Kennis voor Klimaat
Knowledge for Climate

Newsletter Decision Support Tools Theme 8 **Issue 4, January 2013**

Foreword

by Ekko van Ierland, consortium leader

The years 2013 and 2014 will be important years for the program Knowledge for Climate. After two years the Midterm Assessment took place and the program is currently full swing. Decision making on climate change is a complex issue, both for mitigation and for adaptation. Despite the fact that there is broad support for the view that climate change is caused by human activities, uncertainty remains on the timing and the level of the impacts of climate change. We observe many climate related damages at the global scale, but it is often difficult to assess whether the disasters are just the results of regular weather patterns or whether the disasters and their intensity is really related to climate change.

Early action in the domain of mitigation will assist in reducing the speed of accumulation of greenhouse gases in the atmosphere, but of course in many cases mitigation requires substantial investment in energy saving technologies or sustainable energy. More stringent mitigation efforts will reduce the need for adaptation, and –cynically- if we adapt more, we reduce our incentives to contribute to mitigation!

For adaptation the implication is that we at least need to adapt to the climate impacts that are related to 2 degrees Celsius, because whatever we do we can no longer avoid this change in average global atmospheric temperature. If internationally we quickly could agree to stringent GHG emission reduction, adaptation could be restricted to the level appropriate for an increase in atmospheric temperature of 2 degrees Celsius.

Given the uncertainties on the international negotiations on GHG emission reduction, we however also need to be prepared for changes above 2 degrees Celsius.
But how long can we wait with implementing adaptation measures? What is the optimal timing of adaptation? Should we go for structural measures or should we always have a preference for non-structural measures, i.e. measures that do not require huge investment upfront, but that can be financed by small annual costs? How can we keep our options open and at the same time avoid catastrophic events?

Theme 8 decision support tools tries to assist decision makers in answering questions on how to adapt, when to adapt and how to deal with the uncertainties related to adaptation. We need to understand that this is not an easy task, because many uncertainties are related to the various climate scenarios that are presented. Uncertainties about economic growth, about energy efficiency improvement, about technological progress in the domain of sustainable energy. It is easy to decide to spend millions or billions of Euros on adaptation, but it is more difficult to analyse whether the money is well spent, if we do not know what the future climate impacts will be. It is also easy to do nothing and wait and see, but then we will be facing disasters in terms of flooding and loss of human life.

How to find the correct balance for adaptation and mitigation is one of the core challenges for the coming years and Theme 8 of Knowledge for Climate is dedicated to making a contribution to answering these important questions. In close cooperation with a large number of stakeholders we will try to assist in the preparation of decision making, as such that policymakers and private actors at various levels of governance and management will be well informed about the implications of their choices. In the end the decisions need to be made by the various stakeholders in society, at the local, the regional and the global level! And these decisions need to be based on transparent and convincing analysis and information. Those are some of the challenges for 2013, 2014 and beyond.

In this issue:

International workshop on Climate Change Adaptation Decision Support tools – 3 October 2012 by Rob Swart

On 3 October, the Knowledge for Climate (KfC) programme organized an international workshop on Climate Change Adaptation Decision Support Tools, in collaboration with the Joint Programming Initiative Climate (JPI Climate, www.jpi-climate.eu/). The workshop brought together experts from the Netherlands and other European countries, who presented and discussed different methods and tools in six areas:

