

AN ANALYSIS OF KARNATAKA'S ACTION PLAN ON CLIMATE CHANGE

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Introduction

Unlike some other states such as Sikkim, Himachal Pradesh, and Gujarat, climate change has not been a prominent part of the Government of Karnataka's pronouncements on its future development direction. While senior state bureaucrats have been supportive of developing a plan, there is little evidence that they have championed adapting to or mitigating climate change as a cause, at either the political or bureaucratic levels.¹

And yet the climate plan in Karnataka is the outcome of three distinct efforts

resulting in three parallel documents. In addition, Karnataka is arguably the state with the strongest independent scientific and research capacity on climate change.² The presence of the Indian Institute of Science (IISc), the Institute for Social and Economic Change (ISEC), the Center for Study of Science, Technology and Policy (CSTEP) and other such bodies confers a capability for analysis and understanding on climate change well beyond most other states. This strong base of ability played an important role in shaping the tenor and content of Karnataka's action plan through a collaboration by these institutions in the form of the Bangalore Climate Change Initiative-Karnataka (BCCI-K). The association resulted in a scientific assessment of the implications of climate change for the state.³ The formal plan was produced by Environmental Management and Policy Research Institute (EMPRI), an autonomous body under the Department of Forest, Ecology and Environment, Government of Karnataka. In addition to BCCI-K, another non-governmental body, the Centre for Sustainable Development (CSD) also, independently, produced a state action plan.

The three climate plans followed distinct processes, though they only facilitated a limited degree participation from departments and external participants. Departmental communication was a one-sided process, with nodal institutions seeking sectoral information without looking to build climate capacity in the state or involving departments in the ideation process. As a result some recommendations do not seem grounded in what is politically or developmentally tenable. Moreover final recommendations – when viewed together – oscillate between sustainable development actions at one end (as in the case of the EMPRI climate plan), and on the other, big mitigation ideas borrowed from industrialised countries (as seen in the CSD plan), that have not yet entered the mainstream debate on climate change in India.

As the only state government-led process, the EMPRI plan is the one most likely to be implemented. As of January 2014 however, no climate plan from Karnataka had been endorsed by the central government's National Steering Committee.⁵

The aforementioned themes are elaborated in the following sections:

- I. The process of preparing Karnataka's Action Plan
- II. Examining sectoral content in the climate plans
- III. Mechanisms for implementation



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Consequently, while the formal state plan process resulted from the central government-driven request to states to initiate a State Action Plan on Climate Change (SAPCC), there have been parallel and additional efforts to deepen engagement in the state.⁴ Indeed, all of the three documents include the title "[a] state action plan on climate change" for Karnataka.

About Karnataka

Flanked by the Arabian Sea, Karnataka is a coastal state in the south west of India. It is the eighth largest state by size and the ninth by population.⁶ While the Western Ghats account for a bulk of the state's forest cover, over 77 per cent of its geographical area is arid or semi-arid.⁷ Much of this is concentrated in North Karnataka. Karnataka is also the third most urbanised state in the country and water availability is a major concern.⁸ In terms of its economy, over 50 per cent of the state's Gross State Domestic Product comes from the services sector.⁹ There has, however, been a dip in manufacturing and a reduction in mining and quarrying operations.

Much of Karnataka's environmental legacy revolves around two issues; industrial activity in the Ghats in the form of paper mills, gold and iron mining, and hydro power generation; and the supply and usage of water.¹⁰ The most notable manifestation of the latter is the Cauvery water dispute between Karnataka and Tamil Nadu.¹¹ A related concern is the sharp disappearance of lakes and water bodies, owing to encroachment, pollution and infrastructural activity in the state.¹²

Karnataka has a number of prominent scientific and research-based institutions based in its capital city Bengaluru (formerly Bangalore) and this has played an important part in the framing and content of Karnataka's SAPCC.¹³

“ EMPRI does not have the bandwidth to do this. Bangalore is rich in institutions and we decided to use that intellectual capital.”

- Member, BCCI-K

I. The process of preparing Karnataka's Action Plan

The preparation of three climate plans followed largely separate and parallel processes, each of which is worth describing in brief in order to understand the thrust of the plan, the forms of communication about climate change each stimulated, the sources of ideas and intellectual inputs, and the actors involved in shaping these plans. Table 1 provides a time-line of events and is followed by a description of each plan.

Karnataka Climate Change Action Plan by BCCI-K

The BCCI-K process was the earliest of the three, and was more focused on a scientific assessment of the likely implications of climate change than any of the other plans. Indeed, the BCCI-K was able to rely on heavyweight research institutions to apply climate models and develop district level predictions of climate variability. These predictions were relied on quite heavily by the other two reports.¹⁴

Initially, BCCI-K was largely individually driven – a convening effort by the former Chair of Karnataka's Legislative Council, Prof. BK Chandrasekhar, to bring together leading scientific and research institutes to explore the likely implications of climate change on the state. But the process was also facilitated by international technical and financial linkages. Notably, Lord

Nicholas Stern and the India Observatory at the London School of Economics (LSE) participated in some of the discussions and are noted in the report among the contributors.¹⁵ This contribution was facilitated by a long-standing personal relationship between the Chair of the BCCI-K and Lord Stern.¹⁶ In addition, the BCCI-K effort was funded by the World Bank through direct support for individuals at the participating institutions.¹⁷ While this was, therefore, largely a non-governmental effort, the financial support of the World Bank was facilitated by a letter of support from the State Planning Department, and, as described below, some senior government officials did participate in feedback sessions with BCCI-K researchers.¹⁸

In the opinion of members of the BCCI-K, their effort was needed, because the official government agency tasked with preparation of the plan, EMPRI, did not have the requisite capacity to draft the plan and could bring only “nominal” expertise to bear on the topic, an opinion consistent with research conducted in this study.¹⁹ As one stakeholder noted, “EMPRI does not have the bandwidth to do this. Bangalore is rich in institutions and we decided to use that intellectual capital.”²⁰

The resultant process was designed to fill this gap by translating available scientific evidence on climate change to the state

TABLE 1: TIMELINE FOR STATE ACTION ON CLIMATE CHANGE IN KARNATAKA

2007-2008	The “Bangalore Climate Change Initiative – Karnataka” (BCCI-K) formed by former Chair of Karnataka’s Legislative Council
Jun 2009	Government of Karnataka constitutes a coordination committee to coordinate state responses to climate change. EMPRI given the mandate to prepare the SAPCC.
18 Aug 2009	Prime Minister urges all states to draft SAPCCs
19 Aug 2010	MoEF’s National Consultation workshop
Nov 2010	21 government agencies approached for EMPRI’s Rapid Assessment Report
Dec 2010	EMPRI SAPCC preparation commences with a brainstorming session involving government agencies and some NGO representatives
1 Feb 2011	CSD led Inception workshop
7-31 Mar 2011	EMPRI holds consultations with 24 state departments
May 2011	Karnataka Climate Action Plan by BCCI-K completed
Sept 2011	First draft of EMPRI’s Karnataka SAPCC completed
28-29 Sept 2011	Two-day stakeholder workshop by CSD
22 Mar 2012	Second draft of EMPRI’s Karnataka SAPCC completed

“We had many meetings with departments, they kept sending different people. The discussion with departments was to arrive at priority areas. Some of departments had to be nudged along the way.”

