

# Tyndall° Centre

for Climate Change Research

***'Changing the climate of African development'  
26-27<sup>th</sup> March 2009, Cape Town, South  
Africa***

***Workshop Report***



Authors:

Andrew Newsham, Tyndall Centre University of Oxford  
Marisa Goulden, Tyndall Centre UEA

## **Acknowledgments**

The authors gratefully acknowledge the generous funding provision from NERC, ESRC and EPSRC, Tyndall's core funders. The authors would like to thank all of the workshop participants for the time, goodwill and intellectual resources they contributed, and in particular the speakers and discussants for the quality of their presentations. More specifically, the authors would also like to thank: Kate Brown and David Thomas, John Ingram and Bruce Hewitson for useful suggestions and constructive criticism on the organisation of the workshop; Esteve Corbera, Natasha Grist, Henny Osbahr and Katharine Vincent for agreeing to rapporteur sessions (on top of presenting for us!); Margaret Angula for stepping in as a discussant at the last minute; and Hamisai Hamandawana for general encouragement and gratitude (rivalled only by Esteve). Last but by no means least, special thanks need to be given to Vanessa McGregor for extensive, ongoing help with organising the logistics, and to Richard Holden, for various feats of finance wizardry.

## Table of contents

<b>Executive Summary</b> .....	1
Rationale .....	1
Key messages emerging from the workshop .....	1
Key priorities for future research .....	3
<b>Workshop panel sessions</b> .....	4
Introductory remarks and workshop overview .....	4
Session 1a: Adaptation and effective development .....	5
Session 1b Adaptation and collective action in transboundary water management .....	7
Session 2: Policy and market-based initiatives for climate mitigation .....	9
Recap of Sessions 1 and 2 .....	11
Session 3: Scenarios, policy and practice .....	12
Session 4: Funding streams and opportunities .....	14
<b>Breakout discussions on a future research agenda</b> .....	16
Water .....	16
Energy .....	17
Agriculture .....	18
<b>Feedback from workshop participants</b> .....	19
<b>List of workshop participants</b> .....	22

## Executive Summary

### Rationale

On 26-27<sup>th</sup> March 2009, the Tyndall Centre convened a workshop in Cape Town South Africa. The workshop formed a part of the Tyndall Centre's Programme on International Development, 'Securing human welfare: how can international development be sustained in a warming world?' The workshop brought together researchers, policy makers and representatives of civil society working on climate change and development within the agriculture, water and energy sectors.

The objectives of the workshop were twofold:

1. To explore and share ideas on key areas of the interface between climate change and development policy and practice, drawing on and disseminating work coordinated by the Tyndall Centre and research partners in Africa, examining the state of current knowledge on climate change and development, with reference to agriculture, water and energy.
2. To outline, in collaboration with African stakeholders, priorities for further research on climate change and development, identifying potential collaborators and funding streams, with a view to defining a future research agenda and a potential set of working partnerships in Africa.

This workshop report is intended to serve three purposes. First, it offers a brief summary of key messages emerging from the workshop. Second, it gives an overview of presentations made in the panel discussions. Third, it documents the discussions between participants that followed the presentations. Further information about the workshop including the presentation slides and podcasts of most of the presentations, is available at:

<http://tyndall.ouce.ox.ac.uk/prog4/events/adaptationworkshop260409/programme.html>

### Key messages emerging from the workshop

#### Doing climate change research in developmental contexts

- An increasing amount of expertise is available in Africa to deal with climate change in the context of development and is starting to replace current 'centres of power'
- Researchers need to think hard about how they influence policy makers; but policymakers also have to take on board messages from the research community
- It is important and challenging to do adaptation research across broader scales: there was a feeling amongst some participants that a case-study focus is not facilitating an adaptation response that is commensurate with the global implications and scale of climate change impacts.
- There are concerns that, despite efforts at the national level, international coordination of climate change research (and other) funding is somewhat lacking.

### **Climate change, policy and practice**

- Policymakers (and researchers) need to put climate change into the broader context of other twenty-first century challenges like population growth and food, water and energy security.
- Political will and an enabling institutional framework are important for the mainstreaming of climate change
- There is a significant mismatch between the timescales that governments operate at – governed at best by the imperatives of the electoral term – and the much longer timescales across which climate change phenomena unfold. Some participants felt that the climate change challenge requires a longer-term response than current political systems are geared up to deliver.
- Notwithstanding this perennial difficulty, there are ways of ensuring engagement and buy-in from politicians in terms of climate change intervention, ranging from climate change ‘policy champions’ to bottom-up, qualitative scenario-building exercises which empower broader ranges of stakeholders to think about and start planning for climate change.
- There was a strong feeling that, given appropriate funding arrangements, civil society can play a positive role in communicating the science of climate change to a wide range of affected stakeholders.

### **Agriculture**

- It is necessary to engage with local agro-ecological knowledge when formulating adaptation policy, to ensure legitimacy and to avoid unintended consequences.
- It is highly useful to understand the roles of different actors and institutions – formal and informal – in generating resilience to climate events in agricultural practice.
- Actors and organisations providing a bridge between different levels of intervention play a critical role in effective cross-scale adaptation intervention.
- Producing a clearer understanding of who is most vulnerable to climate change impacts is an effective way of targeting intervention, and one for which a number of frameworks and tools already exist (i.e. REVAMP’s household social vulnerability index – see Katharine Vincent’s presentation).

### **Water**

- Extreme climate events and the threat of climate change can lead to both conflict and cooperation between riparian states sharing a river basin.
- It is important to find ways to facilitate cooperation in transboundary water resource management, especially in the context of adaptation to potential climate change impacts.
- It is not clear if current basin-wide initiatives for international rivers are yet facilitating adaptation, in part because of the multiple and sometimes conflicting demands made of water resources.
- African modes of resolving conflict ‘ubuntu’-style<sup>1</sup> may yield more cooperation than coercive attempts to enforce tenets of international water law.
- Although in many ways international water law has the potential to facilitate cooperative adaptation to climate change, it has yet to provide a means

---

<sup>1</sup> *Ubuntu* refers to people’s allegiances and relations with each other, and coming to informal agreements on how to resolve issues

through which to resolve issues around how shared water resources are to be used by different states.

- The sharing of benefits might provide a way forward for cooperation but it is challenging to implement where economies are weak and there are social and political conflicts.

### **Energy**

- The potential role of renewable energy in reducing poverty is considerable, as illustrated by experience of incorporating renewable energy sources in rural electrification programmes in China.
- The example of the Kuyasa Project in Cape Town, and the model for launching similar household energy packages on a national scale, suggests that renewables could play a similarly promising role in African development. This potential is at present, however, largely unrealised.
- Switching to renewable energy sources from currently used ones such as paraffin not only provide carbon reduction benefits, but also confers governance, health, employment and financial benefits, thereby contributing to poverty reduction and improved well-being.
- Carbon forestry initiatives also show great potential for reducing carbon emissions and poverty, but still face an array of challenges, including the instability of carbon markets and questions around the distribution of benefits from carbon credits.

