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Analysis of the Role Carbon Markets Can Play for Global Climate Finance from Today to 2020 and Beyond

Final Report

On behalf of the German Federal Ministry for the
Environment, Nature Conservation, Building and
Nuclear Safety

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The views expressed in this paper are strictly those of the authors and do not represent the opinion of the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety.

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1 Introduction

Financial support for developing countries is a core issue under the United Nations Framework Convention on Climate Change (UNFCCC). Industrialised countries strongly emphasise the potential role of carbon markets in mobilising needed finance. Carbon markets may either finance investments directly, as in the Kyoto Protocol's Clean Development Mechanism (CDM), or they may constitute innovative sources of public finance, for example from auctioning revenues in domestic emission trading systems.

If credits from the CDM or potential new mechanisms are counted towards the investor countries' emission commitments, the related finance may not at the same time be counted towards their financial commitments as this would constitute double counting. However, there are also discussions about using the infrastructure of the CDM not for offsetting, but as system for measuring, reporting and verification (MRV) of investment results, with cancellation of the emission credits that are generated.

The research project "Analysis of the Role Carbon Markets Can Play for Global Climate Finance from Today to 2020 and Beyond" aimed at providing an analysis of and recommendations for how carbon markets can contribute to financing emission reductions in developing countries.

The first part of the project aimed at scoping the framework conditions as basis for the further analysis in the subsequent parts of the project. The research synthesised available estimates of climate-related financial requirements in developing countries and the current status of UNFCCC negotiations on finance and carbon markets, analysed sources and channels of finance and the achievements and shortcomings of the CDM, so far the UNFCCC's only carbon market mechanism available to developing countries.

The subsequent parts of the project analysed how the various strands of the carbon market (traditional CDM, Programmes of Activities, potential new mechanisms) could be harmonised and better linked to national policies of developing countries than has so far been the case. The research analysed where specifically international support would be necessary and what contributions could be tackled by developing countries themselves. This analysis was done both at a conceptual level and in case studies of specific countries and sectors.

This report summarises the main findings from the project. The detailed results are available in the second and third interim reports of the project, which are

annexed to this report. The project's findings were discussed at a project workshop, the documentation of which is also annexed to this report.

2 Climate Finance Requirements and the Current Status of International Climate Finance and Carbon Markets – Main Results of the Second Interim Report

As noted above, the second interim report of the project analyses:

- available estimates of climate-related financial requirements in developing countries,
- the current status of UNFCCC negotiations on finance and carbon markets,
- sources and channels of finance, and
- the achievements and shortcomings of the CDM.

2.1 Financial requirements

The study focused on incremental investment needed annually. Incremental investment denotes the difference between the initial investment needed for a low-carbon asset and the initial investment needed for an alternative conventional one. The International Energy Agency's World Energy Outlook projects total global energy-related investments in the period of 2012-2035 at cumulatively USD 37 trillion even without increased mitigation actions.

The research surveyed the available literature on financial requirements for mitigation, adaptation and reducing emissions from deforestation and forest degradation (REDD+) in developing countries. As different sources partially differ in methodology and focus, the range of estimates is relatively broad. For mitigation, estimates of annual incremental investments needed in developing countries to stabilise atmospheric greenhouse gas (GHG) concentrations at 450 ppm CO₂eq vary between about USD 100 billion and 1.1 trillion. Estimates for adaptation vary between about USD 20 and 100 billion per year, but could be 10-100 times larger if the 2°C target is substantially overshoot. REDD+ incremental needs are very hard to calculate. Annual opportunity costs (costs of forgoing alternative use of forested areas) have been estimated as up to about EUR 270 billion for a full halt of deforestation.

By comparison, total current global climate-related investment has been estimated at about USD 370 billion per year while total global gross fixed investment has been estimated at about USD 20 trillion and total world GDP at about USD 84 trillion.

2.2 Status of UNFCCC Negotiations on Climate Finance

While there are various negotiation items related to climate finance, they ultimately all relate to two main topics: Mobilisation of the needed amount of financial resources and the institutional structure of funding.

Developed countries are required to provide “new and additional” resources to developing countries by Art. 4 UNFCCC. The topic has gained priority through the adoption of the Bali Action Plan, where finance was included as a key building block for a future climate regime. In Copenhagen and Cancún, developed countries committed to providing USD 30 billion in “fast-start finance” (FSF) between 2010 and 2012 and mobilising up to USD 100 billion per year starting 2020. However, so far there is no clarity on how climate finance will be scaled up to USD 100 billion annually. Also, to date, only seven countries have announced a continuation or scale-up of their fast-start commitments beyond 2012.

