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Item 3 of the provisional agenda
Nairobi work programme on impacts, vulnerability and adaptation to climate change

Efforts undertaken to assess the costs and benefits of adaptation options, and views on lessons learned, good practices, gaps and needs

Submissions from Parties and relevant organizations

1. The Subsidiary Body for Scientific and Technological Advice (SBSTA), at its twenty-eighth session, invited Parties and relevant organizations to submit to the secretariat, by 18 September 2009, information on efforts undertaken, including methods used, to assess the costs and benefits of adaptation options, as well as their views on lessons learned, good practices, gaps and needs (FCCC/SBSTA/2008/6, para. 51).

2. The SBSTA requested the secretariat to compile these submissions into a miscellaneous document to be made available by SBSTA 31.

3. The secretariat has received four such submissions. In accordance with the procedure for miscellaneous documents, the two submissions received from Parties are attached and reproduced[**] in the languages in which they were received and without formal editing. In line with established practice, the submissions from two non-governmental organizations have been posted on the UNFCCC website at <http://unfccc.int/3689.php>.

[*] Exact dates within the sessional period are subject to confirmation.

[**] These submissions have been electronically imported in order to make them available on electronic systems, including the World Wide Web. The secretariat has made every effort to ensure the correct reproduction of the texts as submitted.

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* This submission is supported by Albania, Croatia, Montenegro, Serbia and the former Yugoslav Republic of Macedonia.

PAPER NO. 1: RUSSIAN FEDERATION

Предложения Российской Федерации,
представляемые в соответствии с пунктом 51 документа FCCC/SBSTA/2008/6 о предпринимаемых усилиях, в том числе об используемых методах, для оценки издержек и выгод возможных вариантов адаптационных действий, а также свои соображения по поводу извлеченных уроков, оптимальной практики, существующих пробелов и потребностей.

Российская Федерация, используя предоставленную возможность, представляет информацию о существующих в стране подходах по оценке мер адаптации к изменениям климата.

Известно, что девять из десяти опасных природных явлений - являются опасными гидрометеорологическими явлениями (данные ВМО). Согласно данным Федеральной службы по гидрометеорологии и мониторингу окружающей среды (Росгидромет), на территории Российской Федерации ежегодно фиксируется несколько сотен опасных гидрометеорологических явлений (ОЯ) - сильный ветер, сильные осадки, наводнения, засуха, сильный мороз и сильная жара, причем за последние годы отмечался рост их числа (1996 – 206 ОЯ, 2008 – 349 ОЯ). Ежегодный ущерб от воздействия опасных гидрометеорологических явлений на территории России составляет 30–60 млрд. рублей (1-2 млрд. долл. США).

Многих потерь можно избежать, при наличии качественного прогноза о приближающейся угрозе и достаточного времени для реализации защитных мер.

Долгосрочные прогнозы погоды и климата и развитие системы мониторинга атмосферных процессов, можно отнести к адаптационным мерам, направленным на снижение риска от воздействия опасных погодно-климатических явлений и дополнительной выгоды от использования информации. В обобщающем докладе, подготовленном секретариатом РКИК ООН (FCCC/SBSTA/2007/6) также перечислены эти и другие технологии и меры адаптации к изменению климата на региональном, национальном и местном уровнях в различных секторах - по информации, предоставленной Сторонами и соответствующими организациями.

С развитием технологий прогнозирования погоды и климата развивались исследования по изучению ценности предоставляемого гидрометеорологического обслуживания, предоставляемой гидрометеорологической и климатической продукции, ее экономического эффекта. В Российской Федерации такие исследования были начаты 80 лет назад. В числе основных показателей эффективности гидрометеорологической продукции – денежные оценки предотвращенного ущерба в результате своевременно полученной информации. Соответственно, эффективность оценивается как соотношение размеров предотвращенного ущерба к денежной оценке ресурсов, затраченных на производство соответствующей гидрометеорологической информации, издержек адаптации с учетом остаточного ущерба. Многолетняя работа по оценке эффективности гидрометеорологической информации (включая разнообразную климатическую

информацию) свидетельствует о том, что наиболее эффективным оказывается использование гидрометеорологической информации на транспорте, в системах связи, промышленности, сельском хозяйстве и ЖКХ. Для каждого из этих и других секторов экономики разработан целый ряд методик по оценке эффективности использования информации. Российские оценки показывают, что финансовые ресурсы, вложенные в гидрометеорологию, позволяют получить десяти – пятнадцатикратную прибыль при интенсивном развитии экономики.