### **Key priorities for future research**

#### **Agriculture**

##### Vulnerability:

1. Disaggregate between vulnerable groups and ensure benefits of intervention reach those most vulnerable.
2. Consider viable, realistic trade-offs for countries in terms of food self-sufficiency or overall food availability.

##### Capacity:

1. Build and link capacity at regional, national and local levels.
2. Increase understanding of the dynamics of knowledge transfer so that practice more closely resembles policy.
3. Ensure that capacity building leads to mutual innovation and learning.
4. Clarify how much climate change investment is going toward agriculture.
5. Promote better communication of climate information to farmers.

##### Integration:

1. Integrate agriculture and climate change into wider issues around climate change, i.e. migration and conflict.
2. Improve understanding of regional linkages – i.e. implications for other Southern African countries if South Africa's maize crop failed due to climate change.
3. Explore how to support regional collaboration better.
4. Develop a clearer understanding of where mainstreaming of climate change across government has happened more effectively.

#### **Water**

1. Address uncertainty in present and future water resource management.
2. Explore adaptive management in the context of integrated water resource management.

3. Recognise the cross-sectoral nature of water.
4. Appreciate the cross scale use of water – for example: as a local level issue; for national and regional water and food security; for individual human well being and human security; water as a multiple use; water as a basic right.
5. Water security and conflicts over water in transboundary rivers.
6. How do all the above priorities relate to national priorities?

### **Energy**

1. Energy poverty is a key research area which links directly to development. Why is energy poverty so persistent? Why has renewable energy not been more widely disseminated?
2. There is a lack of evaluation criteria to measure the side-benefits (e.g. in terms of health) that renewable energy also generates, a number of which contribute to people's well-being.
3. Establish more clearly how energy issues can assist in meeting the Millennium Development Goals.

## **Workshop panel sessions**

The workshop was comprised partly of panel sessions in which findings were presented from the Tyndall Centre's research on climate change and international development, as well as work by Southern and Eastern African partners and colleagues. Workshop participants also visited a Clean Development Mechanism project situated in Kuyasa, a neighbourhood on the southernmost edge of Khayelitsha, Cape Town's biggest township. Breakout and plenary discussion sessions held in the afternoon of the second day sought to identify funding opportunities and key research priorities for the sectors of agriculture, water and energy.

### **Day One**

#### **Introductory remarks and workshop overview**

##### *Speakers*

Bruce Hewitson, Climate Systems Analysis Group, University of Cape Town, South Africa

Leluma Matookane, Department of Science, Technology and Innovation, Government of Republic of South Africa

David Thomas, School of Geography & Environment, University of Oxford, UK

Bruce Hewitson kicked off proceedings, reflecting on the increasing amount of expertise available in Africa to deal with climate change in the context of development, which is starting to replace current centres of knowledge and power. He argued for the need to focus on interdisciplinary and collaborative frameworks across the continent, pointing to existing instances in which African researchers were already setting the agenda, such as the C3D+ (Climate Change Capacity Development Plus) initiative. Alongside the need for continental collaboration, he argued that it is also necessary to move from the current status of knowledge, characterised by data about and awareness of climate change, to one of action and knowledge to deal with climate change.

Leluma Matookane outlined the priorities of the South African Government. Specifically, he mentioned the Global Change Climate Challenge to instigate significant action on climate change by 2018, which was showcased at the Climate Change Summit held in March 2009 in South Africa. This includes measures to identify risk and reduce vulnerability to climate change within the context of a shift from a resource-based to a knowledge economy. He noted that the Climate Change Summit identified water, agriculture and natural resource use as three key areas to focus on.

Professor David Thomas began by putting climate change into the broader context of other twenty-first century challenges like energy security, food security, conflict and terror, and outlined that these in turn were affected by underlying drivers such as population growth. He outlined some of the potential consequences of climate change, particularly in relation to development processes and aims. He then offered a summary of research about climate change and development conducted by the Tyndall Centre<sup>2</sup>. He concluded by outlining the objectives of the workshop:

1. To disseminate Tyndall Centre research findings.
2. To discuss and debate Tyndall research outcomes and to gather feedback on how these have contributed to debates in Africa.
3. To explore potential future contributions to knowledge and research collaborations.

### **Session 1a: Adaptation & effective development**

*Chair:* Gina Ziervogel, University of Cape Town, South Africa

*Discussant:* Margaret Angula, University Of Cape Town, South Africa

*Speakers:*

Katharine Vincent, University of the Witwatersrand, Johannesburg, South Africa

Henny Osbahr, Walker Institute, University of Reading, UK

Andrew Newsham, Tyndall Centre, University of Oxford, UK

*Presentations*

Katharine Vincent presented a household index of social vulnerability for evaluating adaptation projects in developing countries. This index is intended as a tool for identifying vulnerability at the household level more precisely, so as to target adaptation more effectively at those households likely to be most vulnerable to the impacts of climate change. Drawing on field research in a village in Limpopo Province, South Africa, she developed indicators of social vulnerability by identifying the social, financial, human, natural and physical capital available to households in the village. Her findings suggest that a female-headed household who had income from formal employment and remittances, some economic assets and a low dependence on natural resources as a source of livelihood was considerably less vulnerable to climate change impacts than a female-headed household with no formal employment, tending a subsistence maize crop and with no membership of clubs, such as a burial society. She also stressed that the vulnerability indicators were likely to be applicable and modifiable in a range of local level contexts within and outside South Africa.

---

<sup>2</sup> See presentation slides accessible from [www.tyndall.ac.uk](http://www.tyndall.ac.uk) for further details



Henny Osbahr gave an overview of two completed Tyndall Centre funded research projects: the ADAPTIVE project and the meta-analytical review of factors impacting on effective development in Africa. The ADAPTIVE project primarily explored and mapped local responses to climate variability in Mozambique and South Africa, and implications for vulnerability to climate change. A central objective for the research was to identify the processes, institutions and types of agents that facilitate livelihood adaptation. Key lessons from this research include:

- The importance of understanding the roles of different actors and both formal and informal institutions in generating resilience to climate events.
- The importance of actors and organisations providing a bridge between different levels of intervention.
- The need to recognise that promotion of direct adaptation measures may not be appropriate for flexible reorganisation.
- The need to confront the fact that the strengthening of adaptive capacity requires reform and underlying vulnerabilities to be addressed.

The meta-analysis sought systematically to assess the interactions between climate parameters and the success of development projects and programmes by reviewing both qualitative and quantitative multi-scale case studies. It found that whilst climate can be a trigger that compromises development, the main drivers impacting on effective development are economic rather than climatic, mediated by social, political and cultural factors that are dependent on scale.

