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STRENGTHENING GOVERNANCE OF INDIA'S APPLIANCE EFFICIENCY STANDARDS AND LABELING PROGRAM

BHARATH JAIRAJ, ANJANA AGARWAL, TARA PARTHASARATHY, AND SARAH MARTIN

EXECUTIVE SUMMARY

Demand for electricity is increasing rapidly in India due to economic growth and urbanization. The growing residential sector offers the opportunity to achieve significant energy efficiency gains, which will be critical given India's widening demand-supply gap. One such initiative that has been introduced by the central government to mitigate energy demand growth in the residential sector is a standards and labeling (S&L) program, managed by the Bureau of Energy Efficiency. However, although the S&L program has been in operation since 2006, its potential to reduce electricity demand has not been fully realized; awareness and use of more efficient appliances remain low, and efficient appliances are reportedly unavailable in parts of the country.

CONTENTS

The purpose of this issue brief is to identify how India's S&L program can be better designed, implemented, and evaluated in order to achieve its full potential. Using four good governance principles—Transparency, Accountability, Participation, and Capacity (TAP-C)—we evaluate three important stages of India's S&L program: the standard setting stage, the label implementation stage, and the program monitoring stage. The brief examines the extent to which the four principles have been applied in the S&L program and identifies gaps where the TAP-C principles can be further strengthened and improved.

Based on a study of global best practices and primary research, including stakeholder interviews conducted in India, this issue brief identifies areas for improvement and provides recommendations on governance for a more robust Indian S&L program. We examine the ways in which increased transparency, accountability, and participation can lead to improved and more widely accepted standards, strengthened program implementation, and improved monitoring, verification, and enforcement. We also address the issue of increasing and strengthening the human, financial, technical, and institutional capacity of key stakeholders—the Bureau of Energy Efficiency (BEE), State Designated Agencies (SDAs), test laboratories, and civil society organizations (CSOs).

The brief provides pointed conclusions and recommendations that the Indian government and BEE might consider in order to maximize the effectiveness of the S&L program. These conclusions are largely focused around the following points:

1. **Increased program transparency**, specifically at the standard-setting stage. This includes transparency regarding how products are prioritized, impact assessment studies, availability of national standards, details concerning test laboratories, and compliance data. Program transparency also means increased disclosure of information regarding personnel involved in setting the standards, membership of technical committees, and consultant hiring practices. We also recommend increased transparency of program budgets.

2. **Greater accountability in program implementation**, specifically regarding the clarity of roles and responsibilities within BEE, the primary agency tasked with overseeing and implementing the S&L program. Accountability also requires assigning clear responsibility for developing and implementing public awareness campaigns, and providing details on timelines and targets for program implementation.

3. **Improved participation in monitoring and evaluation (M&E)**, with particular reference to building in-country capacity to perform M&E tasks. Representation of all relevant stakeholders in committee meetings, increased involvement of SDAs to aid with implementation, and increased information, knowledge-sharing, and engagement with CSOs are other attributes of improved participation in M&E activities.

4. **Strengthening institutional, human, technical, and financial capacity of the S&L program.** Ensuring adequate government funding, strengthening in-house knowledge and expertise, supporting testing and related institutional capacity, including civil society capacity, will all cumulatively strengthen program compliance.

In addition to increased program compliance, this issue brief argues that good governance practices, enabled through improved TAP-C can lead to other improvements including greater trust in the program, and ultimately, increased purchase and uptake of energy efficient appliances in the market.

INTRODUCTION

Economic growth and rapid urbanization have led to continued growth in energy consumption in India, particularly in the residential sector. As of March 31, 2013, electricity consumption in India totaled more than 8.5 million GWh, of which residential consumption accounted for 21.8 percent (CEA 2013).[1] Not only is the residential sector the second highest consumer of electricity, it is also the sector with the second highest growth rate (CEA 2013). Studies based on the India Energy Security Scenarios, 2047 estimate that electricity demand from household buildings will increase from 175 TWh in 2012 to 1,840 TWh in 2047 (Niti 2015). Rapid growth in purchases of appliances and electrical equipment, coupled with the increasing success of rural electrification programs, contribute to the high demand from the residential sector. Over the past 20 years, purchases of appliances in India have grown tremendously: air conditioners by 82 percent, washing machines by 50 percent and refrigerators by 17 percent (Roy et al. 2011) . The burgeoning consumer appliance market today is worth Rs.45,000 crore (roughly USD seven billion); the industry grew at a compound annual rate of 13 percent between 2003 and 2013 (Somvanshi 2014).

The growing consumer appliance market is increasingly adding to India's energy demand, which will continue to grow. Energy efficiency and conservation practices for home appliances can help reduce energy consumption, emissions, and energy cost burdens, and therefore should be made a high priority. Energy efficiency policies are particularly vital in India because of widespread energy shortages. Between 2010 and 2013, India consistently had a power deficit, i.e., the difference between power requirement and availability, of between 8.4 and 8.7 percent (CEA 2013).

Efficiency policies serve a dual purpose—they allow more customers to be served using the existing generation capacity, and they can reduce the need for new investments in electricity generation to meet demand (McNeil et al. 2008). Estimates indicate that India has the potential to save up to 240 TWh of electricity through energy efficiency standards by 2030 but, so far, less than 75 TWh of savings have been realized (Letschert et al. 2013).

According to one study, if all major energy-consuming appliances sold in India between 2014 and 2018 were 30 percent more energy efficient, energy savings equivalent to almost INR 60,000 crore (USD 910 billion) would be achieved and 13 billion tons of CO_2 emissions (more than five times India's GHG emissions in 2011[2]) would be avoided over the lifetime of the appliances (Paul and Sathaye 2011). Appliance labels to indicate efficiency levels, together with measures to encourage consumers to purchase higher efficiency appliances, could, therefore, be a powerful mechanism to reduce the need for capital investment in electricity supply infrastructure. Such actions could also enhance national economic efficiency by reducing household expenditures for electricity, improve consumer welfare, and reduce environmental pollution.

With these objectives in mind, the Indian government launched, in 2006, the Standards and Labeling (S&L) program for electrical equipment and appliances under the Bureau of Energy Efficiency (BEE) of the Ministry of Power. Under this program, BEE first identifies appliances and products that

BEE'S STAR LABEL FOR AIR CONDITIONERS (BEE 2013)
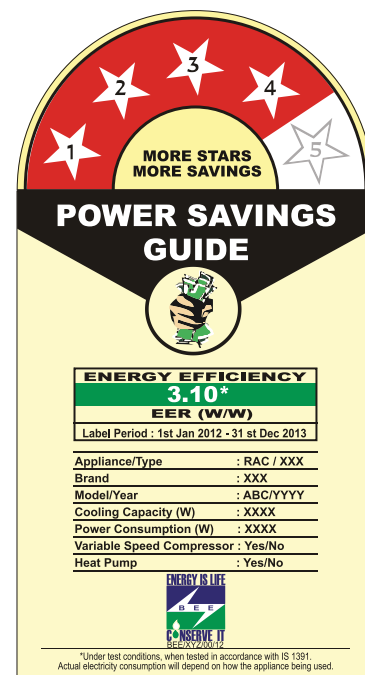
are commonly purchased in the market and contribute most to national energy consumption levels, and then sets minimum energy performance standards (MEPS) for each. MEPS are procedures and regulations that prescribe the energy performance of manufactured products and prohibit the sale of products that do not meet these standards (Wiel and McMahon 2011). Appliance energy labels describe the products' energy performance in terms of energy use, efficiency, and sometimes cost. They are affixed to appliances and products to help consumers make informed choices. Energy labels assigned by BEE under this program are mostly comparative,[3] giving products a rating (on a scale of 1 to 5, with

5 being the most efficient), and also indicating the amount of energy consumed by the product under standard test conditions.

The success of S&L programs obviously requires direct consumer involvement in the form of preferential purchase of efficient appliances (either those that meet minimum standards or those that go beyond the minimum standards as indicated by labels). In fact, BEE clearly states that the objective of the S&L program is "to provide the consumer an informed choice about the energy saving and thereby the cost saving potential of the marketed household and other equip-

If energy efficiency programs that are targeted toward consumers and the general public are to be successful and sustainable, the public must have confidence in their benefits.

ment."[4] Strong consumer and civil society involvement in the program can enhance its legitimacy and help to achieve effective public buy-in (Foti et al. 2013). As intermediaries between policymakers and citizens, Civil Society Organizations (CSOs) can help to correct the imbalance of information between government and the public, bring a consumer perspective to decisions often made by appliance manufacturers and government, infuse local preferences and issues of equity into decision-making, and promote good governance processes.

This issue brief builds on the report *Robust, Recognizable and Legitimate: Strengthening India's Appliance Efficiency Standards and Labels through Greater Civil Society Involvement*, which found that CSO participation helps to strengthen several key factors that contribute to the success of S&L programs. These factors include a strong legal and regulatory regime, adequate human and institutional capacity and resources, an effective communications strategy, robust monitoring and compliance mechanisms, and periodic program evaluation and refinement (Jairaj et al. 2013).

Our analysis goes beyond identifying the benefits of CSO participation. It assesses India's S&L program with the aim of enhancing the scope and implementation of transparency, accountability, participation, and capacity in the program, and identifying measures to improve the efficacy of the program.

