

Climate Connections

SUMMARY OF SEMINAR AND DISCUSSION FORUM HELD AT SNH, BATTLEBY CENTRE, PERTH ON 13 MAY 2011



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Context

Many are aware of the importance that changing climate poses for Scotland, whether this takes the form of increased risks such as flooding, or presents opportunities such as innovations around creating a low carbon economy and green jobs. There is a wealth of scientific endeavour and innovation within Scotland, for which we have an international reputation but in relation to climate change issues, it is spread across a range of organisations and networks.

The purpose of this seminar was not to look at the science of climate change, nor to hear of individual initiatives that are underway, *per se*. Rather it provided an opportunity to consider the role of knowledge networks in helping to shape the climate agenda and our collective responses in Scotland.

The seminar was designed to increase the visibility of activities and initiatives being undertaken by a range of different groups, involving researchers, knowledge brokers and research-users including the policy community.

Consideration was also given to the transfer of knowledge, from scientific research into the policy and commercial arenas, thereby enabling Scotland to become more responsive and resilient to climate change.

Keynote speech, Professor Anne Glover

Professor Glover considered it opportune to address the issue of connectivity of people with interests in Climate Change alongside the science of climate change itself and to address how we work together to deliver for us, in Scotland. This, against a background where research in Scotland is number one in the world in terms of impact against GDP. She recognised that we organise ourselves differently, working together in a collegiate way rather than competitively. We have successful research pools that have allowed us as a small nation to have huge international clout in key subject areas. We have done this by putting together a compelling case to attract the best in world to work with us. We are successful due to the partnerships and networks we are involved with.

There has been an evolution in science from the 1930s, moving away from single authors of science articles to more usually multiple authors for papers, and in the case of particle physics many more. Science is more multidisciplinary, giving more opportunity to work with different partners and to take new approaches to issues such as climate change. Funding criteria which look for partnership working are now common place. This presents challenges in that it is easier, for example to engage with people we already know and who are more like us; it can be difficult to engage with those from a different area of knowledge. We have a problem in any specialist field where we tend to narrow down rather than blossom out, because it is challenging. Networking and communicating with people we don't normally talk to should be a routine part of our top ten tasks – we need to cross these barriers. Scientists are very good company for other scientists.

The science of climate change is enormously complicated. But we are of a view that human activity is having substantial impact on the planet. If we don't do something on this, then by the end of the century we will see massive acceleration of unpleasant things –starvation, drought, economic decline, and be faced with the need to change our lifestyle. Those of us in the developed world see it as so horrific that we have walked away from addressing this. But we need to talk about it, work

together and provide something for the public that is captivating. The challenge with climate change is that it's all bad news about the problems that we are facing. Let's offer people an option: Would you like a world where you have much more time on your hands, where you don't have to find somewhere to park, have more social interaction? If we use technology we have solutions. There is an opportunity for us to message differently. Scientists can't always do this, but if we work in partnership then we can have a better future. We can do this in a way that befits our intelligence and ability as a human species.

Climate Change Research Perspective: Dominic Moran, SAC

A portfolio of research has commenced with funding from Scottish Government which initiates a five-year programme of research valued at £40m, which includes both research and knowledge exchange. The portfolio covers eight themes with funding ring fenced for centres of expertise. Climate change work includes land management and mitigation; land based food and agriculture; landscape scale adaptation to climate change; ecosystem services and mitigation of GHG, and resilient supply chains. There are also cross linkages between themes and with animal health and social science.

The centre of expertise on climate change (ClimateXChange) is more focused on policy needs and knowledge exchange. The ambition is to develop a collective of research providers working collaboratively and with scientists in universities. This involves collaboration across institutions and disciplines. The three work streams are adaptation, mitigation and risk and uncertainty. In terms of the key climate change research challenges, these are around understanding the impacts, selecting adaptation strategies, mitigation strategies, efficiency and equity, understanding synergies and trade-offs between responses, behaviours, and inventories.

Research typically runs behind policy environment. The policy framework in Scotland is very ambitious, and research isn't always tooled up to deliver on some the legislation promises. Policy is often asking questions that science doesn't have answers to and scientists need to commit to these questions. The marginal abatement cost curve can look at where we can mitigate and where can do so cheaply, as well as identifying areas that are prohibitive to measure. This has involved drilling down into different measures and looking at points of interventions. There are still a lot of things we don't know – we have now been given the metrics and scientists to address these.

In terms of adaptation we are on more shaky ground with no fixed targets or metrics. Decisions are taken at both local and regional levels which creates a more challenging situation in terms of governance. Two further key challenges are to understand human behaviour and behavioural change and what affects these; are we counting the right things, focusing on production side, but what about consumption side?

