

**Date**

Monday 13th July 2009

**Title of session**

Opening Plenary:

Managing natural resources in a post-crisis world

**Name of presenter/chair**

Vanessa Lawrence CB, Director General and Chief Executive, Ordnance Survey - Chair

Professor Jacqueline McGlade, Executive Director of the European Environment Agency

**Name of rapporteurs**

Emily Dover and Luke Hampson

Jacqueline McGlade introduced her presentation by saying that she would not be focussing on mapping but rather a global view of the challenges arising from climate change in the context of the global summit taking place in Copenhagen in December.

She added that this had a strong relationship with the work of National Mapping and Cadastral Agencies (NMCA) because of their understanding of what is happening on the ground. She began with a graph which showed levels of CO<sub>2</sub> concentrations over the past 650 000 years. She pointed out that where human civilisation and their technology had developed, it had happened in a relatively stable environment – at least in terms of the climate. However, this stability in the climate is going to change and we are planning for an environment that we know very little about. She added that, even in the best case scenario where all the agreements from the recent G8 meeting are implemented, we will be looking at a global temperature rise in excess of 2°C.

She went on to explain some of the effects of a changing climate. She began by explaining that water would become increasingly scarce across Europe pointing to the Water Exploitation index that is produced by the European Environment Agency. Across Europe we are abstracting 25% of the water that falls on our territory. In countries including England and Wales we have watersheds well beyond what is available.

Jacqueline then highlighted the melting of Arctic sea ice – a difficult area to map - which is reducing in terms of area covered but is also thinning at a rapid rate. She added that the Greenland ice sheet was losing 100 billion tons of ice per year which was contributing to sea level rise. She also suggested that there was evidence that temperatures could “flip” leading to an even more rapid melt. The melt process is not as slow as we once thought.

She moved on to outline further effects that would be seen across Europe including more intense summers leading to significant health risks, increased risk of forest fire and precipitation extremes.

She estimated that the cost of flood events across Europe over the last 3 years was around £30 billion. We will need to keep up with this and in particular the after effects of flooding will need to be mapped.

We have also seen a reduction in the ability of our soils to absorb carbon which is primarily due to changing land use. In the European Union, the Soil Directive is being blocked by a number of member states partly due to resistance to making detailed soil mapping publically available.

The predicted rise in world population to nine billion by 2031 is not necessarily a given. There is a link between access to locally derived, clean energy sources and access to education – especially for women in developing countries. The lack of education is connected to high birth rates. Dealing with this issue could “reset the population clock” from nine billion to around seven billion. This is important because more people means a greater demand for space for agricultural production – if we can reduce this then soil can be a resource for sequestering carbon rather than being used for food.

She moved on to deal with the issue of access to oil and access to gas which will drive much of the discussion and the concept of everyone having access to personal transport will need to be looked at; it is not sustainable. Recent research is suggesting that actual rise in global CO<sub>2</sub> emissions is higher than the current models predicted. In the UK very little of the proposed 80% reduction by 2050 is coming from transport, households– most of it is coming from the energy sector. It is not enough and the UK does not have the capacity to meet this target through energy alone.

Jacqueline showed a slide that detailed a number of “tipping point” indicators across the world – many of which are becoming a reality and which are coupled with one another.

Climate Interactive is a group of organisations that have come together to provide advice to government and other institutions. They have produced a model that provides the ability to check the current offers (in terms of global agreements and action) for effectiveness. She referred to a graph that compared total CO<sub>2</sub> emissions rising from business as usual, implementation of all current proposals and all current proposals plus action on reforestation and deforestation. In all scenarios, this is not enough to meet our targets.

One of the things that will transform this discussion is around how we distribute information. Globally we are facing three systemic crises – a financial crisis, an

energy crisis and a crisis in trust and in governance. This has manifested itself in making money from money, over consumption of resources and capital destruction. We've now begun to analyse how capital is being destroyed and how the risks and the debts are being passed on. Is the pricing really reflective of the true cost, are real risks reflected in the marketplace, are transactions transparent, do we account for what matters? In each case the answer is "no". Whilst coming out of this crisis there is a need, in managing resources, that we need some features of good governance to be put in place- this means maintaining capitals, taking demography into account and balancing resource consumption. However, the most important thing here is public participation.

This has enabled discussion of moving from taxation of labour towards taxation of resource use. We need to get the pricing right and this will make resources more expensive to use but in the long run – without that embedded in it – GDP alone will not give us a good planning tool for the future. Ultimately, to build this low carbon economy, we do need to make clear the true cost of using our natural resources and eco-systems.

