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Global climate policy and local energy politics: is India hiding behind the poor?

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Global climate policy and local energy politics: Is India hiding behind the poor?

Mark Daniel Jaeger and Katharina Michaelowa

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Abstract

Along with the large middle income countries Brazil, China and South Africa, India has been put under increasing pressure to shoulder parts of the mitigation burden and commit to national emission reduction targets. India, however, refers to its limited capacity and wide-spread poverty. Is India hiding behind its poor? While others examined the distribution of emissions within the country to answer this question, we study domestic policy making at the examples of energy subsidies and access to clean energy. Empirical evidence suggests that domestic policy making is at least partially consistent with the pro-poor arguments advanced at the international level. Given their large number and the country's democratic system, the poor do have some weight in Indian politics. However, pro-poor policies end where they do not translate into greater vote shares. Moreover, India's international position ignores the existing complementarities between climate friendly and pro-poor activities.

Policy relevance

Despite its recent growth spurt, India's concern to fight energy poverty at home before engaging in any commitments on climate policy at the international level should be taken seriously within the international negotiations. Policy making in India is driven by democratic incentives, which, in this case, work to the benefit of the poor. Pro-poor policies may not go as far as one would wish from a developmental perspective, but the impact of the masses of the poor on domestic policy making cannot be ignored.

This also provides some broader lessons for mitigation and adaptation policies in developing countries: Politicians respond to incentives and support will only reach the needy if the appropriate incentives are in place. While we observe some significant commitment and implementation problems even in a democratic country like India, such problems must be expected to be even more serious elsewhere. This should not be overlooked when designing institutions for the allocation of climate finance such as the Green Climate Fund.

Keywords

International negotiations, India, energy politics, energy subsidies, electrification, clean cooking

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1. Introduction

India is a highly influential actor in the international climate negotiations. Given the size of the country and the recent growth of its economy, it now contributes substantially to global greenhouse gas emissions. Hence along with the large middle income countries Brazil, China and South Africa, India has been put under increasing pressure from industrialized countries, and also from some developing countries highly vulnerable to climate change such as Bangladesh and the Maldives, to shoulder parts of the mitigation burden and commit to national emission reduction targets (Michaelowa and Michaelowa, 2012).

India is itself highly vulnerable to climate change, but points at the historical responsibility of industrialized countries for the current levels of CO₂ in the atmosphere, and requests a right to development and economic growth that should first allow lifting millions of people out of energy poverty characterized, notably, by lack of access to electricity and clean cooking fuels (Dubash, 2012).

As a leader of the G77, India voices this position not only for itself, but also in the name of the large number of other developing countries. During all of the international climate negotiations following the Conference of the Parties (COP) in Copenhagen 2009, India has been one of the most fervent defenders of a continued clear and unconditional separation between two country groups with and without binding commitments (see, e.g., Rajamani, 2013, p. 164)

These strong normative arguments that lead to a rejection of all responsibility (and hence obligations) for India itself have raised suspicions that India may be hiding behind its poor. Bidwai (2012, p. 7) for instance, speaks of “*a shield that enables India’s elite to hide behind the poor while indulging in profligate consumption and evading responsibility towards the underprivileged in its own society – an overwhelmingly important imperative, to which it only pays rhetorical obeisance.*” Similar formulations were used in a report by Greenpeace (2007).

In this paper, we analyse the consistency of domestic energy policies against India’s focus on pro-poor arguments in international climate negotiations based on available statistics, documentation of domestic politics, and interviews with negotiators, national politicians, and Indian researchers. By doing so, we intend to add one specific piece of information to a broader debate about the links between national and international climate politics (for India, see, e.g., Dubash, 2009a). However,

we will not discuss whether potential support for poverty reduction in domestic politics is instrumental for a more general implementation of pro-poor policies, or whether politicians only carry out such policies to gain electoral support. Such discussions require a different and more detailed theoretical framework that is provided elsewhere (see Jaeger and Michaelowa, 2015, drawing on Finnemore and Sikkink, 1998). Moreover, our analysis does not aim to assess the determinants of India's international negotiation strategy. Such two-level games are examined elsewhere (Betz & Hanif, 2010; Pittel & Rübbelke, 2008). In addition, a number of rich studies explaining the Indian position and strategies in international negotiations in general, and the climate negotiations in particular, already exists (see Narlikar and Narlikar, 2014; Narlikar, 2010, 2006; Chadda, 2014; Dubash, 2012, 2009a, 2009b; Michaelowa and Michaelowa, 2012; Mohan, 2003). However, our study enriches the domestic politics foundation of this literature.

