

# Mitigation Talks

## Series on Nationally Appropriate Mitigation Actions

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### Editorial

With increasing scientific evidence and rising public awareness, the urgency of addressing climate change is recognized by all countries. The phenomenon of climate change is unprecedented in its scale and spread of impact, although this may vary across geographical and socio-economic arenas. It is these differences in impacts, along with the differences in contributions to the problem of climate change made by different countries, which is the source of divergence between, broadly, the developed and developing countries on how to mitigate the change and who should take what responsibility and when.

While the developed countries are historically responsible for accumulated greenhouse gases (GHGs) emissions, the developing countries may emerge as significant contributors in the future. Both, the North and the South, are therefore, asking the each other to commit to take immediate action. Indisputably, it is the developed countries that have the primary responsibility to reduce their emission levels on account of their historical contributions and superior technological and financial capabilities. It is in the interest of developing countries, however, to participate in the containment of the threat of climate change, for they will be the most vulnerable to it. At the same time, as recognized by the United Nations Framework Convention on Climate Change (UNFCCC) and reiterated in the Bali Action Plan, the development priorities of the developing countries come first. Further, the intensity of mitigation action in developing countries is contingent upon developed country action, both in terms of their domestic mitigation strategies as well as their obligations with respect to financial resources and transfer of technology.

While actions are to be designed and implemented domestically, with each country having to deal with a range of barriers—primarily political and infrastructural in the Northern countries and financial and technological in the Southern countries—international cooperation is essential. The need, therefore, is for each country to think through possibilities of domestic actions and all countries to agree upon an international regime to enhance and ensure the realization of these domestic actions. The sooner the countries move on to an aggressive mitigation action plan, the cheaper would it be for them, individually as well as collectively, to deal with climate change in the future. A dialogue among mitigation strategies and options in different countries is warranted.

After the disappointment from the Copenhagen Summit in 2009, countries have begun to outline their mitigation plans, including developing countries, perhaps in despair and mistrust over developed countries' seriousness. But, this could also be capitalized upon as an opportunity to build renewed trust and cooperation among countries. This newsletter aims to provide a platform for the warranted dialogue on mitigation strategies, both within and among countries. The first issue on which this platform will try to engage policy-makers, researchers, civil society, and other stakeholders, is the issue of Nationally Appropriate Mitigation Actions (NAMAs). The issue of NAMAs is most apt in context of the urgency of an international regime to not only support, but also to combine various domestic mitigation strategies, particularly across the North-South divide.

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Since the beginning of discussions over the post-2012 climate regime, the industrialized countries have mounted pressure on major developing economies to take on mitigation commitments, so much so that it is a widely held view that the US will not accept binding mitigation targets unless India and China too accept binding targets. To an extent this pressure has been successful in that the four major developing economies, China, India, Brazil and South Africa came together to constitute the BASIC group in response and have made announcements relating to their mitigation actions. In this context, the proposed mechanism—the Nationally Appropriate Mitigation Actions (NAMAs)—could be seen as institutionalizing mitigation in developing countries, albeit in an implicit manner. The associated debates with respect to their measurement, reporting and verification too are in essence a debate over the ‘binding’ nature of these mitigation actions.

While the UN Framework Convention on Climate Change (UNFCCC) recognizes that the ‘specific circumstances’ and ‘other factors’ of developing countries must be taken into account, developing countries need to develop a codified understanding of them. In the context of technological choices, central to climate solutions, the question of appropriateness has been an unresolved discourse. The debate concerning appropriateness of policy measures within domestic circles is obvious. From a developing country perspective, the issues related to distinguishing between domestic and supported NAMAs with acceptable MRV provisions and designing and implementing them epitomize challenges in resolving the duel between development imperatives and mitigation actions.