- *Socio-economic scenarios.* In this session the status of the development of the new global socio-economic scenario pathways (SSPs) were presented by Tom Kram (Netherlands), and Eric Koomen (Netherlands) gave an overview of national land-use scenario modelling. Kirsten Halsnaes introduced a debate about the need to complement top-down model-based scenarios with bottom-up development of regional and local scenarios, work that will be required soon when the new global climate and socio-economic scenarios will become available in support of the new IPCC assessment.
- *Socio-economic evaluation methods.* On the basis of work for FP7 projects such as Climate Cost and MEDIATION, Paul Watkiss (United Kingdom) gave an overview of the state-of-the-art in impacts costing, followed by Adriaan Perrels (Finland), who reported on Finnish experiences dealing with opportunities and constraints of CBA for adaptation. Roy Brouwer, (Netherlands) presented recent results on the macro-economic impacts of water scarcity in the Rhine and Meuse river basins. The discussion focused on new opportunities for impacts/damage and adaptation costing assessment that would overcome the problem of data scarcity.
- *Tools for communication and visualization in support of design of adaptation measures.* Ron Janssen (Netherlands) discussed the use of touch table interfaces for interactive adaptation planning, with a demonstration provided in the lunch break. Jürgen Kropp (Germany) presented how climate change and impact information can be visualized via an interactive global platform (ci-GRASP http://cigrasp.pik-potsdam.de/). Hasse Goosen (Netherlands) explained how in so-called climate ateliers climate information is made available in a participatory process with stakeholders.
- *Economic damage/costing methods.* This session addressed a number of specific methods in determining the costs of adaptation. Vincent Viguié (France) talked about multi-criteria decision making in adaptation policies in cities in a Worldbank context, Karianne de Bruin (Norway) presented an application of an optimal timing evaluation method and Thomas van der Pol (Netherlands) explained how high a dike should be, if you know that you might know more later.
- *Impact modelling and assessment*. In this session Robert Nicholls (United Kingdom) formulated some key challenges for impact modelling on the basis of experiences with coastal safety modelling. Reinhard Mechler (Austria) discussed methods in the context of iterative risk management and Marjan Hofkes (Netherlands) presented PhD work on modelling the indirect economic effects of floods and flood policies.
- *Monitoring and evaluation of adaptation policy*. An emerging area of policy development and research is related to the monitoring and evaluation of adaptation policy. Petra von Rüth presented the German experiences and Kaj van de Sandt presented on-gong Dutch work in this area, comparing methods with experiences in Finland and other countries. The lively debate in the relatively small groups provided an excellent opportunity for both junior and senior researchers to present research and discuss results and knowledge gaps but also allowed for formulating a number of recommendations for further research that will be taken into account by JPI Climate in the further development of the JPI Strategic research Agenda. The presentations are available at http://knowledgeforclimate.climateresearchnetherlands.nl/workshopadaptationdecisionsupport/resultsworkshopdecisiontools

Midterm Assessment

Results of the Midterm Assessment 2012

The Midterm Assessment brought together nearly 300 scientists, practitioners and policy makers in the field of climate adaptation, from inside and outside the Knowledge for Climate community.

This international meeting provided an excellent setting to discuss the current state of the programme from a broad range of international, scientific and societal perspectives and provided input for optimal end results in 2014.

Plenary opening

In his opening speech, prof.dr. Pier Vellinga (Chair Board Knowledge for Climate) mentioned the background of the Knowledge for Climate programme and its unique character of research by the mechanisms of co-creation and co-funding.
The book 'Bedenk, ontwikkel en gebruik, Kennis voor Klimaat in de praktijk' (translated 'Invent, develop and apply: Knowledge for Climate in practice'), on the use of this co-created and co-funded knowledge in practice, was presented. Looking at the first tranche of the programme, it was found that more than 50 percent of research results is used in practice at this very moment.

'From knowledge to practice' was also the key message of Renske Peters (Director Water Business and International Water Affairs, Dutch ministry of Infrastructure and Environment). Research becomes more and more demand driven, and it is up to the government to remove barriers and stimulate bottom up, regional input. The joint efforts in Knowledge for Climate, including the link with the Delta programme and the evolving Topsectors, are creating an excellent basis for coping with challenges of climate change.