One core controversy is the definition of “new and additional” finance. Developing countries demand that increased climate finance should not come at the expense of funding for other development objectives, such as health or education. However, so far there is no commonly agreed definition of additionality, industrialised countries use various thresholds to demonstrate that the finance they provide is additional. The result is that industrialised countries claim that they are meeting their finance commitments while developing countries claim that they are not.

The Convention’s financial mechanism has so far been managed by the Global Environment Facility (GEF). In 2010, the Green Climate Fund (GCF) was designated as a second operating entity. The GCF was launched in Durban in 2011, and is to be made fully operational in 2013. However, substantial contributions to the GCF by industrialised countries are yet forthcoming.

At the conference in Durban in 2011, countries also decided to introduce a new market-based mechanism (NMM) covering “broad segments” of host countries’ economies to support mitigation actions in developing countries. Negotiations on the details of the NMM are ongoing. Possible relations between and consequences of the different mechanisms for each other are as yet mostly unclear.

2.3 Sources of Finance

Sources of finance can be defined as origins of funding. They may be divided into on the one hand public sources such as general government budgets and innovative public finance sources such as auctioning revenues and carbon taxes, and on the other hand private sources such as foreign direct investment (FDI) or portfolio investment.

Typically, climate financing from public budgets is subject to a country's financial planning procedures, and as such provides a fairly reliable source of funding. Therefore, public finance plays a major role in providing security by giving guarantees to private investors, and thus leveraging private finance. As for innovative public sources, so far only Germany has employed carbon market revenues directly as a finance source over the FSF period.

There is so far no agreed definition of what constitutes private climate finance. FDI is by far the most discussed source of private finance, especially in combination with leverage by public policies and measures. However, many climate-related foreign direct investment flows occur independently of countries' climate commitments. Other private sources include various types of private investment, notably portfolio investments. While they may have a high influence on the targeted country's development path, here as well it may be questioned in how far these flows can be counted towards a certain country's finance mobilisation as they occur largely independently of the public sector's influence.

2.4 Channels of Finance

Channels of climate finance can be defined as the mechanisms through which climate finance is disbursed. They include public channels such as bilateral cooperation between countries or multilateral funding mechanisms within the UNFCCC (e.g. GEF, GCF, Adaptation Fund) or without (e.g. Climate Investment Funds of the World Bank), and private channels such as carbon markets or private credits and guarantees.

Bilateral climate finance is a very reliable channel, and is usable for a wide variety of activities. Multilateral climate finance often gives developing countries a higher level of control than bilateral channels, especially in the case of UN-based funding mechanisms. The funding levels through multilateral funds have generally been low, but reliable.

Private finance institutions play a significant role in channelling private finance to developing countries. However, the money disbursed can often not be attributed easily to specific countries. Given the private-sector character, developing country control is limited to private sector partners in developing countries. This channel is focused on generating revenue from bankable

products, which limits its scope generally to mitigation activities, and possibly insurance against loss and damage.

Another possibly large channel for private climate finance is the carbon market. Carbon markets are especially suited for mitigation, as well as forest-related activities that can be converted to GHG abatement. Due to its inherently private nature, governmental control in developing countries is limited. Private sector partners in projects may have higher possibilities of influence.

Bi- and multilateral agencies, development banks, governments and different funds provide various instruments and sources of finance to scale up private financing. Such instruments include grants, concessional loans, equity investment, debt, guarantees, and insurance mechanisms. The amount of private investments that can be leveraged from public funds varies strongly with the type of financing instrument, the geographical location of the investment, and the type of project that is being financed. According to estimates, leverage factors may vary between 1:2 for non- or partly concessional debt to up to 1:20 for grant-financed equity and guarantees. However, high leverage rates may render the additionality of funded projects questionable, as the public finance element makes up for only a very minor share.

2.5 Current Status of the Clean Development Mechanism

2.5.1 Mobilised Resources

The CDM already plays a significant role for carbon financing and has led to leveraging of significant amounts of private financing, though the exact leverage effect is hard to gauge as the prices in primary transactions of Certified Emission Reductions (CER) are mostly secret. The World Bank has estimated the leverage factor at on average 4.6 and possibly up to 9 for some projects.

