Adaptation Finance Briefing Paper

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tearfund

Double Standards? Financing for Adaptation in the UK and Other EU Member States?

Executive Summary

Both the United Kingdom and European Commission presume that increased awareness and action on adaptation within Europe will promote European Union action on adaptation outside of Europe. However, the EU has so far failed to clearly outline the amount of public money that it will provide for climate adaptation and mitigation in developing countries. Climate financing for adaptation in developing countries is currently totally insufficient, and there is a massive shortfall compared to the current estimates of what is required. Recent analysis highlights that developing countries have received less than 10% of the money promised by developed countries to help them adapt to climate change. The failure is fostering deep distrust between countries and is seriously undermining the current UNFCCC negotiations on a global climate deal. This study examines current and planned expenditure in the UK and other EU member states both on domestic climate change modelling and impact assessments, and in five priority sectors - flood defences and coastal erosion risk management; agriculture; water resources; housing and infrastructure; and transport and communications. While it is clear that money is needed urgently both domestically – look at the recent flooding in Cumbria – and internationally; there is an ever-widening gulf between how much the UK and its EU counterparts are prepared to spend on adaptation domestically compared to the relatively small amounts of money that are currently available for adaptation in developing countries. The implication is that developed countries have double standards – one set of rules applies at home and another to the poorest and most vulnerable countries and communities. In the long term, these double standards are likely to escalate 'adaptation apartheid' unless urgent and significant action is taken i) to apply the same principles and benchmarks to finance provided to developing countries ii) to raise the bar on the level of finance provided to developing countries.

Main Conclusions

"*Adaptation Apartheid*"[1]*:*

- The release of the Climate Change Projections[2] reveals that the UK Government is preparing to adapt to a 4 degrees temperature rise in the UK, whereas developing countries' National Adaptation Plans of Action (NAPAs) are planned, and costs for adaptation measures calculated, on the basis that global average temperature rise will be restricted to 2 degrees.
- Tearfund believes that a 4 degrees rise is too high to avoid catastrophic climate change, and that mitigation efforts must be aimed at keeping global temperature rise as far below 2 degrees as possible. For developing countries adapting to 2 degrees will be difficult and 4 degrees almost impossible.[3] However, adaptation costs should be calculated on the same basis as they are in the developed world or adaptation will be dramatically under-funded in poor countries.
- The scale of both existing and planned investment within the UK and other EU member states far exceeds the level of finance that has been disbursed so far to enable the most vulnerable developing countries to adapt to the immediate impacts of climate change.
- This will accelerate 'adaptation apartheid': this means that the gap between economically rich countries that are able to invest heavily in adaptation and climate infrastructure, and the world's poor who are left to 'sink or swim' will widen.
- Recent analysis identifies the UK as the 12th least vulnerable country to the impact of climate change, and includes seven other EU member states within the top ten least vulnerable countries.[4] This reveals that economically richer and poorer countries are exposed to vastly different levels of risk and vulnerability to climate change.

Policy Recommendations

The UK and other EU member states must:

Fund the immediate needs of the Least Developed Countries

- The needs for action on adaptation are immediate. Adaptation finance should be scaled up to meet the urgent need for adaptation in the most vulnerable communities.
- Annex 1 countries must fulfil the pledges made eight years ago to fully fund the actions addressing the immediate impacts of climate change between now and 2012, as identified in the national adaptation programmes of action (NAPAs). The Copenhagen agreement should include a rapid NAPA implementation initiative, which would provide about US$2 billion for rapid implementation of the most urgent actions identified by the Least Developed Countries in the NAPAs.
- Massively increased and predictable long-term finance for developing countries is also critical.

Ensure additionality of adaptation finance

- Adaptation funding must be new and additional to existing Official Development Assistance (ODA) targets of 0.7 per cent of GDP. With current ODA levels below 0.7% we are starting from a position of development deficit and so adaptation funding must be in addition to this existing ODA target.
- Funding should be delivered as grants, not loans. Total public finance provided by developed countries for adaptation in developing countries should be at least US$50 billion a year by 2013 and US$100 billion by 2020. Funding starting before 2013 must be in addition to the US$2 billion promised for urgent actions in the Least Developed Countries**.**
- There should be a continuous review of the level of finance needed for adaptation in developing countries based on the best available science.
- Support must be predictable, and reliable and reach and support the local communities.

