

Executive summary of ADAM periodic activity report

Summary description of project objectives and overall goals

The core objectives of ADAM (Adaptation and Mitigation Strategies: Supporting European Climate Policy) are:

- To assess the extent to which existing and evolving EU (and world) mitigation and adaptation options and related policies can achieve a socially and economically tolerable transition to a world with a global climate no warmer than 2°C average surface temperature above pre-industrial levels, and to identify their associated costs and effectiveness.
- To develop and appraise a portfolio of longer term policy options that could contribute to addressing shortfalls both between existing mitigation policies and the achievement of the EU's 2°C target, and between existing adaptation policy development and EU goals and targets for adaptation.
- To develop a novel Policy Appraisal Framework (PAF) and apply it both to existing and evolving climate policies, and to new, long-term policy options in the following four case studies: European and international climate protection strategy in post-2012 Kyoto negotiations; a re-structuring of International Development Assistance; the EU electricity sector; and regional spatial planning.

The ADAM project will lead to a better understanding of the synergies, trade-offs and conflicts that exist between adaptation and mitigation options and policies at multiple scales.

Crucially, ADAM will support EU policy development in the next stage of the development of the Kyoto Protocol, in particular negotiations around a post-2012 global climate policy regime, and will inform the emergence of new adaptation strategies for Europe. In research on adaptation policy options, special attention will be paid to the role of extreme weather events both as exposing vulnerability and as a signal for future change. The main impact of the ADAM project will be to improve the quality and relevance of scientific and stakeholder



contributions to the development and evaluation of climate change policy options within the European Commission. This will help the Commission to deliver on its current medium-term climate policy objectives and help inform its development of a longer-term climate strategy.

Work performed, results achieved so far, expected end results

The ADAM work programme is structured around four overarching domains: Scenarios, Policy Appraisal, Mitigation and Adaptation. In addition we are conducting four case studies where climate change mitigation and adaptation strategies have a crucial bearing on the objectives of international conventions and in which the PAF will be tested.

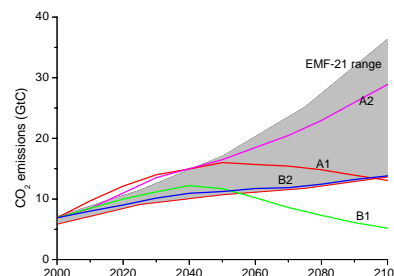
Scenarios

The Scenarios workpackage (WP-S) is laying out framing scenarios that guide and contextualise the ADAM analysis. In the first phase of ADAM we are building on existing scenarios (e.g. WETO-H2, IPCC SRES) to develop a relevant baseline scenario, i.e. a scenario in which no climate change policies occur so that global average temperatures will have reached about 4°C (\pm circa 1°C) compared to pre-industrial levels by the end of the century, and a mitigation scenario where global temperature increase by 2100 in relation to pre-industrial levels is no higher than 2°C (with a stated level of likelihood, e.g.

75%). In the second phase of ADAM these scenarios will be enriched by including climate change feedbacks and adaptation; something that is entirely new in the field and will shape the relevant research for the next years. Both the updated WETO-H2 baseline scenario and the mitigation scenario produced so far are consistent with the state-of-the-art of current scenario literature. A detailed description of the framework for the development of the different scenarios is presented in deliverable D-S1 “Preliminary ADAM Scenarios”.

Attention has also been paid to connect the work in ADAM with the activities in the IPCC, both in the field of baseline and mitigation scenarios (WG-III) and in the field of impacts and adaptation (WG-II) by involving partners who are intensively involved in the IPCC process.

Work on the “Strategic Assessment of Impacts, Damage Costs and Adaptation Costs of Climate Change for Europe”, which was originally a task within the WP-S has been finalised (D-S2), but will in the future be associated to the A2 workpackage (Coping with Extremes).



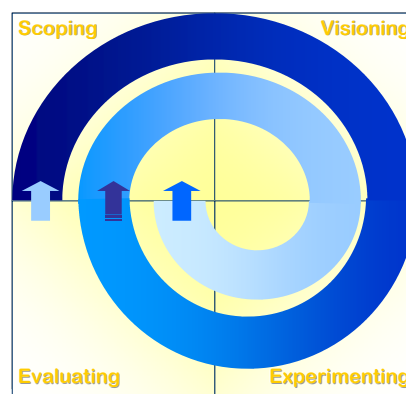
Policy appraisal

The policy domain consists of two workpackages: Development of a Policy Appraisal Framework (WP-P1) and Policy and Governance (WP-P2).