Andrew Newsham considered the issue of mainstreaming adaptation into government policy in Namibia and Mozambique. He drew attention to the importance of engagement with local agro-ecological knowledge which, to some extent, already confers adaptive capacity upon farmers in the face of a wide range of climate variability, by drawing on examples in North-Central Namibia. He argued that the implications of climate change adaptation have not yet been mainstreamed into the broad sphere of government activity in either Namibia or Mozambique. On the other hand, farmers in North-Central Namibia appear to have 'mainstreamed' adaptation into the broad sphere of their agricultural activity. Moreover, any sort of adaptation intervention that does not take into account the sophisticated framework farmers use to understand and utilise their environment could bring about a series of unintended and unhelpful consequences.

Summarising the presentations, discussant Margaret Angula asked workshop participants to consider to what extent local knowledge is useful for adaptation, and how useful it is to compare Namibia and Mozambique. She asked participants whether they had data sets or situations to which Katharine Vincent's social vulnerability index could be applied, and to what extent her findings correlated with or matched their own experiences.

#### *Questions and discussions on presentations*

Four core issues were reflected in the discussions that followed the presentations. The first related to mainstreaming. One participant asked who is responsible for mainstreaming climate change into government policy if, as in many African countries, one ministry waits for another to "make the first move". Another participant mentioned that many African countries are treating climate change as a separate issue, rather than integrating it into wider development concerns.

Linked to such questions was the second issue, related to the importance of research dissemination and the need to disseminate research in ways which will genuinely influence policy makers. One participant argued that researchers should “aim high”, trying to reach the most important politicians, ensuring that messages are framed in line with current priorities, such as economic growth. Another participant noted that putting the onus solely on researchers to ensure research is influential is a “burden”, and that there is a need for stronger institutions to take up research messages and to convey them directly.

Third, Andrew Newsham was asked about the implications of recent flooding (in March 2009) for the use of agro-ecological knowledge in North-Central Namibia to adapt to climate change. He responded that the floods, which had caused massive devastation and loss of life, represented a threshold beyond which such knowledge could offer little protection.

Fourth, the question of how effectively work on local knowledge is being transformed into effective action on adaptation was raised. No clear answer to this was offered but Andrew Newsham noted that it is difficult to take insights for adaptation from a local scale and translate them into broader scales of action, across national and international levels.

### **Session 1b: adaptation and collective action in transboundary water management**

*Chair:* Callist Tindimugaya, Directorate of Water Resources Management, Ministry of Water and Environment, Uganda

*Discussant:* Hamisai Hamandawana, North West University, South Africa

*Speakers:*

Declan Conway and Marisa Goulden, Tyndall Centre and School of International Development, University of East Anglia

Gavin Quibell, WS Atkins, UK/ South Africa

*Presentations*

Declan Conway and Marisa Goulden presented preliminary findings from their research which seeks to understand how institutions and states interact and cooperate in terms of dealing with climate variability and extreme events, and how they are likely to do so in the future. This was done through case study research on how extreme events had been dealt with historically in the River Nile basin. One of these case studies, on the rapid drop in the level of Lake Victoria between 2005 and 2007, has been the subject of both tensions and cooperative interactions between the most affected parties, namely Kenya, Uganda and Tanzania. The presenters drew the following conclusions:

1. Extreme climate events and the threat of climate change can lead to both conflict and cooperation between riparian states;
2. Regional institutions are important for cooperation and potentially for adaptation;
3. Development and adaptation plans of different riparian states involve both cooperative and unilateral development of Nile water resources.

Gavin Quibell spoke on international law governing water use and climate change challenges in Southern Africa. He noted that western society could be quite litigative, and tended to see the law in terms of a gorilla that must not be annoyed. However, he argued that this conceptualisation of the law did not apply in the arena of international water use legislation, and that in particular it did not apply particularly well in an African context. Rather, he noted that international law often enshrined tenets of customary law which were more closely related to the ecological characteristics of a water basin than they were to political boundaries. Moreover, African governments made more recourse to the concept of 'ubuntu', that is, concentrating on people's allegiances and relations with each other, and coming to informal agreements on how to resolve issues. This occurred in parallel to the signing of international water legislation such as the SADC Protocol on Shared Watercourses. The cooperation that such an approach fostered may have the potential to help governments deal better with water resource management in the face of potential climate change impacts, in particular with adapting to extreme events but less so in terms of adapting to a gradual drying in a climate.

In his role as discussant, Hamisai Hamandawana summarised key points from the presentations, noting that whilst there were innovations in international law and an increasing number of initiatives for cooperation in international river systems, these had not necessarily produced mechanisms for adaptation or for the equitable sharing of benefits amongst different countries. The law, he stated, had "failed in almost each and every case to provide some kind of a formula on how water resources are to be utilised".

#### *Questions and discussions on presentations*

Questions and discussion centred around three themes. First, debate moved back and forth over the causes of the drop in the level of Lake Victoria, prompted by a question about the role of hydropower in reducing the level. Marisa Goulden replied that whilst climate variability caused the level to drop, hydropower production was maintained at a high level in order to meet demand, without taking into account the drop in level of the lake. One participant argued that companies did take levels into account because their business depended on it. Another pointed out that expansion of hydropower production in the last decade seemed to be based on calculations influenced by an unusually high rainfall event in the early 1960s that may not have been representative of long term trends. Declan Conway concurred, arguing that in the design of a recent extension to hydropower facilities completed in 2000, the long term climate record wasn't fully taken into account in feasibility studies and design criteria. Marisa Goulden added that increasing demand for electricity to power Uganda's developing economy was a high priority for the Ugandan government and that although the Ministry of Water was aware of the drop in lake levels, it had to compete with the Ministry of Energy, which viewed the lake as a source of power. Both Conway and Goulden emphasised the uncertainties surrounding measurement of inflows and outflows from the lake, with Conway more certain of projections of future water demand increase from demographic pressures than of being able to offer accurate scenarios of future water resources in the Nile Basin.

A couple of workshop participants who were directly involved in the Nile Basin Initiative commented that, whilst there were difficulties and concerns, there was also an improved awareness of the ways in which signatory countries depended on each other, and they had cooperated in a number of ways, not least in terms of sharing the benefits of water, if not necessarily sharing all of the water itself.

A final question came to Gavin Quibell, who was asked whether he thought the SADC approach to transboundary water resource management was actually working. He replied that it may be too early to say, not least because in only one Southern African basin the situation is critical in that the shared water resources are affecting the riparian countries' economies. He argued that all the ingredients for cooperation are there in Southern Africa, although it might be harder to achieve the sort of cooperation seen in Europe, in particular using the benefit sharing approach, owing to weak economies and social and political conflict.

