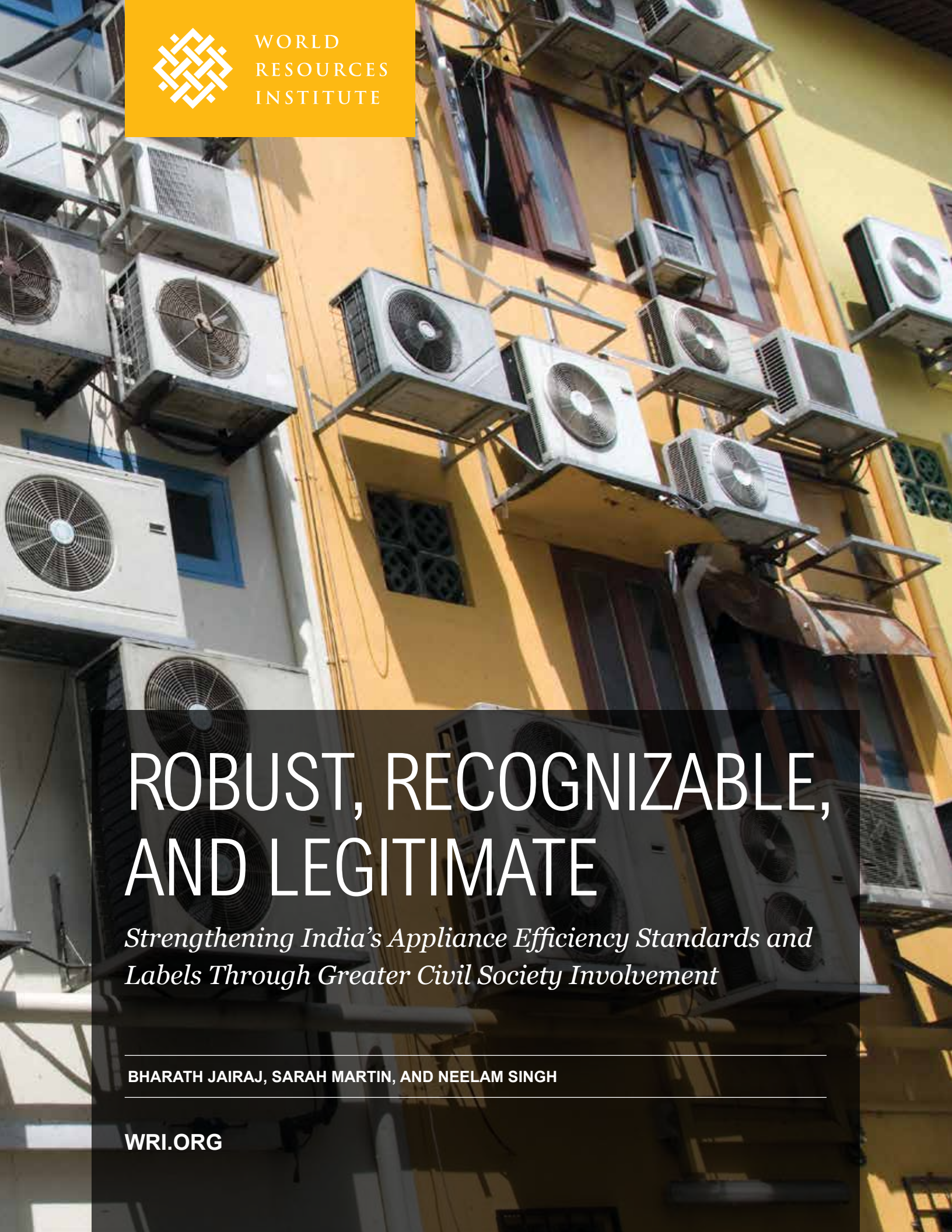

WORLD RESOURCES INSTITUTE

ROBUST, RECOGNIZABLE, AND LEGITIMATE

Strengthening India's Appliance Efficiency Standards and Labels Through Greater Civil Society Involvement

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An initiative supported by

SHAKTI
SUSTAINABLE ENERGY
FOUNDATION

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FOREWORD

A significant proportion of global energy use takes place within our homes. The appliances we rely on to wash our dishes, refrigerate our food, clean our clothes, and cool and heat our homes account for nearly 14 percent of global energy consumption. As the ranks of the global middle class continue to swell, household appliance purchases are bound to rise.