The most straightforward way to check the consistency of domestic politics with India's international pro-poor rhetoric is to assess whether its domestic energy policies are actually oriented towards the poor.. The corresponding analysis of India's national political economy will be presented in section 2 based on the politics of energy subsidies (section 2.1) and access to clean energy (section 2.2). Section 3 draws the conclusions, and suggests some further avenues for a climate friendly, and yet pro-poor development.

2. The concern for energy poverty

Despite an impressive GDP growth of over 250% between 1990 and 2010, and CO₂ emissions growth of over 100% during the same period (IEA, 2013b), India is still a poor developing country, with a GNI per Capita of USD 1,570 in 2013 (World Bank, 2014). Widespread energy poverty, defined as lack of access to modern energy services, including access to both electricity and clean cooking facilities (i.e., fuels and stoves that do not cause in-door air pollution), supports the notion of India as a poor country: at least 25% of the population lacks access to electricity¹ and 66% use

¹ Note that percentages vary widely depending on sources. While the IEA presents the figure of 25%, the 2011 population census reports that 33% of all households lack access to electricity (Government of India, 2011). Since rural households tend to be bigger than urban ones, the IEA number that refers to the population share (rather than

traditional biomass for cooking (IEA, 2014; Ramji et al., 2012, p. 9; Government of India, 2011). There is a strong need to improve access to basic energy resources (see also Dubash, 2009a, p. 50f.).

We assess the coherence between arguments by Indian officials made at the international level and actual policy orientation towards reducing energy poverty. Is the domestic discourse on energy poverty consistent with India's pro-poor stance at the international level? And if so, does it translate into concrete policies conducive to the reduction of energy poverty? The academic and political "hiding behind the poor"-debate that the Indian Greenpeace report has provoked over the last few years primarily looks at the relative per-capita emissions of different parts of the Indian society. (see Chakravarty and Ramana, 2012). In contrast, our intention here is to directly examine national politics or, more specifically, energy politics, i.e., those politics most clearly related to emissions, and which may or may not be pro-poor.

Reducing energy poverty requires re-distributive policies that may put well-organised special interest groups against the masses of the Indian poor. Olson's (1965) seminal work on collective action suggests that powerful lobbies arise from small, rather than large groups, because the former are more easily organised. Other characteristics facilitating lobbying activities include education and proximity to the centre of decision making. These characteristics do not apply to the masses of the poor. This leads us to expect that their voice will be hardly heard, and that the wealthier, urban middle class or business lobbies with vested interests in energy provision and use will dominate the debate.

To examine this hypothesis empirically, we consider two areas relevant to energy poverty, namely (1) pricing and subsidy policies, and (2) access to clean energy. These are the key areas that energy poverty reduction policies would need to address. Information is based on existing studies and documentation on prices and subsidies, media reports, and on a series of semi-structured expert interviews carried out in fall 2013 with policy makers, senior members of the administration, academics, and members of the civil society (see appendix for the list of interviews). The media reports considered were based on a keyword search in the two major Indian newspapers Times of

households) should in fact be even higher. To some extent, different numbers may reflect different definitions of electrification (see also the section on access to clean energy below).

India and Hindustan Times during the period of their full text coverage by the search engine Lexis Nexis (Hindustan Times since 2004, Times of India since 2010). Keywords combined specific sectors (e.g., “electricity”) with indicators of public protest (e.g., “strike”) to provide an initial idea about the salience of the different issue areas and the activities of the different stakeholders. This information was used for the preparation and cross-validation of the interviews as well as for the illustration of certain aspects in the text.

Moreover, extant studies on policy making in India, be they of more general, theoretical nature or related to one of the policy areas examined here provided a useful basis for our discussion (e.g., Chadda, 2014; Santhakumar, 2008; Kale, 2014).