## **Session 2: Policy and market-based initiatives for climate mitigation**

*Chair:* Gisela Prasad, University of Cape Town, South Africa

*Discussant:* Boaventura Cuamba, University of Eduardo Mondlane, Mozambique

### *Speakers:*

Tao Wang, Tyndall Centre, University of Sussex, UK

Esteve Corbera, Tyndall Centre and School of International Development, University of East Anglia

Carl Wesselink, South African Export Development Fund, South Africa

Emily Tyler, Genesis Analytics, South Africa

### *Presentations*

Tao Wang's presentation considered the role of renewable energy in China's attempts to bring electricity to all of its inhabitants, with a view to stimulating thought and debate on whether lessons could be learned in Africa from China's experience. He noted that whilst China is set on current growth rates to emit 50% of global carbon emissions by 2030, it is nonetheless the world leader in the production and use of renewable energy technologies. Most of this comes from small hydropower generation, which is being rolled out as part of China's rural electrification programme. Poverty alleviation is a key incentive for the promotion of renewables. He also discussed the use of solar power to bring electricity to townships in China, reaching 1000 townships in 2 years. He added that he believes that Africa has substantial potential for solar power generation.

Carl Wesselink's presentation outlined the Kuyasa Clean Development Mechanism (CDM) project. The Kuyasa project retro-fits solar water heaters, ceiling insulation and low energy light fittings in houses in the Kuyasa neighbourhood of Khayelitsha, Cape Town's largest township. It aims to reduce household carbon emissions whilst contributing to residents' well-being. At present, the project covers 2,309 houses, but is intended to serve as a sustainable model to be employed on a national scale. The four main benefits (aside from emissions reductions) were listed as: governance, health, employment and finance. The project aims to produce 2.82 tons of carbon credits per year per unit, generate 780,000ZAR for Kuyasa residents and provide employment through maintenance requirements.

Emily Tyler followed on from Carl Wesselink with a consideration of the prospects for up-scaling the Kuyasa model of subsidised housing to the national level, whilst securing sufficient carbon financing to make the exercise economically viable. Preliminary financial modelling suggests that returns on investment could accrue after a period of 15 years, and that up to ZAR 91 billion of costs in power generation could be avoided. Tyler reported that the South African government is starting to

show interest in the model, and that potentially it could also serve as a model for other countries to use for CDM projects.

Ending the session, Esteve Corbera presented on carbon forestry in Kenya. After briefly surveying the history of carbon forestry as an established activity within carbon offset markets and funds, he highlighted some of the principal challenges facing carbon forestry, including:

- The difficulty of acquiring data on carbon stocks and flows.
- The lack of interest from investors, in comparison to energy-related funding.
- The unregulated character of voluntary carbon markets.
- Difficult questions around the distribution of benefits from carbon forestry

These issues were then contextualised with case studies of two carbon forestry programmes in Kenya (ESCONET and TIST). It was concluded that:

- Tree planting carbon programmes provide income benefits and organisational support to farmers, but they lack sound accountability and monitoring procedures.
- The ESCONET initiative represents a new form of public-private forest governance, where the State grants forest rights to an NGO in exchange for effective management of public lands. However, it reinforces public property and marginalises the interests of pastoralists who had informal access to forest resources and grazing areas in the past.
- Uncertain quality of offsets and misleading publicity could undermine the legitimacy of carbon forestry activities

The discussant, Boaventura Cuamba, noted that an important feature of all three presentations was the way in which they brought together elements of both adaptation and mitigation, and offered lessons for Sub-Saharan Africa as a whole, provided that funding for adaptation and mitigation could be found in the international arena. He identified the importance of the link between rural electrification and decentralisation in China, and highlighted an unfulfilled potential within the Southern African region to use the CDM to reduce deforestation levels.

The presentations were followed by a visit to the Kuyasa project, in which participants met employees of the project and were given a tour around houses fitted with the solar water heaters and ceiling insulation.

#### *Questions and discussions on presentations*

Two issues emerged in the discussions on the presentations. The first was a question about whether South Africa would take a leaf out of the Chinese government's book and invest more heavily in renewable energy sources in its own electrification programmes. Tao Wang was reluctant to comment on the South African government's energy policy, but clarified that in the Chinese case, cost remained a significant concern that had impeded the introduction of renewable energy sources on a large scale in electricity supply in China. The Chinese government provided seed funding but much was dependent on the willingness of the private sector to invest.

Secondly, in relation to Esteve Corbera's presentation on carbon forestry, one participant asked him to comment on the extent to which carbon forestry could be managed through mechanisms which generate benefits for whole communities. He responded with an example from his experience in Mexico, in which a carbon forestry

project had been somewhat caught between the challenges of responding to demand for its offsetting products and distributing benefits equally. The farmers best placed to respond to demand from European carbon markets are the more affluent ones who already have land on which to plant more trees. Those who do not own land, even if they have access to communal land, were not able to participate in the project, which risked increasing inequality within the community.



Houses fitted with solar water heaters by the Kuyasa CDM Project

## Day Two

### Recap of Sessions 1 and 2

*Chair:* David Thomas, University of Oxford

David Thomas began by commenting on what he saw as the key issues from the previous day. The visit to the Kuyasa CDM project had, for him, demonstrated vividly the need to avoid treating climate change as a special issue, and to situate it within a suite of other goals. Otherwise, he argued, it would not become embedded in development policy and practice. He also flagged governance as a cross-cutting theme that had emerged across the various panel presentations and discussions, and one of importance at all scales of activity. There was a lively debate around the issue of taking lessons learned from case studies up to broader national and international scales. A number of participants reflected a sense of disappointment that in the adaptation literature, the focus on case studies had not permitted the development of an adaptive response to climate change that was truly global in character. One participant observed that a gap remained between the individual case studies and theory at the institutional scale. Conversely, another participant pointed out that in the case study work presented in the first session, there were attempts to link up detailed study at the local level to the national level and that Katharine Vincent's work gave a locally-focussed framework for identifying vulnerability which was replicable in other countries. A researcher added that his experience of research

in the forestry sector was that case studies had been useful and findings had percolated into international policy. This led another researcher to suggest that perhaps the problem was not the case study research itself but the lack of a systematic framework into which case studies could be put, and that perhaps a methodology should be devised that permitted the economic and social impact of case studies to be measured.

