CLIMATE CHANGE

Scientific Assessment and Policy Analysis

WAB 500102 035

Nationally appropriate mitigation actions (NAMAs) in developing countries: Challenges and opportunities

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Nationally appropriate mitigation actions (NAMAs) in developing countries: Challenges and opportunities

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This study has been performed within the framework of the Netherlands Research Programme on Scientific Assessment and Policy Analysis for Climate Change (WAB), project Nationally Appropriate Mitigation Actions (NAMAs) in Developing Countries: Positions, Interests and Prospects for Engagement.

Wetenschappelijke Assessment en Beleidsanalyse (WAB) Klimaatverandering

Het programma Wetenschappelijke Assessment en Beleidsanalyse Klimaatverandering in opdracht van het ministerie van VROM heeft tot doel:

- Het bijeenbrengen en evalueren van relevante wetenschappelijke informatie ten behoeve van beleidsontwikkeling en besluitvorming op het terrein van klimaatverandering;
- Het analyseren van voornemens en besluiten in het kader van de internationale klimaatonderhandelingen op hun consequenties.

De analyses en assessments beogen een gebalanceerde beoordeling te geven van de stand van de kennis ten behoeve van de onderbouwing van beleidsmatige keuzes. De activiteiten hebben een looptijd van enkele maanden tot maximaal ca. een jaar, afhankelijk van de complexiteit en de urgentie van de beleidsvraag. Per onderwerp wordt een assessment team samengesteld bestaande uit de beste Nederlandse en zonodig buitenlandse experts. Het gaat om incidenteel en additioneel gefinancierde werkzaamheden, te onderscheiden van de reguliere, structureel gefinancierde activiteiten van de deelnemers van het consortium op het gebied van klimaatonderzoek. Er dient steeds te worden uitgegaan van de actuele stand der wetenschap. Doelgroepen zijn de NMP-departementen, met VROM in een coördinerende rol, maar tevens maatschappelijke groeperingen die een belangrijke rol spelen bij de besluitvorming over en uitvoering van het klimaatbeleid. De verantwoordelijkheid voor de uitvoering berust bij een consortium bestaande uit PBL, KNMI, CCB Wageningen-UR, ECN, Vrije Universiteit/CCVUA, UM/ICIS en UU/Copernicus Instituut. Het PBL is hoofdaannemer en fungeert als voorzitter van de Stuurgroep.

Scientific Assessment and Policy Analysis (WAB) Climate Change

The Netherlands Programme on Scientific Assessment and Policy Analysis Climate Change (WAB) has the following objectives:

- Collection and evaluation of relevant scientific information for policy development and decision–making in the field of climate change;
- Analysis of resolutions and decisions in the framework of international climate negotiations and their implications.

WAB conducts analyses and assessments intended for a balanced evaluation of the state-of-the-art for underpinning policy choices. These analyses and assessment activities are carried out in periods of several months to a maximum of one year, depending on the complexity and the urgency of the policy issue. Assessment teams organised to handle the various topics consist of the best Dutch experts in their fields. Teams work on incidental and additionally financed activities, as opposed to the regular, structurally financed activities of the climate research consortium. The work should reflect the current state of science on the relevant topic.

The main commissioning bodies are the National Environmental Policy Plan departments, with the Ministry of Housing, Spatial Planning and the Environment assuming a coordinating role. Work is also commissioned by organisations in society playing an important role in the decision-making process concerned with and the implementation of the climate policy. A consortium consisting of the Netherlands Environmental Assessment Agency (PBL), the Royal Dutch Meteorological Institute, the Climate Change and Biosphere Research Centre (CCB) of Wageningen University and Research Centre (WUR), the Energy research Centre of the Netherlands (ECN), the Netherlands Research Programme on Climate Change Centre at the VU University of Amsterdam (CCVUA), the International Centre for Integrative Studies of the University of Maastricht (UM/ICIS) and the Copernicus Institute at Utrecht University (UU) is responsible for the implementation. The Netherlands Environmental Assessment Agency (PBL), as the main contracting body, is chairing the Steering Committee.

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Preface

This report has been commissioned by the Netherlands Programme on Scientific Assessment and Policy Analysis (WAB) Climate Change. This report has been written by the Institute of Environmental Studies (IVM), Vrije Universiteit Amsterdam.

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The research for this report was finished in November 2009. The report has been updated to reflect the developments in and after the Copenhagen summit in December 2009.

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Executive Summary

1. Introduction

It is increasingly evident that to avoid dangerous climate change, greenhouse gas emissions need to be reduced not only in the industrialised, but also in the developing world. The challenge is to induce developing countries to participate in mitigation action in the future without putting their legitimate development goals at risk. Currently, developing countries are only involved in direct mitigation action mandated at the international level through the Clean Development Mechanism (CDM). However, in the future, other forms of mitigation action are conceivable, ranging from possible sustainable development policies and measures (SD-PAMs) via no-lose targets to possibly even absolute emission reduction targets in the long run.

The important yet difficult issue of future mitigation efforts by developing countries is addressed in paragraph 1(b)(ii) of the 2007 Bali Action Plan, which calls for 'nationally appropriate mitigation actions [NAMAs] by developing country Parties in the context of sustainable development, supported and enabled by technology, financing and capacity-building, in a measurable, reportable and verifiable manner'. This text comprises some of the key elements at the centre of discussions on developing country action in a post-2012 climate regime.

One of the main issues in the negotiations concerns the *nature of NAMAs*. This question relates, among others, to their legal nature. Actions can be considered to be binding or non-binding under international law. This also relates to the question about to what extent 'actions' by developing country Parties are different from 'commitments' by developed country Parties. A second set of questions relates to the *scope of NAMAs*. Proposals by Parties have included almost every possible activity that aims to reduce or limit greenhouse gas emissions, including actions with direct atmospheric benefits, but also actions for which it is more difficult to quantify emission reductions, such as capacity building. Third, perhaps the most crucial issue is the *link between NAMAs and the support received* from developed country Parties. The most important question is which NAMAs should be supported, and if there are any NAMAs that can be undertaken unilaterally. In addition, for the NAMAs for which support is deemed necessary, the question is first how to link support and action, and second what kind of support is appropriate for what kind of NAMAs. A fourth set of questions relates to the *'measurable, reportable and verifiable' (MRV)* clause. Does MRV refer to technology, finance and capacity building to be provided by developed countries, to all NAMAs in general, to only NAMAs for which there is support, or to both NAMAs and support? In addition to the question of *what* should be subject to measurement, reporting and verification, the concept of MRV raises other questions: *how* would MRV take place (including possible metrics used); should it differ for different types of actions and, if so, how?; *who* should measure, report and verify (and at what level)?; and *when* should MRV take place?

The positions of countries and country groupings in the climate negotiations since the Bali climate summit at the end of 2007 have shown a wide range of interpretations of the clause on NAMAs, leading to different responses to the questions above. These positions are influenced by the countries' domestic situations, but also to the negotiating coalitions the countries belong to. A key question for the talks on NAMAs in Copenhagen and thereafter will be whether the different positions can be reconciled at all, which issues would require agreement in Copenhagen, and which issues could be resolved at a later stage.

Against this background, this report addresses the following research questions:

- What are the positions of four key developing countries – Brazil, China, India, South Africa (the 'BASIC' countries) – on NAMAs and paragraph 1(b)(ii) of the BAP? In particular, what are these countries' views on: a) the nature and context of NAMAs; b) the scope of NAMAs; c) the linking of NAMAs and support; and d) the MRV of NAMAs?
- What are the domestic developments and considerations influencing the positions of these four countries?

- What are the prospects of these countries to undertake certain types of NAMAs under a post-2012 climate regime?

2. Brazil

Brazil is of the view that NAMAs are different from emission reduction commitments for developed countries. However, domestic criticism and a desire to exert climate leadership may lead to a change in Brazil's position which has so far categorically refused to accept targets. Government officials have indicated that Brazil considers capping its 2020 emissions at 2005 levels. Furthermore, the country has recently set itself targets for reducing deforestation in the Amazon.

Brazil considers a wide range of mitigation activities to fall under the scope of NAMAs. Brazil's National Plan on Climate Change has quantified the estimated results of various climate policies and measures that Brazil has implemented, or intends to implement in the future. Many of these measures could potentially qualify as NAMAs. However, more information about these measures, the expected reductions and underlying calculations will likely be needed by other Parties in that case. Potentially the biggest opportunity for Brazil is the inclusion of reduced emissions from deforestation and degradation (REDD) as a NAMA. In the past, Brazil has been sceptical about including deforestation in the climate regime, as it saw a possible commitment to slow deforestation as a liability. However, it has increasingly realised that if linked to financial, technological and capacity-building support, the country would most likely be one of the main beneficiaries in this area, and support for REDD could trigger financial transfers of a totally different scale than exports of biofuels or CDM investments.

3. China

While China's main policy priorities are related to its social and economic development, the Chinese government also wants to enhance its reputation abroad, and is increasingly feeling the pressures from environmental degradation within its own borders. There has been some domestic pressure on the Chinese government to adopt voluntary or perhaps even binding emission reduction targets in a few sectors. For some sectors, these targets could follow from the existing targets already specified by the government in its National Climate Change Program and the 11th Five Year Plan, which contains China's economic development priorities. However, policy-based commitments such as SD-PAMs may be more appropriate in the period immediately after 2012. An indication that China is willing to go beyond policies and measures is that Chinese President Hu Jintao pledged to cut the country's carbon intensity in the medium term (2020).

For China, one of the key priorities in the negotiations on NAMAs is the concept of MRV, and in particular what is meant by verification. Although China has set various targets for itself at the domestic level, it has been reluctant to submit these targets to international monitoring. For China, there is a possibility that specific NAMAs could find their way in the 12th Five-Year Plan, which is currently under discussion.

4. India

For India, the main opportunity provided by NAMAs is the possibility of obtaining support for policies and measures for which it has been difficult to garner support through the CDM, including energy efficiency projects and transport policies. NAMAs could set India on a path of adopting stronger domestic action, although they would need to be accompanied by more stringent commitments for developed countries as well as international support.

India has been a staunch opponent of developing country targets under a post-2012 regime. However, there are some small signs of change at the government level. In 2007, Prime

Minister Manmohan Singh pledged that Indian per capita emissions would never exceed those of developed countries, and in September 2009 Environment Minister Jairam Ramesh stated that an indicative, non-legally binding target is a possibility. However, India's defensive position in the climate negotiations is still supported by a wide range of actors, including not only government officials, but also opposition members and civil society.

From the Indian perspective, some of the key challenges in the negotiations on NAMAs include questions about what the sources should be for financial and technological support; which NAMAs would be eligible for support, and how to agree on the technical, but also political aspects of MRV.

5. South Africa

South Africa has been one of the most active countries on NAMAs, putting forward detailed suggestions on how NAMAs could look like – going back to the idea of SD-PAMs – and outlining how mitigation actions and support could be linked through a registry in combination with UNFCCC mechanisms for finance and technology.

The main opportunity for South Africa provided by NAMAs is to obtain support for moving towards a cleaner development path while pursuing other national priorities indirectly related to climate change. In the near term, this is to be achieved by implementing low or negative cost policies such as enhancing energy efficiency in various sectors of the economy. The South African government seems ready to pursue a range of SD-PAMs, but is not yet ready to implement emission limitation or reduction targets for specific sectors. However, it could agree to other types of targets, such as energy intensity targets or mandatory energy efficiency targets.

6. Positions on NAMAs

Overall, the positions on NAMAs of the four countries included in this study largely resemble one another (see Table 1). First, referring to the principle of common but differentiated responsibilities and respective capabilities, NAMAs in developing countries are seen as clearly distinct from the mitigation commitments for developed countries. Second, the countries stress the development imperative, i.e. that mitigation action should not impede their development. Third, all four countries argue that NAMAs in need of support should be proposed by the developing countries on a voluntary basis, and that unilateral action deserves international recognition. Finally, the four countries all suggest that financial support for NAMAs should be channelled through the financial mechanism proposed by the G-77 and China.

A closer look at the positions does reveal some divergences, however. First, the countries do not share the same view on the relation between domestic action that is not supported internally, and NAMAs. For India, if an action does not receive support, it is not a NAMA, in contrast to South Africa, which proposes to register also unilateral NAMAs. Second, while some Brazil and China have explicitly opposed the crediting of NAMAs, India and South Africa have remained silent on the issue. Third, the countries have different views on the role of a register. While South Africa envisages an important role for such a tool, including MRV functions and the process of matching actions and support, China views the register exclusively as an ex post reporting tool. Finally, there are differences of opinion about the level at which MRV should be carried out. Although all countries suggest differentiating MRV according to the type of mitigation action, India does not regard unilateral actions as NAMAs, meaning that no international MRV would be necessary. South Africa, on the other hand, suggests that international MRV could even be considered possible for unilateral actions.

Table 1. Overview of positions

NAMA issue	Brazil	China	India	South Africa
Nature and context	Voluntary	Voluntary	- Voluntary - Contract between developed and developing country	Voluntary
Scope	- Wide range of actions - Highlights REDD - No unilateral actions	- Wide range of actions - No QELROs	- Wide range of actions - No QELROs - No unilateral actions	- Wide range of actions - Could include unilateral actions
Link with support	- Register for actions and support - Register expected mitigation benefits, support - No crediting possible	- No crediting/offsets possible - LCDS not conditionality for support - Registry used for ex post reporting	- Register for actions and support - Register expected mitigation benefits, support - Financial and technology mechanisms match actions and support	- Register for actions and support - Register expected mitigation benefits, sustainable development benefits, support - Technical panel assesses assumptions of actions - Financial and technology mechanisms match actions and support
MRV	- National procedures for measuring and reporting - International procedure for verification	- At national level, under international guidance - For supported action, reporting through financial and technology mechanism - Unilateral action reported through National Communications	- No verification of unilateral action - Use contract between developed and developing country	- M: biennial greenhouse gas inventories - R: through registry (annually for supported actions) and National Communications (for unilateral action) - V: domestic (for unilateral action) and international (for supported action), according to international guidelines

Although all four countries have been opposed to even discussing emission reduction targets for developing countries in the negotiations, it is not ruled out that some kind of targets may be considered as NAMAs. Indeed, all countries have either adopted some types of targets at the domestic level. However, adopting any kind of commitment will be conditional at least on the adoption of legally binding targets by the Annex I countries, including the United States.

7. Outlook

It is unlikely that agreement will be reached on all the outstanding questions on NAMAs in Copenhagen. However, at a minimum, it would seem necessary to reach basic agreement on the following issues:

- Legal nature of NAMAs: would there be a legally binding obligation to implement certain NAMAs or to establish a low-carbon development strategy?
- Definition and categorisation of NAMAs: would unilateral actions be considered NAMAs and require some form of international MRV?
- Basic principles of a mechanism to link NAMAs and support: what would be the main purpose of a registry (or another mechanism linking actions and support)?
- Crediting NAMAS: could NAMAs be credited and/or be used as offsets?
- MRV: how would MRV for NAMAs go beyond the current system for developing country Parties?
- Verification: to what extent will verification require international interventions in national affairs?

More detailed provisions could be specified in further decisions by the UNFCCC COP or a similar body under the new agreement.

8. Epilogue

The research for this report was finished in November 2009. There have been a number of important developments on NAMAs since, however. In December 2009, agreement was reached on the Copenhagen Accord, a non-legally binding agreement outlining a compromise reached by the world's major emitters as well as a number of other countries. The Accord encourages developed countries to list quantified economy-wide targets, and also requests developing countries to list their NAMAs and subject them to international MRV.

The Copenhagen Accord establishes a registry listing NAMAs seeking international support and the required financial, technological and capacity-building support. On the reporting of NAMAs, the Accord states that developing countries shall communicate their mitigation actions through biennial National Communications, which are subject to guidelines to be adopted by the COP. MRV would occur at the national level, while the results of the MRV activities would be reported in the biennial National Communications. On verification, it specifies that developing countries will provide information on how they implement the NAMAs with provisions for international consultations and analysis, thereby endorsing some form of international scrutiny of domestic affairs.

Various developing countries – including the countries studied in this report – have communicated their NAMAs to the UNFCCC Secretariat. A preliminary analysis of the NAMAs proposed by the four countries reveals that:

- Brazil has proposed a wide range of actions, but the main actions (in terms of greenhouse gas emission reductions) are aimed at reducing deforestation.
- The range of proposed actions by the other three countries is rather limited so far. This may be explained by the fact that the Copenhagen Accord has not yet managed to establish a mechanism that links actions to support. Furthermore, the Copenhagen Accord stipulates that more detailed NAMAs may be included in later communications.
- All four countries have included quantified information about the intended effects of their NAMAs.
- The key pledges of all countries were the same as the ones made before Copenhagen.
- All four countries emphasise that undertaking the actions will be conditional on the provision of support by Annex I countries. The four communications do not make a distinction between unilateral or autonomous and supported mitigation actions. It is hence unclear whether any of the NAMAs can (in part) be implemented in the absence of international support.
- While South Africa and Brazil mention the Copenhagen Accord, the Chinese and Indian communications to the Secretariat do not do so.

The notification of these first NAMAs is certainly not the end of the discussion. Many questions raised and discussed in this report remain as relevant as they were last year. First, it remains to be seen whether any of the outcomes included in the Copenhagen Accord will ultimately be included in a formal COP Decision or in a legally binding agreement. Second, the Copenhagen Accord does not distinguish unilateral mitigation actions and actions receiving international support. While the Copenhagen Accord does imply that there are different MRV requirements for supported NAMAs and mitigation actions in general, a clearer distinction between the two is needed. Third, many details about how to link actions and support remain to be elaborated. It is even unclear how anything in the Copenhagen Accord can be elaborated at all, given the failure of Parties to agree on the status of the Accord under the UNFCCC. Furthermore, even if the Accord were to become a COP Decision, many important decisions are still pending. This includes the function of a register, guidelines for MRV and, perhaps most importantly, and the modalities for a future financial mechanism and a technology mechanism. Finally, the question of crediting NAMAs has been eschewed completely in the Accord.

Samenvatting

1. Inleiding

Het wordt steeds duidelijker dat het voorkomen van gevaarlijke klimaatverandering vereist dat broeikasgasemissiereducties niet alleen plaatsvinden in de geïndustrialiseerde landen maar ook in ontwikkelingslanden. De vraag is hoe ontwikkelingslanden in de toekomst meer kunnen bijdragen aan mitigatie zonder dat hun legitieme ontwikkelingsdoelen daardoor in gevaar worden gebracht. Momenteel zijn ontwikkelingslanden alleen direct betrokken bij mitigatie op grond van internationale afspraken via het 'Clean Development Mechanism' (CDM). In de toekomst is het echter mogelijk dat ontwikkelingslanden ook andere mitigatiemaatregelen zullen nemen, waaronder duurzame ontwikkelingsmaatregelen, 'no-lose' doelstellingen en misschien zelfs absolute emissiereductiedoelstellingen op de lange termijn.

De belangrijke maar moeilijke kwestie van toekomstige mitigatie-inspanningen door ontwikkelingslanden komt naar voren in paragraaf 1(b)(ii) van het Bali Actie Plan, waarin wordt verwezen naar 'Nationally Appropriate Mitigation Actions' (NAMAs) van ontwikkelingslanden in het kader van duurzame ontwikkeling, ondersteund en mogelijk gemaakt door technologie, financiering en capaciteitsopbouw, op een meetbare, rapporteerbare en verifieerbare (MRV) manier. De tekst in deze paragraaf bevat een aantal elementen die centraal staan in de discussie over mitigatiemaatregelen door ontwikkelingslanden in internationaal klimaatbeleid na 2012.

Een belangrijke vraag in de onderhandelingen betreft de *grondslag van NAMAs*, waaronder ook de juridische aard van deze maatregelen. NAMAs kunnen wel of niet juridisch bindend zijn onder internationaal recht. Deze bepaling heeft te maken met de vraag of en in hoeverre 'acties' ondernomen door ontwikkelingslanden verschillen van 'verbintenissen' voor ontwikkelde landen. Andere belangrijke vragen betreffen de *reikwijdte van NAMAs*. Voorstellen van verdragspartijen omvatten bijna iedere activiteit waarbij de broeikasgasuitstoot beperkt of verminderd wordt, waaronder maatregelen met directe gevolgen voor de uitstoot, maar ook maatregelen waarbij de uitkomsten moeilijker te kwantificeren zijn, zoals capaciteitsopbouw. Misschien wel de meest cruciale vraag gaat over de koppeling van *NAMAs en de steun van ontwikkelde landen*. Hierbij gaat het onder andere over de vraag of er NAMAs kunnen bestaan die unilateraal – dus alleen door het ontwikkelingsland zelf – ondernomen kunnen worden. Daarnaast is voor NAMAs waarvoor steun nodig wordt geacht de vraag hoe de steun en de specifieke maatregelen aan elkaar gekoppeld worden, en welke mate van steun gepast is voor deze NAMAs. Een andere groep vragen betreft de clausule over MRV. Geldt MRV alleen voor de technologische, financiële en capaciteitssteun van ontwikkelde landen, voor NAMAs die steun ontvangen, of voor allebei? En zelfs als duidelijk is wat onderworpen is aan MRV zijn er verschillende andere openstaande punten: hoe zal MRV plaatsvinden (en welke indicatoren worden daarbij gebruikt)?; zal MRV verschillend zijn voor verschillende soorten maatregelen?; wie is verantwoordelijk voor het meten, rapporteren en verifiëren (en op welk niveau dient dit plaats te vinden)?; en wanneer dient MRV plaats te vinden?

De posities van landen(groepen) in de klimaatonderhandelingen sinds de klimaattop in Bali eind 2007 tonen aan dat er verschillende interpretaties mogelijk zijn van de tekst in het Bali Actie Plan over NAMAs, en dat er verschillende antwoorden mogelijk zijn op bovengenoemde vragen. De posities van landen worden beïnvloed door de binnenlandse situatie, maar ook door de onderhandelingscoalities waartoe de landen behoren. De vraag voor de discussies over NAMAs in Kopenhagen en daarna is of de verschillende posities met elkaar verzoend kunnen worden, voor welke kwesties een overeenkomst in Kopenhagen nodig is, en welke kwesties eventueel later opgelost kunnen worden.

Tegen deze achtergrond, behandelt dit rapport de volgende onderzoeksvragen:

- Wat zijn de onderhandelingsposities van vier belangrijke ontwikkelingslanden – Brazilië, China, India en Zuid Afrika – met betrekking tot NAMAs en paragraaf 1(b)(ii) van het Bali Actie Plan? In het bijzonder, wat is de positie van deze landen inzake: a) de aard en context

van NAMAs; b) de reikwijdte van NAMAs; c) de koppeling van NAMAs en steun; en d) MRV van NAMAs?
- Wat zijn de binnenlandse ontwikkelingen en overwegingen die de posities van deze vier landen beïnvloeden?
- Wat zijn de vooruitzichten dat deze landen bepaalde soorten NAMAs zullen ondernemen in het internationale klimaatregime voor na 2012?

2. Brazilië

Brazilië is van mening dat NAMAs niet hetzelfde zijn als de emissiereductieverbintenissen voor ontwikkelde landen. Binnenlandse kritiek en een behoefte om leiderschap te tonen op internationaal niveau kunnen echter tot een verandering van de Braziliaanse positie leiden met betrekking tot het verwerpen van emissiereductiedoelstellingen. Overheidsvertegenwoordigers hebben al aangegeven dat Brazilië overweegt om de emissies te beperken tot het niveau van 2005 in 2020. Daarnaast heeft het land recentelijk doelstellingen geformuleerd voor het verminder van ontbossing in het Amazonegebied.

