



Report

2010

EMERGING ECONOMIES

How the developing world is starting a new era of climate change leadership

November, 2010

An overview of this paper

This paper focuses on five emerging economies —Brazil, China, India, Mexico and South Africa— examining the current trends in GHG emissions in these countries, the actions underway to mitigate climate change impacts, the forces driving these efforts, and the next set of actions required by these countries to have a relevant response to climate change and support further emission reductions, nationally and internationally.

Given the magnitude and scale of what is required in response to the impacts of climate change, collective action is the only way forward in order to ensure the safety, sustainability and prosperity of people, places and species. Global greenhouse emissions (GHG) need to have peaked by 2015 and there needs to be a significant shift towards climate resilient development. This would require that transformative national action is underway in a critical mass of key countries before 2015 in the developed and developing world.

The principle of common but differentiated responsibilities and respective capabilities, also taking into account historic responsibilities, would help define the level of commitments that is expected of industrialized and developing countries. Recognizing that the industrialized countries are responsible for the lion's share of the GHGs that have accumulated up to now, they need to act decisively to reduce emissions, while supporting the transition for developing countries.

However, the urgency of the problem the world now faces will require simultaneous and collective action that addresses historic, current and future emission levels. Urgently, ambition and momentum needs to be enhanced significantly across the industrialized and developing countries. Confidence needs to be injected to build a climate resilient low carbon future that ensures a rapid decrease in vulnerability, contributing towards stable, robust development across all nations.

This report shows that emerging economies are already implementing a broad range of climate measures, and that in various sectors these climate policy measures are on par with what developed countries are implementing and in several cases even exceed what some of their developed country peers have to offer. However, the race has only just begun and the emerging economies need to sustain and even further step up the momentum to realize the fruits of this much required transition. This would entail demonstrating leadership at home and at the international level. Cancun provides an opportunity for these countries to forge ahead in evolving a collective ambition on, among others, in pushing and shaping an ambitious legally binding agreement, endorsing innovative sources of finance and developing national level longer term visions for a low carbon future that integrates mitigation and adaptation.

This race to a low-carbon future offers the chance for developed countries, emerging economies and vulnerable countries to cooperate in new ways to find solutions towards building an effective response to what is one of the world's most pressing, complex and challenging problems – climate change.

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Part I

1. INTRODUCTION: A New World of Climate Leadership

Climate change is one of the greatest environmental, social and economic threats facing humankind. More than a century of large-scale fossil fuel consumption and deforestation have altered the Earth's climate system, as the build-up of greenhouse gases (GHGs) in the atmosphere have led to higher surface temperatures, shifting climate patterns and an overall destabilization of the global climatic system.

According to the Intergovernmental Panel on Climate Change (IPCC), atmospheric greenhouse gas concentrations are higher today than at any point in history, with most of the emissions coming from industrialized countries. Since the year 1800, the nations representing just 25% of the global population have emitted 83% of the world's cumulative fossil fuel-related carbon dioxide (CO₂) emissions.¹ These countries must significantly transform their economies and shift rapidly from a high carbon economic growth model, to a sustainable development model that reaches near-zero emissions by 2050. Along with domestic mitigation commitments, they will need to consider the already-inevitable impacts of climate change. Through shaping their pathways to a long-term vision of complete decarbonization by 2050, developed countries will need to demonstrate that they have the policies and measures in place to meet their individual emission reduction targets, while supporting the transition for developing countries.

In order to ensure the safety, sustainability and prosperity of people, places and species, global greenhouse emissions need to have peaked by 2015 and there needs to be a significant shift towards climate resilient development. This would require that transformative national action is underway in a critical mass of key countries before 2015 in the developed and the developing world.

Today, as developing nations experience increasingly rapid economic and population growth, they are quickly moving towards becoming among the major emitters of the future. The combination of the current and projected growth in especially the emerging economies, poses a real challenge for peaking global emissions by 2015. The principle of common but differentiated responsibilities and respective capabilities, also taking into account historic responsibilities, would help define the level of commitments that is expected from emerging economies. However, the urgency and scale of the problem the world now faces would require emerging economies to already act on their *future* responsibilities.

Urgently, ambition and momentum needs to be enhanced significantly across the industrialized and the developing countries. Confidence needs to be injected to build a climate resilient low carbon future that ensures a rapid decrease in vulnerability, contributing towards stable, robust development across all nations.

There is a widespread belief among industrialized countries that developing countries are not taking steps to reduce emissions and will be an obstacle to reaching a new global agreement to stop climate change. In reality, these countries are not only showing that they have initiated wide-ranging action on the ground to reduce their own emissions, but many of them are also playing a constructive role in the international climate negotiations. However, this momentum in domestic action has not only to be kept up, but also further enhanced, to contribute towards securing an equitable climate resilient future for all.

¹ Climate Analysis Indicators Tool, Version 6.0 (Washington, DC: World Resources Institute, 2008).

This paper focuses on five of the most dynamic emerging economies—Brazil, China, India, Mexico and South Africa—examining the current trends in GHG emissions in these countries, the actions underway to mitigate climate change impacts, the forces driving these efforts, and the next set of actions required by these countries to have a relevant response to climate change and support further emission reductions, nationally and internationally.

These countries should not be confused with the ‘newly industrialized’ countries, such as Singapore, South Korea, or Saudi Arabia, whose per capita income levels have risen to levels comparable to developed countries in recent decades. Rather, the countries covered in this report reflect broad economic, demographic and resource consumption patterns of developing countries, but their size and influence ensures that each plays a critical role in the UN climate change negotiations and the global economic system. Importantly, each has a strong understanding of the need to address climate change, as they are already experiencing the impacts.

This report not only shows that emerging economies are already implementing a broad range of climate measures, in various sectors these climate policy measures, but are also on par with what developed countries are implementing and in several cases even exceed what some of their developed country peers have to offer. All the while, the emerging economies have still to face and solve many challenges before they live and breathe a low-carbon model. Nevertheless, we have arrived in a new world of climate leadership. This new race to a low-carbon future offers the chance for developed countries, emerging economies and vulnerable countries to cooperate in new ways to find solutions to what is one of the world’s most pressing and challenging problems – climate change.

2. A CENTURY OF EMISSIONS, A DECADE OF INACTION

Prior to the beginning of the Industrial Revolution in the latter part of the 1800s, the global carbon budget was largely in equilibrium. In the century that followed, the most highly industrialized nations relied heavily on fossil fuels to grow their economies. We now know that the consequence was an unprecedented increase in greenhouse gases (GHGs) in the atmosphere.

As stated in Article 3.1 of the UNFCCC’s Convention of the Parties, “The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities, thus, the developed country Parties should take the lead in combating climate change and the adverse effects thereof”...

Article 3.2 of the convention went even further by saying, “The specific needs and special circumstances of developing country Parties, especially those that are particularly vulnerable to the adverse effects of climate change, and of those Parties, especially developing country Parties, that would have to bear a disproportionate or abnormal burden under the Convention, should be given full consideration”.
(UNFCCC)

Box 1

Recognizing that their emissions were responsible for the lion’s share of the GHGs contributing to climate change, the major industrialized nations of the world agreed under the auspices of the UNFCCC to make commitments to reduce emissions before expecting the same of developing countries (Box 1).

Throughout much of the 1990s and into this decade, developing countries held fast to this principle of engagement. Many argued strongly that they had no obligation to take action to reduce their emissions until after the US, the world’s largest historical emitter and largest economy, took action.

Meanwhile, despite their clear responsibility to reduce their disproportionately high emissions, the US and most other industrialized nations dragged their feet, arguing that if they were forced to cut emissions when others were not, their businesses and industries would be unable to compete in the global marketplace. The US failed to ratify the Kyoto Protocol, while Canada has responded

that it will not even try to meet its Kyoto commitments. Other industrialized countries appear to be on track to comply with the Protocol, but too many are making extensive use of the Protocol's flexibility mechanisms, while allowing domestic emissions to continue to grow.

As the finger-pointing and rhetoric raged for more than a decade, global emissions kept rising. Between 1990 and 2006, CO₂ emissions in the US grew by 18.1%, while Japan's emissions rose by 11.3%, and Canada's by 22.9%. The EUs' emissions though did decrease, still thrived economically, showing that continued economic success and climate policy can go hand in hand. However, while China's emissions per capita remain comparatively low (70th in the world), total annual CO₂ emissions in China and the US are now similar.

The ten warmest years on record occurred between 1997 and 2008. In its fourth assessment released in 2007, the IPCC did not mince its words, stating that "warming is unequivocal" and that most of the observed increase in global average temperatures since the mid-20th century is very likely due to the buildup of GHGs in the atmosphere resulting from human activity. The assessment also concluded that "evidence from all continents and most oceans shows that many natural systems are being affected by regional climate changes, particularly temperature increases" and that increasingly disruptive impacts will be felt by the developing world during the course of the 21st century (Box 2).

- Agricultural production could be "severely compromised" in many parts of Africa, with upwards of 250 million additional people projected to be subject to water stress.
- In Latin America, food security is likely to be jeopardized by declining productivity of key crops and livestock.
- More than a billion people in Asia could be adversely affected by decreased availability of freshwater.

Box 2

In the two years since the IPCC assessment, worrying evidence has accumulated that climatic changes will be larger and come faster than previously believed. The IPCC reports that widespread changes have already been observed in average temperatures, precipitation amounts, and wind patterns resulting in a greater intensity in extreme weather-related events such as droughts, heavy rains, heat waves and tropical storms.

In China, for example, eight provinces experienced the worst drought in half a century in 2009, impacting drinking water for more than four million people and endangering more than 24 million acres of cropland. In June and July of 2007, it was the opposite extreme with devastating floods and landslides affecting seven provinces. In 2010, historic floods in Pakistan had temporarily created the largest freshwater lake on Earth, killing many and depriving millions of their livelihoods, while a devastating fire was raging in central Russia.

3. WHY ALL EMISSIONS ARE NOT CREATED EQUAL

To fully understand the role that each nation plays in the climate change equation, emissions must be considered not only in terms of present-day total national emissions, but in the context of the country's population and historical role in contributing to the build-up of greenhouse gases. In that context, the actions being taken by these developing nations are significant.

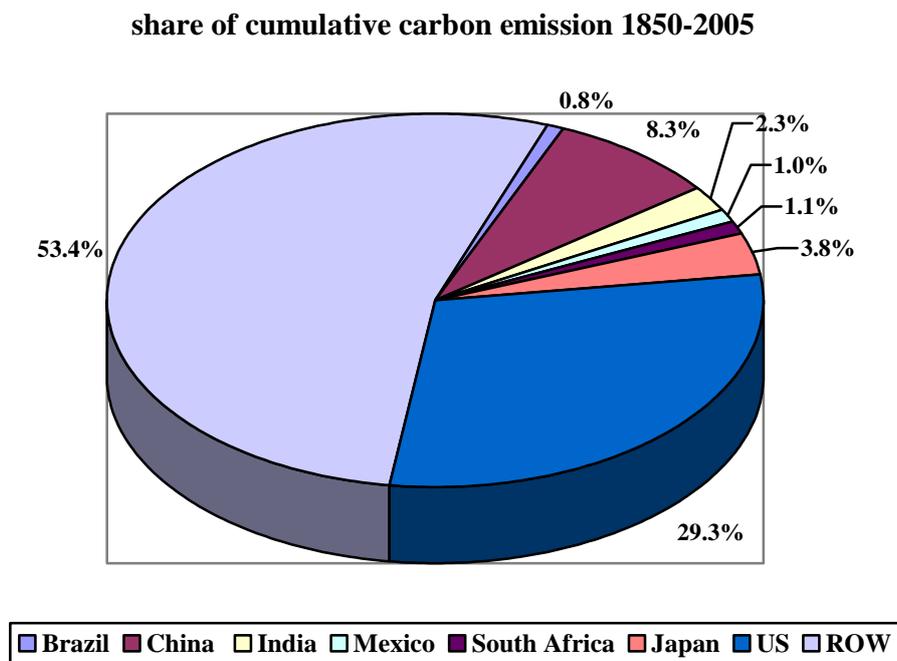
On an annual basis, China has indeed surpassed the US as the world's largest emitter of GHGs. But the US, Japan and other wealthy industrialized countries remain well ahead of China in terms of per capita emissions. Furthermore, as CO₂ lives for a very long time in the atmosphere, it is more meaningful to look at accumulated emissions over time in the perspective of contribution to climate change. As a result, most of the global warming we are experiencing today can be directly attributed to a build-up of "historical" emissions that have been produced by the world's major industrialized countries since the late 1800s. Since annual emission numbers do not capture the cumulative effect of these historic emissions, developing countries' contributions to the overall levels of GHG can appear misleadingly large while the industrialized country contributions appears

smaller than they actually are. Accounting for both annual and historical emissions in decision-making is vital.

While the overall cumulative emissions of emerging economies are now catching up, the levels of cumulative emissions per capita are still very low in the developing countries (Figure 3). The cumulative emissions per capita of an average Chinese person since 1850 ranks 89th in the world – only 6% of the average cumulative emissions of an American or European over the same period.² It is ironic that the developing nations – which have only recently begun to enjoy the benefits of living in an industrialized economy and are hardly responsible for historic GHG emissions and the current impacts of climate change – now find themselves vulnerable to these impacts.

Although China has become the world’s largest emitter in terms of annual emissions, Figure 1 shows that the US and the EU are still far ahead of China in terms of cumulative emissions. The cumulative emissions from other emerging economies are even lower. The high historical emissions for developed countries are a result of their industrialization, a period of uncontrolled exploitation of cheap and highly polluting energy sources to generate wealth and build urban transportation and industrial infrastructure. Developing countries are now building their infrastructures in the context of a carbon-constrained world to improve the living standards for their citizens, standards that citizens of developed countries already take for granted.