Shaping Agriculture and Climate Change Policy: Antje Branding, Scottish Government

Policy staff in the Scottish Government value the amount of research that is tailored towards policy development. In terms of climate change and agriculture, the Climate Change (Scotland) Act provides important statutory targets, 2020 (42%) and 2050 (80%) which helps us focus our efforts. The report on policies and procedures, available on the web is set in the context of a low carbon future and sets out the background for various policy areas. In terms of farming for a better climate, behavioural change is important, helping Scottish farmers to adapt to changing climate and reduce emissions. This programme promotes measures in five key areas. Financial savings are key low hanging fruit that are the easy actions that farmers can take to reduce GHG emissions. The Marginal

Abatement Curves show that most cost effective abatement measures are in the area of nitrogen efficiency measures which also have a wide range of cross cutting benefits for other policy areas. It is important that in promoting the reduction of GHG, consideration is given to other policy impacts as some actions could lead to perverse outcomes or negative trade-offs, so there is a need to look at cross cutting effects.

It is also important to understand the future impact of climate change in Scotland, with significant changes in how land will be used as well as the impact of water supply and trading relations with other countries. There is a need to change how we use the land and natural resources. There are risks for agriculture, but also opportunities. Water shortage/water management (quality and quantity) will become more important. New diseases and pests will emerge. There will be a wider range of crops that can be grown, and more prime agricultural land. However we will have to use agricultural land to meet other societal objectives.

At present, we have only a small amount of prime agricultural land in Scotland and hence little flexibility in terms of agricultural production, but recent climate change has impacted on how much prime land may become available. Looking ahead between now and 2050 we can see potentially large gains in prime agricultural land as a direct effect of changing climate. The downside is an increased risk of water deficit during growing season.

Scotland's land use strategy addresses the competing pressures on land including for woodland/forestry, sporting, recreation, wind farm development, restoration of peat lands, and sustainable flood management. The land use strategy is a statutory element of the Climate Change (Scotland) Act, published in 2011 and will be revised after 5 years, but represents the first step in integrated approach to land management.

The challenges in terms of climate change and land use is how to use evidence in dealing with uncertainty in policy delivery. How do we reach those we want to influence i.e. to influence behavioural change in a subsidised industry of agriculture? The traditional policy cycle involves research evidence and engagement with customers and stakeholders. There is a lot of uncertainty in terms of climate change and agriculture – how can customer be expected to change when they don't have full evidence, so we need to tailor messages. Social researchers in government need to understand the behaviour change cycle – stakeholder identification and segmentation and how we bring our messages to these segments.

How is Scotland responding, a research perspective: Andy Kerr, Edinburgh Centre on Climate Change

Often research is following behind the policy frameworks. Policy and commercial drivers are driving in a certain direction and research has to catch up. There are a number of policy drivers, for example the Climate Change (Scotland) Act, which is not the same as Renewable energies policy. Powerful commercial drivers also affect the urban environment and rural land use. The cost of commodities including crude oil prices is a major driver for businesses including farms. We don't know what the future holds but if we are talking about scenarios of the future, we need to use extremes.

What does this require of researchers? There is the expectation for proper engagement with stakeholders. Whilst there is still a place for blue skies research, where we are engaged in applied research we need to be engaging with end-users. For example a Scottish Council recently enquired about a review of winter resilience, should they invest in snow clearing equipment, is it more or less

likely to have cold or extreme events. The challenge is to make our science useful and the current statement of seasonal forecast is not particularly helpful for decision makers.

We tend to stay together in environmental science, but if we are talking about climate change and how we respond to it, then how we engage people through social science is important. We need a thematic focus for a wider outward facing approach. How do we package up information for communications to make it meaningful for other people? Communication of science is critical. What is being done in Scotland to support this? We have fantastic opportunities with research pools doing away with institutional divides, increasing Research Council drivers are creating thematic programs to support cross disciplinary work. There is a lot of work at Government level pulling research out of research centres for example ERDF encourages pools of business development people to pull knowledge, eg ECCC, TSB, innovation centres, centres of expertise, behaviour change research. Partnerships are being driven by specific commercial drivers – i.e. getting the best science out form universities and into the commercial world.

How do we join up the dots in terms of better communication between overlapping networks? One of the things we have seen with the development of the internet is that every project wants its research page, which is lost when the project finishes. We need communities of interest that hold this information, i.e. overlapping networks. Innovation systems are required involving groups, communities, and policy people sitting alongside researchers.

