts at this Activity illustrate that the conceptualisation contained in Figure 4.2 can be applied, undoubtedly with adjustments, to a wide range of settings, and also that these different settings feed back to the conceptualisation and annotate it.

This discussion concerns questions 2 and 3 of the Activity only. In Chapter 2 of the textbook, I have already selected 5 accounts from the Creative Climate website, so I leave you to extend it in your answer to **Question 1**. As the author of Figure 4.2 in the textbook, I would like to know what you make of it rather than further engage with it myself, hence there is no discussion from me of Questions 4 and 5.

Question 2:

I have selected the main image which appears on the LEChE project public website (<http://www.leche.open.ac.uk>) The image is:



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The picture was created by children at a high school in Bangladesh. I have chosen it deliberately to illustrate the range of media beyond the written word where one can analyse the lived experience of climate change.

The picture depicts an extensive flood, probably due to sea level rise, and is therefore directly related to the physical impacts of climate change. In the language of Figure 4.2, it clearly shows a major proximate influence on the lived experience of climate change – people are being forced to flee from their houses by the rising water. The animal, which is also swimming for its life, suggests another proximate influence, which is the impact of livelihood loss.

Note that the people appear to have relatively few belongings, suggesting that generally they are poor, an observation supported by the small houses with thatched roofs appearing just above the water level. Further, there appears to be a gender dimension. The foreground of the picture depicts women wading while carrying children and food. Further back, the men are on rafts, one with an animal on board, which is presumably a means of livelihood. These are broader socio-economic influences on the lived experience of climate change.

The picture is inevitably a snapshot which depicts an immediate reaction to the flood. It cannot be expected to capture the dynamic, action-learning, central circle of Figure 4.2, nor of the power relations between people and groups (although the gender dimension hints at the latter). It could be seen to represent a general truth that climate change in Bangladesh will be disastrous. The one counter-dynamic is what appear to be windmills on the faraway dry land, which suggests that some authority, presumably the Government, is engaging with carbon-reducing technologies.

The general point I would draw from my discussion of this picture is that, no matter whether I access visual accounts as here, audio accounts or written accounts, they are themselves representations. As such they will focus on some aspects rather than others. Do not expect them to cover, therefore, every dimension shown in Figure 4.2, still less the inter-connections between them. In this picture, as undoubtedly in other accounts, treat them as partial. What the framework of Figure 4.2 can then suggest is further questions, the answers to which will provide us with a fuller representation of the lived experience of climate change. For the picture above, for example, I might ask the following questions, drawing on Figure 4.2:

Were the people who are now fleeing their homes forewarned of the risk of flooding and to their livelihoods?

If they were forewarned, did they take any measures to protect themselves?

Did they consider any collective action to protect themselves?

Did some inhabitants leave the area before the floods arrived? Who were they and what was their status in the community?

Question 3: My personal lived experience of climate change.

I am obsessed by the weather. I am aware of the maxim that climate is what I expect over the long term, while weather is what we get on a day-to-day basis in all its variations, but I also have an experiential suspicion that weather patterns to me have become more extreme and varied over the last few years, and that this is somehow linked to climate change. Thus, I was not surprised that December 2010 in England was the harshest since records began, or that heavy rainfall has caused floods (but not for me personally) or that four summers in recent years (2008-2011) have seemed much wetter than usual.

I am obsessed by the weather because I was introduced to walking in mountains and hills as a child, and that has stayed with me ever since. Hikers and mountaineers are suspicious of the weather and its variability. I am worried less by the recent rainy summers and floods in England, and more by what it will herald once the weather pendulum swings dramatically the other way – prolonged droughts that will affect the mountain landscapes I love, make lakes and streams dry up, and destroy the wild life that depends on them. My biggest thrill in recent years is to ascend a large hill in the Pennines (a range of hills, called ‘the backbone of England’), about 16km from where I live, and walk away from the main footpath to look for the mountain hares which colonise the area. The thrill of seeing their fur turn white in winter and brown in summer cannot adequately be described by words on a page, and I would hate it if climate change were to change all of this.

I have not personally been threatened, even remotely, by climate change in any way that affects my livelihood as a university professor. My home stands on high ground so is unlikely ever to become flooded, and I can probably buy my way out of most difficulties. I do, however, care about climate change as it affects others and am conscious of the need to show individual responsibility. I grow in my garden many of my own vegetables (while in the knowledge that if the crop fails I can go to the supermarket and buy them, unlike a peasant farmer in the Global South). I drive a hybrid car, which switches automatically between its conventional petrol and its electric engine as I drive along, charging up the battery for the latter in the process. I do so, because I consider myself to be an early adopter of new technologies. While hybrid engines are not an ultimate answer

to road transport's carbon footprint, they do represent the current state of the art which can only be advanced by people like me actually adopting them.

I don't use the car at all to go to work, which is at the Open University in Milton Keynes (about 80km North-West of London). I travel by train and then by folding bicycle from the station to the Open University campus. Milton Keynes is a new city, being built around 40 years ago. It was built then with the car in mind, hence its rectangular grid system of main roads. It also possesses, however, a complete cycle system which is off-road. It is a wonderful resource that is rare in the United Kingdom. I have further used a combination of train and folding bicycle to go to LECHe project meetings in Belgium, and in recent years I have travelled by train to mountainous regions in continental Europe for summer holidays. However, I have to admit that I fly by aeroplane to many destinations, particularly for work outside of Europe, because of the much shorter travelling time.

I have to say that none of this, which I consider to be a low-carbon lifestyle, is necessarily value driven – not much anyway. There is also a confluence with self interest. Working in the garden is therapeutic – it relaxes my brain, as does walking in mountains. Driving a hybrid car has a feel-good factor in terms of embracing new technology. I go by train because I consider travelling by car as wasting precious hours of my life. I do a lot of work, preparing for meetings on the train. The folding bike too represents a step-up in technology which pleases me, and I am even more pleased that two colleagues who work in my academic group also now ride similar bicycles. So, it's all a win-win really!