### **Session 3: Scenarios, policy & practice**

*Chair:* Babatunde Abiodun, University of Cape Town, South Africa

*Discussant:* Mark Tadross, University of Cape Town, South Africa

*Speakers:*

Richard Washington, University of Oxford, UK

Barbara van Logchem, National Disaster Management Institute (INGC), Mozambique

Natasha Grist, Overseas Development Institute, UK

*Presentations*

Richard Washington focused on how climate modelling data is (or is not) used by governments and other actors involved in development interventions. He grouped the use of climate data into two sets of problems: those that are tractable and those that are intractable, and he offered some responses to them. The first set mostly relates to the 'fit' between the modelling data currently available and the development sectors for which it is required. The data required is often more specific than that which is currently available, in terms of scale, time period and certainty. He argued that it would be fruitful to spend more time identifying the most appropriate models for different places, diagnosing and fixing problems with models and spending more time on processes, such as empirical downscaling, which would allow more specific model projections. This should preferably be done prior to presenting data as a basis for action in particular development sectors. Of the problems in the second, more intractable set, the most significant was the lack of institutional response, even in instances when sufficiently accurate projections for future states of affairs are readily available. He gave the example of predictions of electric power shortages in South Africa made a few years ago that have now materialised. This led him to suggest that perhaps the real problem is not so much the climate data but whether governments respond to it; especially over decadal time scales, which they might not see as their responsibility.

Barbara van Logchem talked about the projections from recent climate modelling efforts in Mozambique and government engagement with these. She described the downscaling that had been done for five zones of Mozambique and the impacts that had been explored. She argued that the approach taken had reduced the uncertainty which had previously confounded government decision makers concerned with responding to climate change. Even so, she argued, it was necessary to package the message in such a way as to maintain the interest of policymakers and discourage indecision. Barbara outlined some of the more prominent trends and potential impacts, including:

- An increase in precipitation in the wet season and the possible implications for maize harvests.
- More intense, if not necessarily more frequent, cyclones.
- Flooding as a result of sea-level rise.

In each case, she recounted, policymakers are less interested in the methodology and more interested in a clear message that is relevant to them. The climate change message hit home, for instance, when one minister realised that his house was in a potential flood zone. In order to engender a significant response from government, Barbara suggested that:

- A science manager may be more effective in conveying the message to decision makers than a scientist;
- Uncertainty must not be ignored, but too great a focus on it demotivates government actors.
- Climate change has to be put in the context of the government's national priorities.

Natasha Grist presented a contrasting scenario-building tool which relies on bringing people together to devise their own scenarios, based on their perceptions of the potential implications of climate change rather than on modelling studies alone. Participants at a workshop were asked to think through what their institution's response might be based on the resources available to them and the current makeup of the institutions in which they currently worked. This was done in a workshop in Burkina Faso, and was based partly on an examination of projects identified as necessary in the country's NAPA document. She explained that this form of scenario building has the advantage of being cheap, it encourages the formation of networks and contacts which might be required for a coherent response to climate change, and also requires people to think about the sorts of capacity which could be needed to deal with the scenarios envisaged. Key discussion points from the Burkina Faso workshop related to:

- Current climate change impacts
- Whether losses from impacts are 'locked in or retrievable' and what kind of responses are required as a result
- Where the tipping points lie
- The need for good governance and a response to climate change which fits which a poverty reduction approach

Summarising the presentations, discussant Mark Tadross encouraged workshop participants to consider the following questions:

- How do we combine information from multiple models and present it as coherent information?
- What does probability mean for us?
- What kinds of productive work can we do without climate models?

#### *Questions and discussions on presentations*

Most of the discussion was about how much African governments knew about climate change and how to get them to respond to appropriate climate change information. One participant commented on how, even when good, well-publicised research had been done on climate change, as in the case of South Africa's mitigation scenarios, for example, there was no guarantee that politicians would read it. In response, Natasha Grist described the difficulties of embedding climate change in the policy process in Burkina Faso, arguing that even climate change workshops attended by important government figures were not enough. She added that it requires someone who could continue pushing the issue and following it up. In this respect, Barbara van Logchem noted the importance of 'science managers' in the Mozambican context, both in government and in donor organisations, who worked to bridge the science-policy gap. Barbara also touched on the difficulties of how to package climate change information for politicians, in terms of whether to be cautious



when discussing potential impacts or whether to outline the worst case scenarios. She also argued that politicians in Mozambique were concerned with timelines beyond the next five years, but wanted research to give them solutions to climate change problems, rather than just offering different model results and uncertainties.

Another participant argued that perhaps it was unfair to blame politicians for not implementing climate change policy when there was so much uncertainty. He argued instead for a focus on reducing uncertainty. Richard Washington responded that the problem of uncertainty was unlikely to go away in the next 20 years. He felt that the problem lay less with uncertainty than with institutions. This led him to argue that it may be better to focus less on government, with its short-term outlook, and to put the eggs in another basket. The discussion did not, however, resolve the question of what other baskets might be available, with different views expressed on the extent to which the private sector could play this role.

### **Session 4: Funding streams and opportunities**

*Chair:* Andrew Newsham

*Speakers:*

Desiree Sehlapelo, Department of Science and Technology, South Africa

Linda Chamberlain, European Commission, South Africa

Declan Conway, University of East Anglia, UK

*Presentations*

Desiree Sehlapelo outlined the South African government initiatives and funding arrangements for climate change-related activities, within the broad framework of the 'Global Change Grand Challenge' (GCGC), a South African programme conceived to "support science and technology as well as key social, economic development, and environmental management objectives". The GCGC is integrated within core South African policy objectives and programmes, such as the National Sustainable Development Framework and sectoral policies on agriculture, fisheries, water etc. An important component of the GCGC is the 10 year innovation plan, a sector development programme for adaptation and resilience innovation which seeks to bridge the knowledge divide, with elements such as risk and vulnerability mapping. Desiree then outlined the Sector Based Support Initiative, launched by the Department of Scientific & Technology and funded by the European Union, as a means for funding a range of activities sectorally (not limited to climate change). Sector based support is expected to contribute to a number of climate change-related areas, such as sustainable livelihoods, health and human capital development.

Linda Chamberlain sought to identify where, within overall European Union (EU) bilateral support to South Africa through the Trade, Development and Cooperation Agreement, funding is available for environmental affairs, including but not limited to climate change. Two principal sources of funding were identified in this respect:

1. EU-South Africa Development Cooperation Programme, Country Strategy Paper and Multiannual Indicative Programme (MIP)<sup>3</sup>
2. Environment-specific instruments (e.g. thematic programmes and the Global Energy Efficiency and Renewable Energy Fund (GEEREF), which is managed by Directorate-General for the Environment)

<sup>3</sup> See <http://www.eusa.org.za/en/development/MIPCSP20072013.htm>

She explained how funding is not specifically allocated to environment, but is more of a cross-cutting theme in different activities, such as employment creation and capacity development, which EU budget support is primarily targeted at. She commented that it is a problem when environmental issues are diluted and sidelined so as not to feature significantly.

