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INDIAN CLIMATE CHANGE POLICY EXPLORING A CO-BENEFITS BASED APPROACH

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There is a growing body of climate-related policy in India; at the same time, there is no clear and consistent approach or framework that directs and guides these efforts. In this paper, we propose and develop a methodology for operationalising a co-benefits approach to climate policy formulation. We use the technique of multi-criteria analysis, which requires making choices between and examining trade-offs across multiple objectives of policy, such as growth, inclusion and environment. In addition, we develop a framework for consideration of implementation issues.

Introduction

What is the approach that India should adopt in formulating policy responses to climate change, both domestically and internationally? In recent years, there has been a vibrant debate on this question (Dubash 2011, 2012; Kanitkar et al 2009; Narain 2009; Raghunandan 2012; Rajamani 2009). India has established a National Action Plan on Climate Change (NAPCC) with eight subsidiary "Missions"; each state is now in the process of producing State Action Plans on Climate Change with recommendations on how mitigation and adaptation could be mainstreamed into development policy; and at the central level, an "Expert Group on Low Carbon Strategies for Inclusive Growth" has released an interim report (Planning Commission 2011a).[1] Clearly, there is a growing body of climate-related policy in India.

At the same time, there is no clear and consistent approach or framework that directs and guides these efforts. The "co-benefits" formulation in the NAPCC is promising: measures that "promote our development objectives while also yielding co-benefits for addressing climate change effectively" (Government of India 2008, section 2).[2] While useful as a broad concept, the NAPCC's articulation of co-benefits is conceptually insufficient, and lacks the methodological clarity needed to actually guide policy trade-offs and priorities. The Planning Commission has also attempted an initial framing of India's low carbon approaches within a co-benefits template (Planning Commission 2011b). Without clearer specification, however, a co-benefits approach risks being used in an ad hoc manner to either justify business as usual development policies, or to opportunistically sell a particular policy without sufficient justification of its advantages over other comparable policy options.

Why a Co-Benefits Approach Is Appropriate for India

Should a poor, developing country with a substantial poverty burden play any role in mitigating what is a global problem caused in the main by developed countries? If so, then how? This is a deeply contentious issue that often leads to polarised views. By placing a co-benefits approach at the heart of the NAPCC, our national policymakers implicitly project the co-benefits approach as an answer to these questions. However, this answer is neither argued nor justified. Before we enter a discussion on operationalising co-benefits, therefore, we first explore what approach to mitigation a country such as India should take, and why. Since this issue is not the primary thrust of this paper, we present the argument only in brief, with reference to the necessary literature.

First, the concept of CBORRC is the correct point of reference for assessing what countries should do with regard to climate mitigation. However, there is little agreement on how both responsibility and capacity are to be defined, with disagreement generally running along North-South lines (Rajamani 2011: 124-25). By no metric, though, does India emerge as a country with the major responsibility for the problem. The warming impacts of greenhouse gases (GHGS) are proportional to the concentrations of GHGS. Looking at the cumulative emissions in the atmosphere from as late as 1970 to 2009 (a time period that actually understates the contributions by industrialised countries), India had contributed 3.3% of cumulative emissions, as compared to 24.4% for the us and 13.5% for China (Jayaraman et al 2011b: 139).[3] On the basis of annual per capita emissions, India's emissions at 1.7 tonnes per person are about 25% that of the global average, placing India at the very bottom tier of emission levels (WRI CAIT 2011). Arguing that India is a "major emitter" just because its current annual emissions (about 4% of the world total) are among the five highest by countries at present (ibid) may point to a salient fact, but does not translate to responsibility, because it both ignores past contributions and does not contextualise the total emissions against the number of people whose development interests are supported by those emissions.