In producing the above account I have broken my own rule. It is over 700 words, when the Activity states 500 words. When I first started, I thought that I have nothing to say, but obviously I do. My initial anxiety did bring home to me, however, that articulating experience can appear daunting at first. I hope that you managed OK.

In terms of the textbook Figure 4.2, it is obvious that the proximate biophysical influence on my lived experience of climate change concerns landscape and wildlife changes. This is because my mountaineering and gardening are important to me. They help keep me sane with a reasonable perspective on life. In terms of broader influence, I have a history of loving mountains, and of keeping reasonably physically fit, passed on by my father who also climbed them and ran marathon races.

As I have no obvious socio-economic circumstances that might mean that climate change holds a direct threat to me, my relatively low-carbon lifestyle accords easily with my own self interest. Yes, I do reflect both consciously and unconsciously and I act in response - for example, in my transport choices - but this action learning cycle is largely about the coming together of my lifestyle and my self-induced responsibilities to help keep my personal carbon footprint low. Because I think that I have done this quite successfully, I tend to feel rather complacent when I reflect. Thus, I certainly am not a masochist with respect to my lived experience of climate change! I do read about the science and policy documents, as well as accounts in newspapers, but they don't, I feel, have a major impact, other than to rationalise my lifestyle choices as a small contribution to mitigating climate change. When I engage with others I certainly don't shout about sacrifices I have made because I don't feel that I have made any!

Activity 5 covering Chapter 4 of the textbook (maximum time 3 hours)

The aim of this activity is to apply the conceptual framework of Figure 4.2 in the textbook in a more analytical and comparative (rather than descriptive) sense.

1. Use the framework of Figure 4.2, or an adaptation of it that you have developed as a result of doing Activity 4, to compare and contrast the two accounts which are reproduced in Appendix 2 at the end of these Activities. I commissioned these accounts for the module. They both concern individuals who were born, and still live and work, in Sub-Saharan Africa. Charlene Hewat is white-Zimbabwean; Richard Kimbowa is Ugandan.
2. Reflect critically on your use of the framework in this manner.

For advice on writing analytical arguments, and how they are structured by phrases such as 'compare and contrast', see Appendix 1.

Discussion

This Activity is intended to give you practice in formally applying a conceptual framework, as in Figure 4.2, as a tool for analysing a text or other means of communication. My approach is to work systematically through it to structure my 'compare and contrast' of the two accounts. Usually, but not necessarily always (you can break the rules as long as you know what you are breaking), it is best to move from the general to the specific. In Figure 4.2, the concentric circles do this job for me, with the outer circle being the most general. So, here is my attempt at Question 1 of the Activity:

The contemporary lived experiences of both Charlene and Richard are heavily influenced by their family histories, especially their rural childhoods where their survival was connected directly to their relationship with the biophysical environment around them. As a result they both appear to have a profound respect for the biophysical environment. Neither account tells us a great deal about their respective socio-economic circumstance, but I can assume from them that neither Charlene nor Richard have rich backgrounds. Charlene mentions specifically the role of her father in teaching and showing her the interconnectedness of nature, while Richard obviously learned about these things also through formal education at high school and university. Charlene's pride that the family farm was built from nothing probably reflects the 'can do' culture among many white settlers during the colonisation of Africa, a culture that has evidently stayed with her as she campaigned to save the rhino and has been prominent in an environmental NGO. Richard concentrates on the material difficulties, the withdrawal of state services (such as extension workers) and the sense of loss of control due to climate variability, but he too has decided to contribute towards solutions in later life. While being wary of putting words into their mouths that they have not themselves uttered, I provisionally suggest that Richard's circumstances have been circumscribed by vulnerability, in contrast to the more confident 'can do' of Charlene.

Proximate influences can be seen to have acted as triggers for Charlene to become an activist. Particularly, the scene she witnessed of the poached rhino and her subsequent epic bicycle ride with a colleague (for which she became internationally famous for a while in the 1990s) have greatly influenced her subsequent life. Regarding climate change specifically, she obviously soon picked up the messages about it from the international media and elsewhere, but interpreted them in her own way. In contrast, Richard does not mention specific proximate triggers, but the general conditions of hardship in rural areas which have been exacerbated by climate variability. Together with his formal education, he has felt obliged to work with like-minded individuals who wish to address the situation. He also works, therefore, for an environmental NGO.

While the influences, broader and proximate, on both Charlene and Richard have been profound, their experience is obviously evolving through action learning cycles. Charlene refers specifically to the development of drought-resistant small grains and also for the need to help everyone to adapt for themselves. Likewise Richard is explicitly concerned to enable citizens to cope, and interestingly he conceptualises climate variability as a development challenge. However, while Charlene is critical of the work of many international development aid agencies in Zimbabwe, Richard feels that the international community has a responsibility to help. I do wonder whether this reflects a deeper

influence on their experience, between Charlene's sense of 'can do', and a sense in Richard of injustice towards his country for which the international community bears significant historical responsibility.

Question 2: For me the framework of Figure 4.2 worked reasonably well, although the accounts told me nothing about the possible influences of broader regimes of truth or about more proximate power relations in the construction of Charlene and Richard's lived experiences. This brings me to a point to which I alluded in Activity 4. I, as an analyst, deliberately do not attempt to steer accounts of lived experience. I have to take what I find and what they choose to stress, which will almost certainly be partial with respect to our framework. If I were following up the accounts with Charlene and Richard, however, I would use the framework to ask supplementary questions about aspects which might be missing.