2.1. Pricing and subsidy policies

Within the Indian economy, kerosene, liquefied petroleum gas (LPG) and electricity are – at least for some users – directly or indirectly subsidized, a measure that is frequently justified as to the benefit of the poor. However, there is ample evidence of the distortions produced by this system.

Regarding kerosene, ill-targeting occurs primarily for two reasons: First, the calculation of the subsidies is based on per-capita cooking needs while the main use of kerosene by the rural poor is for lighting (because electricity is not available). This leads to an over-proportionate benefit of the urban population who indeed uses kerosene primarily for cooking (TERI, 2012a, p. 23). Second the poor that should in principle be the only beneficiaries of the subsidy cannot be appropriately identified by the below-poverty-line (BPL) cards used for that purpose because BPL estimations are not updated regularly, and there is wide evidence of ghost BPL cards (Rao, 2012, p. 37; TERI, 2012b, p. 18f.). According to the NCAER (2005) roughly 40% of subsidized kerosene distributed through the public distribution system (PDS) was diverted (18% to non-household use, i.e., adulteration, 17% to the open market, and 2.6% to households without BPL cards (see also TERI, 2012b, p. 20).

For LPG, there is not even an attempt to target the poor. No BPL cards are necessary to obtain LPG at the subsidised rate. Since LPG use positively correlates with income and urban areas (only 8-9% of the rural population use LPG as their primary source of energy for cooking, against 62% of the urban population) it is primarily the urban upper and middle class that benefits from the subsidy

(TERI, 2012a, p. 21). Moreover, there is evidence that retailers withhold some of the subsidized supply under the PDS to sell it to small commercial businesses, notably restaurants, at a higher price (TERI, 2012b, p. 13). People often change to piped natural gas (PNG) without surrendering their LPG connection (Lang and Wooders, 2012, p. 14). This also increases the amounts retailers can resell at a higher price. Chawla et al. (2005) estimate that overall, the most affluent 6.75% of the Indian population benefit from 40% of the subsidy.

Electricity subsidies, too, primarily benefit urban upper and middle classes (Komvives et al., 2005): more affluent people since they use considerably more electricity, and city dwellers because many rural areas are not even connected to the grid. This is true despite significantly stronger dynamics towards universal coverage than for LPG (see Ramji et al., 2012, p. 9), despite strong variation between states (see Kale, 2014), and despite electricity prices that increase to some extent with higher consumption (TERI, 2012a, p. 24). Currently, only 65% of the rural population indicates electricity as their primary source of lighting, against 90% in urban areas (Ramji et al., 2012, p. 8). However, those parts of the agricultural households with full access often benefit substantially, and not only for household use, but for instance, when operating water pumps for irrigation free of charge.

In Table 1 in the online appendix further energy sources that receive subsidies, including renewables, are discussed along these lines. Although the net impact is not clear in all individual cases (notably due to the indirect effects), overall, the impression clearly dominates that most of the subsidies are regressive. This corresponds to the conclusions of the large number of existing benefit incidence analyses.

It seems that in line with Olson's collective action arguments, the current main beneficiaries, notably the urban middle class, irrigation agriculture, and some parts of industry are much better placed to defend their interest. Even if a number of Indian states (e.g., Uttar Pradesh, Madhya Pradesh, Bihar and Jharkand) provide lower electricity prices for rural than for urban consumers (Sreekumar and Dixit, 2010, p. 17), these states tend to be those that are dominated by a relatively small number of large rural estates such as the Punjab. Small peasants benefit less from the subsidies, but suffer the negative consequences of ground water depletion and irregular electricity supply (TERI, 2012, p. 24).

Interestingly, our review of press articles shows that the relevant lobbies hardly appear in the public. Protests against the reduction of subsidies are almost always initiated by opposition parties who pro-actively take the lead and argue in a pro-poor normative way, even when actual policy benefits clearly go to other groups of society. Furthermore, party positions opportunistically depend on who happens to be in government (budgetary responsibility) or in opposition (trying to win public support without budgetary concerns), as was also acknowledged in interviews with high-level politicians.²

However, the flip-side of systematic protests to any cuts in subsidies is that both central and state governments keep trying. The downside of the existing system is widely and openly discussed, not only by research institutions and NGOs, but also in the press, which uses harsh criticism at times, notably when talking about fuel distortions. As an example, in 2011-2012 the Times of India included twelve articles explicitly targeting “the kerosene Mafia” by pointing at the financial benefits out of illicit transactions with subsidized kerosene and related violence.