В 2005 году между Российской Федерацией и МБРР было подписано Соглашение о займе для финансирования проекта «Модернизация и техническое перевооружение учреждений и организаций Росгидромета», предусматривающее предоставление Российской Федерации займа в размере 80 млн. долларов США. Основная цель проекта – совершенствование системы наблюдений, улучшение качества прогнозов погоды и климата, как во временном, так и в пространственном разрешении, расширение видов адресной, предназначенной для конкретного пользователя продукции. На стадии подготовки проекта были проведены оценки экономической эффективности вложенных средств. Ожидается, что в результате реализации проекта прямые потери в результате опасных гидрометеорологических явлений сократятся в среднем на 8.5 процентов. Общий экономический эффект от реализации проекта оценивается в 70-150 млн. долл. США, что означает экономическую эффективность вложенных средств как 1:4 -1:8. Имеющиеся расчеты показывают, что экономический эффект повышения качества долгосрочных прогнозов погоды и климата может превысить 20 млрд. руб. (до 7 млрд. долл. США) в год.

Таким образом, в Российской Федерации накоплен достаточный опыт по оценке экономического эффекта от использования гидрометеорологической и климатической информации в хозяйственной деятельности, основанный на расчетах потенциальной выгоды от ее применения, выраженной как в стоимости предотвращенного ущерба, так и в оценке дополнительной выгоды. Данные исследований свидетельствуют о высокой долгосрочной эффективности вложенных средств в развитие гидрометеорологического обслуживания. Эти подходы могут применяться и при оценках экономической эффективности других адаптационных мер к изменениям климата.

[TRANSLATION AS SUBMITTED]

Information on efforts undertaken, including methods used, to assess the costs and benefits of adaptation options, as well as the views on lessons learned, good practices, gaps and needs, submitted by the Russian Federation according to the decision FCCC/SBSTA/2008/6, para 51

The Russian Federation, taking advantage of this opportunity, is submitting information on existing national approaches to assess measures of adaptation to climate change.

It is known from WMO data that nine out of ten natural hazards are extreme weather events. According to the Federal Service for Hydrometeorology and Environmental Monitoring of Russia (Roshydromet), a few hundred extreme weather events, e.g. strong wind, heavy rain, floods, droughts, severe frost and heat, are registered in Russia annually. Moreover, their number has been increasing during recent years (1996 – 206 hazards, 2008 – 349 hazards). Annual damage they bring is estimated as 30–60 billion RUR (1-2 billion USD).

A lot of losses could be avoided provided there are qualitative forecasts of forthcoming threat and time enough for implementing preventive measures.

Development of long-term weather and climate forecasts as well as of monitoring system of atmospheric processes may be regarded as adaptation measures as they are aimed at reducing risks from extreme weather and climate events and could bring additional benefits from using this information. These and other techniques and climate change adaptation measures to be applied at regional, national and local levels are listed in a compilation report prepared by the UNFCCC Secretariat (FCCC/SBSTA/2007/6) based on the information received from the Parties and relevant organizations.

Evaluation of hydrometeorological service, hydrometeorological and climatic information, and their economic efficiency has been developing in parallel with development of technologies for climate and weather forecasts. Such studies were launched in the Russian Federation 80 years ago. One of the criteria of hydrometeorological service efficiency is money saved from avoided risks due to timely received information. Hence, costs and benefits are assessed as the ratio of avoided damage and money invested into production of relevant hydrometeorological data and adaptation to inevitable risks. A multiyear work on cost-and-benefit assessment of hydrometeorological information (including various climate data) proves the highest efficiency for hydrometeorological information application in transport, communication, industrial, agricultural, housing and municipal sectors. A wide range of methodologies for utilization of hydrometeorology service assessment data has been elaborated for these and other sectors. Investments into hydrometeorology are estimated at 1:10 – 1:15 in Russia taking into account rapid economic growth.

In 2005 the Russian Federation signed a 80 million USD loan agreement with the World Bank to finance the Roshydromet Modernization Project. The objective of this project is to develop a monitoring system, to improve quality of weather and climate forecasts both considering time and spatial coverage, and to expand the number of addressed products aimed at concrete users. A cost-and-benefit analysis of the project was carried out at the preparatory stage. As result of the project implementation direct losses from extreme weather events are expected to drop by 8.5% in average. Total economic benefit of the project is estimated as 70-150 million USD which means 400-800% anticipated return on the investments. Calculations predict that economic benefit from improvement of long-term weather and climate forecasts could exceed 20 billion RUR (up to 7 billion USD) per year.