Theme 8 contributed to one of the sessions showing detailed results of the various work packages. The scenarios for regional economics and spatial development are becoming more and more detailed and can be applied to assess the adaptation requirements in the various regions of the Netherlands. Results already have been applied in assessing the prospects of the urban heat island in Haaglanden, the Western Part of the Netherlands. Combining scenarios for climate change with economic development, it has been possible to investigate the impact of the urban heat island by the year 2050. It shows that both climate change and economic development contribute to the urban heat island and already now we know that appropriate adaptation is required in terms of spatial planning and specific urban planning (including planning of trees, water systems, green roofs) to reduce the negative impacts of the urban heat island. Similarly detailed projections are made of the potential impact of flooding in 3D.

More information on the theme 8 midterm reports, the presentations and the posters can be found at:
http://knowledgeforclimate.climateresearchnetherlands.nl/midtermassessment2012

Plenary closure

At the plenary closing session, vice-chair of the IPCC prof. Jean-Pascal van Ypersele, reported on climate change and the IPCC and their role for mitigation and adaptation efforts.

A selection of international reviewers shared their impressions of the Knowledge for Climate research, based on their review of the themes and hotspots and their experiences of the day.

Finally, Sybilla Dekker, Chair of the Supervisory Board of Knowledge for Climate, in her speech explored the impact of the Knowledge for Climate programme by its' value creation in the domains of spatial investments, knowledge infrastructure and business development.

Autumn school: Dealing with uncertainties, 8-10 October 2012

Theme 6: Climate projections, organized together with other consortia of Knowledge for Climate (like Theme 8) the Autumn school: "Dealing with uncertainties in research for climate adaptation". The 38 participants of the Autumn School were researchers in climate change (mostly PhDs). The course was announced via SENSE.

The central theme of the course was dealing and communication about uncertainties in climate-, socio-economic scenarios, impact models and policy making. The discussions during the course contributed to a common frame of reference for dealing with uncertainties. This common frame contains e.g. common definitions and do's and don'ts for dealing with uncertainties. Aim of the frame is improving interaction between different disciplines in climate adaptation (different Knowledge for Climate themes).

Ekko van Ierland contributed to the Autumn School both as lecturer and as discussion leader at the second day. His lecture was about the financial aspects in climate adaptation. He pleaded for probability information to support decisionmaking based on optimization procedures (risk analysis, optimal timing) both for mitigation and adaptation.

Another subject of the discussion Ekko moderated, was the difficulty for decision makers in using different scenarios as the basis for taking decisions on adaptation measures. For Dutch coastal management a "high" scenario is used for the long term (spatial reservations for dikes), and a "low" scenario is used for short term decision making (sand suppletions before the coast). During the discussion it turned out that using more scenarios at the same time for decision making feels inconsistent for some people, not for others. It may avoid over-investments (by not directly increasing dike heights, but by making spatial reservations to do so when needed). He argued that for decision making on adaptation it is important to obtain better information on the probability distributions for climate impacts, such as sea level rise or excessive precipitation. The current scenarios provided by KNMI are very useful, but more detailed information will be required to decide when to act and to what degree.

The Autumn School was a good starting point to improve communication between disciplines (economics, governance, climate, impacts) – which at the end could help decision-makers in achieving superior outcomes for climate adaptation.

For the course a digital reader was set up with relevant literature, which also can be used for further reading after the course. Also the presentations, posters and summaries of the discussions are published on-line.

Further reading:

- Program Autumn School
- Flyer Autumn School Dealing with uncertainties

Course coordinators, Theme 6, Climate Projections
Bernadet Overbeek, KNMI, +31 (0)30 220 6861
Janette Bessembinder, KNMI, +31 (0)30 220 685

The 5th Asian Ministerial Conference on Disaster Risk Reduction, October 22-25, 2012 in Yogyakarta, Indonesia. Contribution: Pini Wijayanti

The Asian Ministerial Conference on Disaster Risk Reduction (AMCDRR) is a biennial conference organized by rotation in different Asian countries since 2005. In this event, the minister in charge of disaster management from the region has opportunity to represent and to reaffirm their commitment to the implementation of the Hyogo Framework for Action (HFA). The conference also serves as a forum to exchange experiences on successful practices and innovative approaches in implementing HFA's five priorities for action at the national and local levels.