Declan Conway presented on funding opportunities within the UK, both for UK research institutions and internationally. Initially, he explained the transition that the Tyndall Centre is going through with respect to funding, from a model based on core funding from government to a more reactive and opportunistic one in which Tyndall researchers will bid into research calls as and when they arise. An important constraint of previous funding for the Tyndall Centre has been the lack of provision for the payment of salaries for research partners in other countries, but that this might change in the future, with greater opportunities for co-funding. He focussed principally on four funding schemes:

1. *Living with Environmental Change*<sup>4</sup>, a UK Research Councils programme which seeks to provide decision makers with the best information to effectively manage and protect vital ecosystem services at the time and space scales for which the economy is managed. This programme has significant international research collaboration components.
2. *Ecosystems Services for Poverty Alleviation (ESPA)*, an initiative across two UK Research Councils (NERC and ESRC) and the UK government Department for International Development (DfID), that focuses on “improving ecosystems management policies to help alleviate poverty in the developing world”<sup>5</sup>. He expressed his opinion that this initiative is ambitious but interestingly interdisciplinary and draws its conceptual framework from the Millennium Ecosystem Assessment. There is likely to be a focus on China, Sub-Saharan Africa and Asia. Research will be required to develop tools for valuing the ecosystem services required for poverty alleviation and economic growth.
3. *The Changing Water Cycle*, a NERC (Natural Environment Research Council) call for proposals with a global remit, which is about identifying large drivers of hydrological variability and how to improve predictions.
4. *Climate Change Adaptation in Africa (CCAA)*<sup>6</sup>, a DfID and IDRC programme addressing climate vulnerability, education and capacity strengthening in Africa by principally action-based research. Declan was not clear on how African institutions can bid into this, but he thought there may also be opportunities in education and training.

#### *Questions and discussions on presentations*

Discussions around funding clustered around four themes. First, a number of comments were made about arrangements (or lack therein) for auditing donor funds given to governments. Desiree Sehlapelo expressed her confidence that in her own department at least (Science and Technology), they would be able to account clearly

<sup>4</sup> See <http://www.lwec.org.uk/> for more details

<sup>5</sup> See <http://www.nerc.ac.uk/research/programmes/espa/> for more details

<sup>6</sup> See <http://www.idrc.ca/ccaa/> for more details

for all expenditure of donor funds. Linda Chamberlain explained that, whilst the EU wanted to see improvement over time in the management of public finances, it did not automatically expect recipient governments to provide a clean audit from the offset.

Second, the (UK) Department for International Development's climate change adaptation in Africa fund (CCAA), administered through Canada's International Development Research Centre (IDRC) was discussed and the necessity of funnelling UK funding for research on Africa by African researchers through a Canadian organisation was questioned along with the implications for the availability of funding for African researchers.

Third, concerns were raised about the potential for overlap and lack of coordination of research funding for climate change research. It was suggested that whilst at a country-level there sometimes was coordination, there seemed to be very little at the international level. Declan Conway noted further that with the speed of developments in climate change research, coordination would be difficult to achieve.

Fourth, there was discussion around the issue of funding for civil society organisations and communicators of science outputs to other stakeholders. Desiree Sehlapelo commented that the DST already considered civil society to be an important part of the science system. Linda Chamberlain was concerned that in South Africa, funding is not yet sufficient for civil society to play a communicating role. Declan Conway noted that research funding in the UK is largely not set up to be available to civil society organisations for communication purposes.

## **Breakout discussions on a future research agenda**

The final part of the workshop consisted of breakout sessions which were divided into three themes: water, energy and agriculture, in order to benefit from the specific expertise of many of the workshop participants. Each group was asked to consider the following questions:

1. What are the research priorities in that sector?
2. How are these priorities to be researched, and what kinds of collaboration would be beneficial for addressing them?
3. What kinds of funding is or should be available for such research?

The group discussions were then reported back in the plenary session which brought the workshop proceedings to a close.

### **Water**

Chair: Declan Conway

*What are the research priorities?*

The group identified six principal priorities:

1. Address uncertainty in present and future water resource management.
2. Explore adaptive management in the context of integrated water resource management.
3. Recognise the cross-sectoral nature of water.

4. Appreciate the cross scale use of water – for example: as a local level issue; for national and regional water and food security; for individual human well being and human security; water as a multiple use; water as a basic right.
5. Water security and conflicts over water in transboundary rivers.
6. How do all the above priorities relate to national priorities?

The group also identified two other research priorities, sea level rise and freshwater contamination by salt water, but decided not to focus on these in the course of their discussion.

#### *Types of collaboration for researching these priorities*

On the question of how to address these research priorities, the group thought that a combination of top-down and bottom-up approaches, which identify national and regional priorities, looks at what is being done to address these, and the extent to which they are working in specific local contexts. Integrated, multidisciplinary regional approaches, to share lessons and to link, rationalise and coordinate action between and across regions, were also thought to be necessary. More specifically, participants suggested a number of projects that they could work on, possibly collaboratively, including: institutional barriers to adaptation, transboundary water management and climate change; understanding the implications of variability at different scales; and decision-making in institutions in the face of uncertainty. It was also mentioned that civil society should play a key role in bridging the science policy gap.

#### *Funding issues*

It was thought that in South Africa at least, it might be easier to approach funding agencies from a local perspective, but that these funds might not be appropriate for incorporating other partners (like Tyndall). In terms of what *should* be funded, it was agreed that development funding should take climate considerations into account, in order to make it 'climate-proof'.

### **Energy**

Chair: Wikus Kruger, RESTIO Energy

#### *Research priorities*

- Energy poverty was identified as a key research area which links directly to development. It was seen as important to find out why energy poverty was so persistent. Why has renewable energy not been more widely disseminated?
- There was thought to be a lack of real evaluation criteria to convince people that renewable energy also generates a number of side-benefits (e.g.. in terms of health) which contributed to people's well-being.
- Establishing more clearly how can energy issues could assist in meeting the Millennium Development Goals was another important priority. How do energy issues help us to reduce poverty? We need to have an integrated approach to the energy question.

Having outlined these priorities, the group went on to identify some of the key factors that have prevented the deployment of alternative technologies in extending the provision of energy services, including:

- Social perceptions of alternative technologies – not least the perception of renewable technologies amongst some poor people as an inferior type of energy provision
- Technological barriers, regarding the power grid
- Investment problems – the private sector does not have investment security
- Social perceptions of who should pay for technologies
- People's ability to pay for technology is limited (bank loans and assets to use as loan guarantees are limited)

### *Funding issues*

The group thought that it was important to design financing models for the poor which could prioritise the adoption of technologies. They posed the question of how to make the Clean Development Mechanism work for Africa, by means of channelling investment to energy poverty alleviation projects. They also saw the CDM as a potential means for increasing the finance available for getting energy to people. A final question related to how to design innovative financial models for the deployment of local, decentralised alternative technologies.

### **Agriculture**

Chair: Uparura Kuvare, University of Namibia

### *Research priorities*

The suggestions that were made for research priorities in this breakout discussion fall broadly into four subthemes: vulnerability, capacity building, communication of relevant information between stakeholders and the integration of climate change into a broader suite of developmental factors also impinging on the future of agriculture.