Voor Brazilië kan een reeks van mitigatiemaatregelen onder de reikwijdte van NAMAs vallen. In het Braziliaanse nationale klimaatplan zijn de geschatte emissieresultaten van verschillende huidige en toekomstige klimaatmaatregelen gekwantificeerd. Veel van deze maatregelen kunnen mogelijk kwalificeren als NAMAs. In dat geval zal echter meer informatie over de geschatte reducties, en de berekening waarop ze gebaseerd zijn, nodig zijn voor andere verdragspartijen.

Het voorkomen van emissies door ontbossing (‘Reduced Emissions from Deforestation and Degradation’; REDD) is een mogelijke NAMA, een optie die grote gevolgen zou kunnen hebben voor Brazilië. In het verleden was Brazilië skeptisch over het meenemen van emissies door ontbossing in het klimaatregiem omdat het land niet zeker wist of mogelijke verbintenissen om ontbossing te verminderen nagekomen zouden kunnen worden. In toenemende mate is echter het besef ontstaan dat Brazilië op dit gebied kan profiteren als een REDD-mechanisme gekoppeld is aan technologische, financiële en capaciteitssteun. Dit zou kunnen leiden tot financiële overdrachten in een andere orde van grootte dan de uitvoer van biobrandstioffen of investeringen via het CDM.

3. China

De speerpunten van het Chinese beleid zijn gericht op sociale en economische ontwikkeling, Niettemin probeert China een betere reputatie in het buitenland te krijgen en krijgt het meer en meer te maken met milieugevolgen in eigen land. Binnen China hebben sommigen de overheid opgeroepen om vrijwillige of misschien zelfs bindende emissiereductiedoelstellingen in te voeren voor een aantal sectoren. Voor sommige sectoren kunnen deze doelstellingen overgenomen worden uit bestaande plannen, zoals het nationale klimaatprogramma en het elfde vijfjarenplan waarin China’s economische ontwikkelingsprioriteiten zijn beschreven. Internationale verbintenissen om beleid te ondernemen, zoals bijvoorbeeld duurzame ontwikkelingsmaatregelen, lijken pas haalbaar na 2012. De belofte van de Chinese President Hu Jintao om de Chinese CO_2-intensiteit te halveren in 2020 is een teken dat China bereid kan zijn om meer dan alleen maar beleidsmaatregelen te nemen.

Eén van de belangrijkste punten voor China in de onderhandelingen over NAMAs betreft de MRV van NAMAs, en met name wat wordt bedoeld met ‘verificatie’. Hoewel China verschillende binnenlandse doelstellingen heeft vastgesteld is het niet bereid om het behalen van deze doelstellingen uitgebreid op internationaal niveau te laten verifiëren. Het is mogelijk dat specifieke NAMAs opgenomen worden in het twaalfde vijfjarenplan die op dit moment voorbereid wordt.

4. India

De belangrijkste mogelijkheid voor India is het verkrijgen van (financiële) steun voor beleidsmaatregelen waarvoor het tot nu toe moeilijk is gebleken om de nodige steun te verwerven via het CDM. Dit geldt onder meer voor energiebesparingsprojecten en projecten in de transportsector. NAMAs zouden kunnen helpen om India verdergaande beleidsmaatregelen te nemen, hoewel striktere doelstellingen voor ontwikkelde landen en internationale steun belangrijke vereisten zijn.

India heeft zich verzet tegen het opnemen van doelstellingen voor ontwikkelingslanden in een post-2012 overeenkomst. Er zijn echter wel enige veranderingen in de positie merkbaar. Zo beloofde premier Manmohan Singh in 2007 dat de Indiase emissies per hoofd van de bevolking nooit hoger zullen zijn dan die van de ontwikkelde landen. Daarnaast stelde de minister voor milieu Jairam Ramesh in september 2009 dat een niet-juridisch bindende doelstelling een mogelijkheid is. Niettemin wordt de defensieve houding van India in de onderhandelingen nog altijd ondersteund door vele belanghebbenden, niet alleen binnen de overheid, maar ook in de oppositie, de media en andere organisaties.

Belangrijke vragen voor India in de onderhandelingen over NAMAs betreffen: de bronnen voor financiële en technologische steun; de criteria voor het ontvangen van steun; en de technische – doch ook politieke – aspecten van MRV.

5. Zuid-Afrika

Zuid-Afrika is zeer actief geweest in de discussie over NAMAs, en heeft gedetailleerde suggesties gedaan over wat NAMAs kunnen inhouden – terugverwijzend naar het concept van duurzaamheidsmaatregelen – en hoe NAMAs en steun bij elkaar gebracht kunnen worden door een register in combinatie met bestaande mechanismen voor financiering en technologie binnen het Klimaatverdrag.

Voor Zuid-Afrika bieden NAMAs de mogelijkheid om steun te krijgen voor het verduurzamen van de economie en het behalen van beleidsdoelstellingen die indirect met klimaatverandering te maken hebben. Op de korte termijn kan dit bereikt worden door het implementeren van beleid met weinig of negatieve kosten, zoals energiebesparing in verschillende sectoren. De overheid is bereid om verschillende duurzaamheidsmaatregelen te nemen, maar nog niet om doelstellingen aan te nemen om emissies te beperken of te verminderen in bepaalde sectoren. Het is echter wel mogelijk dat andere doelstellingen, zoals energie-intensiteitsdoelstellingen of energiebesparingsdoelstellingen, kunnen worden aangenomen.

6. Posities met betrekking tot NAMAs

De posities op het gebied van NAMAs van de vier landen zijn vergelijkbaar (zie Tabel 1). Ten eerste verwijzen alle vier de landen naar het beginsel van ‘gezamenlijke doch verschillende verantwoordelijkheden’, waarbij aangegeven wordt dat NAMAs duidelijk niet hetzelfde zijn als de mitigatieverplichtingen voor ontwikkelde landen. Ten tweede benadrukken deze landen het belang van ontwikkeling, d.w.z. dat mitigatie-acties deze ontwikkeling niet dienen te belemmeren. Ten derde betogen alle vier landen dat NAMAs op vrijwillige basis dienen te worden voorgesteld, en dat door ontwikkelingslanden ondernomen autonome maatregelen erkend dienen te worden. Tenslotte stellen de vier landen allemaal voor dat de financiële steun voor NAMAs geregeld dient te worden door middel van het financiële mechanisme zoals voorgesteld door de G-77 en China.

Tabel 1. Overzicht van onderhandelingsposities

Onderwerp	Brazilië	China	India	Zuid-Afrika
Aard en context	Op vrijwillige basis	Op vrijwillige basis	- Op vrijwillige basis - Contract tussen ontwikkelingsland en ontwikkeld land	Op vrijwillige basis
Reikwijdte	- Veel verschillende soorten acties - Met name voor REDD - Geen autonome maatregelen	- Veel verschillende soorten acties - Geen emissiereductie-verplichtingen	- Veel verschillende soorten acties - Geen emissiereductie-verplichtingen - Geen autonome maatregelen	- Veel verschillende soorten acties - Mogelijk autonome maatregelen
Koppeling NAMAs en steun	- Register voor acties en steun - Registreer verwachte mitigatievoordeel, steun - Geen credits	- Geen credits en offsets - 'Low-carbon development strategies' geen voorwaarde voor steun - Register gebruikt voor rapportage achteraf	- Register voor acties en steun - Registreer verwachte mitigatievoordeel, steun - Financieel en technologie mechanismen koppelen acties en steun	- Register voor acties en steun - Registreer verwachte mitigatievoordeel, duurzaamheids-voordelen, steun - Technisch panel beoordeelt aannames waarop acties gebaseerd zijn - Financieel en technologie mechanismen koppelen acties en steun
MRV	- Nationale procedures voor meten en rapportage - Internationale procedure voor verificatie	- Nationaal, op basis van internationale richtlijnen - Voor ondersteunde actie, rapportage via financieel en technologie mechanismen - Autonome maatregelen via Nationale Communicaties aan UNFCCC	- Geen verificatie van autonome maatregelen - Gebruik contract tussen ontwikkelingsland en ontwikkelingsland	- M: tweejaarlijkse broeikgas-inventarisaties - R: via register (jaarlijks voor ondersteunde acties) en Nationale Communicaties (voor autonome maatregelen - V: nationaal (voor autonome maatregelen) en internationaal (voor ondersteunde acties), op basis van internationale richtlijnen

Bij nadere inspectie blijkt echter dat er ook verschillen zijn in de posities. Ten eerste hebben de landen niet dezelfde visie op de relatie tussen autonome binnenlandse maatregelen en NAMAs. Als een actie geen steun krijgt vanuit het buitenland is het voor India geen NAMA. Zuid-Afrika daarentegen stelt voor om ook autonome maatregelen internationaal te registreren. Ten tweede zijn twee landen – Brazilië en China – expliciet tegen het uitgeven van 'credits' voor NAMAs, terwijl de twee andere landen geen duidelijke positie op dit punt hebben gekozen. Ten derde verschillen de landen van mening over de rol van een register. Zuid-Afrika ziet een belangrijke rol voor een dergelijk mechanisme, waaronder het uitvoeren van MRV functies en het bij elkaar brengen van acties en de benodigde steun. China ziet een register echter meer als een rapportagemiddel achteraf. Tenslotte zijn er verschillende visies over het niveau waarop MRV dient plaats te vinden. Hoewel alle landen voorstellen om MRV te laten verschillen naar gelang het soort mitigatie-actie dat plaatsvindt, heeft India aangegeven dat autonome maatregelen niet als NAMAs kunnen worden beschouwd – en dat MRV dus ook niet nodig zal zijn. Zuid-Afrika heeft echter aangegeven dat MRV ook mogelijk kan zijn voor autonome maatregelen.

Hoewel de vier landen tegenstander zijn van het bespreken van emissiereductiedoelstellingen voor ontwikkelingslanden, blijft het mogelijk dat kwantitatieve doelstellingen als NAMAs voorgesteld worden. Alle landen hebben immers verschillende soorten doelstellingen op nationaal niveau aangenomen. Het opnemen van zulk soort verplichtingen in een internationale overeenkomst zal echter sterk afhangen van het aannemen van juridisch bindende doelstellingen door de ontwikkelde landen, inclusief de Verenigde Staten.

7. Vooruitblik

Het is onwaarschijnlijk dat landen over alle kwesties inzake NAMAs overeenstemming bereiken in Kopenhagen. Het lijkt echter noodzakelijk om over de volgende kwesties een basisovereenstemming te bereiken:

- De juridische status van NAMAs: is er een juridisch bindende verplichting om bepaalde NAMAs uit te voeren of een 'low-carbon development strategy' vast te stellen?
- Definitie en classificatie van NAMAs: kunnen autonome maatregelen als NAMAs beschouwd worden, en dienen deze dus onderworpen te worden aan internationale MRV?
- Basisbeginselen inzake een mechanisme voor het koppelen van NAMAs en steun: wat is het belangrijkste doel van een register (of een ander mechanisme om acties en steun te koppelen)?
- Crediteren van NAMAs: kunnen/mogen NAMAs credits of offsets opleveren?
- MRV: hoe verschilt het MRV systeem voor NAMAs van het huidige systeem voor ontwikkelingslanden?
- Verificatie: in welke mate vereist verificatie internationale inmenging in nationale zaken?

Meer gedetailleerde bepalingen zouden kunnen worden aangenomen via besluiten van de Conferentie der Partijen van het Klimaatverdrag of een opvolger onder een nieuwe overeenkomst.

8. Epiloog

Het onderzoek voor dit rapport is in november 2009 afgerond. Er hebben sindsdien enkele belangrijke ontwikkelingen plaatsgevonden. Zo heeft de Conferentie der Partijen in december 2009 geleid tot het Kopenhagen Akkoord, een niet-juridisch bindende overeenkomst tussen de belangrijkste broeikasgasuitstotende landen en enkele andere landen. Het akkoord spoort ontwikkelde landen aan om gekwantificeerde emissiereductiedoelstellingen in het akkoord op te nemen, en verzoekt ontwikkelingslanden om hun voorgenomen NAMAs aan te geven en internationale MRV in te stellen voor deze acties.

Het Kopenhagen Akkoord stelt een register in voor NAMAs op zoek naar internationale steun. In het register kan ook informatie over de vereiste financiële, technologische en capaciteitsopbouwsteun worden opgenomen. Inzake de rapportage over NAMAs geeft het akkoord aan dat ontwikkelingslanden hun mitigatie-acties dienen te communiceren middels tweejaarlijkse nationale communicaties, die dienen te worden opgesteld op basis van richtlijnen van de Conferentie der Partijen van het Klimaatverdrag. MRV zal in beginsel dienen plaats te vinden op nationaal niveau, maar de resultaten van de MRV dienen te worden gerapporteerd via de nationale communicaties. Met betrekking tot verificatie geeft het akkoord aan dat ontwikkelingslanden informatie zullen doorgeven over hoe de NAMAs worden geïmplementeerd, met bepalingen over 'internationale beraadslagingen en analyse'. Met andere woorden, het akkoord introduceert een vorm van internationale controle van nationale zaken.

Verschillende ontwikkelingslanden, waaronder de landen waar dit rapport betrekking op heeft, hebben inmiddels voorgenomen NAMAs doorgegeven aan het Secretariaat van het Klimaatverdrag. Een eerste analyse van de NAMAs die zijn voorgesteld door de vier landen bestudeerd in dit rapport leidt tot de volgende inzichten:

- Brazilïe heeft een verscheidenheid aan acties voorgesteld, maar de belangrijkste acties hebben betrekking op het verminderen van ontbossing.
- De andere drie landen hebben minder acties voorgesteld. Dit kan verklaard worden door het feit dat het Kopenhagen Akkoord nog niet een mechanisme heeft ingesteld dat acties aan internationale steun koppelt. Daarnaast geeft het akoord aan dat meer gedetailleerde NAMAs ook later kunnen worden voorgesteld.
- Alle vier landen hebben gekwantificeerde informative over de emissie-effecten van de NAMAs opgenomen.

- De belangrijkste beloftes van de vier landen zijn gelijk aan de beloftes die gedaan waren voor de Conferentie in Kopenhagen.
- De vier landen benadrukken dat de implementatei van de acties zal afhangen van het geven van steun door ontwikkelde landen. De vier landen maken in hun voorstellen geen onderscheid tussen autonome NAMAs en NAMAs waar internationale steun voor nodig is. Het is dus nog onduidelijk of NAMAs (gedeeltelijk) kunnen worden geïmplementeerd zonder internationale steun.
- Hoewel Zuid-Afrika en Brazilïe expliciet terugverwijzen naar het Kopenhagen Akkoord, doen de Chinese en Indiase voorstellen dat niet.

Het communiceren van deze NAMAs aan het Secretariaat is niet het einde van de discussie. Veel vragen die in dit rapport zijn behandeld blijven van belang. Ten eerste valt het te bezien of de uitkomsten van Kopenhagen uiteindelijk in een formeel besluit van de Conferentie der Partijen zullen worden opgenomen of misschien zelfs in een juridisch bindend verdrag. Ten tweede maakt het Kopenhagen Akkoord geen onderscheid tussen autonome NAMAs en NAMAs waar internationale steun noodzakelijk is. Hoewel het akkoord wel aangeeft dat er verschillende MRV eisen zijn voor ondersteunde NAMAs en mitigatie-acties in het algemeen is een duidelijker onderscheid tussen deze twee categoriën nodig. Ten derde is het nodig om de details uit te werken over het koppelen van acties en steun. Het is echter nog niet eens duidelijk hoe alle bepalingen van het Kopenhagen Akkoord kunnen worden uitgewerkt, aangezien de verdragspartijen het niet eens konden worden over de juridische status van het akkoord. Zelfs indien van het akkoord een besluit van de Conferentie der Partijen wordt gemaakt is het nodig om een aantal belangrijke knopen door te hakken. Dit betreft onder meer de functie van het register, richtlijnen voor MRV, en gedetailleerde specificaties voor de toekomstige financiële en technologische mechanismen. Tenslotte blijven vragen over de mogelijkheid van het uitgeven van credits voor NAMAS onbeantwoord.

List of acronyms

AWG-LCA	Ad hoc Working Group on Long-term Cooperative Action
BAP	Bali Action Plan
BASIC	Brazil, South Africa, India, China
BAU	Business-as-usual
CCS	Carbon capture and storage
CDM	Clean Development Mechanism
CER	Certified emission reduction
CO_2	Carbon dioxide
CO_2-eq.	Carbon dioxide equivalent
COP	Conference of the Parties (to the UNFCCC)
COP/MOP	Meeting of the Parties (to the Kyoto Protocol)
DEAT	Department of Environmental Affairs and Tourism (South Africa)
DME	Department of Minerals and Energy (South Africa)
GDP	Gross domestic product
G-77	Group of 77
HFC	Hydrofluorocarbon
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
LCDS	Low carbon development strategy
LDCs	Least developed countries
LTMS	Long Term Mitigation Scenarios (South Africa)
MRV	Measurable, reportable, and verifiable
Mt	Megatonne
NAMA	Nationally appropriate mitigation action
NAPCC	National Action Plan on Climate Change (India)
NCCP	National Climate Change Programme (China)
NDRC	National Development and Reform Commission
N_2O	Nitrous oxide
OECD	Organisation for Economic Co-operation and Development
PNMC	National Plan on Climate Change (Brazil)
PPCDAM	Action Plan for the Prevention and Control of Deforestation in the Legal Amazon Region (Brazil)
PROINFA	Programme of Incentives for Alternative Electricity Sources (Brazil)
QELROs	Quantitative emission limitation and reduction objectives
RD&D	Research, development and deployment
REDD	Reduced emissions from deforestation and degradation
RSA	Republic of South Africa
SADC	Southern African Development Community
SAM	Support and accreditation mechanism
SBI	Subsidiary Body for Implementation of the UNFCCC
SBSTA	Subsidiary Body for Scientific and Technological Advice of the UNFCCC
SD-PAMs	Sustainable development policies and measures
TPES	Total primary energy supply
UNFCCC	United Nations Framework Convention on Climate Change
WRI	World Resources Institute

1 Introduction

1.1 Background

In February 2007, the Intergovernmental Panel on Climate Change (IPCC) concluded with 90% certainty that human activities contribute to the increase in the global average temperature (IPCC, 2007a). It stressed the rationale for rapidly limiting and reducing the amount of anthropogenic greenhouse gas emissions released into the atmosphere, to prevent irreversible and adverse climate impacts, including sea-level rise, melting glaciers, increased droughts, and shifts in rainfall patterns.

To address climate change, the Kyoto Protocol, which includes binding quantitative commitments on greenhouse gas emission reductions for industrialised countries, and thereby further develops the provisions of the 1992 United Nations Framework Convention on Climate Change (UNFCCC), was adopted in 1997, and entered into force eight years later. Although Kyoto's entry into force was widely celebrated, and can be seen as an important first step, the bottom line is that greenhouse gas concentration levels have increased significantly since pre-industrial times, and global emissions have risen by 70% between 1970 and 2004 (IPCC, 2007b). The Protocol's target of a 5% reduction of greenhouse gas emissions for industrialised countries by 2012 will be largely insufficient to achieve the ultimate objective of the UNFCCC, which is to 'avoid dangerous anthropogenic interference with the climate system' (Article 2 UNFCCC). At present there are no quantitative targets for the post-2012 period, and there is no clarity about the way in which developing countries will be gradually included into the regime of targets-and-timetables.

In 2008, the Institute for Environmental Studies of the Vrije Universiteit Amsterdam carried out the study 'Exploring the Socio-Political Dimension of Climate Change Mitigation', commissioned by the Netherlands Environmental Assessment Agency. The study provided a brief examination of the positions of various key players in the post-2012 climate change negotiations (Brazil, China, India, Russian Federation, South Africa, and the United States), and provided a preliminary analysis of the underlying driving factors for these positions, using a framework related to the perceptions of equity, affectedness and opportunity (Van Asselt et al., 2008). This report builds on the 2008 study, by examining one important issue in the negotiations in more detail, namely the question of nationally appropriate mitigation actions (NAMAs) undertaken by developing country Parties.

The concept of NAMAs was included in the 2007 Bali Action Plan (BAP), which provides one of the negotiation tracks towards a post-2012 climate agreement to be concluded at the fifteenth Conference of the Parties (COP) in Copenhagen in 2009 (UNFCCC, 2008). Thus, paragraph 1(b)(ii) of the BAP calls for a process addressing:

"[e]nhanced national/international action on mitigation of climate change, including, inter alia, consideration of:

> *(i) (…)*
> *(ii) Nationally appropriate mitigation actions by developing country Parties in the context of sustainable development, supported and enabled by technology, financing and capacity-building, in a measurable, reportable and verifiable manner".*

The text on NAMAs was agreed after intensive negotiations at the last day of the COP in Bali, and has subsequently been subject to different interpretations (Rajamani, 2008). Party submissions showed that Parties have very different views on how NAMAs should contribute to sustainable development in developing countries; what kind of actions (and for which sectors) could qualify as NAMAs; how NAMAs could/should be registered and accounted for; the time by which NAMAs should be implemented for which countries; and the legal nature of NAMAs (e.g. UNFCCC, 2009a, p. 31-34). Various types of NAMAs have been suggested by Parties,

including sustainable development policies and measures (SD-PAMs) (see Winkler et al., 2002; Baumert & Winkler, 2005), sectoral crediting mechanisms (Bosi & Ellis, 2005), programmatic CDM, and sectoral approaches (Baron et al., 2007; Bodansky, 2007), as well as individual projects. Furthermore, it is still unclear by when which countries need to adopt NAMAs, and whether and how NAMAs should be registered and accounted for. Finally, their legal nature (legally binding or not) is still undecided.

In its 2009 Communication on post-2012 climate policy, the European Commission outlined its position on the various elements of the BAP. With respect to developing country participation, the Commission indicated that developing countries 'will need to limit the rise in their [greenhouse gas] emissions through nationally appropriate actions to 15-30% below baseline by 2020' (European Commission, 2009: 5). These actions include reducing tropical deforestation, the adoption of 'low-carbon development strategies' (LCDS), and sectoral approaches. Part of these actions would be autonomously carried out by developing countries, whereas other actions would require the financial support of industrialised countries. Rather than imposing certain types of NAMAs on developing countries, the Commission thus embraces a principle of 'self-election' (Rajamani, 2008), where developing countries can choose what kind of NAMAs they want to adopt. Although the Commission's position is supported by an extensive background analysis, it is not entirely clear how key developing countries, such as Brazil, China, India and South Africa (the 'BASIC' countries), receive this specific proposal, and to what extent positions of the EU and these countries may be diverging. Getting a better understanding of the positions and underlying interests in key developing countries is thus important for building mutual understanding in the negotiations.

1.2 Research questions

Against this background, this report addresses the following, inter-related research questions:

- What are the positions of four key developing countries – Brazil, China, India, South Africa (the 'BASIC' countries') – on NAMAs and paragraph 1(b)(ii) of the BAP? In particular, what are these countries' views on: a) the nature and context of NAMAs; b) the scope of NAMAs; c) the linking of NAMAs and support; and d) the MRV of NAMAs?
- What are the domestic considerations underlying the positions of these four countries?
- What are the prospects of these countries to undertake certain types of NAMAs under a post-2012 climate regime?

1.3 Methodology and limitations

The research methodology consists of: 1) a literature review on the issue of developing country participation in the future climate change regime, and the more general literature on developing country participation in a future climate regime; 2) a review of available documents on NAMAs, including primary documentation such as UNFCCC documents and Party submissions, and secondary literature; 3) attending meetings of the Ad hoc Working Group on Long-term Cooperative Action (AWG-LCA), as well as reviewing meeting through UNFCCC webcasts and the coverage by the Earth Negotiations Bulletin and the Third World Network; and 4) selected interviews with observers from the respective countries.