Jakarta Climate Adaptation Tools (JCAT) team attended and also presented their project in Side Event (SE-12). This Side Event has title Local Level Risk Assessment for Disaster and Climate Change: How risk assessment can assist local risk reduction and adaptation, governance and risk financing.

Background of SE-12

Asia, the most disaster-prone continent in the world, experiences more disaster events. Nowadays, more people are killed or affected as a result of disasters than on any other continent. Totally, nine Asian countries are listed among the ten countries with the largest number of disaster-related deaths. With the effects of climate change increasing, hydro-meteorological disasters have started to outnumber geological and biological disasters both globally and in the Asian region. These include hydrological events such as floods and droughts, meteorological events such as cyclones, hurricanes and droughts and extreme climate-related events such heat and cold waves. The increasing burden of disaster risks that have been exacerbated by the adverse impacts of climate change pose an increasing challenge for Asia vis-à-vis both assessing and addressing risks.

A variety of disaster risk assessment approaches and techniques have been developed in the region, with various degrees of validity, accuracy and usefulness in risk reduction planning. Among the key challenges in these assessments is the gap between scientific parameters and community perspectives, the divide between global/national/macro level risk assessment from local contexts, and the often diverging approaches of disaster risk reduction and climate change adaptation. Related to climate change, there is also a lack of operationalization of risk assessment and quantification for adaptation and financial compensation.

Disaster risk reduction proponents in Asia could initiate efforts to close these gaps and drive a global change in the field of disaster risk assessment. The proposed panel discussions will showcase local practices in risk assessments for disaster and climate change and look for common grounds that will be used as a starting point in developing a robust and integrated risk assessment methodology for disaster and climate change that combines community's perspective and state-of-the art science and technology in the field of risk assessment.

Objectives of SE-12

This session focused on Local Risk Assessment and Disaster Risk Financing and delivered two objectives:

1. To provide substantive inputs to 5th AMCDRR Sub-theme 2: Local Risk Assessment and Financing, and the High Level Roundtable Session, and
2. To scale-up local methodologies and experiences in risk assessment to the global risk assessment practices

Presenters in SE-12

At least six countries presented their research in this session: Indonesia, the Netherlands, Vietnam, Philippine, South Korea, and Bangladesh. They come from Pujiono Center, Agency for Assessment and Application of Technology and Bogor Agricultural University - Indonesia; Action Aid, International Centre for Climate Change and Development - Bangladesh; Hankuk Academy of Foreign Studies – Korea, Wageningen University, VU Amsterdam – the Netherlands.

JCAT Team Presentation in SE-12

The presentation focused on the JCAT project. The overarching goal of the project is to contribute to the development of tools to assess, compare, and optimise options for climate adaptation of Jakarta as a Delta City. One tool will primarily be developed from a modelling background and aims at developing flood risk maps that give insights in the spatial distribution of risks as a function of hazards, exposure, and vulnerability. It sheds light on the effectiveness of flood risk reduction measures. Closely related, the research will develop a model to compare and optimise the costs and benefits of (combinations of) measures. The presentation highlighted the need to assess both the costs and benefits, in economic and social terms, of a large range of flood risk reduction measures. Instead of only focusing on traditional infrastructural measures (such as dikes and sea-walls, which are of great importance), more attention should also be paid to options such as forestation in the upper catchment areas, early warning systems, spatial zoning, reducing land subsidence through the improved supply of drinking water.

The JCAT team at the 5th AMCDRR conference on Disaster Risk Reduction, from left to right: Mr Yus Budiyono, Dr Philip Ward (project coordinator), Prof. Dr Ekko C. van Ierland (consortium leader Theme 8 Knowledge for Climate) and Ms Pini Wijayanti

Introduction new people

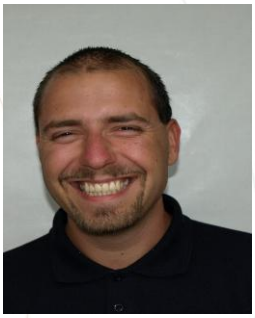
Elmar Eisemann was recently appointed as a full professor in the Computer Graphics and Visualization Group in the faculty EEMCS at TU Delft.