Second, the arguments above do not, in fact, support a position that India should continue with a business-as-usual approach to development. Instead, there is a strong case for India to re-examine its approach to sustainable development, while not giving up on the necessity, indeed imperative, to eradicate poverty and improve living conditions for its citizens. To begin with, if global emissions are to reach half of the current levels by 2050, as the Intergovernmental Panel on Climate Change (IPCC) projects as required, then even if industrialised country emissions tend towards zero, emissions from developing

countries as a bloc necessarily need to slow down and even decline (Baer et al 2008: 15; Jayaraman et al 2011a: 58). As a large developing country, India must playa role. In addition, a consistent application of India's own reference to ethics in climate change would suggest that the current state of scientific knowledge confers on India an obligation to not completely ignore climate impacts in our development strategies. This argument is amplified by the fact that India's poor are among the most vulnerable to climate impacts. There is a political corollary to this ethical argument: the least developed countries and small island states increasingly view India's role in climate negotiations as unsupportive of effective action (Dubash 2012: 15-16; Raghunandan 2011: 15). Both in terms of winning the support of our least developed allies and in terms of great power aspirations, India has to creatively contribute to climate mitigation, albeit in a manner compatible with our level of development and our capabilities.

Finally, the requirement, then, is for a nuanced approach that allows India to pursue its development and poverty eradication goals, but do so in a manner that reduces fossil fuel consumption and therefore greenhouse gas emissions. A systematic approach is required to consciously identify areas where development goals and climate mitigation objectives not only align, but also reinforce each other; in other words, co-benefits. This in turn calls for a decision-making framework for assessing synergies and trade-offs. It should be noted that such an approach need not - and likely will not - always prioritise a low carbon option over others. Instead, it implies that climate change mitigation is seen as one among multiple development objectives against which policy choices are assessed.

The primary reason to develop and apply such a methodology is to enhance the quality of domestic policymaking, so as to make maximum use of the various policy initiatives currently under preparation. However, as suggested earlier, there is also a potential secondary gain in terms of the coherence of India's international negotiating position. The credibility of a co-benefits approach would be enhanced when it is backed by an explicit decision-making methodology. Not having such a methodology opens India to the criticism of tautology: measures that bring co-benefits are those we implement, and we implement those that bring co-benefits. Instead, a framework such as the one suggested here would make clear, on the basis of independent criteria applied through a uniform process, just which actions are fully justified by India's co-benefits approach, and which actions may be good for mitigation outcomes but would set back our domestic development interests. The latter actions would then clearly require international support.

Towards Operationalising Co-Benefits

Multi-Criteria Analysis

While the objective of maximising synergies between climate and development policies is widely written about, the literature on how best to do so is still emerging. One strand of the literature emphasises attention to poverty alleviation by, for example, limiting climate mitigation action in poor countries only to cases where there are clear poverty-limiting benefits (CDKN 2011: 2). A set of case studies of middle-income countries leads to the idea of promoting "poverty-alleviating mitigation actions" (PAMAS), which have the objective of limiting poverty while at the same time reducing emissions (Wlokas et al 2012: 19-21). Others have examined linkages between climate mitigation and the full suite of Millennium Development Goals (AEA 2011: Kreft et al 2010: 9-14). An analysis based on an integrated assessment model seeks to demonstrate that there are cost gains when climate protection policies are combined with other objectives related to energy security and local air pollution, as a way of making a case for a co-benefits approach (McCollum et al 2011: 429). While all these studies provide arguments for a co-benefits approach, none of them develop an explicit methodology that would guide policymakers in applying such an approach.

Implementing MCA consists of several steps (UK DCLG 2009: 30-45). First, the context for the decision - the decision-makers, other players involved, the broader policy context - is identified. Second, the options to be appraised are delineated. Third, the criteria for assessing the consequences of each outcome are laid out. Fourth, each option is scored against the criteria by the stakeholders. Fifth, any weights being used are applied to the options. Sixth, the resultant scores (scoring + weights) are assessed. Finally, the results are examined and subjected to sensitivity analysis. As mentioned above, all these steps ought to be done through a transparent process with the participation of stakeholders in order to maximise the validity of judgments, the learning that the process will engender, and political consensus around the final decision.

Versions of MCA are increasingly being used in decision-making. For example, European Union countries use MCA for pro-curement over a minimum limit (UNEP 2011: 48). In the United Kingdom, MCA is used in a number of decisions by local government, and was also used in transport-related decisions (UK DCLG 2009: 18). MCA is considered particularly useful in environmental decision-making, where the challenges of multiple objectives, choices, trade-offs, and valuation are particularly important (Brown and Corbera 2003a, 2003b: Ss1; Ministry of the Environment, Japan 2009; Munasinghe 2007; Munda 1995; Ramanathan 2006).