- Retired Official, Government of Karnataka

and district level.²¹ Various research institutes, largely working in parallel, took on a section or two of the report: CSTEP undertook the Greenhouse Gas (GHG) inventory; IISc produced a vulnerability assessment, and impacts on water and forests; and the University of Agricultural Sciences produced the agriculture chapter (Table 2). These chapters draw on secondary information and, in some cases on models, to detail the likely implications of climate change for the sector under study at the state and district level. This level of detail of scientific prediction is relatively rare in the SAPCC process, and served as an entry point for the other, policy-focused efforts.

The BCCI-K participants made some effort to communicate with state functionaries, though the interaction appears limited.²² Notably, during an initial workshop, a senior scientist from the IISc, who is also a member of the Intergovernmental Panel on Climate Change (IPCC), Prof. Ravindranath, gave a presentation on climate science.²³ The meeting included the energy and environment secretaries. Once the climate plan was completed it was shared with “three or four important officials.”²⁴ Their comments led to some minor changes in the draft. In addition, through the connections of the Chair, the BCCI-K played a role in increasing engagement with the political class through lectures and roundtables, the visibility of which was amplified by the presence of personalities such as Lord Stern.²⁵ However, there is little evidence that the BCCI-K reached out to those outside the government and research institute communities, to citizens groups and Non Governmental Organisations (NGOs). In its subsequent work, the BCCI-K plans to enhance its engagement with

elected officials at district and block levels.²⁶

In sum, the BCCI-K process was a science-focused report, with some focus on policy recommendations, which laid an important base of knowledge for the other plans. Due to its high profile leadership and participation by senior academics, the document is likely to have been a useful vehicle for injecting climate change issues into policy debates, although it is hard to judge the effects of doing so. The process was designed to tap into the existing scientific capability in Bengaluru to develop and synthesize knowledge, rather than to forge new integrative ideas to directly inform policy. At the same time recommendations (discussed later) in the agriculture chapter have been adopted in both the EMPRI and CSD plans.

Karnataka State Action plan on Climate Change by EMPRI

The primary integrative role in the state was given to EMPRI, an autonomous body operating under Karnataka's Department of Forest, Ecology and Environment. The state's 'Committee on Climate Change' formed to address the Centre's request for preparation of a SAPCC, charged EMPRI with the task for two reasons: to avoid dependence on external consultants, and to ensure access to line department officials.²⁷ In particular, within EMPRI there was a strong perception that inter-departmental communication would be more open if a government department was leading the plan process.²⁸ As a result, by contrast with other states, there is very little indication of involvement by foreign donor agencies. However, as alluded to above, EMPRI's

independent capacity to work on the topic is weak, and a staff of two, including an official on deputation from Germany through a collaborative Indo-German capacity building programme, worked on the plan. In the later stages, EMPRI contracted with The Energy Research Institute (TERI) for additional staffing support.

EMPRI's approach was to serve as an extractor and synthesizer of information from line departments. The work proceeded in two steps. First, EMPRI staff consulted with 22 departments to explore existing policy actions with climate benefits, 14 of which provided input.²⁹ Second, after cataloguing these actions, they concluded that the recommendations were limited to qualitative steps, without any targets or timeframes, and focused heavily on mitigation. This is detailed in the Rapid Assessment Report.³⁰ The analysis of gaps in existing policy set the stage for a more thorough study in the climate plan.

The EMPRI climate plan acknowledges its considerable reliance on the BCCI-K report but also draws on another 80 secondary sources.³¹ However, the primary source is a set of data collected from direct interaction with line departments. The methodology involved a structured interview during which EMPRI staff engaged with staff from departments to ascertain salient information. The questionnaire used to elicit this information is informative. It begins with a brief introduction to climate change drawing on the IPCC 2007 report to note freshwater shortages, coastal flooding and disease vectors as likely impacts, references the National Action Plan on Climate Change (NAPCC), and

TABLE 2: Chapter breakup of the BCCI-K Karnataka Climate Change Action Plan

CHAPTER	CONTENT
Chapter 1	Karnataka - Greenhouse Gas Inventory by Centre for Study of Science, Technology and Policy (CSTEP)
Chapter 2	Climate variability and climate change projections - Karnataka Region by Indian Institute of Science (IISc)
Chapter 3	Impact on Forests in Karnataka Region by Indian Institute of Science (IISc)
Chapter 4	Impact on Agricultural Sector by University of Agricultural Sciences, Bangalore
Chapter 5	Impact of Climate Change on Water Resources of Karnataka by Indian Institute of Science (IISc)
Chapter 6	Socio-economic Vulnerability and Adaptive Capacity Assessment: An Analysis by Institute for Social and Economic Change (ISEC)
Chapter 7	Mitigation options in energy sector by Centre for Study of Science, Technology and Policy (CSTEP)

Source: BCCI-K climate plan.

highlights the need for SAPCCs to be well aligned with national actions.³² Beyond this basic level of communication, no further communication about climate change and its challenges was attempted with line departments, indicating a lost opportunity to communicate more completely and stimulate broader engagement with the issue.

The questionnaire itself is organized around three categories: perception of climate threats relevant to the department's responsibilities; activities planned or implemented relevant to each of the eight National Missions laid down in the NAPCC; and funding levels relevant to those activities.³³ However, there was no evidence of any process to allow the departments to either develop threat perceptions or make linkages between existing actions and national mission related actions. In this context, the exercise seems likely to have resulted in eliciting only information on existing development plans, without any particular attention to examining these through a climate lens. Senior officials admitted to challenges in

involving departments in the process, "We had many meetings with departments, they kept sending different people. The discussion with departments was to arrive at priority areas. Some of departments had to be nudged along the way."³⁴

The information from departments was synthesized internally by EMPRI, along with TERI in a consulting capacity, and condensed into three categories: actions underway; an additional list of 53 actions required; and a more concise list of 31 priority areas.³⁵ To provide feedback during this process, EMPRI convened a review committee of active officers from the Forest Department, Lake Development Authority etc.³⁶ However, the list of recommendations and action areas was developed internally without any explicit criteria or decision framework. Instead, the implicit approach was that some ideas recommended themselves as sensible sustainable development actions. The Principal Secretary, Environment, for example, gave the example of rainwater harvesting, and said examples such as these could be "ocularly" decided, suggesting a certain commonsensical, if somewhat *ad*

hoc basis for decisions.³⁷ But this lack of decision criteria raises the question of the value added of a climate plan, as opposed to a sustainable development planning approach.