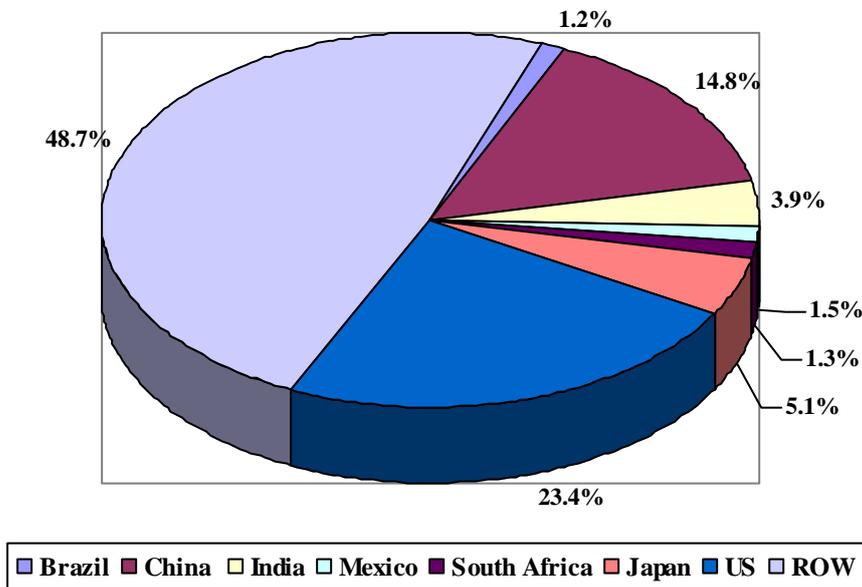
Figure 1



² Climate Analysis Indicators Tool, Version 6.0 (Washington, DC: World Resources Institute, 2008).

Figure 2

share of cumulative carbon emission 1990-2005



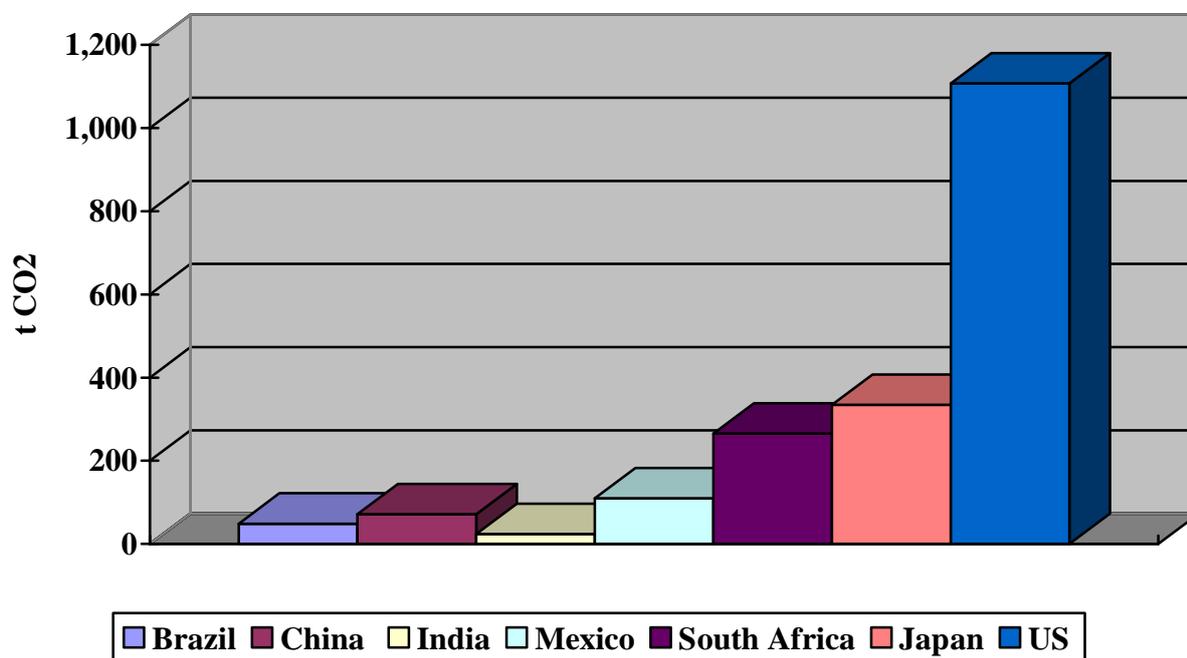
Source: Climate Analysis Indicators Tool, Version 6.0 (Washington, DC: World Resources Institute, 2008)

The data in the figures above point to the fact that developed countries must take the lead in cutting global carbon emissions rather than comparing their post-industrialization annual emissions with those of developing countries that are in the middle of their industrialization process. This in turn, would leave development space for the developing countries, while showing the way for more realistic trajectories for a low carbon future. Figure 2 shows that emission levels of emerging economies rapidly increased notably over the past few decades in line with their industrialization. At the same time, the share of emissions from the US and EU declined. However, our common climate system can only absorb a finite amount of CO₂ emissions by 2100. If we were to avoid runaway climate change, developing countries will not be able to enjoy the same freedom as those early emitters. It is vital for the developing countries to reduce carbon emission growth as soon as possible and as much as possible, while they achieve their development goals through a low carbon pathway.

To help developing countries deviate from the carbon-intense pathways chosen by industrialized countries in the past, the early emitters have to face their moral obligation by providing developing countries with financial and technological support. The emerging economies, as well as other developing countries, also face a moral responsibility to reduce the adverse impacts of their economic growth as much as they can during their period of industrialization in order to protect people and nature, current and future generations, and those that are at the frontline of experiencing an unprecedented increase in vulnerability due to climate change.

Figure 3

cumulative emissions per capita of CO₂ 1850-2005



Source: Climate Analysis Indicators Tool 6.0 (Washington, DC: World Resources Institute, 2008)

4. HISTORIC ROLE OF DEVELOPING NATIONS

Historically, developing nations have accounted for only a small share of global emissions and even today most of them have very low per-capita emissions. However, they aspire to the same economic prosperity accessible today to the wealthier nations. Given their pace of industrialization and economic growth, it is not surprising that overall emissions from the major emerging economies are now growing at a faster rate than in the industrialized world. Much of this growth is due to the globalization of trade and the global rising demand for emission-intensive products such as beef, aluminum, lumber and cement that is increasingly being met by developing nations. So while the emissions are occurring in the developing nations, industrialized countries continue to be one of the major drivers.

The five emerging economies profiled in this document face daunting challenges of high poverty levels, inadequate health, education and transportation infrastructure. They also have to meet demands to promote social development, equity and economic growth and need to match the near-term energy requirements of their rapidly growing populations. In China and India alone, almost 1.5 billion people live on less than 2 dollars per day. Given this pressure, it is significant that these countries have nonetheless committed to reversing the rising trend in emissions and are pursuing low-carbon development pathways - in many cases, taking a bolder, and a more ambitious approach to emissions reductions than many of the wealthy industrialized countries, which calls for the need for a new international climate agreement. Here is a brief overview of the situation of each of these countries:

- **Brazil:** Brazil is the largest nation and economy in South America, with more tropical rain forest than any other country. Brazil derives more than half of its energy from hydropower and biomass. However, in more recent years, the share of fossil fuels in the power sector is increasing. Thus, in spite of being still low, Brazil's dependence on fossil-fuels is not reducing. Deforestation and fires from clearing land for agricultural purposes account for 75% of CO₂

emissions. The country has suffered a series of extreme weather events in recent years, such as a hurricane in the South in 2004, strong droughts in the Amazon in 2005 and 2010, floods and droughts in Southern Brazil and floods in Northeast and North of Brazil in 2009.

- **China:** The world's most populous nation has surpassed the US as the largest emitter of GHG emissions and has become the world's largest energy consumer since 2009 (according to the IEA calculations based on preliminary data). Although the per capita emissions are just one-fifth of the US, China's CO₂ emissions have grown about 140% since 1990, with surging consumption of coal driven by quick expansion of heavy industries and urbanization. The impacts of climate change are beginning to show in China—sea levels are rising by as much as 2.5 millimeters per year over the last 50 years, glaciers are melting on the Tibetan Plateau, and rivers are shrinking. These impacts have spurred China to begin taking serious measures to reduce emissions, including very ambitious energy efficiency standards and targets for renewable energy.
- **India:** India is often compared with China, despite the former having lower levels of emissions, higher poverty levels and lower economic capacity relative to China. India's per capita emissions of 1.5 tonnes CO₂ eq are far below the world average. With 17% of the world's population, India contributes only 4.6% of the world's GHG. However, India is the fourth largest GHG emitter in absolute terms. Since 1990, emissions have grown by 65% and they are projected to increase by 70% by 2020³. Rapid economic growth and making provision for access to energy to those previously without access account for much of this growth. The dangerous impacts of climate change are already visible in the country, e.g. melting glaciers in the Himalayas and increased variability and unpredictability of monsoon rainfall.
- **Mexico:** Mexico is the 11th highest GHG emitter of the world, and its per capita emissions are on par with world averages at just one-fifth of US per capita emissions. The major source of Mexico's GHG emissions is due to the dependence on fossil fuels, such as coal and oil, for energy. Emissions from land-use changes are also substantial, accounting for 136 TgCO₂ per year (185 TgCO₂ without accounting for forest re-growth in abandoned lands).⁴ As a major oil producer and exporter, Mexico is leading the way on climate change, while it also undergoes economic restructuring and reform to become more integrated with its North American trading partners. As a member of the 'Environmental Integrity Group' in the UNFCCC, Mexico has been a strong leader on climate change action within the UN climate process.
- **South Africa:** South Africa is the 20th highest emitter of GHG in the world (14th for energy related CO₂ emission) with emissions per capita closing in on the average for major industrial countries. South Africa's GHG emissions come primarily from the use of coal, which provides about 72% of total primary energy, supports about 90% of electricity generation, and provides feedstock for about a third of the country's liquid fuels via Sasol's coal-to-liquids process.⁵ It is the fourth largest coal producer in the world and has the highest emissions in Africa. South Africa has played a constructive leadership role in the UN negotiations and has been proactive in the preparation for developing plans for domestic emissions reductions.⁶

Not only are developing nations beginning to experience the negative impacts of climate change on their economies and their people, their rising sense of urgency is coupled with a keen desire to begin reaping the potential competitive advantage expected to emerge from a low-carbon economy.

The following pages illustrate that the elements for the alternative exist and are being employed by these larger developing countries. However, these alternatives need to still gain a critical mass and momentum. Creating this critical mass and momentum requires, among others, demonstration and investment in critical sectors and financial and technological support from the developed countries.

³ <http://moef.nic.in/downloads/public-information/EXECUTIVE%20SUMMARY-PS+HRP.pdf>.

⁴ INE-SEMARNAT (2006). INEGI 1990 – 2002.

⁵ www.eia.doe.gov (country analysis brief/South Africa).

⁶ www.environment.gov.za (long term mitigation scenarios).

This would include, for instance, in the areas of: energy infrastructure that is directed away from carbon intensive mechanism and focuses on low carbon solutions; other infrastructure, such as buildings and transport reflects the latest energy efficiency technologies and supporting the development of renewable energy sources; and sustainable agriculture and tropical forest management reflects conservation and management of natural capital in order to reduce emissions and build climate resilient livelihoods and environments. Moreover, these tested practices and approaches would offer appropriate and relevant experience, which would be adaptable to and replicable in other parts of the vulnerable developing world.

5. WHY DEVELOPING NATIONS HAVE DECIDED TO ACT

Despite not being historically responsible for the current impacts of climate change, emerging economies have determined that it is in their self-interest to be part of the solution. Not only are they aware of the potentially devastating impacts of climate change, but they increasingly recognize the economic opportunities and advantages of a low carbon pathway.

As the size and scope of climate change impacts continue to grow, countries around the world will soon inevitably reach the limits of their ability to adapt. Economically, the poorer developing countries and communities are rapidly growing vulnerable to the effects of climate change because of their heavy dependence on natural systems and agriculture for subsistence, and due to their limited capacity to respond and adapt given the lack of financial and technological resources.

For nations with significant populations relying on marginal subsistence agriculture, of which most emerging economies are still a significant part, even modest amounts of climate change are enough to heighten the risk of crop failures, food shortages and loss of key water supplies. Moreover, for some countries, particularly small-island developing states, climate change threatens their future existence. For them a wait-and-see approach is not a viable option.

The volatility in oil and gas prices over the past few years has taught all countries the hard lessons of energy security, and the dramatic swings in energy costs have been especially problematic for poorer nations with fewer financial reserves. They are taking a closer look at how energy efficiency and renewable power can ensure a greater degree of energy independence.

With most experts predicting that investments in new energy-efficient technologies will lower energy costs, create jobs and bring economic growth over the long term, developing nations have much to gain by embracing a low carbon future. Their emerging industries already have a decided advantage over the imbedded infrastructures of the existing industrial nations, because they are able to bypass older, polluting technologies in favor of cleaner, more efficient plants and processes.

For all of these reasons and more, many developing countries are working, domestically, towards becoming leaders in the new clean energy economy.

6. TAKING A LEADERSHIP ROLE IN REDUCING EMISSIONS

The failure to secure a global agreement in Copenhagen has illustrated the need to have ambitious political leadership at both a domestic and international level. Given their geopolitical position, emerging economies have the ability to fulfill such a leadership role. As witnessed by the appearance of the BASIC group of countries in 2009 (China, India, Brazil, South Africa), emerging economies play a key role in decision-making on climate change.

Emerging economies, due to their diversity, disparity and vibrancy, play a key role in redefining and building a more robust, equitable future. Defined by their size and their commitment to action, they are in the process of addressing the needs of a large proportion of the world's poor, while having

the potential for building the capacity and confidence among other more vulnerable developing countries in embarking on a climate resilient future. Some of these developing countries are also emerging as leaders in the global fight against climate change and have assumed a proactive role in contributing to the global effort. The emerging economies have already inscribed voluntary actions. Brazil, India, China, South Africa, Indonesia and Mexico have all made emission reduction commitments. All these countries have developed, or are in the process of developing, national plans to implement their mitigation actions *and* their adaptation responses while addressing the poverty, inequality and sustainable development challenges in their national context.

The seriousness with which these key nations have approached emissions reductions and energy efficiency demonstrates their recognition of the threat of climate change, and also their determination to reap the full economic benefits of a low carbon future as quickly as possible.