Although the issue of NAMAs is inherently connected to numerous other issues in the post-2012 discussions, we would like to point to a few limitations of our study. First, paragraph 1(b)(ii) of the BAP raises the issue of measuring, verification and reporting (MRV). There have been different interpretations of the MRV clause (does it relate to support by developed countries and/or mitigation actions by developing countries?), but it is still not entirely clear which interpretation will prevail in the end. Although this project will address the issue of MRV (which is inextricably linked to the concept of NAMAs through the BAP), the MRV of support is not its main focus (see, however, Ellis & Larsen, 2008; Fransen et al., 2008; Winkler, 2008; Breidenich & Bodansky, 2009; Ellis & Moarif, 2009). Second, NAMAs can take many different forms (UNFCCC, 2009a). Some of them include the use of flexibility mechanisms, such as the CDM or

sectoral crediting. Although various options for NAMAs will be discussed, and the different countries' status in the CDM will be described, the report will not address the separate, yet related question of CDM reform.

1.4 Outline

The report is structured as follows. Chapter 2 first discusses and structures the key questions in the debate on NAMAs, and places the issue of NAMAs in the broader context of the literature on developing country participation in the future climate regime. Based on this discussion, Chapters 3-6 analyse the country positions of Brazil, China, India and South Africa with respect to the nature and context of NAMAs, the scope of NAMAs, the linking of NAMAs and support, and the MRV of NAMAs. The chapters also provide insights in the underlying interest at the domestic level, with a view to identifying prospects for engagement. Potential NAMAs are identified by examining which mitigation options have remained untapped under the current regime. Chapter 7 draws conclusions and provides policy recommendations. Given the developments on the issue of NAMAs after the finalisation of the research for this report, Chapter 8 contains a short epilogue discussing these developments and their implications.

2 NAMAs and developing country participation in a post-2012 climate regime

2.1 Introduction

Greenhouse gas emissions are generally associated with the process of development in various sectors, including energy, transport, and agriculture, household. Despite the potential climate change impacts that developing countries may suffer, there is a fear that the policies and measures that are needed to reduce greenhouse gas emissions may impede developing countries' economic growth. Controlling greenhouse gas emissions without negative impacts on the economy appears to be a major bottleneck not just for developing countries but also for industrialised countries. In the early 1990s, there was an expectation that as countries would become richer, they would first pollute more, but that beyond a certain threshold level they would succeed in permanently decoupling their economic growth from their greenhouse gas emissions (the 'Environmental Kuznets Curve'). This implied that countries would first need to become wealthier before investments to control emissions should be made. This idea was incorporated in the UNFCCC, which acknowledged that 'Parties have a right to, and should, promote sustainable development' (Article 3.4 UNFCCC). However, more recent literature shows that such decoupling is not something that can be taken for granted, especially for global pollutants (e.g. Dinda, 2004; Caviglia-Harris et al., 2009). In other words, the optimal pathway for combining both economic development and climate change mitigation remains largely unclear.

The IPCC's Fourth Assessment Report has discussed the relation between climate change mitigation and sustainable development at length, arguing that climate change mitigation can have ancillary benefits for sustainable development ('climate first'), and that sustainable development provides fruitful conditions for promoting mitigation ('development first'). It further argued that sustainable development is not about following a pre-determined path but about 'navigating through an unchartered and evolving landscape' (Sathaye et al., 2007: 701). For developing countries, it noted that the low energy consumption and emissions per capita meant that a focus on climate change mitigation might come at the cost of meeting sustainable development goals (Sathaye et al., 2007: 706). Against this background, post-2012 discussions on future mitigation action by developing countries should take into account the need for integrating development and climate policies.

At the same time, it is increasingly evident that to avoid dangerous climate change, greenhouse gas emission reductions need to take place not only in the industrialised, but also in the developing world. The challenge is thus to induce developing countries to participate in future mitigation action without jeopardising their legitimate development goals. Politically, this task is complicated by the non-participation of one of the world's largest emitters in the Kyoto Protocol (the United States), by the adoption of targets that allow some industrialised countries to increase emissions, and by the ability of industrialised countries to purchase emission reduction credits in other countries (Van Asselt and Gupta, 2009). In addition, developing countries feel that industrialised countries have failed to live up to their commitments in the UNFCCC on financial, technological and capacity building support.

These developments have antagonised developing countries, since they receive the impression that key industrialised countries are retracting from their original commitment to lead the process. This leads them to wonder whether it is possible to enhance economic growth while not increasing greenhouse gas emissions. Still, many developing countries are already taking mitigation action, or are willing to do so, for a variety of domestic policy reasons including energy security, local air pollution, etc. While some countries, such as China and India, have put in place policies, they are less willing to take a conciliatory position internationally. However, others are willing to engage in defining international solutions for involving developing countries (e.g. Argentina, Kazakhstan, and South Africa). As outlined in this report, the difficulties in

getting to an agreement on an international framework for developing country mitigation action are apparent in the NAMA negotiations.

This chapter provides a background to the country studies in the following chapters, focusing on the concept of NAMAs. The chapter is structured as follows. It first discusses the background of the Bali Action Plan (Section 2.2) and the specific provision on NAMAs (Section 2.3). The remainder of the chapter focuses on specific options for NAMAs that have been put forward in the negotiations (Section 2.4) and provides conclusions (Section 2.5).

2.2 The Bali Action Plan

At COP-11 and COP/MOP-1, held in Montréal in December 2005, first steps were made to discuss and negotiate the future of international climate change governance. In the context of the UNFCCC, an agreement to start an open, non-binding dialogue was reached. Second, discussions on new commitments for developed countries were initiated on the basis of Article 3.9 of the Kyoto Protocol. In Montréal, it became apparent that developing countries still vigorously opposed even discussing the remote possibility of commitments. This option was raised by some Parties, which tried to broaden the discussion of new commitments for Annex I countries to a review of the Kyoto Protocol, which was due for the second COP/MOP.

The issue of future commitments was once again on the agenda at COP-12 and COP/MOP-2, held in Nairobi in November 2006. A decision was made there to hold a second review at the fourth COP/MOP in 2008, but that this review 'shall not lead to new commitments for any Party' (UNFCCC, 2007, para. 6). The Nairobi talks were merely a prelude to the discussions at the following COP and COP/MOP in Bali, Indonesia in December 2007.

The Bali meeting was a crucial moment in the UNFCCC process to set in motion negotiations on a follow-up agreement to be concluded before the current Kyoto targets expire. After intense negotiations, Parties to the UNFCCC finally adopted a series of decisions referred to collectively as the 'Bali Road Map'. The key decision of COP-13 is known as the Bali Action Plan (BAP) (UNFCCC, 2008). It launches 'a comprehensive process to enable the full, effective and sustained implementation of the Convention through long-term cooperative action, now, up to, and beyond 2012, in order to reach an agreed outcome and adopt a decision at its fifteenth session' (UNFCCC, 2008, para. 1). The negotiation process takes place within the Ad Hoc Working Group on Long-term, Cooperative Action, which meets more frequently than the COP. The decision leaves open a number of key issues: it avoids any explicit, quantitative reference to a long-term objective, calling only for 'deep cuts'. It also does not specify any desirable short- to medium-term targets. Furthermore, the decision leaves open a wide range of possibilities for how a post-2012 agreement might look, and it does not explicitly preclude the option that negotiations under Article 3.9 of the Kyoto Protocol are linked to the negotiations under the UNFCCC. The decision also addresses the way in which developing countries could participate in a future agreement through 'nationally appropriate mitigation actions' (NAMAs), which are the main focus of this report.

2.3 One paragraph – many questions

The important yet difficult issue of future mitigation efforts by developing countries is largely captured by one paragraph in the BAP, which calls for:

"[e]nhanced national/international action on mitigation of climate change, including, inter alia, consideration of:

> *(i) (…)*
> *(ii) Nationally appropriate mitigation actions by developing country Parties in the context of sustainable development, supported and enabled by technology, financing and capacity-building, in a measurable, reportable and verifiable manner".*

It is striking that this short text comprises some of the key questions that can be raised with respect to developing country mitigation action in a post-2012 climate regime.

One of the main questions concerns the *nature of NAMAs* by developing countries in a post-2012 world. This question relates, among others, to their legal nature: are the actions considered to be binding or non-binding under international law? And to what extent are 'actions' by developing country Parties different from 'commitments' by developed country Parties? Moreover, if the actions themselves are not considered to be legally binding, would there be any other obligation regarding NAMAs entailing legal consequences (for example, mandatory registration – see below)? If so, to what extent should the details be spelled out in an international agreement, and what issues can be left for future COPs to be decided?

A second question is what the *scope of NAMAs* by developing countries should be. So far, proposals by Parties have included almost every possible activity that aim to reduce or limit greenhouse gas emissions (see below). However, the link between a specific action (e.g. raising awareness about energy consumption) and the impact in terms of emission reductions may not always be straightforward. Would the definition of a NAMA then depend on the aims of an action or its actual effect in terms of greenhouse gas emission reductions? In addition, the question is whether the concept of NAMAs applies to existing (or currently planned) mitigation actions in developing countries, or also to new actions that have not yet been considered. In other words, is the purpose of the concept to recognise existing policies, or to provide an incentive to undertake further action in order to achieve a certain amount of emission reductions in developing countries?

Third, there are questions related to the *link between NAMAs and their support* from developed country Parties. The most important question in this regard is which NAMAs should receive support, and if there are any NAMAs that can be undertaken autonomously (i.e. without support but funded through own resources). In other words, will it be necessary to create a categorisation of different types of NAMA, linked to the support? In addition, for the NAMAs for which support is deemed necessary, the question is how to link the action with the support, and what kind of support is needed for what kind of NAMAs.

A fourth set of questions relates to the *'measurable, reportable and verifiable' (MRV)* clause. Does MRV refer to technology, finance and capacity building to be provided by developed countries, to all NAMAs in general, to only NAMAs for which there is support, or to both NAMAs and support? In addition to the question of *what* should be subject to measurement, reporting and verification, the concept of MRV raises other questions (e.g. Ellis & Larsen, 2008; Fransen et al., 2008; Winkler, 2008; Breidenich & Bodansky, 2009; Ellis & Moarif, 2009): *how* would MRV take place (including possible metrics used); should it differ for different types of actions and, if so, how?; *who* should measure, report and verify (and at what level)?; *when* should MRV take place?

Finally, the language used in the BAP speaks of 'developing country Parties' rather than 'non-Annex I Parties', raising the question if the two can be used synonymously or not. Given the need to limit the scope of this report, this question will not be addressed here (but see Rajamani, 2008).

In summary, paragraph 1(b)(ii) of the BAP raises several important questions about how developing countries could participate in future climate change mitigation. Possible answers to these questions are discussed in the following section on the basis of Party submissions and secondary literature.

2.4 Options for NAMAs

This section examines different proposals for the design of NAMAs in a post-2012 regime, based on the submissions by Parties. The structure of this section follows the groups of questions raised in the previous section, and will hence discuss: 1) the nature and context of

NAMAs; 2) their scope; 3) the link between NAMAs and support; and 4) the issue of MRV. Although the options discussed under the different headings are clearly related, this structure allows for a more structured mapping of country positions.

2.4.1 The nature and context of NAMAs

Simply put, the legal nature of developing countries' NAMAs could be legally binding or non-legally binding. Most Parties – including Annex I Parties such as the EU – agree that NAMAs should not entail legally binding commitments, and that NAMAs are thus distinct from the 'nationally appropriate mitigation actions or commitments' for developed country Parties under paragraph 1(b)(i) BAP. However, some Parties, including Japan (2009), have argued that NAMAs need to contain some forms of commitments, such as intensity targets for at least 'major developing countries'. Furthermore, the United States suggested including NAMAs up to 2020 directly in an 'implementing agreement' to be agreed in Copenhagen for 'developing country Parties whose national circumstances reflect greater responsibility or capability' (United States, 2009: 4). These Parties have sought to minimise the differences between commitments for developed country Parties and developing country Parties.

Even if the NAMAs themselves did not entail legally binding commitments, inclusion of the concept in a post-2012 agreement would likely have legal consequences. For example, the creation of a mechanism for the registration of NAMAs (see below) could lead to a legal commitment for developing countries to submit activities for registration. However, it could also be made explicit that any action is only proposed and registered on a voluntary basis, an option that most non-Annex I Parties prefer (G-77 and China, 2009; Republic of Korea, 2009a; 2009b). Furthermore, the US proposal also entails additional legal obligations for developing country Parties, such as the development of low-carbon strategies and the annual submission of greenhouse gas inventories (except for LDCs) (United States, 2009; see also Australia, 2009; New Zealand, 2009; Norway, 2009).

For the European Community (2009) and several other Parties, the purpose of NAMAs is to ensure that NAMAs result in a significant deviation from baseline emissions in developing countries (on an aggregated level) between -15 and -30 percent by 2020. In contrast, for most developing countries the sustainable development context of the actions is most important: the actions should be in line with national development priorities, while also reducing emissions (G-77 and China, 2009). Furthermore, they emphasise that mitigation actions undertaken by developing countries will depend on the effective provision of financial and technological support by developed countries in accordance with Articles 4.3 and 4.7 of the UNFCCC (see below).

2.4.2 The scope of NAMAs

The question as to what would actually fall under the concept of NAMAs has caused considerable confusion. A wide range of mitigation actions has been proposed to be included under this heading in a post-2012 agreement (UNFCCC, 2009a). Proposed actions include targets, including absolute emission targets (emission caps), no-lose targets, emission intensity targets, energy consumption intensity targets, energy efficiency targets, and sectoral intensity targets. A second category of measures includes national action plans and strategies detailing a country's intended climate policies. These plans could be made on a voluntary or mandatory basis. Third, a number of proposals suggests to enhance developing country actions through the market-based mechanisms, for example, by implementing domestic cap-and-trade systems, or by crediting activities currently outside of the CDM, such as carbon capture and storage (CCS) and reduced emissions from deforestation and degradation (REDD), or by scaling up the CDM. Fourth, sectoral actions have been proposed, including (largely undefined) sectoral approaches, sectoral emission trading systems, no-lose sectoral crediting baselines. Fifth, technology-oriented actions have been suggested, including deployment programmes or standards for renewable energy and energy efficiency, as well as broader (international) technology partnerships. Finally, several countries have proposed to include SD-PAMs as a

form of NAMAs. The concept of SD-PAMs itself includes a wide range of measures (Winkler et al., 2002), which overlap with some of the previously mentioned categories.

Although all these actions are related to greenhouse gas emission reductions, not all of them seek to achieve these in a similar way. The proposed actions include actions at the national to the local level, and short-term and medium- to long-term actions. Some proposals include actions aimed primarily at sustainable economic and social development, or poverty eradication, rather than climate change mitigation. Proposed actions also include broad national-level strategies as well as concrete projects in the context of Article 12.4 UNFCCC.[1]

Furthermore, proposed actions include existing policies and measures, as well as planned ones. One part of the debate on NAMAs concerns the question how NAMAs should serve as a tool for recognition of ongoing developing country mitigation action. This debate is characterised by different interpretations between some Annex I and non-Annex I countries. Annex I Parties – like the EU – emphasise that they want to 'recognise' developing country action through NAMAs, but would like to see this linked to MRV requirements. Non-Annex I Parties instead argue that sufficient information about voluntary developing country action is already available (e.g. through National Communications), and that nothing would inhibit recognition. The difference, so it seems, is between a mere political statement of recognition as compared to a recognition entailing legal consequences, such as financial, technological or capacity-building support for actions recognised.

Several Parties – such as Japan (2009) and New Zealand (2009) – have raised the point that NAMAs should not be the same for all developing countries, and that they will have to be differentiated, for example in accordance with emission levels or through other indicators reflecting different national circumstances. However, formally enshrining this differentiation between developing countries in a post-2012 agreement will likely be unfeasible, given the large developing country opposition to such further differentiation (Rajamani, 2008). Instead, there have been suggestions to differentiate on the basis of the type of NAMA, irrespective of the Party implementing the action (e.g. European Community, 2009; Norway, 2009). The purpose of this differentiation is mainly to identify the appropriate level of support and relevant MRV requirements (see below).

The sectoral distribution of NAMAs has also been discussed, with some Parties calling for a balanced distribution of NAMAs across sectors (e.g. Saudi Arabia, 2009). Others have suggested the exclusion of specific technologies, such as nuclear energy, and a focus on renewable energy and energy efficiency (Tuvalu, 2009).

2.4.3 Linking NAMAs and support

One of the crucial aspects of paragraph 1(b)(ii) of the BAP relates back to Article 4.7 UNFCCC, which specifies that:

> *"The extent to which developing country Parties will effectively implement their commitments under the Convention will depend on the effective implementation by developed country Parties of their commitments under the Convention related to financial resources and transfer of technology and will take fully into account that economic and social development and poverty eradication are the first and overriding priorities of the developing country Parties".*

Article 4.7 thus makes a conditional link between developing country Party actions and developed country financial, technological, and capacity-building support. However, although

[1] This provision specifies that: "[d]eveloping country Parties may, on a voluntary basis, propose projects for financing, including specific technologies, materials, equipment, techniques or practices that would be needed to implement such projects, along with, if possible, an estimate of all incremental costs, of the reductions of emissions and increments of removals of greenhouse gases, as well as an estimate of the consequent benefits".

paragraph 1(b)(ii) of the BAP makes a clear suggestion *that* NAMAs should be supported, it does not specify *how* (Kim et al., 2009). This has led to controversy on the kind of mechanism needed to link NAMAs and the support that developed countries should provide for their implementation.

These discussions seem to have created a 'chicken and egg' dilemma on what should come first: the action or the support? For developing countries, which refer back to Article 4.7, it is clear that support should come first and that new conditionalities for receiving such support should not be introduced. However, Annex I Parties have argued that it is important to first identify which actions need support (e.g. European Community, 2009; Norway, 2009). In this regard, the EU's proposed low-carbon development strategy (LCDS) could serve as one means of identifying NAMAs.[2] The question is whether the existence of such a LCDS (or a similar national strategy) would determine whether a developing country is eligible for support or not: if so, then action – in the form of developing a LCDS – would come first after all. It could be argued that the development of a LCDS itself would be an action requiring support. However, so far, the EU only indicated it would assist LDCs in developing such strategies (European Community, 2009; but see Norway, 2009). Instead, the Republic of Korea (2009a; 2009b) suggests that all countries that cannot identify the specific needs – not only LDCs – may request the capacity building support needed.

In the negotiations, there have been several proposals for a 'registry' or 'register' of NAMAs, which would serve as the linking mechanism between the action and the support (e.g. European Community, 2009; Republic of Korea, 2009a; 2009b; South Africa, 2009). Additionally, such a register/registry could formally recognise developing country mitigation action, and be used for organising MRV. In this regard, Kim et al. (2009) suggest that an effective linking mechanism requires that both actions and support are subject to MRV. Several elements could be 'registered', including the actions themselves; the support needed; the expected (and realised) emission reductions; sustainable development benefits; the status of implementation; etc. (e.g. Republic of Korea, 2009a) It has been suggested that the register/registry would thus consist of a 'tool box' of NAMAs, from which countries could pick and choose (African Group, 2009; South Africa, 2009).

Even if Parties could agree on the idea of a register/registry, its creation would not resolve the matter of how (and what kind of) support is matched with (what kind of) actions. This depends primarily on broader discussions in the negotiations on a future financial mechanism as well as the mechanism for technology transfer. In this regard, a registry could:

- function as the mechanism through which the financial (and technological) resources are allocated;
- be linked to separate financial and technology mechanisms and would be limited to pointing developing countries seeking support to possible donors; or
- not be linked to support at all, which would make it a compilation of developing country mitigation actions.

Saudi Arabia's proposal for a support and accreditation mechanism (SAM) under the supervision of the COP is largely in line with the second option. However, under this proposal, the mechanism would also allow for crediting the NAMAs. Other suggestions grant the decision-making authority on providing support to separate financial and technology support mechanisms, or envisage a separate 'coordinating mechanism' (European Community, 2009). The latter would also have the authority to assess the assumptions and methodologies as proposed by the developing country, something for which South Africa (2009) has suggested a separate technical panel. In the case that the governance of the registry does not require a decision on the granting of support, some countries have suggested that the UNFCCC Secretariat should play a role in maintaining the registry (e.g. Republic of Korea, 2009a; 2009b South Africa, 2009).

[2] The EU suggests that all developing countries, except LDCs, should develop an LCDS by 2012.

Several Parties have suggested differentiating the support provided according to the type of action. The Republic of Korea and the EU have made the distinction between NAMAs to be undertaken unilaterally – and that do not need support; NAMAs to be undertaken only if there is support in advance; and NAMAs undertaken for (non-CDM) carbon credits for which it is difficult to secure public funding (European Community, 2009; Republic of Korea, 2009a; 2009b; see also Indonesia, 2009; Tuvalu, 2009). According to the proponents of crediting NAMAs, this approach would side-step the 'chicken and egg' discussion, as carbon credits could help securing upfront financial support for the action (New Zealand, 2009; Republic of Korea, 2009a; 2009b). Another way of differentiating NAMAs has been suggested by Norway (2009), which argues that support needs to be differentiated depending on the specifics of the action itself – e.g. REDD actions would require a different type of support than R&D activities.

Other Parties (e.g. India) argue that NAMAs can only be those actions for which developed country Parties meet the 'agreed full incremental costs of implementing measures' undertaken by developing country Parties, as specified by Article 4.3 of the UNFCCC.

2.4.4 NAMAs and MRV

The main objective of MRV is to assess the performance of individual countries, and to ensure that all countries are collectively on track towards the ultimate objective of the UNFCCC. Although the discussions on MRV have certainly attracted renewed attention in the context of the debate on NAMAs, MRV is already part and parcel of both the UNFCCC and the Kyoto Protocol (Breidenich & Bodansky, 2009; Fransen et al., 2008).

As noted above, the concept of NAMAs could include a wide range of actions. Subsequently, several different forms of MRV could be necessary in accordance with the nature of these actions. In general, the more specific the NAMA, the easier the MRV process. While some actions might be easy to quantify – such as emission standards – this is much more difficult in the case of, for instance institutional capacity development (Bakker et al., forthcoming; Ellis & Moarif, 2009).

The European Community (2009) suggests that measurement should take place at the national level following international guidance; that reporting should follow international guidelines; and that verification should always occur internationally. If a distinction is made between unilateral NAMAs, NAMAs receiving support in advance, and NAMAs eligible for carbon credits, MRV requirements would likely need to be differentiated. For instance, the Republic of Korea (2009a; 2009b) has suggested that for unilateral action the current reporting system of periodic national communications would suffice (see also Least-developed countries, 2009). Furthermore, there may be more flexibility in the MRV requirements for unilateral action, for instance by allowing the developing country to arrange for verification itself – although perhaps based on international guidance (African Group, 2009; Republic of Korea, 2009a; 2009b). For supported actions, it has been suggested that international verification of actions through the UNFCCC would be needed (e.g. African Group, 2009). For the environmental integrity of a carbon market it is necessary that the actual greenhouse gas emission reductions of a NAMA are subject to stringent MRV provisions similar to those of the CDM, focusing on the actual emission reductions, not the actions themselves. Especially verification would have to play an important role in this regard (Republic of Korea, 2009a; 2009b).

Various developed country Parties (e.g. Canada, 2009; European Community, 2009; Japan, 2009 New Zealand, 2009; United States, 2009) have pointed to the need of regular (e.g. annual) greenhouse gas inventories for developing countries (perhaps starting with key emitting sectors and countries) and more frequent submissions of National Communications as a basis for MRV.