EMPRI staff had a clearer view of decision criteria, suggesting that the priority actions were chosen based on a judgement that climate change would be a strategic "pressure point" or "door opener" or "enabler" for accelerating implementation of particular sustainable development policies.³⁸ These recommendations were then circulated to line departments for comment, but did not elicit much feedback. Finally, the draft was posted on the website for public comment with complementary announcements, but without any explicit workshop or opportunities for direct engagement. It elicited only a handful of comments, although EMPRI staff did note these were detailed comments.³⁹

EMPRI's approach has the virtue of capturing existing state planning processes, but by the same token, faces at least three possible limitations: First, by contrast with

some other states, the communication was largely one way – from department to EMPRI – and unaccompanied by any complementary effort to communicate or share information with line departments, through discussions and presentations on the science, politics and policy of climate change. Second, the separate interviews with departments did not allow for cross-departmental interaction and debate, and the potential for identification of synergies in areas such as water, agriculture, and forests. Finally, the process was very heavily centred on eliciting, summarizing and organizing government perceptions and actions, with no mechanism to capture ideas and perspectives from beyond government, either private sector or civil society. Instead, the process was designed to stimulate incremental action on sustainable development measures from government departments.

Karnataka Climate Change Action Plan by CSD

CSD is an independent research organization in Bangalore that has, independent of the EMPRI process, prepared a state action plan. This process was initiated after the BCCI-K and EMPRI processes and has resulted in a draft report, which, as of February 2014, had not been publicly released.

The report was an initiative of the Chairman of CSD, who was at the time the Advisor, Urban Affairs to the Chief Minister, and previously Chief Secretary of the state, who sought and obtained a small grant from the Ministry of Environment and Forests (MoEF), Government of India to undertake a state action plan study. The Government of Karnataka's Planning Department issued a letter of support for this proposal.⁴⁰ There is no clear explanation from either within the state government or CSD for why an additional study was thought necessary. Indeed, EMPRI was reportedly somewhat surprised when it became clear another study was being undertaken, although the current reaction from both the Forest, Ecology and Environment Department and

EMPRI is that multiple voices are welcome, and that a diversity of views can only be positive.⁴¹

The process followed by CSD followed two tracks: First, information was garnered from various departments, although the mechanics of obtaining that information are not very clear. This information was then analyzed by CSD, with the assistance of technical support from Deloitte Tohmatsu India Private Ltd.⁴² Little information was available on the prior expertise of the Deloitte consultants in India with respect to climate change, and little information on the extent of interaction between them and line departments.⁴³ Second, comments from a series of experts, ranging from retired governmental officials to NGOs were solicited on the substance of the report.⁴⁴

From the limited information available, the CSD effort does not seem to have facilitated more than minimal opportunities for structured engagement with climate concerns among departments; the communication was rather more one way from departments to CSD. Moreover, there were few opportunities for discussion across departments. Finally, there was little knowledge of and engagement with the CSD process from the civil society or from outside government departments.⁴⁵

In conclusion, the involvement of multiple actors across three parallel processes resulted in three climate plans for Karnataka. While this has added a fair degree of uncertainty to the process of identifying the final official document, it has also resulted in a proliferation of inputs to address climate change in the state. BCCI-K's involvement – though non-governmental in nature – ensured the SAPCC process was informed by regional climate science and research because both the EMPRI and CSD plans have relied on findings in the BCCI-K report. While there was some degree of departmental engagement in all three processes, there was little opportunity for departments to own any of the sectoral chapters, and the flow of information from departments was

largely one-sided. Moreover, none of the plan processes facilitated extensive civil society participation.⁴⁶

II. Examining sectoral content in the climate plans

One of the notable features of Karnataka's SAPCC process is the range and scope of sectoral recommendations arrived at to address climate change in the state as a result of the three parallel efforts. The organisation of content is distinct in all the plans. The BCCI-K report for instance only offers generic recommendations in some of the chapters, as its primary function was to generate sector based climate research specific to Karnataka. The EMPRI plan is more comprehensive; it provides data and recommendations for seven sectors, driven by a detailed policy gap analysis.⁴⁷ The structure of the CSD report is harder to comprehend. While the document offers detailed sectoral strategies, final recommendations have no bearing on previous sectoral recommendations and are entirely mitigation driven.⁴⁸ It is worth noting that in a few cases, recommendations seem removed from the development or political context. Some of the distinguishing features of the sectoral content in each of the plans are elaborated below.

Karnataka Climate Change Action plan by BCCI-K

The BCCI-K report is a compendium of technical papers that captures state-specific regional climate projections, spatial vulnerability, emission baselines, and climate impacts on various sectors. All chapters – as noted earlier – are strongly rooted in climate research specific to Karnataka. A brief chapter-wise assessment of the document's content indicates three other trends.

First, the report shows little evidence of dialogue across the various institutions involved in the BCCI-K during its preparation. The first chapter in the plan

is the GHG inventory report by CSTEP. The chapter examines emissions from seven sectors and concludes that Karnataka contributes four per cent of the country's emissions.⁴⁹ The power sector is noted as the largest emitter because of coal-based generation, followed by agriculture of which the largest constituent is methane from livestock rearing. These and other findings however, do not seem to have a bearing on the energy or agriculture chapters in terms of mitigation actions.

Similarly, the chapter on climate change projections by IISc offers a range of detailed information such as temperature data over the last century, 35-year rainfall data for Karnataka from IMD, as well as rainfall and temperature projections for the period between 2021 and 2050.⁵⁰ However, the chapter on agriculture by the University of Agricultural Sciences uses different time-scales and parameters from the ones employed by IISc for its district-wise rainfall and temperature trends. Notably, the chapter on Socio-economic vulnerability and adaptive capacity assessment by ISEC is the only one that quotes directly from the IISc paper on climate projections for Karnataka.⁵¹ These papers were possibly written in parallel, and it is unclear if the BCCI-K provided a formal platform for organisations to share their findings during the pre-draft stages. With the exception of ISEC, it was perhaps a missed opportunity for institutions to collaborate in manner that resulted in a more cohesive picture of climate change impacts and actions for the state.