Already the progress made by some of these developing countries in areas such as emissions intensity, vehicle efficiency, and renewable power is equivalent to or exceeds what has occurred in the US or other industrialized countries. Examples include:

- **Brazil** developed a national plan to tackle climate change, setting a target to reduce the annual Amazon deforestation rate by 70% by 2017 in comparison to the average rate for the period between 1996 and 2005 (19,500 km²).⁷ In 2004, forest destruction reached a peak of 27.700 km² in the region.⁸ Since then, Amazon deforestation rates have decreased by 56%. The 70% target marks a significant step towards meeting global emissions trajectories that reduce the greatest impacts of climate change. In 2008, Brazil launched the Amazon Fund, an initiative to attract donations to support actions to reduce Amazon deforestation. In November 2009, Brazil announced a goal of reducing its total emissions by up to 39% by 2020⁹, compared to business as usual, including actions within different economic sectors (agriculture, steel industry, energy and reduction in deforestation rates in the Amazon and Cerrado regions).
- **China** has committed to reduce the energy intensity of its economy by 20% by 2010 compared to 2005 levels,¹⁰ and has set an aggressive target to produce 10% of its primary energy through renewable sources by 2010 and 15% by 2020¹¹. In 2009, just before the UNFCCC Copenhagen Summit, China also announced plans to reduce its carbon intensity of GDP by 40-45% by 2020 from 2005 levels, inscribed in the Copenhagen Accord.¹²
- **India** has committed to an economy-wide 20% increase in energy efficiency by 2016/17, while expanding its renewable energy program, already one of the largest in the world. India's contribution to the Copenhagen Accord was a 20-25% reduction in carbon intensity by 2020.
- **Mexico** established an economy-wide plan to cut its projected emission *in half* by 2050 (compared to 2000 levels), to be implemented through a cap-and-trade program. Mexico put forward a reduction on 30% by 2020 and 50% by 2050, which has been inscribed in the Copenhagen Accord.
- **South Africa** proposed a plan for its emissions trajectory to "peak, plateau and decline", achieving stabilization in the period 2020-2025. This marks a critical step in developing Nationally Appropriate Mitigation Actions (NAMAs) and is particularly ambitious from a country

⁷ Government of Brazil. 2008. Plano Nacional sobre Mudança do Clima.

⁸ National Institute for Space Research – INPE. Taxas anuais do desflorestamento da Amazônia Legal http://www.obt.inpe.br/prodes/prodes_1988_2009.htm. Accessed in 22 November 2010.

⁹ Government of Brazil. 2009. Cenários para Oferta Brasileira de Mitigação de Emissões.

¹⁰ National People's Congress. (2006). "The Eleventh Five-Year Plan for National Economic and Social Development (full text in Chinese)." from http://news.xinhuanet.com/misc/2006-03/16/content_4309517.htm.

¹¹ NDRC (2007). The Medium and Long-Term Development Plan for Renewable Energy in China. Beijing, National Development and Reform Commission.

¹² BBC (2009), 'China unveils emissions targets ahead of Copenhagen', available at <http://news.bbc.co.uk/2/hi/8380106.stm>.

so highly dependent on coal-based energy. In the lead-up to Copenhagen South Africa announced mitigation commitments, conditional to international support, to reduce emissions by 34% and 42% percent below business as usual for 2020 and 2025 respectively. These targets were subsequently inscribed in the Copenhagen Accord.

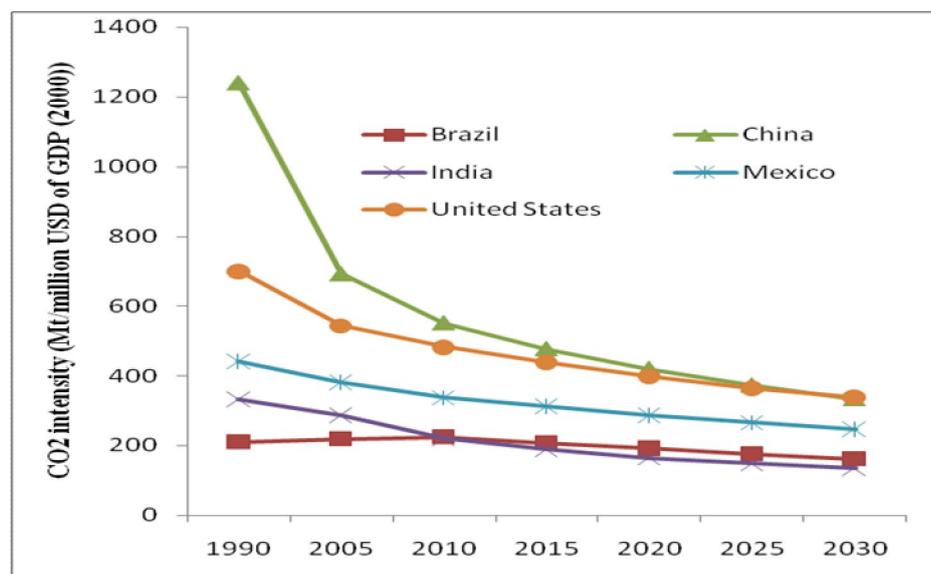
In the wake of the global financial crisis, many nations around the world adopted economic stimulus plans which included significant investments in energy efficiency and renewable technologies, and in many cases developing nations have demonstrated a stronger commitment than their industrialized peers. A study done by HSBC Global Research found that the US devoted only 12% of its stimulus funding for “investments consistent with a low carbon economy.” By comparison, 38% of China’s stimulus plan went towards promoting a low carbon economy, investing significantly more money in these sectors in absolute terms. In absolute terms China’s green stimulus spending amounts to 221 bn US\$, while the US, through its stimulus package (American Recovery and Reinvestment Act, February 2009), provides 112 bn US\$ for emission reducing clean energy projects.¹³

7. REDUCING EMISSIONS INTENSITY

Regardless of which nations bear responsibility for the greenhouse gases (GHGs) in the atmosphere, the fact remains that if we are to avoid the most dangerous impacts of climate change, global emissions must be slashed by at least 80% below 1990 levels by 2050. One useful way to understand how various nations are progressing towards a goal of absolute emissions reductions is to compare their “carbon emissions intensity” (the level of emissions that are generated per unit of economic output determined by the combination of energy intensity and the fuel mix in a particular country).

Emissions intensity levels are not based on a country’s total economy or population but are calculated on the amount of energy needed to achieve specific levels of economic activity. Emissions intensity allows us to compare the de-carbonization trends (switching energy to lower carbon fuels, improving energy efficiencies, and/or restructuring economic activities) of various nations to better understand how they are progressing towards a goal of absolute emissions reductions. So like per capita emission levels, emissions intensities makes it easier for us, for example, to compare a country like India with nearly 1.2 billion people with a country like the US with only one quarter the number of people.

Figure 4: Carbon Emission Intensity of Selected Economies



Source: Adapted from *International Energy Outlook 2008*: DOE/EIA 0484-2008, Table 13.

¹³ HSBC Global Research, HSBC 2009.

Data from the US Energy Information Administration shows that China, India and Mexico have made good progress in de-carbonizing their economies (Figure 4), achieving significant emissions reductions for each unit of economic activity. In the developing world, cuts in carbon intensity are largely due to the use of more modern and energy efficient technologies. For the industrialized countries such as EU and the US, much of the de-carbonizing is the result of high-emitting industries moving their operations to developing countries and expansion of relatively low emissions sectors of the economy, such as IT. As illustrated in this chart, the move to more efficient technologies is causing energy intensity levels to decline sharply in most of these developing nations, which will ultimately result in lower emissions over time.

The most dramatic reduction has come from China, which has cut its energy intensity to half between 1990 and 2005, and it is seeking an additional 20% reduction by 2010. If reached, this would reduce Chinese emissions by a 20% below business as usual levels. China is making substantial progress toward this goal, with energy intensity levels falling year by year: 1.79% in 2006, 4.04% in 2007 and 4.59% in 2008.¹⁴

While the decline in emissions intensity for China is not coming fast enough to offset the country's rapid growth in energy consumption, the ambition level and progress should be viewed as important steps forward and a demonstration of the seriousness and effectiveness of Chinese efforts to reduce emissions. Although the progress in 2009 is not satisfactory due to the expansion of investment in infrastructures and heavy industries as a result of the stimulus package, the Chinese leadership still seems to show determination to reach the energy intensity target by end of 2010. Now with the 12th Five-Year-Plan development, the Chinese central government has asked provincial government to include carbon intensity target into the local five year plan. The central government is also going to have a new energy intensity target in the national plan. In addition, the Chinese government has announced that by 2020, the proportion of China's non-fossil fuel energy will be at 15%. Meeting this goal would mean a very significant transition to a lower carbon economy. With China achieving the greatest reduction in emissions intensity of any major economy during the period, the country is now firmly on track to match the emissions intensity of the US in the near term. This means that China shows good prospects of transitioning to a low carbon economy by the middle of the century.

8. RENEWABLE ENERGY STANDARDS

While the US has continued to debate whether to adopt any form of national renewable energy standard (RES) (although some US states have their own RES), at a national scale Brazil, China, India, Mexico and others have already begun implementing them, or other similar instruments, with success.

- **Brazil:** With one of the highest percentages of renewable energy in the world, 46% of Brazil's primary energy comes from renewable sources, while 75% of electricity is produced from renewables. Brazil's high renewable share is largely driven by large hydro-electric sources. Brazil is implementing a RES of 12% from wind, biomass and small hydro by 2020 in its mix of sources for electricity.¹⁵
- **China:** China has established a RES requiring 10% of its primary energy to be produced from renewable sources by 2010, and 15% by 2020 (compared to 8% in 2006).¹⁶ Small as it is in share, China has the world's largest renewable power capacity in absolute terms, amounting to around 76 GW in 2008 excluding large hydro power, the equivalent of nearly 80% of the EU-27

¹⁴This source is only available in Chinese at <http://www.ccchina.gov.cn/cn/NewsInfo.asp?NewsId=20307>.

¹⁵ Source of this information is Brazil - MME – Ministry of Mines and Energy. 2010. Plano Decenal de Expansão de Energia 2019 (Ten Year Energy Expansion Plan 2019).

¹⁶ NDRC (2007). The Medium and Long-Term Development Plan for Renewable Energy in China. Beijing, National Development and Reform Commission.

combined¹⁷. Although most of this is small hydro, more advanced renewable energy is developing quickly in China. Globally China leads with \$34.6 bn investment in clean energy¹⁸ and the highest new addition in wind power, small hydro and solar water heaters. In 2009, China was responsible for producing 40 percent of the world's solar PV supply, 30 percent of the world's wind turbines (up from 10 percent in 2007), and 77 percent of the world's solar hot water collectors¹⁹. China now has the world's second largest wind power capacity after the US. A new feed-in tariff for wind power was announced in 2009 by the Chinese government to replace the previous special concession process. China also has the world's largest solar PV manufacturing capacity, and two government programs were recently announced to promote installation and use of solar PV in China. In terms of solar thermal energy, China has more than 60% of the world's solar water heaters and installed 80% of the world's total new capacity in 2008.

- **India:** India has the 4th largest installed wind power generating capacity in the world. In 2009, renewable energy power accounted for more than 8% of total power generation capacity in India. The country should meet and exceed its target of adding 10% renewable energy power by 2012. From December 2009 onwards, the government has introduced Generation Based Incentives (GBI) for grid interactive wind and solar power projects. Under this scheme, the government has earmarked subsidies to the tune of 3.8 billion INR for the wind power producers for feeding into the grid. This scheme is introduced in parallel to the existing financial incentives including accelerated depreciation for wind power projects in a mutually exclusive manner (i.e the firms can avail either GBI or accelerated depreciation). This scheme is to be implemented through the Indian Renewable Energy Development Agency (IREDA). In addition to this effort, another scheme is the Renewable Energy Certificates (RECs) mechanism, a market-based instrument that facilitates purchase of power generated from renewable energy sources. Under this scheme, a central agency will be set up to issue and administer RECs and renewable energy generators will be allowed to either sell the electricity at an above-market tariff set by local power regulators, or sell the electricity and associated REC attributes separately. With such mechanisms, India seeks to double its renewable energy capacity to 25GW within the next four years²⁰.
- **Mexico:** Mexico proposed an instrument similar to a RES of 9% of electricity from renewable sources (excluding large hydro) by 2012. However, no penalization is involved if the proposed 9% goal is not met, as the electricity is produced by a state-owned power company (CFE), not by the private sector. However, the Ministry of Energy has announced that the country is on track to meet that standard, driven mainly by installing wind power projects in the State of Oaxaca, which has an estimated wind power potential of over 10,000 MW.²¹
- **South Africa:** In March 2009 the National Energy Regulator of South Africa approved a set of four Renewable Energy Feed-In Tariff (REFITs) schemes for electricity generated from renewable resources with four different technologies. A further set of REFITs were approved in mid-2009. The tariffs are generally considered generous, but the details of implementation have yet to be finalised. Government initiated a review of the renewable energy policy and targets in March 2009. A draft revised policy is promised in November 2010 and the new targets are due to be formally adopted in March 2011.

¹⁷ REN21 (2009), 'Renewables Global Status Report 2009 Update'.

¹⁸ Pew Center (2010), 'Who is winning the clean energy race – G20 clean energy factbook'.

¹⁹ REN21 (2010), 'Renewables 2010 Global Status Report'.

²⁰ <http://www.businessgreen.com/bg/news/1804458/india-proposes-renewable-energy-certificate-scheme>

²¹ SENER (2010). National Energy Strategy 2010 - 2024. www.sener.gob.mx/.../

EstrategiaNacionaldeEnergiaRatificadaporeIHCongresodelaUnion.pdf.