Activity 6 covering Chapters 3 and 4 of the textbook (maximum time 6 hours)

The aim of this Activity is for you to engage critically with a major argument in Module 2 textbook, Chapters 3 and 4, namely that engagement with others is an important aspect of the evolving lived experience of climate change through an action learning cycle.

Investigate how engagement with others about climate change occurs when mediated by information and communications technologies, and assess the potential of such engagement to contribute to evolving lived experience. In order to do this, investigate at least one discussion forum on climate change (or a related topic such as environmental change) on Facebook or similar site. You may also choose one of the e-discussion forums that are associated with this module if you wish. Write up to 500 words summarising the results of your investigation. If, instead of writing a 500-word response, you decide to share with others on the module discussion forum, make sure that you tell them how to access the forum that you are analysing.

Discussion

Rather than show you a sample answer to this Activity, my discussion gives you some pointers (in the form of questions) of what to look for once you have found a suitable electronic forum on climate change. A good structure would be, where appropriate, to compare your answers which compare the e-forum to what you might expect from a face-to-face meeting. All of the suggested questions below about the e-forum relate to points made in Sections 3.2, 4.1 and 4.2 of the module textbook. You are also likely to find some overlaps in your answers to different questions.

1. Are you able to gain any sense of the social make-up of those participating in the forum? Is it inclusive of a wide range, or are the contributors mostly from similar social backgrounds? To the extent that the participants are from similar social backgrounds, does this limit what is discussed? Alternatively, does the fact that the participants are from different parts of the world expand the range of views expressed compared with a face-to-face meeting? (Section 3.2).
2. Does the fact that the members of the forum have never met each other face-to-face limit the kinds of conversation that they can have? (Section 3.2).
3. Is your overall view of the forum that it involves less spontaneity and creativity than a face-to-face meeting might have? If so, in what ways? For example, are participants more careful in what they express? (Section 3.2).
4. Does the forum contain genuine exchanges of views, or are the contributions mainly statements, with responses comprising requests for clarification? (Section 3.2).
5. To what extent does the forum relate to Habermas's three areas of human cognitive interest? (Box 3.6 in Section 3.2).

6. Do the participants articulate general ‘truths’ about climate change? Is more than one general ‘truth’ articulated? (Section 4.1).
7. Are power relations evident among the participants? Do some appear to be more authoritative, while others defer to them? Do some try to establish authority by use of language? E.g. ‘As a meteorologist in my professional life, I believe that...’; ‘As someone who was raised in a poor rural society in country X, I believe that...?’ (Section 4.2).
8. Are accommodations reached between the participants when there is debate? (Section 4.2).
9. Do any of the participants indicate that they are learning or have learned something from the forum discussions? (Sections 3.2 and 4.2).
10. Is there any sense that new collective knowledge has been generated by the participants? (Sections 3.2 and 4.2).

Activity 7 covering Chapter 5 of the textbook (maximum time 6 hours)

The aim of this Activity is to apply the concept of the lived experience of climate change to a case study where ‘lived experience’ is not necessarily the major focus.

Read Sections 2.4.3 and 3.4.3 in the Water Case Study. Both sections concern stakeholder participation in the management of the Nile and Rhine rivers respectively.

In what ways might an understanding of lived experience improve this kind of management and what are the possible challenges of incorporating lived experience? (Write up to 500 words).

Discussion

I am not going to write 500 words for you, but here are some notes that I take from Chapter 5 of the textbook. They would form the basis of my essay.

The ways in which an understanding of lived experience might improve water management through stakeholder engagement. It will:

- Create greater legitimacy for actions taken.
- Capture a wide range of knowledge and insights
- Help avoid policy mistakes.
- Capture local adaptation strategies and possibly incorporate them into policy.

Possible challenges include

- Deciding on the validity of the lived experiences, whose lived experiences they represent, and possible trade-offs between localised concerns and a ‘greater good’ which is captured by more scientific analyses.
- The length of time required to assimilate the range of knowledges before making a decision.

If you are unsure how to write a 500-word essay on this topic, refer to Appendix 1 of this workbook,

Activity 8 covering Chapter 5 of the textbook (maximum time 8 hours)

The aim of this Activity is to extend and deepen your understanding of the claims made in Chapter 5 of the textbook concerning the relevance of lived experience of climate change evidence to policy making.

1. Re-read Chapter 5 in the textbook. Then, summarise a relevant policy area with which you are familiar, or one that you have found through an internet search. In what ways might an appropriate understanding of the lived experience of climate change be a useful addition to the evidence base for this policy area?
2. Drawing on your answer to Question 1, what is the main disadvantage of considering lived experiences when developing policy on climate change, and how might this disadvantage be considered positively? (Write about 500 words).
3. Revisit the World Wildlife Fund for Nature (WWF) website (Activity 2): http://wwf.panda.org/about_our_earth/aboutcc/problems/people_at_risk/personal_stories/witness_stories/. Many of the witness stories are accompanied by a 'Scientific review' which assesses the claims made in the story in relation to the known science. Choose a story that is accompanied by a 'Scientific review', and write a complementary 'Lived experience review'. You may, if you wish, place this in the 'Add Comment' section at the bottom of the witness page, although of course this is entirely up to you.