The most ambitious effort to develop a MCA framework for climate policy with relevance for both mitigation and adaptation has been attempted by the United Nations Environment Programme (UNEP 2011: 103-30). The framework is built around a "hierarchical criteria tree" containing generic criteria divided into a number of categories. These include financing; GHG mitigation; social criteria such as reducing inequity; environmental criteria; climate impact criteria; and political and institutional criteria, such as improved governance. The study develops a menu which can then be fine-tuned and applied in select country cases. Although the approach elaborated in our paper was developed separately and independently, it shares several features with the UNEP study. However, we have also sought to keep in mind the practical realities of limited time, resources and capacities of policymakers, as a result of which the approach here is designed less as a menu for all possible contexts and policy options, and more to provide a parsimonious and accessible tool.

4. A Methodology for Application of MCA

A tool for the analysis of co-benefits needs to be easily understood, transparent, participatory; and tractable if it is actually to be put to use for deliberation and policy analysis by governments and other stakeholders. The ultimate goal of the framework proposed here is to contribute to decision-making that explicitly and intelligibly contributes to multiple outcomes, and does so in a manner that also accounts for implementation challenges and costs.

To begin with, we use the following terminology in laying out this framework:

- **Outcomes:** Refers to the ultimate outcomes of the policy process, such as economic growth, inclusion, local environmental gains, and GHG mitigation;
- **Policy objectives:** Refers to the proximate objectives of policies in specific sectors, such as enhancing appliance efficiency or improving public transport;
- **Policy instruments:** Such as taxes, regulations, market instruments, or combinations of these, designed to achieve objectives.

We propose a two-step methodology. The first step is a co-benefits analysis that assesses whether and to what extent a given policy objective, if achieved, delivers on co-benefits across multiple outcomes. For example, we seek to establish if a particular policy objective is likely to simultaneously enhance economic growth, inclusion, local environmental gains and GHG mitigation, or whether there are trade-offs across these, and the extent of those trade-offs. The outcome of this analysis can provide the basis for screening out deeply problematic policy objectives whose other impacts outweigh any GHG mitigation benefits they may have, and screening in those that simultaneously achieve multiple objectives. This step looks only at the desirability of a policy objective, setting aside considerations of cost and implementability.

The second part of the analysis introduces pragmatic considerations towards implementation - an implementation analysis. This step requires, first, detailing the policy instruments (regulation, taxes, creation of markets, investment promotion incentives, labelling, etc) with which to achieve the policy objectives that are selected using the co-benefits analysis. The implementation analysis looks at the transactional and financial costs of implementation.

The result of this process is a set of prioritised objectives, each with an assessment of the likely implications for the ultimate desired outcomes, such as economic growth, inclusion, local environment, and climate mitigation. For each objective, the methodology requires the preparation of a package of policy instruments with an assessment of the implementation issues and challenges. Next, we detail the two steps in the analysis in more detail, providing examples of the approach.

Co-Benefits Analysis

Policymaking in India, as in other countries, has to increasingly take into account multiple objectives. It is no longer adequate for a particular policy to promote growth if it undermines sustainability or inclusion, or vice versa. The co-benefits analysis is intended to provide a framework to analyse the impacts of any policy objective under consideration on the full range of outcomes across economic, social and environmental goals. The intent is to compel explicit consideration of these impacts, both positive and negative,intopolicy formulation.