Table 1: Renewable energy targets implemented in developing countries

Country	Renewable target	Progress
India	10% by 2012 ¹	On track to meet or exceed renewable energy target, having already achieved more than 8% in 2009 ¹ .
Brazil	Maintain 46% by 2020	Share of primary energy from renewables is currently 46%, among the highest in the world, relying heavily on large-scale hydro-electrical generation, sugarcane (primarily for ethanol production) and charcoal and wood. The target would maintain this share even under conditions of rapidly expanding demand
Mexico	9% by 2012 ² and 35% by 2024 ²²	This is divided by 6% of other renewable energies and 3% of mini hydro-energy below 70 MW. The 6% goal is driven largely by new wind power projects in the State of Oaxaca.
China	10% by 2010 and 15% by 2020 ³	By 2006 had achieved 8% of its primary energy production from renewable energy, and is now scaling up wind and solar to meet these goals. Revised the Renewable Energy Law by end of 2009 reemphasizing the mandate to the grid company to provide grid access to the electricity generated from renewables.
EU	20% by 2020	In 2007, the EU adopted a target of 20% renewable energy by 2020 (up from 9% in 2005) as part of their overall climate change policy package.
Australia	20% by 2020 ¹	The target will increase substantially the country's share of renewable electricity now at around 6%

1-Percent of total power generation in the country from renewable energy.

2- Percent of renewable electricity generation excluding large hydro.

3- Percent of non-fossil fuel energy in the primary energy supply.

Source: Renewables 2007: Global Status Report and REN21: Renewable Energy Policy Network for the 21st Century (2007).

²² SENAR (2010). National Energy Strategy 2010 - 2024. www.sener.gob.mx/.../EstrategiaNacionaldeEnergiaRatificadaporelHCongresodelaUnion.pdf.

To further encourage the growth of renewable energy, developing countries have adopted various policies as outlined (Table 2) below.

Table 2: Renewable energy promotion policies

Policies	China	US	Brazil	Mexico	India	South Africa	Japan
Feed in tariff	✓	*	✓		✓	✓	*
Renewable portfolio standard		*			✓		✓
Capital subsidy, grant or rebates	✓	✓			✓	✓	✓
Investments or other credits	✓	✓		✓	✓		
Sales tax, energy tax, excise tax, or VAT reduction	✓	*			✓	✓	
Tradable renewable energy certificates		*			✓	✓	✓
Energy production payments or tax credits		✓			✓		
Net metering		*		✓	*		✓
Public investment, loans, or financing	✓	*	✓		✓	✓	✓
Public Competitive Bidding	✓	*	✓		✓		

Note: Entries with an asterisk * mean that some states/provinces within these countries have state/province-level policies but there is no national-level policy. Source: IEA online database (2009).

The most common policy instrument used across the world is a feed-in tariff and has seen an increased interest in these past few years. As of 2010, at least 50 countries have implemented this policy, half of which have been enacted since 2005. As the chart indicates, China, India and South Africa have implemented a comprehensive renewable energy policy mix, while Brazil and Mexico opted to concentrate on fewer options.

Part II

COUNTRY PROFILES

This section provides a profile of each country and an overview of the status of actions within each of the countries, acknowledging the progress that has been made so far. Further, in order to mark the road ahead, ensuring the desired level of ambition, momentum and confidence, each country profile and status of actions is complemented by a set of key asks required to sustain and enhance an effective pursuit of a climate resilient low carbon future,

1. BRAZIL

1.1. Overview

Brazil is the world's fifth most populous country and the world's tenth-largest economy in GDP terms. When viewed at a human scale, however, the Brazilian economy is not as strong: in GDP per capita (PPP), Brazil ranks 82nd in the world.

Although no country has a perfect record in responding to climate change, Brazil has become a leader in reducing the emissions intensity of its economy, in generating renewable power and, perhaps most importantly, in seriously addressing emissions related to deforestation.

1.2. Sector-based policies and measures

Often forgotten as a major source of greenhouse gas emissions, deforestation is actually the second-largest source of emissions by sector, producing up to 20% of global emissions²³. In the developing world, deforestation-related emissions constitute a significant share of the total. When deforestation-related emissions are included, Brazil ranks seventh in the world in absolute emissions, despite producing nearly 50% of its electricity from sources that do not emit GHGs. These high emissions are largely associated with deforestation, which accounts for about 75% of the country's CO₂ emissions.

Reducing emissions from deforestation in a lasting way requires substantial upfront investment in building monitoring capacity, improving measuring and accounting systems, engaging in extensive land tenure reforms to ensure that local landowners are properly compensated, and increasing investment in law enforcement. These kinds of investments in a national program demonstrate a commitment to ensure that forest programs result in reduced GHG emissions. Without this type of investment, project-level deforestation reduction activities may not provide reliable benefits to the climate.

The required investment is substantial, and Brazil has committed itself to building this capacity to reduce deforestation-related emissions, which includes:

- Establishing 148 protected areas covering 620,000 km² from 2003 to 2007. Many of these new protected areas are in zones under high deforestation pressure.
- Developing and implementing one of the most sophisticated forest tracking systems in the world, fully operational in the Amazon Region, which is based on remote sensing methods and linked to land management databases in state-level governments. This system is being disseminated to other Brazilian biomes (Caatinga/Semi-arid, Cerrado and Atlantic Forest) as well as being made available to other governments.

²³ IPCC 4th Assessment Report, 2007.

- Stepped-up enforcement against illegal logging, deforestation and other environmental crimes.
- Prohibiting financing landholders without clear tenure or in breach of environmental laws.
- Accelerated land reform to establish clear tenure rights in areas subject to intensive social conflict.
- Developing a legal framework for forestry concessions in national forests.

These efforts have helped substantially reduce deforestation in the Brazilian Amazon by 56% since 2004. This alone represents a decrease of 1.3 billion tons of CO₂ emissions in relation to the previous four-year period, or nearly 20% of the US's current annual emissions of CO₂-e (7.0 billion tons in 2006). Building on these reductions, in December 2008 the Brazilian government announced a new target of reducing deforestation by 70% below the average rate between 1995 and 2006, by 2017. This would avoid 4.8 billion tons of CO₂ emissions – equivalent to more than two-thirds of current annual emissions in the US.

In 2008, the Government of Brazil launched the Amazon Fund, a private fund with the purpose to provide an incentive for Brazil and other developing countries with tropical forests to continue to increase voluntary reductions of greenhouse gas emission from deforestation and degradation. By 2021, the Government of Brazil aims to raise donations of over US\$ 21 billion from governments, multilateral institutions, non-governmental organizations and corporations. Government of Norway, which committed to donate US\$ 1 billion by 2015, has transferred US\$ 110 million to the Fund.

In November 2009, Brazil announced a goal of reducing its total emissions by up to 39% by 2020 from BAU. This announcement, made during the international climate change negotiations in Copenhagen, is reflected in Brazil's Climate Change Law. Efforts are now being made to develop strategies through which the different economic sectors will contribute to the overall goal.

However, meeting the new, ambitious deforestation reduction goal and other targets will not be easy, and Brazil cannot do it alone. However, its commitment to making the necessary early investments and continuing to press for even greater reductions shows Brazil to be a leader. This further helps to replace the old conventional wisdom about developing countries with a new reality - these nations are taking action and looking to partner with the rest of the world to increase the ambition and momentum to acting against climate change.

1.3. Top Asks of Brazil

Brazil, as a member of the BASIC group and the G20, must act as a leader in achieving a global legally-binding agreement under the UNFCCC that provides the basis for a low carbon development pathway. Brazil should lead by example, as the guardian of one of the world's largest biodiversity and freshwater reserves, through its domestic efforts to mitigate and adapt to climate change, through transparency, as well as by being a leader in the international process in the UNFCCC.

#1 - Brazil must lead the negotiation process towards a robust agreement on REDD+ with a global goal linked to adequate provision and access to finance.

Brazil has the largest tracts of remaining global native tropical forests. In the last 10 years, a new species was discovered every 3 days in the Amazon Forest. With a major ethical and moral duty to its own citizens, Brazil needs to lead the pathway for the formulation of a robust REDD+ decision in Cancún.

The country has already entered a path to reduce emissions in the Amazon, by having announced a national target of 80% reduction of emissions from the Amazon bioma as well as 40% reduction in Cerrado, the Brazilian savanna. However, even with those targets, Brazil would still be faced with a deforestation of 12.450 square km per year up to 2020. In order to help countries to tackle those challenges a global target for REDD+ is needed linked with a global financial support target. A meaningful long-term financial architecture needs to be secured through agreement on innovative sources for public finance from developed countries.

An international framework for REDD+ must be complementary to the targets and actions taken

under the Convention on Biodiversity (CBD). There is a need to guarantee that a REDD+ mechanism will incorporate strong safeguards and the participation of Indigenous people. Brazil must show leadership on REDD+ in Cancún, by agreeing and pushing for the establishment of a medium term global goal for ending deforestation reduction as well as financial support goals for the short, medium and long-term.

#2 - Brazil should commit to developing a Low Carbon Action Plan for a long-term 2050 vision for Brazil and formally submit its Nationally Appropriate Mitigation Actions.

Brazil has formally informed the UNFCCC of its national voluntary targets aiming to reduce its emissions between 36.9 to 38.1 % in 2020 from a business as usual (BAU) scenario. These national targets have been broken down into several national actions in different sectors (agriculture, charcoal for steel industry, energy and the reduction of deforestation in the Amazon and Cerrado). This is a very important step in the right direction, however Brazilian national goals are for 2020 only. A key next step for Brazil will be to develop a Low Carbon Action Plan with a long term 2050 vision, based on an appropriated carbon budget, detailing a set of Nationally Appropriate Mitigation Actions (NAMAs) to be achieved by 2050.

The country must lead by example and agree to formally register its NAMAs. When submitting its NAMAs to a registry system, Brazil should outline the objective aimed for emission reductions, financial costs and what international support may be needed from the UNFCCC. Such a progressive step could help to unblock the climate negotiations, prompting progress in several critical areas.

#3 - Brazil should support progress on innovative sources of public financing.

Brazil needs to agree to include innovative sources of funding, such as raising finance from the aviation and maritime transport sectors, financial transaction taxes (FTT) and auctioning allowances, in conformity with the principle of 'common but differentiated responsibility and respective capabilities'. Only with innovative sources will it be made possible to raise finances required to reach the scale needed to support mitigation and adaptation action in developing countries. The country has shown support for innovative finance at the Task Force on FTTs of the Leading Group on Innovative Financing for Development. The country must maintain its leadership in this regard. Such type of innovative thinking is needed. Only if innovative sources are implemented, will the scale of funding materialize that developed countries have to put forward to fulfill financial commitments based on the concept of 'assessed contributions', which Brazil promotes.

#4 - Brazil needs to assume leadership within BASIC and support a legally binding agreement at COP17 in South Africa.

Within the debate on whether governments are still aiming for a legally-binding agreement under the current UNFCCC negotiations, Brazil has not been very vocal. Recent comments made by Chancellor Celso Amorim, Brazilian Minister of Foreigner Affairs, though confirms that Brazil believes a legally-binding agreement under the UNFCCC is needed, but communicates doubt that this will be possible by South Africa in 2011. However, according to Chancellor Amorim, an agreement should be expected in the year of the World Summit "Rio +20" in 2012. Brazil needs to be much more vocal in supporting a global legally-binding agreement to come out of the current round of negotiations. This should be an agreement for industrialized countries *and* for developing countries that evolves the approach of the Kyoto Protocol – a rules-based, commitment-based approach based on and guided by scientifically-sound global targets, ensuring fairness. This means that, over and above demanding a 2nd commitment period for the Kyoto Protocol, Brazil should support the negotiations under the Climate Convention track lead to a legally-binding instrument.

It is risky to have such an agreement approved during Rio+20 only. An international climate regime could be threatened by a gap between the signature of the agreement and its implementation. Appropriate time will be necessary for the development of rules, procedures, or UNFCCC architecture on adaptation. Also national parliaments need time to approve a new regime. Parties should not take the risk of not having a legally binding agreement done prior Rio+20. There is no time to lose. Brazil must support a robust legally binding agreement in South Africa, 2011.

2. CHINA

2.1. Overview

China has recently become the world's largest annual emitter of GHG, but is also leading the world's most ambitious efforts on energy efficiency, with a strong focus on renewable energy.

These efforts aim to reduce China's energy intensity by 20% by 2010, compared to 2005 levels. These reductions will come primarily from the power, industrial and transportation sectors.

In the power and industrial sectors, the focus will be on retiring inefficient power plants and industries, increasing overall energy efficiency and moving from intensive fossil fuel sources to renewable energy. In the transportation sector, some of the policies aimed at reducing emissions include switching to cleaner fuels, imposing higher fuel economy standards and increasing the use of hybrid vehicles.

2.2. Sector-based policies and measures

Industry: China has implemented various policies and measures targeting energy efficiency and demand-side management. Plans include energy conservation and agreements from the top 1,000 energy-intensive companies to reduce their consumption. They also foresee the implementation of more stringent energy efficiency standards for equipment, as well as measures such as energy conservation management systems or the environmentally-friendly company award, which includes "green credits" (credit connected to the environmental performance of a company). Table 3 presents the potential emission reductions through implementation of some policies in China.

Table 3: China's CO₂ emission reduction options by 2010

Source	Potential emission reduction by 2010(Mt)
10 key energy conservation priority programs ²⁴	550
Technology (thermal power generation)	110
Coal mine Methane	200
Total	860

Source: Romm Energy, (2008).

Buildings: Guidelines and standards for energy conservation in the residential and commercial buildings are set. The latest one is the Energy Conservation Ordinance for Civilian Buildings, which has been effective since October 2008. The government is now promoting energy-saving products for lighting and appliances.

In Recent years, China has developed more than 35 energy efficiency standards covering industrial, commercial and residential energy use products with ongoing implementation. (<http://www.energylabel.gov.cn/NewsDetail.aspx?Title=%E6%A0%87%E5%87%86%E5%8F%91%E5%B8%83&CID=34&ID=661>). Most of the existing standards were revised to push the market to have a higher energy performance. New standards have been developed to regularize the market, among others, a new standard for televisions was published and implemented in 2010. For room air conditioner, the 2010 new standard increased the minimum energy performance from the former Grade 5 to Grade 2.