Overall, the issue of NAMAs is of great significance for developing countries, not only from the implementation point of view, but also from the climate diplomacy point of view. A deeper understanding of

NAMAs will enable them to prioritize their mitigation strategy. A comprehensive notion of what ‘nationally appropriate’ mitigation options are for a developing country could serve as a methodological tool to assess many developed country proposals such as sectoral approaches, deployment of carbon capture, and sequestration technology, aviation and maritime tax, MRV, international support, and so on.

With this understanding, the project “Developing country participation in addressing climate change: analysing issues and options for implementing NAMAs and REDD Plus” aims to develop a framework to assess appropriateness of a given mitigation action in a particular developing country context. It will also, to illustrate applicability of this framework, examine few mitigation options in BASIC countries.

The present series of this newsletter aims to initiate an informed dialogue between various stakeholders from developing countries with a view to develop criteria of appropriateness of domestic mitigation actions in the context of its relationship with the evolving international climate regime. This dialogue is intended to serve as a methodological tool to ensure robustness and general acceptability of the criteria in developing countries, with a special focus on BASIC countries. We hope that this will provide a comprehensive and transparent approach for national governments in developing countries to assess their needs, identify effective and achievable mitigation actions, and design domestic MRV processes with significant stakeholder participation.

This issue presents an interpretation of some agreed texts at the UNFCCC level, some observations based on ongoing discourse on mitigation actions in India, and a snapshot of mitigation initiatives in BASIC countries. The arguments presented are not exhaustive as they are aimed at initiating a dialogue. We welcome readers to respond to these arguments, add new threads or propose alternative views.

## Nationally appropriate mitigation actions: distilling from agreed texts

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Climate policy is concerned with a global public good wherein all Parties agree to the ultimate objective of stabilizing greenhouse gas (GHG) concentration levels, to be achieved in accordance with the United Nations Framework Convention on Climate Change (UNFCCC). The UNFCCC, in its Article 3.1, calls for developed countries to take the lead in combating climate change and its adverse effects in accordance with the principle of Common but Differentiated Responsibilities (CBDR) and respective capabilities. Accordingly, the developed and developing country Parties have had different levels of commitment and obligations under the Convention. For instance, Annex I Parties<sup>1</sup> are to take the lead in modifying longer-term trends in emissions by adopting national policies and measures with the objective of returning their GHG emissions individually or jointly to 1990 levels by the year 2000 (Article 4.2 a and b) with Parties included in Annex II<sup>2</sup> having further commitment to provide new and additional financial resources to meet the agreed full costs incurred by developing country Parties in complying with their obligations (Articles 4.3, 4.4, 4.5) and developing country Parties are eligible for funding the implementation of its general commitments (Article 11 and 12). The UNFCCC, in its Article 4.7, implies that the extent of their implementation depends upon both the availability of funding from developed country Parties and the fact that development and poverty reduction are the overriding priorities of developing countries.

The precise nature of differentiated burden-sharing amongst Parties have always been a contentious issue in climate negotiations and have led to increased debate with developed country Parties, emphasizing the need to have higher involvement of developing countries, especially large developing economies to

undertake certain obligations under the Convention. This debate can be traced back to climate negotiations as early as COP 1 (1995) where the first review of adequacy of commitments concluded that the paragraphs in Article 4.2(a) and (b) were not adequate and initiated a process through the Berlin Mandate<sup>3</sup>, to strengthen the commitments of Annex I Parties, including proposals related to a protocol. However, it has gained stature since the adoption of the Kyoto Protocol (KP) as a result of the negotiations of the Ad Hoc Group on the Berlin Mandate (AGBM) at COP 3 in 1997<sup>4</sup>. The KP strengthened the GHG mitigation commitments for the Annex I Parties<sup>5</sup> but not for developing countries. Yet, developing country participation was one of the major issues during and after the Kyoto meeting. For example, the US Senate passed a resolution stating that the Senate would not consider ratifying a potential protocol unless it contained some key provisions that the developing countries (particularly China and India) also assume obligations to reduce their GHG emissions and that it not be harmful to the US economy.<sup>6</sup> The US, accounting for 36% of global emissions then, was important because it was mandatory for at least 55 countries to ratify the KP and the countries that ratify should cover 55% of Annex I emissions.