Therefore, the Russian Federation has gained a considerable experience in conducting cost-and-benefit analysis of application of hydrometeorological and climatic information for economic activities. Such analysis is based on assessment of potential benefits expressed both in avoided money losses from damage and in co-benefits. Studies prove high return rate of investments into hydrometeorological service. These approaches could be utilized for cost-and-benefit assessments of other climate change adaptation measures.

PAPER NO. 2: SWEDEN ON BEHALF OF THE EUROPEAN COMMUNITY AND ITS MEMBER STATES

SUBMISSION BY SWEDEN ON BEHALF OF THE EUROPEAN COMMUNITY AND ITS MEMBER STATES

This submission is supported by Albania, Croatia, the Former Yugoslav Republic of Macedonia, Montenegro and Serbia

Stockholm, September 23, 2009

Subject: **Nairobi Work Programme on impacts, vulnerability, and adaptation to climate change: Information on efforts undertaken, including methods used, to assess the costs and benefits of adaptation options, as well as views on lessons learned, good practices gaps and needs.**

Introduction

The SBSTA[1] invited Parties and relevant organisations to submit to the Secretariat, by 18 September 2009 under the socio-economic information work area of the Nairobi Work programme: **Information on efforts undertaken, including methods used, to assess the costs and benefits of adaptation options, as well as views on lessons learned, good practices gaps and needs.**

The Swedish Presidency on behalf of the EU welcomes this opportunity to respond to this request.

General remarks

The EU believes that sustainable development is a guiding principle for effective adaptation. Therefore, in considering costs and benefits of adaptation activities broad economic analysis should be used by decision makers taking into account broader environmental, economic and social goals. Such analysis could consider additional factors in order to also address issues related to e.g. cultural values, equity, risk to people, longer term sustainability. In order to build a figure of adaptation costs and benefits, the analysis should include the cost of inaction compared to the costs of adaptation action. Analysis should be transparent with regard to assumptions (e.g. with regard to discount rate, climate variables, externalities (co-benefits, co-costs, at various geographical levels), residual damage, constraints, time period) and approach used. Such comprehensive information can facilitate an appropriate comparison, between adaptation options in the wider context of other spending priorities. Analysis should be carried out sectorally and cross sectorally, and at different scales considering the analytic limitations, especially if applied over a long time period (50–100 years ahead). Such analysis express cost and benefits in market values, and this requires sufficient detail and to set a project off against a future in which the project is not undertaken and accounting for the costs of inaction. In addition to the economic perspective, particularly in the absence of the monetary values, risk management approaches can be helpful to cope with uncertainty such as a phased approach to adaptation, no regrets and win-win options.

In the EU generally, the costs and benefits of adaptation options in some sectors (agriculture, water resources management and coastal zone management) are better understood than in others. At European Community level, efforts to improve the dissemination of knowledge on methods and approaches to

[1] FCCC/SBSTA/2008/6 paragraph 51

establish the costs and benefits of adaptation options are underway with the establishment of the European Clearing House mechanism to improve knowledge sharing.
At national level, initiatives are underway in some member states to undertake economic analysis of adaptation options to identify the scale of cost and benefits of and thus identify priority areas for nation action.

Activities at the level of the European Union

European Clearing House mechanism - The White Paper on Adaptation to Climate Change (COM (2009)474) and accompanying Impact Assessment highlighted the gaps in the evidence base on climate impacts and vulnerability and on the costs and benefits of adaptation measures. The White Paper recognises that a considerable amount of information and research already exists, but is not shared across Member States and that an effective way therefore to improve knowledge management would be to establish a European Clearing-House Mechanism (CHM) as an IT tool and database on climate change impact, vulnerability and best practices on adaptation, including cost and benefits of adaptation measures. The establishment of a web-based European Clearing-House Mechanism enhancing information structuring and sharing on climate change impacts and adaptation measures is under progress.

Member States Experience and Approaches

Finland

Finland's National Strategy for Adaptation to Climate Change was completed in 2005. A Coordination Group for Adaptation to Climate Change was appointed to follow and promote the implementation of the strategy. The Coordination Group steered the evaluation[2] of the implementation of the Adaptation Strategy conducted in winter 2008–2009. The main objective of the evaluation was to find out what kind of progress has been made in different sectors since the strategy came out in 2005.