China's energy labeling program was launched in 2005. It's based on the energy efficiency

²⁴ The ten key energy priority programs are: (1) Upgrading of Low efficiency coal-fired Industrial Boiler (Kiln); District heat and Power Cogeneration; (3) Recovery of Residual Heat and Pressure; (4) Oil saving and Substitution; (5) Energy Conservation of Motor Systems, (6) Optimization of Energy system; (7) Energy Conservation in Building; (8) Green Lighting Projects; (9) Energy Conservation in Government Agencies; and (10) Energy Conservation Monitoring and Technological Support System.

standards to ask the manufacturers and importers to disclose the energy efficiency performance to the end consumers. Starting with 4 products, China energy labeling program now covers more than 20 products. (<http://www.energylabel.gov.cn/Download.aspx?navl=guide&CID=49>). China's Ministry of Construction forecasts a total energy-saving potential for buildings of 380 Mtce by 2020 (Lai, 2007 cited in Romm Energy 2008). This consists of about 280 Mtce from heating supply, 32 Mtce, and 68 Mtce from residential buildings and public buildings respectively. In the current five-year plan, the target for total energy savings in buildings will be 120 Mtce, which will be achieved through energy savings from newly constructed buildings, the introduction of energy-saving services in government agencies, more advanced and efficient heating and lighting technologies, and labels for household appliances identifying their efficiency levels.

The energy savings target for new buildings in urban areas is to be 50% more energy efficient compared to 2005 levels by 2010. By 2010, the energy consumption per government building is expected to decrease by 10% compared to 2002 levels. The green lighting program also aims at reducing energy consumption in lighting by 10% by 2010. In 2009, the area of energy efficient buildings increased by 0.96 billion square meters, saving energy at the level of 9 millions tones of coal equivalent, and 23.4 millions tones of carbon emission. By the end of 2009, more than 20% of total urban building area in China consisted of energy efficient buildings.

Transportation: China has adopted some of the most stringent fuel economy standards in the world, higher than those in the US. Pump prices for petrol have been raised in Beijing to finance cleaner fuel sources, and the world's first mass production plug-in hybrid electric car was introduced at the end of 2008 by BYD.

What's notable about China's fuel economy standard is that it is based on weight category for each vehicle, rather than fleet average. To achieve this standard, the government has implemented taxation policies for passenger vehicles based on their engine size, ranging from 9% to 20% for those that are 2 liters and above. At the same time, tax breaks are offered to owners of energy-efficient cars and hybrid vehicles.

Other policy programs, including alternative transportation fuels, alternative fuel technology, environmentally friendly technology and the use of public transportation, are designed to make the transportation sector energy efficient in China. Five cities have been chosen to pilot the alternative transportation fuels, like advanced bio-fuels, which is expected to achieve a 15% to 20% CO₂ reduction compared with conventional gasoline vehicles. In August 2010, 16 State Owned Enterprises (SOEs) established the China Electric Car Industrial Union, under the leadership of State-owned Assets Supervision and Administration Commission of the State Council (SASAC) to stimulate the development of the electric car in China. Some of them also include several energy giants in China such as China Petro, CNOOC and State Grid Corporate who are competing to build the network of recharging stations. China is also undertaking the largest railway expansion in history, with a more than \$300 billion worth investment plan by 2020. This plan would include, building 8000 kms of high speed railway and approximately 1,300 miles of railway lines, which will be laid and operational in 19 cities by 2015.

China adjusted its refined oil price mechanism. In January 2009, a new fuel tax was introduced across the country. The purpose of the new mechanism is to link the prices of refined oil products in the domestic market in China more closely to their international equivalents.

Electricity: On the supply side, major improvements in energy efficiency are being made in the power sector, and China aims to utilize the most advanced coal fired power plants for newly installed capacity. The average coal consumption per KWh electricity generation has been declining significantly over time in China, from 392 grams in 2000 to 340 grams in 2009, already lower than some developed countries, such as the US. The Chinese government is closing down inefficient power plants, replaced by state of the art super-critical and ultra super-critical power plants. Between 2006 and 2009, more than 60 GW of small inefficient power plants have been closed down, approximately 8% of the country's total generating capacity. In early 2010 another very ambitious investment plan worth more than \$3 trillion was announced by the State Grid Corporate to invest in a "Robust Smart Grid" by 2020, in which supporting energy saving measures and integration of renewable energy generation are among the main goals.

Renewable Energy: Renewable energy is promoted through a renewable energy target that was adopted by the Chinese government quite a few years ago. Before Copenhagen the Chinese Premier Wen Jiabao declared as an international commitment that at least 10% of energy demand in China will be produced from renewable sources by 2010, and 15% by 2020. This is one of the most ambitious renewable energy development targets in the world, as China only had less than 9% of its energy source from renewable energy in 2009.

By end of 2009, China had over 62 GW of renewable electricity generation capacity, excluding large hydro powers - the highest among all countries, and nearly half of the EU-27 combined. When large hydro power is included, China has almost equivalent renewable generating capacity to the EU-27 combined. Among these, more than half is small hydro power, but wind power capacity has increased significantly (by doubling the figure each year) from nearly nothing in 2003 to more than 25 GW in 2009. The similar story is expected for solar PV, which is recently identified by the Chinese government as one of the seven strategic industries together with the electric car industry.

To promote the development of renewable energy, China formulated the Renewable Energy Law that sets the financial and regulatory framework for renewable electricity production. Furthermore, the Chinese government has introduced a no less than 70% local content requirement to stimulate the manufacturing of wind power equipment from outside China. In the area of renewable manufacturing, China has more than one third of Solar PV manufacturing capacity in the world, and the wind manufacturing capacity may reach 20 GW in 2010. In 2009, China was the global leader in clean energy investment with an investment \$34.6 billion made in spite of the economic crisis.

To sum up, China has set an energy intensity target of 20% reduction by 2010 from 2005 level, with a potential emissions reduction of 20% compared to BAU. This represents a step forward in China's commitment to fight dangerous climate change. China has cut the carbon intensity of its growing economy by half between 1990 and 2005, avoiding the emission of 1800Mt CO₂ between 1991 and 2005. The new challenge of reducing carbon intensity by 40%-45% by 2020 is a strong commitment made by the Chinese government. The country is making good progress towards this goal, as illustrated by the performance over the last three years.

2.3. Top Asks of China

China has been making a number of ambitious domestic targets since 2006 and is on track to meeting these targets by end of this year. At the same time, China is now finalizing its 12th Five Year Plan in which significant commitments in energy efficiency, renewable energy and most importantly, carbon intensity of GDP are expected to be included. But China needs to take on even more stringent and effective measures to ensure that future mitigation commitments will be met and even exceeded. Also, China needs to work towards having its domestic actions incorporated and counted as part of the international effort. Below is a list of the top priority asks of the Chinese administration in the run up to the Cancún climate meeting.

#1 – In Cancún, China should reaffirm the commitment of 40%-45% reduction in carbon intensity by 2020 from 2005 levels, and try domestically to aim for an even higher level of reduction, possibly 50%, if technology and finance support is provided by industrialized countries.

China is currently on track for reaching the 20% energy intensity target, while the carbon intensity target for the next five years (2011-2015) is being reviewed under the design of 12th Five Year Plan which is close to being finalised. There is a possibility for China to overshoot the announced target of 40-45%. The WWF China office is working with other stakeholders on this. But a 50% carbon intensity ambition should be supported through international support, particularly in low carbon technology development and finance.

#2 - China should announce its commitment to developing and implementing a Low Carbon Action Plan/Low Carbon National Vision 2050, and agree to being subjected to international third party verification that is consistent to what is described in the Copenhagen Accord.

China has developed a national climate program and made various reduction commitments, which could be further developed into a low carbon national plan through to 2050. This should be agreed at the Cancún conference, in principle, conditional to appropriate commitments of industrialized countries and other emerging economies.

#3 - China should agree that developing country emission reduction commitments supported by international funding should be subject to an effective measurable, reportable and verifiable (MRV) system that is established with international support, and to include China's Nationally Appropriate Mitigation Actions for MRV at a later stage.

The Chinese government has clearly recognized the need to improve its energy and emission statistics system and is not against it in principle. However it is reluctant to give permission to MRV all its mitigation measures. The Chinese government should agree to have MRV for internationally funded reduction commitments subject to the protection of its sovereign rights. With increased capacity and trust, MRV could be expanded to include China-funded NAMAs at a later stage.

#4 - China should agree to produce National Communications every 4 years, with an update, including a GHG inventory, submitted every two years.

The Chinese government is already completing its second national communication and should agree to produce subsequent national communications every four years, with updates every two years. The first update would then be due in 2012. China should also agree that developing countries' national communications should be reviewed by expert review teams as part of an UNFCCC facilitative approach, with an alternative option for in-country reviews based on internationally agreed guidelines for countries that want to have in-country review processes in order to build capacity.

3. INDIA

3.1. Overview

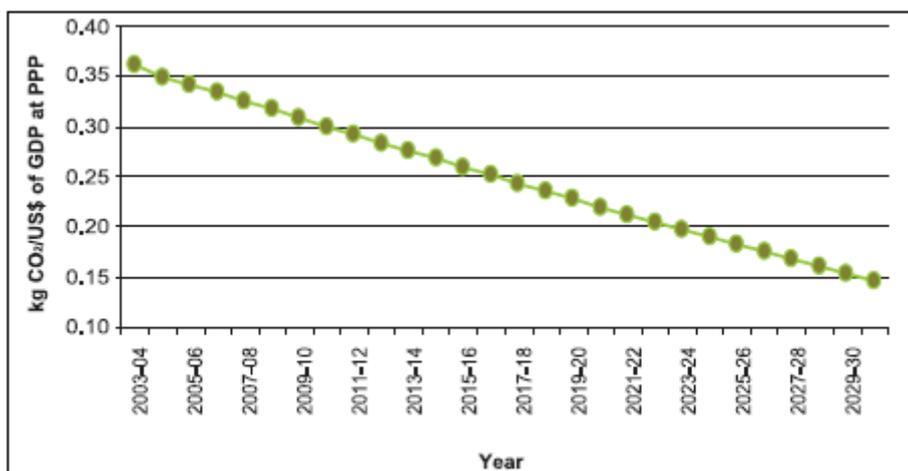
India is an emerging economy, unique in having witnessed an unprecedented growth rate in the last decade, while large parts of the population continue to exist below the poverty line. It is ranked 115th in the world in terms of per capita GDP, according to the World Bank, and largely because 267 million people live on less than a dollar per day. India, being the fourth largest economy in the world, accounts for less than 5% of global emissions, and is the fourth largest GHG emitter after the US, China and Russia. However, India's per capita emissions are far below the world average, and less than a tenth of the US. Since 1990, India's emissions have grown by 65% and are projected to increase by 70% by 2020. As India has started to succeed in reducing poverty, an increasing percentage of the population has begun to have access to commercial energy and the means for greater consumption.

India's economy has progressively de-carbonized since the early 1990s. Emission intensity has declined by more than 30 percent during the period 1994-2007 (see Figure 5). Recent studies have projected that the emission intensity will reduce to 0.15KGCO₂ e by 2030 from a level of 0.35 KGCO₂ e in 2003-04. One of the key reasons for this continuous decline in emission intensity is the increase in share of services sector in the economy. The government has also implemented a renewable energy and energy efficiency program, and put strong incentives in place for their further promotion.

India's action on integration of renewable energy and energy efficiency can be traced back to the early 1980s, when the country started to focus on harnessing alternative sources of energy and – more specifically – locally available resources. These gave genesis to large national level programs on renewable energy (biogas, biomass, solar PV and thermal) and energy efficiency

(e.g. improved energy efficient wood fuel stoves, energy efficiency in industries). With the opening of the economy and a greater role for the private sector, throughout the 1990s and beyond, India diversified and scaled up its ambition on renewable energy and energy efficiency. These plans are spelled out in the many existing policies that are aimed at reducing GHG emissions.

Figure 5: Emission Intensity Reduction for the Indian Economy



Source: India's GHG Emission Profile: Results of five Climate Modeling Studies, Climate Modeling Forum, MoEF, GoI, 2009.

A more recent development is the National Action Plan on Climate Change (NAPCC) – an effort by the government to focus – among other things – on harnessing renewable energy and providing a framework for following an ecologically sustainable development path, ensuring energy security and social and economic development, while yielding co-benefits of climate change impacts. This plan also describes other ongoing initiatives – including energy efficiency, renewable energy and decarbonising power generation – and outlines eight priority missions that will promote sustainable development and mitigate the impact of climate change. Below is a snapshot of the different National Missions proposed by India under the NAPCC (Figure 6).

Figure 6: The Missions of the National Action Plan for Climate Change



Of these eight missions, five missions have been approved by the government and the rest are in different stages of finalization. Some of these missions have been going on for several decades in various ways and are institutionalized through policies, programs and the creation of specific institutions.

3.2. Sector-based policies and measures

Energy and Industry: The energy sector is responsible for 66% of CO₂ emissions, while the industrial sector, comprising of mainly iron, steel, cement, aluminum and fertilizer, accounts for the remaining 27% in 2007 (MoEF, GoI, 2010). Improving the efficiency of these sectors will significantly reduce CO₂ emission. Since 2001, the use of washed coal has been mandated at all power plants more than 1000 kilometers from the mining source, or in urban, sensitive and critically polluted areas.

India's Initiatives on Energy Efficiency: India passed the Energy Conservation Act in 2001, which requires large energy-consuming industries to undertake energy audits and an energy-labeling program for appliances. The energy-labeling program was launched in 2006, and comparative star-based labeling has been introduced for fluorescent tube lights, air conditioners and distribution transformers. An energy audit of large industrial consumers was made mandatory in 2007.

National Mission on Energy Efficiency: The Bureau of Energy Efficiency (BEE), a national agency for implementation of the Energy Conservation Act, has been key to the introduction of the National Mission on Energy Efficiency, during 2010. Among several initiatives, the most important one to be proposed under the Mission is the PAT (Performance, Achieve and Trade) mechanism. According to the government, the PAT system will cover facilities which account for more than 50 percent of the fossil fuel use in India. This mechanism will help in the reduction of 25 million tons of CO₂ per year by 2014-15. Under this mechanism, the energy savings certificates (ESCerts) will be issued for savings in excess of the mandated target. These ESCerts can be used by other facilities for compliance if they find it unaffordable to meet their own reduction targets.

Improvement in energy efficiency has been driven partly by policy and incentives intended to conserve energy. In the major energy-consuming industrial sectors, such as cement, steel, aluminum and fertilizers, average specific energy consumption has been declining because of energy conservation in existing units, and (much more) due to new capacity addition with state-of-the-art technology. In the cement sector, for instance, the specific energy consumption of the most efficient plants in India is now comparable to the best in the world.

