International Policy Dialogue - Financing the Climate Agenda: The Development Perspective, Berlin, 19th - 20th March 2009

Financing the climate agenda: the development perspective

Background paper

Bonn
March 2009

Prepared for the conference by Imme Scholz (DIE-GDI) and Laura Schmidt (BMZ)

1 Climate change and development: the challenge

Climate change has turned into a key challenge for human development. Addressing this challenge requires, first, a decoupling of economic growth from greenhouse gas emissions and, second, making development resilient against the impacts of climate change. The climate and the development agendas are thus inextricably linked and intertwined: While climate change has the potential to impede and even reverse progress in poverty reduction, economic growth in a business-as-usual scenario will further undermine the biophysical basis of human life on earth. Emissions of greenhouse gases, such as carbon dioxide, methane and nitrous oxide, are the result of socio-economic development characterised by industrialisation, population growth, intensive agriculture and increased reliance on modern technology. Efforts must be made to ensure a more sustainable path towards socio-economic development. At the same time, advances in socio-economic development potentially improve the ability of governments and people to introduce low-carbon innovations as well as to prepare for or cope with the impacts of climate change.

Climate change occurs in a world characterised by profound welfare disparities, both between and within countries. Despite large differences in emission patterns between industrialized countries, it is possible to relate high emissions per capita to high levels of socio-economic development. Historically, the accumulation of large stocks of physical capital has gone and is going hand in hand with the burning of fossil fuels and corresponding CO_2 emissions. At the same time, impacts of climate change will also be unevenly distributed. Climate models show that the poor countries in the tropics and the sub-tropics will be especially affected by global warming and its effects, such as sea level rise, changed precipitation patterns, water scarcity, and a higher frequency and intensity of extreme weather events. Vulnerability to climate change is probably highest in countries with low levels of human development, such as LDCs, and in countries with a high sensitivity to climate-induced changes in their natural environments, such as small island states and countries with large low-lying coastal areas.

Effective global climate policies therefore not only need to take into consideration development concerns, but also issues of equity and fairness with regard to global burden sharing in mitigation and adaptation. These fundamental linkages between climate change and development need to be adequately reflected in the post-2012 climate agreement to be negotiated until the end of 2009. Six areas need to be covered by international climate policy:

- Global objectives: In order to maintain the impacts of climate change within a manageable range, there is wide scientific consensus that the average global temperature increase needs to be limited to 2°C above pre-industrial levels. The EU has embraced this objective.
- Emissions reductions by developed countries: In order to achieve the 2°C objective, global greenhouse gas emissions must be reduced to less than 50% of 1990 levels by 2050. Emissions from fossil fuel burning will have to peak by 2020. Developed countries will have to lead in this process and show that a low-carbon economy is possible. According to the IPCC (IPCC 2007a), this requires emission reduction targets in the range of 25-40% by 2020 and 80-95% by 2050.
- Emission reductions by developing countries, particularly by the economically more advanced: The International Energy Agency estimated in 2007 that until 2030, more than half of energy demand growth and thus of additional greenhouse gas emissions will come from developing countries, particularly from China and India (IEA 2007). The current financial crisis and looming economic recession will decelerate this process, but they will not change this trend. Therefore, it will be necessary that developing countries as a group limit the rise in their emissions to 15-30% below business as usual by 2020, with appropriate support from developed countries. This estimate excludes emission reductions that result in the transfer of carbon credits to developed countries (European Commission 2009).

- Reduce emissions from deforestation and forest degradation: At present, about 17% of global greenhouse gas emissions come from deforestation, which occurs to 95% in tropical countries. Reducing emissions from this source, with appropriate support from developed countries, therefore will be an important contribution from developing countries to achieving the 2°C target. By 2020, gross tropical deforestation should be reduced by at least 50% compared to current levels. By 2030, global deforestation should be stopped (European Commission 2009).
- Adaptation to climate change: Developing countries, especially LDCs and small island states, need to be effectively supported in adapting to the impacts of climate change.
- Supporting low-carbon development and adaptation in developing countries: In order to reach the goals mentioned above, agreement is needed on the volume, institutional settings and instruments for the transfer of technology and financial resources from developed to developing countries. Establishing a global carbon market will be an important element here but it will not cover all areas of a comprehensive approach to the climate and development interface.