WP-P1 is developing the Policy Appraisal Framework (PAF). The PAF is an innovative new approach for supporting development of strategies to address adaptation and mitigation of climate change within Europe. It is a mechanism by which we will engage appropriate stakeholders in Europe and which will allow policy-makers to examine the effectiveness of different climate change related strategic policy options. The PAF is an iterative process that includes four phases of policy appraisal (scoping, visioning, experimenting and evaluating). In each stage there are several relevant building blocks (on knowledge integration, tool selection, social learning, uncertainties, contextualisation, and stakeholder selection) that will help the user to go through that stage in an appropriate way. The PAF will be tested in our four case studies and in WP-P2. Next to being a tool for climate change policy appraisal, the PAF is also a major deliverable of the project in its own right. So far we have developed a prototype version of the PAF and we are preparing the PAF as a web-based resource. We have also developed plans for iteratively improving this during years two and three of the project. We have worked together with the case studies in order to develop a scoping document by the end of the first year of the project.

Insights gained and lessons learnt within the project will be used to develop and enhance the PAF as a product/deliverable that will have a life and usefulness beyond the end of the 3-year ADAM project. We expect that the demand for such a support tool will increase as legislation (and other drivers) cause climate change to be incorporated into more and more aspects of life. By the end of the project the PAF will have undergone several iterations and our aim is that it will eventually become a sophisticated tool for integrating climate change into routine planning and decision making processes as well as for supporting policy appraisal and decision-making on climate change. In addition we recognise the need to make the case for this new approach to climate change appraisal within the academic literature. To this end we have developed an ambitious publication strategy with a journal special issue as a centre piece (one paper already published). The journal special issue would include articles about the PAF approach and methodology, and articles about the applications in the ADAM case studies and in WP-P2.

WP-P2 is mapping and appraising current policies in the context of international agreements on global change and governance systems in the EU. The expected end results have not changed and by the end



of the project we will have analysed whether the climate change related policy and governance goals have been met and we will have developed portfolios of alternative proposals for EU climate policies and strategies. We intend to maintain close contact to EU climate policymakers and researchers to achieve the greatest impact.

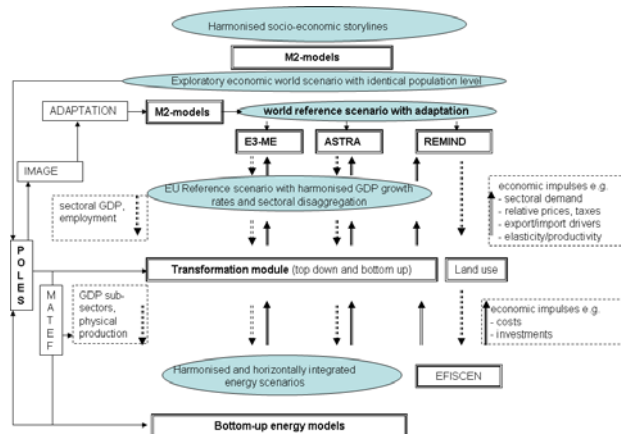
In the first year we have been developing a theoretical and methodological framework for analysing EU climate policy instruments, interactions between policies, policy goals and institutional networks. A jointly-authored paper has been completed and will be published as an ADAM Working Paper. It proposes that climate policy and governance should be analysed in the context of 6 governance dilemmas: a) problem perception and policy objectives, b) the costs and benefits of governing, c) levels and scales of governance, d) modes and instruments of governance, e) timing and temporality of governance, and f) implementation and enforcement. These six governance dilemmas will function as the conceptual backbone for all research in WP-P2. We have further developed a template and database of EU and Member State climate policy. This allows for the first time an analysis of patterns of climate policy at the EU and MS levels. An online version of the database is being made available on the ADAM website.

Mitigation

The Mitigation domain is evaluating the costs and effectiveness of different mitigation options at the EU level and estimates their corresponding contribution at the global level. These evaluations address the main interactions between the EU and other world regions regarding international trade, development aid, technology transfer and investments. The domain consists of two workpackages: Mitigation at the European Level (WP-M1) and Mitigation at the Global Level (WP-M2):

WP-M1 has so far been intensively working on data collection, enlarging the models to the full number of European countries and the E3ME, ASTRA and POLES models have produced the first results for the baseline scenario (i.e. without considering climate change). The conceptual work has been finished with the following major results (that will be part of a deliverable in 09/2007): the detailed sectoral bottom-up models will only be used for the period 2000-2050. The simulation of the greenhouse gas emissions will include the energy and industrial system as well as aspects of material efficiency and substitution. For the period 2050-2100 the POLES model will be used for simulating the European energy system and REMIND for the economic analysis. Expected end results have not changed and by the end of the project WP-M1 will have calculated the mitigation costs for a 2°C scenario for Europe as well as the adaptation costs of the European energy system for both the mitigation and the adaptation scenario.