2.5 Conclusion

This chapter has provided an overview of the different aspects raised by paragraph 1(b)(ii) of the BAP. These aspects relate to various questions that have played a role in the debate on the participation of developing countries in future climate change mitigation. First, the nature of NAMAs touches upon the sensitive issue of developing country commitments. Almost all Parties seem to agree that NAMAs for developing country Parties are different from 'actions and commitments' for developed country Parties, and that NAMAs should not include QELROs. However, some Parties are looking for some legal certainty with respect to developing country action, for example by advocating a legal obligation to register actions or to develop national strategies. Second, the discussions under paragraph 1(b)(ii) link to longstanding discussions on voluntary action by developing countries. They raise the point whether the concept of NAMAs should be interpreted narrowly, including only voluntary actions that require support, or more broadly, including also voluntary actions that are not matched with international support. Third, the discussions relate back to Article 4.7 of the UNFCCC, showcasing the different positions on the link between developing country actions and developed country support. Finally, the debate on NAMAs illustrates how developed countries seek to ensure that their funding results in developing country actions (through MRV of NAMAs), and how developing countries strive to make sure that developed countries deliver their end of the bargain (through MRV of support).

Having outlined the key questions and options with respect to NAMAs in developing countries, the next chapters will examine the positions, underlying interests and prospects for engagement on this issue for Brazil, China, India and South Africa.

3 Brazil

3.1 Position on NAMAs[3]

3.1.1 The nature and context of NAMAs

In the past, Brazil has put a strong emphasis on countries' historical responsibility for climate change. In 1997, in the negotiations on the Kyoto Protocol, it put forward the 'Brazilian proposal', which linked commitments to a calculation of historical responsibility. The emphasis of this proposal as well as Brazil's subsequent submissions on mitigation has primarily been on the commitments for developed countries.

Still, even before the BAP was agreed upon, Brazil had clear views on mitigation actions by developing countries. For instance, it stated that '[e]fforts undertaken by developing countries to reduce emissions in different sectors within their territories can only be characterized as voluntary and, therefore, cannot be linked or associated with goals, targets or timeframes' (UNFCCC, 2005). Brazil is still of the view that mitigation actions for developing and developed countries are of a different legal nature, and that NAMAs for developing countries are different from quantified emission reduction commitments for developed countries. In Brazil's view, NAMAs should be proposed on a voluntary basis, and require financial and technology transfer support provided in a measurable, reportable and verifiable manner.

3.1.2 The scope of NAMAs

Brazil considers NAMAs as something different from quantified mitigation commitments, as specified for Annex I countries. In addition, Brazil argues that transnational or national sectoral mitigation targets are inappropriate, especially for developing countries. Brazil views NAMAs as actions resulting in direct emission reductions, as it argues that capacity building and the strengthening of institutional frameworks should take place with the help of additional support. Although Brazil argues that NAMAs should cover a range of sectors, it highlights the forestry sector (including REDD) as a particular area for NAMAs.

For Brazil, unilateral actions funded with developing countries' own resources fall outside the scope of paragraph 1(b)(ii) of the BAP. Although Brazil acknowledges the importance of recognising unilateral mitigation actions, it indicates that such recognition can also take place outside the framework of paragraph 1(b)(ii).

3.1.3 Linking NAMAs and support

According to the Brazilian submissions, a registry would function as a mechanism to: 1) propose mitigation actions; 2) identify the support needed for those actions; and 3) provide an estimate of the mitigation benefits of NAMAs. The registry would contain information showing what support is matched with which actions, after which both the action and support would become 'effective'.

Brazil does not see crediting for NAMAs as a possibility, emphasising the importance of additional action by developed countries.

3.1.4 NAMAs and MRV

MRV should be applied to both the NAMAs and the support. Brazil proposes that MRV should follow national procedures for measuring and reporting, and international procedures for verification. It has opposed the suggestion to increase the frequency of reporting for non-Annex

[3] Based on Brazil (2009a; 2009b), unless stated otherwise.

I countries (Höhne et al., 2008), although this may change if support is provided by Annex I countries (Viola, 2009b). MRV needs to apply to the emission reductions of each proposed action.

3.2 Underlying interests

3.2.1 Brazil's energy and environment profile

Brazil's CO_2 emissions have been steadily increasing over the last few years (see Figure 3.1), and Brazil is now the fifth largest emitter of greenhouse gases in the world (IEA, 2009). In terms of per capita emissions, Brazil ranked around the world average, yet above the average of non-Annex I countries (Höhne et al., 2008). In 2005, Brazil's greenhouse gas emissions per capita were 5.4 tonnes CO_2-eq. (WRI, 2009), but are significantly higher when LULUCF activities are included. Emissions per capita have been increasing in recent years (Figure 3.1). Emissions per capita are comparatively high for the agriculture, land-use change and forestry sectors (respectively 3.22 tonnes CO_2-eq. in 2000 and 8.06 tonnes CO_2-eq. in 2000) (Höhne et al., 2008).

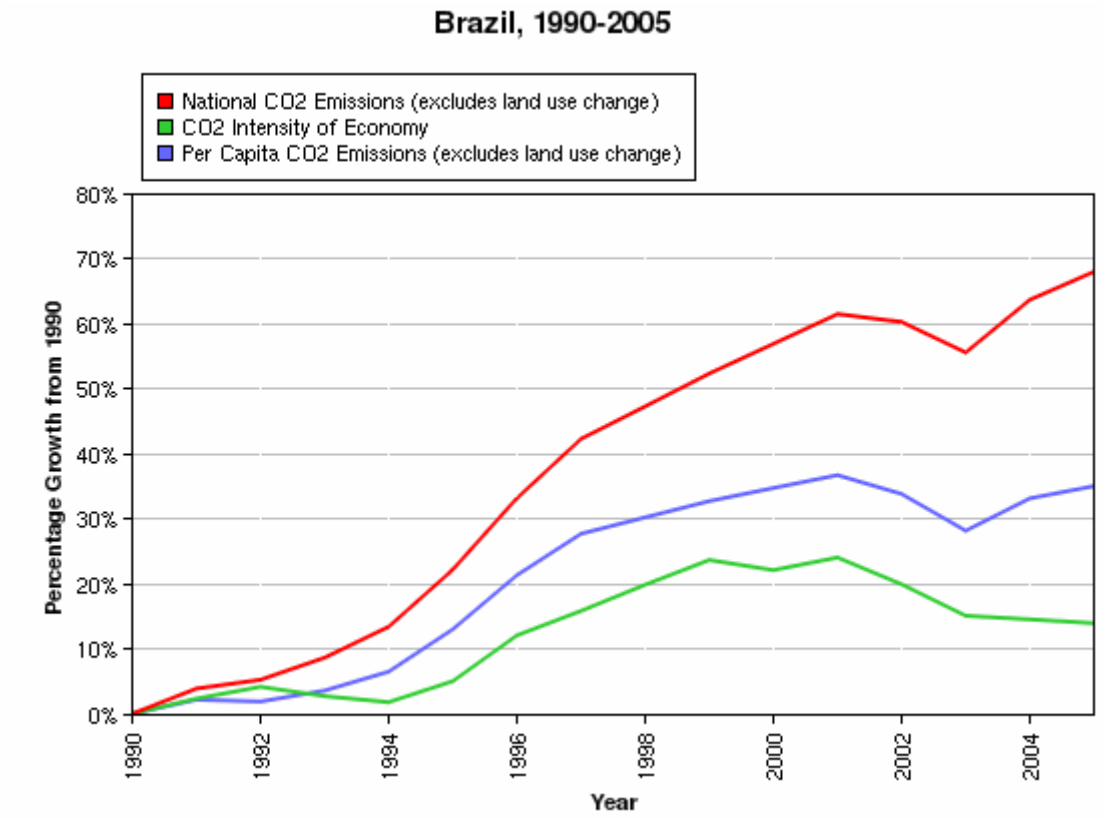

Figure 3.1. Development of key indicators for Brazil 1990-2005 (WRI, 2009)

The bulk of Brazil's CO_2 emissions stem from agriculture, land-use and forestry (81%), especially in the Amazon and the Cerrado savannah, while the energy sector accounts for a relatively small share of the emissions (19%), mainly because of the high share of renewable energy in the country's energy mix (IEA, 2009). The emissions from land-use change are in large part due to deforestation, especially in the Amazon. According to Brazil's National Communication (Brazil, 2004), 96% of its emissions from land-use change and forestry can be traced back to forest conversion – i.e. deforestation to gain land for cattle ranching and soybean cultivation.

Although fossil fuels – in particular oil – account for more than half of the energy supply, the share of renewable energy in Brazil is relatively high (e.g. Szklo et al., 2005). Almost a third of

the energy supply stems from biomass and waste. In addition, over 90% of the country's electricity is generated with hydropower (Brazil, 2004), which accounted for 13.6% of the TPES in 2006 (see Figure 3.2). Emissions from transport are relatively low given the widespread use of biofuels (Höhne et al., 2008), in particular ethanol made from sugarcane.

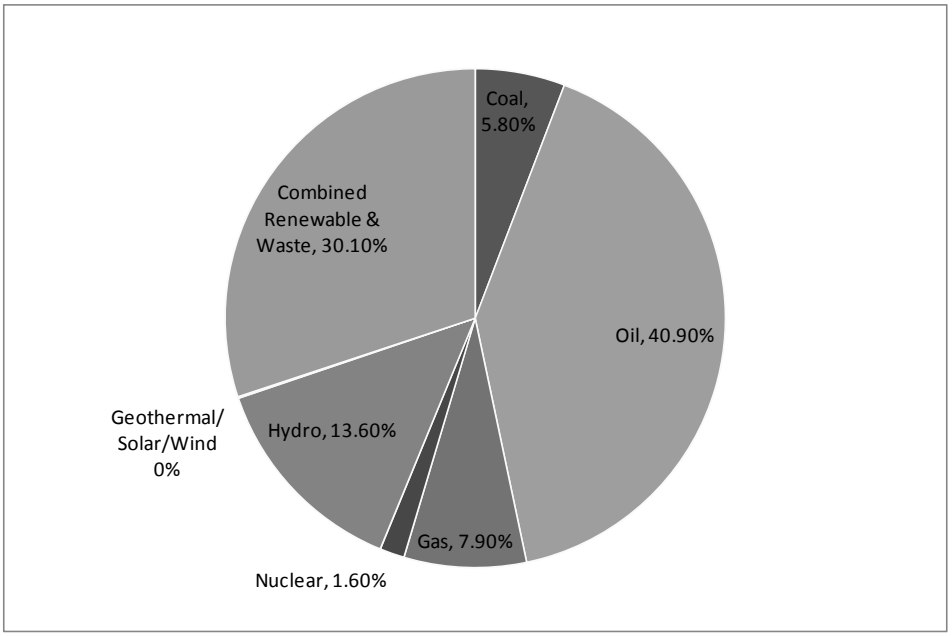

Figure 3.2. Brazil's Total Primary Energy Supply (TPES) in 2006 (based on IEA, 2008)

However, emissions from energy production and consumption have shown a relative increase in recent years, because of an increase in diesel consumption, a greater share of electricity produced by fossil fuels, and increased activities in the oil refining sector (Viola, 2009a). Brazil's energy base will get dirtier over the years to come as energy demand is growing fast, and hydroelectricity opportunities will likely decrease (Lèbre la Rovere et al., 2007). This gap will in the near future likely be covered through an increasing reliance on natural gas, resulting in increasing greenhouse gas emissions (Schaeffer et al., 2009). Furthermore, the discovery of a deep-water oil field off the south-eastern coast in November 2007 will probably increase the prominence of oil in the energy mix. Emissions from the transport and industrial sectors are also expected to continue to rise in the coming years (IEA, 2009).

3.2.2 Brazilian climate policies

Existing climate policies in Brazil have mainly focused on the transport and energy sectors. Various policies and measures in the energy sector have been adopted for non-climate policy reasons, such as energy security, employment or local air pollution. Still, these policies and measures 'cut investment requirements in the energy sector, reduced net energy imports and improved the balance of trade, enhanced energy efficiency, expanded renewable energy use, and ushered in several positive social and environmental changes'(Chandler et al., 2002: 11).

Brazil is well-known for its widespread use of biofuels (e.g. IEA, 2009). Policies on ethanol date back to the 1970s. The main climate-related policy is the PRO-ALCOOL programme, which has provided an important impetus for increasing the use of biofuels in the country, with a view to replacing gasoline by ethanol. Through the programme, bagasse, a by-product of the sugarcane used to produce ethanol, is being widely used for renewable cogeneration of electricity. The programme was initiated in response to the 1973 oil crisis, and intended to support domestic sugar producers. In other words, the programme was put in place for non-climate policy related reasons. However, it still had significant effects on greenhouse gas emissions (Szklo et al., 2005). According to Brazil's National Communication, the programme resulted in avoiding 400 million tonnes of CO_2 emissions (Brazil, 2004), and according to the International Energy

Agency, 'the program has now become the largest commercial application of biomass for energy production and use in the world' (IEA, 2009: 18). Another important policy in the transport sector is the 2004 biodiesel initiative (PRO-BIODIESEL), which requires all diesel sold in Brazil to contain at least 2% (later changed to 3%) biodiesel by 2008, and 5% from 2013. After 2013, the 5% requirement will become mandatory.

Furthermore, there are various policies to curb emissions on the demand-side through energy conservation and efficiency in the transport and electricity sector. The PROCEL (Programa Nacional de Conservaçao de Energia Elétrica) programme is aimed at saving electricity on both supply and demand side and has resulted in significant emission reductions (Lèbre la Rovere, 2002). The programme has met its target to reduce Brazilian electricity consumption by 2.5% by 2003 (Höhne et al., 2008).

Table 3.1. Selection of quantified climate-related targets in Brazil (based on Brazil, 2008; Point Carbon, 2009a)[4]

Issue	Target
Transport	
Biodiesel	5% biodiesel added to diesel by 2013
Forests	
Reduced deforestation	70% by 2017; 80% by 2020 (compared to average of 1996-2005)
Forest plantations	Double the area by 2020 from 5.5 to 11 million hectare, including 2 million hectare for native species
Energy production and consumption	
Annual electricity consumption	10% reduction by 2030
Renewable energy	Add at least 7,000 MW between 2008-2010
Electricity supply from cogeneration	11.4% by 2030
Hydropower	Add 34,460 MW to energy mix between 2007-2016
Waste	
Urban solid waste	20% increase in recycling by 2015

Renewable energy is stimulated through the 2002 Programme of Incentives for Alternative Electricity Sources (Programa de Incentivo a Fontes Alternativas de Energia Elétrica – PROINFA). The first stage of PROINFA is aimed at promoting the use of three renewable energy sources (wind, biomass cogeneration and small hydro) with a view to having in place 3,300 MW by 2007. As the 2007 target year was missed, the programme has been extended. The second stage, which will start after the target of the first stage is reached, aims to increase the share of the total primary energy supply of these renewable technologies to 10%.

In December 2008, the Inter-Ministerial Committee on Climate Change issued Brazil's National Plan on Climate Change (PNMC; Brazil, 2008). The plan covers various sectors, including energy, forests and agriculture, as well as industry, transport and waste. It does not include any nationwide emission reduction targets, but includes various quantified objectives for a range of sectors (see Table 3.1). On energy efficiency, the plan proposes to implement a National Policy for Energy Efficiency, which would result in a 10% reduction in Brazil's annual electricity consumption by 2030. On renewable energy, the plan indicates the government's willingness to maintain the high share of renewable in electricity generation, building on PROINFA. The plan envisages adding 7,000 MW to the energy mix between 2008 and 2010. It also suggests various measures in the area of sustainable transport, including pursuing an average annual consumption increase of sugarcane ethanol of 11% in the next ten years, and feasibility studies paving the way for the obligation to add 5% biodiesel to all diesel (Brazil, 2008).

Deforestation, especially in the Amazon, has increasingly gained attention in domestic policies. Brazil's domestic efforts with regard to climate change show a 'dual face' (Paredis et al., 2006): while the country is an environmental leader among developing countries with regard to

[4] Note that not some of these quantifications refer to expected results of actions, and are not necessarily regarded as 'targets' by the Brazilian government.

emission reductions in the energy sector, its record in the crucial challenge of reducing deforestation in the Amazon is, despite some recent progress, still bleak.

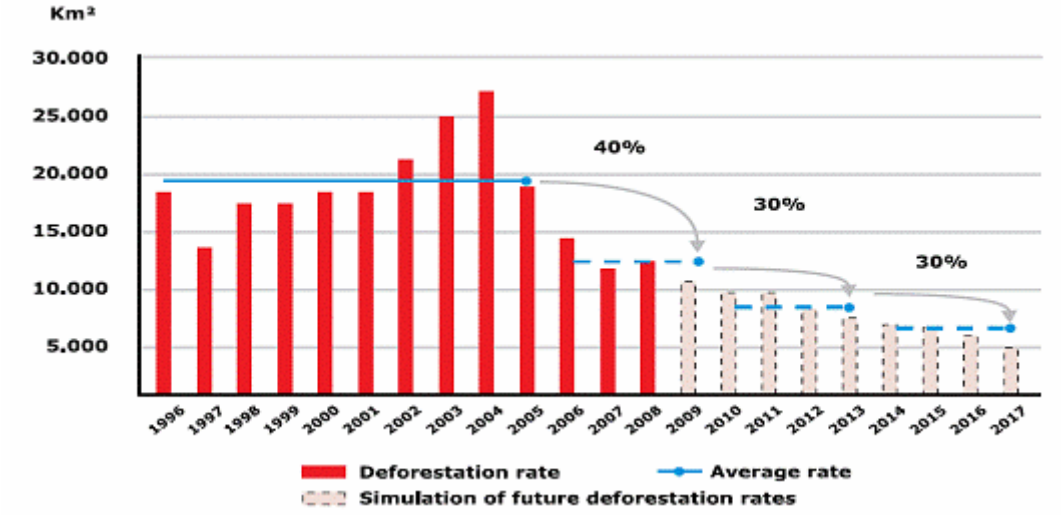

Figure 3.3. Brazil's deforestation targets 2008-2017 (Brazil, 2008)

In March 2004, the government launched the Action Plan for the Prevention and Control of Deforestation in the Legal Amazon Region (PPCDAM). In December 2007, Brazil announced its intention to set up a national fund for activities to control deforestation. The resulting Amazon Fund (Fundo Amazônia) was put in place by the end of July 2008. The fund 'represents a compromise between the international community and the national government', given that in the past Brazil wanted to treat deforestation outside the climate regime (Viana de Carvalho, 2009). The PNMC specifically addresses the deforestation problem, indicating that by 2009 deforestation should be reduced by 40%, and 30% more in the two following four-year periods (see Figure 3.3). According to the plan, Brazil wants to reduce deforestation by 70% by 2018 compared to the average of the period 1996-2005, thereby avoiding 4.8 billion tonnes of greenhouse gas emissions between 2006 and 2017. In September 2009, the government announced an extension of the target to 2020, aiming at an 80% reduction by that year. The government also indicated that measures would cover areas beyond the Amazon, particularly the Cerrado savannah, an area where deforestation driven by agricultural expansion is a problem (Point Carbon, 2009a).

3.2.3 Brazil and the CDM

The Clean Development Mechanism (CDM) was introduced as a combination of the US proposal for emissions trading, and the Clean Development Fund originally proposed by Brazil in the negotiations on the Kyoto Protocol (Van Asselt & Gupta, 2009). The country has taken a generally positive stance towards the mechanism. Brazil was a relatively early mover in the carbon market and has since consolidated its leading position. Brazilian policy-makers have shown great enthusiasm about the CDM, which has been described as 'a cooperation instrument that is both brilliant and innovative' (UNFCCC, 2005).

By 1 September 2009, 344 projects were in various stages of the CDM project cycle, making up a share of more than 7% in the global CDM market in terms of projects (Fenhann, 2009). 162 of these projects are registered by the Executive Board, which amounts to 9% of global market share of registered projects (UNFCCC, 2009c). With its increasing demand for energy, and although renewable flues play an important role already, Brazil has great potential for CDM projects in fuel substitution and energy efficiency. Particular promising are industries such as aluminium, cement, chemical, ferroalloys, iron and steel, pulp and paper (UNIDO, 2003).

Nevertheless, access to long-term financing has proven a barrier for the implementation of CDM projects in Brazil, particularly for unilateral and small-scale projects. It is very expensive to get

loans for projects, and consequently a great deal of funding is coming directly from companies' own revenues (Friberg & Castro, 2008).

3.2.4 Potential NAMAs for Brazil

According to Höhne et al. (2008), there is substantial mitigation potential in the country. Under their most ambitious scenario, they calculate that Brazil's emissions could be reduced by 14% compared to a business-as-usual (BAU) scenario by 2020 (which equals a 6% increase from 2005 emissions), leading to a mitigation potential of 429 Mt CO_2-eq. This potential could primarily be realised in three sectors: the transport sector (164 Mt CO_2-eq.); the power sector (120 Mt CO_2-eq.); and the industrial sector (59 Mt CO_2-eq.) (Höhne et al., 2008).[5]

The mitigation potential in the power sector is currently limited by the already large share of hydropower, although emissions could be avoided if new capacity were based on fossil fuels (Höhne et al., 2008). Schaeffer et al. (2009) also point to the potential emission savings that could be realised by increasing energy efficiency in the Brazilian household sector.

The transport sector is a key sector for future mitigation action (Höhne et al., 2008). Machado-Filho (2009) discusses the potential leverage function of international support in strengthening domestic transport policies – aimed at promoting multimodal transport and enhancing urban public transport – that have been adopted for reasons other than climate change. Noting the limited contribution of the CDM to investments in the transport sector, he suggests that domestic transport policies could qualify as NAMAs. One difficulty is that data and quantitative indicators are still lacking in the transport sector (Kahn Ribeiro & Andrade de Abreu, 2008). However, Machado-Filho (2009) suggests that international investments could also assist in developing appropriate indicators.

In discussing various additional climate policies and measures for three sectors, Höhne et al. (2008) suggest which policies which would need external support from Annex I countries.[6] Table 3.1 lists their suggestions.

Table 3.2. Suggested climate policies and measures in need of international support for Brazil (based on Höhne et al., 2008: 68-71)

Sector	Suggested additional climate policies and measures
Transport	Domestic emissions trading scheme
	Research on sustainable transportation systems
Power	Domestic emissions trading scheme
	Financial and technical support for energy efficiency and renewable energy sources
	Financial support for the installation of renewable energy technologies for cold and heat
	Investment support for improvements in the conversion efficiency of fossil fuel power plants
	'CCS-ready' obligation for new power plants
	RD&D schemes for accelerated development, technical improvement and market introduction of renewable energy technologies for electricity, heat and cold, efficient fossil fuel power plants, and for analysis of CCS
Industry	Financial and technical support for energy-efficiency and renewable energy sources
	Domestic emissions trading scheme
	Enhanced financial support for the optimisation and installation of energy efficient technologies linked to energy audits and management systems
	RD&D scheme for energy efficient production technologies and methods

[5] Note that Höhne et al. (2008) did not examine the REDD potential.

[6] In determining which options need international support, Höhne et al. assume the following: 1) that no-regret options do not require permanent international support; 2) that options with co-benefits require some international support; and 3) that options required for the ambitious scenario require international support.