Vulnerability to climate change is reduced by development aimed at improving the living conditions and access to resources of those experiencing the impacts, as this will enhance their capacity to adapt and mitigate. Such capacity is often limited by a lack of resources, poor institutions and inadequate infrastructure, amongst other factors. International development cooperation already makes important contributions to meeting the challenges at the interface of climate change and development, in the context of sustainable development. ODA expenditures for renewable energy technologies and energy efficiency programmes as well as in areas with the potential to improve climate resilience currently outweigh the investment channelled through the Global Environmental Facility and other funds under the UNFCCC. New multilateral, regional and bilateral funds administered by development agencies, e.g. the Climate Investment Fund of the World Bank, are important sources for financing mitigation and adaptation policies and programmes (Porter et al. 2008). In conceptual terms, development agencies are working on assisting governments to channel development policies into the direction of a low-carbon economy while at the same time reducing the adverse socio-economic impacts of climate change.

After this short introduction into the challenges at the interface of climate change and development, the remainder of this background paper will focus on mitigation and adaptation options in developing countries and how international cooperation can assist them (sections 1.1 and 1.2), then discuss financing low-carbon and climate-resilient development (chapter 2). In the final section, key questions will be posed for the institutions and instruments needed in a post-2012 climate change regime which integrates climate change and development finance in the most effective and efficient way (chapter 3).

1.1 Mitigation and development

In its last assessment report, the IPCC states that effective climate policy would involve a portfolio of mitigation and adaptation actions. These actions include (i) technological, institutional and behavioural options, (ii) the introduction of economic and policy instruments to encourage the use of these options, and (iii) research and development to reduce uncertainty and to enhance the options' effectiveness and efficiency. There are important differences between adaptation and mitigation. For example, most adaptation is motivated by the self-interest of affected individuals, households and firms, and by public arrangements of impacted communities and sectors, whilst mitigation is primarily justified by international agreements reflecting collective concern, and ensuing national public policies.

Which are the main options for mitigation action? Developing countries, especially those with relatively advanced economies and high dynamic growth rates, will increasingly adopt national mitigation strategies, as has already been done by governments in China, India, Brazil and South Africa. These strategies will identify the most important sources of greenhouse gas emissions and the most efficient options for reducing them. Important selection criteria for these op-

tions will be their cost-efficiency (in order to avoid negative effects on economic growth); their environmental integrity or effectiveness (in order to achieve the 2°C target and avoid adverse environmental effects in other areas, e.g. biodiversity) and their distributive effects (in order to avoid negative social effects). Another function of these strategies will be to identify the incremental costs in implementing them which cannot be sustained from domestic sources and which will require international support.

The overall challenge is to develop "an economic growth paradigm that decouples the growth in carbon emissions from the growth in capital stocks … (in order to) overcome the tragic choice between economic growth at the expense of dangerous climate change on the one hand, and climate protection sacrificing economic growth on the other" (Edenhofer et al. 2008:3). In other words: The improvement of human welfare and the corresponding increase in energy demand need to be made independent from the burning of fossil fuels. Mitigation options exist and need to be pursued through adequate incentives and regulations in seven major areas, i.e. energy supply, transport, buildings, industry, agriculture, forestry and waste management.

Greenhouse gas emissions are most significant from energy and land use change. In the short-term, mitigation action must focus here. In the next decades, further areas will require action, including transport, mobility and urbanisation. Reducing emissions in these areas will certainly require the exploration of technological alternatives. But changes in consumption patterns and ways of life of the wealthier parts of the global population (e.g. switching from individual to public transport) will also play an important role.