While there was no major decision in other COPs, the issue has always been the undercurrent in negotiations to the extent that primary issues before the COP 13 in Bali were whether or not indicative percentage reduction targets of 25%–40% should be included in the mandate and what should be the precise wording to be used to allow discussion of reduction commitments for developing countries.<sup>7</sup> The Bali Action Plan (BAP) in its paragraph 1(b) (ii) gave room to allow for discussion on emission reductions in developing countries by envisaging enhanced action

<sup>1</sup> OECD and economies in transition.

<sup>2</sup> OECD

<sup>3</sup> <http://unfccc.int/resource/docs/cop1/07a01.pdf>

<sup>4</sup> <http://unfccc.int/resource/docs/cop3/07a01.pdf>

<sup>5</sup> Article 3.1 of the Kyoto Protocol “The Parties included in Annex I shall, individually or jointly,...[reduce] their overall emissions of such gases by at least 5% below 1990 levels in the commitment period 2008 to 2012.”

<sup>6</sup> Leiserowitz A A. 2005. “American Risk Perceptions: is climate change dangerous?” *Risk Analysis* 25(6): 1433–1442.

on mitigation of climate change wherein developing countries are expected to undertake Nationally Appropriate Mitigation Actions (NAMAs). The BAP paragraph 1(b)(ii) calls for 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 (MRV) manner. The BAP, thus, while opening up space for developing country mitigation actions, nevertheless reflected in part the structure of para 4.1 and 4.7 of the Convention.

This was around the time when scholars<sup>8</sup> had already tabled proposals for meaningful participation of developing countries with the SD-PAMs approach. The proposals thereof suggested that though developing countries needed to grow they could take a path with lower emissions, and thereby also exploit the mitigation co-benefits. This approach was largely based on Article 3.4 of the Convention, which postulates that “the Parties have a right to, and should, promote sustainable development” through policies and measures “appropriate for specific conditions of each Party.” In comparison with the SD-PAMs approach, the NAMA approach has received much more attention primarily because mitigation is the core of this proposal and developed countries are now arguing that while historical GHG emissions contributing to anthropogenic climate change have been mainly from developed countries, an increasing share of GHG emissions is going to come from developing countries, especially the large developing nations that are experiencing high economic growth. This means that action by developed countries will be insufficient in preventing dangerous human interference with the climate system and, therefore, developing countries should take action.

Since Bali, negotiations under the AWG-LCA track have focused on detailing out ‘what entails NAMAs’ with many proposals and ideas. However, the proposals are still at a very conceptual level and often vary in terms of its interpretation. The important issues being deliberated upon in these proposals include the following.

- **Nature and scope of NAMAs:** whether NAMA are voluntary actions or obligations; whether they

include domestic actions or should only include supported actions;

- **Governing mechanism of NAMAs:** what might a the mechanism look like in terms of its design, organization, and activity, what will be the role of existing institutions and mechanism, if new institutions are required what will be the elements and modalities that would enhance its effectiveness;
- **Operational issues:** identification of the content of NAMAs as well as the kind of support they need to implement those actions, implementation plan, timeframe, and the outcome of actions; and
- **Measurement, reporting, and verification (MRV) issues:** whether all actions should be MRVed or only actions that receive support should be MRVed, and in any case what will be the methodological and technical requirements in terms of methodologies relating to MRV, and who should do MRV.