OVERVIEW OF TAP-C FRAMEWORK

Transparency, Accountability, Participation, and Capacity (TAP-C) are four basic principles of good governance. They have been adopted by the World Resources Institute and Prayas Energy Group's Electricity Governance Initiative (EGI) in their publication *EGI Assessment Toolkit: Benchmarking Best Practice and Promoting Accountability in the Electricity Sector* (Dixit et al. 2007). EGI's approach underscores the importance of understanding how decisions are made in the sector; better decision-making processes can lead to better decisions. If energy efficiency programs that are targeted toward consumers and the general public are to be successful and sustainable, the public must have confidence in their benefits. This outcome is greatly supported if the program is transparent and the implementing agency is accountable. Open processes provide a check on abuse and subversion of the process for narrow ends, thereby increasing chances of improved outcomes.

In this evaluation, we use the four principles of good governance to assess different stages of the S&L program (standard setting, label implementation, monitoring and evaluation) with a view to exploring and identifying areas for improvement at each stage. The four principles are detailed in Box 1.

Strengthening these principles is a necessary, but insufficient factor for overall program success. Other factors such as an enabling environment which encourages collective action and greater government responsiveness to public inputs are necessary (Fox 2014).

TAP-C—KEY PRINCIPLES OF GOOD GOVERNANCE

Transparency: Transparency is the process of revealing actions and information in the policy process so that outsiders can scrutinize them and be informed. Attributes of transparency include the comprehensiveness, timeliness, availability, and comprehensibility of information, and whether efforts are made to ensure that information reaches affected and vulnerable groups. It is critical that information shared be user-centered to facilitate scrutiny.

Accountability: Accountability includes the extent to which: there is clarity about the role of various institutions in sector decision-making; there is systematic monitoring of sector operations and processes; the basis for decisions is clear or justified; and legal systems are in place to uphold public interests.

Participation: Diverse and meaningful public input helps decision-makers consider different issues, perspectives, and options when defining a problem. Elements of access to participation include formal space for participation in relevant forums, the use of appropriate or sufficient mechanisms to invite participation, the inclusiveness and openness of such processes, and the extent to which the gathered input is taken into account. Key to effective participation is the confidence that voices will be heard and not subject to reprisal.

Capacity: Capacity refers to the government's social, educational, technological, legal, institutional, and financial ability to practice good governance, and the ability of civil society to engage in decision-making. This requires strong institutional arrangements that allow officials to act autonomously and independently, the availability of resources (both human and financial) to provide access to information, and the capacity of civil society (particularly NGOs and the media) to analyze the issues and participate effectively. An example might be to make available adequate financial and human resources to the program implementing agency so that it can, first, effectively design and implement the program and, second, monitor and evaluate the program's progress and success.

Note: Based on Dixit et al. (2007).

OVERVIEW OF INDIA'S STANDARDS AND LABELING PROGRAM

In 2001, the Government of India established the Bureau of Energy Efficiency (BEE) under the Ministry of Power, and under the provision of the national Energy Conservation Act, in order to curb energy use and reduce energy intensity in the Indian economy. One of the key functions of BEE under the Act is to recommend energy consumption standards for different categories of appliances and equipment, and suggest the display of such information in the form of energy labels on products. With respect to certain product categories, these standards and labels are mandatory, as described below.

The Indian appliance efficiency Standards and Labeling (S&L) Program was launched by BEE in 2006 as a voluntary scheme. In 2010, MEPS became mandatory for four categories of products—frost-free refrigerators, air conditioners, tubular fluorescent lamps, and distribution transformers. Labeling for these products became mandatory (BEE 2006; BEE 2009a) in order to provide customers with information about the energy savings' potential of these products (BEE n.d.) The star rating system adopted by BEE rates product categories from 1 to 5, with products of higher efficiency receiving a higher star rating, and products with lower efficiency receive a lower star rating. Currently, the program covers 21 categories of appliances and equipment, though only the initial four categories are mandatory (See Table 1).

While labeling is voluntary for products, manufacturers can choose whether or not to display energy labels that indicate the products' level of efficiency.[5] India's 12th Five Year Plan (2012–2017) envisages the inclusion of another four to five appliances under the mandatory category of the program, but no additions have been made to the mandatory category as of this paper's date of publication.

BEE enjoys significant credibility among stakeholders, and stakeholders have shown significant interest in the S&L program.[6] Reports indicate that several major appliance manufacturers participated in the program and

TABLE 1

PRODUCTS AND APPLIANCES COVERED BY INDIA'S S&L PROGRAM (AS OF 27 OCTOBER, 2015)

Appliance/Product	Year Standards First Developed	Nature of Label Program
Frost-free refrigerators	2006	Made Mandatory in 2010
Tubular fluorescent Lamps	2006	Made Mandatory in 2010
Room air conditioners (split, window)	2009	Made Mandatory in 2010
Distribution transformers	2009	Made Mandatory in 2010
Room air conditioners (ceiling, cassette, standing tower)	2010	Voluntary
Direct-cool refrigerators	2010	Voluntary (to become Mandatory in January 2016)
General purpose induction motors	2010	Voluntary
Agricultural pump sets	2010	Voluntary
Ceiling fans	2010	Voluntary
Domestic LPG stoves	2010	Voluntary
Electric geysers	2010	Voluntary (to become Mandatory in January 2016)
Color TVs	2010	Voluntary (to become Mandatory in January 2016)
Washing machines	2011	Voluntary
Computers (notebooks / laptops)	2011	Voluntary
Ballast (Electronic / Magnetic)	2011	Voluntary
Office Equipment (printers / scanners / copiers)	2011	Voluntary
Diesel engine driven mono set pumps for agricultural use	2013	Voluntary
Solid state inverter	2014	Voluntary
Diesel generators	2014	Voluntary
Inverter air conditioners	2015	Voluntary
LED lamps	2015	Voluntary

FIGURE 2

AIR CONDITIONER SALES BY STAR RATING
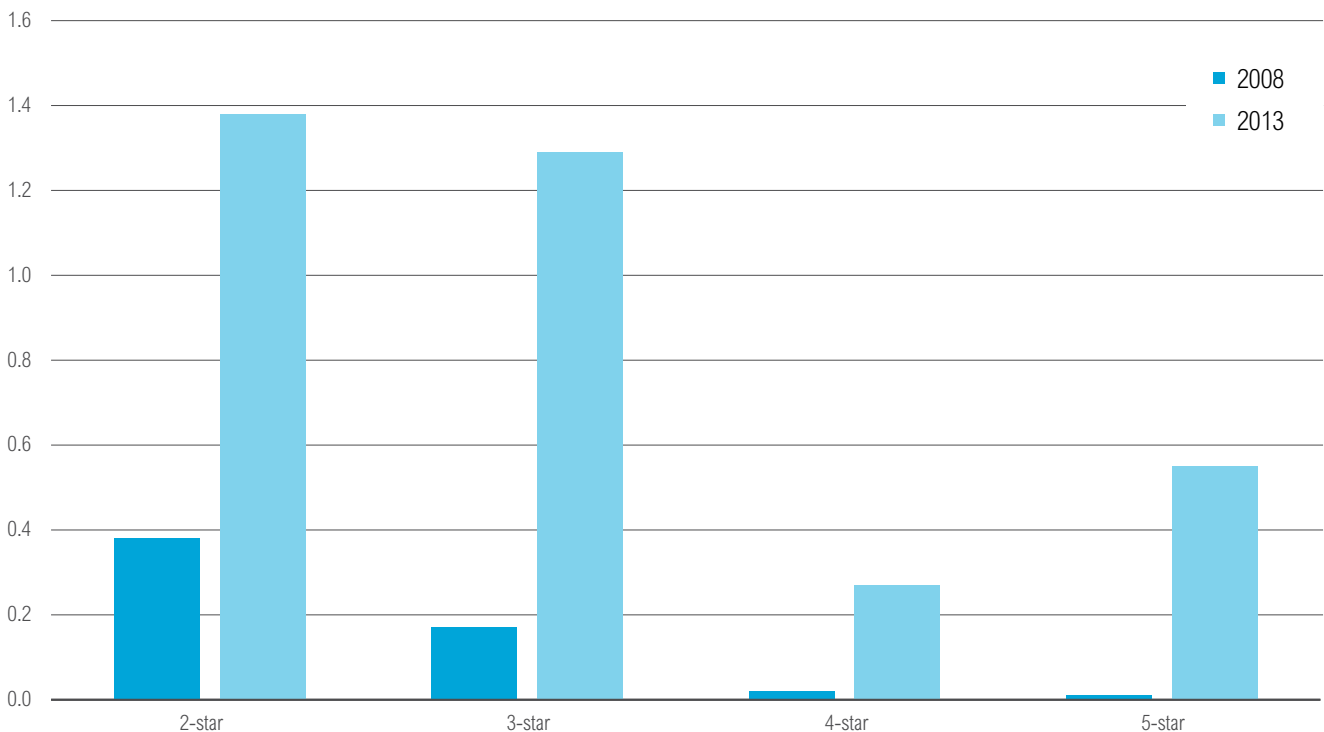
continue to do so (Consumer-Voice n.d.). In its Annual Report for 2007–2008, BEE noted that 80 percent of refrigerator manufacturers, 90 percent of tube light manufacturers, and 80 percent of air conditioner manufacturers had participated in the program (BEE 2008). Studies carried out by BEE found that in 2009–2010, 4.4 billion kWhs of electricity were saved on account of the program (National Productivity Council 2013), and that between 2006 and 2011, the program helped avoid 4,898 MW of new generation capacity addition (CEA 2012). In fact, more than two thirds of the energy saved through energy efficiency measures under the 11th Five Year Plan (2007–2012) is attributed to the S&L program (Khandari 2011), though there is some debate over the accuracy of this estimate.

