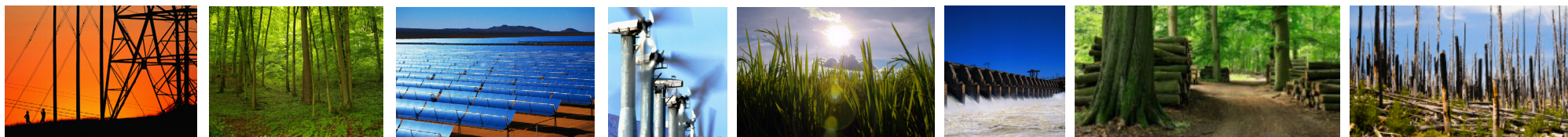


# NATIONAL CLIMATE CHANGE STRATEGIES: COMPARATIVE ANALYSIS OF DEVELOPING COUNTRY PLANS



	INDIA	BRAZIL	CHINA	MEXICO	SOUTH AFRICA
	<b>National Action Plan on Climate Change (NAPCC)</b>	<b>National Plan on Climate Change (PNMC)</b>	<b>National Climate Change Program</b>	<b>Special Program on Climate Change (PECC)</b>	<b>Long Term Mitigation Scenarios (LTMS)</b>
<b>Issuing entity</b>	Prime Minister's Council on Climate Change, July 2008	Inter-Ministerial Committee on Climate Change, December 2008	National Development and Reform Commission, June 2007	Inter-Secretarial Commission, August 2009	Cabinet of South Africa, July 2008
<b>Stated objective</b>	To establish an effective, cooperative and equitable global approach based on the principle of common but differentiated responsibilities and relative capabilities; to identify measures that promote development objectives while yielding co-benefits for climate change.	To identify, plan, and coordinate the actions and measures that can be undertaken to mitigate GHG emissions in Brazil, as well as those necessary for the adaptation of society to the impacts that occur due to climate change.	To make significant achievements in controlling GHG emissions; to enhance the capability of continuous adaptation to climate change; to promote climate change related science, technology and R&D to a new level; to raise public awareness on climate change; and to further strengthen institutions and mechanisms on climate change.	To develop and solidify guidelines contained in the previously released National Strategy on Climate Change (ENACC); to demonstrate that it is possible to mitigate and adapt to climate change without compromising development, while reaping economic benefits.	To produce a sound scientific analysis from which Cabinet could draw up a long-term climate policy; to give South African negotiators under the UNFCCC clear and mandated positions; to ensure that South African stakeholders understand and commit to a range of realistic strategies for future climate action.
<b>Process for development</b>	Plan developed by a special council appointed by the Prime Minister. Efforts began in 2007. Council includes ministers, government officials, scientists, civil society and business, but has met infrequently. As of 2009, strategies to advance the eight missions identified in the plan are being developed by ministries, agencies and consultants. The need for further stakeholder engagement has been recognized.	President initiated PNMC in April 2007 on the recommendation of the Ministry of Environment and Brazilian Forum on Climate Change. In November 2007, President appointed Inter-Ministerial Committee on Climate Change (CIM) to oversee Plan. CIM surveyed ministries to identify actions that could be incorporated and solicited input through a stakeholder consultation process. Initial version released for public comment in September 2008; criticized for lack of clear goals. Revised version released December 2008.	China was the first major developing economy to issue an action plan. Process was led by the National Development and Reform Commission, with input from leading universities. Chinese Vice Premier Zeng Peiyan and State Councilor Tang Jiaxuan now head a National Coordination Committee on Climate Change, which includes 17 ministries and agencies, to orchestrate climate change policy.	Inter-Secretarial Commission on Climate Change (CICC) formed in April 2005. CICC prepared ENACC, presented by President Calderón in May 2007, who ordered development of the PECC based on ENACC and the National Development Plan (PND). 17 sectoral reviews fed into PECC. An initial draft was published in July 2008 and was subsequently revised based on a new set of GHG mitigation scenarios and a public consultation process.	Commissioned by Cabinet in 2006; Department of Environment and Tourism tasked to develop plan. A "Scenario Building Team" was set up, including research institutes, business, and civil society.