Despite these debates, it could be argued that the core of the proposal is the consideration of ‘National appropriateness’ as the BAP para1(b) (ii) suggests mitigation action undertaken by the developing country Parties shall be nationally appropriate, which is in line with the Article 3.4 of the Convention. Article 3.4 also requires that in addition to being “appropriate for the specific conditions of each Party”, policies and measures should also be “integrated with national development programmes”. This implies that, mitigation actions to be undertaken by developing country Parties should be left for each Party to decide, which actions to undertake as per its national priority, according to its level of development and capability. Further the BAP para 1(b) (ii) emphasizes that mitigation actions undertaken by the developing country Parties shall be in the context of sustainable development. This is in line with the overall objective of the Convention as enlisted in Article 2 and 3.4. Therefore, mitigation actions to be undertaken by developing country Parties must by any means not have adverse impacts on sustainable development and rather should promote sustainable development co-benefits as a requisite.

<sup>7</sup> Egenhofer C. 2008. “From Inconvenient Truths to Copenhagen Accord.” In Christian Egenhofer (ed.) *Beyond Bali: strategic issues for the post-2012 climate change regime*, pp. 1–10. Brussels: Centre for European Policy Studies.

<sup>8</sup> Winkler H, Saplding-Fecher R, Mwakasonda S, Davidson O. 2002. “Sustainable Development Policies and Measures: starting from development to tackle climate change.” In Baumert K, Blanchard O, Llosa S, and Perkaus J, *Building on the Kyoto Protocol: options for protecting the climate*. World Resources Institute.

# Appropriateness of mitigation actions—what does it entail?

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**E**ven though it is a controversial issue, the nature and extent of mitigation actions in developing countries is an important policy question at both domestic as well as international levels. While developing countries continue to pursue a cautious approach in climate change negotiations, many of them have already begun to articulate their mitigation strategies.

At diplomacy platforms, these initiatives are seen as positive signaling gestures. However, in domestic circles, experts, industry, civil society, and policy makers are increasingly debating, although mostly in a subdued form, these evolving strategies on account of their feasibility, impacts on economy and the process of industrialization, implications for negotiating positions, choice and prioritization of interventions, implications for resource availability and allocation, and so on. Broadly, the various opinions are located within the larger context of sustaining growth and promoting sustainable development.

These debates offer useful insights into what could be considered as parameters of ‘appropriateness’ of mitigation actions. Even though the idea of ‘appropriateness’ is to be applied for both developed and developing country’s mitigation actions (the Bali Action Plan para 1b [i] and 1b [ii]), the following discussion limits itself to presenting some observations in the context of developing countries, based on the ongoing discourse within India.<sup>1</sup>

## Choice of technology

One way of looking at emerging mitigation strategies in developing countries is to interpret them as implicit technology policies. In this context, two issues dominate the discourse: commercial viability of technology and investment on research, development, and deployment (RD&D). While most initiatives aim

at filling the gaps in commercial viability and creating markets for certain technologies—for instance, feed in tariff policies, exemptions from duties, renewable purchase obligations, tradeable renewable energy certificates, and so on—some argue that preference should be given to those technologies that are already commercially viable but are not diffused enough due to institutional, infrastructural, and market barriers. In addition, it is argued that in order to avoid import dependency, adequate emphasis should be given on building RD&D capabilities.

## The negotiation context and existing national regulatory framework

Adopting mitigation actions leads to incremental costs. Given the limited financial capabilities of developing countries, undertaking such actions would require diversion of resources from other developmental priorities enshrined in national policies and regulatory framework. Therefore, many policy makers and experts are of the opinion that these actions should not be undertaken if international support, as per the provisions of the UNFCCC, is not provided. Implicitly, it is argued that only those mitigation actions that comply with the conditions and priorities laid out in national policy and regulatory framework could be considered as nationally appropriate. However, this will open up a Pandora’s Box in terms of linking it with the domestic debate around appropriateness of existing policy and regulatory frameworks.