Focus on the poorest and most vulnerable people

- Special attention must be given to the particular needs of the most vulnerable communities in adapting to the unavoidable consequences of climate change.
- Adaptation support should be available for all developing countries, but priority given to the poorest and most vulnerable countries and the poorest communities within these countries.

Support adaptation that builds resilience

- The Copenhagen agreement must include a comprehensive approach to building resilience. A "risk reduction" approach to ensure that underlying risk factors are addressed through climate adaptation (one of the five priorities of the Hyogo Framework for Action). Links need to be made between adaptation and DRR, poverty reduction and national sustainable development plans. The framework should encourage ongoing, systematic dialogue, information exchange and joint working between climate change and disaster reduction bodies, focal points and experts.
- Adaptation should build on existing capacity and experience to increase the resilience of the most vulnerable communities. The adaptation framework should build on and expand existing strategies and mechanisms for disaster risk reduction (DRR), making use of transferable and practical experience in addressing hazards. The adaptation framework should ensure that substantial and additional human and financial resources are available, consistent with the priorities of the Hyogo Framework for Action.

Support integration of adaptation into national development plans

- Support for adaptation should ultimately move from NAPAs and project-based activities towards the strategic integration of adaptation measures into the design and implementation of national development and poverty reduction plans, sectoral policies and strategies.
- Support must be provided to developing countries for the development and implementation of comprehensive longer-term National Adaptation Plans (NAPs). Where appropriate, adaptation must be integrated into national development planning and ultimately into sectoral plans and

strategies. Plans must be developed through inclusive and transparent processes. These must be country-driven processes to define priorities for adaptation funding. There should be a significant role for civil society in planning, implementation and monitoring.
- Strategies for disaster risk reduction, water resource management and food security should all feature highly in national development planning in order to strengthen adaptation and resilience to climatic and economic shocks, and ensure that the concerns of the poorest are met.
- Access to the latest climate change science and knowledge must also be provided to enable developing countries to develop robust adaptation strategies.

Support monitoring and evaluation

- Civil society organizations and community-based institutions can play an important role in both implementation and monitoring of adaptation at the national and local level. They should be involved in an independent, local level monitoring framework as part of an adaptation framework.
- In this context, significant upfront capacity-building support will be vital to enhance the ability of civil society and local poor communities to access, use and monitor adaptation funding.

Introduction

Tearfund is supporting the demands of the most vulnerable countries for urgent adaptation funding to address the current impacts of climate change and for much increased and additional finance for adaptation in the ongoing United Nations climate change negotiations.[5] Adaptation must be a strong and central element of the post-2012 UNFCCC framework.

According to a selection of current estimates on the overall needs, the additional public financial investment required for adaptation to the inevitable impacts of climate change in developing countries is at least US$50 billion a year by 2013 and US$100 billion by 2020.[6] If these costs were to be divided up between Annex 1 countries in proportion to their relative responsibility and capability, then the EU would be required to deliver roughly one third of the finance required for adaptation in developing countries. Oxfam estimates the UK's obligation at 5.3% of the total, or US$2.65 billion (€2 billion) per year of the US$50 billon (€40 billion) by 2013.[7] These costs are expected to increase significantly if efforts for reducing emissions are insufficient. A recent report by leading scientists warns that the real costs of adaptation are likely to be two to three times greater than the estimate of US$50 billion, and adds that costs will be even more when the full range of climate impacts on human activities is considered.[8]

Current climate financing for adaptation in developing countries is totally insufficient. There is a massive shortfall compared to the current estimates of what is required. Recent analysis highlights that developing countries have received less than 10% of the money promised by developed countries to help them adapt to climate change. The failure is fostering deep distrust between countries and is seriously undermining the current UNFCCC negotiations on a global climate deal. Developed countries have together pledged nearly $18 billion (£12.5 billion)[9] in the last seven years, but despite world leaders' rhetoric that the finance is vital, it has been estimated that less than $0.9 billion has been disbursed and long delays are plaguing the current funds (see appendix I).