What role can ODA play with regard to the structural changes needed in the energy, forest and agricultural sectors in developing countries? During the last decade, large amounts of financial and technical resources have been invested in promoting energy efficiency and renewable energy technologies in developing countries, especially in the large dynamic economies. For this purpose, countries have reformed their energy policies and renewed their energy infrastructure. Cooperation with the private sector has been sought in order to promote energy-efficient technologies and production processes. With regard to the forest sector, international cooperation can look back on at least two decades of experience with the promotion of sustainable forestry and efforts to halt deforestation. In the coming years, knowledge will be created and more experience accumulated in how other sectors of society, e.g. agriculture, transport and cities, may change in order to contribute to low-carbon development and how these changes can be achieved in an equitable way, both within and between countries. International cooperation can assist in catalysing institutional, economic and technological change in the transformation towards a low-carbon economy. Experience already made in this area is extremely valuable for the design of instruments under a post-2012 climate agreement with the aim of supporting mitigation action and corresponding technology transfer in developing countries at a larger scale.

1.2 Adaptation and development

Global warming will profoundly change the conditions for human development in many areas of the world. Particularly developing countries will be strongly affected by climate change, through rises in temperature, changes in precipitation patterns, and an increased frequency and intensity of extreme weather events, such as droughts, floods, and storms. If no preventative adaptation measures are taken, the reduced availability of freshwater could have strong economic and social impacts, due to greater constraints for agriculture, the energy sector, tourism, new health threats and reduced food security. Sea levels will rise due to melting ice shields and glaciers and ocean warming. This endangers coastal zones and large estuaries and will severely affect the livelihoods of millions of persons living there (Parry et al. 2007). The more developed countries (and large emitters from the South) fail to implement measures which allow to limit global average warming to 2°C, the more likely it is that strong demands for an international compensation and liability regime will emerge (IPCC 2007a).

Adaptation requires a set of approaches which can be ordered along a continuum between vulnerability reduction and directly addressing impacts of climate change (McGray et al. 2007): (1) approaches which directly address the impacts of climate change, such as building dikes; (2) approaches to manage risks associated with climate change, such as disaster risk reduction systems; (3) approaches for building response capacity in public administration, science, the private sector, in local communities; and (4) approaches to address the general drivers of vulnerability, i.e. income poverty, insecure land tenure rights, or discriminatory gender roles.

To sustainably increase adaptive capacities in developing countries, the addressing of the drivers of their vulnerability is decisive. Vulnerability results from interactions between socio-economic conditions and institutional arrangements. In poor countries, vulnerability is often linked to poverty, as the poor are as a rule more dependent of direct use of natural resources for their livelihood and have weaker safety nets for dealing with the economic damages associated with natural hazards (Levina/ Tirpak 2006; O'Brien et al. 2004). The Human Development Report 2007/2008 identified five fundamental areas where climate change could first impede and then reverse progress in human development: agricultural production and food security; water scarcity and reduced water availability; sea level rise and extreme weather events; changes in ecosystems and loss of biodiversity; new dangers for human health. The analysis is based on the concept of negative feedback loops due to low human development levels which reduce the capacity of poor households to cope with climate risks and lead to further erosion of their scarce assets.

Climate change has to be seen as a new factor which governments have to integrate into development planning in general. In the coming years and decades, adaptation to climate change will turn into an essential part of strategies for poverty eradication, and of international cooperation. The agenda of the development community will be profoundly changed (UNDP 2007): poverty reduction will require striking a new balance between the promotion of economic growth and the implementation of pro-poor adaptation strategies targeting the most vulnerable population groups. Policies in many sectors in developing countries will have to be conceived so as to function under much more uncertain climatic conditions in the future.

The provision of knowledge is thus crucial for adaptation: This global public good includes accessible information about current and future climate variability and change and their likely impacts, knowledge on technical levers for adaptation as well as on policy changes required for applying them. Research is needed in all of these areas, and international cooperation for scientific capacity development needs to be strengthened.