## Overriding priority to poverty eradication

Priority to adaptation over mitigation in developing countries and demand for net transfer of resources from developed countries are asserted on account of overriding primacy of poverty eradication as a developmental imperative. As a normative inference,

<sup>1</sup> Reference to Indian discourse here is not exhaustive. It only refers to those discussions that the author has been a witness of either as observer or active participant at various stakeholder consultations, civil society meetings, seminars and personal interactions over last two years. Observations presented here are thus author’s assessment in his own capacity. For more detailed summary of some personal interactions see Shrivastava, M. and H. Upadhyay. 2009. Climate change and technology: perceptions from India. [Discussion paper: TERI/GCN-2009:1] and Shrivastava, M., N. Pahuja and H. Upadhyay. 2010. Financing Renewable Energy in India: Challenges and opportunities. [Discussion paper: TERI/GCN-2010:2, forthcoming]

a mitigation action or technology policy that strengthens the stated poverty eradication goals is considered an appropriate mitigation action. A logical extension of such an ‘overriding’ priority is that any action that hinders poverty eradication or strengthens sources of poverty is ‘inappropriate’. In this context, however, the question arises that if a mitigation action offers substantial poverty reduction benefits, for example, complete rural electrification through solar systems, but incurs huge incremental costs, then can that action be called ‘nationally appropriate’ even if no international support is provided?

### **Impacts on industry, employment, and issue of stranded assets**

In a globalized market, interventions need to be extremely sensitive to the ways they might impact the competitiveness of domestic industries<sup>2</sup> and associated employment scenarios. While some studies suggest that with concerted global mitigation actions in different countries likely to benefit relevant industries as well as employment creation,<sup>3</sup> an immediate shift from high-emission industries to low- or zero-emission industries might have serious implications for the industrialization process, as well as job opportunities. For instance, it is argued that since coal-based industries and associated activities together constitute one of the top employment venues, shutting down coal-based facilities will have serious implications on employment rates as well as GDP growth rates. However, a related concern is that sooner or later developing countries will need to make this shift, which necessitates that the industrialization process is such that it avoids creation of stranded assets by way of investments in high-emission facilities and corresponding infrastructure, as well as creation of human resources. Finding a dynamic equilibrium

among these concerns over a long-term development strategy is, perhaps, the gravest of the challenges in arriving at any practical conception of ‘appropriateness’ of mitigation actions in developing countries like India.

### **Beneficiaries of co-benefits of mitigation actions**

A range of co-benefits of mitigation actions is often mentioned in various literature and discussions. While in the international context, the question of who benefits the most from mitigation actions in developing countries is more pronounced, for example, a larger market of mitigation technologies from developed country companies, it is not articulated in so many words in developing countries. However, in a very subdued form and in the context of rural-urban divide, poverty eradication and adaptation priorities it could be argued that there is an implicit suggestion by some that the developmental co-benefits of mitigation should preferably accrue to the poor, in general and the rural poor, in particular. This is an issue of ‘appropriateness’ that the national policy making bodies need to resolve.

### **Conclusion**

The above discussion presents some of the points frequently made by researchers, civil society, industry, and policy makers in the context of mitigation actions in developing countries. Even though these points are not exhaustive, yet it could be argued that they offer a reference point to assess the appropriateness of mitigation strategy. However, it is important to examine each of them in more detail, with a particular reference to other points, in order to find a balance between competing priorities, and still not compromise with overriding priorities and mitigation imperatives.

<sup>2</sup> The different views with respect to voluntary industry initiatives through various incentives as against specific top-down energy-saving targets for utilities to promote energy efficiency through the National Mission on Enhanced Energy Efficiency under India’s National

<sup>3</sup> GCN. 2010. Low carbon jobs in an inter-connected world. Global Climate Network Discussion paper no. 3.; Upadhyay, H. and Pajjua N. 2010. Low carbon employment potential in India: A climate of opportunities. [Discussion paper: TERI/GCN-2010:1]

# Renewable energy: the common thread

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There is much uncertainty that surrounds the future of the climate change negotiations and what the eventual frameworks will look like. There are, however, two points that many people can agree on in the context of mitigation in developing countries—first, the negotiation language will focus heavily on articulating and operationalizing the Nationally Appropriate Mitigation Actions (NAMAs), and second, the spotlight will be on the BASIC countries (Brazil, South Africa, India, and China), an interesting negotiating bloc threaded by the pressure from industrialized countries to take comparable binding emission reduction targets on account of being amongst the largest developing-country emitters that will soon, if not already, be amongst the world's leading emitters overall. The large size of their economies also means that there is significant scope for avoiding emissions if the right actions are prioritized and supported accordingly.