Discussion

Question 1. My chosen policy is that of the UK Government to promote a low-carbon, green economy as a way to meet the twin challenges of climate change and continuing economic prosperity. The UK policy was first formulated in 2009 under the previous Labour Government of Gordon Brown. It still exists under the Conservative and Liberal Democrat coalition Government, although as I write in December 2011, it is too early to say whether it will continue, be adapted, or dropped in favour of something else. In whatever way the policy evolves, as it stands it is an interesting historical example that I can use to make my main points. These are as follows:

1. The policy follows the UK Government's Stern Review of Climate Change which was published in 2006, and which gained international influence. Basically, the Review stated that the costs of inaction to mitigate climate change significantly outweigh the cost of immediate action. A follow-up book by Stern published in 2010 is titled: 'A blueprint for a safer planet: how I can save the world and create prosperity', firmly expressed his belief that, if you can establish appropriate policies, then markets and entrepreneurship will do the rest in terms of developing low/zero-carbon technologies. For a fuller review of Stern see Chapter 3 'Economics matters in climate change' of module 1 in this series: 'Introducing climate change in the context of sustainable development'. He is also referred to in Section 4.1 of the textbook for this module. I need, however, say no more in my discussion of this Activity, except that the green economy policy was basically drawn up by Government economists (including Stern) and consulted further some academic economists.
2. Although economists disagree, as they do in any other 'science', I can conclude that the green economy policy was drawn up by a fairly narrow mindset of economists and politicians. What might lived experiences have contributed to the policy? I draw on four groups who could potentially each have had a collective lived experience to contribute:
 - a) Representatives of industry, particularly representatives of smaller enterprises and those linked to the energy sector. These will bring home the experience of Government-driven transition, the disruption caused by transition, and the costs.
 - b) Trade Union representatives. These will also be concerned about the cost of transition, but in terms of losing jobs and possible deskilling as current industrial processes are replaced. Their experience will be of a high risk context, where claims made by economists of a more prosperous country in the longer term will be treated with scepticism.
 - c) Community groups whose experience of siting, for example, wind farms has not been good and will want more consideration given to this aspect.

- d) Formal civil society organisations, such as the Royal Society for the Protection of Birds, who will be ambivalent about some of the new technologies (including again wind farms), and will want to present a more holistic view of environmental change which includes, among other things, landscape changes and amenity loss.

Question 2. For my chosen policy area, I think that the main disadvantage of including groups such as those above is that they would inevitably bring a much greater diversity of knowledges into the formal process, and thus make it more difficult to reach the accommodation that is needed for clear policy. The positive side, however, would be that the eventual settlement would make a green economy policy more robust and less likely to endure protest from a range of actors.

Question 3. I chose the story of Muhammad bin Mat Zin, dated 2nd March 2010. As well as the text, I viewed the U-tube video which repeated some of the text but provided additional narrative. I also read the 'Scientific review' underneath the narrative.

My 'Lived experience review' goes like this:

Muhammad bin Mat Zin's story illustrates the immediate importance of weather unpredictability (whether it is due to climate change or not) on those whose livelihoods are inextricably and directly linked to natural resources – here water (the sea and rainfall) and fish. Sea conditions, affected by current variability and unpredictable stormy weather, affect in turn fish catches.

In these circumstances weather unpredictability understandably creates insecurity, especially among poor families such as that of Muhammad bin Mat Zin who have few opportunities for alternative sources of livelihood. This isn't to say that poor families do not respond to their changing circumstances. They do, and Muhammad bin Mat Zin now farms alongside fishing. Farming, however, is subject to the same insecurity as fishing, dependent as it is on reliable patterns of rainfall.

In fact, the only phenomenon in Muhammad bin Mat Zin's life which does appear predictable is inexorably rising sea level, again to detrimental effect.

There are two important points for policy makers and professional practitioners emanating from this lived experience:

Poor people who are dependent directly on natural resources for their living are very concerned about weather and its increasing unpredictability

Being poor, moreover, limits their capacity to respond adequately.

Taken together, these two points create a high degree of insecurity for poor people and families in Malaysia in the face of climate change.

Activity 9 covering Chapters 4 and 5 of the textbook (maximum time 24 hours)

The aim of this major Activity is to build on previous Activities to a) create a collective (with other students) policy brief on the relevance of lived experience for the evolving European Commission policy on climate change; b) develop through e-learning communities skills of working with, and generating knowledge with, others from different traditions and cultures; c) articulate lived experience knowledge.

The maximum time you should allow is 24 hours, and it could end up taking significantly less. Whatever time it takes, I suggest that you spread it over two weeks, on the following steps.

1. Group formation. With the help of one of the learning community moderators, establish a viable group: eight active members would allow a minimum of two per team in step 3 below.
2. Read different aspects of EU climate change policy. Divide the labour between you and share on the forum. Agree a summary of EU policy in 500 words maximum.
3. Divide into the following teams to explore lay lived experience evidence which might assist the policy review.
 - A team which is concerned about loss of amenity (biodiversity loss, visual and/or other unwanted intrusions, diminished leisure opportunities, etc.)
 - A team which is concerned about livelihood impacts in the European Union
 - A team which is concerned about livelihood impacts in developing countries.
 - A (public) engagement with science team which is especially concerned about 'getting the message across'.
4. Each team creates a briefing document (500 words each) on its collective lived experience which it posts on the forum to a mutually agreed deadline. Alternatively it can produce an audiovisual document.
5. Group members comment on each other's briefing documents, exploring both common ground and differences.
6. Group members attempt to synthesise a joint briefing document to which all can sign (500 words).
7. Finally, step back from the process and write an individual reflective essay for yourself (about 500 words) about the group work process, the technological medium of virtual forums, what was achieved, what was not achieved, and developing your own transboundary competence skills.

Discussion

I expect this Activity to be moderated and the moderator will provide a summary at key points, especially on completion of Step 6 and to help start Step 7.

Activity 10 covering Chapter 6 of the textbook (maximum time 6 hours)

The aim of this Activity is to help you identify a preliminary topic for investigation in a Masters dissertation/project (or any other substantial piece of work that you prepare, for example, in your professional life). It does not, however, attempt to provide you with knowledge of the fundamental epistemologies of different approaches to investigation. These are matters for module 3 in the series on interdisciplinary research methods. Nor does it attempt to enable you to describe exactly your dissertation topic, or suggest how you might research it. You can only do that in consultation with your supervisor. Nevertheless, it is always a good idea to approach her or him with some worked-out initial ideas which you can progress.