Second, while the BCCI-K plan is notably research oriented in tone and focus, four out of seven chapters – forestry, agriculture, water and energy – include sectoral recommendations. However, with the exception of agriculture, these proposals are largely broad-based in scope. The agriculture chapter is the most detailed chapter in the report. It also includes a cost calculation for recommended activities.⁵² In fact specific recommendations in the CSD and EMPRI plans are borrowed from the agriculture chapter of the BCCI-K

document.⁵³ In contrast, recommendations in the energy chapter are largely generic in nature such as promoting energy efficiency, demand side management measures, increasing public transportation and setting up bicycle lanes.⁵⁴

Third, there seems to be no attempt in the BCCI-K draft to synthesize the chapters or extrapolate data in all its papers to arrive at broad trends or present a comprehensive plan. World Bank officials agreed this was a significant challenge.⁵⁵

Karnataka State Action plan on Climate Change by EMPRI

There are a number of features in the sectoral content put forth by the EMPRI climate plan that differentiate it from other SAPCCs: First, the content builds heavily on the non-governmental BCCI-K report. Other states have not had the benefit of a similar process. Second, it is the only plan studied that both challenges and accepts the existing scientific consensus on climate change. Third, the sectoral content, is broadly informed by a detailed policy-gap analysis that was conducted prior to the preparation of the plan. Fourth, the EMPRI-led draft plan relies on an available GHG inventory for the state by BCCI-K, but does not fully use the existing vulnerability assessment study. Despite having a mitigation specific base-line report like the GHG inventory, however, the SAPCC conforms with other state plans in not proposing mitigation actions that address climate change in a transformative manner. The following section presents an overview of the content in the SPACC and elaborates on the aforesaid themes.

Given EMPRI's limited capacity to develop a comprehensive climate plan, one of the most notable aspects of the SAPCC is that it builds on the research and findings of the BCCI-K report rather than treat it as a parallel effort to be out-competed.⁵⁶ It makes use of data on temperature and rainfall projections, the GHG inventory study, as well as crop productivity and

trends.⁵⁷ But the BCCI-K document is perceivably not its only source – the content is also supplemented with additional secondary data, occasionally highlighting information that does not correspond with the BCCI-K plan. For instance the draft states that while the BCCI-K study identified an overall decline in rainfall data between 1971 and 2005, IMD Bangalore (which incidentally provided the baseline data for the BCCI-K analysis) is in disagreement with the trend as the period was too small to arrive at "dependable conclusions."⁵⁸ In addition the forestry chapter in EMPRI's climate plan goes beyond the BCCI-K report in examining current and projected concerns in other biodiversity hotspots such as coastal zones, coral reefs, the Western Ghats and the state's eastern plains.⁵⁹

Even as EMPRI's climate plan is rooted in climate-based research, the document devotes a section of its introductory text to detailing uncertainties around anthropogenic climate change. The draft cites from the "Non-governmental International Panel on Climate Change (NIPCC)", which refers to the 'limitations' of IPCC's 2007 report and suggests that climate change occurs due to "changes in ecological cycles" and "not anthropogenic GHG emissions."⁶⁰ The SAPCC, however, concludes that despite uncertainties, the "weight of evidence attributing climate change to human activities is significant" and projected vulnerabilities cannot be ignored.⁶¹ There is little description of the IPCC or the NIPCC or effort to discuss whether the two exercises are of equivalent rigour and therefore should be accorded equivalent weight.

EMPRI conducted a policy-gap analysis as part of its Rapid Assessment report prior to the formulation of the climate plan. None of the other SAPCCs studied have conducted such an exercise in their pre-draft stages.⁶² The Rapid Assessment report offers a department-wise list of actions taken and actions proposed at the state level for interventions that also address climate change. The report

**TABLE 3:
OVERVIEW OF
THE CONTENT IN
EMPRI'S SAPCC**

CATEGORIES	DETAILS
Chapter-wise break-up	<ol style="list-style-type: none"> 1. Executive Summary 2. Background 3. Climate trends 4. GHG emissions 5. Sectoral chapters 6. Action Plan
GHG Emissions inventory	<p>Prepared by CSTEP</p> <ol style="list-style-type: none"> 1. Power 2. Transport 3. Households 4. Industry 5. Agriculture and allied sectors 6. Waste
Vulnerability Assessment	<p>There is no separate vulnerability assessment chapter though a portion of the vulnerability assessment study done by ISEC in the BCCI-K report is reflected in the agriculture chapter of the EMPRI-led SAPCC.</p>
Sectors covered	<ol style="list-style-type: none"> 1. Agriculture and allied sectors 2. Water resources 3. Forestry biodiversity and wildlife 4. Coastal Zone 5. Energy 6. Urbanisation 7. Human health
Sector-wise chapter break-up	<ol style="list-style-type: none"> 1. Concerns 2. Projections 3. 'Actions, policies and institutional preparedness' 4. Missions under NAPCC 5. Selected emerging intervention areas
Recommendations break-up	<ol style="list-style-type: none"> 1. Actions already underway 2. Actions required: <ul style="list-style-type: none"> - Challenges - Implementation - Data management - R&D - Policy intervention 3. Priority actions and entry points <i>31 out of 200 actions for immediate implementation</i>
Finances	<p>Priority action tables indicate the amount of money allocated for that type of activity under the NAPCC. The document does not offer a cost estimate for different actions, not does it specify a cumulative budgetary estimate.</p>

Source: EMPRI climate plan.

surmises that there are numerous policy initiatives with climate co-benefits across sectors though they are largely qualitative in nature. In addition, they do not carry “targets or timeframes” or even cost estimates for their implementation.⁶³ The EMPRI climate plan is comprehensive in another regard: The section on policies and institutional preparedness in various sectoral chapters is accompanied by a narrative on whether the implemented programs have been successful or not. For instance the chapter on water resources states that Karnataka’s water resources authority was meant to improve research gaps in water management and increase external participation, but there is, “an impression that the authority failed to live up to expectations for unspecified reasons.”⁶⁴

The EMPRI based action plan does not include a separate chapter on vulnerability assessment for the state despite the availability of ISEC’s vulnerability study in the BCCI-K report. The agriculture chapter in the EMPRI plan instead lists some findings from the vulnerability analysis.⁶⁵ The EMPRI climate plan does, however, include a GHG inventory chapter based on CSTEP’s state GHG inventory.⁶⁶ It is unclear why the agency elected to keep the latter but exclude the former as it diverges from the trend seen in other SAPCCs. The dominant trend in other states is to include a VA but not a GHG inventory, both because states’ chose to focus on adaptation measures and also because the MoEF has informally requested states not prepare a GHG report as there is concern that state baseline figures may not add up to the national figures put forth in India’s Second National Communication (NATCOM) to the United Nations Framework Convention on Climate Change (UNFCCC).⁶⁷

With regard to the actionability of recommendations in the EMPRI climate plan, they tend to be fairly specific, but without much clarity on how they are prioritized. In addition, actions are often only tangentially rooted in climate concerns but rather based on broad sustainability issues.