Despite the success achieved by the program, its full potential has yet to be realized. Market uptake for appliances with higher levels of efficiency (4- and 5-star products) has been slower than uptake for less efficient appliances (2- and 3-star products). For instance, BEE data on air conditioner sales indicates that in 2008, when voluntary labelling was introduced for air conditioners, 380,000 units of 2-star-rated air conditioners were sold whereas only 20,000 4-star-rated and 10,000 5-star-rated air conditioners were sold. By 2013, the number of 4- and 5-star-rated air conditioners sold had gone up to 270,000 units and 550,000 units, respectively, but the market continued to be dominated by 2- and 3-star rated

air conditioners, of which 1,380,000 and 1,290,000 units were sold (Figure 2) (Diddi 2014).

Further evidence indicates that awareness of the program continues to be low. A survey carried out in 2009 found that only 20 percent of the sample population was aware of the program and, in rural areas, awareness was even lower (Jose 2011). Another study by Consumer-Voice has found that labeled products are not even available in several parts of the country (Consumer-Voice 2015a). Experts also argue that Indian standards lag behind global levels (Somvanshi 2014). The S&L program offers potentially significant energy savings and its effectiveness is of great importance in the government's effort to achieve energy efficiency gains across India.

RESEARCH METHODOLOGY

The research team began with a detailed literature review of the methodology adopted by India's S&L program in order to identify key stages in the program, and to further identify specific decision-making processes within each stage. Prayas, Energy Group helped to develop the initial analytical research framework used by the team.

The analysis was discussed, at a national workshop in December 2013, with EE.Net—a knowledge network of 25 independent energy experts, representatives of consumer organizations, and other civil society stakeholders in India, who have been working on building awareness of, and strengthening, energy efficiency programs in the country.[7]

Based on the discussions, we limited the focus of research to three stages of the S&L program:[8]

- **Standard setting**, which involves identifying products for the program, setting the technical energy efficiency specifications for each of the different products, final publication of standards, and the schedule for future review and revisions.
- **Program implementation**, which includes institutional structures, roles and responsibilities, financial and human resources, scope of the program, process of disbursing the labels, and marketing.
- **Program monitoring**, which includes the strategy for checking the performance of labeled products, adequacy of testing laboratories, and penalties imposed in case of default.

Deeper examination indicated that there are multiple TAP-C considerations relevant to each of these three stages. Bearing in mind the current level of involvement of civil society in the S&L program, we identified the most significant governance issue for each stage, based on inputs and feedback from stakeholders interviewed during our research. We considered that such simplification (identifying one overarching governance issue per stage) would help convey the message more clearly.

Consequently, the report identifies *transparency* in standard setting, *accountability* in implementation, and *participation* in monitoring. This is not to say that other elements of governance are not examined in these stages, but we have highlighted what appears to be the most significant issue, based on our interviews and consultations. Furthermore, capacity of relevant stakeholders such as BEE, the State Designated Agencies (SDAs), laboratories, and civil society, among others, is an overarching concern through the program. Capacity constraints affect transparency, accountability, and participation; capacity challenges for stakeholders have therefore been examined across the stages.

Transparency in standard setting: This stage defines the rest of the program, so it is crucial to disclose actions and information and enable scrutiny by stakeholders. The emphasis is on *how* decisions are made, rather than on actual decisions (such as the level at which a standard is set). For example, we assessed whether standard setting bodies proactively disclose their agenda for meetings, and whether minutes of such meetings are available in the public domain. In addition to the availability of the information, we considered whether it is comprehensible and actionable by users. We also assessed whether there is selective sharing of information with some stakeholders, thereby creating information asymmetry among stakeholders. These aspects of transparency have implications for the choice of products that will be prioritized for inclusion in the program, whether the process is captured by vested interests, and the stringency of the standards—all of which factors eventually can determine whether or not consumers will purchase the appliances.

Accountability in implementation: At the implementation stage, we assessed the allocation of personnel and whether administrative directives for implementation of the program were in place. Where responsibility for implementation is shared by various public agencies, we examined the clarity of their roles, and whether the basis for decisions, such as the charging of fees for energy labels, is justified. Improving accountability in implementation will also have positive ramifications for monitoring and evaluation of the program.

Participation in monitoring: Because robust monitoring and enforcement leads to stronger consumer confidence in the program, we assessed principles of public involvement in monitoring and evaluation. These include provision of formal spaces for participation, the inclusiveness and openness of such processes, and the extent to which public input is taken into account. This is particularly vital given that setting efficiency standards is a technical process but one with significant implications for consumers.

We also examined the technical, institutional, and administrative capacity of the agencies entrusted with monitoring and evaluation tasks. Technically specialized personnel are needed to perform energy efficiency analysis, set standards, and test-check for compliance; other personnel are needed to carry through label design, communications campaigns, and marketing studies. Adequate financial and human resources are vital to ensure compliance of star-rated appliances sold across the country and ensure the success of S&L programs.

With the stages and key governance principles for analysis identified, the research team developed detailed research questions (listed in Annex 1) to assess the effectiveness of the stages using the TAP-C governance principles. We also developed a list of stakeholders to be interviewed for the research. These included officials in the Ministry of Power, BEE, Energy Efficiency Services Limited (EESL), SDAs for energy conservation,[9] electric utilities, appliance manufacturers, appliance manufacturers' associations, test laboratories, appliance retailers, energy efficiency consultants, independent experts and CSOs. Our primary research included 23 detailed, semi-structured interviews with these stakeholders, conducted either in person or by email or phone. Interviews were conducted between April 2014 and November 2014. For some interviewee categories, such as test laboratories and retailers that engage with only one aspect of the S&L program, our interview questions were more focused. EE.Net partners also helped us develop the questionnaire and conduct interviews. Several respondents asked not to be individually identified in the report, and we have referenced their inputs by stakeholder category only. We compared responses to available public data, and triangulated responses from different stakeholders in order to arrive at our conclusions.

Further research included studying international best practices, particularly global examples of standards and labeling programs that highlight transparency, accountability, and participation in S&L programs, and the strengthening of capacity of relevant stakeholders. At periodic intervals, we held meetings with independent energy experts, and civil society members of EE.Net to discuss progress of the research and

FIGURE 3

RESEARCH APPROACH
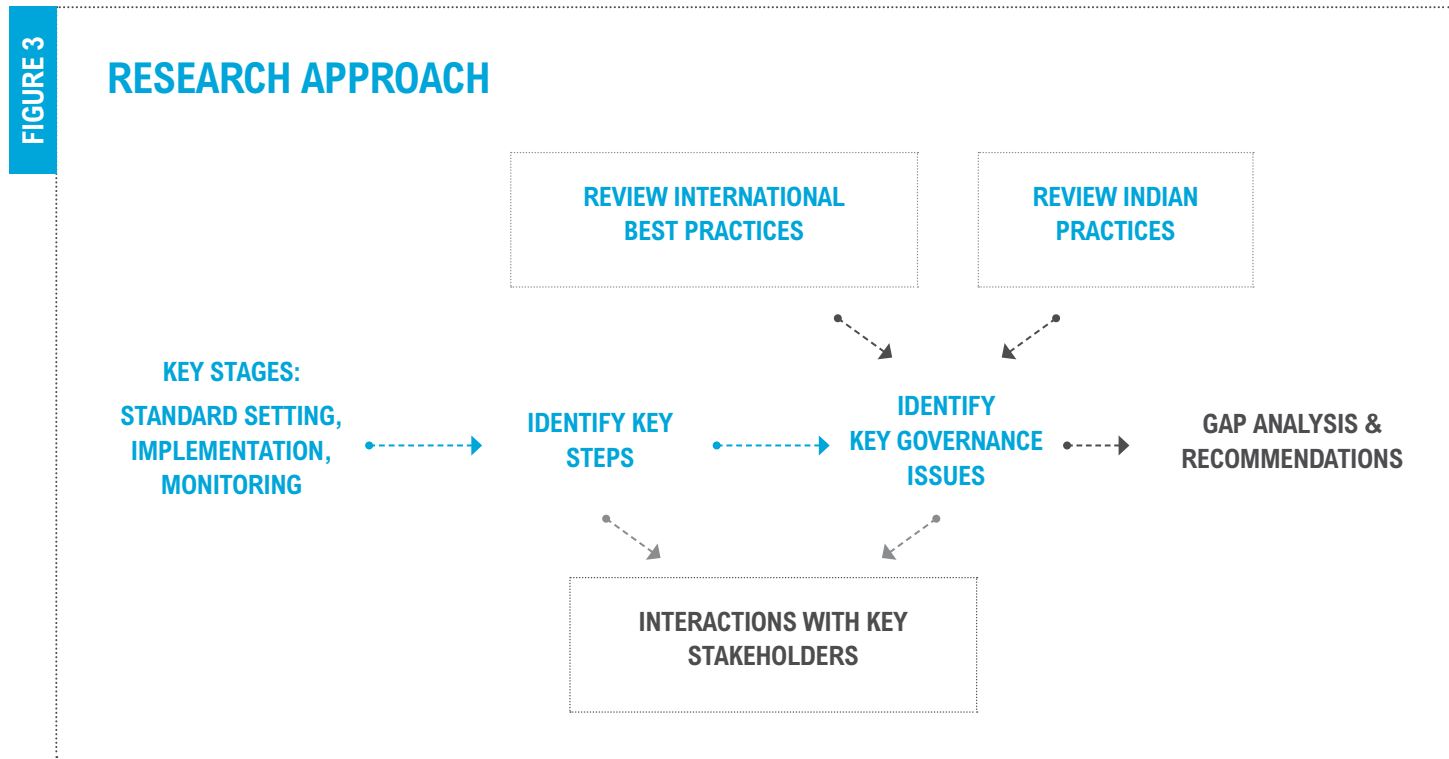
identify next steps, as described in Figure 4 below.[10]

EVALUATION OF INDIA'S S&L PROGRAM AGAINST TAP-C PRINCIPLES

This section examines the three stages identified in the S&L program—standard setting, implementation of standards, and monitoring—from a governance perspective.