NAMAs could also address the largest source of Brazilian emissions: land-use change and forestry. According to Höhne et al. (2008), the main path to realising emission reductions in this sector relates to improving governance by ensuring the necessary capacity for enforcing the existing laws and regulations is in place. Indeed, Brazil's policies in the land-use sector have long been stymied by weak law enforcement, unsecured land tenure, and counter-acting incentives such as subsidised credits for soybean cultivation and cattle ranching (Volpi, 2007). Although policies to counter deforestation are thus already in place, and enforcement efforts are being increased (Viola, 2009a), international support could increase the pace of combating deforestation (Viola, 2009b). Specific REDD-related NAMAs could include payment for ecosystem services and the intensification of land use outside the Amazon (CCAP, 2009). McKinsey & Company (2009) estimate that around €5.7 billion annually is needed to preserve the Amazon, and to contribute to a greenhouse gas emission reduction of 70% by 2030.

3.3 Prospects for engagement

Brazil has in the past rejected the idea of developing country targets under the international climate regime. However, according to Viola (2008; 2009a), there has been domestic criticism from various stakeholders in Brazil about the country's categorical refusal to accept targets. Both civil society organisations and business have argued that an emissions goal would be in Brazil's own interest.

There are important signs of change in the Brazilian government. In 2007, Joao Paulo Capobianco, executive secretary at the Brazilian Environment Ministry specified that 'Brazil would not be unwilling to accept targets, if the principle of common but differentiated responsibility were respected – that is, if countries historically responsible for emissions stepped up their contribution to mitigating global warming' (quoted in IPS, 2007). More importantly, a similar statement was repeated by Foreign Minister Celso Amorim in an interview in August 2009, in which he stated that Brazil may adopt a 'number' and timetable in Copenhagen (Point Carbon, 2009b). Furthermore, in October 2009, Environment Minister Carlos Minc announced that Brazil was considering capping its 2020 emissions at 2005 levels, while President Luiz Inacio Lula da Silva also stated that Brazil sought to establish a target for the countries in the Amazon region in Copenhagen (Reuters, 2009a; 2009b). The statements by Amorim, Minc and Lula are signs of a rapid development in Brazil, stimulated by domestic criticism and the desire of the government to exert 'soft' leadership internationally (Viola, 2009b). They show that there is certainly scope for discussion of certain types of targets in the context of the post-2012 negotiations, including the no-lose emission targets proposed by Höhne et al. (2008).

Brazil's National Plan on Climate Change does not outline a specific pathway to a low-carbon economy for the country, for instance by setting nationwide emission targets. Nevertheless, the PNMC has quantified the expected results of various climate policies and measures that Brazil has implemented, or intends to implement in the future. Several of these measures could potentially qualify as NAMAs. However, as CCAP (2009) points out, more information about the measures, the expected reductions and underlying calculations will likely be needed.

Perhaps the biggest opportunity for Brazil is the inclusion of REDD as a NAMA. In the past, Brazil was sceptical about including deforestation in the climate regime, as it saw a possible commitment to slow deforestation as a liability (Viola, 2009a). However, it has increasingly realised that if linked to financial, technological and capacity-building support, the country would most likely be one of the main beneficiaries of such a mechanism, and support for REDD could trigger financial transfers of a totally different scale than exports of biofuels or CDM investments. However, Brazil has indicated repeatedly that it does not want activities controlling deforestation to be counted for Annex I compliance purposes. Still, a mechanism addressing REDD, including possibly the inclusion of REDD as a NAMA, could provide the capital needed for changing the incentive structure in such a way that forest conservation becomes more profitable than land clearing for ranching or agriculture.

4 China

4.1 Position on NAMAs[7]

4.1.1 The nature and context of NAMAs

China emphasises the connection between the principle of common but differentiated responsibilities and NAMAs, as well as the effective implementation of support provisions by the developed countries. For China, the notion of responsibility relates to historical emissions rather than current emissions (Jakobson, 2009).

In China's view, NAMAs are clearly different from developed country quantified emission reduction and limitation objectives, and should be not seen as legally binding obligations for developing countries. The NAMAs should not be internationally imposed, but voluntary and country-driven, meaning that they are undertaken in the context of national sustainable development strategies, in line with domestic priorities related to economic growth and poverty alleviation. Furthermore, China's definition of NAMAs includes only those actions that are supported by Annex I countries. This means that unilateral or autonomous actions are not included under the definition of NAMAs.

4.1.2 The scope of NAMAs

In the Chinese view, a wide range of activities could qualify as NAMAs, including project-based, sector-based, and policy-based activities, etc. The main point is that the scope of NAMAs should be flexible so that they can be framed in line with developing country circumstances. NAMAs should be able to include all actions with mitigation benefits, even if these benefits are indirect, as in the case of institutional capacity-building. For receiving support, it is important that actions can illustrate the mitigation benefits, however, this may differ for the type of action (see below).

China excludes the idea of targets as possible actions for itself, as there needs to be a clear distinction between NAMAs for developing countries and the commitments for developed countries. However, China has not completely excluded the possibility of national emission reduction targets, depending on the kind of commitments that Annex I countries are willing to take on in a post-2012 regime (Jakobson, 2009). Furthermore, given that NAMAs are voluntary and country-driven, for China it may be possible that some developing countries propose targets as NAMAs for themselves.

4.1.3 Linking NAMAs and support

In line with its negotiation position in the past, China links NAMAs to the provision of financial, technological and capacity-building support by developed countries, emphasising the importance of Article 4.7 of the UNFCCC. The support needs to be 'new, additional, adequate, predictable and sustained'. Furthermore, it argues that the 'provision of support is a compensation for the excessive occupation of emission space [by industrialised countries] due to their high per capita cumulative emissions'.

According to China, developing countries should suggest the NAMAs they wish to undertake in conjunction with a specification of the support needed. Funding would be provided through a 'Mitigation Fund' under the financial mechanism proposed by the G-77 and China, which is supervised by the UNFCCC COP.

[7] Based on China (2009a; 2009b), and Teng (2009).

China is opposed to the use of carbon credits emanating from NAMAs that can be used for compliance purposes by developed countries. A reason for this is that through crediting NAMAs, the focus would primarily be on mitigation actions that would result in direct mitigation benefits, i.e. actions for which the outcome in terms of greenhouse gas emission reductions can be readily determined. This would detract funding from long-term actions with indirect benefits, such as institutional capacity-building. Another concern about crediting NAMAs – more specifically, using NAMAs as offsets – is that one single effort of Annex I countries could count double. Annex I countries would be able to use the emission reductions for compliance with their targets, and at the same time claim that they have provided the necessary support. Finally, a concern is that the inclusion of NAMAs as credits may flood the carbon market, and depress the carbon price (Teng, 2009).

A registry can be part of the system of linking NAMAs and support, but only after the NAMAs are enabled by support, and implemented. A registry could then include information on the outcomes of the process of implementing NAMAs. The main purpose of a registry would be to build trust and enhance confidence among Parties by providing information about the actions implemented by the developing countries, and support provided by developed countries.

With respect to the idea of developing national low-carbon or low-emission action plans or strategies, it is important for China that the support for NAMAs is not made conditional on having such a plan or strategy in place. As will be described below, China already has developed a National Climate Change Programme (NCCP). However, the substance of the NCCP is different from what the EU suggests for low-carbon development strategies (LCDS): whereas the idea of LCDS requires developing countries to specify an emissions pathway for the longer term, China considers it unfeasible to provide a quantification of its future emissions, since the margin of uncertainty is too high (Teng, 2009). Other than the idea of quantifying the long-term emission pathways, there are possible synergies between the idea of LCDS and the NCCP.

4.1.4 NAMAs and MRV

According to China, MRV of NAMAs should be arranged at the national level, albeit under international guidance. MRV should further be enabled by technological, financial and capacity building support.

The framework for MRV should be flexible to account for different types of NAMAs. In particular, MRV for actions for which the mitigation benefits are not quantifiable should also be possible, in order to allow for non-quantifiable NAMAs such as capacity building. Quantification is only one way through which MRV can take place.

Reporting NAMAs could take place through the financial mechanism proposed by the G-77 and China. Given that NAMAs are supported, it may make sense to establish a reporting procedure separated from the National Communication process.

Unilateral, unsupported mitigation actions should be recognised, but should not be subject to compulsory MRV. While China sees the benefits of enhancing transparency with a view to building trust among countries, in its view, the decision on how to enhance this transparency for unsupported actions should be left to developing countries. For instance, it could be included in the National Communications. In addition, progress reports could be communicated to the UNFCCC on a voluntary basis.

A key issue concerns verification. First, there needs to be agreement on how stringent or flexible the international verification of national actions would be. Review by an expert team could be one form of verification, although the details of a mandate for such a review team would be important.

4.2 Underlying interests

4.2.1 China's energy and environment profile

China allegedly overtook the United States as the world's largest CO_2 emitter in absolute terms in 2007 (Netherlands Environmental Assessment Agency, 2007). The International Energy Agency also now reports China to be the biggest emitter (IEA, 2009). On a per capita basis, however, Chinese emissions are still relatively low, a point which has been emphasised repeatedly by the Chinese government. Indeed, emissions per capita in the United States were almost four times as high as in China in 2007, although Chinese emissions per capita were also fivefold of Indian per capita emissions (IEA, 2009).

Figure 4.1 shows a rapidly increasing trend for various indicators, especially in recent years, including not only absolute CO_2 emissions, but also per capita CO_2 emissions. China's rapidly increasing emissions can be attributed to its huge population, as well as the swift economic growth it has experienced in the past decade (Richerzhagen & Scholz, 2008). Even though the emissions growth may slow down, it is expected that Chinese emissions will have almost doubled between 2007 and 2030 (IEA, 2009). However, the graph also shows that the carbon intensity of the overall economy has decreased between 1990 and 2005. This trend (against the background of rapidly increasing economic growth) can be mainly attributed to China's energy efficiency policies (Zeng et al., 2008; Zhou et al., forthcoming; see also below).

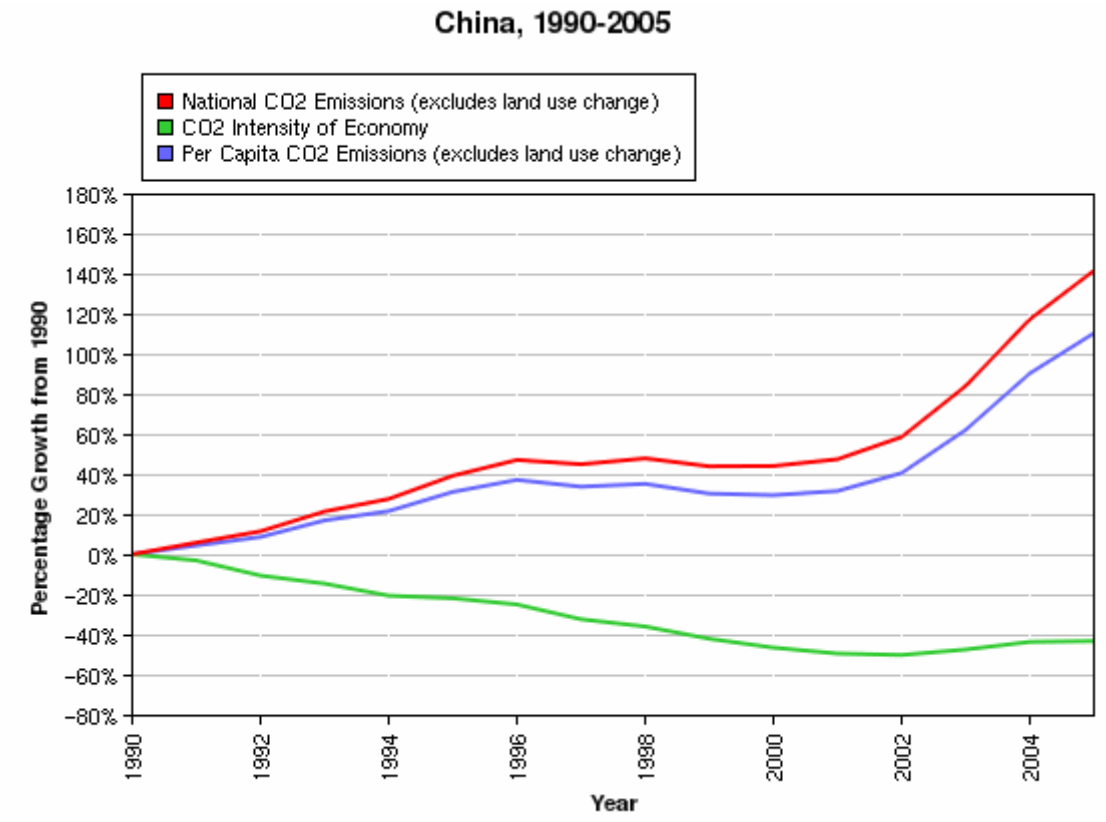

Figure 4.1. Development of key indicators for China 1990-2005 (WRI, 2009)

China's strong dependence on coal (more than 64% of the total primary energy supply; see Figure 4.2) is an important factor that has contributed to Chinese emissions growth in the past, and that will continue to contribute to future emissions. The bulk (99%) of Chinese electricity is produced with coal, and electricity demand has grown significantly, resulting in large increases in CO_2 emissions from electricity generation (IEA, 2009). Most energy-related emissions can be

attributed to the energy-intensive industries in China, rather than households and transport (Jakobson, 2009).

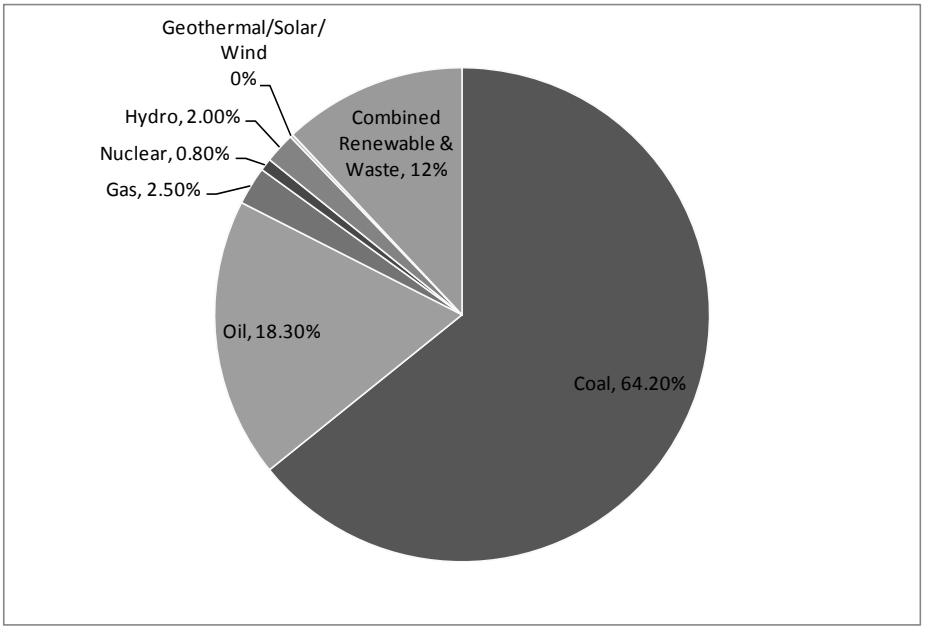

Figure 4.2. China's Total Primary Energy Supply (TPES) in 2006 (based on IEA, 2008)

An important – and growing – share (one third) of Chinese emissions is related to the production of commodities that are exported for consumption abroad (Leggett et al., 2008; Jakobson, 2009). Although this could lead to a discussion on who is responsible for such emissions, it should be noted that these emissions are eventually also related to the dominance of coal-fired electricity generation (Weber et al., 2008).

4.2.2 Chinese climate policies

Climate policy in China is largely framed by the country's energy security objectives, i.e. reducing the dependency on foreign oil (Yang, 2008; Heggelund and Buan, 2009; Jakobson, 2009). Other non-climate change reasons for Chinese climate policies include the need to reduce local air pollution and its associated health problems, as well as bringing down the costs of production to enhance the competitiveness of Chinese industries (Leggett et al., 2008; Jakobson, 2009). Thus, the Chinese climate strategy is in line with its economic development priorities.

China's National Climate Change Program (NCCP; NDRC, 2007a) is the country's first nationwide strategy on climate change. It not only provides a comprehensive synthesis of the existing domestic climate policies, but also includes various climate-related targets (see below). The strategic objective of the NCCP is 'to make significant achievements in controlling greenhouse gas emissions, to enhance the capability of continuous adaptation to climate change, to promote climate change related science, technology and R&D to a new level, to remarkably raise public awareness on climate change, and to further strengthen the institutions and mechanisms on climate change' (NDRC, 2007: 26). The NCCP, as well as the 11th Five-Year Plan, lists several targets for the Chinese government (see Table 4.1). Notably, China announced that it intended to reduce its energy intensity (energy consumption per unit GDP) by 20% from 2005 levels by 2010. To achieve this energy savings target, the government has implemented a range of supporting policies and measures (Teng et al., 2009). After some start-up problems in the first few years, it seems that China is unlikely to meet the 20% target, but will rather reach a level of 15 or 16% (Jakobson, 2009: 40; see also Zhou et al., 2009). In October 2008, the Chinese government published a White Paper, which describes the progress made

since the announcement of the NCCP (China, 2008), although it does not include much new information about climate policies.

Table 4.1. Selection of quantified climate-related targets in China (Teng et al., 2009: 7-8)

	Indicator	**Target for 2010**
Economic structure	Share of service industry's contribution to GDP	43.3%
	Urbanisation rate	47%
	Research and development as % of GDP	2%
Emission related	Energy intensity (energy consumption per unit GDP)	20% reduction from 2005 levels
	Rate of comprehensive use of solid industrial waste	60%
	Forest coverage as % of total land cover	20% (and 26% in the long term)
	Increased use of renewable energy as % of total primary energy consumption	10% (and 15% in 2020)
	N_2O emissions	Stabilise at 2005 level

In addition to the general policies described above, China has adopted a host of more specific policies and measures in various areas, some of which will be described below. For a more detailed recent overview, see Teng et al. (2009).

In 2005, China adopted a Renewable Energy Law. The law provides a framework for the promotion of renewable energy (hydro, solar, wind, biomass) in the country. It delegates the setting of mid- and long-term targets to the NDRC, which needs approval from the State Council. The NDRC published a Medium and Long-Term Development Plan for Renewable Energy in China in 2007 (NDRC, 2007b). The plan sets the goal to increase the use of renewable energy to 10% of total energy consumption by 2010 – an increase of 2.5% compared to 2005 – and 15% by 2020. To achieve this target, the plan envisages the adoption of a host of policies and measures, including measures aimed at promoting demand of renewable energy, including mandatory market share policies; feed-in tariffs; fiscal incentives; and the promotion of research and development of renewable energy technologies (NDRC, 2007b).

In the area of energy efficiency, China has implemented a wide range of policies and measures in pursuit of the energy intensity reduction target of 20% by 2010. The main policy document is the Medium and Long-Term Energy Conservation Plan, released in 2004 (NDRC, 2004). The plan includes ten 'key priorities', some of which have been implemented, while others have not been realised (Zhou et al., forthcoming).

There are various initiatives to save energy in the industrial sector, including a programme to improve the energy efficiency of the thousand largest enterprises, which was established in 2006. As noted above, the industrial sector is the most important source of Chinese CO_2 emissions. Voluntary targets are set for each enterprise, and are formalised in contracts with central and provincial governments (Teng et al., 2009). In addition, the government is also making an effort to close down small, inefficient thermal power plants by 2010, and replace them with larger, more efficient installations. The 1998 Energy Conservation Law is equally aimed primarily at the industrial sector, but also includes measures aimed at increasing energy efficiency in buildings and consumer goods. The law was considered to be too general to be effective, but was amended in 2008 to operationalise the energy efficiency goals (e.g. by prohibiting certain energy-intensive products, and mandating a fund for energy efficiency). In the residential sector, the main measures are a variety of building standards. However, further improvements to these standards, both in terms of stringency and in enforcement, is still possible (Zhou et al., forthcoming).

In the transport sector, China has adopted vehicle fuel economy standards that are more ambitious than Australia, Canada and the US, although they still lag behind those in the EU and Japan (Lewis, 2007). The first standard was adopted in 2005, and aimed at improving fuel efficiency by 10%. From January 2008, the goal is to increase fuel efficiency by an additional 10% (Teng et al., 2009). Although there are also initiatives aimed at promoting public transport,

these have received less support than the vehicle fuel economy standards (Zhou et al., forthcoming).

4.2.3 China and the CDM

Given China's negative stance on binding emission reduction commitments for developing countries and their early perception of CDM as a mechanism through which developed countries could exploit to escape their responsibilities, their participation in the CDM was off to a slow start. However, during the last few years, Chinese policy with regard to CDM has changed and China has become the most active host country for CDM projects (Heggelund, 2007).

There has been a steady growth of CDM projects in China since mid-2005, and in 2008 China held a market share of 84%, which accounts for a huge part of the transactions in the primary CDM market (Capoor & Ambrosi, 2009). By September 2009 there were 1837 projects in the CDM pipeline, amounting to almost 40% of the global market in terms of project numbers as well as a great share of the total amount of CERs (Fenhann, 2009). 626 Chinese projects have been registered to date, which equals a global market share of 34% of registered projects (UNFCCC, 2009c). Although many Chinese CDM projects concern renewable energy, most CERs stem from hydrofluorocarbon (HFC) projects (Fenhann, 2009; Schroeder, 2009).

There are several reasons for China's attractiveness for CDM projects. First, there is a good business climate and CDM capacity in the country (Jung, 2006). Since China started to prioritise CDM investments, the project approval has been facilitated, founded on streamlined and transparent institutional structures (Zhang, 2009a). Second, China has got exceptional mitigation potential, not least because of its large dependency on coal as a primary energy source. Finally, energy efficiency and renewable energy development are political priorities for China; hence, China has every interest in leveraging CDM financing for reducing its greenhouse gas emissions (Heggelund, 2007).

The most popular types of projects in terms of numbers are in hydropower, wind power and energy efficiency projects in the energy sector (Zhang, 2009a). However, after a steady growth in early 2008, the market slowed down in the second half of the year, largely due to transaction problems in the wider economy.

4.2.4 Potential NAMAs for China

NAMAs could be implemented in a wide range of sectors in China, including the electricity, transport and building sectors, but also energy-intensive sectors such as iron and steel, cement and chemicals (Teng, 2009). The mitigation potential for China according to Höhne et al. (2008) is as follows. Under the most ambitious scenario, Chinese emissions could be reduced by 32% below BAU (meaning a 1% increase compared to 2005 emissions), which equals a mitigation potential of 2930 Mt CO_2-eq. by 2020. This potential could primarily be realised in three sectors: the power sector (1322 Mt CO_2-eq.); the industrial sector (770 Mt CO_2-eq.); and the transport sector (395 Mt CO_2-eq.) (Höhne et al., 2008). A number of suggested policies and measures to achieve this potential are listed in Table 4.2.

The large dependency on coal means that shifting towards renewable energy in the power sector holds significant mitigation potential. Although the existing policies provide a good basis for moving in this direction, additional policy instruments are needed. In addition, increasing the energy efficiency of energy-intensive industries, for instance through financial support, could further decrease emissions by lowering demand. In the transport sector, policies could be implemented enhancing the use of biofuels, further increasing the efficiency of vehicles, and promoting public transport (Höhne et al., 2008).

Table 4.2. Suggested climate policies and measures in need of international support for China (based on Höhne et al., 2008: 78-82)

Sector	Suggested additional climate policies and measures
Power	Domestic emissions trading scheme
	Financial and technical support for energy efficiency and renewable energy sources
	Financial support for the installation of renewable energy technologies for cold and heat
	Investment support for improvements in the conversion efficiency of fossil fuel power plants
	'CCS-ready' obligation for new power plants
	RD&D schemes for accelerated development, technical improvement and market introduction of renewable energy technologies for electricity, heat and cold, efficient fossil fuel power plants, and for analysis of CCS
Industry	Financial and technical support for energy efficiency and renewable energy sources
	Domestic emissions trading scheme
	Financial support for the optimisation and installation of energy efficient technologies linked to energy audits and management systems
	RD&D scheme for energy efficient production technologies and methods
Transport	Domestic emissions trading scheme
	Research on sustainable transportation systems

Supported NAMAs could assist China to enhance its existing policies and measures by increasing the ambitiousness of policies and measures (e.g. strengthening existing targets; extending the scope of policies and measures; and moving forward the implementation of policies and measures (Teng, 2009).