The Adaptation Strategy of 2005 stresses the adaptation to the impacts of climate change that takes place in nature and the environment. In recent years we have also started to understand better the wider socioeconomic impacts and reflections of the impacts of climate change to Finland in other parts of the world. In the next Adaptation Strategy the focus should shift more in this direction. This requires, however, that there are also Finnish adaptation studies available on the socioeconomic impacts of climate change when preparing the strategy.

The Climate Change Adaptation Research Programme ISTO[3] has produced information on climate change for use in different sectors and to serve various kinds of needs, but so far only case-by case sectoral and sub-sectoral studies have been made on, for example, the economic impacts. Establishing a wider and more comprehensive view calls for a lot of more research. Risk management methods have also been developed in individual projects and more experience is needed on their application.

Germany

The German Adaptation Strategy

The German Adaptation Strategy (**D**eutsche **A**npassungs **S**trategie, DAS) creates a framework for adaptation to the consequences of climate change in Germany. It was published in December 2008 and creates a framework for adapting to the impacts of climate change in Germany. The strategy lays the

2 http://www.mmm.fi/attachments/ymparisto/sopeutuminen/5HB7CtsIo/Evaluation_of_Implementation_of_NAS_FINAL.pdf

3 http://www.mmm.fi/en/index/frontpage/ymparisto/ilmastopolitiikka/researchprogrammeonadaptationtoclimatechange.html

foundation for a medium-term, step-by-step process undertaken in cooperation with the Federal Länder (federal states) and other civil groups and aimed at assessing the risks of climate change, identifying the possible need for action, defining appropriate goals and developing and implementing options for adaptation measures. The German Adaptation Strategy thus pursues an integrated approach to assessing risks and action needs, supporting sustainable development. And it reflects Germany's international responsibility. In 2011, the Federal Government intends to present the first action plan for adaptation to climate change. Cost-benefits analysis, monitoring and evaluation will be a vital part of this action plan.

Further reading: http://www.bmu.de/english/climate/downloads/doc/44003.php and http://www.bmu.de/english/climate/downloads/doc/42841.php

Economics of adaptation

Germany has established ambitious aims in reducing emissions – this is even for economic reasons. Reducing emissions can be seen as an investment in the future. First, because many measures to save fossil fuels will gain net benefits from saving energy costs and possibly fosters innovation. Second, because reducing emissions will reduce the social costs of climate change impacts on the long run. Based on first – very rough - estimates by DIW (German Institute for Economic Research) the accumulated cost of climate impacts in Germany will be up to €500 billion till 2050. It is expected to decrease this sum considerable by systematical analyzing vulnerability and realizing adaptation measures.

More detailed assessments of the risks and opportunities associated with the consequences of climate change are needed for industries, economies, globally interlinked value creation chains, and the global economy as a whole. Economic analyses will provide significant arguments for discussing priorities within the adaptation process and for weighing up possible options.

Italy

The first comprehensive attempt to quantify and evaluate in monetary terms the costs of climate change impacts at national level and to assess costs and benefits of some adaptation strategies that are currently being explored in Italy, was promoted by the National Environment Protection and Technical Services Agency (*Agenzia per la Protezione dell'Ambiente e per i servizi Tecnici*, APAT) - now Institute for Environmental Protection and Research (*Istituto Superiore per la Protezione e la Ricerca Ambientale*, ISPRA) - in the context of the 2007 National Conference on Climate Change, with technical and scientific support by the Eni Enrico Mattei Foundation (*Fondazione Eni Enrico Mattei,* FEEM) and the Euro-Mediterranean Center for Climate Change (*Centro Euro-Mediterraneo per i Cambiamenti Climatici*, CMCC)[4]. The focus of the study is on four areas, which have been identified as key vulnerabilities for Italy: the Alps and glacier ecosystems; coastal zones; arid areas and area threatened by desertification; areas vulnerable to flood and landslides. In addition, two specific case-studies (on Upper Adriatic coasts and impacts on human health) have been treated.

Methodology - concerning the methodology, the study tries to identify and quantify physical impacts of climate change for the above-mentioned vulnerable areas on the basis of the existing literature, and to estimate their economic value. Subsequently, it presents the current state of the art in terms of adaptation strategies and their evaluation for Italy. Finally, costs of climate change have been aggregated in a macro-economic model that traces the impacts of climate change on Italian total and sectoral GDP, taking into consideration interactions of Italy's economy with the rest of the world.