There is no Discussion to this Activity. Instead, below I provide a series of steps for you to take. A note of caution, however: these steps are set out linearly and logically, but your brain does not work like that necessarily. Be prepared for a process of iteration – moving backwards and forwards between steps.

Step 1. Consider and choose several preliminary general topics for your investigation. Although you can choose just one, it is better to have more initially, so that you can work systematically through them, making comparisons, before coming to a final decision. The only two criteria for this step are that the topics:

- a) Can be made to relate to the lived experience of climate change, broadly defined

b) Are of at least potential interest to you.

Step 2. How practical is it for you to undertake an investigation on these topics? Your answer will depend on many factors, such as the time that you have available, whether or not you will have access to and/or are able to obtain the necessary data, the kind of data you hope to obtain, etc. This is what I call a 'killer' step because, clearly if a topic is impractical for you to investigate, you should not attempt to do so. You may reject some of your initial choices on this basis. Alternatively you may refine some of these choices in order to make them more practical to investigate.

Step 3. At what level or scale do you wish to conduct your investigation? Geographically you could have any of the following scales: global, sub-global regional (for example the European Union); national, sub-national regional (for example a region of a country); local (for example a town or a neighbourhood). Within any geographical scale there can be further sub-divisions, for example you could have any of the following foci: organisation(s), social or professional group, a group within an organisation.

Note that the question of scale probably relates to the practicality question in Step 2. Usually, the more specific the topic the easier it is to investigate. However, you should not narrow down so much that your topic has no broader interest. Also note that the scale of investigation might be defined for you in a formal Masters programme of study. For example, an applied Masters might specify that your investigation is targeted organisationally at your place of work.

Step 4. Taking Steps 1-3 into account, and any refinements you have made as a result of the process, choose your preferred topic. If you can't decide between two or more topics because you weight them equally in terms of Steps 2 and 3, return to Step 1 and choose the one that is of most interest, along as it is relevant to the broadly defined area of the lived experience of climate change.

Step 5. Although you will refine further with your supervisor, it will help if you have already formulated some aims, objectives and ways of investigating what you want to find out from your chosen topic.

Aims are general statements of a topic to which you wish to contribute knowledge and understanding. Often one aim will suffice, and I certainly would never recommend having more than three. For example, a topic of flood defences in region X of country Y might have the following aim:

To explore the potential of improved flood defences in region X of country Y to reduce impacts of climate variability.

Objectives concern what it is possible to investigate. Taken together they contribute to the overall aim(s). There can be several objectives. For example, to:

- a) Ascertain the effectiveness of current flood defences in region X of country Y in preventing floods.
- b) Evaluate the technologies which are available for improved flood defences and at what cost.
- c) Assess the range of management structures available for controlling flood defences and their relative effectiveness.
- d) Identify possible negative impacts on livelihood and recreational activities of improved flood defences.
- e) Identify the stakeholders who are likely to benefit overall from having improved flood defences.
- f) Identify the stakeholders (if any) who might lose from having improved flood defences.

- g) Assess the possibilities for reducing negative impacts of improved flood defences and at what cost.

Ways of investigating. Again very preliminary but objectives a) and b) might be achieved through literature searches; c) may require both a literature search and interviews; and d)-g) might rely mainly on interviews.

Activity 11. We are not alone! Capturing the lived experience of climate change in the world (maximum time 2 hours)

The aim of this final Activity for Module 2 is to provide a glimpse of some of the work that is already taking place across the world which recognises the importance of lived experience. This work does not, however, use the concept 'lived experience', but instead uses complementary terms such as 'local' or 'traditional' knowledge. I have issues with these other terms because they tend to assume simple, static understandings of 'local' or 'traditional' and often make no attempt to engage with them critically. Nevertheless, they and similar terms have been in use for a long time in both academic discourse and professional practice. They are at least complementary to, and overlap with, lived experience as discussed in this module, and I suggest that you work with them as reasonable proxies.

To end Module 2, therefore, I invite you to tune into the following video links. You will find them all interesting and relevant. Make notes for yourself on anything that links to, and possibly expands, what you have learned in Module 2. If you have the time and enthusiasm to do so, conduct your own search for other relevant audiovisual material.

There is no discussion to this Activity.

The links are:

1. <http://insightshare.org/watch/video/himalayan-voices>

This video is of a workshop run by an organisation called 'InsightShare' which specialises in participatory video (PV). The workshop explores the use of PV to capture and draw lessons from nomad voices in the Himalayas. The video running time is 18 minutes 9 seconds.

2. <http://community.eldis.org/.5a445137>

While the previous link was mainly about the use of PV, this link is to an actual PV. It was made by people living on Ahus Island, which is part of Papua New Guinea in the Asia-Pacific Region. It is called 'Sindaun Wantain Senis – Ahus Island', which translates into English as 'Living with changes – Ahus Island'. Note in this video the intersection of lived experiences – of over-population and declining marine resources, as well as climate change. The video running time is 12 minutes and 9 seconds.

3. <http://www.youtube.com/watch?v=LOL2CdCfRts&feature=plcp&context=C33982fcUDOEgsToPDskIw5QWQW9fUS2FJeBdjAkxL>

This video demonstrates a participatory modelling activity to capture the knowledge of the inhabitants of a village on one of the Solomon Islands, and plan for possible climate change impacts. The video running time is 8 minutes 40 seconds.

Appendix 1

Advice on structuring and writing essays or reports

If you are studying the Lived Experience of Climate Change modules for accreditation within a university, you will eventually have to communicate an answer to a formal assessment by way of an essay or report. In this Appendix We provide advice on ensuring that a longer piece of writing, such as an essay or report, contains a clear structure around which your argument is developed, that it flows well from beginning to end, and that it is persuasive and clear to the reader.