There is certainly scope for strengthening Chinese climate policies through the formalisation of NAMAs in a post-2012 agreement. While China has undoubtedly set ambitious climate-related targets for itself, '[i]mplementation is suffering (…) because the targets and objectives (…) are not matched by corresponding processes designed to monitor and evaluate target achievement' (Richerzhagen & Scholz, 2008: 320). In other words, they argue that MRV procedures still lag behind China's domestic ambitions. Indeed, China's record of implementing and enforcing environmental laws and policies has been sketchy at best (Yang, 2008). However, as shown by Teng et al. (2009), many climate-related policies and measures are being monitored, reported and verified at least to some extent at the domestic level. For instance, they demonstrate how the implementation and outcomes of the thousand enterprise programme is being reported and verified from the level of individual enterprises up to the (aggregated) national level. This does not necessarily mean that all MRV activities are aimed at measuring, reporting and verifying greenhouse gas emission reductions; other input- and output-related metrics are also used (Teng et al., 2009).

4.3 Prospects for engagement

While China's main priorities are related to its social and economic development, the Chinese government also wants to enhance its reputation abroad (Jakobson, 2009). There has been some domestic pressure on the government to adopt voluntary or perhaps even binding emission reduction targets in a few sectors. For some sectors, these targets could easily follow from the existing targets specified by the Chinese government (Jakobson, 2009). This leads Jakobson (2009: 27) to conclude that 'China can be expected to push for acceptance of policy-based commitments as part of the post-2012 agreement'. Although (economy-wide) emission reduction targets are being advocated by some researchers in China, it is unclear whether China would be willing to accept these – even if other major emitters would do so – because: 1) there is a risk that implementing climate policies would hamper economic growth; 2) there is a suspicion that Western countries try to prevent China from becoming a world power; and 3) there is a fear that China would not be able to meet the targets, and that it would only agree to what it think it can meet (Jakobson, 2009).

According to Zhang (2009a), for the immediate post-2012 regime '[t]he best strategy is to encourage China to take on stringent domestic actions to the extent possible and appreciate the

Chinese efforts, and at the same time to enable China to do that by providing a package of positive incentives in the form of support for scaling up of technology transfer and deployment, financing and capacity building'. Likewise, Richerzhagen and Scholz (2008: 309) argue that SD-PAMs are appropriate 'as a first step toward commitments on the international level, which could first be voluntary in nature and eventually become part of a package of binding commitments'. Höhne et al. (2008) argue that SD-PAMs should only be implemented for those sectors where good data is not readily available. For the sectors where data is available – including in the power, iron and steel, and cement sectors – they suggest that no-lose sectoral targets or alternatively sectoral CDM is a good option. Around 2020, Zhang (2009b) argues that it would be possible for China to adopt voluntary no-lose targets, which would need to be based on baselines set by an international authority. Around 2025, it may be reasonable to expect China to adopt binding carbon intensity targets. Finally, after these three transition periods, he argues that around 2030 would be a realistic date to expect China to take on an emission cap given that the country's emissions are still rapidly growing and that a 'grace period' for implementing new policies and measures is needed (Zhang, 2009b). A recent speech by Chinese President Hu Jintao in front of the United Nations, in which he pledged to cut the country's carbon intensity in the medium term (2020), illustrated that that Zhang's predictions are not far off the mark. Although no number was attached to the pledge, it can be seen as a step forward given that China had previously not made any quantitative pledges at the international level (Reuters, 2009c).

One of the main challenges in the negotiations on NAMAs will be to reach agreement on what is meant with MRV, and in particular what is meant with verification (Teng, 2009). In other words: what will be the level of international scrutiny of domestic policies and measures, and will this scrutiny entail specific consequences? Although China has set various targets for itself at the domestic level, it has been reluctant to submit these targets to international monitoring.

If sufficient support is provided, however, NAMAs would allow developing countries to learn from each other's policies and measures, and would allow developing countries to enhance their mitigation activities. For China, there is a possibility that specific NAMAs find their way in the 12th Five-Year Plan, which is currently under discussion. Given the top-down structure of Chinese policy-making, this is important, since decisions taken at the national level would flow down to specific sectors and activities (Teng, 2009).

5 India

5.1 Position on excluding NAMAs[8]

India's most explicit proposal with regard to paragraph 1(b)(ii) of the BAP is as follows (GoI, 2009c):

> *"Developing countries may, on a voluntary basis, propose mitigation actions that they offer to implement provided the agreed full incremental costs are met by developed countries through the financial mechanism referred to in Article 11, paragraph 1, of the Convention. Such proposals should include an estimate of all incremental costs, including for the transfer of technology and capacity-building, as well as an estimate of reductions of emissions and increments of removals of greenhouse gases. Proposed mitigation actions, as well as the support required to enable their implementation should be measurable, reportable and verifiable. Each proposal, together with the agreed financial support, shall be inscribed in a "Register of NAMAs (Nationally Appropriate Mitigation Actions) of Developing Countries Supported and Enabled by Technology, Financing and Capacity-building", on conclusion of an agreement between the proposer developing country and the financial mechanism in accordance with Article 4, paragraph 3 of the Convention".*

Various elements of this proposal are discussed below.

5.1.1 The nature and context of NAMAs

The main rationale behind NAMAs for India s the need to enable developing countries to do more in the future – with the necessary support. Although India acknowledges that mitigation action from both developed and developing countries is needed, it sees NAMAs as inextricably linked to Article 4.7 UNFCCC, which makes effective implementation of non-Annex I country commitments dependent on the effective implementation of the commitments by Annex I countries. Furthermore, India has referred to NAMAs to Article 4.3 UNFCCC, arguing that 'all actions involving full incremental costs need to be compensated'.

For India, NAMAs are voluntary actions proposed by the developing countries. However, the NAMA and the support provided would be based on a contractual obligation between the developing country proposing the action and the financial mechanism of the UNFCCC (see below).

5.1.2 The scope of NAMAs

The range of actions that would be considered as NAMAs by India is broad: they include bottom-up actions, which could consist of projects, programmes, and policies proposed in different national processes. At the very least, India is clear about what NAMAs should certainly *not* entail, namely the introduction of QELROs for developing countries or any other measure that could be interpreted as an implicit back door for introducing binding commitments that can be scaled up in the future.

5.1.3 Linking NAMAs and support

According to the Indian delegation, in order for an action to become a NAMA, it needs to be supported. Hence, India does not include unilateral action – funded by India itself – in the definition of NAMAs, and posits that NAMAs are only a subset of the total actions that developing country Parties undertake. The argumentation behind this is that NAMAs relate to 'enhanced' action, which means that unilaterally funded actions that would be undertaken

[8] Based on GoI (2009a; 2009b; 2009c); Mathur (2009).

anyway are excluded. These unilateral actions include actions for which no financial support is expected, but also unilateral CDM project activities, which generate funding at a later stage.

On the idea of a registry/register, India is of the view that this should consist of a compilation of different NAMAs. The registry/register could include the mitigation benefits of a certain policy, as well as an estimate of the incremental costs and technological support required, which refers to the provisions in Article 12.4 UNFCCC. Once the enabling financial, technological and capacity building support for NAMAs in the form of interest-free and non-repayable transfers would be received, implementation could start.

The registry/register itself should be set up under the UNFCCC, but the governance of financial resources would be through the financial mechanisms under auspices of the UNFCCC COP. For the different types of support (e.g. technology and capacity building), different boards (or teams of experts) could be set up, which provide advice on what is to be funded. The funding decisions would need to display a high degree of automaticity given the scale of funding needed, and would need to provide direct access to funds. The linking of action and support would be sealed by a contractual agreement between the developing country and the financial mechanism.

5.1.4 NAMAs and MRV

For India, both NAMAs (i.e. actions receiving support) and the support provided would need to be subjected to MRV. With respect to other (non-NAMA) actions undertaken, India emphasises that the existing reporting procedures (i.e. national communications) are sufficient.

MRV for both the actions and the support would be arranged through the contractual obligation between the developing country and the financial mechanism. The type of MRV would depend on the type of action (e.g. project, programme, policy), and the nature of the support provided (e.g. finance, technology, capacity building), and would be detailed in the contract. An analogy can be made to the CDM, where different methodologies are being used for different types of project activities. For instance, for an investment project, it could be determined whether emission reductions have been achieved. For technology transfer, it could be determined whether the share of renewable energy has increased. And for capacity building, it could be determined whether there are any observable changes in the institutional framework. It may be difficult to distinguish which elements can be regarded as financial support and what needs to be seen as technological support. Mathur (2009) argues that if the base costs are carried by the developing country, it should be considered as a finance issue, and if the developed country bears these costs, it should be seen as a technology transfer issue.

5.2 Underlying interests

5.2.1 India's energy and environment profile

Accounting for almost 5% of global CO_2 emissions, India is the world's fourth largest emitter in absolute terms (IEA, 2009). However, its per capita emissions, historical responsibility, and per capita GDP are relatively low compared to other developing countries (Höhne et al., 2008). Of the four countries examined in this report, India's per capita emissions are lowest (1.2 tonnes CO_2 in 2007) (IEA, 2009). Furthermore, so far India has been able to experience economic growth without a corresponding growth in CO_2 emissions, as is shown by the decreasing carbon intensity (see Figure 5.1). Yet India's emissions – both in absolute and relative terms – are on the rise (see Figure 5.1), and projections indicate that emissions may even treble by 2031 (Point Carbon, 2009d). This has led to an increasing number of voices arguing for India to implement more aggressive mitigation policies (Dubash, 2009).

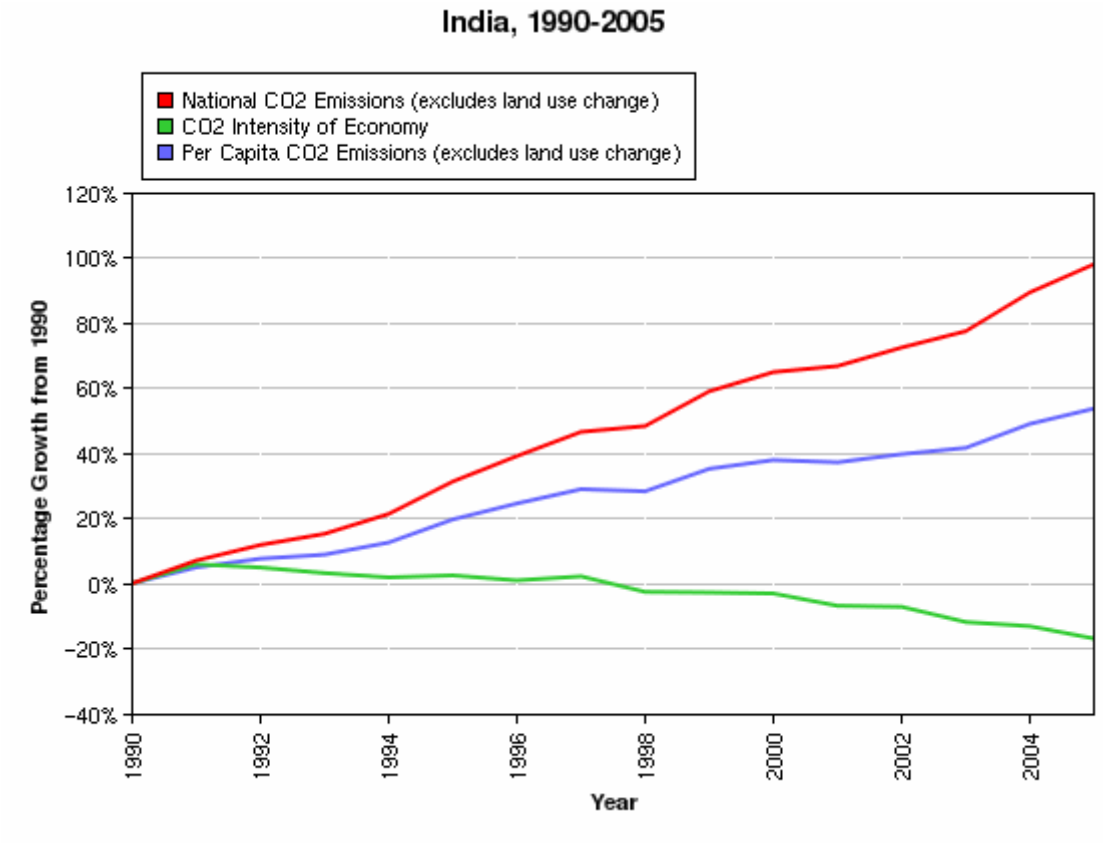

Figure 5.1. Development of key indicators for India 1990-2005 (WRI, 2009)

Most of India's emissions stem from electricity and heat generation (56% in 2007, which is an increase from 42% in 1990) (IEA, 2009), while agriculture and industry form other important contributing sectors (Pew Center and TERI, 2008). As Figure 5.2 shows, energy production is mainly based on fossil fuels, with coal accounting for a share of 39.40% of TPES in 2006. Coal is expected to remain the most important energy source in the future given India's energy security needs (Planning Commision, 2006). Electricity generation is also primarily coal-fired; in 2007, 68% of India's electricity was produced with coal. However, the share of renewables in the Indian energy mix is relatively high, and increasing (Vihma, 2009; IEA, 2009). Of the various renewable energy sources, biomass is particularly important for India, accounting for 28.3% of TPES (see Figure 5.2). However, in recent years, wind energy has experienced the most dramatic growth (Bhattacharya & Jana, 2009). The prominence of renewable energy can be attributed to India's high levels of poverty and the lack of electrification (Vihma, 2009). There is a strong focus on renewables for rural electrification of remote villages that do not have access to modern energy services (Chaurey et al., 2002). Furthermore, biomass (e.g. wood fuel) is being used for cooking.

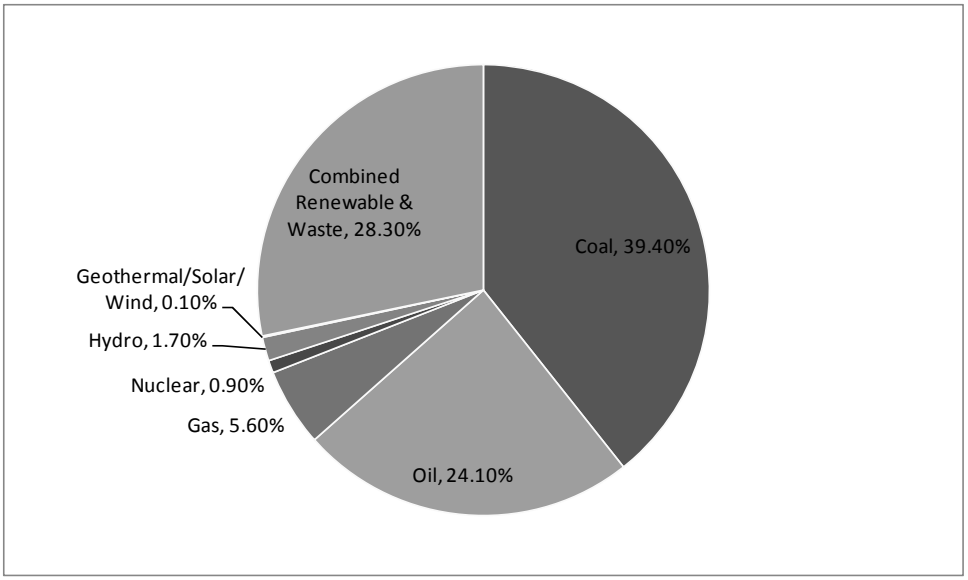

Figure 5.2. India's Total Primary Energy Supply (TPES) in 2006 (based on IEA, 2008)

5.2.2 Indian climate policies

In 2007, the Government of India set up the Council on Climate Change to coordinate Indian climate policy. The Council includes representatives from the Prime Minister's Office, the Planning Commission, several ministries, and other non-governmental organisations. In 2008, the Council released India's National Action Plan on Climate Change (NAPCC) (GoI, 2008). According to the plan, '[i]t is imperative to identify measures that promote [India's], while also yielding co-benefits for addressing climate change effects' (GoI, 2008: 13). It thus explicitly emphasises India's overriding development goals over climate-related objectives.

The plan identifies eight national 'missions', of which several are related to climate change mitigation (GoI, 2008):

- Solar mission: aimed at increasing the share of solar energy in the energy mix.
- Mission for enhanced energy efficiency: aimed at promoting new measures to increase energy efficiency.
- Mission on sustainable habitat: aimed at increasing the energy efficiency of buildings, managing solid waste, and promoting a modal shift to public transport.
- Mission for a green India: aimed at increasing the forest cover.

The NAPCC, as well as the 11th Five Year Plan (Planning Commission, 2008), includes a limited number of quantified goals for Indian climate policy. These are listed in Table 5.1.

In addition to the NAPCC, India has put in place a wide range of climate-related policies and measures, the most important of which are discussed below.

The promotion of renewable energy gained early recognition in the Indian government. Already in 1992, a Ministry of Non-Conventional Energy (now: Ministry of New and Renewable Energy) was created in order to promote the use of renewable energy. The 2003 Electricity Act and the 2005 National Electricity Policy have stimulated the competitive procurement of renewable electricity by the State Electricity Regulatory Commissions (Singh, 2009a).

Table 5.1. Selection of quantified climate-related targets in India (based on GoI, 2008; Pew Center & TERI, 2008)[9]

Indicator	Target
Forests	
Forest cover	Expand forest cover from to 33%
Energy production and consumption	
Energy efficiency	Saving 10,000 MW by 2012
Energy intensity	Reduce energy intensity per unit GDP by 20% between 2007/8 and 2016/17
Transport	
Biofuels	Add 5% ethanol to gasoline by 2008

As noted above, renewable energy plays a role in rural electrification. Over the last five decades, the central government and state governments have implemented electrification and renewable energy programmes to provide access to electricity in rural areas of India. However, despite these large national and state programmes, electricity is available in only 44% of the rural households and its use for economic activities suffers from chronic shortfall in availability of electricity and poor quality and unreliable electricity supply (Planning Commission, 2002). Limited access to electricity is largely due to the geographical spread and dispersion. The goal of India's rural electrification policy is to ensure electrification of all households by 2012 (Pew Center & TERI, 2008).

The Energy Conservation Act, 2001 promotes efficient use of energy and its conservation through, among others, the creation of the Bureau of Energy Efficiency to promote energy conservation and demand side management; the adoption of standards and labelling for energy-intensive equipment and appliances used in sectors such as industry, households, and agriculture; mandatory energy audits through accredited auditors and a market development mechanism including project development to be taken up in rural agricultural sub-stations with private management; municipal/metro water pumping efficiency; and energy-efficiency improvements in government buildings, commercial buildings, railways, defence establishments etc.

In the transport sector, a key initiative relates to biofuels. India recently (2008) announced a measure to add ethanol to gasoline is, while a biofuels policy document was in the final stages at the time of writing.

Finally, Indian forest policies are aimed at the objective of expanding forest cover to one-third of the country. No date is specified, but for the period of the 11th Five Year Plan, it is suggested that 3.3 million hectares are planted annually (GoI, 2008).

5.2.3 India and the CDM

India is an attractive host country with great mitigation potential, and has been a major player as a host country for CDM projects. By September 2009, there were 1270 projects in the CDM pipeline in India, of which 452 were registered with the CDM Executive Board. This represent about a share of the global market of about 25%, both in terms of number of projects in the CDM pipeline (Fenhann, 2009) and in terms of registered projects (UNFCCC, 2009c). Energy efficiency and wind power projects represent the lion's share of existing projects.

There is an institutional framework promoting the CDM, which together with great mitigation potential explains India's attractiveness as a host country (Babu & Michaelowa, 2003). Nevertheless, there is a gap between the potential supply of CERs from India and actual transaction volumes. Especially, in the energy sector it is challenging to acquire financing for projects. Energy efficiency projects emerge in a climate where companies often lack

[9] Note that not some of these quantifications refer to expected results of actions, and are not necessarily regarded as 'targets' by the Indian government.

creditworthiness, and as acquiring finances through banks is becoming more difficult, there are barriers for implementing such projects (Capoor & Ambrosi, 2009).

Another barrier for India's possibilities of reaching its full CER potential through CDM can be found in the governance process. It is bureaucracy laden, understood as being slow, laborious, and not always fully transparent. Furthermore, it has been difficult to guarantee a reasonable process for CERs and to prove additionality (e.g. Michaelowa & Purohit, 2007).

5.2.4 Potential NAMAs for India

For India, Höhne et al. (2008) have estimated the following mitigation potential. Under the most ambitious scenario, Indian emissions could be reduced by 38% below BAU (or a 19% increase compared to 2005 emissions), which equals a mitigation potential of 1336 Mt CO_2-eq. by 2020. This potential could primarily be realised in three sectors: the power sector (647 Mt CO_2-eq.); the industrial sector (245 Mt CO_2-eq.); and the transport sector (231 Mt CO_2-eq.) (Höhne et al., 2008). A number of suggested policies and measures to achieve this potential are listed in Table 5.2.

Table 5.2. Suggested climate policies and measures in need of international support for India (based on Höhne et al., 2008: 89-93)

Sector	Suggested additional climate policies and measures
Power	Financial and technical support for energy efficiency and renewable energy sources
	Domestic emissions trading scheme
	Ecological finance reform
	Financial support for the installation of renewable energy technologies for cold and heat
	Investment support for improvements in the conversion efficiency of fossil fuel power plants
	'CCS-ready' obligation for new power plants
	RD&D schemes for accelerated development, technical improvement and market introduction of renewable energy technologies for electricity, heat and cold, efficient fossil fuel power plants, and for analysis of CCS
Industry	Financial and technical support for energy efficiency and renewable energy sources
	Domestic emissions trading scheme
	Financial support for the optimisation and installation of energy efficient technologies linked to energy audits and management systems
	RD&D scheme for energy efficient production technologies and methods
Transport	Domestic emissions trading scheme
	Research on sustainable transportation systems

Rai and Victor (2009) suggest a number of concrete mitigation actions that India could credibly offer to the international community. First, for the power sector they suggest that privatisation of power distribution may reduce transmission and distribution losses, a notable problem in India, while also reducing the growth in demand by exposing energy users to the true costs of electricity. External funding could support this suggestion throughout the country. Second, they point out that even though coal is still relatively abundant in India, growth in demand may result in India becoming dependent on coal imports. This is an argument for increasing the efficiency of coal use, which currently is still highly inefficient (see also Singh, 2009b). Support from developed countries could come in the form of sharing efficient technologies. Third, they suggest a synergetic way of combating local air pollution in the form of atmospheric brown clouds, caused by burning biomass, and reducing greenhouse gas emissions. Improved cooking stoves could lead to significant reductions, although international support would be needed to implement this suggestion throughout India (Rai & Victor, 2009). Although coal-efficiency may assist India in safeguarding its energy security objectives, while delivering climate co-benefits, Gupta (2009) has noted that it is not a sustainable strategy in the long term, and that the focus should shift towards distributed renewable energy.

Regarding MRV, Höhne et al. (2008) note that India has existing infrastructure to keep track of climate-related statistics. However, it is not entirely clear how reliable such data would be.