[4] Cf. Carlo Carraro (2008), *Cambiamenti climatici e strategie di adattamento in Italia. Una valutazione economica*, FEEM / ISPRA / CMCC project, published by Il Mulino. The book collects the FEEM studies presented at the National Climate Conference in September 2007. A working paper version can be downloaded at <http://www.feem.it/Feem/Pub/Publications/WPapers/default.htm>

Gaps - the valuation exercise showed a number of gaps, leading to an underestimation of the total costs of climate change in Italy. Gaps identified include: lack of accurate projections about the likely physical impacts of climate change, in particular at the national and regional level; difficulties in translating physical impacts into monetary values, especially for non-market environmental goods and services, such as, for instance, biodiversity or landscape beauty. Indeed, the existing literature does not provide indications on the economic estimation of the cost of inaction nor the (net) benefits of adaptation for the country.

Needs - much needs to be done on the research side to improve the knowledge of climate change impacts, of their implications on economics systems and of their economic value, which is necessary to carry out a proper cost-benefit analysis of adaptation options. For instance, evaluation techniques need to be improved to better evaluate non-market goods and services such as ecosystems and biodiversity and cultural heritage. Also, integrated climate models that allow the downscaling of global climate change scenarios should be developed and specific studies conducted at national level, and impact analyses should be focused on the future impacts of climate change rather than on the assessment of past events.

The Netherlands

In the Netherlands there is a large knowledge base for cost estimates of water management and cost benefit analysis have often been applied in decision-making on the desired flood protection strategy in the Netherlands. Furthermore an assessment of the incremental costs and benefits associated with the different adaptation options has been carried in 2006 out as part of Scientific Assessment and Policy Analysis (WAB) Climate Change.

More recently the Government of the Netherlands requested an independent Committee of State (the Delta Committee, http://www.deltacommissie.com/en/advies) to give its advice on flood protection and flood risk management in the Netherlands. Their final report included the estimates for the associated costs.

The WAB assessment of the incremental costs and benefits associated with the different adaptation options (full report http://www.rivm.nl/bibliotheek/rapporten/500102003.pdf) highlighted that cost benefit analysis require consensus, at least to some extent, about the (un)certainty with which climatic impacts take place as different probabilities may lead to substantially different conclusions on what would be the best option to implement. The impacts of climate change are, even when only focusing on the Netherlands, surrounded by considerable uncertainties and its consequences are subject to debate.

In dealing with considerable uncertainties National regularly updated climate scenarios are used as a baseline and given these scenarios experts are consulted for further analysis of the implications. The assessment made two important observations for the Netherlands. First, the literature on adaptation options for the Netherlands to date has a qualitative focus; to a very small extent costs of implementing the options have been roughly estimated, and their benefits are at best somewhat described in a qualitative way. Secondly, so far little attention has been given to spatial planning for the long run, i.e. for the period beyond 2050. Recently the Delta Committee has taken on the long term planning. Overall the assessment stresses the need for a more systematic research on and analysis of adaptation options, their costs and benefits, and their interactions.

Cost and Cost-benefit analysis from the Delta Committee

In the Netherlands the estimates of the total costs for the protection of the Netherlands are based on risk assessments and probabilities. The safety level of defenses against flooding is based on a certain probability of occurrence. The Delta Committee estimates that the implementation of the entire package of measures as proposed in the Delta Programme – Working together with water – (http://www.deltacommissie.com/doc/deltareport_full.pdf) will cost 1.2–1.6 billion euro's per annum to 2050 and 0.9–1.5 billion euro's per annum in the period 2050–2100. This estimate is on top of the

budgets already reserved for bringing the flood defenses to comply with the present flood safety standards.

For the cost benefits analysis the Delta Committee notes that there are limitations if they are applied over a longtime period (50–100 years ahead). These analysis express cost and benefits in market values, and this requires sufficient detail and it must be possible to set it off against a future in which the project is not undertaken accounting for the costs of inaction. Given there are major uncertainties, even over a decade; even more so for a century these estimates might pose difficulties. Moreover there might be more values than the economic values, such as landscape, natural, cultural and social values. A final weighing of economic, cost-benefit aspects and other aspects is a choice for society. In spite of the uncertainties the Dutch cabinet is willing/planning to establish a special fund in order to have enough financial resources in the future.

Spain

The Spanish Climate Change Adaptation Strategy (*Plan Nacional de Adaptación al Cambio Climático*, PNACC) has just adopted its second work programme. After a first work programme in which key activities (e.g. coordinating a national system for climate scenarios) and priority horizontal sectoral evaluation projects (water resources, coastal areas, biodiversity) were carried out, the 2nd is a much more ambitious programme. It will make use of the results of the 1st Programme to extend the evaluation of impacts and vulnerability to new key sectors.