In direct contrast, developed countries see no reason for delay in taking action at home and are already investing substantial amounts in their domestic adaptation strategies. This is clearly very important, as communities in the UK are at significant risk from extreme weather events, which the recent floods in Cumbria have shown. The main objective for this study is to examine current and planned expenditure on climate change adaptation both in the UK and other EU member states. In doing do, it aims to highlight how much developed countries are prepared to spend on adaptation domestically when compared to the little money currently available for adaptation in developing countries. These stark differences lends support to Tearfund's ongoing climate change advocacy work, as it presses the UK and EU to provide clarity on what support they are willing to give to developing countries – where the poorest are being hit first and hardest - in Copenhagen and beyond.

Climate Modelling & Impact Assessment

The UK and other EU member states have prioritised investment in climate change modelling and impact assessments in order to build a stronger knowledge base. The Stern Review (2006) on the Economics of Climate Change has made an important contribution as it ensured that the projected impacts of climate change and the associated social and economic costs are now widely understood.[10] However, one of the major challenges since its release has been to understand the impact at national, regional and local level given the uncertainty, unpredictability and uneven impacts of climate change. This information is critical if robust measures to adapt to those changes that are now unavoidable and prevent mal-adaptation. This is highlighted in a recent EC paper, which states: "a better understanding of disasters is a prerequisite for developing efficient disaster prevention policies."[1112]

The UK Climate Projections

Back in 1997, the UK government established an independent organization, the UK Climate Impacts Programme (UKCIP); specifically to help public and private sector organizations assess their vulnerabilities to climate change so that they can prepare for its impacts. It also continues to joint fund the Met Office Hadley Centre, which employs over 1500 staff, with approximately 200 working in its climate research unit. More recently, the UK has financed the national Climate Change Projections, which were jointly funded by DEFRA and DECC to highlight the current and future impacts of climate change and guide responses. These investments have established the UK as a world leader on understanding climate change.

The Climate Change Projections, which were launched in June 2009, are the first local-level impact estimates of climate change to be undertaken. The projections reveal that the UK will not be immune from the now unavoidable impacts of climate change. The local-level impact estimates show that we can expect future changes to seasonal rainfall (wetter winters and drier summers); higher temperatures; rising sea levels and coastal erosion. It is also expected that the UK will be susceptible to increased extreme events, such as high winds; heavy prolonged rainfall; flooding; drought and heat waves. Sea levels are also projected to rise by 36 cm, and we could face regular summer heat waves in which temperatures would regularly top 40 degrees Celsius. As in developing countries, the poorest and most vulnerable communities within the UK will be worst affected by climate change impacts, unless they receive significant financial support to enable them to adapt.

These forecasts will provoke massively scaled-up action on adaptation within the UK. On the release of the climate projections, the environment secretary, Hilary Benn, said: "We have invested record levels of funding in recent years but, as the UK climate projections we published yesterday make clear, climate change means all of us will need to do much more in the future to adapt and manage the risks of flooding and erosion." Part of the government's response has been to establish a new adaptations sub-committee charged with providing advice, analysis, information and other assistance on how to protect public non-financial assets of approximately £800 million and avoid the threat to security, health, infrastructure and environment.

It is important to note that the projections are based on the medium emissions scenario from the Inter-governmental Panel on Climate Change's (IPPC) Fourth Assessment Report, and foresee in a 3.9 degrees rise in the South East of England during the summer by 2040. This reveals that the UK Government is preparing to adapt to a 4 degrees temperature increase. This risks accelerating what Desmond Tutu has described as "adaptation apartheid"[13] – while the UK is planning for a 4 degrees rise, the NAPAs were planned and costs for adaptation calculated on the basis that temperature rise would be restricted to a global average temperature rise of no more than 2 degrees. Tearfund believes that a 4 degrees rise is too high to avoid catastrophic climate change, and that mitigation efforts must be aimed at keeping global temperature rise as far below 2 degrees as possible. For developing countries adapting to 2 degrees will be difficult and 4 degrees almost impossible.[14] However, adaptation costs should be calculated on the same basis as they are in the developed world or adaptation will be dramatically under-funded in poor countries.

The European Commission also grasps the importance of climate change information. In April 2009, the EC agreed a policy paper that sets out what Europe should do to adapt to climate change. This was released along with discussion papers on agriculture; water and health; and an impact assessment on adaptation in the EU.[15] The paper proposes an EU-level online 'clearing house' mechanism to help member states share and manage information on climate change impacts, vulnerability and best practice on adaptation. This should be operational by 2011, and is part of a broader strategy to ensure that the EU is "well-placed to facilitate coordination and the exchange of best practice between member states on climate adaptation and has the necessary financial mechanisms to facilitate the adoption of appropriate adaptation measures."