While some specific stand-alone measures will be needed in reaction to discrete impacts of climate change, the comprehensive and cross-cutting nature of most climatic impacts will require mainstreaming approaches. Development cooperation by definition addresses vulnerability, but will also need to more proactively incorporate risk management and building responsive capacity if it wants to assist development progress to be defended against the risks and impacts of climate change. Furthermore, it is crucial to support long-term learning processes in public administration and society, as well as to make use of scientific knowledge on climate change in private and public economic decision-making. Managing risks may also require the establishment of insurance schemes against losses due to extreme weather events at different levels to increase buffer capacity of smallholders as well as of national or provincial budgets.

2 Financing low-carbon and climate-resilient development

2.1 Financial needs in developing countries

Low-carbon development

The European Commission states in its Communication of January 28, 2009 (COM(2009) 39/3) that investments to reduce global emissions will rise annually and cites figures indicating that

"the net global incremental investments (will be) in the order of € 175 billion by 2020. It is estimated that more than half will have to be invested in developing countries, including the forestry sector" (European Commission 2009, p. 7). McKinsey calculated that developing countries require an average of € 115 billion per annum in incremental capital expenditure, and € 35 billion in financing flows per annum if their potential of reducing 12 Gt CO_2e is to be fully used (McKinsey 2009). The UNFCCC secretariat estimated that by 2030, USD 100 billion will need to be spent annually in developing countries for emission reductions.

The widespread and rapid diffusion of existing low-carbon technologies and massive investment in developing new technologies will be needed in order to reach the ambitious emissions reductions mentioned in the introduction to this paper (Stern 2008: 30). Carbon trading systems will constitute an important incentive for technology diffusion, but they need to be underpinned by pro-active policies such as energy efficiency standards across sectors, guidelines for public procurement and sector benchmarking (as in the new rules for the European ETS) in order to give loud, persistent and legal signals to economic actors. The development of near commercial technologies such as CCS (carbon capture and storage), solar and second generation biofuels needs to receive massive investment, through private-public cooperation in developed and developing countries, and through mechanisms for assisting developing countries with technology diffusion and adoption. Finally, it will be necessary to invest in the development of new breakthrough technologies; this requires a longer time horizon than the other measures mentioned before.

In order to promote this technology package, three areas need global coordinated action, ideally also under the post-2012 climate agreement: globally coordinated standards, coordinated public funding for R&D and the deployment of new technologies, and targeted concessional finance for developing countries on the basis of specific programmes and targets, e.g. in specific energy-intensive sectors.

How much of this investment should be covered by domestic sources and how much by international transfers? The European Commission considers that until 2020, most of the energy efficiency measures in developing countries should be financed from the private sector and households, i.e. from domestic sources, as they have low incremental costs or even generate a net benefit in the mid-term. Public policies would be needed, though, in order to leverage this finance. The incremental costs of mitigation action that goes beyond that, however, should receive support from "the full range of sources and innovative financing mechanisms, including public funds and international carbon crediting mechanisms. It is estimated that these crediting mechanisms can provide one third or more of the additional investments in developing countries" (European Commission 2009: 8). Based on the financial need as cited by the European Commission, this would amount to at least € 30 billion annually by 2020. For comparison: The Human Development Report 2007/2008 proposed that developed countries should support low-carbon energy investments in developing countries with USD 25-50 billion annually.

Climate-resilient development

Global funding requirements for adaptation to climate change in developing countries are usually based on rough top-down cost estimations. In an analysis of the climate-sensitivity of its portfolio, the World Bank assumed that an additional 5 to 20 % in resources will be needed to adapt it to climate change. The Bank thus estimated that development costs will increase by USD 10 to 40 billion per year. The UNFCCC estimates that adaptation costs in all developing countries could range between € 23-54 billion per year in 2030. For the water supply infrastructure, for example, an additional investment of USD 11 billion will be needed, 85 % thereof in developing countries. Scaling up estimates of adaptation costs in National Action Plans of Adaptation (NAPA) under the UNFCCC, Oxfam calculates adaptation costs of more than USD 50 billion per year. This calculation is based on 13 NAPAs only and just considers urgent and priority activities on adaptation in least developed countries. The Human Development Report 2007/2008 estimated that USD 88 billion would be needed annually, half of it for climate-

proofing development investment and the other half for financing additional adaptation measures. McKinsey estimates that an additional € 5-15 billion will be needed on average per year between 2010 and 2020 for adaptation measures in the most vulnerable developing countries (McKinsey 2009).