One of the most relevant new lines is that it plans to mainstream adaptation into the most cost effective way, i.e. mainstreaming into legislation and national planning, by identifying the key entry points for adaptation in the sectoral regulations and plans, thus ensuring the consideration of climate change impacts and uncertainty at early stages of the policy process and accomplish an authentic anticipatory adaptation. Sectors where first steps will be done include environmental evaluation, agriculture, fishery, rural development, coasts, water, biodiversity, national parks and forestry. Some progress already has already been achieved in the Water and Forestry policy, and the National Plan to Fight Desertification. A general national system of indicators for monitoring the effects of climate change and the results of adaptation will be developed under the 2nd Work Programme.

Additionally, a series of activities are planned to develop studies on costs and benefits of adaptation - including the costs of inaction, especially in the sectors where such a line of investigation has been identified as a priority. A basic consideration in the 2nd Programme is that studies will be carried out sectorally and at several scales and that the achievement of figures on adaptation costs and benefits is needed to ensure effectiveness in the measures adopted.

As a first measure, a workshop will be organised with national experts to evaluate the availability of expertise, evaluation models and methods. The results of the workshop are intended to be used as a communication and implementation tool for policy makers, the private sector and citizens. Pilot projects will also be developed in key sectors and geographic areas. There are other activities that will aim to investigate the business opportunities of adaptation.

United Kingdom

The environment ministry, the Department of Environment, Food and Rural Affairs (Defra), co-ordinates the cross-government Adapting to Climate Change Programme in England, which drives action forward in England. Over recent months, there have been several developments that will support the work of the Programme, taking account of lessons learned, good practice and needs.

First, new Projections showing how the climate of the UK will change over this century were launched on 18 June 2009, as part of a concerted programme of action in response to climate change being pursued

across Government. The Projections form a significant element of the evidence base which is needed to take the right decision at the right time, based on an analysis of the risks involved.

The Projections cover:

- probabilistic projections for temperature, precipitation, air pressure, cloud and humidity and other variables by region and 25km grid squares and for monthly, seasonal and annual values
- results for the three different emissions scenarios – high (SRES A1FI), medium (SRES A1B) and low (SRES B1)
- Information for seven overlapping 30-year time slices, starting with 2010-2039 and going up to 2070-2099.

Further information, including training to help organisations learn and use the Projections, can be found at www.defra.gov.uk/adaptation .

Second, the Government is currently consulting on how to use the Adaptation Reporting Power. This power was taken under the Climate Change Act 2008 and requires specified bodies to report on the risks that climate change poses to their operations and their adaptation plans. The consultation package includes information on how bodies should conduct their risk assessment and action plan.

Third, the Chair and six members of the Adaptation Sub-Committee to the independent Committee on Climate Change (http://www.theccc.org.uk/) have been selected. This Committee will provide advice and scrutiny of the Government's Adaptation Programme. Shortly after the first National Climate Change Risk Assessment has been completed as required under the Climate Change Act, the Programme will become statutory, expected in 2012.

Economics of adaptation

An economic analysis of adaptation options will be completed as part of the Climate Change Risk Assessment. This economic analysis component of the assessment aims to identify the scale of cost and benefits of adaption for the UK. It will also help to identify the priority areas for action on adaptation. The Government's allocation of resources between different priorities is guided by the use of cost-benefit analysis. Therefore, this study will try and provide monetary values for potential impacts and the potential benefits for adaptation options where possible. This study will be complete in mid 2012. Work also continues on nationally inspired but community-led initiatives to assist in the integration of adaptation planning and action at the regional and local level. This includes local authority targets and other community based initiatives such as local authority partnerships involving private and public bodies working at the community level to identify best practices and address adaptation needs. Tools to support this are available on the UK Climate Impacts Programme website: http://www.ukcip.org.uk/

In recognition of the important role that local authorities should be taking, Government introduced an adapting to climate change indicator in to the Local Government Performance Framework. The indicator allows authorities and partners to monitor and evaluate progress in adapting to climate change over four levels. The levels range from identifying the priority areas for adaptation through to developing and maintaining an adaptation action plan. The first year of self-assessment of progress against various levels of preparedness on adaptation has just been completed, and the results are being analysed and will inform further future work. The national Programme has provided the local authorities with guidance and training, including on the new UK Climate Projections, to help them take action and develop their plans.

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