Determining NAMAs is of extreme significance for the BASIC countries, with the challenge lying in trying to determine what mitigation actions are the most nationally appropriate. Despite not having a binding greenhouse gas (GHG) reduction commitment, there exists a wealth of mitigation actions from the BASIC countries that have been planned and implemented already, many with mid-to-long term targets associated with them. Presumably, these actions, or at least a significant part of them are likely to be reported as NAMAs by the BASIC countries. In this brief, some examples of those mitigation actions are presented, which are similar within the BASIC group and are likely to have significant implications for negotiations and international cooperation. These actions are those that would appear to have a large mitigation impact and those that would likely be straightforward to qualify, preemptively for domestic measurement, reporting, and verification (MRV) and international consultation and analysis (ICA) or international MRV of supported actions that may eventuate. In addition, while many policies and measures have

been enacted, only those which have a recent year of implementation are likely to get more attention.

### High-level mitigation pledges

It is worth revisiting the overarching mitigation policies, which exist in each of the BASIC countries, who while having no obligation to do so, have made voluntary reduction pledges, which set the national direction and drive the sub-national mitigation actions. Both China and India have made intensity (emissions per \$ GDP) reductions pledges with South Africa and Brazil making absolute reduction pledges from business as usual (BAU) emission levels as shown below:<sup>1</sup>

- **China:** 40% to 45% intensity reduction from 2005 levels by 2020.
- **India:** 20% to 25% intensity reduction from 2005 levels by 2020.
- **Brazil:** 36.1% to 38.9% absolute emissions reductions from BAU by 2020.
- **South Africa:** 34% absolute emissions reductions from BAU by 2020.

### Commonality of emphasis on renewable energy

Not surprisingly, all of the BASIC countries have placed a strong emphasis on renewable energy (RE) as the main type of mitigation action, given the obvious co-benefits that it has with respect to energy security, an issue which ranks high on developing country agendas. Many of the mitigation actions involve fiscal incentives to promote greater domestic uptake of RE and as shown below, present the best kind of RE mitigation actions that would benefit from external support.

#### China

With respect to G-20, China ranks number one in investment growth of clean energy technologies. The unofficial plans suggest a target of almost doubling the installed RE capacity in the next 10 years with additional 130 GW of hydro, 138 GW of wind, and 19.6 GW of solar photovoltaic (PV) during

<sup>1</sup> World Resource Institute. 2010. Summary of GHG Reduction Pledges Put Forward by Developing Countries. Details available at <[pdf](http://wri.org/summary_of_non_annex1_pledges_2010-06.pdf)>

2008–2020.<sup>2</sup> Through its stimulus funding on energy efficiency, clean vehicles, grid infrastructure, and other clean energy technologies, China is expected to spend \$46.9 billion. The “Golden Sun” project, announced in July 2009, covers 50% of the total cost of grid-connected PV power plants and 70% of the construction cost of independent PV power-generation systems through fiscal incentives with a target of installation of 500 MW of large-scale solar PV. The subsidies are conditional on 20-years service life of the installations.<sup>3</sup> The wind concession programme that covers wind farms larger than 100 MW in capacity, achieved 1.2 GW capacity installation during 2003–2008.<sup>4</sup>