The total cumulative investment mobilised by the CDM up to the end of 2012 has been estimated at USD 280 billion. However, these are not all North-South flows. There is no accurate data available for all CDM project types, but the CDM Policy Dialogue's impact research concluded that for renewable energy projects the majority of the investment provided by the CDM has come from domestic sources. This might be one of several reasons why activities and respective financing under the CDM are distributed unequally, as poorer countries may have difficulties funding projects from domestic resources. In consequence, reforming existing or introducing new carbon market instruments may in itself not be sufficient to achieve a more balanced geographical distribution. Financial institutions and general investment framework conditions in developing countries will also have to be strengthened to enable them to attract more investment.

2.5.2 Unequal Geographical and Sectoral Distribution

Currently, only a few more advanced countries dominate the CDM market while entire continents like Africa have only a limited number of activities. More than 75% of the registered projects are hosted in only three countries (China, India, Brazil) and China alone accounts for more than 50% of the projects. No African country can be found in the “top-15”. This dominance is even more pronounced for the actually issued CERs. Here, more than 90% of the issued CERs went to only four countries (China, India, South Korea, Brazil) and China alone accounts for more than 60%.

Besides the regional dimension, also at sectoral levels unequal distribution of CDM activities can be observed. Hydro and wind are the predominant project types in terms of registered projects. Project types such as methane avoidance, biomass energy and landfill gas are also frequently implemented but in significantly lower numbers. HFC and N₂O projects have low numbers of projects but have received more than 60% of all issued CERs so far. While there is a high number of registered solar projects, there are only very few actual issuance activities and a low amount of CERs. Afforestation, reforestation, transport, energy distribution, energy efficiency services and energy efficiency in households have low numbers of projects. Agriculture has only one registered project and no CERs issued.

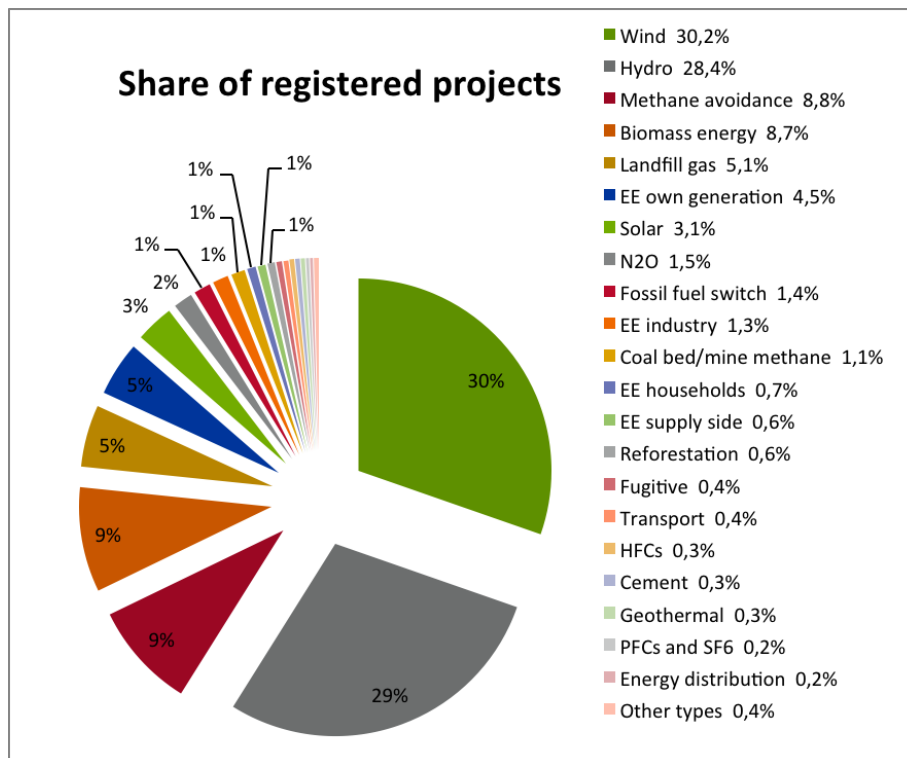


Figure 1: Distribution of CDM activities per UNEP Risoe project type (source: own calculations based on UNEP Risoe 2013; cf. Annex)

Key reasons for this unequal distribution are the mitigation costs of project types as well as the general level of complexity of CDM projects that is caused by the nature of the underlying emission sources (e.g. dispersed and small vs. large point sources), as well as the related difficulties to set baselines and fulfil MRV requirements. This barrier can be reduced by other project type characteristics, e.g. if projects generate significantly high funds or if the projects are embedded in industry structures which can manage to comply with stringent MRV requirements.

2.5.3 Reform Efforts – Programmes of Activities and Standardised Baselines

Measures that have been taken to address these problems include the introduction of “Programme of Activities” (PoAs) as a new project category and the concept of “Standardised Baselines” (SBL).