Governments now attempt to move towards a general replacement of distortive and often ill-targeted subsidies through direct financial transfers using the country’s new system of unique identification numbers based on biometric information (UID) (Mahalingam, 2013, p. 417). In spring 2015, the Modi government announced that it will replace LPG subsidies by direct transfers to people’s bank accounts. It also abolished the subsidies on diesel, although the overall distributional effect in this context is less clear. And petrol subsidies, which are clearly regressive, were already abolished by the previous government in June 2010.

From the perspective of energy subsidies and pricing, it thus becomes clear that Olson’s theory only explains part of the story, inhibited by budgetary pressures and some public contestation. Let us move on to the discussion of access to clean energy (cooking and lighting fuels) to see whether the situation in this second policy field confirms this finding and / or suggests why this may be the case.

² Interviews with Kariya Munda, Deputy Speaker of the Lok Sabha, Bharatya Janata Party (BJP), and Vijay Prakash Saha, Chairman of the Energy and Environment Committee, Janata Dal (United) (see appendix). Both confirmed that the protests relate much less to any particular ideological orientation of the parties than to the simple status of being in opposition.

2.2. Access to clean energy

Since the beginning of the 21st century, and particularly in the 2009 general election, household access to electricity turned into a key policy focus at all government levels. Earlier on, electrification was thought to be primarily important for agriculture to ensure a sufficient food production. The shift to the household level came when the success of the Green Revolution had guaranteed the first objective. The first major government program was the BJP government's Rural Electricity Supply Technology (REST) mission in 2001, which was followed in 2005 by the Congress government's Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY).

As opposed to what Olsonian expectations might suggest, the declared objective was not primarily to ensure regular access to electricity for urban households, but to really cover all Indian households and notably the rural poor. Political campaigns by all parties went into this general direction despite the urban middle class' discontent about frequent power cuts and irregular supplies that they have to suffer until today.

There are many examples that show how important this issue was for politicians of all parties and at all levels of governance. Along with the general orientation towards households sketched out above, the major slogan for the general elections shifted from 'khana, kapade, makkan' (food, clothes, housing) to 'bijli, sadak, pani' (electricity, roads, water). Several state and diverse local elections were won on the promise of providing electricity. Our review of press articles revealed that even people with otherwise very limited chances to win any election could do so, if they convincingly promised electrification. In April 2012, for instance, the Times of India reported about the election of a Dalit woman as head of a village of about 2000 inhabitants – despite the two attributes (being female and being a Dalit) that would generally be expected to greatly reduce the chances for election (Parmar, 2012).

Rural electrification also forms an important part of promises before elections. The Bihari Chief Minister Nitish Kumar (Janata Dal) even stated that he would not run for a 2nd term if he did not reach 100% electrification before 2015. And politicians also fear that they may be effectively judged on the basis of successful electrification. Hence, ten months before the election in Madhya Pradesh in November 2013, the state government started to buy electricity from neighbouring states to ensure an uninterrupted 24-hour supply for all citizens (at least until the elections). For a

systematic discussion of political electricity supply cycles in India, see Baskaran, Min and Uppal (2014).

The above examples clearly demonstrate that Indian politicians do not just cater to a well-organized urban middle-class or industry when it comes to electrification campaigns. In contrast, they seem to consider the vote bank provided by the large number of the poor. This is in line with Brown and Mobarak's (2009) general results on the relationship between electrification and democracy. However, there are clear limits to this optimistic perspective. For many politicians, simply connecting villages to the grid already does the job. Less visible in national statistics, but at least as important in reality, is actual coverage, maintenance and regular supply. It should be noted that according to official statistics, a village can already be considered as electrified if only 10% of the households actually have access to electricity.³ According to Surya Sethi, former Principal Adviser for Power and Energy and member of the Planning Commission of the Government of India, this definition itself shows the half-hearted concern of Indian politicians.