### India

India ranks number seven in investment growth of clean energy technologies among the G-20 countries. The National Solar Mission targets to achieve 20 GW of grid-connected and 2 GW off-grid solar power by 2022. In order to support the generation-based incentives under the National Solar Mission, a cess of Rs 50/tonne of coal produced and imported has been introduced in the National Annual Budget of 2010/11. In 2008, capital investment subsidies of 20% were announced to support solar PV manufacturing in special economic zones.<sup>5</sup> Other officially announced targets include 17.6 GW from wind and 3.4 GW from small hydro by 2012. The Indian government has allocated \$850 million for RE in its Eleventh Five-Year Plan (2007–2012). This is complimented with a mandated use of Renewable Purchase Obligations (RPOs) for power generation facilities with a solar component from 0.25%–3% by

2022, with tradable Renewable Energy Certificates (RECs) to assist facilities in meeting their RPOs.

### Brazil

With respect to G-20, Brazil ranks number six in investment growth of clean energy technologies. Incentive mechanisms employed relating to RE investment include the Luth para Todos (LpT)<sup>6</sup> programme, which entails a target of rural electrification of 10 million people till 2010 and PROFINA,<sup>7</sup> a wind, biomass, and small-scale hydro power programme, which includes FITs, guarantee of payment for energy over long-term contracts, and initial capacity quotas. The official targets for Brazil are 1.4 GW from wind; ethanol accounting for 25% of total gasoline consumption; and bio-diesel accounting for 5% of total diesel consumption by 2012.<sup>8</sup>

### South Africa

South Africa ranks number seventeen in investment growth of clean energy technologies. The South African government’s 2008 Vision and Strategy for Climate Change, foresees RE accounting for about 15% of generated power by 2020 and 27% of generated power by 2030. This implies additional 5 GW from wind and 4.5 GW from concentrated solar power by 2020.<sup>9</sup> For 2012, the targets are 1.7 GW of RE and 2% of national liquid fuel supply to come from biofuels. Towards these targets, the Biofuels Strategy-2006 requires mandatory blending specifications and the government has provided capital subsidies for RE tech—once-off capital grant made available for project developers in 2005/06–2007/08 financial years.

<sup>2</sup> GCN. 2010. Investing in Clean Energy: how can developed countries best help developing countries finance climate-friendly energy investments? [Global Climate Network discussion paper no. 4].

<sup>3</sup> REN21. 2009. Renewables Global Status Report: 2009 update. Paris: REN21 Secretariat. Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH.

<sup>4</sup> REN 21. 2009. Recommendations for improving the effectiveness of renewable energy policies in China. Details available on <[http://www.ren21.net/Portals/97/documents/Publications/Recommendations\\_for\\_RE\\_Policies\\_in\\_China.pdf](http://www.ren21.net/Portals/97/documents/Publications/Recommendations_for_RE_Policies_in_China.pdf)>

<sup>5</sup> REN21. 2009. Renewables Global Status Report: 2009 update. Paris: REN21 Secretariat. Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) GmbH.

<sup>6</sup> MME. 2010b. Details available on [http://luzparatodos.mme.gov.br/luzparatodos/Asp/o\\_programa.asp](http://luzparatodos.mme.gov.br/luzparatodos/Asp/o_programa.asp), last access on 2 June 2010

<sup>7</sup> Dutra R M and Szklo A A. 2008. Incentive policies for promoting Wind Power production in Brazil: scenarios for the alternative energy sources incentive program (PROINFA) under the new Brazilian electric power sector regulation. *Renewable Energy* 33: 65–76

<sup>8</sup> G-20 Clean Energy Factbook. 2010. Details available at [http://www.pewtrusts.org/uploadedFiles/wwwpewtrustsorg/Reports/Global\\_warming/G-20%20Report.pdf](http://www.pewtrusts.org/uploadedFiles/wwwpewtrustsorg/Reports/Global_warming/G-20%20Report.pdf)

<sup>9</sup> GCN. 2010. Ibid.

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