Both the UK Government and Met Office agree the need to facilitate access to the latest climate change science and knowledge, and support developing countries in the development of robust adaptation strategies. It is essential that these commitments are met to avoid a concentration and monopoly of climate change information in the North. Farmers in France, for example, benefit from a meteorological network that invests $388 million annually in climate monitoring and analysis, using some of the worlds most advanced forecasting systems. By contrast, in Ethiopia, where over 90 per cent of people depend on agriculture for their livelihoods, the national meteorological budget for 2005 was round US$2 million. In fact, the French meteorological budget exceeds expenditure on climate monitoring and analysis for the whole of Sub-Saharan Africa.[16]

Integrating Adaptation into National Policies

The UK and other EU member states have harnessed the latest climate knowledge to guide their national adaptation strategies. European countries have generally been the most active with respect to adaptation policy initiatives; a number of national adaptation strategies are currently either being developed or are under revision (see appendix II). There is a breadth of approaches and policy instruments being adopted to prioritize risks, formulate national plans of action, and integrate adaptation considerations into public policy, programs, and financial decisions at various levels of governance. It is clear from preliminary investigation that climate change runs across all of society and the whole of the economy. Thus the adaptation strategies that are already in existence share a common feature: to be most effective, they have sought to integrate climate adaptation programs and policies with day-to-day economic development activities.

The UK's adaptation strategy is a cross-Whitehall initiative, coordinated by DEFRA, which involves a wide number of stakeholders to ensure adaptation is embedded at all levels. Over 100 providers of important public services will be required to report on their assessment of climate risks and their plans to respond to these. Government departments will also be producing adaptation plans by April 2010.

Recent EC policy papers also promote an integrated approach to adaptation. They note that the EC has an important leadership role to play in ensuring that all EU programmes and policies take account of the changing climate. This is particularly important for programmes such as the Common Agricultural Policy (CAP), the European Regional Development Fund, the European Fisheries Fund and the Water Framework Directive. The primary objective of this strategic approach to adaptation is to improve the EU's resilience to deal with the impacts of climate change.

The integrated nature of the UK and other EU Member states' adaptation strategies means that it is difficult to establish concrete cumulative figures for the cost of adaptation measures since most of the finance is embedded in projects. For example, planning policy for flood defense in the UK requires consideration of the water cycle over a 25-year period and also involves looking in an integrated way at flood risk management, water resources, water and wastewater treatment, water efficiency, and harvesting. The challenge is exacerbated by the lack of quantified information on the costs and benefits of adaptation.[17]

Nonetheless, it is clear from the scale of both existing and planned investment that the UK government and other EU members states far exceeds the paltry $0.9 billion that is estimated to have

been disbursed so far to enable the most vulnerable developing countries to adapt to the immediate impacts of climate change. The recent EC paper states that "climate change is one of the priorities for the current financial perspectives (2007-13) and it is important to ensure that the available funds are use to reflect this priority."[18]

These financial inequalities have stark implications, as they are likely to precipitate what has been described above as "adaptation apartheid": the gap between economically rich countries that are able to invest heavily in adaptation and climate infrastructure, and the world's poor who are left to 'sink or swim.' The financial, technological, and human capabilities of developed countries to take action on adaptation dramatically decrease their vulnerability to climate change. Recent analysis identifies the UK as the 12th least vulnerable country to the impacts of climate change[19] Seven EU member states are counted within the top ten least vulnerable countries.[20] This reveals that economically richer and poorer countries are exposed to vastly different levels of risk and vulnerability to climate change

Investment in Key Sectors

A review of a number of national adaptation strategies currently underway or under revision reveals that the UK and other EU member states have either already undertaken or are planning major public investments. These are designed to protect economic and natural assets, and livelihoods, and to ensure all sectors are climate resilient. This paper briefly examines existing and projected spending in five key sectors - flood defences and coastal erosion risk management, agriculture, water resources, housing and infrastructure, and transport and communications – and how these contrast with adaptation measures undertaken in some of the poorest and most vulnerable countries:

Flood Defence and Coastal Erosion

In the UK, flood and coastal erosion risk management (FCERM) is generally more advanced than other sectors. Following the major flooding in the UK in 2007 that cost the economy £3 billion, the Environment Agency's main focus has been on responding to increased flooding. The UK is particularly at risk, as five million people live in areas prone to flooding, and 11% of new homes are built in flood risk areas. Economic assets, including health centres and doctors' surgeries, office, factories, schools and miles of railways and roads are also at risk.