As in mitigation, adaptation funding will also come from both public and private sources. But for equity reasons – as indicated in the previous chapter – the need for public policy interventions will be large and require both transfers within countries as between countries, in order to support the most vulnerable and the poor.

2.2 Sources of finance for developing countries

The creation of a global carbon market is paramount for achieving the necessary structural economic change towards sustainable GHG emissions, complemented by other policies such as regulation, standards and taxation. The Stern team at the London School of Economics argues in favour of an international cap-and-trade system for three reasons:

- effectiveness, as it would be based on absolute limits of emissions,
- efficiency, as it would reduce the costs of action and
- equity, as it would generate private sector financial flows to developing countries which could be used for low-carbon development. In 2020, around USD 20-75 billion could be transferred per year, and in 2030, around USD 50-100 billion (Stern 2008: 18).

Such a global trading system would ideally be developed on the basis of globally agreed reduction targets for developed countries; after 2020, developing countries should also participate on the basis of binding national targets for emissions reductions. Depending on the evolution of the economy after the financial crisis and the expected recession in 2009 and after, some major dynamic developing countries may need to take over targets for specific energy-intensive economic sectors as soon as 2013.

Contrary to mitigation measures, the cost of adaptation to the impacts of climate change will have to be borne to a larger extent by public sources. Integrating climate change into the sustainable achievement of the Millennium Development Goals will make this objective more difficult and more costly. At the same time, as has been explained before, investment in human development will become all the more important as it is fundamental for reducing the drivers of vulnerability to climate change. Seen from this perspective, the developed countries current 0.7% target for ODA by 2015 will be insufficient, and might have to be upscaled in the near future.

There are several arenas where new sources of international public finance are being discussed. Under the UNFCCC, China, Mexico and Norway made proposals for financing mitigation and/or adaptation needs in developing countries. China quantified the demand that developed countries financially support mitigation, adaptation and technology transfer with transfers of 0.5% of their GDP, leaving the source of finance open. By contrast, Mexico and Norway tied their proposals to the emerging global carbon market, i.e. by focusing on auctioning revenues or by proposing to set aside a certain share of assigned amount units (AAUs) from national emission budgets and have them auctioned by an international institution. Switzerland proposed to introduce a global uniform carbon tax in order to help closing the gap in financing adaptation costs.

Other proposals emerged from national or regional laws introducing emission trading schemes. In December 2008, the EU adopted its new rules on emissions trading. Future revenue from auctioning emission allowances will go to member states national budgets, and it is suggested that member states consider to use 50% of auctioning revenues for climate change related activities in the EU and abroad. In Germany, in 2009 € 225 million of revenues are already being used for cooperation with developing countries. In the US, the Lieberman-Warner Climate Security Act of 2008 proposed to establish a programme for financing adaptation measures in devel-

oping countries, and to finance it with a certain share of the annual national emission allowances, to be auctioned by the Environmental Protection Agency. In 2012, this share would be 1%, rising gradually to 7% in 2050. Finally, there are proposals discussed in international organisations, such as the International Maritime Organisation (IMO) or the Leading Group on Solidarity Levies to Fund International Development. The first proposes a levy on international maritime emissions, and the second a levy on international air tickets.