In addition, the Pune-based NGO think tank Prayas reports multiple barriers for poor households to obtain (and retain) access to electricity even if their village is formally connected to the grid. These include the harassment by distribution companies, the multiple formalities to obtain a household connection, and the cost including expected bribes (Sreekumar and Dixit, 2010, p. 12ff.). Often, flat rate payments are required while supply is known to be irregular – making the rates high for the little benefits received (see also Sehgal et al., 2012, p. 25). Many states have special provisions for the poor but actual coverage remains low (Sreekumar and Dixit, 2010, p. 15). As soon as consumption temporarily exceeds a certain maximum (corresponding to two bulbs and a fan), special treatment is stopped. Moreover, people are disconnected if they do not pay on time.

Counting actual access rates at household level would hence lead to substantially lower success rates of public electrification programs. And even this would result in an over-estimation of actual access when taking into account that supply is irregular and often available only at times where people cannot really make use of it. Counting access rates accordingly would hence further reduce the electrification rate (Sehgal et al., 2012, p. 15).

³ For the exact definition, see Ministry of Power (MoP) (2006).

The general distrust in politicians to settle these issues in the foreseeable future is evident from media reports, and also from a variety of initiatives taken by the civil society to mitigate the problems on their own. Examples are TERI's Lighting a Billion Lives program and other initiatives that try to build on locally available technology and private business incentives to ensure sustainable supply and maintenance.⁴ For politicians, trying to settle the multiple problems of corruption, disincentives, local management of electricity supplies, and maintenance has a much lower benefit than linking the village to the grid. The inauguration photograph will be taken only once. And responsibilities for the missing follow-up can be easily shifted to other entities.

In a similar way, the whole area of clean cooking has been largely neglected by Indian politics in recent years, despite a market potential of up to 160 million households (Venkataraman et al., 2010) – and despite its crucial importance for health, notably for women and children. In fact, this is one of the areas where poverty reduction and climate change mitigation are clearly complementary rather than opposing objectives, even in the short run. In the country as a whole, the use of traditional biomass (firewood and dung) is estimated to cause over 400 000 premature deaths per year (IEA, 2007, p. 573). Given the prevalent patterns of traditional biomass use for cooking, any clean cooking initiative would directly address the poor, and only the poor.

In principle, there are two ways to reduce the negative health impact of traditional biofuel use: The promotion of LPG and the promotion of improved cookstoves. However, hardly any improvement can be found over time (Ramji et al. 2012)..If at all, political efforts have so far concentrated on the promotion of LPG – promising free connections and subsidized supplies. Campaigns to support the use of improved cookstoves do not figure prominently among the list of priorities of Indian politicians. There was only one major program launched by the Ministry of New and Renewable Energy (MoNRE) in 2009, the National Biomass Cookstove Initiative (NBCI), which, however, was geared more towards research and development of new technologies than towards large-scale distribution (MoNRE, 2013).

The problem is that public saliency of the benefits stemming from improved cookstoves (and clean cooking fuels) is very limited. First, the familiar taste of the food and other cultural habits are often deemed more important than health benefits for women (Shrimali et al., 2011). . Second, and

⁴ Interviews with J.K. Mehta (South Asia Forum for Energy Efficiency), Dhairya Dholakia (TERI) and Ibrahim Rehman (TERI), see list of interviews in the appendix.

besides (or because) of persisting cultural obstacles (Crewe, 1997), clean cooking initiatives have a bad history (Barnes et al., 1993). The failure of large clean cooking campaigns in the 1980s is still vividly remembered by the public. Bidwai (2012, p. 187) asserts that not even many NGOs have the stamina to stick to campaigning in this area. Hence, politicians do not become active in this field either. In fact, rather than promoting the use of improved cookstoves, in many states, governments heavily tax these cookstoves (the VAT is 13.5% on average, just like for a luxury good).⁵

In sum, clean cooking neither has any relevant lobby, nor does it have wide-spread public support. The only plausible reason that could currently drive politicians to invest in this field would therefore be a genuine desire to reduce energy poverty. The limited evidence we have for political activities to promote clean cooking does not provide much evidence for such a genuine desire. Rather, the Indian politicians' interests in the needs of the poor seem to end where catering to the poor does not directly translate into a greater vote share.

This is not in contradiction with our findings in the area of electrification and energy subsidies: As opposed to predictions from Olson's theory of collective action where lobbying of a few well-organized groups drives the whole policy process, Indian politicians do – at least sometimes – cater to the poor. But they seem to do so only when this allows them to gain the support of large numbers of people at election times.