The main objective of PoAs is to substantially lower transaction costs for the inclusion of dispersed mitigation opportunities by bundling similar opportunities and thus increasing the overall project sizes. While PoA uptake was slow in the beginning, they in the meantime achieved considerable importance and show a markedly better distribution than “traditional” CDM. African countries account for 30% of all PoAs in the pipeline and LDCs for 11%, while their shares in normal CDM projects are 3.0% and 1.1% respectively. PoAs have furthermore a significantly increased share in categories such as energy efficiency on the demand side (including energy efficiency in households, industry and service), waste and solar.

Remaining problems include the unquantifiable liability of Designated Operational Entities (DOEs) for erroneous inclusion of component project activities (CPAs) into PoAs and the lack of capacity in many developing countries to establish capable coordinating/managing entities (CME) for PoAs.

SBL are doubtless a useful approach but still require solving development challenges before they are available at a larger scale to impact also the scale of the CDM. So far, possible standardisation has been studied for only a few sectors, mostly large-scale industry. In addition, to develop a robust SBL reliable data is essential but often difficult to get or even unavailable, e.g. because of confidentiality issues. Moreover, most host countries do not have the necessary capacity to survey the required data.

2.5.4 CDM and National Policies

Besides technology-related barriers, especially the regional distribution of CDM projects can also be affected by the overall policy situation and CDM integration within the host countries. Host countries have a vital role for the success of the

CDM since they can either support or hinder the implementation of CDM projects on their own territory. Some host countries identified the positive impact of the CDM very early, while others started to support CDM implementation rather late or just recently.

3 Linking Mechanisms: Carbon Markets, Climate Finance and National Policies – Main Results of the Third Interim Report

The third interim report of the project analyses:

- potential overlaps between carbon market instruments, national climate policies in host countries and international climate finance;
- possibilities to group countries according to criteria of economic capability and responsibility for combating climate change; and
- emission reduction potential and options for use of carbon markets in 15 country-sector combinations.

3.1 Overlap between Carbon Market Instruments, National Climate Policies and International Climate Finance

Analysing the relationship between carbon markets, international climate finance and national climate policies in host countries is an important basis for the investigation into which contributions to GHG mitigation in developing countries should be financed externally and which financing could be expected from carbon markets. A detailed analysis is furthermore required to ensure that mechanisms and instruments striving for GHG mitigation can co-exist and double counting of efforts is avoided. The study investigates how the different existing market-based instruments and those that are under development overlap and how they are linked with national climate policies in developing countries as well as international non-market based approaches such as nationally appropriate mitigation actions (NAMAs).

In order to establish a common understanding the study briefly discusses the relevant mitigation instruments. From a market perspective we describe the flexible mechanisms CDM and Joint Implementation (JI) and treat CDM Programmes of Activities (PoA) as separate mechanism approach. For New Market-based Mechanisms (NMM) we distinguish between a trading approach and a crediting approach which are based on the international UN climate regime. Emissions Trading Systems (ETS) are considered as domestic

instruments potentially integrated in other national policies. Non market-based mechanisms are considered by looking at the design and setup of supported and unilateral NAMAs. In the subsequent discussion of these mechanisms, the links to national policies which are implemented independently from the UNFCCC framework are further analysed. Figure 2 below depicts the different instruments and illustrates the context in which they have been developed and are functioning. This graph distinguishes between instruments operated under the UNFCCC and those outside of it. The mechanisms under the UNFCCC can further be divided into existing ones that are used to achieve targets under the Kyoto Protocol (boxes in light green on the left), i.e. International Emissions Trading (IET), CDM and JI, and future mechanisms (NMM and NAMA), which are under development and will be available under a new global agreement (boxes in dark green in the middle).