Possible new sources of public finance for developing countries

Proponent	Proposal and Source	Mitigation (estimated, per year)	Adaptation (estimated, per year)
China[a]	0.5% GDP fiscal commitment of developed countries for mitigation and adaptation (source is left open)	USD 139 billion	USD 46 billion
Mexico	Multinational Climate Change Fund (fiscal commitment or auctioning revenue; adaptation levy on disbursements)	USD 95 billion	USD 200 – 1,920 million
Norway	International auctioning of some AAUs		USD 14 billion
Switzerland	Global carbon Tax (USD 2/tCO_2)		USD 14 billion
EU[a]	Up to 50 % of auctioning revenue generated by European Emissions Trading System	USD 40 billion	USD 20 billion
USA	International Climate Change Adaptation and National Security Fund (auctioning revenue)		USD 1 – 6 billion
IMO	International Maritime Emissions Reduction Scheme		USD 4 – 15 billion
	International Air Travel Adaptation Levy		USD 4 – 10 billion
a: This distribution of revenue between mitigation and adaptation is not part of the original proposal. Figures are based on Müller (2008).			

3 Institutions and instruments for a post-2012 climate change regime

What instruments are most effective?

As has been repeatedly stated in this paper, development and climate protection are inextricably linked, both with regard to objectives as to programmes and measures. Climate policy-related measures in developing countries will be most effective and cost-efficient when they are integrated into a country's general development strategy, rather than implemented in isolation. In future, development strategies must include a long-term vision outlining the transformation towards a climate-friendly and –resilient economy and society. International support must be available for both the formulation and implementation of these strategies.

Investments for reducing emissions will have to be generated primarily by the private sector, also in developing countries. Therefore, developed countries should support them in creating enabling environments for low-carbon investment, through appropriate legal framework conditions and economic incentives, setting efficiency standards and promoting renewable energies. Technical assistance is an appropriate instrument here. Public funds from developed countries could also be used for covering the incremental costs of innovative low-carbon technologies and

for ensuring their economic viability, as well as for creating enabling environments for technology transfer and in the assessment of technology needs and options.

Reducing emissions from deforestation and forest degradation (REDD) is an urgent priority. In the mid-term, by 2020, REDD could be financed through the carbon market, but this would require a robust monitoring system and ambitious reduction targets by developed countries. Until then, developed countries should support institutional development and the elaboration of REDD strategies in developing countries through upscaled funding (e.g. the FCPF or UN REDD), complemented by bilateral support where appropriate.

Programme-based approaches, and in particular budget support, are playing an increasing role for channelling ODA into developing countries, in order to reduce transaction costs and streamline international support to country-driven policies. The same effects could be mobilised when using programme-based approaches and particularly budget support as instruments for climate funding. The need to transfer large amounts of money cannot be met by a project-by-project-based approach alone which is largely current practice. Yet, a number of challenges will need to be addressed to adjust programme-based approaches and in particular budget support to new funding criteria, such as the development of a climate-specific progress assessment framework. This is scientifically challenging and there is little practical experience as of yet.

What financial architecture do we need?

At present, both bilateral and multilateral development agencies make a significant contribution to climate change finance, and they are accumulating a lot of knowledge with regard to institutional reform, specific instruments and technical levers. This means that it would be wise to foresee a strong role for existing instruments, procedures and institutions of development policy and cooperation in the financial architecture which will be designed in Copenhagen at the end of this year.

There are, at the same time, proposals for creating one comprehensive new mechanism for financing mitigation and adaptation in developing countries, as e.g. the Chinese and the Mexican proposals mentioned before. A separate mechanism would facilitate transparency on the volume of funds actually transferred. If it really were one encompassing mechanism, it could also help to reduce the transaction costs associated today with the multiplicity of actors and rules engaged in development cooperation.

Development agencies fear that the creation of new and heavy financial instruments under the Copenhagen agreement could permanently increase the number of actors and thus counteract the principles of aid effectiveness, which call for a reduction of actors. Also, new institutions might repeat the mistakes which development cooperation has already acknowledged and is trying to overcome with the Paris/Accra agenda.