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GHG emission scenarios framing plan	Notes that there is evidence of climate change, and references the IPCC reports. Makes a commitment that Indians' emissions per capita will not exceed those of people in developed countries.	Cites the IPCC as scientific consensus that anthropogenic climate change is occurring. Presents national emissions data from 1994. States that Brazil has contributed little to the problem (in terms of comparative per capita and per area emissions). Mentions that Brazil will not wait for others to act to mitigate climate change, and characterizes its actions as ambitious relative to those of others. Frames actions in the plan in terms of contribution to efficiency of the economy.	Makes reference to IPCC and Stern reports to confirm the need for early action on the part of all countries to reduce emissions. Notes that emissions intensity is falling. Emphasizes China's right to development, and the need to consider developing country emissions on a per capita basis.	Presents national emissions data from 2006. Establishes long-term vision, including national GHG reduction target of 50% below 2000 levels by 2050. Target stems from OECD estimate of maximum annual global and per capita emissions compatible with 450 ppm by 2050. Notes that Mexico's emissions need to peak by 2012 to meet target. Considers cost curve analysis identifying low- and no-cost actions. States that reaching target depends on international support.	Developed with reference to emission scenarios if growth were "not constrained," and emission levels "required by science" to prevent climate change. The actions identified in the LTMS are to reduce emissions to the levels required by science.
Overview and scope	Defines eight national missions: Solar, energy efficiency, sustainable habitat, water, Himalayan ecosystem, green India, sustainable agriculture, and strategic knowledge. Outlines institutional arrangements to achieve missions. Addresses adaptation as well as mitigation.	Covers energy (renewable/clean energy, biofuels, consumption reduction, oil and gas); forests and agriculture (ecosystem conservation, agriculture and ranching, strengthening sinks); and other sectors (industry, waste, transport, and health). Plan lists 32 activities in implementation and 13 activities in the "conception phase." Addresses mitigation, adaptation, R&D, and education and communication.	Covers energy production and transformation, energy efficiency, industrial processes, agriculture, forestry, and waste. Addresses mitigation, adaptation, science and technology, public awareness, institutions and mechanisms, and international cooperation.	Covers energy generation; energy use; agriculture, forests, and other land uses; waste; and private sector. Contains 41 mitigation objectives and 95 related targets. Targets are framed in terms of both quantitative and qualitative metrics. Most have a 2012 deadline; some are framed in terms of GHG reductions. An annex identifies responsible agencies and strategies. Addresses mitigation, adaptation and cross-cutting policy.	Identifies measures to reduce emissions and adapt: activities to "start now" as they will save money over time; measures to scale these actions up with additional resources; tax and incentive packages; and parallel options, e.g. behavioral changes and generation technologies. Considers energy and non-energy emissions, macro-economic analysis, and climate impacts. Addresses mitigation only.

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Examples of proposed mitigation interventions	<p><i>Energy generation/use</i></p> <ul style="list-style-type: none"> <li>Increased deployment of solar PV; 1,000 MW of concentrating solar thermal power</li> <li>Energy efficiency in industries, small enterprises, energy production, residential sector</li> <li>Promotion of ESCOs and retrofits</li> <li>Regulate power tariffs for irrigation</li> <li>Retire or rehabilitate 10,000 MW old capacity</li> <li>RD&amp;D of supercritical coal</li> <li>Promote nuclear power (closed cycle technology)</li> <li>Exploit hydropower potential (large, medium, micro)</li> <li>Explore dynamic minimum renewables purchase standard starting in 2009-10</li> </ul> <p><i>Transport</i></p> <ul style="list-style-type: none"> <li>Urban public transport</li> <li>Transport pricing reform and higher regulatory standards</li> </ul> <p><i>Forests</i></p> <ul style="list-style-type: none"> <li>Expand forest cover to 1/3 of country's area</li> <li>Additional afforestation programs</li> </ul>	<p><i>Energy generation/use</i></p> <ul style="list-style-type: none"> <li>Add 7,000 MW of renewable energy from bagasse cogeneration, mini-hydro, and wind; increase bagasse cogeneration to 136 TWh (11.4% of energy mix); add 34,460 MWh from hydro</li> <li>Solar water heating to reduce energy needs by 2200 GWh/year</li> </ul> <p><i>Transport</i></p> <ul style="list-style-type: none"> <li>Increase share of rail and water transport; improve mass transit, bicycling, and river cargo</li> </ul> <p><i>Forests</i></p> <ul style="list-style-type: none"> <li>Reduce deforestation by 40% by 2009, and an additional 30% by 2013 and 2017; eliminate illegal deforestation</li> <li>Complete a carbon stock inventory and