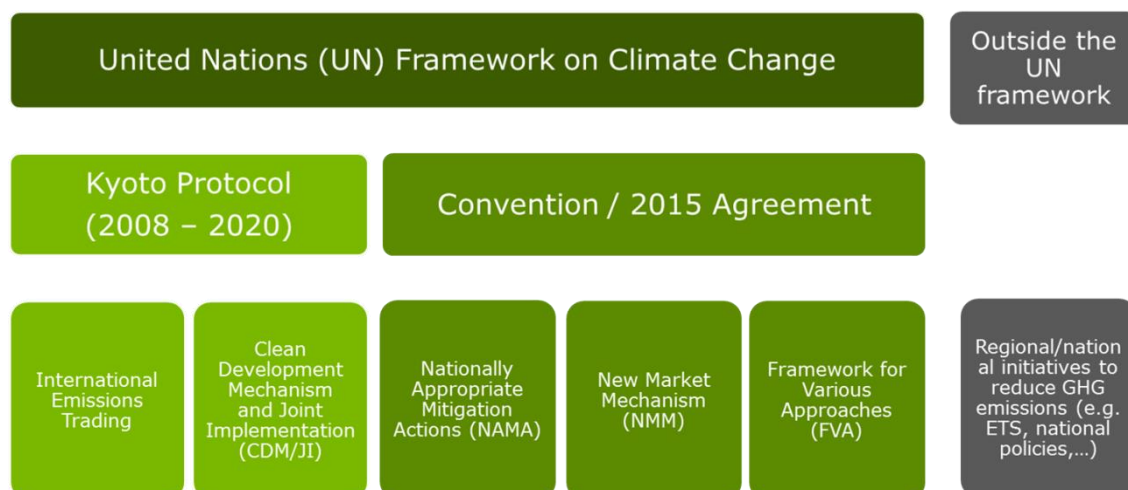


Figure 2: Overview of existing and emerging mitigation mechanisms (Source: Ecofys)

3.2 Criteria-Based Mechanism Comparison

Market-based instruments (CDM/PoA/JI/ETS/NMM) and non-market based instruments (national policies, NAMAs and others) overlap in terms of their financing sources, measures and coverage. This overlap can be a challenge, in the sense that existing activities would need to be taken into account in the set-up of new instruments, but could also be seen as an opportunity to use experiences and resources from existing instruments for a future and scaled-up instrument (for example, moving from CDM/PoA to NMM). The study conducts a criteria-based mechanism comparison. The resulting overview matrix lists the mechanisms including their sub-types and compares them according to eight key policy and design elements (general objective, coverage, governance,

target setting, financing, incentives, contribution to net decrease of global GHG emissions and approach to measuring, reporting and verification (MRV).

Following this, we assess how mechanisms relate to each other. Aside from the mechanisms analysed in the criteria-based comparison approach, further approaches and instruments exist that are applied in similar contexts serving similar purposes. These include, for example, “Results-based Financing Approaches”, national policies in developing countries, and voluntary carbon markets, all of which might be used in parallel with, or integrated into, the described mechanisms. These approaches and instruments are therefore additionally considered when linkages between mechanisms are assessed.

3.3 Practical Implications of Interactions between Mechanisms and Implementation Instruments

Based on the analytical comparison results, the study further investigates how parallel features, as well as overlaps, of the various mechanisms have an effect in practice. Selected mechanism connections are further analysed according to aspects such as ownership of the emission reductions, double counting of emission reductions, incentives provided and to whom, layers of implementation, national integration, source of funding and links to national policies. These findings are completed by six selected practical examples that allow a better understanding of the identified challenges and point to further areas for research.

The study in particular looks into the relation of CDM to NMM and NAMAs, which includes practical implications for CDM activity continuation in sectors that are covered by a NMM or NAMAs; CDM PoAs related to NMM and NAMAs; cross effects between the mechanisms and national policies; as well as national policies and NAMAs. We also analyse the role of NAMAs for the setup of NMMs, the role Result-based Financing could have within NAMAs and national policies in relation to an ETS and a NMM. The selected practical examples include Costa Rica’s National Climate Change Strategy, the linkage of Feed-in Tariffs with PoAs and/or NAMAs in for example Thailand or Uganda, Mexico’s Sustainable Housing NAMA, the Chinese Certified Emission Reduction credits approach and market-based mitigation approaches in Tunisia’s cement sector.

The in-depth analysis of the relationship between carbon markets, international climate finance and national climate policies is used as basis for the analysis in further parts of the study to identify contributions to GHG mitigation in developing countries which could be financed externally and with financing from carbon markets.

3.4 Illustration of Countries or Country Groups Regarding their Use of Carbon Markets

Additionally to the analysis of different mechanisms to support mitigation, it is of relevance to evaluate which countries the mechanisms could be applied to, and which of those would serve as a host country or a donor country. On the one hand, the evaluation shall reflect the carbon market readiness of countries or country groups, on the other hand, it shall include the degree of responsibility the countries have to contribute to mitigation activities.

In the current situation, countries are grouped as “Annex I” (developed countries) and “non-Annex I” (developing countries), as defined by the UNFCCC. This grouping is based on the development situation at the point of the starting year of the Convention. Over the years, there have been changes in all countries, in terms of economic development as well as greenhouse gas emissions. The range between least developed countries and emerging economies has grown significantly, so that further differentiation is needed today.