Between 1960 and 2000, the UK spent $3.15bn on flood control, which has averted losses that would have been of the order of $12 billion.[21] It is estimated that a further £20 billion needs to be invested in flood defences in the UK to protect properties over the next 25 years since climate change is likely to bring rising sea levels and more intense rainfall and storms. This is reflected in recent budget allocations. The Environmental Agency's flood defence budget is currently £700 million for 2009-2010 (up from £650 million last year) and is set to rise to £804 million next year. This is more than double what was spent in 2004, indicating its priority status. The Environment Agency has also called for at least $8 billion to be spent on strengthening the Thames Barrier, which prevents London from being flooded by exceptionally high tides.

The UK also spends a great deal of money on flood warning, through investment in infrastructure (rain gauges, river level monitoring stations) and the dissemination of flood warnings. In April 2009, the Environment Agency and Met Office opened a new £10 million Flood Forecasting Centre to provide earlier and more accurate flood warnings.

Other EU member states will have had to take similar precautions. In 2000, the Netherlands released a national policy document, which set a detailed framework for adaptation and proposed a budget of $3 billion for investment to protect against flooding. This included the development of flood-retention areas. The scale of investment on adaptation by member states is set to increase in light of more recent projections. With increased climate change, annual maximum rainfall is projected to rise in most parts in Europe, except for southern Spain and localised regions in several other countries. Therefore, flood risk and its associated economic damages are projected to increase. For the Upper Danube catchment (in Austria, Germany, Switzerland, Slovak Republic and Czech Republic) and the Meuse catchment (in France, Luxembourg, Belgium and the Netherlands), the estimated total damage

of a one in 100-year flood is projected to be in the order of €60-73 billion. Over two million people in nine countries, including residents of Vienna and Liège, would be affected (Feyen et al 2006).[22]

Low-lying, developing countries are at even greater risk from flooding than EU member states since they lack the resources to undertake major public investments. The UK government recognises that the livelihoods of Bangladeshi people are particularly threatened by the flooding of the Asian mega-delta. It has thus pledged £75 million in grants over the next five years to the Bangladesh Climate Change Strategy and Action Plan (BCCSAP, 2009-2018) to enable the country to adapt to the impacts of climate change.[23] The UK also expects the £50 million *Chars* (riverine and coastal areas of Bangladesh) Livelihoods Programme to have reduced the vulnerability of half million poor people to climate shocks by raising homestead and providing assets to 50,000 women-headed households by the end of 2009. While these bilateral commitments are welcome, they provide just a fraction of the estimated £500 million that Bangladesh needs over the next 1-2 years to support immediate action initiatives, such as fortifying coastal embankments and cyclone shelters.

Agriculture

A recent EC paper on agriculture reveals that climate change will affect the volume, quality and stability of food production and the natural environment in which agriculture takes place.[24] Climatic variations will also have consequences for the availability of water resources, pests and diseases and soils, leading to significant changes in the conditions for agriculture and livestock production. The EU's current recommendation for farmers is to examine their soil and tillage practices that help maintain and increase the organic carbon in soils. Organic farming is believed to be more resilient to climate change because of its efficient nutrient cycles and soil management, and tendency to promote higher biodiversity. This may explain why the UK disbursed £1.6 billion in subsidies to organic farmers between 1999 and 2005.

Short term technical solutions are also recommended, which include protecting orchards from frost damage, improving cooling systems in animal shelters, and changing planting dates and crop variety selection for better adaptation to growing seasonal lengths. However, it is clear that, over the next decades, adaptation will need to go beyond mere adjustments of current practice. For example, vulnerable areas could be identified at national level, and irrigation plans developed. There also needs to be even greater support for farming research and experimental production. While the costs of such measures have not yet been estimated, the recent EU paper states that: "Financial support to adaptation needs to be envisaged because some of the measures for adjusting to new climatic conditions are likely to be costly and need investments, which are unaffordable to farmers."[25] The EC plans to ensure that national strategies and rural programmes for 2007-13 encourage additional funding for climate change adaptation.