The specific articulation of outcomes for a co-benefits analysis should be based on a clear understanding of national priorities. For example, in some cases stimulating growth may be paramount; in others, generation of jobs may dominate; and in yet others, local environmental pollution may be high up the list. Since this framework was initially developed in the context of India's Twelfth Five-Year Plan, for the purpose of this exercise we have followed categories used in the Plan process, and suggest a minimum set of four outcomes against which' policy objectives should be assessed:

- Economic growth: Growth is necessary to create the economic wherewithal for improved livelihoods and lifestyles for the population, and to enable higher provisioning for necessary physical and social infrastructure. While growth is a complex category that includes multiple interactive effects, we suggest that an analysis of economic growth include, at a minimum:

- Impacts on aggregate demand and efficiency of resource use;
- Creation of jobs;
- Implications for energy security and in particular for fuel import costs.
- Inclusion: The poorest and most vulnerable should gain a substantial share of this growth so as to reduce poverty and inequality, improve access to goods and services, and also act as an engine for further development; this is an explicit objective of India's planning process. Inclusion has at least two dimensions:
- Improving outcomes for the poorest and most vulnerable;
- Reducing disparities in distribution and limiting inequality.
- Local environment: The outcomes of many low carbon policies also have local environmental gains as well as related benefits in health or other well-being, as greenhouse gas emissions are often (although not always) accompanied by other pollutants, unsustainable resource extraction, and unhealthy or otherwise poor lifestyles. Particularly salient are:
- Pressures on land;
- Pressures on water, and water pollution;
- Air pollution.
- Carbon (and other GHG) mitigation: The promotion of development in a low carbon manner.

An essential element of the methodology is that all qualitative arguments and scoring should be subjected to a process of consultation and feedback to identify weaknesses in the argument and/or disagreements over the scores. This process of discussion and deliberation should involve a wide range of stakeholders, including technical experts, policymakers, industry, users, and civil society and local communities, in order to capture all perspectives. The expectation is that with repeated iteration, the knowledge base on which the co-benefits analysis is built will improve through the identification of key issues, addition of information, and refinement of arguments and scores. Indeed, facilitating a structured discussion is itself an important objective of the co-benefits analysis.
The co-benefits analysis, in sum, is intended to provide:

- Identification of the causal mechanisms (with positive and negative impact) through which policy objectives impact each outcome;
- Identification of research gaps;
- A structured basis for deliberating on the likely outcomes of policy objectives;
- Initial indication of the impact of each proposed objective on multiple outcomes.

We now provide some examples that help elucidate the approach. The policy objectives analysis is illustrated Through three examples: (a) inducing a modal shift in urban transport towards public and non-motorised transport; (b) promotion of biofuels, specifically bioethanol and biodiesel; and (c) improving the efficiency of domestic appliances. Each of these policy objectives is first independently assessed and scored for its impacts on the four chosen co-benefits. Subsequently, theobjec-tives are compared with each other, based on the scores attained by each of them.

Therefore, issues of feedstock availability as well as issues relating to land-use and the risks and costs associated with relatively new technologies and processes, are quite different for the two kinds ofbiofuels. It is for this reason that whereas a mandatory 5% blending of petrol with bioethanol has been in place for several years, and a 10% blending mandate has been announced but not enforced due to availability issues, no mandates at all have been announced for biodiesel. The policy explicitly states that bioethanol blending will be mandatory up to the target year, whereas biodiesel blending levels will remain "recommendatory in the near term" (MNRE 2009: 4). For these reasons, bio-ethanol (Table 2, p 53) and biodiesel (Table 3, p 55) will be treated separately in the analysis to follow.

(c) Introducing Super-Efficient Electrical Appliances
The electricity sector is responsible for 38% of GHG emissions in India (MOEF 2010b). The domestic and commercial sectors together consume about 34% of the electricity consumed in India (MOSPI 2012). Electricity consumption by these sectors has been growing at over 9% pa, primarily driven by the electrical appliances used in domestic and commercial buildings. It is expected that sales of appliances such as fans, refrigerators, televisions and air conditioners will increase significantly due to rising prosperity. It is also known that there is significant potential for improving the energy efficiency of these appliances, thus leading to reduced electricity consumption and hence lower GHG emissions (Chunekar et al 201l). Therefore, this is a policy objective that deserves consideration. Scoring for this objective is given in Table 4 (p 56).