3. Conclusion and implications for the international climate negotiations

Based on a review of existing studies, information from the media, and a series of interviews with Indian officials, academics and policy makers, this paper has shown that in India, as a functioning democracy, there are some incentives for politicians to actually cater to the poor in the country. By their sheer number, even the rural poor as opposed to the much better organized urban middle class do have some impact on policy making.

Hence the argument that Indian politicians are hiding behind the poor when they insist on the countries development needs at the level of the UNFCCC does not seem to be fully justified.

⁵ Interview with Vivek Jha, area convenor for TERI's rural extension activities (see list of interviews in the appendix).

However, as evidenced by the difficulties to remove regressive subsidies, the limitation of electricity expansion to connections to the grid without much concern for actual access, and the reticence to advance clean cookstoves, there is much room for even stronger commitment.

Interestingly, some of these are areas in which poverty reduction and mitigation are complementary rather than opposing objectives. The promotion of clean cooking is associated with significant reductions of black carbon, thereby improving poor people's health, while simultaneously mitigating climate change. Similarly, the expansion of access is not necessarily in opposition to mitigation objectives, namely when it works through a promotion of renewable energies. Narendra Modi's plans to make more use of India's plentiful endowment with solar energy point in the right direction. In fact if Modi's objective is to speed up "innovation and cutting-edge research that would reduce the cost of solar energy, making it more accessible to people" (Mohan, 2015), mitigation gains could go way beyond the increased use of solar energy in India alone.

Even though India's internationally voiced concern for the poor is at least partially consistent with its domestic policies, the potential for co-benefits illustrated by the above examples shows that there is ample scope for productive moves towards sustainable economic development in a more comprehensive way. In addition, given India's high vulnerability to global climate change, it is obvious that any influence it may have on a general unblocking of the international climate negotiations – by taking up a progressive leadership role rather than the role of a procrastinator – will also, eventually, benefit India's poor.

To conclude our reflections on the consistency between India's national and international policies, let us clearly delineate the limitations of our study. Our analysis focused on the domestic political economy and complements the existing "hiding behind the poor" debate by focusing directly on political processes. However, the analysis neither intended to assess the normative commitments of politicians on energy poverty reduction and their possible realisation, nor to explain the genesis and/or development of India's international negotiation strategy. In both cases, a substantially different research design would be necessary. This is beyond the scope of this short article. Nevertheless, by focusing on some aspects of the domestic decision making processes, our findings enrich the micro-foundations of the extant international negotiations literature. They can serve as the basis of a more comprehensive two-level analysis in future research.

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- (1) J.K. MEHTA, Regional Manager South-Asia and Pacific and Project Manager Energy Access, World Energy Council (WEC); Chairman, South Asia Forum for Energy Efficiency, 21 August, 2013
- (2) Hari Natarajan, Sr. Technical Advisor, Indo-German Energy Program, Renewable Energy Component, Deutsche Gesellschaft für Internationale Zusammenarbeit (giz), 22 August, 2013
- (3) Dr. Ligia NORONHA, Executive Director for research coordination, and Director, Resources, Regulation, and Global Security Division, The Energy and Resources Institute (TERI), 29 August, 2013
- (4) Ibrahim Hafeezur REHMAN, Director, Social transformation Division, The Energy and Resources Institute (TERI), 30 August, 2013
- (5) Dairya DHOLAKIA, Lighting a Billion Lives Program, Social Transformation Division, The Energy and Resources Institute (TERI), 30 August, 2013
- (6) Debajit PALIT, Associate Director and Fellow, Lighting a Billion Lives Program, Social Transformation Division, The Energy and Resources Institute (TERI), 30 August, 2013
- (7) Vijay Prakash SAHA, Chairman and Managing Director, Akshaya Electro Metallurgy Ltd., chairman Energy and Environment Committee, Janata Dal (United), 31 August, 2013
- (8) Sharad YADAV, President of Janata Dal (United), Member of Lok Sabha, 31 August, 2013
- (9) Kariya MUNDA, Deputy Speaker of the Lok Sabha, Bharatatiya Janata Party (BJP), 1 September, 2013
- (10) Mr. Vivek JHA, Fellow and Area Convenor, Rural Extension Activity, Social Transformation Division, The Energy and Resources Institute (TERI), 5 September, 2013
- (11) Dr. Prodipto GHOSH, Member of the Indian Administrative Service (IAS) from 1969 until 2007, when he retired as Secretary, Environment and Forest, Government of India; member of the Prime Minister's Council on Climate Change and the National Expert Committee on Climate Change, long-term member of India's delegation to the UNFCCC, 5 September, 2013.
- (12) Prof. Surya SETHI, former Principal Adviser for Power and Energy, Planning Commission, Government of India; long-term member of India's delegation to the UNFCCC; former