national public forest registry</li> <li>Eliminate net loss of forest cover including by doubling area of forest plantation to 11 million ha by 2020, and increasing annual planting</li> </ul> <p><i>Waste</i></p> <ul style="list-style-type: none"> <li>Recuperation of methane from landfills</li> <li>Increase urban solid waste recycling by 20% by 2015</li> </ul>	<p><i>Energy generation/use</i></p> <ul style="list-style-type: none"> <li>Reduce energy consumption per unit GDP by 20%</li> <li>Accelerate institutional reform</li> <li>Foster bioenergy and renewables, including wind, solar, geothermal and tidal</li> <li>Develop hydropower resources</li> <li>Promote nuclear power</li> <li>Ultra-supercritical coal, methane bed, and mine methane technology</li> <li>R&amp;D for efficient coal mining, oil and gas exploration and use technologies</li> <li>Improve efficiency standards, programs and implementation</li> <li>New financing mechanisms and tax policies to promote energy savings</li> <li>Most efficient technologies for iron and steel; cement; oil and petrochemical; agricultural machinery industries</li> </ul>	<p><i>Energy generation/use</i></p> <ul style="list-style-type: none"> <li>Design and operate a carbon market between para-state companies in the energy sector</li> <li>Reduce emissions from natural gas injection</li> <li>Enhance cogeneration</li> <li>Promote natural gas projects</li> <li>Promote additional investment in renewable energy</li> </ul> <p><i>Transport</i></p> <ul style="list-style-type: none"> <li>Increase the share of rail in cargo transport</li> </ul> <p><i>Agriculture</i></p> <ul style="list-style-type: none"> <li>Improve pasture management</li> </ul> <p><i>Forests</i></p> <ul style="list-style-type: none"> <li>Promote sustainable forest management</li> <li>Design, pilot and implement REDD projects</li> </ul> <p><i>Waste</i></p> <ul style="list-style-type: none"> <li>Reduce emissions from landfills</li> </ul>	<p><i>Energy generation/use</i></p> <ul style="list-style-type: none"> <li>Accelerated energy efficiency and conservation across all sectors</li> <li>Mandatory energy efficiency targets</li> <li>Align response to the electricity crisis with LTMS</li> <li>Explore carbon pricing mechanisms</li> <li>Diversify energy mix away from coal; promote cleaner coal</li> <li>Feed-in tariffs</li> <li>Targets for renewable and nuclear energy</li> <li>Explore CCS and coal-to-liquids (consider phase-out of coal plants without CCS)</li> <li>Build domestic industries in clean sectors</li> </ul> <p><i>Transport</i></p> <ul style="list-style-type: none"> <li>Targets to reduce transport emissions</li> <li>Promote public transport, hybrids and electric vehicles</li> </ul>
Observations on mitigation interventions	<p>Many programs in the NAPCC underway for some time. It is not always clear how the plan will build or expand on these existing programs. Proposes to revisit many difficult / stalled policy and regulatory reform processes. Proposed programs to significantly expand solar power are new; energy efficiency mission implementation involves significant new programs.</p>	<p>Activities are categorized as “in implementation phase” or “in conception phase.” Some activities in implementation date from the 1990s or earlier; others are newer. Activities “in conception” include both relatively untested ideas as well as others that are being actively explored. New deforestation goals are set, noting that international support is helping realize these efforts.</p>	<p>Much of the plan builds on ongoing programs. Emphasis on building R&amp;D and technical capacity within the country. Identifies potential emission reductions of some interventions. Strong new emphasis on institutional reform, and coordination across agencies in implementing the plan.</p>	<p>Proposes new programs, including a national carbon market for the energy sector, expected to be operating by 2011. Strengthens some existing programs; states that others (e.g. several related to energy efficiency) are ongoing and are reflected in the baseline scenario. A previous draft noted that not all proposed goals had been funded; \$7B had been assigned to goals targeting reductions of 93.5 MtCO<sub>2</sub>e, leaving a \$6.6B gap.</p>	<p>Plan explicitly identifies actions that would be new or scaled up as part of a response to climate change. Actions identified in the “start now” scenarios reflect ongoing priorities and programs; next the plan identifies measures to scale up these initiatives, and explores how market and other instruments might allow South Africa to take higher-cost steps.</p>