5.3 Prospects for engagement

From the Indian perspective, some of the key challenges in the negotiations on NAMAs include questions about what the sources should be of the financial and technological support; which NAMAs would be eligible for support, and how to agree on the technical – yet political – aspects of MRV. However, with respect to MRV it is argued that any agreement will largely build on existing procedures in the UNFCCC and the Kyoto Protocol, meaning that the details could thus be decided after Copenhagen (Mathur, 2009).

The main opportunity India sees in the concept of NAMAs relates to the possibility of obtaining (financial and technological) support for several projects, programmes and policies for which it has been difficult to garner support so far. These include projects for which is difficult to receive support through the CDM, including energy efficiency projects and transport policies (Mathur, 2009). The potential for inclusion of renewable energy policies is more difficult, given that most countries have established goals already. Höhne et al. (2008) suggest that India should adopt SD-PAMs in a post-2012 framework conditional on international funding. This funding could only in part stem from the carbon market, as 'the emission reductions achieved through policies implemented in India can probably only be roughly estimated' (Höhne et al., 2008: 94). According to Vihma (2009: 64), '[i]nternationally financed sustainable development policies could force the Indian bureaucracy to further internalize climate objectives, and could further empower domestic advocates to push for more climate co-benefits and early action', although such actions would also need to be accompanied by more stringent commitments for developed countries.

India has been a staunch opponent of developing country targets under a post-2012 regime, be it emissions, intensity or other targets (Vihma, 2009). However, there are some small signs of change at the government level. In June 2007, at the G8 summit in Heiligendamm, Germany, Prime Minister Manmohan Singh pledged that Indian per capita emissions would never exceed those of developed countries. Interestingly, this might imply an indirect cap on Indian emissions if developed countries would pursue aggressive mitigation strategies. Perhaps more notable is that in September 2009, Environment Minister Jairam Ramesh stated that an indicative, non-legally binding target is a possibility (Point Carbon, 2009c). In October 2009, Ramesh also seemed to indicate that the overall Indian position on developing country commitments would be untenable: 'The position we take on international mitigation commitments only if supported by finance and technology needs to be nuanced simply because we need to mitigate in self-interest' (quoted in Times of India, 2009a). Furthermore, Ramesh expressed sympathy for the Australian proposal of schedules, which would bring obligations for developed and developing countries closer together. However, this statement met with significant criticism from negotiators, the press, as well as the political opposition, and was revoked later (Times of India, 2009b). At this stage, it is unclear whether the Minister's personal views are more widely shared among the Indian government.

In addition, there is increasing awareness about climate change and its impacts in India (Rai & Victor, 2009). However, India's defensive position in the climate negotiations is still supported by a wide range of actors, including not only government officials, but also opposition members and civil society (Vihma, 2009).

6 South Africa

6.1 Position on NAMAs[10]

6.1.1 The nature and context of NAMAs

South Africa posits that the registration of NAMAs should be done on a voluntary basis, and that NAMAs could include voluntary unilateral actions.

6.1.2 The scope of NAMAs

NAMAs are seen in the context of Article 12.4 of the UNFCCC. A wide range of actions could be included, including individual actions, sets of actions and programmes. This thus includes mitigation actions such as SD-PAMs, REDD, programmatic CDM, and no-lose sectoral crediting.

South Africa acknowledges the possibility of domestically funded NAMAs, although it treats these actions differently from those NAMAs that receive international support.

6.1.3 Linking NAMAs and support

In September 2009, South Africa proposed agreeing on a 'life cycle' for NAMAs, including the following stages:

1) Capacity building by national coordinating body supported by agreed full costs.
2) Identifying the NAMA by national coordinating body within its mitigation potential as well as the required resources.
3) Conducting a technical analysis.
4) Registering indicative mitigation actions, their support, the mitigation results, and co-benefits.
5) Mobilising resources.
6) Implementation.
7) Measuring, reporting and verification;
8) Updating the register on an annual basis, reflecting the status of the action and support.

South Africa has been one of the first countries proposing a register of NAMAs. This register, maintained by the UNFCCC Secretariat, should be considered as a set of actions, listed by countries, not countries listed by actions. For South Africa, the register is aimed at 'facilitating the identification, mobilization and matching of the financial, technology, capacity and other support required to implement [NAMAs]'. The register could include indicative unilateral (domestically funded) NAMAs, but only if developing countries would choose to register these. Developing countries seeking support for NAMAs would be required to register their indicative actions.

Elements initially included in the register would include an indication of the actions; the expected emissions reduction compared to a constructed business-as-usual baseline; and the sustainable development benefits. For supported action, the register would also include information about the required support. The list of information to be registered could be expanded further.

For actions seeking support, a technical panel established under the UNFCCC will assess the assumptions and methodology behind the actions and support identified, and report to the financial and/or technology mechanisms of the UNFCCC, which will then decide on matching the action with funding. It can be noted that these two steps are similar to the tasks assigned to

[10] Based on South Africa (2008; 2009) and UNFCCC (2009: 18-21).

the coordinating mechanism proposed by the European Community (2009). After the actions and support are matched, the action will be considered to be 'registered' and will no longer be 'indicative'.

South Africa is concerned that the national mitigation strategies proposed by some developed countries become a requirement, and argues that these should rather be framed as an incentive. Instead, South Africa notes that implementation of actions requires additional support for building the necessary institutional arrangements.

6.1.4 NAMAs and MRV

South Africa has made detailed suggestion on the MRV requirements for both actions and support. MRV for both actions and support should take place at the end of the first year of implementation and every year thereafter. MRV would not need to take place for the sustainable development benefits of NAMAs.

With regard to actions, it suggests that the developing country Party is responsible for measuring, and that developing countries should submit biennial greenhouse gas inventories to assist in measuring emission reductions (in CO_2-eq.) compared to BAU. Support would be measured according to indicators for finance and technology. For financial support, developed countries would need to indicate to which extent funds have been allocated and transferred over and above official development assistance in a unit of currency to be agreed. For technology transfer, including development, application and diffusion, additional indicators would need to be identified by the Subsidiary Body for Implementation (SBI) or the Subsidiary Body for Scientific and Technological Advice (SBSTA), while measuring the agreed full incremental costs for technology could be measured in units of a commonly agreed currency. Capacity building requires the identification of appropriate indicators by the SBI.

Reporting would take place through the registry (voluntary for unilateral actions; mandatory for actions seeking support). The reporting to the registry of actions receiving support would include an annual update of the status of implementation, and a biennial update including measured outcomes. Reporting of unilateral actions would take place in developing countries' National Communications. Reporting of developed countries' support would need to happen every year through their National Communications.

The verification of unilateral actions could occur at the domestic level, following international guidelines. Voluntarily registered but domestically funded actions, as well as supported actions would be measured, reported and verified on the basis of modalities and procedures to be established under the UNFCCC, using international guidelines. The verification would take place for both the support and the actions. Verification of supported, non-carbon market measures would take place internationally under the auspices of the UNFCCC COP, while actions supported through the carbon market would be verifiable through accredited institutions, including third parties, but also under the guidance and authority of the COP. Developed countries would need to provide new and additional resources to meet the agreed full costs of verification undertaken in developing countries.

6.2 Underlying interests

6.2.1 South Africa's energy and environment profile

South Africa is the world's 12th largest CO_2 emitter (accounting for almost 1.5% of the world's emissions in 2004). Figure 6.1 shows that even though its CO_2 emissions grew significantly between 1990 and 2005, but that the carbon intensity of its economy, as well as emissions per capita decreased in this period. Emissions per capita are well above the non-Annex I country average however.

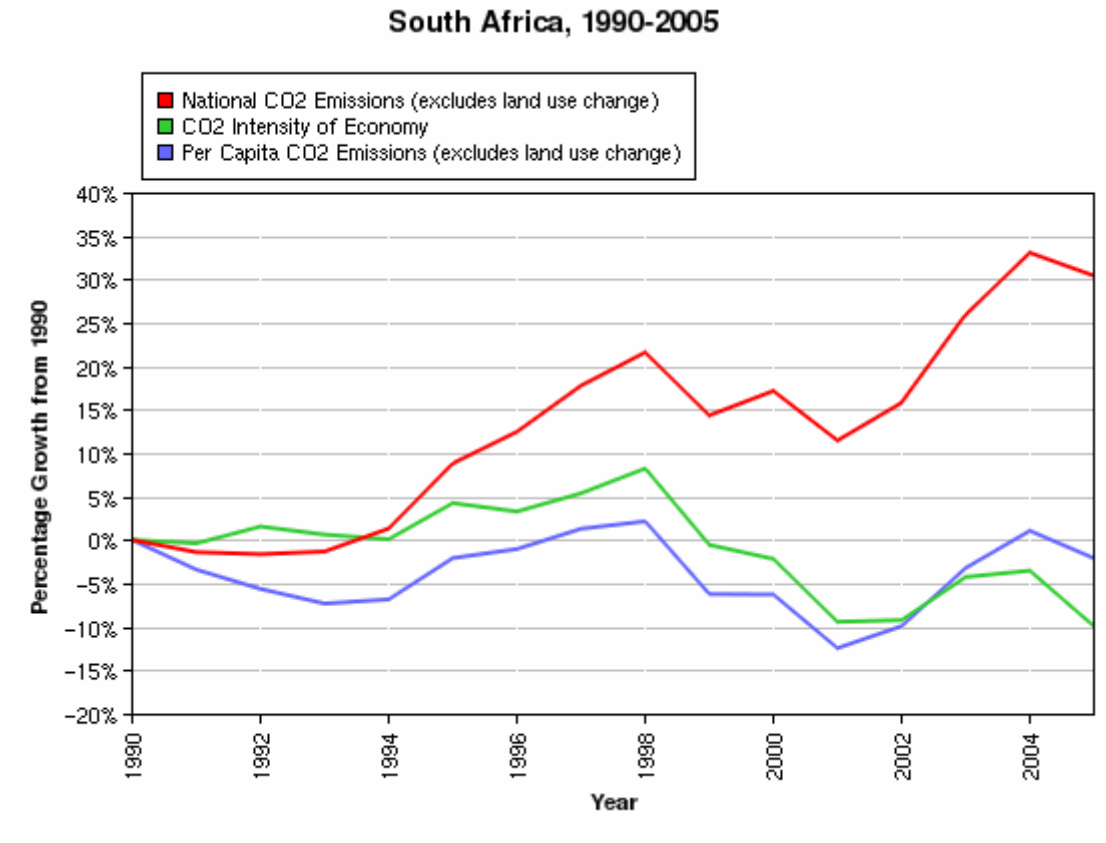

Figure 6.1. Development of key indicators for South Africa 1990-2005 (WRI, 2009)

The dominance of coal in the primary energy supply (72%; see Figure 6.2) accounts for a large part of the country's greenhouse gas emissions. The abundance of coal in the country has lead to a low electricity price, which in turn has kept the share of other sources (e.g. natural gas or renewable energy) in the energy mix rather small. Renewable energy consists mainly of biomass, co-fired bagasse, small hydro, and to a small extent solar (Winkler, 2005). Given the energy mix, the energy sector is by far the largest emitting sector in the country, followed by manufacturing and construction, and the transport sector. The main non-CO_2 emissions stem from agriculture (methane emissions from livestock) and industrial processes and waste (Winkler & Marquard, 2007). The only significant important CO_2 sink results from afforestation, as South Africa has one of the largest man-made forestry resources in the world, covering about 1.5% of the cultivated land (RSA, 2000).

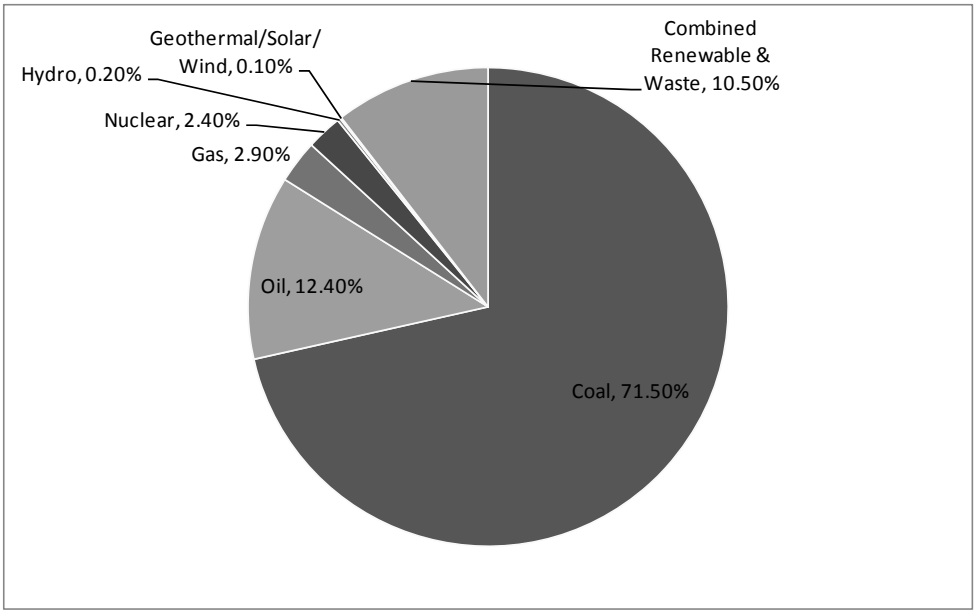

Figure 6.2. South Africa's Total Primary Energy Supply (TPES) in 2006 (based on IEA, 2008)

6.2.2 South African climate policies

In 2008, South Africa announced its intention to stop emissions growth by 2020-2025, stabilise for ten years, and to reduce emissions in absolute terms by 2050 ('peak, plateau and decline trajectory'). Implementation of the strategy is currently underway: a national climate policy White Paper is expected at the end of 2010, which are to be followed by a legislative package in 2012 aimed at measuring and reporting emissions from various sources (Van Schalkwijk, 2008; DEAT, 2009b).

South Africa has developed a wide range of policies and measures in the area of climate change and energy (Warburton et al., 2007), the most important of which are outlined below. While many policies have been put in place, implementation is still lagging behind (Winkler & Marquard, 2007).

The 1998 White Paper on Energy Policy presents the South African government's energy policy until 2010 (DME, 1998). It places South Africa's energy policy in the context of national objectives of employment creation and economic growth, and has five core objectives: 1) increasing access to affordable energy services; 2) improving energy governance; 3) stimulating economic development; 4) managing energy-related environmental and health effects; and 5) securing supply through diversity.

The White Paper on Renewable Energy is the main policy document on renewables (DME, 2003). The vision of the role of renewable energy is '[a]n energy economy in which modern renewable energy increases its share of energy consumed and provides affordable access to energy throughout South Africa, thus contributing to sustainable development and environmental conservation' (DME, 2003: 1). The White Paper sets a medium-term target of an additional 10,000 GWh renewable energy contribution to final energy consumption by 2012, mainly through biomass, wind, solar and small-scale hydro (DME, 2003).

In 2005, the Department of Minerals and Energy (DME) published its Energy Efficiency Strategy (DME, 2005; see also DME, 2008). The Strategy sets a voluntary national target for improving energy efficiency with 12% by 2015. To achieve this target, it proposes a number of 'implementing instruments', including support mechanisms, including efficiency labels and performance standards; legislation; and finance instruments. It further sets a wide range of targets for specific sectors (see Table 6.1).

Table 6.1. Selection of quantified climate-related targets in South Africa (Van Schalkwyk, 2008; DME, 2005; 2007)

Issue	Target
General	
Emissions	Peak by 2020-2025, reduce afterwards
Transport	
Biofuels	Market penetration of 2% of road transport liquid fuels
Energy production and consumption	
Renewable energy	Share of 15% by 2020; 10,000 GWh by 2012
Energy efficiency (nationwide)	Improving with 12% by 2015
Energy intensity in iron and steel sector	Improvement of 1% per year
Energy intensity in chemical and petrochemical sector	Improvement of 1% per year
Energy intensity in paper and pulp sector	Improvement of 2% per year
Energy intensity in cement sector	Improvement of 2% per year
Final energy demand in industry and mining sector	Reduction of 15% by 2015
Final energy demand in mining sector	Reduction of 10% by 2015
Final energy demand in building sector	Reduction of 20% by 2015
Final energy demand in residential sector	Reduction of 10% by 2015
Final energy demand in transport sector	Reduction of 9% by 2015

Finally, in 2007, the South African government released a draft biofuels strategy (DME, 2007), in which it proposes aims 'to develop the biofuels industry to achieve a market penetration of 2% of road liquid transport fuels' (DME, 2007: 20) to be achieved by utilising local agricultural and manufacturing capacity. Although no target date is set, the South African government expects that the target is achieved before 2013. While the draft of the strategy contained a target of 4.5% (DME, 2006), this number was lowered given social and environmental concerns.

6.2.3 South Africa and the CDM

Initially, South African stakeholders were sceptical of the use of the CDM (Kim, 2004). Nevertheless, CDM investors are increasingly finding their way to South Africa. On 1 September 2009, 29 projects were at various stages of the CDM pipeline, among which 16 were registered with the CDM Executive Board, and 12 more projects were awaiting validation. However, this still represents only 0.6% of all projects in the CDM pipeline (Fenhann, 2009).

South Africa can be considered a rather attractive host country for CDM projects for several reasons. Its large dependence on coal and relatively high emission levels give the country great potential for emission saving projects. Additionally, the overall business climate is considered to be good and there is existing capacity for implementation the CDM in place (Jung, 2006). South Africa's strategic objectives for the CDM include: 1) serving as a lever for foreign investment-related employment creation in sectors that can achieve emissions reductions; 2) promoting policy initiatives aimed at emissions reductions; and 3) enabling technology transfer (Rosenberg, 2007).

Nevertheless, there are also some barriers that lower the overall attractiveness for CDM projects in South Africa. The approval procedures are complicated and general low electricity price constitutes a barrier for the development of energy efficiency projects and renewable energy (BFAI, 2006). Furthermore, even though the South African government has shown support and encouragement of domestic firms' participation in the CDM, there has been a lack of specific and clear-cut policy on the general idea of the mechanism. This goes, to some degree, in line with the country's general negotiation position in international climate cooperation (Kim, 2004). Nevertheless, from a regional perspective, on the African continent, South Africa stands out as one of the few really promising candidates for hosting CDM projects so far (Jung, 2006).

6.2.4 Potential NAMAs for South Africa

For South Africa Höhne et al. (2008) show that the mitigation potential is as follows. The most ambitious scenario could result in emission reductions of 35% below BAU (15% below 2005 emissions), which equals a mitigation potential of 212 Mt CO_2-eq. by 2020. This potential could primarily be realised in three sectors: the power sector (67 Mt CO_2-eq.); the transport sector (42 Mt CO_2-eq.); and the industrial sector (41 Mt CO_2-eq.) (Höhne et al., 2008). A number of suggested policies and measures to achieve this potential are listed in Table 5.2.

Table 6.2. Suggested climate policies and measures in need of international support for India (based on Höhne et al., 2008: 110-114)

Sector	Suggested additional climate policies and measures
Power	Financial and technical support for energy efficiency and renewable energy sources
	Domestic emissions trading scheme
	Ecological finance reform
	Financial support for the installation of renewable energy technologies for cold and heat
	Investment support for improvements in the conversion efficiency of fossil fuel power plants
	'CCS-ready' obligation for new power plants
	RD&D schemes for accelerated development, technical improvement and market introduction of renewable energy technologies for electricity, heat and cold, efficient fossil fuel power plants, and for analysis of CCS
Transport	Domestic emissions trading scheme
	Research on sustainable transportation systems
Industry	Financial and technical support for energy efficiency and renewable energy sources
	Domestic emissions trading scheme
	Financial support for the optimisation and installation of energy efficient technologies linked to energy audits and management systems
	RD&D scheme for energy efficient production technologies and methods

There is a significant amount of research examining possible mitigation policies and measures for South Africa. Winkler (2006; 2007) discusses a set of possible energy policies that could be adopted, including policies aimed at: 1) higher energy efficiency in the industry, commercial buildings and the residential sectors; 2) increasing the biodiesel production; 3) increasing the share of renewable electricity, including nuclear energy and imported hydropower; 4) increasing natural gas imports; and 5) introducing a tax on electricity generated by coal.

Energy efficiency measures, especially in the power and industrial sectors, hold the most potential when assessed in the light of sustainable development indicators (Winkler, 2006; 2007). There is further potential on the energy supply side, including through a diversification of the energy mix (including renewable energy and natural gas), and through the deployment of clean coal technologies.

Although the theoretical renewable energy potential is enormous, renewables have only played a small role so far in meeting the objective of increasing access to electricity, mainly through increasing off-grid electrification (Winkler, 2005). To increase the share of renewables in the energy mix, new policies are needed. One option is to increase the import of hydropower from other African countries, notably the Democratic Republic of Congo (Winkler et al., 2007; Halsnæs et al., 2008). South Africa could use its existing ties through the Southern African Development Community (SADC) to exploit this potential. Halsnæs et al. (2008: 214) conclude that the hydropower potential for South Africa is 'fairly robust' although its implementation in the region 'will have to overcome many political barriers'. One of these barriers is that South Africa would become increasingly dependent on energy imports (Winkler, 2007). Another option that is being considered is nuclear energy, which is currently undergoing a 'renaissance' (Winkler & Marquard, 2007: 14). The state-owned utility Eskom is developing a so-called Pebble-Bed Modular Reactor, and has further plans to enhance nuclear capacity. Furthermore, although the technology does not feature in any policy documents or strategies, there seems to be interest in increasing the use of hydrogen technologies in South Africa (e.g. DEAT, 2004).

As in the case of hydropower, increasing the import of natural gas makes South Africa's energy supply more dependent on imports (Winkler, 2007). Significantly, Sasol (South Africa's main synthetic fuel producer) has invested in large natural gas fields in Namibia and Mozambique, and South Africa and Mozambique have signed an agreement to build a gas pipeline to supply South Africa.

Other technologies focus on cleaning the energy supply by reducing emissions from coal. Clean coal technologies for power production, such as pulverised fuel combustion, integrated gasification and combustion, and coal-powered fuel cells are not yet available, but could become so in the medium to long term (Winkler, 2006). Another technology that holds significant potential is carbon capture and storage (CCS). Mwakasonda and Winkler (2005) examined the promises and pitfalls of the technology for South Africa. The heavy reliance on coal will very likely continue in the foreseeable future (DME, 2003a), and could thus make CCS a realistic option for the country. They argue, however, that the technology brings few or even negative sustainable development benefits. In particular, introducing the technology would raise electricity prices, thereby endangering the affordability of energy services. On the other hand, CCS would involve technology transfer to South Africa.

Even if all these options were fully exploited, CO_2 emissions would still be 30% above 2000 levels. Instead, Winkler and Marquard (2007) suggest that putting South Africa on a path towards a low-carbon society, more far reaching measures are needed, including: 1) incentive programmes for energy-intensive industries; 2) pricing energy to reflect external costs for non-energy-intensive sectors of the economy; 3) investment in climate-friendly technologies where the country has a resource (e.g. solar thermal technology); 4) measures to lower the energy intensity of key industries; and 5) economy-wide measures such as carbon taxes or emissions trading systems.

The policy options discussed above resonated in the process on Long Term Mitigation Scenarios (LTMS). In the LTMS process, which sought to provide the government with a solid scientific basis for devising climate policy for the long term, various potential mitigation and adaptation measures were identified (DEAT, 2007):

- *'Start now' measures*, which would result in financial and (sustainable) development gains, and could be implemented through state action. These could include measures aimed at energy efficiency, which would result in cost recovery over time.
- *'Scale up' measures*, which is an extension of the first type of measures, also comprising of state action, but now including measures that can be taken at (low) positive cost. These measures include additional energy efficiency measures, as well measures for moving towards zero-carbon electricity, such as increasing the use of renewable energy and nuclear energy in power generation.
- *'Use the market' measures*, which aim to use the market to change social behaviour, including carbon taxes and subsidies for renewable energy.
- *'Reaching for the goal' measures*, which imply drastic changes for the South African economy as a whole, including: investments in technologies that are not yet on the market; using gas and hydro availability to switch from coal; specific measures to change people's behaviour, such as promoting modal shifts in public transport or urban planning; and eventually, moving towards a low-carbon economy by reconsidering the sectors that provide South Africa with a competitive advantage.