This will be underpinned by a system of national accounts which encompasses a system of environmental accounts. This includes things like land and water accounts which are linked directly to people's economic well-being. It will be based on spatially derived estimate of resources and this is where national mapping agencies will have a role to play. This will produce public goods but citizens will need to understand why the cost of living is increasing.

Wind potential is the great hidden potential of Europe and if you are going to map then you must map everything. The question is whether people really want to use this resource – but we need to get people to think about using land to generate energy and support an energy mix. Local energy generation empowers people and enables them to respond to the challenge of climate change.

The oceans are a largely unmapped and untapped energy resource. Europe has an enormous source of potential renewable energy in the seas. However, climate change will change things again and already a number of countries know they will have to adapt – especially around sea level rise – and this is alarming enough for them to have begun to take action. The Netherlands for example are looking at ways of moving cities, towns and people away from high risk areas. Where we cannot move, we will have to look at adapting structures to accommodate the sea and already architects are building in a very different way. Nothing is sacrosanct and we have to engage people in a very different kind of discussion supported by maps of the future.

In the future, there will be many areas of cultivation that were not as productive as they were in the past due to the changing climate. Some countries will have to choose between prioritising food or fuel. Countries that are able to map their resources accurately will be at a significant advantage in devising solutions that means that they will be able to feed their population.

We will also have to think differently about landscapes - which should be managed with the community through activities like tree planting and greening of an area to make our planet work. Even "wilderness" areas need to be managed as a resource. Vertical farming is an option that can be used in city centres – feeding local

communities and cutting the carbon footprint. We will have to rethink farming and what constitutes urban living.

As people come into cities we need to adapt the existing buildings. To respond to these planning pressures and the need to make urban areas green, mapping of where people actually live will be essential. We will also have to move people underground and this will have an impact of the kind of mapping that we undertake.

Moving on to the Global Environmental Observing System of Systems (GEOSS), Jacqueline said that this was being heralded as the way to work universally together. In the Arctic for example, GEOSS ties in the work on sea ice and what is happening above and below the ground. We are potentially looking at a lot of economic activity in the Arctic and so agencies will have to pay attention to how environmental quality is monitored.

We learned a lot from some of the worst case hurricane scenarios around the time of Hurricane Katrina. Governments are now publishing everything they can make available to help us understand our environment and engage early warning systems. Therefore we need to be able to provide comprehensive mapping and a smooth transition from cadastral and local, to global level information.

To do this we have to change our model of governance. The deregulated governance model needs to be rebalanced and so that we can build in more effective public participation and protection of the public good. The loss of trust that people have in their governments is meaningful when it comes to how we look at resources. Fiscal rescue packages are colliding with each other – if we are to realise a low carbon future then we will require everyone’s participation and will need to make things more accessible and more open. We need to look to provide more live information which is validated in many different ways. So mapping is a resource which is augmented by many different citizens as well as researchers and agencies running sensor webs for carbon monitoring for example. Indigenous populations in remote areas, farmers and members of the public are all able to collect information about what is happening on the ground in their area.

For example, more and more people are suffering from conditions that mean that they must monitor ozone levels closely. Using near real time monitoring means hospitals can send out alerts to those that are at risk thereby reducing hospital emissions.

People are on the move as a result of climate change and we need to understand what that means for our borders and how we take care of these people. What we do locally will have an impact at a global level. Local action must be believable, openly audited and publically created as well as driven by credible institutions and agencies. It is only by getting the local information together with the official statistics that will we get the kind of information that we need.

| Questions/Comments   | Answers  |
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| <p>Dr David Coleman, Natural Resources, Canada</p> <p>How do you see national mapping agencies being</p> | <p>Professor Jaqueline McGlade said that national mapping agencies are generally not engaged in politics or playing a role in the frontline in the fight against climate change. She identified an opportunity in the verification of forestry</p> |

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| <p>part of the solution to climate change?</p>  | <p>destruction. There is political will to spend money to tackle climate change but we need a global estimate of this and mapping will be key- but we need to put this out into the public domain.</p>  |
| <p>Robin McLaren, Know Edge Ltd</p> <p>How can we encourage public participation?</p> | <p>Professor Jaqueline McGlade: There is a technology divide between those who spend time on social networking and those that don't. There is a big opportunity authentication, and the European Environment Agency have tried this with information about bathing water, if we make a space online for people to provide information then you discover that there is an appetite for this. If you look to industry, there is potential for positive labelling or rating for environmentally sustainable behaviour.</p> |
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