#### Vulnerability:

- Disaggregate more exactly between vulnerable groups
- Ensure that community-specific interventions are benefitting those identified as most vulnerable
- Consider viable, realistic trade-offs for countries in terms of food self-sufficiency or overall food availability, in order to ensure continued food security

#### Capacity:

- Build and link capacity at regional, national and local levels, making use of existing structures
- A better understanding of the dynamics of knowledge transfer could make the links between policy and practice clearer so that practice more closely resembles policy
- Ensure that capacity building leads to mutual innovation and learning, as opposed to being a unidirectional exercise in knowledge transfer
- Research how much climate change investment is going toward agriculture, and to what extent this was driven by a renaissance of interest in agriculture
- Better communication of climate information to farmers

#### Integration:

- Integrating agriculture and climate change into wider issues around climate change, i.e. migration and conflict, in order to tease out the implications for policy.
- Better understanding of regional linkages – e.g. the implications for other Southern African countries if South Africa's maize crop is significantly diminished by climate change.
- Research on supporting regional collaboration.
- Improve understanding of where mainstreaming of climate change across government has happened more effectively (i.e. bringing treasuries on board rather than working through much weaker environmental ministries).

#### *Types of collaboration for researching these priorities*

The group agreed that more North-South and South-South collaborations and transfers would be desirable. Collaborating with a range of stakeholders beyond policy-makers would also be welcome, perhaps some of which could be in the form of public-private partnerships.

#### *Funding issues*

It was generally agreed that funding should be based more on partnering, partly with a view to changing a funding situation in which the North provides funding, and the South has to “jump at their call”. Another difficulty facing Southern researchers is that funding applications to bilateral and multilateral institutions must go through government, who filter them according to what they consider is appropriate. It was suggested that perhaps funding might be better administered through regional pots. However, there was also a concern that, no matter who disbursed the funding, there was a tendency for certain Southern actors to be better-positioned to respond to funding calls, partly because they had been influential in the formulation stage of those research calls. Researchers trying to gain access to funding would struggle if they operated outside certain networks, regardless of the standard of their research output.

## **Feedback from workshop participants**

Participants were invited to give their feedback on the workshop a short time after it finished. They were asked the following questions:

1. What aspects of the workshop did you find most useful?
2. What aspects of the workshop did you find least useful?
3. What would you change about any aspect of the workshop?
4. Have you any other comments pertaining to any aspect of the workshop?

Approximately 36% of participants responded and their comments are summarised below.

#### *Most useful aspects of the workshop*

The most frequently identified useful aspects were the presentations relating to Tyndall research. Respondents variously found them interesting, well-presented, a good way to keep up with or learn more about the Tyndall Centre's work, as well as a source of new perspectives and inspiration.

Many also found the workshop a good opportunity for meeting people and sharing ideas. A couple of participants also suggested that some of the more significant interactions and opportunities for collaboration were negotiated informally in the coffee and lunch breaks. Some also found the break-out sessions of use, with one respondent commenting that they provided an opportunity to discuss research collaboration with other researchers in the same field.

The visit to the Kuyasa Project was also flagged as a welcome reminder of “why we do what we do instead of getting bogged down too much in the theory and semantics!”.

#### *Least useful aspects of the workshop*

A number of respondents were disappointed with the session on funding, largely because it did not cover detailed accounts of funding mechanisms or project proposals. One participant, went so far as to find this session “disappointing in the extreme”.

Interestingly, a couple of participants thought that the focus should not have been specifically on Africa, and would have been more informative had Africa been compared to other regions, e.g. Europe and Asia.

#### *Aspects that participants might have changed*

Most frequently, respondents would have changed the breakout discussions. A couple of participants suggested that they could have been more useful, with one feeling that they could have been better-structured in order to solicit the response the organisers hoped to generate. Another respondent thought the breakout sessions insufficiently ambitious and too bogged down in detail. A number of people would have preferred to have had more discussion time built into the programme in addition to the breakout sessions.

#### *Other comments*

Much of the additional feedback was positive about the workshop logistics, which were generally perceived to be very well organised. Another participant suggested that participants needed to be encouraged to identify research partners or initiate discussions with possible partners regarding identified future research areas. This respondent would have liked to have seen participants from African countries “showing interest in sharing their data or building upon existing research frameworks as presented by Tyndall” and other researchers.

A few responses did not directly answer these questions but are worth noting. One response explored the issue of how best to influence policy makers and the role of ‘Northern’ research in this process. It was argued that in the absence of big events which radically change the political outlook, such as the end of apartheid in South Africa, policy making is a mostly conservative process in which significant change is hard to effect. Therefore, researchers should think carefully about how to influence the policy process. This could be best achieved, in this participant’s view, by becoming a trusted advisor to the big policy decision-makers, or indeed to make good links with those trusted advisors. This can not be done through short-term approaches, but requires commitment and compromise from researchers, and even ‘buy-in’ on the part of the researcher to the “developmental and sometimes political

ideology of the advisee”, which might not permit so much room for separation of the research process from politics as a researcher might desire.

Other responses related to issues that did not make their way into the workshop programme. One researcher worried that there were various “elephants in the room” that were not referred to. For instance, despite much focus on water management, no reference was made to some of the potentially devastating human consequences of climate change-related disruptions to water availability. If the workshop was intended to provide a representative sample of the state of play in terms of climate change and development research, it was unclear that the most important questions were being asked. Another respondent wondered whether the workshop had considered the grand science questions for Africa, especially in terms of societal priority and knowledge bottlenecks.