WP-M2 has in the first year a) specified and assigned the research questions based on the objectives of the ADAM proposal; b) designed a regional model comparison exercise, agreeing to calibrate and harmonize all models according to common baseline data projections for GDP, population and emissions (from WP-S), and to devise a set of 450ppm CO₂ stabilization scenarios; and c) prepared a deliverable for month 12 for which a main objective is to provide WP-P3a with the policy and technology options available in the WP-M2 models. Expected end results continue and by the end of the project we will have assessed the costs of EU and global mitigation policies and their impact on economic growth, employment and the competitiveness of the EU, giving specific attention to the role of technology spillovers, damage compensation and other incentives for developing countries to cooperate in mitigation policies.



Adaptation

The Adaptation domain is developing a quantitative knowledge base on Europe's vulnerability to climate change to provide the EU and other stakeholders with the rationale for a concerted focus on adaptation and mitigation. We will analyse social, technical and environmental factors that influence adaptive capacity to slow onset climate change and extreme weather events at various spatial and temporal scales, different sectors and cross-cutting issues. The results of this work will feed directly into the broader economic and social analyses of climate change impacts, vulnerabilities and adaptation. The domain consists of two workpackages: Assessing Potential Impacts and Adaptive Capacity (WP-A1) and Coping with Extremes (WP-A2).

WP-A1 has made important progress towards their first deliverables, in particular the macro-economic analysis, where the model framework has been developed and initial model exercises have been conducted, and the policy analysis, where the case studies have been defined and first interviews have been conducted. An initial version of the formal framework of vulnerability has been completed and will be tested and further developed during year 2. In addition to the individual task deliverables, the results of the economic, institutional and meta-analysis will be brought together in a "digital compendium of vulnerability to climate change in Europe". The expected end results are largely unchanged, i.e. the formal framework of vulnerability, a meta-analysis of impacts and vulnerability, an assessment of economic impacts and an analysis of actor-based adaptation and adaptive capacity. However, lacking sufficient spatial resolution to justify the preparation of maps, the "digital atlas of vulnerability" has been renamed into a "digital compendium" that will integrate the results of all analyses in A1.

WP-A2 has so far mapped flood risks across parts of Europe and is now preparing to extend the methodology to include drought and wind-storm risks. Based on ADAM's guiding scenarios we are beginning to project weather-related extreme event risks to 2025 and 2100. We are also underway modelling private and public sector vulnerabilities and harmonizing approaches with WP-A1. We have also begun our work on promoting adaptation to extreme events by using innovative risk financing mechanisms. To this end interviews were conducted with key experts to forward novel ideas and mainstream proactive disaster risk management within EU's policies as well as to restructure regional and global risk pooling mechanisms. The expected results of WP-A2 have not changed but a new task, A2.7, has been devised. This task has formerly been associated to WP-S, but its research goals fit much better into WP-A2. For this task a strategic report on the impacts, damage costs and adaptation costs of climate change in Europe has been prepared, which will be further developed until the end of the project.

ADAM case studies

In ADAM we are conducting four specific case studies where climate change mitigation and adaptation strategies have a crucial bearing on the objectives of international conventions and where we will test the PAF. The four case studies focus on: Options for Post-2012 Climate Governance (WP-P3a), International Development Assistance (WP-P3b), Assessing Electricity Use and Generation in the EU (WP-P3c), and Regional Examples (WP-P3d).

WP-P3a will take a global perspective and will appraise a range of possible policy regimes and options against multiple criteria. During the first 12 months we have: a) mapped current options for an effective and equitable global climate regime, b) analysed existing proposals and institutional structures, c) applied the PAF methodology to prepare a scoping document that will guide our future research, d) interacted with the climate negotiations through interviews at international events and the creation of a contact group with negotiators, policy analysts and leading researchers. The expected end results have not changed and by the end of the project we will have provided a set of innovative options for global climate policy post-2012, providing a unique combination of quantitative analyses with insights into political feasibility challenges and implementation pathways.

WP-P3b looks at Europe's international development assistance and the ways in which more careful design and operation of such assistance can simultaneously meet the objectives of the Millennium Development Goals and the UNFCCC. So far we have been mainly preparing our first deliverable, which traces the historical evolution of theory and practice for both development assistance and climate policy, and draws out the overlaps between the two. This involved the review and analysis of hundreds of national communications and studies, stakeholder interviews, and an extensive review of the peer-reviewed literature. We have also finalized our scoping document with respect to providing strategic options for streamlining and restructuring development assistance in the case of more pro-active disaster management. The expected end results have changed in two ways: a) the report describing the current state of EU development assistance has been expanded to provide a much richer historical perspective; b) the analysis of EU mainstreaming practices using a portfolio screening tool cannot be carried out as planned because SDC never finalized the development of the tool. The work will thus concentrate on other mainstreaming practices with focus on non-governmental and intergovernmental development organizations and how they include climate adaptation into their agendas.