EMPRI’s climate plan identifies 200 action plans, likely selected based on the policy gap analysis, but chooses to focus on 31 implementation activities.⁶⁸ This is a significant departure from other state

action plans that typically offer a far longer list of recommendations. However, there seems to be no clear basis on how these 31 actions were arrived at. The final list covers agriculture, water, forests and biodiversity, coasts, energy, urban, and research & documentation activities.⁶⁹ Actions are categorised as either pertaining to ‘implementation and planning’, ‘data management’, ‘R&D intervention’ or ‘policy intervention’ (see Table 3). In terms of scale and specificity, actions – with some exceptions – are largely specific in nature.⁷⁰ For instance under agriculture a suggested objective is to promote irrigation efficiency and the listed activity specifically targets the theft of distribution pipes.⁷¹ Under energy efficiency, the target is to stabilize grid supply voltage and the recommendation is to develop an automated load shedding system.⁷²

In this regard, the EMPRI plan differs from several state plans that offer broad objectives but lack specific actions to guide implementation efforts. However the EMPRI plan follows the norm in that recommendations (whether broad based or specific) are typically driven by sustainable development imperatives rather than climate based forecasts. Some recommendations in the sectoral chapters of EMPRI’s climate plan in fact, have no perceivable climate links. The chapter on coasts for example, looks at making beaches zero-waste areas, and the chapter on energy addresses local air pollution caused by stand-alone generators. However, the agriculture chapter is a notable exception. It uses IISc’s recommendations to reassess regional crop changes and crop rotation in light of changes in temperature and precipitation outcomes in various districts.⁷³

As with other SAPCCs, recommendations in the EMPRI climate plan are not discussed in a context that enables assessment of whether there was an active effort to realize the NAPCC aspiration of effecting a “directional shift in the development pathway” of the country.⁷⁴ For example, related to mitigation, the EMPRI climate plan proposes actions to increase the share of renewable energy in the state’s energy mix from the current 11.5 per cent but there is no specific target to how much.⁷⁵ Other suggestions include developing indigenous solar research and manufacturing to drive down costs, attracting more players in the wind and solar space, and removing

implementation barriers.⁷⁶ None of these proposals are placed in the context of a business as usual analysis or a modelling analysis to show alternative pathways under different assumptions. Hence there is no basis for judging whether these proposals are transformative or even ambitious.

However a key energy concern in the state is that irrigation pump sets use up the highest percentage of electricity generated in the state and lead to severe ground water depletion. These are picked up as priority areas in the EMPRI plan.⁷⁷ Another notable recommendation is in the forestry sector of the EMPRI climate plan on assessing the carrying capacity of the Western Ghats.⁷⁸ Such an initiative – if followed through could have significant ecological implications.⁷⁹

In the context therefore of protecting the Ghats and targeting water and energy in agricultural use, the EMPRI plan looks to address significant concerns. And although officials in the state are sceptical of the political tenability of being able to carry out such measures, it is nonetheless worth noting their inclusion in the report as an indication of occasional efforts at considering large-scale transformative change.⁸⁰ As one stakeholder noted, “Karnataka gives free electricity to farmers as there is no user fee, so water extraction high and this affects the ground water situation. So ground water is a priority area... [the nodal department head] had reservations about irrigation tariffs... but he agreed. We said all actions should have dual benefits, mainstream as much as possible”⁸¹

Karnataka Climate Change Action Plan by CSD

While the CSD plan uses climate science and research from the BCCI-K report and carries a separate vulnerability assessment report, climate change is not its sole focus.⁸² The report’s four stated objectives are preserving biodiversity hubs, improving the state’s “ecological-index”, natural resource conservation, and “reducing unwarranted release of pollutants.”⁸³ GHG emission reductions are perceived as one part of this overarching exercise. For instance, the mining section talks of not just climate impacts from increased energy use as a result of mining activities, but also surface and groundwater pollution.⁸⁴ The

“ Karnataka gives free electricity to farmers as there is no user fee, so water extraction high and this affects the ground water situation. So ground water is a priority area ... [the nodal department head] had reservations about irrigation tariffs ... but he agreed. We said all actions should have dual benefits, mainstream as much as possible”

- Consultant, EMPRI climate plan

transport section in addition lists other air pollutants and noise pollution as concern areas.⁸⁵ Further, the section on industries expands on the problem of e-waste.⁸⁶

By establishing the policy objective of its plan up front, and explicitly stating its overarching targets, CSD follows a useful exercise, but the final list of recommendations in the CSD report are all mitigation driven and have little bearing on the sectoral recommendations of the previous chapters. Some are apparently borrowed from the experience of industrialised nations without any effort to contextualize the proposal. For instance the report offers a detailed account of adopting energy budgets, perhaps echoing the United Kingdom (UK) experiment with carbon budgets, and tradable emission quotas (TEQs) such as exist in the European Union.⁸⁷ However, there is no discussion if these ideas are viable and workable in the Indian context. The plan also expands on the importance of addressing large point-source of emissions such as agriculture, thermal plants, aluminium, steel plants, and the Information Technology industry.⁸⁸ In addition, it talks of each government department preparing carbon reduction delivery plans.⁸⁹ Incidentally these measures are aimed at achieving a “target of 25 percent reduction in GHG emission levels by 2020” at the state level which is a considerably stronger statement than the national pledge of a 20 to 25 per cent reduction in emissions intensity.⁹⁰ This is the only report among those studied that aims to quantify its actions in terms of absolute emission reductions by a fixed period, though it offers no baselines for that reduction, nor any justification or feasibility analysis. Given how far outside the mainstream of climate thought these proposals actually are, it is unclear if the CSD document represents simply an elementary

error in comprehending the difference between absolute emissions reductions and reductions in emissions intensity.

Finally, a recurring concern in the document is that many mitigation strategies are improperly categorized as adaptation measures. For instance, a committee to monitor carbon stocks under forestry is tagged as an adaptation action.⁹¹ Further, recommendations such as energy audits, GHG accounting of industries, public transport to reduce conventional fuel dependency, are all listed as adaptation plans. As noted earlier, it is unclear if the consultants involved in the CSD plan process had any expertise in working on climate issues in India.

In sum, the presence of three climate action plans in Karnataka, while problematic for institutional reasons, provides a vast array of climate strategies for the state. The BCCI-K report is replete with relevant climate research, although it only offers policy recommendations in some of its chapters, and they are largely broad-based. The agriculture chapter however is a notable exception in terms of detail and specificity of proposed actions and this is picked up by both the CSD and EMPRI reports. The EMPRI plan in turn, is comprehensive in providing detailed suggestions across seven sectors. This was informed by a policy-gap analysis that was conducted prior to the preparation of the plan. While the draft offers a considerably targeted list of priority actions, there seems to be no framework used to prioritise these actions from a climate perspective. The CSD plan, for its part, provides several specific sectoral recommendations that focuses solely on mitigation solutions, all of which are insufficiently discussed or justified.