This need for differentiation has already shown in the past years in international climate policy: First indications are for example the EU’s limitation of recognising Certified Emission Reductions only from Least Developed Countries (LDCs) in the EU ETS since the start of the third trading period (January 2013), or that the agreement currently negotiated under the Ad Hoc Working Group on the Durban Platform for Enhanced Action (ADP) shall also include mitigation commitments for developing countries.

The report approaches the question of differentiation by defining two dimensions – “Own contribution” and “carbon market readiness” -, lists various quantitative indicators for those and applies them to the UNFCCC parties. Thereby it is important to note that the indicators used and the way they are combined are only one illustrative example of a possible approach, and do not aim at providing a final solution.

Indicators feeding into the own contribution include the Human Development Index (or sub-indicators used for its calculation, e.g. per capita income), historic emissions and current per capita emissions. Also, the amount of mitigation potential available at negative or low costs within countries plays into the possibilities of those countries to contribute themselves to reductions: A country with abundant potential at negative costs may be able to reduce a high share of emissions itself. Other countries may have higher abatement costs on average, nevertheless these potentials need to be tapped as well under a sufficiently ambitious climate regime. These countries may thus need more support and therefore have a lower share of own contribution.

Indicators for carbon market readiness are relevant experiences with carbon markets, e.g. the number of CDM or JI projects or domestic market based instruments, and capacities for Measuring, Reporting and Verification, expressed for example through the number of submitted national communications and emission inventories to the UNFCCC. Furthermore, the statuses of current plans for emissions trading schemes or similar instruments are of relevance.

Based on different combinations for weighing the indicators for own contribution, the results provide a range of possible country groupings. Considering all combinations analysed, we nevertheless find a number of commonalities:

For all combinations of the indicators used, the Least Developed Countries remain in one group with a low carbon market readiness and a low own contribution.

There are a number of countries with high responsibilities and capabilities, but with little carbon market readiness. If those were to support mitigation activities in other countries through merely market-based tools, market-based approaches in those countries would need to be strengthened significantly. Nevertheless, those countries could as well channel direct funds towards market-based instruments in the recipient countries.

At the same time, there are many countries which would likely need support for mitigation activities, but which at this point in time do not have successful market-based mechanisms in place to channel funding.

Another interesting aspect can be seen when comparing combinations for own contribution using HDI and alternatively per capita income. For those combinations relying on HDI, there are no countries with a low own contribution and high market readiness. However, there are countries with a relatively low per capita income with a high carbon market readiness.

The HDI considers other development factors besides the per capita income, such as education and health. Our results show that those seem correlated to the ability of countries to implement more enhanced policies, such as market-based mechanisms. Some countries with a low income per capita seem to be able to prepare for carbon markets, whereas those that additionally have low health and educational indicators are not able to do so.

3.5 Prospects for International Cooperation and Use of Carbon Markets in 15 Country/Sector Cases

The study analyses future prospects for international cooperation and in particular use of carbon markets in 15 country/sector combinations. The selection of cases aimed to cover a broad spread of sectors and countries, including all continents and a range from advanced to least developed countries. Other key criteria were data availability and whether the countries are pursuing an active climate policy that provides entry points for international cooperation.

The analysis proceeds in four steps:

1. Survey of existing studies on available mitigation potential and costs;
2. Survey of policies and measures that are currently in place;
3. Analysis of remaining barriers that impede low-emission investments;
4. On the basis of the above, discussion of the scope for international cooperation and use of carbon markets.

With these steps, we first identify where action could potentially be effective. We then check where activities already exist and where remaining barriers are, to ultimately identify potential room for carbon markets to support these areas.

The following summarises the main rationales for the selection of the country/sector combinations and the main findings.

Brazil is a key major emitter and carbon market participant and has a relatively progressive negotiation position as well as an elaborate set of national climate policies. The study analyses the electricity and waste sectors as emissions from these sectors are projected to increase strongly in the future. There is substantial potential for emission reductions in both sectors and Brazil brings to the table quite a sophisticated climate legislation architecture including substantial experience with carbon markets. However, there are also substantial barriers such as institutional complexity, a partial lack of enforcement of environmental legislation, conflicts between growth and environmental strategies and a lack of inter-municipal coordination. Furthermore, there are substantial financial barriers. The waste-management sector suffers from substantial underinvestment and the high costs of interconnecting bagasse cogeneration and wind energy projects in the back country with the main power grid so far have to be borne by the corresponding sugar mills and wind-farm developers. There is also a lack of a culture of recycling regarding broad parts of the society and materials, respectively. Besides institutional and public

capacity building on the relevant issues identified, a toehold for international cooperation could include technology transfer.