WP-P3c analyses, using quantitative models and participatory methods (e.g. interviews of stakeholders), how adaptation and mitigation will affect the electricity sector in Europe. The analysis is framed to explore effects on the demand side and the supply side, through a mitigation scenario and an adaptation scenario. During the first phase of the project we have emphasized on the role of expectations amongst stakeholders, and in particular to how government entities and large emitters relate to each other. When government entities make announcements about future policies (e.g. quota allowances, climate change targets, efficiency targets), crucial questions are how other parties relate to these. Importantly, the costs of emission reductions (using nuclear, gas, renewables for electricity generation and/or more efficient use of electricity and carbon and capture options) in the future depend on expectations about future policy decisions. The focus on these research questions is important for the application of the PAF. While the expected end results have not changed, an emphasis on political feasibility and on expectations for future policy formation will be more important than envisaged. This change results from observed developments in the EU (experience with ETS, and the recent energy policy communication, inter alia).

WP-P3d is looking at three specific regions – the Tisza basin in Hungary, the Guadiana basin in Spain, and a region in Mongolia – with distinct climate change related environmental problems. The overall objective of this case study is to bring together innovative policy options from previous and ongoing projects in these regions, to evaluate and appraise new policy options using the PAF, and give feedback to improve the PAF. In the first year the specific research questions were mapped out and the scoping documents for the Tisza and the Guadiana basins have been prepared, based on stakeholder workshops and interviews. Research on the Mongolia case study has already begun, despite this having a foreseen starting date of month 18. The expected end results have not changed and will evaluate mainstreaming climate change adaptation and mitigation issues into water and land-use management practices and policies, which are typically not linked to climate issues.

Intentions for use and impact

The intentions for use and impact have not changed altogether. Next to the advancement of and impact on climate change mitigation and adaptation research, ADAM has the clear intention, stated in its subtitle, to be policy relevant and to inform and *support European climate policy*. This is currently accomplished through various channels:

- The outcomes of the ADAM research are being submitted to DG RTD from where they are made available to other DGs;
- There are up to six science policy seminars foreseen within ADAM, which are being organised by CEPS in Brussels. These seminars about important climate policy related issues are specifically



addressed to key policymakers and policy analysts and high visibility and rapid information flow from the scientific analysis to the policy process;

- We maintain regular contact with key policymakers from the European Commission, in particular from DG Environment to ensure that our research is policy relevant and answers the right questions while maintaining scientific freedom;
- We have set up a 'contact group' which includes policymakers at the EU and Member State level as well as key researchers to maintain a rapid flow of information from the policymaking process to support our analyses and vice-versa; and
- We have and will continue to present our results at high-level meetings (e.g. COP).

Contractors involved in ADAM

1. Tyndall Centre for Climate Change Research, University of East Anglia, UK
2. Potsdam Institute for Climate Impact Research, Germany
3. Institute for Environmental Studies, Free University Amsterdam, The Netherlands
4. Centre for International Climate and Environmental Research, Norway
5. Alterra Research Centre, Wageningen University, The Netherlands
6. International Institute for Applied Systems Analysis, Austria
7. Paul Scherrer Institute, Switzerland
8. Centre for Sustainable Studies, Lund University, Sweden
9. International Centre for Integrative Studies, University of Maastricht, The Netherlands
10. Institute for Environmental Science and Technology, Autonomous University of Barcelona, Spain
11. Research Centre of Agricultural and Forest Environment, Polish Academy of Science, Poland
12. Environmental Assessment Agency, The Netherlands
13. Fraunhofer Institute for Systems and Innovation Research, Germany
14. Centre for Climate Change Mitigation Research, University of Cambridge, UK
15. Institute for Environment and Sustainability, Joint Research Centre, European Commission
16. Department of Agronomy and Land Management, University of Florence, Italy
17. Stockholm Environment Institute, Sweden and UK
18. Energy and Environmental Policy Department, National Centre for Scientific Research, France
19. Corvinus University Budapest, Hungary
20. EnerData, France
21. German Institute for Economic Research, Germany
22. Centre for Energy Policy and Economics, Swiss Federal Institute of Technology Zurich, Switzerland
23. Environmental Systems Analysis Group, Wageningen University, The Netherlands
24. Centre for European Policy Studies, Belgium
25. The Energy and Resources Institute, India
26. Institute of Atmospheric Physics, Chinese Academy of Sciences, China

Contact details of the ADAM project office

Prof Mike Hulme ADAM Project Coordinator
 +44 (1603) 59 3162 m.hulme@uea.ac.uk
Dr Henry Neufeldt ADAM Project Manager
 +44 (1603) 59 1120 h.neufeldt@uea.ac.uk
 Tyndall Centre for Climate Change Research
 University of East Anglia, Norwich, NR4 7TJ, UK



Please visit us at www.adamproject.eu