III. Mechanisms for

Implementation

This section addresses implementation mechanisms that feature in the EMPRI-led plan document. The BCCI-K report as discussed earlier, is less a standalone action plan and more a scientific value-add to the other two climate action plans. Sectoral recommendations are proffered only in some chapters. Moreover, the research and insights in the BCCI-K report are copiously employed in both drafts. The CSD report states that actions proposed in its plan are merely meant to bring important issues to the attention of the state government, and it is left up to state departments along with ‘non-state actors’ to carry out its implementation.⁹² Moreover, the plan as of January 2014 is not in the public domain. The EMPRI-led climate plan, in contrast is the only document that is formulated by a government-affiliated body and more likely to be adopted by the state with possible inputs from the other two plans. This section therefore focuses on EMPRI’s climate plan, specifically on four aspects; prioritization of actions, budgets, mechanism for monitoring and evaluation, and institutional mechanisms to take the plan forward.

Prioritisation

One of the key advantages of the EMPRI-led climate plan is the provision of a specific priority list with targets and timetables for each activity. A targeted list of 31 actions raises its likelihood of implementation given the ready focus and timeframe provided. There is however no evidence of a reasoned process or relevant criteria with which the agency arrived at this final list. Moreover, there is a lack of consistency between sectoral recommendations in individual chapters, those included in the actions required section and those in the priority actions list. For instance one of the intervention areas in the energy chapter

“We decided, lets not put budgets for all actions, let the government approve NAPCC budgets and then we would allocate funds based on budgets approved.”

- Consultant on the EMPRI climate plan

is the creation of an energy conservation fund.⁹³ This is neither picked up in the ‘actions required’ table nor the priority list. Conversely the suggestion of an energy conservation building code is in the final section of the report, but is not listed in any part of the energy chapter. As officials have noted, the final list was arrived at based on the state’s overriding development and environment concerns.⁹⁴

Budgetary Allocation

The EMPRI-led action plan does not link any of its recommended actions with specific budgetary requirements, nor does it offer a cumulative monetary figure for the entire action plan. The document instead provides the total amount of money available centrally for an area of work in the final priority list. For instance, on devising cropping shifts, the table states that, “INR 65,000 crore of INR 108,000 crore under the NAPCC Mission for Sustainable Agriculture is earmarked for technology, products and practices.”⁹⁵ As one stakeholder noted, “We decided, lets not put budgets for all actions, let the government approve NAPCC budgets and then we would allocate funds based on the budgets approved.”⁹⁶ In 2013, different departments, according to EMPRI, were asked to submit specific financial requirements for priority actions.⁹⁷

Mechanisms for monitoring, evaluation

There is no stated mechanism in the draft to ensure monitoring, evaluation and implementation of the EMPRI-led draft plan. Each of the priority actions are comprehensive to the extent that information on the key implementing departments as well as other departmental stakeholders is provided. In addition, the table lists capacity building requirements to implement a given action. For instance, to increase the deployment of improved chulas, the key implementers are Gram Panchayats, and the stakeholders are the Department of Rural Development and Panchayati Raj, as well as the Department of Health and Family Welfare.⁹⁸ Given that departments were not sufficiently co-opted in the draft plan process, one concern is that EMPRI lacks the required capacity and bureaucratic weight to nudge other key departments into mainstreaming

climate in their development plans, or even implement priority actions. Moreover, some of the recommendations may not be politically feasible since they pertain to topics that have been contested by civil society groups. For instance restructuring power tariffs in agriculture sector or adding a cess on every unit of electricity consumed does not find support in all constituencies.⁹⁹ In addition suggestions of bio-diesel plantations in forest areas, and soil carbon sequestration may be opposed by some organisations.¹⁰⁰ A state official cited another example, “The knowledge on framing the NAPCC and SAPCC is available, but implementation is a big issue. Electricity is almost free in Karnataka for agriculture. Renewable energy projects cannot come up because they will cost some money, even though the government may subsidize it. Also the neighbouring village will have free electricity. So unless implementation is made absolutely compulsory, it will not happen.”¹⁰¹ This ties to a larger process-driven concern of not making the process open to external participants. As a result the action plan does not take into account the social or political tenability of some actions.

Institutional mechanism to take the plan forward

One of the big tasks ahead for the government of Karnataka is streamlining the SAPCC process from its three current tracks, and formally nominating a single plan for approval from the state. If the EMPRI-led plan is the likely choice, the state needs to decide if aspects of the CSD report will be included (the BCCI-K report has been extensively cited by both the other plans). Much of this is still unclear. When we spoke with officials at EMPRI in April 2013, various departments had been tasked with submitting budgetary allocations for sectoral recommendations. Moreover, EMPRI is constrained in another regard; all key members who were involved with the SAPCC process have moved office, including the secretary at the Environment and Ecology division of the nodal department. The new team in place may be hindered by the lack of a planned institutional mechanism to take the SAPCC forward.

Conclusion

Karnataka's climate plan process stands out for its relatively robust scientific and analytical grounding, largely due to the input of the BCCI-K, a consortium of research organisations. This, in turn was possible because of the density of scientific establishments in Bengaluru. External consultants played a more limited role here than witnessed in other states. However, the fact that three separate processes were initiated, speaks to some degree of incoherence and lack of coordination within the state. Given that the EMPRI plan is the formal SAPCC initiated by the Government of Karnataka, the remainder of the conclusion focuses specifically on this plan.

The content of the EMPRI plan was substantively determined by harvesting

information from various departments leading to a one-way dialogue. Based on the knowledge gathered, EMPRI proceeded to conduct a "policy gap" analysis. This was an intriguing effort in identifying gaps, as the process was neither structured to be deliberative nor did it lead to cross-departmental discussion. Ultimately, it turned out to be a failed opportunity on two counts – to better communicate climate change within the government, and start a discussion on the appropriate ways of mainstreaming climate change into developmental policy. As a result, and despite the benefit of the BCCI-K input on science, final recommendations appear to be a disconnected list, lacking a broader strategy or direction and with no stated linkages to climate change impacts. While a broad sustainable development focus can

be useful in such a plan, the EMPRI plan fails to demonstrate strategic thinking or prioritization beyond picking items from departmental lists of actions.

Moreover, the plan remains uncertain on process, as it does not adequately address implementation issues. More clarity is needed on the best way forward, especially since there are three different, competing state plans. There is a need for enhancing institutional capacity (particularly given the staff turnover at EMPRI); clear financial allocations; and effective monitoring mechanisms. These measures would be necessary in order to build upon the positive elements in Karnataka's SAPCC and allow it to result in tangible mainstreaming of climate change considerations in Karnataka's development process.