A recent report on the most energy intensive industries in India published by the Centre for Science and Environment, observes that in some of the sectors like aluminum, coal fired power plants, and cement, the energy efficiency is better than current global standards. The Ministry of Power in its annual report of 2009 has stated that by 2030, there would be a 20 percent increase in generation from thermal power by improving on the efficiency level of the power plants. In order to sustain its effort in increasing energy efficiency, the Indian Government plans to retire 7% of the country's inefficient coal plants by 2012, and an additional 10,000 MW by 2017. It has also stated that about 90% of the new capacity that will be added between 2007 and 2031/32 would come from more efficient super-critical, ultra super-critical and IGCC power plants.

A recent government publication indicates that actions envisaged under the mission on Energy Efficiency will result in 10,000 MW of energy savings by 2020.²⁵

Transportation: The government has implemented mandatory Bharat Stage IV (comparable to Euro IV) auto fuel norms for all new four wheelers in Delhi and 10 other metropolitan cities from April 2011 onwards, while; in the rest of the country, Bharat Stage III (comparable to Euro III) has been made mandatory. Developing efficient mass transportation options as outlined in the NAPCC, includes buses, railway and mass rapid transit systems, which will lead to reduction in energy use, and mitigation of associated GHG emissions and air pollution in urban areas. The government aims to achieve this by refurbishing the existing urban transport system and incorporating efficient mass rapid transport system in cities. Some of the proposals put forward are extension of the Delhi Metro subway system to cover the entire metropolitan area by 2021, and to also extend the efficient public transportation system in major metropolitan cities. With the completion of the first two phase of Delhi Metro, it is projected that the daily number of passengers will reach 2.6 million

²⁵ http://www.envfor.nic.in/mef/presnt_CC.pdf.

by 2011. The Bangalore Metro Phase I is expected to be operational by 2011 and projected to provide transportation for a million passengers per day.

Renewable Energy: Apart from energy conservation and efficiency improvements, the need to develop and exploit cleaner energy sources and renewable technology has long been recognized by the Indian Government (Parikh and Parikh, 2002). Currently, India has only 0.8 percent of the known oil and natural gas resources, and a large section of population does not have access to energy. Therefore, it has to meet future energy requirements and build its energy security from renewable sources. India also believes that development of clean energy technologies, though primarily sought for energy security, generates co-benefits in terms of reducing GHG emission. The NAPCC presented an aggregate installed capacity of 23,500 MW through various renewable energy sources - wind farms, micro-hydroelectric plants, biomass and cogeneration power plants, biomass-based gasifier systems and solar photovoltaic systems are expected contribute significantly by 2012. Currently, India produces nearly 17000MW²⁶ (nearly 8% percent of total electricity produced) from renewable sources, and has set the target of producing 23,500MW (i.e. 10% of total electricity) by 2012. Wind will make up 72%, with biomass and hydro power about 14% each. A further breakdown of renewable energy achievements and plans and targets is presented in Table 4.

Table 4: Renewable energy plans and targets

Renewable Source	Cumulative Achievements (till 2009, in MW)	Targets for Additional Capacity (2007-2012, in MW)
Biomass	683.30 MW	1200
Wind	9755.85 MW	10,500
Small Hydro	2344.67 MW	1400
Cogeneration-bagasse	1033.73 MW	500
Waste to Energy	58.91 MW	
Solar	2.12 MW	1000 ²⁷
Off-Grid/Distributed Renewable Power	346.18 MWeq	

Source: Ministry of New and Renewable Energy/Annual 5 year plan 11th summary: <http://mnes.nic.in/>

India has introduced both regulatory and incentive based mechanisms to meet the targets of an increasing share of renewable energy in the country. This includes a wide array of policy measures like the exemption of customs and excise duties on imports of clean technology machineries, giving tax holidays for 10 years to small hydropower projects (up to 25 MW), wind energy, biomass power and solar energy. Additionally, a feed-in tariff of 12 rupees (about 25 cents) per kilowatt-hour for solar photovoltaic power and 10 rupees (about 22 cents) per kWh for solar thermal power generation is being introduced. There are also accelerated depreciation benefit, and Generation Based Incentives (GBI) for wind farms and solar energy.

Finalisation of National Missions on Climate Change:

Jawaharlal Nehru National Solar Mission: Of the eight pillars of the NAPCC, the National Solar Mission is regarded as the most important. This is partly due to the potential availability of 5,000 trillion KWh of solar energy that most parts of India enjoy for 250 to 300 days per year. Because of this tremendous potential, emphasis is on the solar mission to tap this natural resource, make the country's solar energy industry as competitive as the fossil fuel industry, and deliver change from the Kilowatt scale of distributed solar thermal and solar PV to the Giga-watt scale within the next 20

²⁶<http://www.climatechallengeindia.org/cerc-asked-to-okay-renewable-energy-certificate-contracts-30-aug-2010-business-standard>.

²⁷ NAPCC.

to 25 years²⁸. Estimates show that if solar power is properly developed, 1% of India's land mass has the potential to meet India's entire electricity requirement by 2030²⁹.

The National Solar Mission proposes an addition of 20,000 MW of solar energy through photovoltaic and thermal by 2022, and 200,000 MW by 2050.

India: Sun is the Goal – The National Solar Mission

- Targets by 2022:
 - 20,000 MW of Solar Power
 - Utility grid power – 12,000 MW
 - Roof-top – 3000 MW
 - Rural installations – 3000 MW
 - Other distributed applications – 2000 MW
 - 20 million solar lights
 - 20 million sqm. for solar thermal heating
- 4-5 GW of solar manufacturing capacity by 2017
- Supported by regulatory policies, tariff incentives and minimum portfolio standards

National Mission on Sustainable Habitat: The government has also approved the National Mission on Sustainable Habitat with the objective of introducing energy efficiency in residential and commercial buildings through design changes, and providing appropriate financial incentives for implementing green infrastructure in buildings. Further, the Mission also aims at developing a comprehensive approach to water and solid waste management including wastewater management that will take into account the potential of reuse, recycle and energy creation. Mandatory energy efficiency labels for a range of consumer durables such as refrigerators, air conditioners and other appliances are being promoted. This has brought down average specific energy consumption in existing units and even more in new efficient units³⁰. Bureau of Energy Efficiency has also introduced a voluntary Energy Conservation Building Code (ECBC) guideline for building energy efficiency in commercial buildings and guidelines for the residential sector through the TERI-GRIHA guidelines.

Green India Mission: The other ambitious Mission that has been finalized is the Green India Mission (GIM), which aims at doubling of the forested area in the next 10 years resulting in a reduction of 43 million tons of CO₂ annually.

National Mission on Himalayan Ecosystems: The Mission on Himalayan Ecosystems focuses on evolving suitable management and policy instruments for safeguarding and monitoring the Himalayan glacial system and mountain ecosystem through inter and intra regional coordinated approaches. The Mission proposes to set up the National Institute of Himalayan Glaciology, which will undertake research programs on measuring, monitoring, and modeling of the health of the Himalayan glaciers across the region.

Initiatives in Regional Cooperation on Climate Actions:

The country has undertaken major steps in developing science based network for climate change related research within the region. In this regard, India provided financial support to the scale of 1 million USD both to SAARC Forestry Centre, Thimpu and SAARC Coastal Management centre in Maldives for developing science based studies of climate change impacts in the region. It has also proposed to launch a dedicated satellite to monitor GHG emissions, from 2013 onwards.

Policies in Addition to National Missions:

Annual Budget 2010: Major policy and financial support programs have been implemented through the Annual Budget of 2010. Some of the most important measures being undertaken are introduction of a cess at the rate of 50 rupees per ton of coal used in the country for the R&D fund on renewable energy. Further, the Finance minister has announced customs duty exemption on

²⁸ NAPCC, P22.

²⁹ NAPCC, P20.

³⁰ http://envfor.nic.in/divisions/ccd/Addressing_CC_09-10-07.pdf.

rotor blades and generators for promoting wind power generation in India. For solar energy imports, there is now a concessional customs duty and a full exemption of excise duty on machinery, equipments, and appliances for solar PV and CSP.

Expert Committee on Low Carbon: Under the auspices of the Planning Commission of India, the Expert Group on Low Carbon Strategies for Inclusive Growth has been constituted for identifying the low carbon options for India. The government has declared the forthcoming 13th Five year Plan to be based on a low carbon development premise.

Initiatives on State Climate Action Plans: Major initiative in the form of developing individual State Climate Action Plans have been initiated within the country in collaboration with the Ministry of Environment and Forests, State Governments and international organizations. These plans will be guided by the overall principles and aims of the NAPCC. There would be a common framework of strategies to be developed in due course, under which the each state will be identifying their respective areas of priority and scale of intervention.

Overall, India is currently undertaking a multilayered approach to its climate actions. This involves developing inter-region network for study of change impacts in South Asia with neighboring countries, approval and implementation of several NAPCC Missions within the country, while also initiating the development of state level climate change action plans. Besides as part of the commitment to reduce the use of fossil fuel by increasing the share of renewable energy in the energy mix, several Indian states are developing their own areas and scale for climate actions that fit within the NAPCC framework, for evolving state specific mitigation and adaptation strategies. Within the region, the country has launched proactive support for developing science based evidence of climate impacts in key physiographic areas. The NAPCC provides a framework for an ecologically sustainable low carbon development path. So far, the plan is the most comprehensive document crafted to address climate change within the context of sustainable development for the country. The NAPCC uncovers India's readiness to commit to a gradual shift from economic activity based on fossil fuels to one based on renewable sources of energy. India's policy action on climate change is broader than carbon emissions reductions and incorporates a vision of following an ecologically sustainable development pathway. It aims at enhancement of the country's energy security while meeting its social and economic development objectives, and yielding co-benefits of addressing climate change effects at the same time.

3.3. Top Asks of India

India looks forward to the forthcoming Cancún meeting as an important step towards getting an ambitious deal in the near future. For this it believes that there have to be substantive decisions made in Cancún. This would primarily include decisions on REDD+, technology, and the financial mechanism. However, India is not very optimistic about achieving this due to lack of enthusiasm among the developed countries. India has shown leadership by demystifying the MRV and financial mechanism issues for developing countries, but has also more prominently raised the issue of equitable burden sharing. The Indian Government has been engaging within BASIC as well as in the Major Economies Forum (MEF) discussions on these issues over the last year. However, they need to extend this leadership to the larger forum in the UNFCCC in pursuit of an outcome in Cancún on the full range of substantive decisions *and* a negotiation process that will lead to adopting a full agreement by COP 17 in South Africa.

#1 - India should position itself clearly on the nature of a legally-binding agreement

Given India's leadership position among the developing countries, India should clearly project its stand on the legally binding nature of the deal that requires an outcome from Cancún. For example, it should support a mandate for the COP towards a legally binding instrument by COP 17 in South Africa from the AWG LCA and in parallel seek a similar decision on the AWG KP track. Furthermore it should work towards formulating and seeking an agreement on a set of substantive decisions on the elements of the Bali Action Plan. For this it is important that India should take on the issue in every forum before the COP, within the BASIC group, as well as within G77 + China.

#2 - India should press for substantive decisions on scale and sources of financial support under the UNFCCC

Substantive decisions on finance including governance, sources and scale are important for India and other developing countries to undertake ambitious climate actions through international support. For this it is important to maintain its demand for assessed contributions, but to also support the proposal to agree and implement innovative sources of public finance from the developed countries, so that substantive funding is available and is governed by a financial mechanism under the UNFCCC. As has become clear with the lack of fresh, additional funding in the case of fast-start climate finance from developed countries, developing countries cannot only depend on developed country annual national budgets to add up to 100 bn USD. Innovative sources of financing would generate the scale required to undertake actions to prevent catastrophic climate change and protect the vulnerable from climate impacts. Innovative sources are a must. Only with funding securely flowing through the UNFCCC, will the proposed UNFCCC global climate fund, with fair, equitable and balanced governance architecture as proposed by developing countries, be meaningful.

#3 - India should quantify emissions reductions from the different proposed climate friendly domestic programs as part of creating a set of Nationally Appropriate Mitigation Actions (NAMAs)

Currently the government is undertaking various actions, such as the Energy Efficiency Missions, Performance and Trade systems for its industrial sectors and the National Green India Missions, to name a few. India should quantify in absolute numbers what the total CO₂ reductions are from these actions as part of creating a set of Nationally Appropriate Mitigation Actions (NAMAs).

#4 - India should clarify its proposals on linkages between International Consultation and Analysis (ICA) and MRV

India has been referring to a set of ideas under the concept of Measurement, Reporting, and Verification (MRV). Politically within the G77 block, this is a sensitive issue and especially within the BASIC countries there are a few remaining differences. India has now put forward a concrete proposal on ICA linking domestic developmental actions, climate change and the issue of a domestic review mechanism based on the international guidelines. India now has a chance to be a bridge-builder among BASIC, G77 and with the developed countries in this critical area of the negotiations.

4. MEXICO

4.1. Overview

The Mexican government released its National Strategy on Climate Change (ENACC) in May 2007. The objective of ENACC was to identify a wide range of mitigation and adaptation opportunities, with a strong focus on progressively decoupling the increasing GHG emissions from economic growth. After the publication of the strategy, the Inter-ministerial Commission on Climate Change (CICC) worked together to elaborate the Special Program on Climate Change (PECC). It brought together representatives of the Ministry of Environment, the Ministry of Social Development, the Ministry of Energy, the Ministry of Economy, the Ministry of Agriculture, Livestock, Rural Development, Fisheries and Food, the Ministry of Foreign Affairs and the Ministry of Transport and Telecommunications. On June 2009, the PECC was launched by Mexican President Calderón. While still lacking aggressive measures on energy efficiency and renewable, the coordinated CICC effort probably represents the most ambitious progress towards mainstreaming public policy on sustainable development.

During the current administration, Mexico committed to reduce 260 million tons of CO₂ emissions in the period 2008-2012, and with the strongest effort, 100 MtCO₂e million, in 2012. This goal is aligned to Mexico's international commitments. The PECC has four main components: Long Term

Vision, Mitigation, Adaptation and Cross-cutting policy elements. Within each component a number of objectives and goals have been established.