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<b>Examples of proposed adaptation interventions</b>	<p><i>Agriculture</i></p> <ul style="list-style-type: none"> <li>Drought /thermal/pest-resistant crop development</li> <li>Improve communication and capacity of extension workers to support vulnerability-reducing activities</li> <li>Weather modeling, risk insurance, credit; improve access to weather and agricultural information</li> </ul> <p><i>Ecosystems / Biodiversity</i></p> <ul style="list-style-type: none"> <li>Monitor Himalayan glaciers and ecosystems</li> <li>Improve land use and development planning</li> <li>Improve coastal protection through infrastructure and forest/mangrove restoration</li> </ul> <p><i>Water</i></p> <ul style="list-style-type: none"> <li>Increase water use efficiency and equity</li> <li>Mandate water harvesting and recycling</li> <li>Wetlands conservation</li> <li>Desalination technology development</li> </ul> <p><i>General</i></p> <ul style="list-style-type: none"> <li>Support climate change research and modeling</li> </ul>	<p><i>General</i></p> <ul style="list-style-type: none"> <li>Improve regional modeling of climate change impacts</li> <li>Vulnerability mapping for coastal zones, biodiversity, water resources, electricity generation, oil and gas, desertification, urban areas</li> <li>Reduce poverty and inequality</li> <li>Prepare for health implications: improve knowledge base, increase technological capacity of health professionals, establish early warning systems</li> <li>Identify most vulnerable groups and address socio-economic factors</li> </ul>	<p><i>Agriculture</i></p> <ul style="list-style-type: none"> <li>Improve agricultural infrastructure</li> <li>Promote use of high-yield, stress-resilient crops</li> <li>Promote large-scale, water-saving irrigation</li> </ul> <p><i>Ecosystems / Biodiversity</i></p> <ul style="list-style-type: none"> <li>Incorporate climate change into laws and regulations on forests and wetlands</li> <li>Expand ecosystem monitoring systems</li> <li>Expand forest area and develop bio-corridors</li> <li>Refine fire forecasting, monitoring, and suppression techniques</li> <li>Prevent grassland desertification (increase by 24M hectares, restore 52M hectares)</li> </ul> <p><i>Water</i></p> <ul style="list-style-type: none"> <li>Unify water management, planning, and allocation</li> <li>Speed up water infrastructure development including North to South Water Diversion project</li> <li>Slope and shore protection through engineering and biological measures</li> </ul>	<p><i>Agriculture</i></p> <ul style="list-style-type: none"> <li>Reduce soil degradation</li> <li>Modernize hydro-agricultural infrastructure</li> <li>Databases on resilience of key crops</li> </ul> <p><i>Ecosystems / Biodiversity</i></p> <ul style="list-style-type: none"> <li>Preserve, widen, and connect protected areas</li> <li>Build ecosystem resilience</li> <li>Avoid and control spread of invasive species, diseases, parasites</li> </ul> <p><i>General</i></p> <ul style="list-style-type: none"> <li>Evaluate current national capacities and seek sectoral integration</li> <li>Deepen understanding of impacts of climate change on agriculture, forestry, water, ecosystems, infrastructure, cities</li> <li>Payments for environmental services</li> <li>Implement early warning systems</li> <li>Promote climate-resilient building standards</li> <li>Promote decentralized, small-scale, local energy supply systems</li> </ul>	<p>The LTMS do not address adaptation. South Africa is developing a National Climate Change Response Policy that touches on vulnerability and adaptation; the document was under discussion at press time.</p>
<b>Observations on adaptation interventions</b>	<p>The plans for India, Brazil, China, and Mexico successfully provide an indication of national adaptation needs and priorities. They articulate the potential effects of climate impacts on livelihoods, economies, and natural systems, but stop short of providing concrete procedures and strategies for meeting adaptation needs. All four documents reflect preliminary adaptation planning efforts and require elaboration or supplementation (likely elsewhere, in sectoral or regional planning documents) to achieve greater specificity.</p>				
	<p>The NAPCC proposes adaptation strategies directed at sectors, with a particular focus on increasing the resilience of agriculture, urban water infrastructure, and the Himalayan socio-ecological system. It emphasizes the need to avoid compromising national economic growth. The NAPCC also proposes strategies to address funding needs for adaptation. It fails to include specific adaptation practices and implementation tools for all sectors.</p>	<p>The PNMC establishes goals along two general themes - increasing institutional, managerial, and legislative capacity for adaptation and promoting direct action-steps for addressing impacts, risks, and particular vulnerabilities. The PNMC identifies specific sectors and locations in need of adaptation and proposes both short- and long-term strategies. It is fairly comprehensive but still falls short of identifying specific action-steps and implementation strategies.</p>	<p>The plan stresses the need for adaptation of human and natural systems without hindering economic development. There is also a great focus on national level policy/ legislative approaches to enhance China's overall adaptive capacity. The adaptation strategies proposed tend to be large in scope and scale - the vision of the plan is impressive, but the document lacks specific targets and action-steps for realizing these goals.</p>	<p>The PECC serves as a national guideline for promoting adaptation strategies; therefore it provides visions and goals for particular sectors but does not provide specific procedures for achieving these goals. The PECC addresses the importance of collaborating and harnessing existing institutional capacity through streamlining and integration.</p>	