About Centre for Policy Research, Climate Initiative

The Climate Initiative seeks to generate research and analysis on the global climate negotiations, and on the links between the global climate regime and domestic laws, policies and institutions in India. It also seeks to create a platform from which scholars and activists can engage in policy and academic debate on climate change.

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Notes

1. Interview with Meera Saxena, Former Additional Chief Secretary, Government of Karnataka, September 27, 2012, Bengaluru, Karnataka.
2. There are over 20 noted science and research-based institutions in Karnataka; Findouter India. (http://www.findouter.com/India/Region/Karnataka/Research_Institutes/2).
3. BCCI-K, "Karnataka Climate Change Action Plan" (BCCI-K), *Final report submitted by BCCI-K to the Government of Karnataka* (Bengaluru: BCCI-K, May 2011).
4. Interview with Meera Saxena, September 27, 2012, Bengaluru, Karnataka; Interview with Felix Nitz, Technical Advisor, EMPRI, September 28, 2012, Bengaluru, Karnataka.
5. Ministry of Environment and Forests (MoEF), Government of India, "State Action Plan on Climate Change," Submitted Reports on State Action Plan on Climate Change (SAPCC) endorsed by National Steering Committee on Climate Change. (<http://envfor.nic.in/ccd-sapcc>).
6. Karnataka Water Resources Department, "Irrigation in Karnataka," April 23, 2010 (http://waterresources.kar.nic.in/irri_in_kar.htm).
7. Environmental Management and Policy Research Institute (EMPRI) and The Energy Resources Institute (TERI), "Karnataka State Action Plan on Climate Change: 1st Assessment" (Bengaluru: EMPRI, March 22, 2012), p. 15. (<http://parisaramahiti.kar.nic.in/pubs/Karnataka-SAPCC-EMPRI-TERI-2012-03-22.pdf>).
8. S Puttaswamaiah, "Drinking Water Supply: Environmental Problems, Causes, Impacts and Remedies – Experiences from Karnataka," 2005. (<http://www.isec.ac.in/Drinkingpercent20Waterpercent20Supply.PDF>); EMPRI, Karnataka climate plan, p. 119.
9. EMPRI, Karnataka climate plan, p. 15.
10. Sugata Srinivasaraju, "Once There Was a River," Outlook, February 14, 2005 (<http://www.outlookindia.com/article.aspx?226478>); Vibha Varshney, "Gold's Toxic Legacy," *Down To Earth*, November 30, 2012 (<http://www.downtoearth.org.in/content/gold-s-toxic-legacy>); Divya Gandhi, "Mini-hydro projects still a major threat to Western Ghats," The Hindu, May 23, 2013. (<http://www.thehindu.com/news/national/karnataka/minihydro-projects-still-a-major-threat-to-western-ghats/article4740215.ece>).
11. Ramaswamy Iyer, "Cauvery Dispute: A Lament and a Proposal," *Economic & Political Weekly*, vol. 48, no. 13, (March 30, 2013).
12. Business Standard, "HC contempt notice to chief secretary over lake protection," August 29, 2013. (http://www.business-standard.com/article/economy-policy/hc-contempt-notice-to-chief-secretary-over-lake-protection-113082901150_1.html).
13. The Karnataka report is part of a larger study examining climate plans in Himachal Pradesh, Karnataka, Madhya Pradesh, Odisha and Sikkim. In some states, there are multiple versions of climate plans in the public domain; this study uses the most recent version, as specified in the notes to this report. The climate plans, in general, are referred to as State Action Plans on Climate Change (SAPCC).
14. EMPRI, Karnataka climate plan, p. 29; Centre for Sustainable Development (CSD), "Karnataka Climate Change Action Plan" (Bengaluru: CSD), p. 35.
15. BCCI-K, "Foreword," *Karnataka climate plan*.
16. Interview with B K Chandrashekar, Chairman, Bangalore Climate Change Initiative- Karnataka (BCCI-K), Former Chairman, Karnataka Legislative Council, September 28, 2012, Bengaluru, Karnataka.
17. Interview with Anshu Bharadwaj, Director, Centre for Study of Science Technology and Policy (CSTEP), September 28, 2012, Bengaluru, Karnataka.
18. Interview with Meera Saxena, September 27, 2012, Bengaluru, Karnataka.
19. Interview with Anshu Bharadwaj, September 28, 2012, Bengaluru, Karnataka.
20. Not for attribution interview with a stakeholder involved in the Karnataka SAPCC process, September 28, 2012, Bengaluru, Karnataka.
21. Interview with B K Chandrashekar, September 28, 2012, Bengaluru, Karnataka.
22. Interview with Anshu Bharadwaj, September 28, 2012, Bengaluru, Karnataka.
23. Interview with Anshu Bharadwaj, September 28, 2012, Bengaluru, Karnataka.
24. Interview with Anshu Bharadwaj, September 28, 2012, Bengaluru, Karnataka.
25. Interview with B K Chandrashekar, September 28, 2012, Bengaluru, Karnataka.
26. Interview with B K Chandrashekar, September 28, 2012, Bengaluru, Karnataka.
27. Interview with Felix Nitz, September 28, 2012. Bengaluru, Karnataka.
28. Interview with Felix Nitz, September 28, 2012, Bengaluru, Karnataka.
29. EMPRI, Karnataka Climate Plan, p. 13.
30. Department of Forest, Ecology and Environment, Government of Karnataka, "State Action Plan on Climate Change Karnataka: Rapid Assessment of Sectoral Actions Initiated" (Bengaluru: EMPRI, December 30, 2010). (<http://karnataka.gov.in/pubs/Karnataka-SAPCC-Rapid-assessment-EMPRI-2010-12-30.pdf>).
31. EMPRI, Karnataka Climate Plan, p. 13.
32. EMPRI, "State Action Plan on Climate Change: Outline of Information to be provided by Departments," *questionnaire sent to line departments*.
33. EMPRI, Outline of Information to be provided by Departments.