China is the world's largest emitter and largest CDM host country. In addition, it is in the process of establishing regional and eventually a national carbon market. Electricity and cement are among the largest emitting sectors and emissions are projected to increase strongly in the future. Very large and achievable mitigation potentials exist in these sectors and market mechanisms have already been used extensively in both. However, national-level policy making sometimes conflicts with local-level priorities. In addition, poor awareness across the population inhibits the adoption of best practices in smaller industrial firms and the buildings sector and gives room for industrial lobbying. With its rapid growth and increasing emissions, China should be able to implement a number of mitigation measures with domestic means, but receive support to tap into the full potential.

Costa Rica has been a carbon market frontrunner since the 1990s, is currently establishing a national carbon market and has pledged to become carbon neutral by 2021. Due to the preponderance of hydropower in electricity supply agriculture is one of the key emitting sectors. Costa Rica has seen environmental politics as an important cornerstone of its government activities for a long time and has consequently put in place a clear institutional architecture as well detailed strategies, plans and programs on mitigation. Barriers include a lack of financial resources and knowledge preventing the full, effective implementation of some laws and programs on sustainable agriculture as well as the use of low-emission technologies and organic fertilizers. Furthermore, inter-sectoral coordination of sectors and institutions as well as the division of responsibilities and decision-making power could be improved. There also is a lack of awareness, information and capacity regarding various issues relating to mitigation. Due to the challenges arising for MRV in agriculture, NAMAs may be a good alternative to the sector's participation in a future global carbon market.

Ethiopia has a very progressive negotiation position and pledged to become carbon neutral by 2025. However, due to its development status as a least developed country implementing this pledge will require strong international support. Agriculture is the most important economic sector, employing about 80% of the population, and electricity demand is projected to increase sharply in line with the country's development aspirations. In 2010, only $\frac{1}{4}$ of the population had grid access. Ethiopia's renewable electricity expansion plans are economically rational but require substantial upfront investment, which is not completely covered in current budgets. Most of agricultural measures is not expected to have short term positive returns. The institutional and market

environment is not conducive to participation from the private sector to close the funding gap. Ethiopia has had no interaction with market-based mechanisms historically and would require substantial preparation in order to engage with markets in the future. The agriculture sector presents further complications as it is very fragmented by small-scale activities. Market-based mechanisms may become interesting to mobilise potentials in Ethiopia in the future, however market readiness needs to be enhanced before and new approaches to mechanisms must be found to address the country-specific barriers. One promising activity to be supported could be the continued employment of renewable energy technologies for electrification.

India is a key major emitter and carbon market participant. In addition to its strong position to the CDM it is also using market-based approaches domestically. Cement and iron&steel are the largest emitters among the industrial sectors and project steep emission growth under business as usual. Prospects for the use of market-based instruments are generally good. However, there are substantial non-price barriers, including lack of access to investment capital, high ex ante investment requirements, waste legislation that impedes the use of waste as alternative fuels, low-quality waste collection, norms and standards that limit the potential of cement blending, lacking social acceptance of alternative fuels and cement blending, low quality of domestic iron ore and coal, low availability of scrap, and lacking awareness of /reluctance to invest in efficiency. Use of carbon market instruments will therefore probably only be able to fully exploit the available potential if combined with support for access to investment capital and significant regulatory changes and capacity building activities. Prospects for international cooperation could include purchase of Indian energy efficiency credits, provision of budget support, and scaling up support for investment funds.

Kenya has developed some ambitious climate policies. Due to its development status agriculture is the most important economic sector and has been identified by the government as the pivotal sector for driving the wider development of the country's economy. Substantial international funding is necessary to cover the positive costs of mitigation due to Kenya's low level of capability and responsibility. Abatement measures are also dependent on behavioural change at the individual level and therefore hindered by poor awareness and skills across the sector. With a low but more advanced carbon market readiness in comparison to other countries in the region, Kenya might be an interesting pilot for a new market mechanism, targeted to the country-specific barriers.