Interpreting the Results of Co-Benefits Analysis:
It is important to interpret the results of the co-benefits analysis appropriately. The co-benefits analysis offers a way to systematically examine the strengths and weaknesses of a policy objective across multiple desired outcomes. Using the

examples in Figure 5, both the urban transport modal shift and the appliance efficiency improvement objectives yield positive outcomes across all the co-benefits outcomes. By contrast, the biomass fuels objectives score lower, and score very low on some of the objectives, indicating negative outcomes. This is also reflected in the graphical representations of the biofuel examples, enclosing smaller areas as compared to the urban transport modal shift and appliance efficiency improvement examples. The former two are therefore better suited to achieving multiple objectives simultaneously. When examining any single objective, the analysis also allows the identification of possible trade-offs. For example, promoting a modal shift in urban transport is likely to strongly support both inclusion, and environmental objectives, but is neutral, at best, with regard to growth objectives.

Implementation Analysis

Agreement on policy objectives is of limited use if progress is not made at the same time towards achieving those objectives through specific policy instruments. The second part of the analysis therefore focuses on understanding implementation challenges.

The starting point is to develop a menu of policy instruments that would contribute to achieving a desired policy objective. These instruments would typically cluster around a few categories: regulations, creation of markets, taxes, subsidies, voluntary measures and disclosure instruments. There are variations on each of these categories based on the scope of the instrument, the monitoring and verification systems put in place, and so on. The underlying reason for developing this list of instruments is the recognition that instruments have different characteristics when it comes to implementability, both interms of ease of implementation on the one hand and financial costs on the other. This step of the analysis helps to identify obstacles to implementation along both dimensions.

The template used for the analysis begins with a summary description ofthe policy instrument - how it works, the policy actors, and the timeline. For the last, we consider 2-5 year implementation periods as short term, 6-15 as medium term, and >15 aslong term. The discussion of implementation that follows is divided into two components that seek to explore the sorts of obstacles that often hinder the implementation of policy: ease of implementation and financial costs.

The analysis of ease of implementation is divided into two categories: political economy and transaction costs. The political economy component is aimed at understanding the extent of the likely challenges ex ante to putting in practice a policy instrument. The presence of stakeholders who might lose from implementation and therefore might mobilise against it, for example, would constitute grounds for a negative score, while the presence of actors who would gain and support the policy instrument would result in a positive score. Analysis of transaction costs is intended to capture several elements salient to the implementation of a policy instrument ex post. These include: the presence or absence of specialised institutions and/ or human resources skills required to implement the policy; the existence or not of substantial monitoring and verification issues; and the scope for rent seeking. As With the objectives discussion, the analysis is then translated into a qualitative ranking to allow comparison on a 1-5 scale, with higher numbers indicating greater ease of implementation and lower numbers indicating potential challenges to implementation.

The analysis of costs is intended to capture in a relational manner the degree of challenge anticipated in mobilising the finance needed to implement a policy. While a more complete assessment would require careful quantitative analysis, the task here is to qualitatively identify factors that might ease the path to raising finance, or make it more difficult. Once again, the analysis has two components: unit-cost of the instrument and financial feasibility. As with the previous category, the outcome is scored from 1-5

One measure of the cost of an instrument is how it affects the unit cost of an associated service or benefit, for example, cost per unit of energy provided or saved. The cost per unit of energy saved requires benchmarking a policy instrument againstthe existing dominant form of providing energy in a similar form for a similar purpose. Using the three categories of change developed above - fuel supply shift, efficiency increase and structural change in demand - the analysis is conceptually clear for the first two. So for a new source of energy, such as solar power, or for efficiency improvements, the benchmark will be the existing marginal costs of utility-based generation. For the third category, structural changes in demand, the analysis is conceptually harder since the comparator cost is less clear. For a modal shift away from private transport and towards public transport, or a shift from road to rail freight, for example, the appropriate benchmark is the existing cost of providing a unit of service - passenger mile travelled or freight mile travelled. In each such case, the benchmark cost used must be carefully justified. Formal techniques such as cost-benefit analyses could be employed to arrive at the actual cost per unit service provided or saved. A highly affordable instrument, that is, one whose assessed unit costs are very low, would receive a score of 5, and a highly expensive instrument would receive a score of 1, with other instruments falling in between.