Figure 4 presents a diagrammatic overview of the structure of the S&L program (Tathagat 2007). The nodal agency responsible for the program is BEE. Steering and technical committees are constituted under BEE to assist with standard finalization, development of testing protocols, and the energy-rating plan. The committees are also involved in finalizing the label design and enforcement mechanism, as well as designing consumer awareness campaigns.

Strengthening the Standard Setting Process through Greater Transparency

Information provision is a key element of energy efficiency policies (Davis and Metcalf 2014). Setting product standards involves choosing the products to include, the analytical methods to use, and the criteria for evaluating energy performance. In addition, this process needs a clear understanding of the degree of development of the market for energy efficient appliances. Each of these steps involves negotiating with various stakeholders and incorporating diverse interests. It is therefore important that all assumptions, methods, and results are documented and shared, not only with stakeholders involved in setting

standards but also with the public, so as to ensure that all concerns are voiced and addressed (Wiel and McMahon 2005).

Our analysis of India's S&L program shows that there is limited information in the public domain concerning how standards are set. We found it necessary to consult multiple experts, often with diverging views and opinions, simply to understand the process. As discussed below, limited transparency can negatively impact the program as a whole.

Product Selection

The first step in setting standards is to identify which product(s) should come under the ambit of the S&L program. In India, this decision is made by BEE. Transparency in product selection is important in order to justify the inclusion of products in any S&L program. Not only must the final list of products (including the order in which they will come under the ambit of the program) be made public, the criteria and processes used to identify these products must also be clear and well known so as to ensure that priority products are covered by the program.

The Indian S&L program currently covers 21 products under two label categories: mandatory and voluntary. Although there is no information in the public domain about how these products were selected and assigned to these categories, experts indicate that BEE developed a product prioritization toolkit together with the Collaborative Labeling and Appliance Standards Program (CLASP)[11] based on the following criteria (Tathagat 2007):

- Appliances commonly used

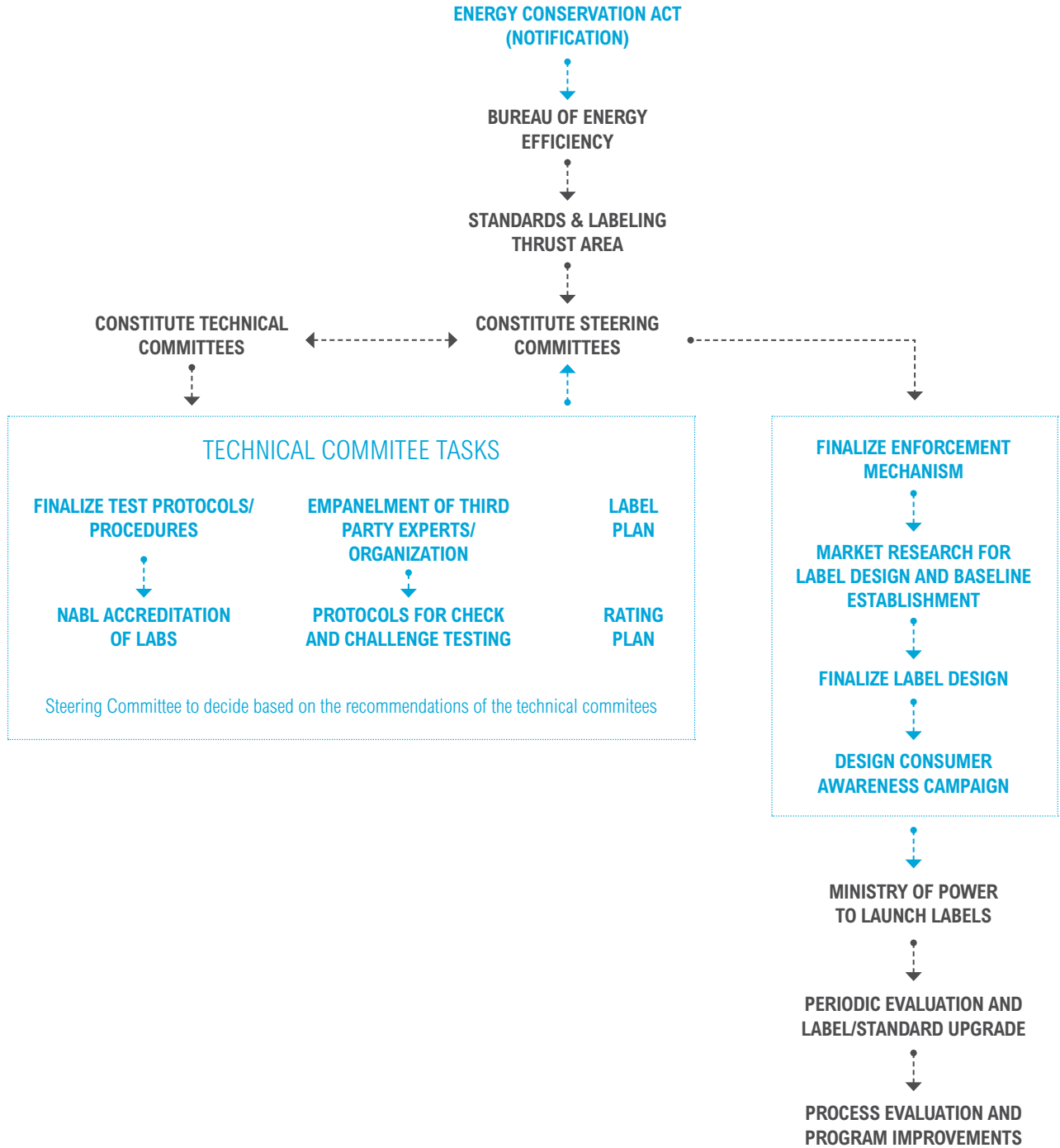- Appliances with high energy intensity

- Appliances that contribute to peak demand

- Appliances that contribute significantly to the portion of electricity used in that category

- Appliances with potential for savings (in energy consumption and peak demand)

We could not conclusively establish whether market surveys were conducted, or identify the data that were used to arrive at the list of products, nor whether there was public disclosure of this information. There are differing views on who participated in this process, but reports indicate that, initially, 81 products were identified, which were then narrowed down to a smaller subset of 25 appliances (Garg et al. 2012). This is not to imply that the products currently included in the S&L program are inappropriate; however, it is difficult to assess the program's objectives in the absence of publicly available information.

Opaqueness in product selection undermines the legitimacy of this step. For instance, some experts question the prioritization of washing machines for inclusion under the program given their limited use in India. No disclosure was made regarding the market data or any other rationale for their inclusion in the list of products. While BEE has kept adding new products to the voluntary part of the program, the number in the mandatory program remains at the initial four products. This raises concerns about whether BEE's resources are being spread too thinly, and whether stricter implementation and M&E should receive more attention. Failure to disclose the order in which products will be selected has also left manufacturers and test laboratories with inadequate time to plan

FIGURE 4

S&L IMPLEMENTATION PROCESS IN INDIA

**ENERGY CONSERVATION ACT
(NOTIFICATION)**

↓

**BUREAU OF ENERGY
EFFICIENCY**

↓

**STANDARDS & LABELING
THRUST AREA**

↓

**CONSTITUTE TECHNICAL
COMMITTEES** ←→ **CONSTITUTE STEERING
COMMITTEES**

TECHNICAL COMMITEE TASKS

FINALIZE TEST PROTOCOLS/ PROCEDURES	EMPANELMENT OF THIRD PARTY EXPERTS/ ORGANIZATION	LABEL PLAN
↓	↓	
NABL ACCREDITATION OF LABS	PROTOCOLS FOR CHECK AND CHALLENGE TESTING	RATING PLAN

Steering Committee to decide based on the recommendations of the technical commitees

**FINALIZE ENFORCEMENT
MECHANISM**

↓

**MARKET RESEARCH FOR
LABEL DESIGN AND BASELINE
ESTABLISHMENT**

↓

FINALIZE LABEL DESIGN

↓

**DESIGN CONSUMER
AWARENESS CAMPAIGN**

↓

**MINISTRY OF POWER
TO LAUNCH LABELS**

↓

**PERIODIC EVALUATION AND
LABEL/STANDARD UPGRADE**

↓

**PROCESS EVALUATION AND
PROGRAM IMPROVEMENTS**

and build their capacities. Questions then arise about information asymmetries among appliance manufacturers, with some having better access to information than others.[12] Given that this program has significant impacts on a competitive market process, disclosing relevant information to all stakeholders is critical.