Scotland is lucky because of talents in the research base, but in terms of translating the evidence base into good practical ideas we are still a long way down the league. The fantastic ideas in research institutes are not being pulled through and applied to business, policy decisions and communities. Bringing good ideas through to society to meet targets in, for example, resilience to climate change or low carbon energy targets, mean that we can't have people sitting in institutions with good ideas. We have to work in collaboration.

A challenge in delivering research is that of cultural issues, skills levels, and information-people exchange. Two examples to address this are ECCC and Centre of Expertise on Climate Change. ECCC, which is not a research centre, is taking good ideas and pulling them through to make them real. ECCC puts people and ideas together and links these to skills development. The aim is to create hubs for partnerships, equipping people with skills, working with talented people to see what can be applied. The Centre of Expertise on Climate change is an innovative way for policy makers to get better access to knowledge from the research community. The centre focuses research effort to package up, communicate, synthesise information.

Climate Change, evidence into policy: Rebekah Widdowfield, Scottish Government

RESAS has a broad base of skills. One role for RESAS is to provide support for climate change policy, drawing on external expertise. RESAS is supporting policy development and implementation of policies. RESAS looks at how we can ensure that government policies can be as good as they can be, and climate change is a strategic priority. Subsequent to the introduction of the Climate Change (Scotland) Act consideration is being given to: how to achieve the targets; measures to implement and reduce emissions; agriculture and waste; analysis of information across government; monitoring and evaluating outcomes; collecting collating and analysis of information; responding to emerging issues e.g. the impact of economic downturn on emissions, and providing a sound evidence base for the future.

How is this undertaken? This includes secondary analysis and data modelling, as well as providing a key role in knowledge brokerage and exchange wherever the evidence exists. The Climate Change Scotland Act is a main driver and subsequently the report on Policies and Proposals has given attention to evaluating the impact of initiatives to reach those targets.

Carbon assessment and management is important, with carbon viewed in a similar way to how we view money. How much are we spending and what is the carbon cost? What are the carbon implications of the budget? However, quantification doesn't take us to where we need to be in terms of carbon management. We need to look at how we use the data in decision making for example what is the carbon footprint of a dairy centre.

Climate change behaviours are important. We have tended to focus on the technical and environmental science rather than thinking enough about social science. From UK government work on importance of behaviours and the UK Climate Change Committee work on marginal abatement cost curves, it is clear there is more to do in order to understand what behaviours to influence. Consumption based emissions are going up, and there is a need to tackle climate change at a global level. This is a critical challenge but we also recognise the opportunities offered by climate change – commercially and in terms of renewables.

We work in partnership with policy, with conversations and dialogue as the basis of good ideas, and identifying what is effective. We make best use of existing evidence, harnessing and bringing into government to inform policy and practice. We join up across disciplines i.e. Natural science, social science and economics and ensure close working with MRPs and the wider HEI Sector

Communicating Climate Change research: Lorraine Fitzgerald, Scottish Climate Change Impacts Partnership (SCCIP – now Adaptation Scotland)

There are challenges in terms of communicating climate change to stakeholders and working with the research community to get messages out more effectively. The Scottish Climate Change Impacts Partnership (SCCIP) (now Adaptation Scotland) was set up in 2005. It provides advice and support to help ensure that Scotland is prepared for, and resilient to the impacts of climate change. Whilst there is often a focus on the negative, we need to also look at opportunities, which is particularly important for the private sector. SCCIP provides support for the Scottish Government Adaptation framework and sector action plans, and seeks to build capacity with stakeholders and build skills. SCCIP provides a gateway for adaptation information in Scotland and supports use of projections and key climate change information.

Whilst the main portal is the website much work centres on communication and delivering the adaptation message to people. SCCIP focuses on impacts from climate change going forward. Best evidence is UKCP09, which is freely available for everyone to use/access and there are opportunities for users to delve deep for customized information. Whilst this is a comprehensive dataset, for some users this may be too much data, which can be overwhelming. The challenge is to take the data and communicate it to those who need it, including government and businesses, local communities and wider public sector. This can be through training events, production of guidance documents, conferences and case studies and including guidance for private and public sector at a top level combined with a workbook for practitioners to ensure that adaptive capacity and adaptation is built into decision making processes.

People want to know, not that it is going to be two degrees hotter, but what does it mean for me in my area, my policy area, my business. It's important to get people thinking about impact at a high level but in detail too, so SCCIP and UKCIP are working with people to see what information they

need and how they can get this. SCCIP's data manager provides visual presentation of information and impacts and changes for them.