As a general guide, a good essay or report will:

- Answer the question you have been asked, which requires a thorough understanding of the question.
- Make an argument in relation to the question that has been asked.
- Have an appropriate overall structure.
- Use concepts to drive the answer, rather than the other way round (which would most likely be to immerse yourself in detail and examples at the expense of rigorous analysis).
- Use signposting words to make the text flow nicely from one sentence or paragraph to another.
- Back up your argument with appropriate evidence.
- Draw the text to an appropriate conclusion.

1. Types of question that you are likely to be asked

It can be useful to divide an essay or report topic into its *content* and *process* words and phrases.

Content words and phrases concern what the essay is about. Thus in the examples that we use below to illustrate process words, the content words are:

Climate change, the policy of the United States, the policy of the European Union (The compare and contrast example)

Action on climate change, the United States, the European Union (the discuss, critically evaluate and to what extent examples).

Usually, and before you do much else of substance, you need to explain these content words. This might be definitional, but often something more discursive is required to set the scene for your answer. Thus, you don't have to describe the United States and the European Union in a physical geography sense, but in these examples you do need to explain their political and socio-economic contexts, because it is these that is the basis for differences between them with respect to action on climate change.

Process words and phrases concern what you are going to do to the content words. The list of what you are going to do could be very long indeed, so we will restrict ourselves here to the most common types:

Compare and contrast asks you to look for similarities and differences between two or more situations, and then to balance them.

Example: Compare and contrast the policies of the United States and the European Union in relation to climate change.

Discuss is used often in relation to a statement or proposition where you are required to look for points for and against the proposition and come up with a balanced conclusion.

Example: 'The United States is less willing to take action on climate change than the European Union.' Discuss.

Critically evaluate is basically the same as 'Discuss', but often in relation to a general argument rather than a statement or proposition.

Example: Critically evaluate the argument that the United States is less willing to take action on climate change than the European Union.

To what extent...? Here the statement or proposition is turned into a question, which asks you to examine the evidence that the United States is less willing than the European Union to take action on climate change, and that which suggests it is not less willing, and, again, come up with a balanced conclusion. It is also useful to think of your possible range of answers to 'To what extent' questions as being framed by two extremes: a) The United States is always less willing than the European Union to take action on climate change, or b) The United States is never less willing than the European Union to take action on climate change. Your own argument is likely to be somewhere between these two extremes, but is also likely to be inflected towards one or the other.

Example: To what extent is the United States less willing to take action on climate change than the European Union?

2. Structuring your answer

2.1 Essays or reports

Essays and reports have basic features in common. They both require you to:

- Demonstrate an understanding of the content words in relation to your topic
- Make an argument.
- Demonstrate an understanding of all sides of the argument, including opposing views and their supporting evidence;
- Arrive at a considered judgement which leads to your own argument, and which itself uses supporting evidence
- Communicate effectively using a clear structure and writing style.

The difference between essays and reports is therefore one of emphasis, rather than substance. A report is usually written to advocate a policy, strategy or action, while an essay is more discursive and prone to 'sitting on the fence' (although an essay might also make a strong case). As a result, a report has a particular audience in mind, beyond that of the person who will be marking your work. It is also more formally structured than an essay, with section headings and sub-headings to guide the reader. An essay tends to be more in continuous prose with greater use of signposting words and phrases (see below) to link different parts of the argument.

2.2 The overall macro-structure of an essay or report

Whether it is an essay or report, you need to introduce it, consider the different viewpoints and evidence, and conclude it. A long report usually also contains an executive summary of its main points and recommendations at the start.

The overall macro-structure of both an essay and report is:

1. Introduction, where you should state what you understand by key terms. For example from the sample questions above, the key term would be ‘action on climate change’. The introduction will also set out the general terms of the debate in no more than a few sentences, and you might also state what your overall argument will be.
2. Give the arguments for and against, treating even those you don’t like or with which you don’t agree, with respect.
3. Discuss the arguments, carefully weighing them up against each other. Don’t forget to back up with evidence and illustrations.
3. Conclude, stating where, on balance, you stand and why. A conclusion should not normally introduce new evidence or arguments.

2.3 The micro-structure of the text -- words, phrases and paragraphs

2.3.1 Use concepts to drive your argument

Concepts are words and phrases that express what is general or typical and they are the key to how we communicate. We would add that they are the building blocks of a ‘shared language’ in a subject area such as climate change in that they form the basis of collective understandings. This is what we are trying to do throughout the textbook of module 1 *Introduction to climate change in the context of sustainable development* – build up a common language that we can share. Concepts that we all can use, and know the meaning of, are the place to start. This is essential for a good answer.

The sample questions above might use concepts which appear in Chapters 3 and 4 of module 1. They include: the climate change regime, global policies, state and non-state actors, cooperation, conflict, market mechanisms, etc. The United States or the European Union are not concepts, however, as there is only one United States and one European Union – they do not express what is general or typical.

Concepts that link to and reinforce one another form conceptual frameworks, and they can be used to structure your essay or report. Conceptual frameworks lead to theories of why things are as they are. Often more than one conceptual framework can be applied to the same problem, where they compete with one another in terms of their explanatory power. For example, in Chapter 3 of module 1, one conceptual framework is based on the concept of market failure, and linked concepts include economic growth, global carbon markets, low-carbon technologies, property rights, R&D investment, and so on. A quite different framework, however, would be based on sustainability, human welfare, justice, contraction and convergence.

Use concepts as the basis of headings and sub-headings to structure your answer and drive it forward. Of course, in an essay of continuous prose, they might be invisible headings/sub-headings in the final answer and you rely instead on signposting words and phrases for your linking (see below).