Meanwhile, farmers in the developing world have received minimal funding to support them undertake adaptation measures that are crucial for building their resilience and reducing their vulnerability to food crises. Several agriculture initiatives have been identified in the NAPAs as requiring funding, but so far the funds have not been forthcoming. Therefore, many communities remain reliant on traditional cultivation technology and using rice varieties that cope with reduced water. In Bangladesh, women are also resorting to building 'floating gardens' on which to grown vegetables in flood-prone areas. While these small-scale initiatives may have enabled communities to adapt to some of the immediate impacts of climate change, they are unlikely to safeguard communities as more frequent and intense flooding with climate change. Instead, developing countries will require substantial financial support to integrate adaptation into national development planning and ultimately into sectoral plans and strategies. Strategies for food security, along with disaster risk reduction and water resource management, will need to feature highly in national development planning in order to strengthen adaptation and resilience to climatic and economic shocks, and ensure that the concerns of the poorest are met.

Water Resources

The release of the UK Climate Projections was welcomed by water providers, which said the results would help the company plan key infrastructure, such as reservoirs. Infrastructure investments are invariably costly. For example, the South East Water submitted plans in February 2008 to build a new reservoir in Clay Hill, East Sussex, for a cost of £150 million. This is intended to overcome shortfall of water for the southeast from droughts and potential restrictions on abstraction from underground aquifers.

In Spain, the government is currently following a controversial programme of building desalinisation plants in attempt to provide a long-term solution to Spain's endemic water shortage. Spain already has 950 desalination plants which produce 2 million cubic metres of water a day, enough to supply 10 million people. They have built 6 so far and plan a further 18. In summer 2008, nearly 23 million litres of drinking water - enough for 180,000 people for a day - were delivered each day as part of an emergency plan to help this parched corner of Spain. At a cost of €22 million (£17.5 million), six shiploads arrived each month for three months, from Tarragona in southern Catalonia, Marseille and Almeria - one of the driest areas of southern Spain.

These figures contrast starkly with those from Niger, which has only received $0.2 billion in funding towards implementing the most urgent adaptation measures, as identified in the NAPA. Niger is one of the poorest countries in the world, ranking 174th of 177 countries on the UN's Human Development Index. Climate change also threatens to undermine its rural development objectives, as pastoral communities are exposed to water crises with increasing regularity. Niger is thus in urgent need of financial and technical support to enable it to undertake a series of immediate measures. These include improving water capture and storage with ponds and shallow wells, and increasing the use of stone dykes to enhance opportunities for crop and tree production. The current lack of support has forced communities to adapt to changing climate as far as is possible without external help. The undertaking of traditional strategies designed to cope with climate variability has puts increased pressure on resources and is likely to force communities to migrate in large numbers to towns. [26] Niger therefore urgently requires massively scaled-up, additional adaptation finance to strengthen local adaptive capacity by supporting localised water resource approaches and by exploring options for replicating them at scale. This will also need to be replicated throughout the developing world, as it has been estimated that by 2025 the proportion of the world population living in significantly water-stressed countries will increase from 34 per cent (1995) to 63 per cent – some 6 billion people.[27]

Housing and Infrastructure

With a lifespan of 80-100 years, infrastructure such as building, ports and bridges will have to take into account the impacts of climate change. The costs of 'climate proofing' these investments are likely to be considerable. The Organisation for Economic Cooperation and Development (OECD) member countries, including the UK and other EU member states, spend $1.5 trillion annually in construction of new buildings and infrastructure. The additional cost of making new infrastructure and buildings resilient to climate changes could be US$15-150 billion each year (0.05-0.5 % GDP). Retrofitting the built environment is much more expensive or even prohibitive given the disruption to ongoing business.

The EU states that protecting existing and future infrastructure from the impacts of climate change will be predominately a member state responsibility. However, it has assumed responsibility for providing significant levels of infrastructure funding and setting standards for construction. EC has committed to ensuring that all EU-funded infrastructure projects are climate-proofed, and exploring the possibility of making climate impact assessment a mandatory condition for funding. The recently adopted European Economic Recovery Plan (EERP) contains a number of actions relating to climate change investments, which includes the modernisation of European infrastructure.