Examples from other countries indicate that greater transparency at the product selection stage, including making public the criteria used to identify products, can lead to selection of the most appropriate products, thereby improving the effectiveness of the program as a whole. In South Korea, the involvement of national consumer organizations including Consumers Korea led to the inclusion of vacuum cleaners and rice cookers, products that are widely used in South Korea, under the national energy efficiency labeling and standards scheme (Consumers Korea 2012). The consumer organizations conducted surveys to identify popular appliances and

carried out campaigns publicizing test results showing the energy efficiency of these appliances. Based on these results, standards were developed, and the organizations participated in their development. These programs have resulted in higher uptake of energy efficient products by consumers, demonstrating the importance of transparency at this stage of a labeling program.

Setting the Standard

As shown in Figure 4 above, standard-setting is carried out by committees established by BEE. Several interviewees hold the view that BEE is acutely understaffed and that this has led to extensive reliance on external consultants to carry out techno-economic analyses and recommend the threshold efficiency for each category of appliances selected for the program (Figure 5). Our research shows that the process of hiring consultants and defining their terms of reference is usually not made public.

Under-staffing has also led to instances where manufacturers' associations have themselves undertaken the technical analysis. One example is the standards for chillers, where Underwriters Laboratories, the Refrigerators and Air Conditioners Manufacturers Association (RAMA), and the India Society of Heating, Refrigeration, and Air Conditioning Engineers (ISHRAE) worked with consultants to develop the standards that were accepted by Bureau of Indian Standards (BIS) and BEE.[13] This is not necessarily a bad practice, because several of these agencies have the technical information and expertise required. However, in the short term, it calls for stronger scrutiny and supervision by BEE and BIS, given the potential conflict of interest, and a plan to strengthen in-house capacities in the medium to long term. Adequate staff, with the right skills to design and implement the S&L program, are critical for program success. As an example, the Council of Australian Governments (COAG)

FIGURE 5

THE STANDARD SETTING PROCESS

CONSULTANT

TECHNO-ECONOMIC ANALYSIS

TECHNICAL COMMITTEE
(Sets Standards)

BEE

STEERING COMMITTEE
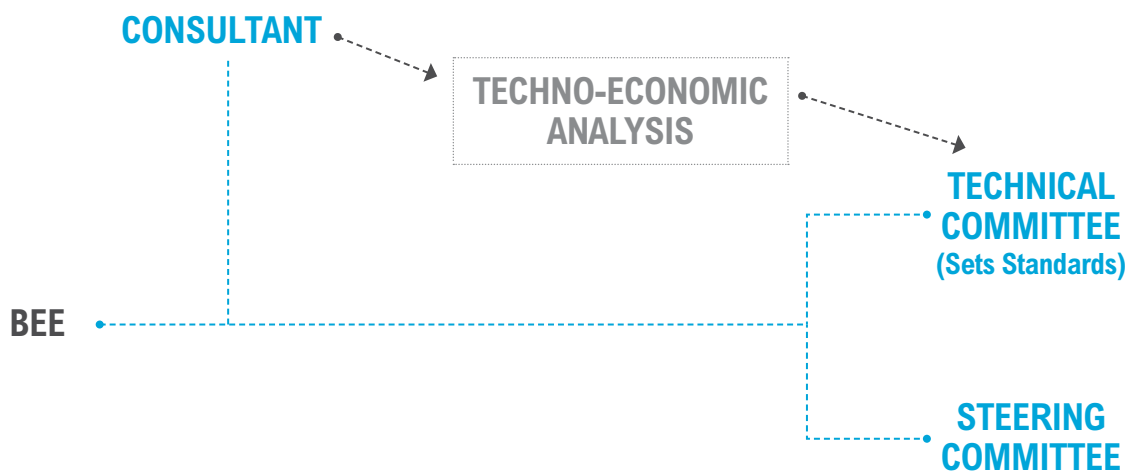
set up the National Energy Efficiency Skills Initiative as a means to develop the skills required for the implementation of energy efficiency programs (COAG 2009). Currently, as part of this initiative, the Australian Department of Resources, Energy, and Tourism (RET) is working closely with an advisory group of university academics to improve access for engineering educators to energy efficiency training resources (Energy Efficiency Exchange 2015).

Ensuring multi-stakeholder participation in fora such as the technical committees reduces the risk of capture by any one interest group (for example, by manufacturers). Admittedly, several decisions made during the S&L program implementation are highly technical and lack of capacity, particularly among CSOs, to engage in this technical space is a concern. Other than one or two organizations based in New Delhi, no CSOs are represented at technical committee meetings in India.

Disclosure of data and assumptions on which the standards are developed will clarify why energy efficiency evaluations differ from those found in other independent studies (Khandari 2011). Based on the techno-economic analyses, standards are finalized by the technical committee that is constituted under Section 8(3) of the Energy Conservation Act, 2001. Various stakeholders, including energy economists from within BEE, BIS, National Accreditation Board for Testing and Calibration Laboratories (NABL), appliance manufacturers, manufacturers' associations, test laboratories, independent experts, and consumer groups, are invited to technical committee meetings. CLASP is also present at these meetings as an observer.[14]

Our research found that, while minutes of the technical committee meetings that capture stakeholder discussions and recommendations are circulated to committee members, they are not made publicly available. Stakeholders confirm that technical committee meetings are participatory, and participants are able to express their views freely. Decisions are taken by consensus and recommendations by participants are taken seriously.[15]

We identified two additional issues that require greater clarity:

- Timelines and frequency of committee meetings: There are no defined timelines that the technical committee is required to follow to finalize the standards. Interviewees suggest that the standard setting process for each product typically takes one to two years, during which period the committee meets five or six times.

- Access to all relevant studies and analysis: Interviewees differ on whether all studies and analyses, particularly the techno-economic analysis, are shared with all members of the committee.[16]

Japan's Top Runner Program provides an example of transparency in standard finalization. The program follows a detailed, clearly outlined process in which various stakeholders have been involved through participation in technical committees and working groups. Three layers of committees, comprising academic experts, consumer groups, trade unions, local government representatives, and industry representatives, are involved in determining the products that should be included in the program, the content of the standards, target years,

and other details (Swedish EPA 2005). The Evaluation Standard Subcommittee meets in sessions that are partially closed to the public to preserve industry data confidentiality; however, when a decision is reached after all items have been discussed, an interim report is developed and released for public comment. The Subcommittee considers the public comments it receives and prepares its final report (METI 2010).

Standards Approval

Our evaluation suggests that the process for standards approval in India is unclear. The recommendations of the technical committee are reviewed and approved by BEE; however, even technical committee members do not always seem to know when or how the standards are approved. There do not appear to be clear timelines for granting approval, and often the time between development and implementation of standards can be 12 to 18 months.[17] Lack of clear information about the approval and notification process reduces stakeholders' trust in the process, and their ability to follow up when final standards are published.

Review and Ratcheting of Standards

Energy labeling is voluntary for several product categories but, once stakeholder buy-in has been achieved, product labeling is expected to become mandatory (BEE 2006). Our research did not find any information or explanation of how products would transition from voluntary to mandatory application of energy labels. Experts opine that the frequency of review and ratcheting of standards is also not clear. BEE issued a schedule in 2010, suggesting the review and ratcheting of standards every two years, but there is no evidence of this process being followed.[18] BEE is said to regularly

carry out market assessment studies to understand market penetration of energy efficient appliances, but these reports are not in the public domain (Khandari 2011).

The absence of transparent criteria that would both trigger a review of standards, and a ratcheting of standards, makes the process fairly unclear. Even where timelines are provided, if they are not followed it becomes difficult for manufacturers and other stakeholders (testing laboratories, for instance) to know when the standards will actually be enhanced. Because standards decisions affect R&D investment decisions well ahead of the timelines, the process needs to be improved.

> Even where timelines are provided, if they are not followed it becomes difficult for manufacturers and other stakeholders to know when the standards will actually be enhanced.

Strengthening Implementation of the Program through Greater Accountability

Participation and partnerships are vital to successful implementation of S&L programs for several reasons. Governments need to engage with stakeholders to ensure that the minimum performance levels can be met, have a positive benefits-to-cost ratio and are relevant to local conditions. Consumers need confidence that standards will protect their interests. And industry needs confidence that standards are achievable and represent a level playing field for all. Even in cases where one agency leads an entire program, effective program implementation requires a variety of skill sets to be applied to follow through on all the processes and procedures involved. Clarity regarding the different implementing agencies, in terms of their roles and responsibilities and how

these are being deployed for program implementation, are determinants of how successfully a program will be implemented.

The BEE Star Labeling Scheme Document (BEE 2006) envisaged an implementation committee—comprising the Director-General of BEE, representatives of the Ministry of Power, BIS, consumers associations, manufacturers associations, and test laboratories—that would make recommendations on the enforcement of the provisions of the program. We were not able to ascertain that this committee has been set up, or find its reports, but it is widely accepted that BEE is the primary agency responsible for implementation of the program. In addition to BEE, SDAs are responsible for implementation of the S&L program in their respective states. The three major roles that SDAs are expected to play are those of development agency, facilitator, and regulator/enforcing agency (BEE 2007). Instead of establishing new and dedicated agencies, state governments have added the task of S&L program implementation to existing state government agencies. The choice of agency varies from state to state; typically SDAs are the state renewable energy development agency, the state electrical inspectorate, or the distribution company (BEE 2007). Our research concludes that, for multiple reasons, the full potential of SDAs in implementing the program has not been achieved. SDAs typically have multiple responsibilities at the state level and they often do not have a supporting mandate or resources to be able to enforce the S&L program. Nor has BEE developed a document that could guide SDAs on program implementation. These factors combine

to make the role of SDAs in program implementation less clear and less accountable.