SCCIP believe that the research community has a vital role in providing information for stakeholders in terms of where impacts might be. The wider research community using UKCP09 is continuing to grow, using the scenarios in their own models to get a better understanding. SCCIP plays a role in connecting research and users, acting in the same sphere as the Centres of expertise – i.e. as a boundary organisation bringing together researchers and decision makers. So SCCIP needs to know about research that is underway so that this can be distilled and communicated as well as building partnerships with stakeholders.

There is also need for good interaction between policy makers and researchers, as well as links to businesses and communities so that all needs are addressed, at different scales including national regional and local. Examples of cross sectorial engagement include the recent SCCIP A9 project - focusing on climate change in the central highlands with a wide range of stakeholders involved. This has shown the value of those who have not previously interacted talking to each other - in this respect SCCIP is a hub to bring people together.

Knowledge brokering in the Scottish Parliament: Graeme Cook, Scottish Parliament Information Centre (SPICE)

Knowledge brokering is about understanding the quality of information and providing added value. SPICE works for parliament rather than government, providing an impartial information and research service for MSPs and parliament. SPICE has 50 staff based at Parliament with 25 staff in the research service and interns funded by research councils. Key activities on the research side are focused on providing direct support for committees, answering enquiries from MSPs and briefings on hot topics. SPICE provides support to committees when carrying out enquiries, when scrutinizing government and considering legislation. For example in the progression of the Climate Change Bill SPICE provided briefings on climate change so that parliamentary committees, and parliament as a whole, had a decent knowledge base. Briefings are peer reviewed wherever possible. SPICE also demonstrated emissions scenarios for Scotland in 2050 to set the context for deliberations and arranged fact finding visits.

For the work of parliamentary committees SPICE suggests expert witnesses and helps with suggested lines of questioning of those witnesses. SPICE also provided follow up activity to the Bill and support on things that come back to the parliament for example the RPP and development of land use strategy.

Three challenging questions:

- What are you doing that parliament needs to know about?
- Why should Parliament listen to you?
- Who do you speak to in parliament at the moment?

Communicating climate change experiences from Clim-ATIC: Clive Bowman, UHI

Clim-ATIC is a three-year EDRF funded programme with 13 partners in 5 countries involving 10 communities. It covers all aspects of adaptation to climate change; vulnerability assessments, impacts, projections, working with the communities to see what those impacts might be, and implementing real adaptations on the ground. Through all of this communication is essential.

When considering how we communicate it's important to be aware of a number of mental modes – i.e. the mode or mental picture we have about an issue. If we are to communicate climate change the recipient may already have an opinion in their mind based on incomplete facts - for example confusing climate with weather. How we frame a message is important using different techniques, visual aids, photographs, local experiences, charts and graphs or stories. The jargon or scientific terms used can be a major impediment.

There are two different brain processing systems – experimental and analytical. The first reacts to emotional stimuli e.g. stories and experiences that are less tangible but don't last in our minds, whereas analytical processing has longer-term impacts. As a species, we have evolved to look not too far into the future and have only recently started to do longer term projections. Historically we have been in fight and flight mode, but we are now trying to do something that we are not evolved well to do, which presents communication challenge.

We have a finite pool of worry – we can only worry about one thing at one time, so if something else comes up we stop worrying about climate change. This applies to policy makers and decision makers as well as the public. We have single action bias, for example, thinking that changing light bulbs is sufficient. We need to be much more holistic in implementing aspects of climate change. The precautionary principle needs to be thought about when dealing with uncertainty.

Whilst individuals work for self-interest it is useful to look at group affiliation to have a sense of common purpose and common good, in order to get results. Glen Urquhart, studied as part of Clim-ATIC, demonstrated that as individuals we have a wide range of uncoordinated responses, but when workshops were held involving farmers then a sense of common purpose became apparent, with a focus on how those in the group could work together.

Ten workshops were held across Scotland as part of Clim-ACTIC involving the use of maps, films and photographs to look at extreme events. The important feature is to get people involved in the decision making process.

Outputs from the project included a number of films, nine with schools in Cairngorm National Park, each school identifying a subject they wanted to cover, e.g. tourism, countryside, water management and resources, transport. This was a useful exercise for teachers and children, parents and local business, and provided a product to use as discussion material with other sectors and stakeholders. A total of 48 podcasts were produced summarising the various projects and communities – now on YouTube – a useful resource as a communication tool.

Interactive games were used to engage people, for example the string game was used to look at interactions between climate change and activities in the environment demonstrating that nothing occurs in isolation and everything is interconnected.

Other activities included interactive exhibitions and through the climate challenge fund 26 authors were encouraged to write short stories on climate change scenarios. Finally there is a case for bringing art into communicating climate change, using imagery and interactive datasets