## List of workshop participants

NAME & ORGANISATION	Email address
<b>UK</b>	
1. Conway, Declan - School of International Development, University of East Anglia	<a href="mailto:d.conway@uea.ac.uk">d.conway@uea.ac.uk</a>
2. Corbera, Esteve - Tyndall Centre, University of East Anglia	<a href="mailto:e.corbera@uea.ac.uk">e.corbera@uea.ac.uk</a>
3. Goulden, Marisa - Tyndall Centre, University of East Anglia	<a href="mailto:m.goulden@uea.ac.uk">m.goulden@uea.ac.uk</a>
4. Grist, Natasha - Overseas Development Institute	<a href="mailto:n.grist@odi.org.uk">n.grist@odi.org.uk</a>
5. King, Caroline - University of Oxford	<a href="mailto:caroline.king@stx.ox.ac.uk">caroline.king@stx.ox.ac.uk</a>
6. Newsham, Andrew – Tyndall Centre, University of Oxford	<a href="mailto:andrew.newsham@ouce.ox.ac.uk">andrew.newsham@ouce.ox.ac.uk</a>
7. Osbahr, Henny – Walker Institute, University of Reading	<a href="mailto:h.osbahr@reading.ac.uk">h.osbahr@reading.ac.uk</a>
8. Thomas David – School of Geography, University of Oxford	<a href="mailto:david.thomas@ouce.ox.ac.uk">david.thomas@ouce.ox.ac.uk</a>
9. Wang, Tao - Tyndall Centre, SPRU, University of Sussex	<a href="mailto:tao.wang@sussex.ac.uk">tao.wang@sussex.ac.uk</a>
10. Washington, Richard - School of Geography, University of Oxford	<a href="mailto:richard.washington@ouce.ox.ac.uk">richard.washington@ouce.ox.ac.uk</a>
<b>Namibia</b>	
11. Kuvare, Uparura - Ogongo College/University of Namibia	<a href="mailto:ukuvare@unam.na">ukuvare@unam.na</a>
12. Ndokosho, Johnson - Country Pilot Partnership Namibia	<a href="mailto:johnson.ndokosho@gmail.com">johnson.ndokosho@gmail.com</a>
<b>South Africa</b>	
13. Angula, Margaret - University of Cape Town (UCT)	<a href="mailto:margaret.angula@uct.ac.za">margaret.angula@uct.ac.za</a>
14. Abiodun, Babatunde Joseph - Climate Systems Analysis Group, UCT	<a href="mailto:babiodun@csag.uct.ac.za">babiodun@csag.uct.ac.za</a>
15. Anya Boyd, Energy Research Centre, UCT	<a href="mailto:anyasofieboyd@yahoo.com">anyasofieboyd@yahoo.com</a>
16. Hamandawana, Hamisai - Dept of Geog & Environmental Sciences, North West University	<a href="mailto:hamandawanah@yahoo.com">hamandawanah@yahoo.com</a>
17. Hewitson, Bruce - Climate Systems Analysis Group, UCT	<a href="mailto:hewitson@csag.uct.ac.za">hewitson@csag.uct.ac.za</a>
18. Kruger, Wikus, RESTIO Energy	<a href="mailto:wikus@restio.co.za">wikus@restio.co.za</a>
19. Matookane, Leluma - Department of Science & Technology, Government of RSA	<a href="mailto:Leluma.Matooane@dst.gov.za">Leluma.Matooane@dst.gov.za</a>
20. Methner, Nadine - Climate Systems Analysis Group, UCT	<a href="mailto:nmethner@csag.uct.ac.za">nmethner@csag.uct.ac.za</a>
21. Ngorima, Ester – Council for Scientific and Industrial Research	<a href="mailto:engorima@csir.co.za">engorima@csir.co.za</a>
22. Nteo, Dora, Department of Environmental Affairs & Tourism	<a href="mailto:dnteo@deat.gov.za">dnteo@deat.gov.za</a>
23. Prasad, Gisela - Energy Resources Centre, UCT	<a href="mailto:Gisela.Prasad@uct.ac.za">Gisela.Prasad@uct.ac.za</a>
24. Quibell, Gavin – WS Atkins (UK)	<a href="mailto:QuibellG@dwaf.gov.za">QuibellG@dwaf.gov.za</a>
25. Tadross, Mark - Climate Systems Analysis Group,	<a href="mailto:mtadross@csag.uct.ac.za">mtadross@csag.uct.ac.za</a>

UCT	
NAME & ORGANISATION	Email address
26. Tyler, Emily - Genesis Analytics	<a href="mailto:emilyt@genesis-analytics.com">emilyt@genesis-analytics.com</a>
27. Vincent, Katharine - University of the Witwatersrand, Johannesburg	<a href="mailto:katharine.vincent@googlemail.com">katharine.vincent@googlemail.com</a>
28. Wesselink, Carl - SA Export Development Fund	<a href="mailto:carlw@iafrica.com">carlw@iafrica.com</a>
29. Wlokas, Holle - Free University of Berlin	<a href="mailto:holle.wlokas@googlemail.com">holle.wlokas@googlemail.com</a>
30. Ziervogel, Gina - Climate Systems Analysis, UCT	<a href="mailto:gina@csag.uct.ac.za">gina@csag.uct.ac.za</a>
<b>Mozambique</b>	
31. Cuamba, Boaventura - Univ. de Eduardo Mondlane	<a href="mailto:boaventura.cuamba@uem.mz">boaventura.cuamba@uem.mz</a>
32. Malanço, José Álvaro - National Directorate of Water	<a href="mailto:jmalanco@dnaguas.gov.mz">jmalanco@dnaguas.gov.mz</a>
33. van Logchem, Barbara - National Disaster Management Institute (INGC)	<a href="mailto:barbaravanlogchem@gmail.com">barbaravanlogchem@gmail.com</a>
<b>North/East Africa</b>	
34. Aty, Mohamed Abdel – Water Resources Specialist, Egypt	<a href="mailto:maaty_sayed@yahoo.com">maaty_sayed@yahoo.com</a> , <a href="mailto:maasayed@nilebasin.org">maasayed@nilebasin.org</a>
35. Nour el-Din, Mohamed - Faculty of Engineering, Ain Shams University, Egypt	<a href="mailto:mhmdnour2@hotmail.com">mhmdnour2@hotmail.com</a>
36. Osman Elasha, Balgis - Higher Council for Environment& Natural Resources, Sudan	<a href="mailto:balgis@yahoo.com">balgis@yahoo.com</a>
37. Tindimugaya, Callist - Directorate of Water Resources Management, Uganda	<a href="mailto:callist_tindimugaya@yahoo.co.uk">callist_tindimugaya@yahoo.co.uk</a>
<b>Regional organisations</b>	
38. Croxton, Simon - DFID South Africa	<a href="mailto:S-Croxton@dfid.gov.uk">S-Croxton@dfid.gov.uk</a>
39. Reddy, Trusha - Institute of Security Studies	<a href="mailto:treddy@issafrica.org">treddy@issafrica.org</a>
40. Okumu Wafula - Institute of Security Studies	<a href="mailto:wokumu@issafrica.org">wokumu@issafrica.org</a>
41. Chamberlain, Linda - European Commission to South Africa	<a href="mailto:Linda.CHAMBERLAIN@ec.europa.eu">Linda.CHAMBERLAIN@ec.europa.eu</a>
42. Petrie, Belynda - OneWorld Sustainable Investments	<a href="mailto:belynda@oneworldgroup.co.za">belynda@oneworldgroup.co.za</a>
43. Chapman, Arthur - OneWorld Sustainable Investments	<a href="mailto:arthur@oneworldgroup.co.za">arthur@oneworldgroup.co.za</a>
44. Woods, David - OneWorld SI Sustainable Investments	<a href="mailto:dave@oneworldgroup.co.za">dave@oneworldgroup.co.za</a>
45. Cole, Hugh - OXFAM Southern Africa	<a href="mailto:HCole@oxfam.org.uk">HCole@oxfam.org.uk</a>