Receiving and Processing Applications

With limited staff and several energy efficiency programs to run in the country, BEE has outsourced some tasks and processes to external agencies. These include implementation roles such as application processing and verification. Energy Labels are granted based on self-certification by the manufacturer, and manufacturers are allowed to commence sale of the product immediately. The process of collection, verification, and processing of self-certificates was originally outsourced by BEE to RITES Limited; it is currently outsourced to EESL.[19]

Manufacturers are required to pay a nominal fee for every energy label to be affixed to an appliance. Our research indicates that this payment allows BEE to track the number of appliances labeled (and sold) in the market. However, up-to-date data are not available in the public domain. Furthermore, there is no available information on the amount of fees collected thus far, or how these funds have been utilized. To begin with, these funds could be deployed to strengthen implementation of the program.

Disclosure of label fees could also be a significant entry point for measuring the efficacy of the S&L program. Putting this information in the public domain would allow consumers to know which appliance manufacturers have sold more energy efficient appliances than others. These data would provide researchers with the baseline information required to estimate potential energy savings, including avoided new additions of

generating capacity. In the absence of appliance penetration data, the label fees data would serve as a proxy for BEE and other stakeholders to identify whether sufficient market penetration has been achieved to trigger ratcheting of standards for a particular appliance category.

Additionally, the funds collected from the label fees could be used for market studies and surveys, manufacturer capacity building, and consumer awareness, as well as other activities aimed at further strengthening the program.

Consumer Awareness and Participation

Outreach and communication to build greater awareness of the program in particular, and energy conservation in general, is a strong focus of the S&L program. Experts believe that agencies such as the SDAs and the Directorate of Audio Visual Publicity (DAVP) are expected to play a significant role in outreach activities. Our research found significant numbers of advertisements on radio and television and in print; however, there appears to be no existing plan, budget, or mechanism focused on further building consumer awareness through a dedicated communications strategy. So, while there is significant focus on outreach and promotional activities, and there is growing brand recognition around the Star Label, the absence of a communication plan and targeted mechanisms limits the involvement of other stakeholders, who could be effective outreach partners.

Effective outreach and awareness-building have proven critical to the success of S&L programs globally. In Thailand, for example, success of the Label No. 5 program has been

attributed to public awareness and education campaigns carried out by the Electricity Generating Authority of Thailand (EGAT), Demand Side Management Office (DSMO), and Energy Policy and Planning Office (EPPO). Through continuous campaigns around Label #5 and other related initiatives by both the DSMO and EPPO, the level of public awareness of EE and the labeling program has increased (GEF 2006). One key measure undertaken to build awareness was the Green Learning Room program under which school authorities and schoolchildren were trained to conserve energy. The measure involved coordination with the Ministry of Education (EGAT 2013).

Involving more CSOs, such as voluntary consumer organizations, and increasing participation in the program can have tremendous positive impacts, particularly with respect to consumer awareness (Wiel and McMahon 2005). Participatory decision-making not only improves the final decision but also helps build public awareness about a particular issue, and individual participants may develop valuable new knowledge and skill (Foti et al. 2008).

An example of this is the mandatory comparative labeling scheme in the European Union, where special efforts were made to include consumer inputs and preferences in the design of the program. In July 2008, the European Commission published an Action Plan on Sustainable Consumption and Production and Sustainable Industrial Policy, which proposed that the existing A–G scale for energy efficient labeling would be replaced by a numerical 1–7 scale. However, CSOs were concerned that this potential change could confuse consumers who had understood the A–G label and used

it as a practical guide in purchasing decisions. CSOs provided market studies that confirmed this (ANEC 2009). Based on these inputs, the European Union abandoned the motion to move to a numerical scale, and instead decided that new labels (for products more efficient than the "A" category) would be assigned "above A" scales (ECEEE 2015). In 2010, the Energy Labeling Directive was recast to include A+, A++, and A+++ categories (representing 20 percent, 40 percent and 60 percent efficiency above the A level) and the range was changed from A+++ to D (Waide 2011; EC 2003; EC 2010). This example highlights how transparency and participation can lead to the development of robust and implementable standards that are well recognized and relied on by consumers, and improve the overall efficacy of the S&L program.

Strengthening Monitoring, Verification, and Enforcement (MV&E) of the Program through Enhanced Stakeholder Participation

The third stage of the S&L program involves regular monitoring to check claims of energy efficiency against the standard, verification of such claims by an unbiased laboratory, and enforcement to ensure that non-compliant products are not available for purchase (CLASP 2010). Effective MV&E requires the involvement of other parties in addition to the program managers. The participation and involvement of stakeholders including consumer groups and NGOs, test laboratories, retailers, manufacturers, and individual consumers will further strengthen MV&E and trust in the program.

A strong MV&E regime can help to protect consumer's interest and ensure a credible standard that can be relied upon. It can provide assurance to manufacturers that investments they have made to increase the efficiency of their products will be protected. In addition to guarding the integrity of the program, a robust MV&E regime is also essential to monitor the performance of the program over the long term and gather the information necessary to adapt the program in case of changing circumstances (Jose 2011).

The ENERGY STAR program in the United States, for example, relies on partners and stakeholders to check product compliance and report findings of these tests to program managers (Wiel and McMahon 2005). ENERGY STAR, administered by the U.S. Environmental Protection Agency and the Department of Energy, has partnered with over 20,000 organizations including manufacturers, retailers, utilities and regional energy efficiency sponsors, energy service providers, builders and facilities owners, businesses, and HVAC contractors (McWhinney et al. 2005; USEPA 2010). When public accountability levels are low, even partial increases in accountability through increased public participation can have significant impacts (Fox 2014).

CSOs can play a very useful, interlocutory role in bringing more representative public opinion to the table (Fox 2014; Mansuri and Rao 2013). The Australian experience with the E3 comparative labeling program, for example, demonstrates the value of participation by consumer groups at the monitoring stage. In addition to participating in the label design process and aiding in the development

of outreach materials, the consumer group CHOICE (Australian Consumers' Association), has played a strong role in product testing and program enforcement. CHOICE carries out parallel and independent lab testing and home monitoring for many regulated appliances each year and publishes the results in its magazines or online. Where it finds non-compliance, CHOICE notifies the regulator, who can follow up with the manufacturer. Several mislabeled products have been identified as a result (Jairaj et al. 2013).

MV&E is a resource-intensive stage, because samples of appliances sold by manufacturers across the country have to be checked. Not only does this require adequate skilled human resources, it also needs sufficient testing facilities and budgets. BEE has only a few full-time staff on the program and relies on SDAs to assist in monitoring and evaluation at the state level. A 2007 report by the National Productivity Council found that the infrastructure of most SDAs needed to be strengthened to enable them to coordinate, regulate, and enforce the provisions of the Energy Conservation Act (BEE 2007). Our research does not confirm whether such infrastructure strengthening was ever carried out. SDAs also appear to lack authority and resources to undertake compliance testing and, while BEE does provide a yearly grant to the SDAs for energy conservation activities, this grant is used largely for outreach and consumer awareness. Although the Action Plan for the S&L program had envisaged that SDAs would collect data on statewide sales of labeled appliances (BEE 2007), we were unable to find such data or reports and none of the SDAs we interviewed reported collecting such information.

Monitoring and compliance is often limited by the availability of test laboratories with the capacity or the equipment to conduct the tests required. BEE has recently engaged in extensive workshops and exercises regarding the addition of test laboratory capacity, and the impact of these efforts is likely to result in an increase in compliance testing.[20]

Figure 6 summarizes the Indian S&L program's check testing and verification processes.

In addition to checking testing carried out by BEE, the policy also allows for consumers, consumer associations, other manufacturers, or any person to challenge the star-rating label (Consumer-Voice n.d.). As shown in Figure 5 above, BEE determines whether or not there is a case for testing, based on reports it receives. If BEE's verification test fails, use of the label for that appliance model is prohibited, and the failure can be widely publicized in the press. In addition, the manufacturer would be debarred from participating in public tenders (Consumer-Voice n.d.).

Like CHOICE in the Australian examples discussed above, Consumer VOICE, a Delhi-based consumer group, regularly carries out comparative testing of products and parallel check tests in India. In 2014, Consumer VOICE tested split air conditioners in an independent accredited lab. The results indicated that three brands/models did not meet the claimed efficiency threshold (Consumer VOICE 2015a). These results were communicated to BEE and the Ministry of Consumer Affairs.[21] In the following months, BEE conducted its own tests and found similar results; this resulted in BEE launching an aggressive "name-and-shame" campaign. Advertisements with names of the manufacturers and models that failed the check test were published in national newspapers[22] (see Figure 7,

an advertisement from the Hindustan Times). Actions like these represent a positive step in moving away from low-accountability trap scenarios created by lack of participation and lack of government responsiveness (Fox 2014). The recognition that BEE will respond to and act on participatory efforts by the public can spur more such efforts.