Long Term Vision: The ambition for Mexico is to reduce 50% of its emissions for 2050, with the year 2000 as its baseline. Mexico plans to go from 6.8 tCO₂e per capita to 2.8 tCO₂e in 2050. Based on this goal and the Program, Mexican emissions will reach their inflexion point before 2012, to gradually decrease until the indicated level for 2050 is reached - around 340 MtCO₂e. In this section, Mexico highlights that in order to reach its reduction target, a multilateral regime needs to be established and developed countries need to provide financial and technological support mechanisms at an unprecedented scale.

Mitigation: The PECC intends to consolidate a development pattern in which economic growth is not highly affected by an increase on GHG emissions. By inducing a fall in carbon intensity, the PECC gives an initial boost to the “de-carbonization” of the Mexican economy. The 260 MtCO₂ emission reductions for the period 2008-2012 will be based on actions in sectors like the use and generation of energy, agriculture, forests and other land uses (AFOLU) as well as waste.

Adaptation: The Mexican Government considers that adaptation tasks need to be focused on reducing the country’s vulnerability to climate change. In some cases (mainly in the sectors related to land use management), adaptation measures match up with those for mitigation. The PECC identifies the need to develop integrated risk management, especially in cases related to external hydro-meteorological phenomena.

Elements of a Cross-cutting Policy: It engages all federal government entities in the fight against climate change with actions, objectives and methodologies. Inter-sectoral and inter-institutional coordination are considered to ensure efforts are enhanced around the economy, education, capacity building, research, sharing of information and communication. The Program builds on activities that include capacities and competencies within the Federal Government as well as from different levels of government and the private sector.

Certainly, the PECC is not perfect. Yet, it represents a crucial step forward to operationalize Mexico’s international commitments and while learning by doing, lead on domestic policy.

4.2. Sector-based policies and measures

Preliminary data from the most updated version of the National Greenhouse Gas Inventory (INEGI) shows that in 2006, Mexico's total national emissions were 715.2 MtCO₂e. The total emissions are grouped as follows:

Table 5: Mexico's emissions and mitigation objectives by sector

Category	INEGI * (MtCO ₂ e)		Mitigation Objective		
	2006		2008-2012 (MtCO ₂ e)		2012
Energy Generation	196.53	27.5%	59.85	23%	24.16
Oil and Gas	84.07	11.8%	42.15	16%	13.39
Electricity	112.46	15.7%	17.7	7%	10.77
Use of energy	233.5	32.6%	31.92	12%	13.47
Transport	144.63	20.2%	11.35	4%	5.74
Residential, Comercial and Municipal Sector	24.88	3.5%	16.72	6%	6.77
Industry	56.83	7.9%	3.6	1%	0.88
Federal Public Administratio	-	-	0.25	0%	0.08
Other uses	7.16	1.0%	-	-	-
AFOLU	131.56	18.4%	160.09		57.17
Agriculture			2.12	1%	0.83
Livestock	42.56	5.9%	37.84	15%	16.66
Forest			73.33	28%	24.28
Limits of Forest/Livestock	89	12.4%	46.8	18%	15.4
Waste	100.42	14.0%	8.58		5.46
Urban Waste Management	53.83	7.5%	7.58	3%	4.44
Discharge and Residual Water Treatment	46.39	6.5%	1.02	0%	1.02
Other wastes	0.2	0.0%	-	-	-
Others	53.29	7.5%	-	-	-
Total	715.3	100.0%	260.44		100.27

Source: Preliminary data from INEGI, to be published in 2009

Generation and Energy use: In oil and gas production, the mitigation objective for the period 2008-2012 is equivalent to 50% of the emissions in 2006, while in electric power the same objective reaches 16%, and in transport 8%. These figures suggest the need to intensify mitigation efforts in these three sectors, given that in 2006, together they emitted almost 50% of the total national emissions. Emissions in the oil and gas sector represented 11.7% of the total Mexican emissions in 2006, electricity accounted for 16%. Development of mitigation activities for both sectors focuses on energy efficiency and use of renewable energies.

Transportation: The transport sector represents 20% of the national emissions emitted in 2006, with a total of 144.6 MtCO₂e, classified as follows:

Table 6: Mexico's transport emissions by mode of transport

Type of transport	GHG emissions on 2006 (Mt CO ₂ e)
Auto-transport	135.0
Railway	1.8
Aviation	5.4
Maritime	2.4
Electric	Insignificant

The Mexican mitigation policies focus mainly on strengthening actions to save energy through fostering best practices and energy efficiency norm application; reducing energy consumption in

weight and passenger transport; renovating vehicles; enhancing urban public transport with sustainability criteria and high social impact; promoting suburban public transport; increasing railways for federal transport and fostering energy efficiency in the fishing sector.

Renewable Energy: Mexico, in its National Energy Strategy, has put forward a goal of 35% of renewable energy by 2024. In 2000, Mexico had 41,000 MW of installed power generation capacity, of which 11,000 MW was based on renewable energy. From 2000 to 2006, a total of 13,400 MW of new generation capacity was added. Around 2,000 MW was based on renewable energy. Most of this green energy came from large hydro projects and only 480 MW was produced by private investment. Mexico's Ministry of Energy expects to reach the country's 2012 goal primarily through new wind power projects in the state of Oaxaca. Oaxaca, in the southern part of the country, has an estimated wind power potential of more than 10,000 MW. A total of 2,500 MW of wind energy is expected to be installed there by 2012.

As per the plan, 12,400 MW of new capacity will be installed across Mexico between 2006 and 2012. As mentioned above, 2,500 MW of this new capacity will come from wind energy projects in Oaxaca. Another 890 MW will be made available through a new large hydroelectric project, and 310 MW will be based on other renewable energies. The challenge is to increase the country's transmission infrastructure to allow the interconnection of green-project-generated electricity around the country. Mexico is well-positioned to take advantage of the international carbon-emission markets and hence, be a part of the solution for climate change. The country is trying to use its renewable energy sources to achieve its institutional goal of having 25% of its installed capacity from renewables in a 10-year time span. The first steps have been taken. However, a lot of challenges (as well as potential business opportunities) lie ahead. An accurate and timely planning of the country's green infrastructure is needed³¹. However, existing financial incentives such as depreciation rules for RES technologies, a green fund and financial support for solar water heating may promote to some extent the expansion of renewable energy sources and increase the success of the 2012 RES target.

Agriculture, forests and other land use: This category represents the second most important source of GHG emissions, with a total of 131.56 MtCO₂e, contributing almost 19% of the country's total emissions. In agriculture, the main policy objectives are to turn agricultural degraded lands with low potential productivity into sustainable systems; to foster green harvest of sugar cane; enhance sustainable agricultural practices in order to maintain carbon reserves and increase carbon capture capabilities. The main mitigation measures for livestock involve sustainable shepherding, land management, and management from enteric fermentation derived products and animal excretes.

Under an appropriate policy, the forest sector has the capacity to compensate emissions generated in other sectors, turning it into one of the most important mitigation options in the short and medium term. To induce the conservation, capture and substitution of forest carbon, the main policy objectives are to mitigate emissions from the forest sector and from land use change through programs that protect, conserve and manage forest ecosystems and their soils in a sustainable way; to increase forest carbon storage through forestation and reforestation; and to stabilize forest-agriculture limits in order to reduce emissions from land use changes from forest surfaces to agricultural uses.

As an emerging economy, Mexico is playing a strategic role as a bridge builder REDD+ country in Latin-America, and this role is foreseen to increase its importance in the upcoming years, particularly for Spanish speaking countries. WWF Mexico, together with WWF-Brazil and WWF-Peru are the only active offices working on REDD+ issues in the Americas.

Mexico's National Forestry Commission (CONAFOR) and the Environmental Ministry (SEMARNAT) are leading the development of the National REDD+ Strategy (ENA-REDD+), to be completed before 2012. WWF Mexico has played a leading role in this process by creating the national Technical Consultative Committee on REDD+ which involves representatives from all key

³¹ http://www.noruega.org.mx/Business_eng/sector/environmental_technology/Environmental+techology.htm.

sectors involved in forest management which now serves as the formal consultative committee advising the National Inter-ministerial Commission on Climate Change.

Mexico presented its Readiness Preparation Proposal (R-PP) to the World Bank's Forest Carbon Partnership Facility (FCPF) which was recently approved. Mexico has been selected as country recipient for WB's FIP funds and is a country observer of UN-REDD.

Waste: According to INEGI 2006, the volume of emissions from solid urban wastes and sewage water was 100.4 MtCO₂e, which contributes to 14% of the total national emissions. The main mitigation opportunities in this category lie in avoiding uncontrolled methane emissions on final solid waste management disposals.

The PECC has established 41 objectives and 95 goals for mitigation action for the four main categories, energy generation, use of energy, AFOLU and waste.

The 18 main mitigation measures in the PECC – accounting for 62% of the total emissions – are as follows:

Table 7: Mexico's main mitigation measures

Goal	Concept	Mitigation MtCO ₂ e			
		2008-2012	2012	Accumulated on 2012	%
M87	REDD Pilot projects	44.8	14.9	14.9	15%
M72	Planned shepherding in 65 million ha of pastureland	37.75	16.59	31.49	31%
M1	Re-inject bitter gas with high nitrogen concentration in the largest Oil field in Mexico, Cantarell, in order to reduce gas flare in activities off-shore	27.6	6.9	38.39	38%
M75	Incorporate 2.175 million ha for EPS	15.29	3.25	41.64	42%
M74	Incorporate 2.5 million ha of land ecosystems to Management Units for wildlife use (UMAS, for its acronym in Spanish)	12.55	4.18	45.82	46%
M63	Increase 2.95 million ha of Sustainable Management of Forests	11.88	4.37	50.19	50%
M81	Landfills	7.56	4.44	54.63	55%
M2	Thermal energy efficiency in PEMEX	7.5	2.5	57.13	57%
M82	Establish 500,000 ha of commercial forest plantations	6.88	3.44	60.57	61%
M42	Energy savings from electro domestic appliances substitution in households	4.97	1.17	61.74	62%
M37	Increasing railway participation in the weight federal transport (from 26% to 28.3% in terms of ton-km)	3.9	1.6	63.34	63%
M11	Thermo electrical central power in Manzanillo	3.75	3.75	67.09	67%
M22	Enhance private sector participation for electricity using RE and Co-generation by increase energy self sufficiency private investments for up to 2,500 MW.	3.65	3.65	70.74	71%
M44	Substitution on 47.2 million incandescent light bulbs for saving fluorescent lights	3.53	1.68	72.42	72%
M76	Incorporate 750,000 ha of forest ecosystems in Natural protected areas	3.36	1.12	73.54	74%
M18	Electricity generation with wind power (507 MW)	2.4	1	74.54	75%
M17	Hydroelectric central power constructed in La Yesca (750 MW)	2.05	1.02	75.56	76%
M51	600,000 wood stoves installed	1.62	1.62	77.18	77%

Source: Mexican Special Programme on Climate Change, March 2009 version.

For the past year, Mexico has been working on a General Climate Change Law, which, if approved would give firstly, a trans-sectoral nature to the pledges and goals of PECC, and secondly, a binding nature, to Mexico's international commitments. Amongst the top highlights of this Law would be if approved, the commitment of the country to phase-out subsidies to fossil fuels by 2020 and halt deforestation by 2015.

4.3. Top Asks of Mexico

Mexico has been leading by example with the enactment of national public policies to meet ambitious carbon reduction goals as well as through taking on an open and positive role as President of COP16. We would like Mexico to recognize the need for the global climate agreement and its commitments to be of a legally-binding nature. Mexico should also push for the completion of a robust REDD+ agreement by putting in place and presenting its own REDD+ vision as well as to take a clear position vis-à-vis the strengthening of the provisions for NGO participation in the framework of UNFCCC.

#1 - Mexico should agree to have its Copenhagen commitments inscribed in a legally binding agreement.

Mexico should agree to inscribe its Copenhagen Accord commitments (30% reductions by 2030 and 50% reductions by 2050 compared to 2000 levels) in a legally binding agreement under the UNFCCC, with a baseline identified; both would provide credibility to its pledges as well underline its belief in the UNFCCC system. In addition, as President to UNFCCC Cancun climate summit, Mexico should secure a decision on legal form as the bedrock to a UNFCCC agreement in South Africa in 2017.

#2 - Mexico should demonstrate leadership by adopting a progressive National Climate Change Law.

By inscribing its international commitments (30% by 2030 and 50% by 2050 compared to 2000 levels) in a national legal framework before a finalized international legally binding agreement is completed, Mexico would demonstrate its seriousness and willingness to lead. This would strengthen its position and inspire others in the developing and developed worlds alike.

By enacting a Climate Law with immediate effect, Mexico would demonstrate that it is willing to invest public resources beyond Calderon's Presidential mandate, in favor of national and international common interests.

#3 - Mexico should come to Cancún with an ambitious target to halt deforestation, within a framework of biodiversity protection and poverty alleviation.

Mexico should come to Cancún with a clear REDD+ vision (aligned with the WWF REDD+ principles) and a goal to halt net deforestation before 2016. It should show that a global net deforestation goal conditioned by environmental and social safeguards can be viable and locally acceptable. It should communicate the pathway to a legitimized national approach to REDD+ and the roadmap to readiness based on strengthened local forest governance.

#4 - Mexico should demonstrate how livelihoods/ecosystem-based national adaptation policies can be mainstreamed globally, starting with the water sector.

Mexico should demonstrate that the adaptation framework within the Convention should integrate the ecosystem's approach, which recognizes the interrelationship between livelihoods and ecosystems. For example, freshwater management should demonstrate that ecosystem-based policies, such as 'e-flows' (allocating water for the use of the environment), are the most cost-effective way to do adaptation. It should show how these policies can be the basis for the development of guidelines for the use of international resources inscribed within the UNFCCC adaptation framework. Mexico should show how to arrive at a global consensus on adaptation priorities and guidelines for a sector, using water as an example.