In Bangladesh, communities are forced to respond to the risk of flooding by raising their homes above floods levels by placing them on stilts or embankments. As mentioned above, the UK government has invested $50 million in raising the homesteads of women-headed households. This is just a small

proportion of the estimated £500 million that Bangladesh needs over the next 1-2 years to support immediate action initiatives, which include efforts to protect housing and infrastructure.

Transport and Communications

In the UK, recent hot summers have seen commuters endure soaring temperatures, which carry significant health implications. The exceptionally warm and dry European summer of 2003 was responsible for 35,000 extra deaths across Europe as a result of heat stress, bad air quality and high levels of air pollutants such as ozone. With increasing climate change, summer ozone levels in the average year are projected to be similar to those found during the summer of 2003, with the largest increase projected to occur over England, Belgium, Germany and France. In response, the UK unveiled the first 'tube' train with air conditioning as part of a £3.1 billion upgrade on the Underground network. London Underground has ordered 191 of the new seven and eight-carriage trains at a total cost of £1.6 billion.

Conversely, the Bangladeshi government estimates in its' national adaptation plan that raising a 800 kilometre network of roads by between 0.5 and 1 metre to counter sea level rise will cost just $125 million. The Cambodian government calls for just $11 million to construct water gates and culverts for rehabilitated road networks developed without factoring in the extreme risk of flooding. Despite Annex 1 countries agreeing eight years ago to fully fund the actions addressing the immediate impacts of climate change between now and 2012, as identified in the NAPAs, neither of these infrastructure projects has as yet received funding.

Conclusion

This study has demonstrated that there is need to respond urgently to the effects of climate change both domestically and internationally. There is currently a gulf between how much the UK and its EU counterparts are prepared to spend on adaptation domestically and the little money is currently available for adaptation in developing countries. Estimates for adaptation in developing countries are in the order of billions per annum, while currently available funds are only in millions of magnitude. This is clearly inadequate. The implication is that developed countries have double standards – one set of rules applies at home and another to the poorest and most vulnerable countries and communities. In the long term, these double standards are likely to escalate 'adaptation apartheid' unless urgent and significant action is taken i) to apply the same principles and benchmarks to overseas investments and ii) to raise the bar on the level of finance provided to developing countries.

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[1] Desmond Tutu, as quoted in the United Nations World Development Report (2006).

[2] The Climate Change Projections were launched in June 2009, and are the first local-level impact estimates of climate change to be undertaken.

[3] R. Weaver (2009), What the world is waiting for: action on adaptation (Tearfund), p. 7

[4] Maplecroft (2009), Climate Risk Report: Country-by-Country Risk Analysis and Mapping

[5] Tearfund is also calling upon developed countries to provide overall measurable, reportable and verifiable (MRV) finance of, at the very least, US$100 billion a year from 2013 onwards in additional public financing to developing countries to support their mitigation actions. This money is in addition to the public funding of at least US$50 billion a year by 2013 and US$100 billion by 2020, which is needed for adaptation in developing countries.

[6] Source for 65 billion Euros ($86 billion) – UNDP (2007) *Human Development Report*

[7] Source for 40 billion Euros ($50 billion) – Oxfam (2007) *Adapting to climate change: what's needed in poor countries, and who should pay.*

[8] M. Parry et al (2009) Assessing the costs of adaptation to climate change: A critique of the UNFCCC estimates (IIED)

[9] This figure includes funding pledged to three sources – UN Climate Funds (includes the Global Environment Facility, Least Developed Country Fund etc.), World Bank Climate Investment Funds (Pilot Project for Climate Resilience) and bilateral agreements between individual countries.

[10] The Stern Review of the Economics of Climate Change (2006) showed that the impact of uncontrolled climate change would be like losing up to 20 percent of world GDP now and forever in the future. It concluded that doing nothing is likely to be much more expensive than de-carbonizing the economy. The Stern Review was based upon the science available up to 2005. Recent evidence about sea level rises, changes in water supply, and the social costs of climate change, has suggested the impacts of unrestrained climate change would be higher than 20 percent of GDP

[11] European Commission Strategy (2009) White Paper: Adapting to climate change: Towards a European framework for action, p. 4

[12] European Commission (2009), A Community Approach on the Prevention of Natural and Man-made Disasters.