head of the Indian delegation in EU-India Dialogues; currently Professor, Lee Kuan Yew School of Public Policy, Singapore, 9 September, 2013 (via Skype)

- (13) Prof. Amit PRAKASH, Centre for the Study of Law and Governance, Jawaharlal Nehru University, 10 September, 2013
- (14) Prof. Praveen JHA, Centre for Economic Studies and Planning, Jawaharlal Nehru University, 10 September, 2013
- (15) Smita SINGH, Project Manager Energy, EU Delegation to India, 11 September, 2013.
- (16) Amb. Chandrashekhar DASGUPTA, Indian Foreign Service officer from 1962 -2000, notably as the Ambassador to the European Union (1996–2000) and Ambassador to China (1993–96); Member of the Prime Minister’s Council on Climate Change and Advisor to the Indian delegation for UNFCCC/Conference of the Parties (COP) meetings (2002-2009).

Online appendix

Table 1: Energy resources, actors and interests

Resource	Actors and interests	Comments / Notes
Kerosene	<p>User interests Poor rural population using kerosene for lighting when there is no electricity (no grid connection or insufficient/unreliable electricity supply) (39% of rural households, but only 5.1% of urban households, and poor urban population using kerosene for cooking (8% of urban households, but only 1.3% of rural households) (TERI 2012a: 23). To receive the subsidized kerosene, poverty is to be demonstrated by below poverty line (BPL) cards.</p> <p>Interest of intermediaries Wholesalers and retailers (e.g., pumping stations) who use kerosene to adulterate other fuels, notably diesel (various press articles talk about the “kerosene Mafia”). This should, however, generate opposing interests by the upper and middle classes that want to protect their cars and the machinery spoilt by the use of adulterated fuels. At the same time, some middle class households may benefit if they are not entitled to subsidized supplies and gain access through the black market at an intermediate price. <i>According to the NCAER (2005) roughly 40% of subsidized kerosene distributed through the public distribution system (PDS) was diverted (18% to non-household use, i.e. adulteration, 17% to the open market, and 2.6% to households without BPL cards (see also TERI 2012b: 20).</i></p>	<p>While kerosene is important for the poor, subsidies are ill-targeted because they are calculated on the basis of per-capita estimation of cooking (rather than lighting) needs. Moreover BPL estimations are not updated regularly, and there is wide evidence of ghost BPL cards (Rao 2012: 37, TERI 2012b: 18f.)</p> <p>It should also be noted that kerosene generates toxic emissions and risk of fire which makes it a very bad substitute for electricity (see also TERI 2012a: 23)</p>
Liquefied Petroleum Gas (LPG)	<p>User interests Primarily urban upper and middle class since LPG use positively correlates with income and urban areas (only 8-9% of the rural population use LPG as their primary source of energy for cooking, against 62% of the urban population) (TERI 2012a: 21), and since the subsidy is universal (not constrained to BPL card holders). Chawla et al. (2005) estimate that the most affluent 6.75% of the Indian population benefit from 40% of the subsidy.</p> <p>Interests of intermediaries Retailers withhold some of the subsidized supply under the PDS to sell it to small commercial businesses, notably restaurants, at a higher price (TERI 2012b: 13).</p>	<p>People often change to piped natural gas (PNG) without surrendering their LPG connection (Lang and Wooders 2012: 14). This also increases the amounts retailers can resell at a higher price.</p>
Electricity	<p>User interests Urban upper and middle classes (more affluent people since they use considerably more electricity, city dwellers because many rural areas are not yet connected to the grid). While the picture substantially varies between states, and usually, households with higher consumption pay higher rates (TERI 2012a: 24), Komvives et al. (2005) find that the subsidies are generally regressive.</p> <p>Currently, only 65% of the rural population indicates electricity as their primary source of lighting, against 90% in urban areas (Ramji et al. 2012: 8). However, those parts of the agricultural households with full access often benefit substantially, and not only for household use, e.g., when operating water pumps for irrigation free of charge.</p>	<p>There are stronger dynamics towards universal coverage than for LPG (see Ramji et al. 2012: 9). However, access measured in terms of grid connections may over-estimate actual access since the connection itself does not imply regular supply. Sehgal et al. (2012: 15) thus suggest counting only actual access between 6 and 10 p.m., when electricity will</p>