5. SOUTH AFRICA

5.1. Overview

South Africa's emissions and GDP per capita are well above the world average and its emissions per capita are close to the Annex I average. Due to the extensive use of coal, South Africa's emissions per kWh electricity are among the highest in the world. Almost 50% of GHG emissions in South Africa come from the state-owned utility Eskom, with Sasol being the second largest emitter, mostly from producing liquid fuels from coal. Coal supplies 72% of primary energy and 90% of electricity. Biomass (10%), oil (12%), nuclear energy, gas and hydropower only play a minor role in South Africa's current energy mix.

Work on the Long-Term Mitigation Scenarios (LTMS) for South Africa, started with a mandate from Cabinet in March 2006, and concluded with outcomes agreed by Cabinet in July 2008. The process had objectives at both national and international level:

- Nationally, to develop robust and broadly supported scenarios to lay the basis for long-term climate policy
- Internationally, to provide South African negotiators well-founded positions for the negotiations on the future of the climate regime after 2012

The technical work on the LTMS was based on a facilitated multi-stakeholder process (government, business and civil society) and used the best available information. Central to the process was the Scenario Building Team (SBT), bringing together strategic thinkers from key sectors across government, business and civil society. The exercise produced two scenarios with options within each. The two scenarios are:

- growth without constraint (GWC)
- required by science (RBS)

The most fundamental issue raised by LTMS was the need for a transition to a low-carbon economy. Changing from an energy and emissions intensive past to a climate-friendly future requires a major transformation. The benefits and costs of such changes and transitions need to be much more deeply understood.

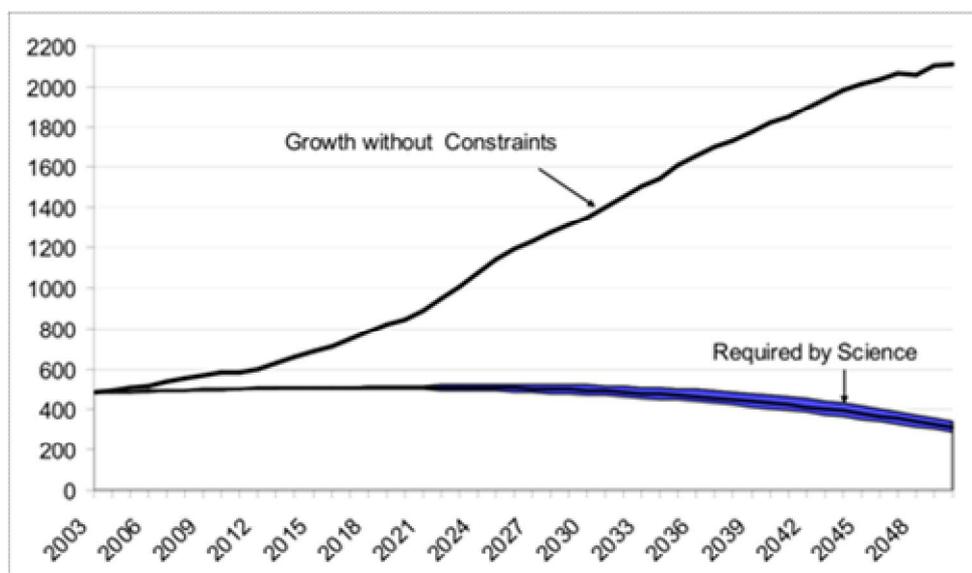


Figure 1: Emissions trajectories for GWC and RBS

In July 2008, Cabinet agreed on an ambitious plan, driven by the aim of limiting temperature increase to 2 degrees C above pre-industrial levels and doing a fair share in the international context. Cabinet stated clearly that emissions need to peak (at the latest by 2020-25), then plateau for a decade or so, and then decline. Subsequent to this, the South African Government was amongst those developing countries that announced voluntary emission reduction commitments at Copenhagen. "South Africa will undertake mitigation actions which will result in a deviation below

the current baseline of around 34% by 2020 and by around 42% by 2025” (Presidency 2009). This commitment has been inscribed in the Copenhagen Accord.

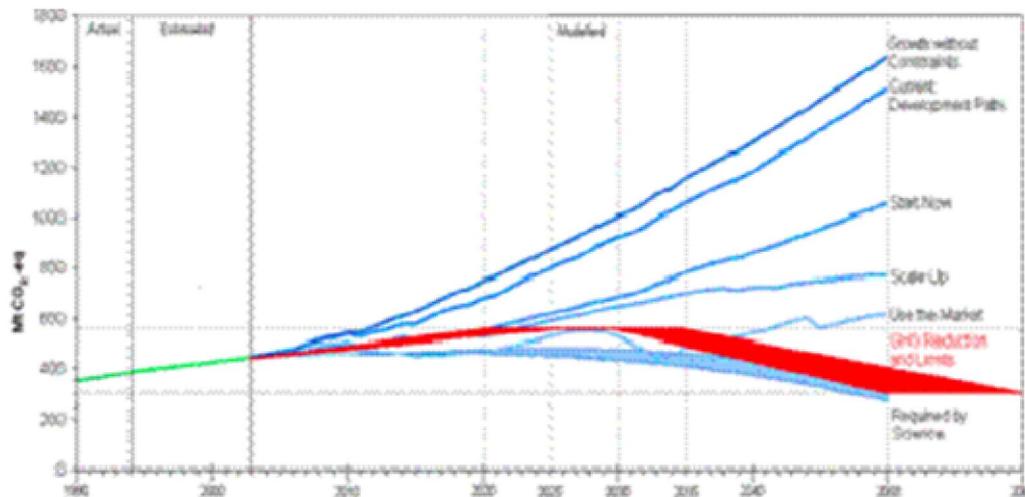


Figure 2: Peak, Plateau and Decline scenario adopted by cabinet

Further, in May 2010 South Africa held a Green Economy Summit committing to release a Green Economy Strategy by end of the year.

Key policies processes currently underway within South Africa that will support low carbon economy transition are

- A key guiding document for all future planning and expenditure programs between 2009 and 2014 is the Medium Term Strategic Framework document (MTSF). The document emphasizes the point that the government needs to ‘set the country on a new growth and development path’ in which decent work and sustainable livelihoods are key. The MTSF sets sector wide goals leaving some opportunity to insert low carbon economy growth and development initiatives under Strategic Priority 9, which deals with sustainable resource management and use. Areas identified for growth are the energy, infrastructure, industrial policy, agriculture, low cost and affordable housing arenas and others in order to ensure sustained target of fixed investment ratio above 25% of GDP by 2014.
- The introduction of new tax amendments that allow for a 15% rebate for energy efficiency investments, as well as a suite of other tax incentives.
- A Green Paper on a National Climate Change Response Strategy has been approved by cabinet and will be put out for public comment.
- The National Planning Commission has been established to develop a long-term Vision and Plan for the country
- The Integrated Resource Plan 2010 is currently being finalised and a period for public comment opened up. This plan will put forward the energy mix for the electricity sector for the next 30 years.
- There is a review of the Industrial Policy Action Plan (IPAP) where the environmental goods and services sector will be a key target sector. The IPAP will also include a solar cluster that can hold significant industrial manufacturing potential for South Africa.
- An extensive review by the Department of Energy of the Renewable Energy policy is currently underway and holds the promise that the renewable energy target can be revised – potentially from a 4% to a 15% target. This also comes on the back of favourable Feed-in Tariff guidelines that have been introduced by the National Electricity Regulatory (NERSA)
- Cabinet approved a new Growth Path for South Africa emphasizing the creation of jobs and identifies the Green Economy as an important new growth sector.

5.2. Sector-based policies and measures

South African emissions reductions can be achieved in the industrial sector by increasing efficiency and moving to renewable energy sources (Hohne et al, 2008). There is also the possibility of

reducing emissions in the transportation sector, including through scaling up public transport. A gradual transition to more natural gas and biomass use is considered an option, as is electric vehicles.

Industry: The existing policy mix in the industrial sector already has a number of promising measures. The framework is set by a sectoral target (which is linked to the general energy efficiency strategy), which aims at energy savings of 15% until 2015. Specific measures include variable speed drives, efficient motors, compressed air management, efficient lighting, heating, ventilation and cooling as well as thermal savings (more efficient use and production of heat). An Energy Efficiency Accord, which includes the 37 largest industries in South Africa, established technical committees to discuss how to fulfill the energy efficiency target.

Transportation: Current climate policies in the transportation sector include targeted economic and fiscal measures (e.g. financial support for efficient and low-polluting vehicles, subsidies for scrapping old taxis and finance for bus services), regulations (e.g. emission standards) and information measures (e.g. public awareness campaigns for using public transportation). The ambitious potential of about 42 MtCO₂eq in 2020 can be realized by introducing additional measures. Other policy measures include a phase-out of subsidies and energy taxation on fuels.

Renewable Energy: Renewable energy is promoted through a renewable electricity target (additional 10,000 GWh from renewables until 2013). The Renewable Energy Finance and Subsidy Office, whose mandate includes managing renewable energy subsidies and providing advice to developers and other stakeholders on renewable energy finance and subsidies, was established in 2005. Feed-in tariffs for electricity from four renewable energy technologies were set in early 2009, and for additional technologies in mid-year, and the implementation procedures are due to be finalized soon. There is also an off-grid electrification PV program. As part of the drive to increase Energy Efficiency the government has also announced an ambitious plan to roll out installation of one million solar water heaters. Eskom offers a rebate to consumers wishing to purchase solar water heaters.

5.3 Top Asks of South Africa

South Africa has long been considered a leader in climate negotiations, a bridge-builder between developing and developed countries and an originator of good ideas. It is currently placed in a strategic position in terms of being an incumbent COP president, a member of BASICS and the Africa group and it's President Zuma as co-chair of the UN's High Level Panel on Sustainable Development. However actions speak louder than words, both at a domestic and international level. Now is the time for South Africa to walk the talk and truly lead!

#1 - South Africa should agree to have its Copenhagen commitments inscribed in a legally binding agreement.

South Africa should demonstrate leadership by agreeing to inscribe its Copenhagen Accord commitment (34% by 2020 and 42% by 2025) in a legally binding agreement under the UNFCCC.

South Africa is obliged to provide leadership as it is COP17 President and the President of the country is co-chair of the UN High Level Panel on Sustainability that is preparing for Rio+20.

It should persuade the BASICS group to do so too. South Africa should be in a position to break the current logjam between developed and major developing countries with regards to common but differentiated responsibilities (CBDR) and historical responsibility through asserting its commitment to dealing with its future responsibilities as a global citizen.

Furthermore, it should highlight the progress it is making to put in place a low carbon growth and development strategy to meet the announced commitments.

#2 - South Africa should come to Cancún with a set of NAMA's to be inscribed in a Registry.

South Africa is in a position to table a set of NAMA's for inclusion in a registry. These should include information about the potential emissions reductions to be achieved, the costs of

implementation, which ones or portions require international support and which would be possible without support. Both supported and unsupported NAMA's should be subject to differing forms of Measurement, Reporting and Verification (MRV). By tabling such NAMA's in Cancún, South Africa will be able to concretely demonstrate its commitment to doing its fair share as well as begin the process of learning by doing.

#3 - South Africa should state its political commitment to a legally binding agreement, which should bind both developed and developing countries. It should be clear about the form this agreement should take and outline a roadmap of how to get there.

South Africa should be unambiguous about what it expects at COP17 as the incumbent President. It should step up the political work needed to ensure that we have a legally binding agreement in 2011. As the incumbent COP President, South Africa should produce a roadmap for achieving a legally binding agreement at COP17.

#4 - South Africa should demonstrate its solidarity with the vulnerable countries and groups by building alliances with and support for the LDCs, SIDS, and Africa.

South Africa is currently in a difficult position in terms of its political credibility amongst the vulnerable groups and especially within the Africa group. It is sometimes viewed with suspicion and accused of acting in its own interests. South Africa needs to make every effort to concretely demonstrate that it will support the interests of the most vulnerable by supporting their demands and actively promoting these in the negotiations and within the G77+China and BASIC negotiating blocs.

CONCLUSION

For over a decade the perception has persisted that major emerging economies were not acting to reduce their own emissions. In the US in particular, this perception has been used as a reason for inaction on climate change. This justification for inaction was always flawed, as it ignored the seriousness of the problem, the historical responsibility of the industrialized countries, the commitments made under the UNFCCC, and the power of industrialized country leadership. However this flawed perception today needs to be replaced by a recognition of these countries' commitment to act. Developing countries, in particular the major emerging economies, are taking action to reduce their emissions, even in the absence of industrialized country support, leadership and action.

These actions are but the first important steps on a long journey. Without an investment in new technologies and a commitment to efficiency, emissions trends indicate that the majority of new emissions will be produced in the developing world in the coming decades. As they grapple with both climate change and desperate poverty, developing countries will need to find the required ambition, momentum and support to fully make the transition towards a low-carbon economy. Based on industrialized country historical responsibility for the climate crisis, their greater economic capacity, and the urgent need to step up momentum and ensure swift action this support is justified. However, in terms of action, ambition levels need to be raised across the board.

Climate change is a global problem and its impacts can only be slowed through a global response. In addition to transitioning to a clean energy future themselves, industrialized countries must provide measurable, reportable and verifiable revenues to provide predictable financing for emissions reductions and adaptation needs within the developing world. Only by helping developing countries continue to move toward low-carbon pathways and reducing emissions from tropical deforestation, can we bring global emissions under control. Most crucially, this is not a zero-sum game. Improving the global market for clean energy technologies will help spur greater advancements throughout the industry, which will also contribute towards bringing the transition to a low-carbon pathway to the rest of the world.

Their recent actions show that these emerging economies will be good partners in this global effort. They are increasingly demonstrating their serious commitment to addressing climate change and have sent a strong message to the world that they are ready for a new era of international cooperation. They have taken actions and developed plans to begin to decouple their economic growth from their greenhouse gas emissions, so that they can grow sustainably without disrupting the climate system.

But increased financial and technical assistance from industrialized countries can create that much required added momentum and ambition. Rather than ignoring the emerging leadership by developing countries, the developed world has to support these important efforts to protect people and nature from dangerous climate change – and match them with more ambitious action at home, to reflect their historic responsibility and their current capability to act.

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