[13] UNDP (2007), Human Development Report, p. 166

[14] R. Weaver (2009), What the world is waiting for: action on adaptation (Tearfund), p. 7

[15] These papers build upon results of previous studies. For instance, the EU released a green paper in June 2007, which examined adaptation options in the EU, and emphasized the need to develop a coherent policy response to reduce costs and enable complementary actions based on joint partnerships (EC, 2007b). The green paper built on the results of the *European Climate Change Programme II: Impacts and Adaptation* (EC, 2007a), which had a mandate to explore the scope of a strategy to guide policy in the adaptation to and impacts of unavoidable climate change and to identify how best to assist local, regional, and national efforts.

[16] UNDP (2007), Human Development Report, p. 174.

[17] A number of economic analyses are underway, but are not currently available. DEFRA is undertaking Climate Change Risk Assessments (which incorporates economic analysis) for the UK, which must be laid in Parliament by 26th January 2012. The EC also aims to develop detailed cost estimates by 2011 for relevant policy areas so that they can be taken into account in future financial decisions.

[18] European Commission Strategy (2009) White Paper: Adapting to climate change: Towards a European framework for action, p. 11

[19] Maplecroft (2009), Climate Risk Report: Country-by-Country Risk Analysis and Mapping

[20] These countries are Ireland, Norway, Denmark, Sweden, Finland, France and Switzerland.

[21] Llewellyn, J, (2007) The Business of Climate Change -Challenges and Opportunities (Lehman Brothers)

[22] WWF (2008), Climate Change: Faster, Stronger, Sooner – A European Update of Climate Science.

[23] The UK is one of the biggest contributors to the Bangladesh trust fund, with other European countries such as Denmark and the Netherlands, as well as the World Bank, also expected to contribute.

[24] European Commission (2009) Adapting to Climate Change: the Challenge for European Agriculture and Rural Areas, p.2

[25] Ibid. p. 7

[26] M. Hedger and J. Cacouris (2008) *Separate streams? Adapting water resources to climate change* (Tearfund), p. 2

[27] Simms, A. et al (2004), *Up in Smoke? Threats from, and responses to, the impact of global warming on human development,* International Institute for Environment and Development (IIED), London

Appendix I: Climate Change Funds

Type	Name and link	Administered by	Areas of focus	Total Funds pledged to date (US$ millions)	Total funds disbursed to date (US$ millions)
Multilateral	Adaptation Fund	Adaptation Fund Board	Adaptation	$0	$0.0
Multilateral	GEF Trust Fund - Climate Change focal area	The Global Environment Facility (GEF)	Adaptation, Mitigation - general		($2,388.7 total)
Multilateral	Least Developed Countries Fund	The Global Environment Facility (GEF)	Adaptation	$172	$47.5
Multilateral	MDG Achievement Fund – Environment and Climate Change thematic window	UNDP	Adaptation, Mitigation - general	$528	($85.5 total)
Multilateral	Pilot Program for Climate Resilience	The World Bank	Adaptation	$204	$0.0
Multilateral	Special Climate Change Fund	The Global Environment Facility (GEF)	Adaptation	$106.5	$59.8
Multilateral	Strategic Climate Fund	The World Bank	Adaptation, Mitigation - general, Mitigation - REDD	$1,600	$0.0
Multilateral	Strategic Priority on Adaptation	The Global Environment Facility (GEF)	Adaptation	$50.0	$50.0
Bilateral	Global Climate Change Alliance	The European Commission	Adaptation, Mitigation - general, Mitigation - REDD	$64	$0.0

(Source: Adapted from climatefundsupdate.org)

Appendix II: National Adaptation Strategies (under preparation or adopted, based on EEA (2008). Note that England is currently the only part of the United Kingdom with a formally adopted strategy.

European countries in which a formal National Adaptation Strategy has been adopted	**Year in which the strategy was adopted**
Finland	2004
France	2006
Spain	2006
Denmark	2008
Hungary	2008
Netherlands	2008
United Kingdom	2008
Germany	2008
European countries in which governments are preparing a strategy or in which preparatory work has been undertaken	**Year in which a strategy is expected**
Austria	n.a.
Belgium	2012
Czech Republic	2009
Estonia	2009
Ireland	n.a
Latvia	2009
Norway	n.a.
Portugal	n.a.
Sweden	n.a.
Romania	2008

Source: PEER (2009), Europe Adapts to Climate Change: Comparing National Adaptation Strategies.