The second component is the financial feasibility of implementing the policy instrument, which translates to the ease of accessing or mobilising finance, which is in turn a function of project risk, including the risk profile of the borrower. Relevant considerations include the scope for recovering the cost from consumers or users, the gestation period of the project, and the amount of upfront investment required in the project. For example, projects requiring high upfront investments and with low possibility of recovering the costs from users would be harder to finance as they would essentially have to rely on government budgetary support for long periods of time. On the other hand, projects that either require smaller investments or would be backed by direct or indirect cost recovery mechanisms would be easier to finance. For example, public investment in rail freight capacity mayor may not yield adequate returns, depending on the pricing structure for rail freight, which in turn is subject to political economy considerations.

The qualitative analysis of implementability issues across both the dimensions above is likely to be a difficult challenge, but we suggest that it is better to explicitly undertake this exercise than to not consider implementation issues at all. As with the co-benefits analysis, a critical element of the methodology is reflection, deliberation, consultation, and debate over the analysis in order to refine policy instruments and assess prospects for implementation. Below, we provide examples of two competing policy instruments to illustrate the analysis.

Policy Instruments for Enhanced Appliance Efficiency

There could be two broad approaches to achieving the objective of introducing super-efficient appliances, each of which has two sub-approaches. At the first level, the instruments could either be incentive-based (encourage the adoption of efficient appliances) or penalty based (discourage the purchase of inefficient appliances). At the second level, the instruments could either target manufacturers or they could target consumers. For illustration, we present an analysis of two incentive-based instruments - one targeting consumers and the other producers.

Consumer Incentives

Consumer incentive instruments would essentially offer rebates or discounts to consumers buying efficient appliances, along with some mechanism to reimburse dealers or manufacturers if the rebate or discount is on the product price.

Incentivising Manufacturers

An alternative approach to improve the efficiency of domestic appliances could be through a policy instrument that incentivises manufacturers to

7. Conclusion

The framework laid out in this paper is intended to provide a basis for a rational and structured approach towards co-benefits-based climate policy formulation. It seeks to provide a Way to explicitly address the achievement of multiple objectives of policy, in a manner that provokes discussion and debate, makes explicit what are often implicit assumptions, and brings to light considerations that are often hidden, such as the political economy of implementation.

India has formally espoused a co-benefits approach, but in the absence of clear specification, it risks being little more than an ad hoc and often ex post justification for business-as usual policies. If systematically applied, however, a co-benefits approach can stimulate real shifts in policy direction, not only towards lower carbon futures, but also more explicit efforts to internalise inclusion and local environmental gains. And, as discussed earlier, it can also enrich India's international negotiating position.

The methodology is founded on qualitative judgment, which may give some readers pause. However, it is important to realise that the framework design calls for the qualitative judgment to be backed by clear argumentation and detailed reference to supporting theoretical and empirical literature. In other words, the intent is to generate informed and rigorous judgment, not guesswork. Moreover, the framework allows for the results of quantitative work, including modelling results, to be represented within the template. In this sense, this is a structured tool that allows existing work to be better summarized and placed within an analytical framework; MCA analysis is intended as a complement to other forms of analysis. Finally, the framework calls for judgment to be embedded within a process of transparent discussion and deliberation, so as to refine understanding and analysis over time, and identify weak points. If used consistently and properly, a co-benefits analysis will increasingly contribute to the ability to make informed judgments. Given the absence of methodological rigor in most prevalent climate policy formulation, we believe the adoption of such a framework will be a step forward.

There are several policy mechanisms already in process that would be enhanced by the application of this tool. Various missions of the NAPCC could deploy a co-benefits approach to choose among objectives and instruments, as could the final report of the Expert Group on Low Carbon Strategies for Inclusive Growth of the Planning Commission. Indeed, the draft

Twelfth Plan, which draws on the Group's interim report, makes explicit reference to a co-benefits approach, using an earlier iteration of the framework proposed here. Similarly, many states have produced state action plans on climate change, and more are in progress. These plans tend to have large numbers of unprioritised objectives and instruments. This approach could provide a basis for seeking broader feedback, focusing criteria, and subsequently prioritizing on the basis of co-benefits and implementability.

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