CONCLUSIONS

India's S&L program has the potential to achieve many gains in India in terms of energy and cost savings, and avoided generating-capacity additions. Since the program's implementation in 2006, it has achieved momentum among stakeholders who have been involved along the way. It has been claimed that between 2007 and 2012, over two thirds of energy savings achieved in India through energy efficiency measures can be attributed to the S&L program, making this the flagship of BEE's programs in the country. The inclusion of additional

FIGURE 6

TESTING AND VERIFICATION PROCESSES UNDER THE INDIAN S&L PROGRAM

SELF-CERTIFICATE BY MANUFACTURER
- Manufacturer can affix label on tested products

CHECK/CHALLENGE TEST BY BEE APPOINTED AGENCY
- At NABL accredited lab
- Manufacturer informed if product fails test

SECOND VERIFICATION TEST
- Sample size doubled, each product must pass test

FIGURE 7

NEWSPAPER ADVERTISEMENT IN THE HINDUSTAN TIMES, 31 MAY 2014, NEW DELHI EDITION, IDENTIFYING NONCOMPLIANT APPLIANCE MODELS
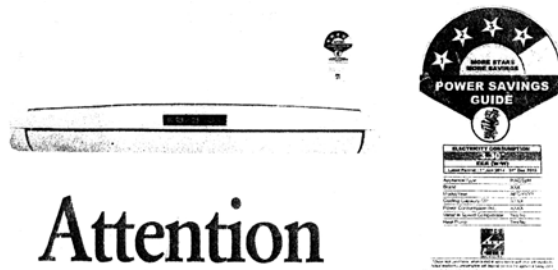
Attention Consumers

FOLLOWING AIR CONDITIONERS FAILED TO MEET THE ENERGY CONSUMPTION DECLARED ON THEIR LABEL:

S. No.	Manufacturer Logo	Manufacturer/ Company Name	Brand	Model	Star Rating	EER as per BEE record	Test Results (EER)		Result
							Sample 1	Sample 2	
1	SAMSUNG	Samsung India Electronics Pvt. Ltd.	Samsung	AR18FC3TAUR	3	3.01	2.76	2.88	FAIL
2	Panasonic	Panasonic India Pvt. Ltd.	Panasonic	CS-UC18PKY	2	2.82	2.38	2.44	FAIL
3	Godrej	Godrej & Boyce Mfg. Co. Ltd.	Godrej	GSC18FC3WMZ	3	2.94	2.51	2.76	FAIL

EER represents Energy Efficiency Ratio

This notice has been issued in compliance with the provision of regulation 7 of the Bureau of Energy Efficiency (Particulars & Manner of their Display on Labels of Room Air Conditioners) Regulations, 2009.

MINISTRY OF POWER
Government of India

Bachat Ke Sitare Dost Hamare

SECRETARY
BUREAU OF ENERGY EFFICIENCY (BEE)

SAVE ENERGY, SAVE MONEY

appliances and more robust and consistent standards for the program is increasingly desired by stakeholders and is seen as a requirement of program success.

Yet, despite the program's initial and potential successes, stakeholders (manufacturers, retailers, and customers) agree that it is not realizing its full potential. Market uptake of energy efficient appliances is still low, and stakeholders interviewed during this research feel that a stronger impetus is needed to boost the program's standard setting, implementation, and verification processes.

This study determines that critical governance components are weak. More specifically, our research concludes that:

There is limited transparency in the S&L process, specifically with regard to product selection, and standards creation, approval, and review. Our primary conclusions are that the availability of information and documentation in the public domain regarding these processes is limited, and that there is virtually no disclosure of data and assumptions that underlie product selection and standard development. Furthermore, there is some confusion among experts involved in the process about how standards are approved, and the current approach to the review and ratcheting of standards appears unclear. The lack of clarity and certainty about the overall process puts appliance manufacturers who produce highly energy efficient products at a disadvantage. Global examples demonstrate that greater transparency at the product selection and standards creation stages can lead to selection of more appropriate products to include in the program, as well legitimize standard setting processes.

Accountability in program implementation needs to be strengthened. Our research concludes that limited staffing and resources has led BEE to outsource several aspects of program implementation. This increases the need for BEE, as the national authority entrusted with implementing the program, to strengthen its supervision of the agencies to which implementation functions have been delegated. The collection and use of label fees is one way to gauge effectiveness of implementation because manufacturers have to pay for every label affixed to their appliances. Analysis of these data will clarify, for example, how many 4- and 5-star labels (per appliance, per model) are being sold, and how these sales compare with those of 2- and 3-star labels. If a significant portion of

sales are 4- and 5-star rated products, should the standard be reviewed and revised? However, with no publicly available information on label fees, gauging implementation is difficult. BEE is required to work with SDAs for effective program implementation at the state level. Our research concludes that the task of implementing the S&L program has been added to the already multiple functions of SDAs. The issue of inadequate staffing and resources is not confined to BEE, but also affects the SDAs.

Stakeholder participation could be further strengthened. Inadequate attention has been paid to strengthening the participation of stakeholders—not only SDAs and test laboratories, but also consumer groups, retailers, and individual consumers. This applies particularly to the MV&E stage of the program. Our research concludes that, while BEE is taking steps to address some of these issues—for example, increasing the number, and strengthening the capacity, of test laboratories, and providing training for SDAs—other efforts are currently absent. The recent check testing efforts are also very encouraging. Our research concludes that limited capacity of intermediaries like consumer groups, retailers, and other CSOs, and the absence of processes that enable them to participate in the program, can in turn impact consumer trust in the program.

Lack of capacity impacts all stages of the program. An overarching governance gap in the program is the limited capacity in the financial, technical, and human resources that are needed for the success of the program. Our research concludes that, at BEE and the SDAs,

the limited focus on capacity building and adequate resourcing deeply undermines the potential of this program.

RECOMMENDATIONS

In order to achieve improved success of the program, we recommend that the TAP-C principles should be strengthened at all stages of the program's development. More specifically, we put forward the following recommendations to help the Government of India and BEE achieve the full potential of the S&L program.

Overall, a key challenge facing all stages of the program is the perceived uncertainty and lack of clarity that characterizes the process. As a first step, therefore, BEE should develop and make publicly available a guidebook that lists the steps involved in every stage of the program, identifying key decision-makers and authorities, laying down criteria, and setting timelines.

Increased program transparency:
- Specifically on standard setting, the product prioritization manual should be published. Revisions, if any, should include broader feedback from stakeholders identified in this paper. This would ensure enhanced transparency and certainty in the process of product selection and prioritization.
- For greater transparency, and to ensure continued public confidence in the program, impact assessment studies and compliance data should also be published regularly.[23]

- The rationale and process of hiring consultants should be more transparent. While consultants might be required in the short term, the government could develop expert review panels and engage in consultations with a broader set of stakeholders to make the work of the consultants more inclusive and accountable. Government should also consider building in-house capacities for the medium to long term.
- The composition of the standard-setting committees and minutes of their meetings and/or interim reports should be made publicly available.
- BEE's budget is currently not public. The budget, along with a report on label fees collected and their utilization, should be made public.
- In cases where recommendation(s) of the technical committee are not accepted by BEE or the Ministry of Power, justifications for the decision should be provided to members.

Enhanced accountability:
- There is a need for greater involvement of the SDAs in the program. SDAs have multiple responsibilities at the state level but they lack human and financial capacity to participate effectively in monitoring. Their accountability to BEE for these programs is also unclear. Establishing a clear, funded mandate to monitor compliance, and incentivizing or subsidizing some other aspect of the program in lieu of greater monitoring, might make SDAs more responsive.
- Setting timelines for each step and adhering to them is vital to enable public scrutiny of actions,

and to ensure that standards are not redundant by the time they are implemented.

- When consultants are selected to assist with any stage of the program, BEE must ensure that they have no conflict of interest, and capacity must be developed within BEE to oversee and evaluate their functioning.
- Consumer awareness campaigns across the country, conducted in regional languages, need to be prioritized and planned. Implementation will require clarity regarding personnel responsible for carrying out these activities,

and BEE will need to develop a dedicated plan and budget for awareness building activities.

Improved stakeholder participation:

- Regular testing of manufacturers' claims is critical because energy labels are granted on the basis of manufacturer self-certificates. Building adequate in-country capacity (laboratories, consumer groups, media, etc.) and strengthening their role in monitoring will enhance public trust in the program.
- Participation by consumer groups and other CSOs in the program should be supported by enabling policies, particularly in the areas of implementation and MV&E. Such measures are necessary to spur more public inputs to the program. Enabling policies can establish participatory processes at the national and sub-national levels to encourage public input and information to flow into the S&L program design and implementation.
- Currently, draft standards are published only for products in the mandatory category. In addition to public consultation for mandatory products, meeting(s) should be held where members of the public can share their views, comments, and concerns with BEE. Inputs received from the public and details of responses by BEE, should be published online.

Dedicated focus on building capacity at all stages of the program:

- Dedicated efforts to enhance capacity—technical, financial, and human—within BEE and the SDAs need to be prioritized

by both national- and state-level governments. It is critical that their budgetary allocation and staffing is significantly enhanced so they can undertake the full range of activities entrusted to them under the Energy Conservation Act. Linked to this is the need to develop technical knowledge on energy efficiency more generally. To this end, BEE could work in closer collaboration with technical universities to create a cadre of trained energy efficiency experts.