34. Interview with Meera Saxena, September 27, 2012, Bengaluru, Karnataka.
35. EMPRI, Karnataka Climate Plan, p. iv.
36. Interview with Felix Nitz, September 28, 2012, Bengaluru, Karnataka.
37. Interview with Kanwerpal, Commissioner, Watershed Development Department. Former Secretary to Government of Karnataka (Environment and Ecology), September 28, 2012, Bengaluru, Karnataka.
38. Interview with Felix Nitz, September 28, 2012, Bengaluru, Karnataka.
39. Interview with Felix Nitz, September 28, 2012, Bengaluru, Karnataka.
40. Interview with Meera Saxena, September 27, 2012, Bengaluru, Karnataka.
41. Interview with Felix Nitz, September 28, 2012, Bengaluru, Karnataka.
42. Deloitte is acknowledged in the CSD report for technical support. We were also informed by observers engaged in the process that Deloitte consultants were hired to undertake the technical work of pulling together departmental information into a report.
43. Not for attribution interview with representative of a research organisation, September 27, 2012, Bengaluru, Karnataka.
44. Interview with, Srinivas, Centre for Sustainable Development, September 27, 2012, Bengaluru, Karnataka.
45. Participants in a "Bangalore Platform" discussion on climate change had little information on the CSD process, although they were aware of the BCCI-K and EMPRI reports.
46. As of September 2012, the Karnataka government was looking to meet all the key actors and arrive at a consensus on the final plan as well as deciding if key inputs from other plans could be incorporated in the final version.
47. A policy-gap analysis typical involves a sector wise assessment of ongoing policies and programs that also provide climate benefits after which policy 'gaps' or targets are identified, that need to be bridged in order to design a comprehensive climate plan.
48. CSD, Karnataka climate plan.
49. CSTEP, "Karnataka - Greenhouse Gas Inventory," in *Karnataka Climate Change Action Plan* (Bengaluru: BCCI-K, May 2011), ch. 1, p. 3. (http://www.lse.ac.uk/asiaResearchCentre/_files/KarnatakaCCActionPlanFinal.pdf)
50. Indian Institute of Science (IISc), "Climate variability and climate change predictions- Karnataka Region," in *Karnataka Climate Change Action Plan* (Bengaluru: BCCI-K, May 2011), ch. 2, p. 26.
51. Institute for Social and Economic Change (ISEC), "Socio-economic Vulnerability and Adaptive Capacity Assessment," in *Karnataka Climate Change Action Plan* (Bengaluru: BCCI-K, May 2011) ch. 6, p. 4.
52. CSD, Karnataka climate plan, p. 176.
53. EMPRI, Karnataka climate plan, p. 36.
54. CSTEP, "Mitigation options in energy sector," in *Karnataka Climate Change Action Plan* (Bengaluru: BCCI-K, May 2011), ch. 7, p. 3.
55. Interview with Muthukumar Mani, Senior Environmental Economist, The World Bank, 6 June, 2012, New Delhi.
56. EMPRI, Karnataka climate plan, p. 18.
57. EMPRI, Karnataka climate plan.
58. EMPRI, Karnataka climate plan, p. 19.
59. EMPRI, Karnataka climate plan, p. 75.
60. EMPRI, Karnataka climate plan, p. 3.
61. EMPRI, Karnataka climate plan, p. 4.
62. Madhya Pradesh asked the Indian Institute of Forest Management to conduct a policy gap analysis for the state. But according to state officials, it wasn't taken into account while drafting the MP climate plan because of time constraints.
63. EMPRI, Karnataka climate plan, p. 13.
64. EMPRI, Karnataka climate plan, p. 65.
65. EMPRI, Karnataka climate plan, p. 42.
66. EMPRI, Karnataka climate plan, p. 29.
67. Interview with Sumana Bhattacharya, Head – Climate Change and Sustainability, Intercooperation, India, 6 August 2012, New Delhi.
68. EMPRI, "Foreword," Karnataka climate plan.
69. EMPRI, Karnataka climate plan, pp. 165-196.
70. Some activities in the EMPRI SAPCC are broad-based in scope: For example, conducting an "assessment of barriers impeding the deployment of different renewable energy technologies", or assessing the barriers to effective solid waste management among urban local bodies. However, such priorities, at the scale of objectives rather than specific actions, are relatively few in number in the EMPRI led draft; EMPRI, Karnataka climate plan, pp. 189 and 193.
71. EMPRI, Karnataka climate plan, p. 168.
72. EMPRI, Karnataka climate plan, p. 184.
73. EMPRI, Karnataka climate plan, p. 43, table 18.
74. Prime Minister's Council on Climate Change, Government of India, "National Action Plan on Climate Change" (New Delhi: Government of India, 2008), p. 7. (http://pmindia.nic.in/climate_change_english.pdf).
75. EMPRI, Karnataka climate plan, p. 199.

76. EMPRI, Karnataka climate plan, p. 189-190.
77. EMPRI, Karnataka climate plan, p. 165.
78. EMPRI, Karnataka climate plan, p. 179.
79. EMPRI, Karnataka climate plan, p. 191.
80. Not for attribution discussion in, "State Action Plans on Climate Change in India: Framing, processes, and drivers," *A report on the round table dialogue organized by the Centre for Policy Research (CPR), Climate Initiative* (New Delhi: CPR CI, April 27, 2013) (http://cdkn.org/wp-content/uploads/2013/05/SAPCC-Workshop-Report_CPR_27-April-2013_update.pdf)
81. Interview with Sumit Gautam, Fellow, The Energy Resources Institute, September 27, 2012, Bengaluru, Karnataka.
82. The CSD plan predominantly details climate-related sectoral impacts and uses BCCI-K recommendations on shifting cropping patterns; CSD, Karnataka climate plan, pp. 149-150.
83. CSD, Karnataka climate plan, p. 23.
84. CSD, Karnataka climate plan, p. 131.
85. CSD, Karnataka climate plan, p. 139.
86. CSD, Karnataka climate plan, p. 51.
87. CSD, Karnataka climate plan, p. 215.
88. CSD, Karnataka climate plan, p. 217.
89. CSD, Karnataka climate plan, p. 220.
90. CSD, Karnataka climate plan, p. 217; Press Information Bureau, "Speech of Jairam Ramesh at Copenhagen on Climate Change," December 17, 2009. (<http://pib.nic.in/newsite/erelease.aspx>).
91. CSD, Karnataka climate plan, p. 47.
92. CSD, Karnataka climate plan, p. 28.
93. EMPRI, Karnataka climate plan, p. 117.
94. Interview with Kanwerpal, September 28, 2012, Bengaluru, Karnataka.
95. INR refers to the Indian Rupee; EMPRI, Karnataka climate plan, p. 166.
96. Interview with Sumit Gautam, September 27, 2012, Bengaluru, Karnataka.
97. Not for attribution discussion in, State Action Plans on Climate Change in India: Framing, processes, and drivers, CPR CI.
98. EMPRI, Karnataka climate plan, p. 192.
99. Parvathi Menon, "The rural anger in Karnataka," *The Frontline*, vol. 21, issue 12, June 05-18, 2004. (<http://www.frontline.in/static/html/fl2112/stories/20040618003303500.htm>); The Hindu, "Rider on free power not acceptable," September 3, 2008. (<http://www.hindu.com/2008/09/03/stories/2008090356330300.htm>).
100. WWF India, "Biofuel Plantations." (http://www.wwfindia.org/about_wwf/reducing_footprint/sustainable_forestry/solutions/biofuel_plantations/).
101. Not for attribution discussion in, State Action Plans on Climate Change in India: Framing, processes, and drivers, CPR CI.