	<p>There are also some opposing interests: Some sections of private consumers and notably modern industry have to pay higher rates to compensate for the subsidies elsewhere. In addition, in some areas, there is evidence of water shortages when electricity is provided for free or at highly subsidized rates (TERI 2012a: 24), but very irregularly, because then, it is easiest for farmers to keep their water pumps running throughout. This is harmful to other parts of the population, who then suffer not only from even more frequent outages, but also from the water shortages.</p>	<p>actually increase productive working time. However, no large-scale data are available for this indicator.</p>
Wind	<p>User and producer interests Large industry, jointly as producers and as users: Almost all have invested in wind parks due to the attractive depreciation rules (possibility of total depreciation within one year) as well as feed-in tariffs provided on the state level. Moreover, the use of self-produced wind energy provides a cheaper substitute for expensive publicly provided electricity.</p> <p>Indirect user interests Indirectly, the production of wind energy should also benefit other electricity consumers by reducing demand pressure, and enhancing energy security, but no specific interest groups can be defined.</p>	<p>Indirect subsidies through highly attractive depreciation rules are only related to installation, not actual production of electricity (a change of this rule is under discussion).</p>
Solar	<p>Producer and implementer interests Producers of PV cells are mainly in China, but project implementers are in India itself (mainly small consultancy firms)</p> <p>User interests Mainly rural population without electricity connection, but also industry.</p>	<p>Only photovoltaic (PV) is considered here. Solar thermal power plants are still too expensive, and solar water heaters for household use are rare and not subsidized.</p>
Hydro	<p>Producer interests Steel and cement industry</p> <p>User interests See “Electricity”. Generally provides greater energy security and reduces supply constraints. Thus it is of interest for the industrial sector, too.</p> <p>However, there are often negative side-effects such as destruction of existing local irrigation systems or of fishing grounds, and displacements of population. These effects are resented even more as the electricity supply often does not go into the remote areas where these power plants are built, but in larger cities or to industry (see also the discussion of the allocation of electricity above).</p>	<p>No subsidy of tariffs, but large hydropower plants are directly built by public firms. Smaller, run of the river hydro systems (typically private, but subsidized) usually generate less of the negative side-effects and are designed in a more participatory manner involving the local population. However, the contribution of small hydro to overall energy production is so far only marginal.</p>
Nuclear power	<p>Producer interests Steel and cement industry (as for “Hydro”)</p> <p>User interests See “Electricity” and “Hydro”. Given the inherent risk of nuclear power plants, their construction is resented at least as much as hydro power, especially if the electricity is not used locally.</p>	<p>As for large hydro, nuclear power plants are public investments.</p>
Natural gas	<p>User interests Substantially subsidized allocation of locally produced natural gas to producers of fertilizers and, to some extent, electricity producers. Only in</p>	<p>Indirect subsidy through fixed prices below world market price.</p>

	the latter case, natural gas is used for energy production. There is some competition between the two user groups. Whoever does not obtain the gas allocation at fixed national rates has to buy at higher international market prices. Since prices for both electricity and fertilizer are also fixed, the gains or losses remain with the producing companies, rather than being reflected in the price for the end-users.	
Modern biomass power plants	<p>Producer interests Large sugar and rice producers who benefit from covering their own power needs through use of residues (bagasse, rice husk) as well as power sales. Smaller rice producers can now sell residues at attractive prices. .</p> <p>User interests See “Electricity” and “Hydro”.</p>	Very high subsidies, e.g., in Orissa. Tariffs vary from State to State.

Note: All sources are listed in the general references section of the paper..