New sources of finance will certainly have to be found in order to cover costs of mitigation and adaptation. But do new sources inevitably require new mechanisms or institutions for their delivery? Effective and efficient mitigative and adaptive measures require that they be integrated in national and sectoral development policies and strategies. Therefore, financial flows also need to be integrated, at least at the point of delivery in developing countries. If financial flows under the new agreement are not directly, institutionally integrated with ODA flows, they will need at least a common set of rules for disbursement, based on the principles of ownership, alignment, harmonisation, managing for results and mutual accountability. At the same time, these rules need to be flexible enough in order to accommodate strategies, programmes and measures adapted to national conditions (emission sources, drivers of vulnerability, socio-economic conditions etc.). Especially for adaptation it is necessary to facilitate the participatory elaboration of programmes and measures and to enhance local responsive capacities.

Governance of funds will be of utmost importance in negotiations throughout 2009 and probably after. At the multilateral level, governance reform will be important in order to implement the principles of aid effectiveness. A reformed GEF could continue to act as operating entity of the financial mechanism of the Convention, together with the Adaptation Fund and other existing development cooperation channels. This presupposes a clear understanding of the division of labour among them, and probably some streamlining of the existing funds under the GEF.

Another important issue is the long-term debate on whether or not finance for mitigation and adaptation in developing countries should be counted as ODA. This debate stems from different interpretations of Article 4(3) of the UNFCCC which obliges developed countries to provide new and additional financial resources for climate mitigation and adaptation. A Copenhagen agreement could be the occasion to further define this obligation.

Finally, who should pay? Burden sharing should include all OECD member states. The contribution of the major economies could consist in covering part of the necessary costs through domestic sources. Among OECD member states, burden sharing should be guided by the polluter pays principle; GDP size could be an additional criterion.

Literature

BMZ (2007): Klimakonzept Konkret. Aktionsprogramm „Klima und Entwicklung“, Bonn: BMZ

Edenhofer, O. / G. Luderer / C. Flachsland / H.-M. Füssel (2008): A Global Contract on Climate Change, prepared for the Conference “A Global Contract Based on Climate Justice: The Need for a New Approach Concerning International Relations”, Brussels, 11 November 2008 (htpp://www.global-contract.eu/Background_Paper_index-21.html

Horstmann, B. / S. Leiderer / I. Scholz (2009): Financing adaptation to climate change through budget support, Policy Brief, Bonn: DIE

IEA (International Energy Agency) 2007: World Energy Outlook 2007, Paris.

IPCC (Intergovernmental Panel on Climate Change) (2007a): A Report of Working Group I to the Intergovernmental Panel on Climate Change. Summary for Policymakers, Geneva: IPCC

Levina, E. / D. Tirpak (2006): Adaptation to climate change: key terms, Paris: OECD

McGray, H. / A. Hammill / R. Bradley mit L. Schipper und J.-E. Parry 2007: Weathering the Storm. Options for Framing Adaptation and Development, Washington, DC.

Müller, B. (2008): International Adaptation Finance: The need for an innovative and strategic approach, Oxford Institute for Energy Studies

McKinsey (2009): Pathways to a low-carbon economy, London

O'Brien, K. / S. Eriksen / A. Schjolden / L. Nygaard (2004): What’s in a word? Conflicting interpretations of vulnerability in climate change research, Oslo: CICERO Working Paper 4

Parry, M.L. / O.F. Canziani / J.P. Palutikof / J.P. van der Linden / C.E. Hanson (Hg.) (2007): Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge.

Porter, G. / N. Bird / N. Kaur / L. Peskett (2008): New Finance for Climate Change and the Environment, WWF / Heinrich Böll Stiftung

Stern, N. (2008): Key elements of a global deal on climate change, London: London School of Economics and Political Science

UNDP (United Nations Development Programme) 2007: Human Development Report 2007/2008. Combatting climate change: Human solidarity in a divided world, New York, http://www.hr.undp.org/en/reports/global/hdr2007-2008/