As Figure 6.3 shows, all four groups of measures would be needed to get South Africa on a low-carbon economy path that is 'required by science' (DEAT, 2007). It also shows that the 'Start now' measures could cut emissions in 2050 by about 40%.

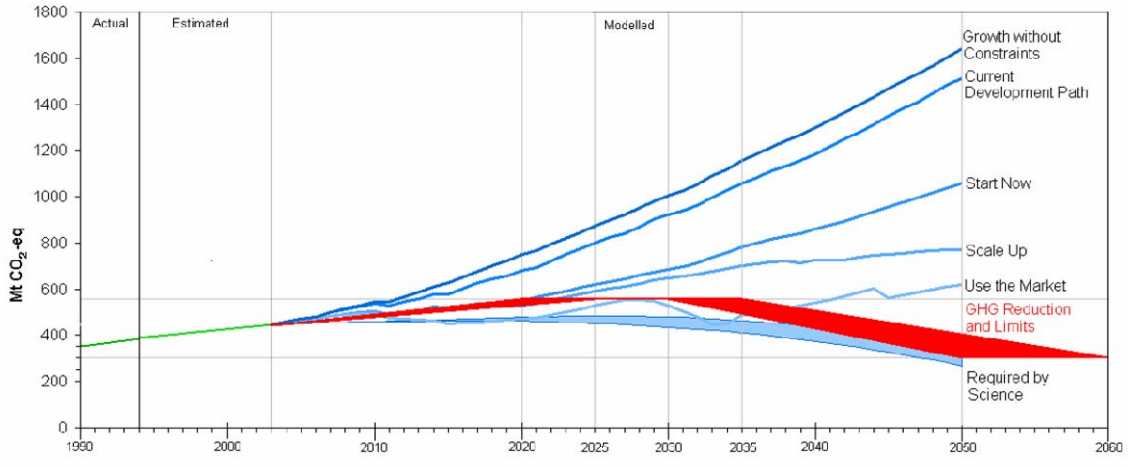

Figure 6.3. South Africa's proposed 'plateau and decline trajectory' (DEAT, 2009a)

Measuring the results of mitigation actions in terms of greenhouse gas emission reductions requires emissions data. In this context, it should be noted that South Africa recently published a draft of its second greenhouse gas inventory, for the year 2000 (DEAT, 2009c). The inventory, as well as agreements with South African industries on greenhouse gas emission reporting, provide a foundation for the MRV of future mitigation actions.

6.3 Prospects for engagement

The 2004 National Climate Change Response Strategy summarises South Africa's perspective on enhanced developing country mitigation action: 'South Africa needs to vigorously pursue the opportunities latent in the requirements that developed countries assist developing countries in their climate change response actions. This should be used as a vehicle to maximize the development benefits for South Africa, and the Southern African region as a whole, and to put in place suitable adaptation measures, ensuring a minimum of disruption while maximizing the return on any internal resources that are used' (DEAT, 2004: 4). This statement makes clear what South Africa sees as the main opportunity from undertaking mitigation actions: moving towards a cleaner development path may allow the country to pursue other national priorities indirectly related to climate change (Warburton et al., 2007). In the near-term, this is to be achieved by implementing low or negative cost policies such as enhancing energy efficiency in various sectors of the economy (an important part of the measures under the 'Start now' scenario of the LTMS). In the long run, these actions would include mandatory energy efficiency targets, measures aimed at cleaning coal production and enhancing the share of renewables, mandatory transport targets, and possibly a carbon tax.

Höhne et al. (2008) suggest that South Africa should take on sectoral no-lose targets in the power and industry sector or alternatively sectoral CDM projects in these sectors. In addition, they suggest that South Africa could implement SD-PAMs for other sectors given international support. It can be seen that the South African government is ready to pursue various SD-PAMs already, but is not yet ready to implement emission limitation or reduction targets for the abovementioned sectors. However, other types of targets are certainly possible, such as energy intensity targets or mandatory energy efficiency targets.

On NAMAs, South Africa has been one of the most active countries, putting forward detailed suggestions on how NAMAs could look like – going back to the idea of SD-PAMs – and outlining how mitigation actions and support could be linked through a registry in combination with UNFCCC mechanisms for finance and technology.

7 Conclusions

This report has provided an overview of the views of four key developing countries on some of the main issues raised in the debate on nationally appropriate mitigation actions (NAMAs), while at the same time providing an outline of the domestic contexts that influence those positions.

With respect to the positions on NAMAs of the four BASIC countries (see Table 7.1), the first observation that can be made is that the main thrust of the positions of all countries is very similar. First, referring to the principle of common but differentiated responsibilities and respective capabilities, NAMAs in developing countries are seen as clearly distinct from the mitigation commitments for developed countries. Second, the countries stress the development imperative, i.e. that mitigation action should not impede their development. Third, all four countries argue that NAMAs needing support are determined by the developing country itself on a voluntary basis, and that unilateral action deserves international recognition. Finally, the four countries all suggest that financial support for NAMAs should be channelled through the financial mechanism proposed by the G-77 and China.

Table 7.1. Overview of positions

NAMA issue	Brazil	China	India	South Africa
Nature and context	Voluntary	Voluntary	- Voluntary - Contract between developed and developing country	Voluntary
Scope	- Wide range of actions - Highlights REDD - No unilateral actions	- Wide range of actions - No QELROs	- Wide range of actions - No QELROs - No unilateral actions	- Wide range of actions - Could include unilateral actions
Link with support	- Register for actions and support - Register expected mitigation benefits, support - No crediting possible	- No crediting/offsets possible - LCDS not conditionality for support - Registry used for ex post reporting	- Register for actions and support - Register expected mitigation benefits, support - Financial and technology mechanisms match actions and support	- Register for actions and support - Register expected mitigation benefits, sustainable development benefits, support - Technical panel assesses assumptions of actions - Financial and technology mechanisms match actions and support
MRV	- National procedures for measuring and reporting - International procedure for verification	- At national level, under international guidance - For supported action, reporting through financial and technology mechanism - Unilateral action reported through National Communications	- No MRV for unilateral action - Use contract between developed and developing country	- M: biennial greenhouse gas inventories - R: through registry (annually for supported actions) and National Communications (for unilateral action) - V: domestic (for unilateral action) and international (for supported action), according to international guidelines

Taking a closer look into the positions reveals some divergences however. First, the countries do not share the same view on the relation between domestic action that is not supported internally, and NAMAs. For India, if an action does not receive support, it is not a NAMA, and hence does not need MRV at the international level. South Africa, in contrast, proposes to

register unilateral NAMAs, and subject them to international MRV procedures. Second, while Brazil and China have explicitly opposed the crediting of NAMAs, India and South Africa have remained silent on the issue. Third, the countries have different views on the role of a register/registry. While South Africa envisages an important role including fulfilling MRV functions as well as starting the process of matching actions and support, China views the register/registry as an ex post reporting tool. Finally, there are differences of opinion about the level at which MRV should be carried out. Although all countries suggest differentiating MRV according to the type of mitigation action, India does not regard unilateral actions as eligible for NAMAs, meaning that no international MRV would be necessary for such actions. South Africa, on the other hand, suggests that international MRV could even be considered possible for unilateral actions.

Both the similarities and the differences in position can be explained. The similarities can be explained by the four countries' membership of the G-77 and China, and the need to speak with one voice on this issue. Furthermore, it is well known that the countries share certain basic features: they are large countries, with large populations, and which are emitting a great share of the world's greenhouse gases. Due to rapid economic growth, these emissions are rapidly rising in absolute terms. However, there are also important differences. Brazil's energy mix is much cleaner than that of the other three countries, which all depend heavily on coal. This means that NAMAs in the energy sector are of lesser importance for Brazil. In contrast, for Brazil, REDD is a crucial issue, while this plays a smaller role in the other countries. Of all four countries, India by far is the poorest, and also has much lower per capita emissions than the other countries. South Africa has features of a developed country (e.g. high per capita emissions) but at the same time there is a huge gap between the rich and the poor.

Although all countries studied in this report have opposed the inclusion of emission reduction and/or limitation targets for developing countries in the negotiations, it is not ruled out that some kind of targets may be considered as NAMAs. Indeed, all countries have either adopted some types of targets at the domestic level, while there are some indications that Brazil may be even willing to discuss emission caps at the international level. However, it should be noted that adopting any kind of target will be conditional on at least the adoption of legally binding targets by the Annex I countries, including the United States.

It is unlikely that agreement will be reached on all the outstanding questions about NAMAs in Copenhagen. However, at a minimum, it would seem necessary to reach basic agreement on the following issues:

- Legal nature of NAMAs: would there be a legally binding obligation to implement certain NAMAs or to establish a LCDS? While there is a strong push by developed countries for adopting LCDS in the context of NAMAs, a legal obligation to submit such a strategy that would include a specified low-carbon path would likely be a bridge too far. At the very least, such an obligation would need to be accompanied by support in the development of the strategies.
- Definition and categorisation of NAMAs: would unilateral actions be considered NAMAs and require some form of international MRV? All countries seem to agree that unilateral action needs some form of recognition. However, would such recognition only be possible after MRV takes place, or could it be provided outside the NAMA context?
- Basic principles of a mechanism to link NAMAs and support: what would be the main purpose of a registry (or another mechanism linking actions and support)? A registry can help building trust by including information on the status of both actions and support. The registry could also provide an important link between the actions and the financial and technology mechanisms, by assessing the credibility of proposed actions. However, it still needs to be decided to what extent the registry itself matches action and support, or whether this function will be fulfilled by the respective mechanisms.
- Crediting NAMAS: could NAMAs be credited? Crediting NAMAS creates a whole new dynamic – verification becomes crucial when NAMAs are credited. Besides agreeing on the possibility of crediting NAMAs, a related issue is that if NAMAs could be credited, they could also be used as offsets (i.e. for compliance purposes) by developed countries.

- MRV: how would MRV for NAMAs go beyond the current system for developing country Parties? MRV is already happening under the existing climate treaties (Breidenich & Bodansky, 2009). The question is thus to what extent new requirements would be created under a post-2012 agreement.
- Verification: to what extent will verification require international interventions in national affairs? Verification can be perceived as intruding in domestic affairs, but is at the same time of importance for ensuring that emission reductions have taken place. A balance will need to be struck between these considerations.

If agreement is reached on these key issues, more detailed provisions could be specified in further decisions by the UNFCCC COP or a similar body under the new agreement.

8 Epilogue

8.1 Introduction

The research for this report on NAMAs was finished in November 2009. The drawback of research on any current policy issue is that policy developments may evolve more rapidly than the research itself. This is to some extent the case for this study. This epilogue, therefore, will briefly discuss some of the implications of the Copenhagen Accord, the main outcome of the fifteenth Conference of the Parties in Copenhagen, for the debate on NAMAs. It first discusses what happened in Copenhagen (Section 8.2), followed by a brief discussion of the issue of the state of the discussion on NAMAs in developing countries following the Copenhagen Accord (Section 8.3).

8.2 What happened in Copenhagen

Some weeks before the Copenhagen summit, it became increasingly evident that a legally binding agreement would be an unlikely outcome in Copenhagen, and that a set of detailed political decisions, including a timeline for getting to a legally binding treaty, would be the best possible result. Not only had the negotiations become incredibly complex, with negotiation texts of almost 200 pages circulating earlier in 2009, it was also clear that some of the crunch issues – including mitigation commitments and actions by developed and developing countries, and financial support for developing countries – would be very difficult to resolve. While this development lowered expectations, the stakes for Copenhagen were raised by the presence of more than 100 heads of government in the second week, an unprecedented event – not even in Kyoto did so many world leaders attend a climate change conference. Expectations were thus high – perhaps unreasonably so – that heads of government could break the deadlock that had prevailed in the negotiations for more than two years. Furthermore, Copenhagen was preceded by a large number of unilateral pledges by countries to reduce or limit their greenhouse gas emissions, including new pledges by the BASIC countries. Brazil pledged to reduce its emissions between 36.1% and 38.9% below projections by 2020. India pledged to limit its carbon intensity by 20-25% by 2020. China indicated its willingness to reduce the emissions intensity per unit of GDP by 40-45% in 2020. Finally, South Africa pledged to reduce its emissions 34% below projections by 2020, and 42% by 2025 (Reuters, 2009d; 2009e; 2009f; 2009g). The EU had already put in place a legislative framework to reduce its emissions by 20% in 2020 compared to 1990 levels, and had stated its intention to raise this to 30% if other industrialised countries joined. While the US had not made a similar pledge, legislative discussions at the federal level in the US showed that the country might be willing to agree on an emission reduction of 17% by 2020 compared to 2005 levels (amounting to a 3% reduction compared to 1990 levels), an ambition level endorsed by President Obama shortly before the beginning of the conference. In other words, there were some positive signs that countries were ready to enhance their climate change mitigation efforts.

Despite these expectations, the first week of the conference continued the stalemate that had characterised the discussions in the past two years. In the second week, things heated up when several countries accused the Danish COP Presidency of being biased and non-transparent after it had announced to work with a negotiation text that was not solely based on the texts coming from the AWG-LCA and the AWG-KP. The second week was also marked by the arrival of the heads of government. Those expecting that they merely came to rubberstamp a text agreed upon by the delegates were wrong. On the contrary, key issues such as finance and mitigation were still unresolved by the time all world leaders had arrived.

On the last official day of the conference, all eyes turned to the US. In the morning, President Obama gave a speech to the COP, disappointing many observers when he failed to go beyond the known US position at this point. However, Obama's arrival did mark the start of a series of high-level meetings. Whereas the drafting of texts had so far taken place in small groups of

country delegates, it was now a small group of world leaders that took up the challenge to arrive at a text that would be acceptable to all countries. On the last evening, an agreement was reported between around twenty-five countries, including the US and all the BASIC countries. This agreement, the Copenhagen Accord (UNFCCC, 2009d), was not the end point of the conference, however. In fact, the non-transparent drafting process of the Accord provoked intense reactions of disappointment and disgust by some of the countries that had not been involved. Nevertheless, most countries were able to – reluctantly – agree on the text. Still, for the text to become a formal decision taken by the UNFCCC COP, it needed to be adopted by consensus, which proved to be impossible given the rejection by a small group of countries, including Sudan, Bolivia, and Venezuela. Eventually, countries decided to 'take note' of the Accord, and to list the countries endorsing at the top of the document. What this means in practice, remains to be seen.

8.3 NAMAs in developing countries: what next?

It is thus clear that the Copenhagen Accord is not a legally binding international agreement. Still, the Accord may serve an important purpose: it encourages developed countries to list quantified economy-wide targets, and also requests developing countries to list their NAMAs and subject them to international MRV to some extent. Arguably, no legally binding agreement coming out of Copenhagen could have achieved such lists given the opposition of developing countries to any legally binding commitments, as well as the international review of domestic actions.

Despite its unclear legal status, the Copenhagen Accord provides a preliminary answer to some of the questions that have been raised in this report. Paragraph 5 of the Accord contains the relevant provisions on NAMAs. On the context of NAMAs, it states that non-Annex I countries will implement mitigation actions 'consistent with Article 4.1 and Article 4.7 [of the UNFCCC] and in the context of sustainable development'. In other words, the text refers to the commitments by all Parties under the UNFCCC, but more importantly to the provision that the extent to which developing countries implement their commitments will depend on the effective implementation by developed country commitments on financial resources and transfer of technology.

As noted by Müller (2010), paragraph 5 does not explicitly state that actions should be linked to support, and also does not state that actions are voluntary, with the exception of actions taken by LDCs and small island developing States.[11] However, the text could be interpreted in such a way that non-Annex I Parties not being LDCs or small island developing States may receive support on a case-by-case basis (Müller, 2010). The Copenhagen Accord states that there will be a registry, which lists the NAMAs seeking international support, and the required financial, technological and capacity-building support. However, it does not state whether the registry should fulfil any other functions than listing the NAMAs.

On the reporting of NAMAs, the Accord states that non-Annex I countries shall communicate their mitigation actions through biennial National Communications, which are subject to guidelines to be adopted by the COP. This is in contrast with the current system of National Communications by non-Annex I Parties, for which no fixed dates were set (Yamin & Depledge, 2004). MRV would in the first place occur at the national level, while the results of the MRV activities would be reported in the biennial National Communications. On verification, the Copenhagen Accord reflects an important compromise reached between China and the United States (Ramesh, 2010). It states that "[n]on-Annex I Parties will communicate information on the implementation of their actions through National Communications, with provisions for *international consultations and analysis* under clearly defined guidelines that will *ensure that national sovereignty is respected*" (emphasis added) (UNFCCC, 2009d: para. 5). While the term 'verification' is not used, this provision endorses some form of international scrutiny of domestic affairs. The text is not entirely clear about whether it applies to unsupported action, although a

[11] The relevant text states: "Non-Annex I Parties to the Convention will implement mitigation actions" and "[l]east developed countries and small island developing States may undertake actions voluntarily and on the basis of support" (UNFCCC, 2009d: para. 5).

case can be made that the provision is about unsupported (autonomous) action, as supported action 'will be subject to international measurement, reporting and verification with guidelines adopted by the [COP]' (UNFCCC, 2009d: para. 5).[12]

The Accord also calls on non-Annex I countries to communicate NAMAs by 31 January 2010, which will be compiled in an INF document by the Secretariat. Various Parties have responded to this call, including the four BASIC countries. Table 8.1 provides an overview of the NAMAs suggested by the four countries studied in this report.

A preliminary analysis of the NAMAs proposed by the four countries reveals the following:

- Brazil has proposed a wide range of actions, ranging from actions in the forestry, industrial and transport sectors; however, the main actions (in terms of greenhouse gas emission reductions) are aimed at reducing deforestation. This is not unexpected given the large mitigation potential in the forest sector in Brazil.
- The range of proposed actions by the other three countries is rather limited so far, with South Africa only proposing the reduction of overall emissions as a NAMA. The absence of concrete policies and measures in particular sectors may be explained by the fact that the Copenhagen Accord has not yet managed to establish a mechanism that links actions to support. Given the emphasis the four countries have put on obtaining financial, technological and capacity-building support in the negotiations leading up to Copenhagen, the countries cannot be expected to table NAMAs at the international level without at least some certainty about the (levels of) support these NAMAs will receive. Furthermore, the Copenhagen Accord stipulates that more detailed NAMAs may be included through follow-up communications by non-Annex I countries, including through their National Communications.
- All four countries have not shied away from providing quantified information about the intended effects of their NAMAs. While none of this information can be regarded as an international commitment to achieve a target, it could enable observers and other countries to examine the contribution of mitigation policies in these countries to global emission reductions. However, for at least two countries data and assumptions underpinning the targets would need to be made available to allow for a proper assessment of the targets.[13]
- The key pledges (on emissions intensity or reducing emissions compared to BAU) of all BASIC countries were the same as the ones made before Copenhagen.
- In their communications to the UNFCCC Secretariat, all four countries emphasise the importance of Article 4.7 of the UNFCCC, thereby indicating that undertaking the actions will be conditional on the provision of support by Annex I countries. The four communications do not make a distinction between unilateral or autonomous and supported mitigation actions. It is hence unclear whether any of the NAMAs can (in part) be implemented in the absence of international support.
- Interestingly, while South Africa and Brazil mention the Copenhagen Accord, the Chinese and Indian communications to the Secretariat do not do so. Indeed, at the time of writing this epilogue, China and India were still considering whether they wanted to be 'associated' to the Copenhagen Accord (Reuters, 2010).

[12] This interpretation is also adhered to by, for instance, Bodansky (2010).

[13] See, for instance, the comments on the Chinese and Indian pledges at http://www.climateactiontracker.org/.

Table 8.1. Overview of BASIC country proposals for NAMAs in the context of the Copenhagen Accord[14]

Country	Proposed NAMA	Quantified information
Brazil	Overall emission reduction	36.1-38.9% compared to projected emissions in 2020
	Reduction in Amazon deforestation	Estimated reduction of 564 million tons of CO_2-eq. in 2020
	Reduction in Cerrado deforestation	Estimated reduction of 104 million tons of CO_2-eq. in 2020
	Restoration of grazing land	Estimated reduction of 83-104 million tons of CO_2-eq. in 2020
	Integrated crop-livestock system	Estimated reduction of 18-22 million tons of CO_2-eq. in 2020
	No-till farming	Estimated reduction of 16-20 million tons of CO_2-eq. in 2020
	Biological N_2 fixation	Estimated reduction of 16-20 million tons of CO_2-eq. in 2020
	Energy efficiency	Estimated reduction of 12-15 million tons of CO_2-eq. in 2020
	Increased use of biofuels	Estimated reduction of 48-60 million tons of CO_2-eq. in 2020
	Increased energy supply by hydropower plants	Estimated reduction of 79-99 million tons of CO_2-eq. in 2020
	Alternative energy sources	Estimated reduction of 26-33 million tons of CO_2-eq. in 2020
	Replace coal from deforestation with coal from planted forests for iron and steel sectors	Estimated reduction of 8-10 million tons of CO_2-eq. in 2020
China	CO_2 emissions per unit GDP	40-45% reduction by 2020 compared to 2005 levels
	Increase share of non-fossil fuels in primary energy consumption	Achieve 15% by 2020
	Increase forest coverage	Add 40 million hectares by 2020 compared to 2005 levels
	Increase forest stock volume	Add 1.3 billion m^3 by 2020 compared to 2005 levels
India	Emissions intensity of GDP (excluding agricultural emissions)	Reduce by 20-25% by 2020 compared to 2005 levels
South Africa	Emission reductions	34% below BAU by 2020; 42% below BAU by 2025

The notification of these first NAMAs is certainly not the end of the discussion. Many questions raised and discussed in this report remain as relevant as they were last year. First, it remains to be seen whether any of the outcomes included in the Copenhagen Accord will be included in a formal COP Decision, or ultimately in a legally binding agreement. So far, the 'obligation' to implement NAMAs has no firm legal basis, and it is unclear whether the next COP in Mexico will be able to provide the legal foundation. Second, the Copenhagen Accord does not explicitly distinguish unilateral mitigation actions and actions receiving international support, a discussion which has tended to dominate the debate over the past year. While the Copenhagen Accord does imply that there are different MRV requirements for supported NAMAs and mitigation actions in general, a clearer distinction between the two is needed. Third, many details about how to link actions and support remain to be elaborated. In fact, it is even unclear how anything in the Copenhagen Accord can be elaborated at all, given the failure of Parties to agree on the status of the Accord under the UNFCCC. Furthermore, even if the Accord were to become a COP Decision, many important decisions are still pending. This includes the function of a register, guidelines for MRV and, perhaps most importantly, and the modalities for a future financial mechanism (deemed the 'Copenhagen Green Climate Fund') and a technology mechanism. Finally, the question of crediting NAMAs has been eschewed completely in the

[14] The communications on which this table is based can be found at http://unfccc.int/home/items/5265.php. See also http://www.usclimatenetwork.org/policy/copenhagen-accord-commitments#Note9 (both accessed 14 February 2010).

Accord, although it notes that ‘opportunities to use markets’ can be pursued to promote mitigation actions (UNFCCC, 2009d: para. 7).

In sum, we believe the discussions on NAMAs have only just started. Many difficult, but important decisions still need to be resolved on the road to Mexico and beyond.

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