Morocco has submitted an elaborate and ambitious 2020 pledge to the UNFCCC. It has in particular set ambitious goals for renewable electricity as it has an inherent interest in reducing its near-total dependence on energy

imports. However, it will need international support to actually achieve these objectives. Barriers include lack of access to investment capital, high ex-ante investment requirements of renewables, lack of financing mechanisms for distributed installations, a virtual monopoly of the state utility, no access to the low-voltage grid for independent producers, the existence of fossil fuel subsidies, and limited human capacity. Market readiness and scope for private sector engagement is low, most CDM projects were developed by public institutions. The most promising options for international engagement may therefore lie with working through the Moroccan government, for example on the basis of a sectoral crediting scheme including incentives for distributed installations, provision of investment support and regulatory reforms.

Peru is a member of the progressive Independent Association of Latin America and the Caribbean (AILAC). It has lately been developing initiatives to promote renewable electricity but they conflict with economic incentives for natural gas, which has become a preferred resource for the country's development strategy. In addition, there are difficulties with reaching remote parts of the population and technical capacities. Peru might be expected to mobilise the capital for abatement costs with a positive return. Additionally, international funding should support more ambitious measures. Doing this through market mechanisms - specifically on a sectoral level - may be feasible if the mechanism adequately addresses country specific barriers.

South Africa is a key major emitter and has submitted an ambitious 2020 pledge to the UNFCCC, which it, however, now has problems to fulfil. Electricity and iron&steel are among the most important emitting sectors. Translation of policies and plans into concrete actions is slow, partly due to limited knowledge and capacities within government institutions. High investment requirements and low electricity prices act as disincentives to energy efficiency measures and stronger uptake of renewable energy deployment. South Africa's potential for the use of market-based instruments for GHG abatement seems limited. Both sectors analysed for this study show a highly concentrated structure and a small amount of market actors. Of the two, the electricity sector may develop a higher potential for market use in the future, as new companies enter the electricity market. The South African government is planning to put in place a carbon tax and has decided not to create a market instrument for various reasons, including institutional capacity constraints. The lack of a robust GHG inventory would complicate emissions monitoring necessary for a market mechanism both on the sectoral and on the national level.

Thailand has a dynamic economy and some ambitious policies domestically but has so far not submitted a 2020 pledge. Thailand's cement production is the country's largest single energy consuming sector and is among the top ten

cement producers worldwide. Thailand's cement sector seems well fit for market-based approaches to reduce its carbon intensity. The country's proposal under the World Bank's Partnership for Market Readiness (PMR) defines a roadmap how such approaches could be implemented. Thailand aims at the introduction of a voluntary Energy Performance Certificate Scheme by 2017 and a mandatory emission trading scheme (ETS) in 2020. Similar to the Indian, case, these initiatives create options for international linkage of domestic systems.

4 Main Results of the Project Workshop

The project workshop focused on the emerging situation that climate action will in the future probably increasingly be financed from a mix of sources: from domestic finance, international public finance and market-based sources. How can NAMAs, PoAs and new market mechanisms interact in such a situation? What influence does this situation have on the accounting of national targets? And what does this mean for the design of climate finance? These questions were discussed with selected experts on the basis of a selection of the case studies. The discussion yielded in particular the following results:

- The different forms of financing emission reductions in developing countries entail significant opportunities. Some combinations of mechanisms are unproblematic while others need regulation.
- In case of overlaps it is important to clarify the ownership of emission reductions and avoid double counting of emission reductions and finance contributions.
- Overlaps of CDM projects and 2020 pledges are not a problem as pledges have no real compliance status. New rules only need to be found if pledges are translated into binding commitments.
- Overlaps of supported NAMAs and a national ETS are unproblematic. However, NAMA funders will need clarity on what happens with the emission reductions financed by the NAMAs.
- The removal of existing barriers needs to be pursued vigorously if a country's participation in international carbon markets is to be successful.
- The prospects of credited NAMAs are unclear. Most current NAMAs are packages of policy measures that would be hard to quantify for the carbon market. Some NAMA plans contain CDM projects or PoAs.

However, it is doubtful whether these should be called “credited NAMAs”. The packaging of policy measures is not uncommon.

- Which countries should be supported? Countries with negative mitigation costs, good governance capacities and sufficient financing options raise the question whether they should receive any finance. However, exactly these countries could be good pilot cases for the development of new market mechanisms.
- The crucial issue is not making emission reductions and climate finance accountable until 2020, but to establish a viable system for the time after 2020. Until 2020, different approaches can be tested and readjusted.

5 List of Annexes

Annex 1: Second Interim Report: Climate Finance Requirements and the Current Status of International Climate Finance and Carbon Markets

Annex 2: Third Interim Report: Linking Mechanisms: Carbon Markets, Climate Finance and National Policies

Annex 3: Workshop Report: Linking Mechanisms: Carbon Markets, Climate Finance and National Policies