Since 2009, he was an associate professor at Telecom ParisTech and, before, a senior researcher in the Cluster of Excellence in Saarbrucken (Max-Planck-Institute).

His research interest focuses on graphics, perception, visualization, vision, and simulation. He is heading the 3Di flooding simulation and visualization research team, succeeding prof. dr. ir. Frits Post and dr. ir. Gerwin de Haan.

Tim Tutenel is currently a researching postdoc at the Computer Graphics and Visualisation Group in the 3Di flooding simulation and visualisation team.
Tim has an academic record in graphics for games. He is finishing his PhD in the field of semantics in game worlds in December 2012.

Christian Kehl is currently a PhD candidate at the Computer Graphics and Visualisation Group in the 3Di flooding simulation and visualisation team. Christian will focus his research efforts in real-time, realistic simulation and visualisation of floods.



Upcoming events in 2013

- **Theme 8 is planning a meeting with the Advisory Board in Spring 2013.**
- **Theme 8 will be participating in European Climate Change Adaptation Conference 2013 (ECCA).** The European Climate Change Adaptation Conference 2013 will bring together scientists and practitioners working on adaptation to the impacts of climate change. The conference will create a European forum bringing together world-class science, with the aim of fostering a creative dialogue with climate adaptation policy makers and practitioners. The theme of the conference is **integrating climate into action**. Even under the most optimistic greenhouse gas emission reduction scenario we are facing already a certain level of future climate change. The first impacts of climate change are now observable in Europe and internationally. These impacts create new risks and vulnerabilities, while also generating opportunities for some. But while the need to manage climate vulnerabilities and to adapt is now widely understood, questions about whether, how and when to adapt are often hard to answer. New knowledge from science and practice is critical to making judgements, choices and decisions in the context of uncertainties.The conference is co-sponsored by the German Federal Ministry of Education and Research (BMBF), the European Commission, the City of Hamburg and the University of Hamburg. The conference is an initiative of four EU research projects: RESPONSES, CLIMSAVE, MEDIATION and ClimateCost.
- **Theme 8 will be contributing to the completion of the Mediation program through reporting on various case studies in the European context of adaptation in Spring 2013.**
- **Theme 8 will participate in the series of meetings to prepare the regional adaptation strategy for Haaglanden.**
- **Theme 8 will organize a meeting with the WP leaders to discuss the progress and the deliverables of the program.**
- **Theme 8 will through the participation of Prof. E.C. van Ierland contribute to the group of Experts on Economic issues of the Deltacommissariaat.**
- **Theme 8 will participate in the development of new proposals on adaptation for the EU.**

Kennis voor Klimaat
Knowledge for Climate

Contact information

Projectleader Theme 8

Prof.dr. E.C. van Ierland
Environmental Economics and
Natural Resources
Wageningen University
P.O. Box 8130
6700 EW Wageningen
The Netherlands

T *+31 317 484307*
E *ekko.vanierland@wur.nl*

Programme Office Knowledge for Climate

Secretariat:
Kennis voor Klimaat
Daltonlaan 400
3584 BK Utrecht
The Netherlands

T *+31 88 335 7881*
E *office@kennisvoorklimaat.nl*

Composition newsletter by communication officer
Wil den Hartog (wil.denhartog@wur.nl)

WAGENINGEN UNIVERSITY
WAGENINGEN UR

Netherlands Environmental Assessment Agency

IVM Institute for Environmental Studies

TU Delft Delft University of Technology

TNO

Deltares
Enabling Delta Life

VU UNIVERSITY AMSTERDAM