2.3.2 Provide evidence to support the points you make under your conceptual drivers

This is an obvious point but easily missed. A common structural mistake is to start with the evidence and add the concepts as an afterthought. In English we call this ‘putting the cart before the horse’.

2.3.3 Use ‘signposting’ words to link sentences and paragraphs and to construct an argument that flows through your writing

If you don’t do this you will almost certainly produce an answer that is a list of unlinked sentences. These sentences may be individually very powerful and use important concepts, but overall there will be no coherent thread of an argument running through your text. It’s a bit like a sports team, where individual players are very skilful but play

as isolated individuals with no overall game plan. They are likely to lose to a well organised team that may be less skilful individually.

Signposting words keep the reader informed as to where the argument is going. They are used to:

- Draw out similarities or extend the argument (use words/ phrases such as: *and, similarly, moreover, furthermore, in addition*):
“*Moreover*, the United States never signed the Kyoto Protocol.”
- Contrast two items, facts or points (use words/ phrases such as: *but, however, on the other hand, yet*):
“The United States never signed the Kyoto Protocol, *but* at a different level it has invested heavily in low-carbon technologies.”
- Illustrate an argument or point (use words/ phrases such as: *for example, that is, as is*):
“*For example*, the European Union was among the first to sign the Kyoto Protocol.”
- Conclude a point, topic or argument. (use words/ phrases such as: *so, consequently, thus, as a result, therefore*):
“*Thus*, the European Union has been a global leader in relation to climate change.”
- Move on to the next stage in your argument or description (use words/ phrases such as: *then, after that, ultimately*):
“*Ultimately*, if the Eurozone economy goes into long-term decline, *then* the European Union will find it difficult to maintain its role as a leader on climate change action.”

Try to use both concepts and appropriate signposting in essay/report answers. Those outlined above are examples only so use your own signposting words or phrases if you wish.

Appendix 2

Two accounts of the lived experience of climate change from Sub-Saharan Africa

Charlene Hewat's account (Zimbabwe)

I am a White African, born in 1963 on a farm in Zimbabwe, which when I started out had nothing on it except for the flora and fauna. To begin I lived in a mud type house and my bath was a tin tub, which we had to heat on the log fire. We had no running water or electricity and in fact most of my childhood was spent with a simple generator for power. Our food we would source mainly from the wild and grow our own vegetables and eventually fruits. Coming from a farming background I remember the importance of the rains and how we would celebrate the first rains, no matter where we were, by getting ourselves soaked. We carried out dry land farming, so rains were very important to us and still are today. Every day we would measure the rain gauge and keep a record of the rainfall annually. In a nutshell we depended a lot on our natural environment for our survival.

My father was a born environmental, earthy type of person and was a real inspiration to me. When we started farming he would always talk about how everything was interconnected and how we needed to farm in a way that did not harm nature and the environment. Papa, as I called him, would leave 5 to 6 metres of natural bush between each of the fields, he would not let anyone bulldoze the anthills and left them standing in the middle of the fields. He would explain how important nature is to the production of crops, the bees to pollinate, and the trees to absorb the heat and cool the earth. He even refused to plough the lands and at the time carried out what was called minimal tillage. When I look back I realise that all that he was teaching me was about how to conserve and take care of our environment and today the talk amongst agriculturalists is about zero tillage and how it can help towards carbon sequestration.

My passion for the environment and the love of nature was instilled in me at a very young age, thanks to Papa, but he also taught me about the importance of people and the planet. How people were destroying the planet and yet at the same time how the traditional leaders were real protectors of the planet. He told me about the story of the local chief not allowing anyone to cut trees without permission and if they did they were punished by sitting on top of an open anthill. Yet today I see throughout our beautiful country thousands of trees being chopped, some out of necessity but most of it out of greed. Something that is still vivid in my memory is when I accompanied Papa, aged 14 years to visit the local chief, Chief Chirau, and there before us in the maize field was the Chief in a brand new Mercedes with a plough attached to it, ploughing his fields. I did a double take, was this for real? What have we done to our people? I said. What was this all about? Technology advancing at a faster rate and us not being aware or capable of keeping up with it.

When I look back at my younger days, I feel privileged to have been born in a world that was natural, raw and real. Visiting many wildlife areas, it was the one thing I loved and in my early 20's I came across some poached rhino. Horns hacked off and the carcass left for dead. This triggered something inside of me and I went to find out from National Parks what was being done about it. Not much as there was little finance and equipment to cope with the high volumes of poaching. It was here that I decided to do something about it and rode a bicycle from the UK to Zimbabwe, 22 000Kms, with a colleague of mine. We raised 250 000 British pounds for rhino conservation but for me what was amazing was the lessons along the way. I noticed how Europe was busy, with polluted cities, and people had no time for each other. There were all the latest up-to-date gadgets around, and very little wildlife and open spaces, mainly concrete. Whilst travelling through Africa there were vast open spaces, wildlife and friendly open people who would welcome us into their homes, and although they were poor they would provide us with

food and water. I remember on the one day we asked for water, they said just over the hill, well no water was seen for miles and miles and eventually we had to dig for water in the sand bed. The differences between the developed and the developing countries was hugely noticeable and although more consumerism, pollution is happening in the developed world, it seems that Southern Africa is going to be the most affected with regards to climate change.

Currently I am working with a local Environment based organisation and this is when I first got to hear about climate change some 15 years ago. Everyone was making such a big issue out of climate change and the negative impacts it is having and going to have especially in Africa. For me, I think climate change is a natural cycle that the world is heating up, however, what we as humans have done and are doing is speeding up the process. Our greed, consumptive patterns and basic loss of connection to our planet are all contributing to climate change.