- In order to create enough capacity for a strong compliance program, it is recommended that the government institutionalize a process whereby funding is available for existing and new labs to increase their testing capacity. In addition to budgetary allocation, funds from labeling fees could be made available for this purpose.
- There is an urgent need to increase capacity to improve monitoring and compliance of the program. The government needs to enhance BEE's institutional capacity to take action against noncompliant manufacturers and increase its human and financial capacity to carry out this process more effectively. This would raise the credibility of the program and ensure that consumers are protected from false claims.
- BEE can involve retailers in the program through innovative training activities to improve awareness concerning standards and labeling. For example, BEE might choose to develop a pilot retailer competition that rewards retailers who sell high volumes/percentages of energy efficient appliances.

> In order to create enough capacity for a strong compliance program, it is recommended that the government institutionalize a process whereby funding is available for existing and new labs to increase their testing capacity.

ANNEX 1

Research questions to assess TAP-C governance principles in the S&L process.

Standard Setting

- Is there a document/manual that outlines the process for standard setting? Is it publicly available?
- What is the process? Is it time-bound?
- Who takes decisions throughout the process? At each point in the process, who is the decision-maker?
- In the standard setting process, how are the various performance aspects of the product addressed?
- Who is the final decision-maker on the standard?
- Which government agencies are involved in the standard setting process? How do they coordinate with each other?
- How are external non-governmental agencies involved in the standard setting process? Who coordinates their involvement?
- Is there public consultation on the draft standard?
- Is information relating to the transition from voluntary to mandatory labeling publicly available? Who is responsible for ensuring this transition?

- Are there TORs or mandates for each of these committees? Are they publicly available?
- What is the mandate of the committee? (recommendatory/affirmatory/decision-maker) What happens after the committee sends its recommendations? Is there public consultation on the draft standard?
- What is the composition of these committees? Is this publicly available?
- Transparency in functioning: Is the frequency of the meetings publicly known? Are the minutes of these meetings publicly available?
- Are there financial resources available for the committee? What are they used for? Do the committees have financial resources available to hold meetings?

- What kind of analysis? What are the key parameters that are analysed? Is this publicly available information?
- Who does it: in-house or consultants?
- Is the analysis publicly available?
- If done by consultants, what is the process for hiring those consultants—tenders and transparency? Who makes the decision on hiring?
- Who is consulted during this process?

- What is the prescribed frequency for tightening standards? What is the frequency in practice? From what date is this period counted (date of publication of standard/date of submission of committee report?)
- Who is involved in this process?
- Is there a review of the standard during the ratcheting process, and how long does it take?

Implementation

- Who participates in the label design process? Who is the final decision-maker on the label? Is there a public consultation in the label design process?
- Is there a procedure for obtaining labels? Is this publicly available information? What are the steps, time, and cost involved? How is the information submitted by the manufacturer verified before a label is awarded? Who verifies this information?
- Roles of different institutions in implementation including BEE, EESL, test laboratories, SDAs, manufacturers, retailers, utilities, consumer groups, GIZ and any others?
- Role of different committees in implementation?
- Is there clarity on these different roles and is this publicly available information?

- What financial and human resources are available? Who can access them (laboratories, consumer groups)?
- Are adequate test laboratories available?

- Is there a coherent strategy to reach out to consumers as well as retailers?
- What is the role of different institutions in the communications process: BEE, BIS, manufacturers, retailers, consumer groups, SDAs, utilities?
- What are the financial resources available for communication/implementation of strategy?
- How is the impact of the communication strategy verified? Are there resources for this?

Monitoring

- Is there a prescribed process for monitoring? Is it followed?
- How are external consultants selected? What is their mandate and duration of their contract? Is this publicly available?
- Role of various institutions in the monitoring process: BEE, test labs, SDAs, independent monitoring agencies
- Is compliance tested regularly? Are there regular and frequent spot tests and check tests? (Is there a certain minimum number of tests the monitoring agency must conduct before submitting a report?)
- Is the monitoring process different for mandatory and voluntary appliances?

- What are the financial and human resources available? Who can access them?
- Who pays for monitoring?

- Do consumers have any role in the monitoring process?
- How do their inputs feed into the process?
- What is the role of competitors in the monitoring process?

- Are the monitoring reports being made public? If so, how frequently?
- What actions, if any, are taken after the submission of the monitoring report? Are these actions corrective, preventive, or punitive in nature? What are these actions? Who takes these actions?
- Are enforcement actions made public?
- Have there been any disputes?

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ENDNOTES

1. According to the U.S. Energy Information Administration, the share of the residential sector in total energy use is around 18%. See http://www.eia.gov/tools/faqs/faq.cfm?id=447&t=1.

2. According to estimates, India emitted 2,358 MtCO2e in 2011. See WRI (2014).

3. BEE also provides voluntary endorsement labels for laptop computers and office equipment. http://www.beestarlabel.com/Content/Files/shcedule14com.pdf.

4. See http://beestarlabel.com/.

5. Nonetheless, setting MEPS helps the industry as a whole move toward higher efficiency levels and interviewees indicated that they would like to see more product categories included in the mandatory labeling program over time.

6. Personal communication with test laboratory and independent consultant. Several respondents observed that BEE is among the more responsive government agencies and is relatively accessible. However, there was also widespread consensus that, while the S&L program began on a positive note, it was set back by a change of leadership in BEE.

7. Participants at the workshop included representatives of the following organizations: Centre for Environment Education, Ahmedabad; Prayas, Energy Group, Pune; CUTS International, New Delhi; Consumer and civic Action Group, Chennai; Consumer Research Education Awareness Trust, Bengaluru; Bijli Bachao, Mumbai; Centre for Science and Environment, New Delhi; WRI India, Bengaluru; Consumer Education Research Centre, Ahmedabad; Consumer-VOICE, Delhi; Consumer Guidance Society, Vijaywada; Shakti Sustainable Energy Foundation, New Delhi; and Karnataka Electricity Governance Network, Bengaluru. Several of these organizations have come together to form a knowledge-sharing network called EE.Net. Many of these organizations are very active in the energy efficiency sector and were either interviewed for this paper or helped conduct other interviews.

8. CLASP identified seven stages of an S&L program: deciding whether and how to implement an S&L program; developing testing capability; setting standards; designing and implementing a labelling program; designing and implementing a communications campaign; ensuring program monitoring and compliance; and evaluating program performance (Wiel and McMahon 2005).

9. SDAs are statutory bodies set up by Indian state governments to implement energy conservation measures at the state level.

10. The project team benefited from the insights provided by Shantanu Dixit, Aditya Chunekar and Mrudula Kelkar of the Prayas, Energy Group, particularly in the design of the research framework that helped identify the key steps and governance issues in the S&L program.

11. CLASP was founded in 1999 through a strategic cooperation of three organizations—the Alliance to Save Energy, the International Institute for Energy Conservation, and the Lawrence Berkeley National Laboratory—to address the growing energy demand and contributions to climate change of developing countries. See: www.clasponline.org.

12. Personal communication with leading appliance manufacturer (on April 16, 2014) and test laboratory (on July 7, 2014).

13. Personal communication with test laboratory (on July 7, 2014).

14. Personal communication with consulting firm (on April 15, 2014).

15. Personal communication with leading appliance manufacturer (on April 16, 2014).

16. At least two leading appliance manufacturers raised this issue.

17. Personal communication with test laboratory (on July 7, 2014) and leading appliance manufacturers' association (on April 17, 2014). The time period for approval varies. For some products, such as ceiling fans, approval seems to have been given easily, while for others, such as washing machines, where quantifying exact savings potential was difficult, approval seems to have taken longer.

18. Personal communication with leading appliance manufacturer (on April 16, 2014). See also Somvanshi (2014).

19. Personal communication with consulting firm (on April 15, 2014).

20. Personal communication with consulting firm (on April 15, 2014), consumer group (on June 11, 2014) and test laboratory (on July 7, 2014).

21. Personal communication with consumer group (on June 11, 2014).

22. Personal communication with consumer group (on June 11, 2014).

23. BEE's website includes a link to "surveys and studies." However, as of the date of writing of this paper (January 8, 2016) this webpage is "under construction" and empty. http://www.beestarlabel.com/ManageUser/surveyandstudies

ABOUT THE AUTHORS

Bharath Jairaj is a Senior Associate at the World Resources Institute.

Contact: bjairaj@wri.org

Anjana Agarwal is an Associate at the World Resources Institute.

Contact: aagarwal@wri.org

Tara Parthasarathy was an Associate at the World Resources Institute and is currently working with a manufacturing company in India.

Sarah Martin is an Associate at the World Resources Institute.

Contact: smartin@wri.org

ACKNOWLEDGMENTS

ABOUT EGI

The Electricity Governance Initiative (EGI) is a unique network of civil society organizations dedicated to promoting transparent, inclusive, and accountable decision making in the electricity sector. We facilitate collaboration of civil society, policymakers, regulators, and other electricity sector actors using a common framework to define "good governance." Since 2003, we have worked with civil society organizations around the world to complete assessments of electricity governance in their respective countries, and to advocate for improvements in governance. More than 30 organizations around the world are now partners in the Initiative. The World Resources Institute serves as the global secretariat for EGI, with the Prayas, Energy Group (India) serving as our special knowledge partner.

ABOUT WRI

WRI is a global research organization that works closely with leaders to turn big ideas into action to sustain a healthy environment—the foundation of economic opportunity and human well-being.

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