There is no doubt that climate change is real, especially here in Africa. I have noticed the rainfall patterns changing, the seasons changing and geographical regions changing. With the work that I do, I travel extensively out into the rural community areas and meet with our many community farmers who have their stories to tell about climate change. In the Eastern Highlands, the rural farmers are telling us stories about how they are now having two rainy seasons and not one and that there is less and less rain falling. In Hwange, Matabeleland North, the farmers talk about changes in the vegetation and the increase in temperature.

It was about 12 years ago when we as an organisation decided to start introducing, and in most areas reintroducing, small grains to the farmers. I noticed back then the reduction in rainfall and wanted to look at how farmers could adapt to the changing climate. Small grains require little rain and if farmed with zero tillage and conservation agricultural methods, the likelihood of reaping a crop is higher than if one used the normal hybrid maize, tilled soils and fertilizers. It was difficult at first to convince the farmers that this is the way forward, so we started with a few farmers and with their success more and more farmers took up small grains and conservation agriculture methods.

Climate change adaptation is now real and something all development and development agencies need to incorporate as part of their interventions. It is not a singular issue, a separate issue but an inclusive one. International organisations often come into Africa with quick fix, immediate short-term solutions which in the long term not only fail but also break up and destroy communities. They think they are doing the right thing at the time. A good example is food aid. People are starving so let's go out and give them food instead of giving them small amounts of food for a specific time frame whilst at the same time teaching them how to feed themselves. The international organisation feels good, it has fed some targeted hungry communities, it has reported back to the donor country and it has fulfilled what it thinks is real development. The question is how are donors going to deal with climate change issues. Recently when we received from a donor seed to distribute we received hybrid maize seed, as that is what the donor was giving out, although we specifically requested small grains. What do we do in this instance? Basically the big brother rules, but who suffers in the long term? The community.

Adaptation is critical in Africa and over 5 years now I have seen an increased uptake of small grains by local communities. The communities are realising that climate change is real and to deal with it they are going to have to adapt. Small grains is one of the adaptations that is taking place more and more in the areas where we are now working and working well. The communities who are undertaking small grains and conservation farming methods are surviving, whilst others are producing very little or no crops with hybrid maize seed. Interestingly, the seed companies are now looking more and more at small grains and at how they can get involved in the production and distribution of small grain seed.

One big area, which is lacking with regards to climate change, is biodiversity monitoring and banking. We, Environment Africa, as an organisation are looking at establishing a bio bank so as to bank biodiversity for the future. The project is in the initial stages of development and new technologies of banking biodiversity at room temperature are currently being explored together with the monitoring systems of climate change along the Zambezi River. This project will not only enable us to bank biodiversity for the future but will also enable us to work towards climate change adaptation as we will know what it is we are dealing with. This is an exciting project for the future.

Climate change must not be driven as a single issue; it is too big and too daunting to us all. What we need to look at is how to integrate climate change into our daily lives both at work and at home.

Ricard Kimbowa's account (Uganda)

I was born and grew up in the central part of Uganda 40 years ago. From a background of a small scale agro-based family that depended on a combination of crop and animal husbandry for a livelihood in Wakiso district near Uganda's Capital of Kampala, I was able to study until university level.

During my high school I used to attend some school geography club events that included monthly debates on a wide range of topics. In some way climate change discussions featured. More frequently, during my undergraduate studies where I studied forestry, I was able to learn a little more about climate change issues from this professional standpoint.

This exposure enabled me to attend several discussions, trips organised by nature related clubs at University and numerous talks and discussions that helped me understand the topic more, although available literature then was limited to experiences from other countries (especially Asia and Western Europe)

All my family's agricultural work has been dependent on the two rainy seasons which fall around April and November, combined with the relatively fertile soils that have until recently supported a satisfactory crop yield and animal production. However, changes in the intensity and predictability of the rainy season in this largely rain-fed agriculture have severely interfered with family incomes and hence affected livelihoods (including dependants who are far away in the rural areas)

Rainfall failure and its increasing irregularity as evidenced by sporadic occurrence, strong winds and hailstorms is a major climate factor of interest to me, coming from an agro-based background. Climate change related impacts have exacerbated the decline in agricultural productivity. This takes the form of failure of the sown crop (grain) seed to germinate, poor harvest due to excess rains / extended drought conditions, poor post-harvest handling leading to huge losses and / or poor prices from the crop produce. In relation to animals, the water stress arising from extended droughts meant that poor quality water had to be looked for from far distances and at awkward hours (for example staying at a water point up to late in the night or very early morning; and having to come back early from school in order to be able to look for water), which affected my concentration at school. In some cases the water collected was of questionable quality, but we had no alternative to use it for cooking, bathing, washing and other domestic purposes.

Effects of climate change have been compounded by the rolling back of the state in the 1990s (no agricultural extension service staff, no more farm inputs, etc) with dire consequences to small scale farmers like my family, who have to turn to private advisers at a cost.

Given my background and the experiences of the changing climate (especially rainfall patterns on which many Ugandans depend for their agricultural activities), I feel obliged to work with likeminded individuals and institutions to influence national plans that

address adaptive capacity of the most vulnerable communities (small scale farmers, fishers, rural based societies and the urban poor). Fortunately, I work for an NGO – Uganda Coalition for Sustainable Development -- where such a chance exists through national, regional and global campaign efforts (provision of information on available coping options, research, awareness raising, sign-ups, among others).

It is clear that this is going to be part of our life. What is therefore important is to have in place measures and options that can enable citizens to cope with this new development challenge at their own level (agriculture and food security, water supply and sanitation, transport, health, and so on).

This is not an easy thing to have in place in developing countries like Uganda where available safety nets (sometimes even to levels of disaster preparedness) lie with families that are already stretched by declining food yields, disease outbreaks, rapid urbanisation rates and the rolling back of the state in the much needed social sectors like agricultural extension and healthcare. In this regard, I feel that there is a global responsibility from the rich countries and well-off citizens to help offset this need.