Fortunately, an uptick in household appliance purchases does not necessarily mean ever greater global energy consumption. Mandatory efficiency standards, coupled with labels that describe energy performance, enable consumers to save energy and reduce expenses, without drastically changing their lifestyles. Within the major economies worldwide, standards programs alone could save 1500 Terawatt hours of energy by 2030 and save consumers US$1.5 trillion.

The value of standards and labeling programs is especially notable in countries like India, where economic growth is fueling consumer electronic sales. India's residential sector already accounts for more than a third of its final energy consumption. Improving the efficiency of household appliances could secure impressive energy savings.

Despite the many benefits of appliance standards and labeling programs, many countries have not yet unleashed their full potential. Civil society—the intended beneficiary of standards and labeling programs—is often overlooked in the design, implementation, and enforcement of these programs. Experience shows that failure to fully engage this key constituency limits program impacts.

This report, "Robust, Recognizable, and Legitimate," considers the contribution that civil society organizations can make at each stage of an appliance efficiency standards and labeling program. Based on experiences in 10 developed and developing countries, it shows that civil society organizations bring a vital consumer perspective to standards and labeling programs, which can speed uptake and boost consumer awareness. Examples from the 10 countries demonstrate that civil society engagement throughout the entire lifecycle of a standards and labeling program can make programs more robust, recognizable, and legitimate. The report offers insights for India and other countries as they aim to broaden their own standards and labeling programs.

Delivering energy-efficient appliances into the homes of consumers is an affordable and practicable step toward meeting sustainable energy goals. Political leaders and appliance manufacturers in India and elsewhere should strive to create an environment that enables public participation and empowers consumers to make the best use of available energy-saving technology.

Andrew Steer
President
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EXECUTIVE SUMMARY

When effectively implemented, appliance efficiency standards and labels (AES&L) benefit multiple levels of society's stakeholders. This report looks at 10 such programs to distill which methods might work for India.

Among available energy efficiency approaches, appliance standards and labeling programs are particularly well positioned to improve household-level energy efficiency. Globally, residential use accounts for 14 percent of energy consumption (US EIA 2011). Appliance standards alone could achieve a 17 percent energy reduction in the residential sector (Letschert et al. 2012). The increased coverage and application of standards and labeling schemes could have real benefits for greenhouse gas reduction efforts as well, with a potential carbon dioxide saving of 3.1Gt per year by 2020 (CLASP 2013).

When effectively implemented, appliance efficiency standards and labels (AES&L) benefit consumers, utilities, manufacturers, and policymakers. Mandatory standards result in large and cost-effective energy savings through a change in manufacturing. Energy labels influence consumer behavior in favor of more efficient products and foster competition among manufacturers to innovate and market efficient products. Together, appliance efficiency standards and labels create market transformation mechanisms that promote energy efficiency in residential appliances and lighting.

Although AES&L programs—especially labeling programs—aim to influence consumer behavior, consumers and civil society often play a limited role in the design, implementation, and monitoring of these programs. Aside from the democratic benefits of participation,[1] civil society organizations (CSOs)[2] can balance information asymmetry, bring consumer perspectives to AES&L decisions, and infuse local preferences and issues of equity into decision making processes. Among the countries[3] assessed within this report, the under-involvement of CSOs and their lack of awareness about the positive impacts of energy efficiency have impeded the progress of energy efficiency programs and policies.

This is certainly true in India, where only about 20 percent of the population is aware of the labeling program (Jose 2011), and where consumers are generally not motivated by energy efficiency concerns. India's residential sector consumes a significant amount of its total energy consumption. Given India's steadily increasing population and its rapid economic growth, its energy consumption is set to increase exponentially in the coming years. Two decades of economic liberalization has already seen significant growth in the sale of several consumer electronic products, including televisions, refrigerators, air-conditioners, and other household electronic products. The consumer electronics sector of the Indian economy is poised to continue to grow in the coming years, requiring large investments in new electricity generation projects.

This report looks at AES&L programs in 10 countries with a view toward the lessons they might hold for India. The report identifies key factors that have contributed to effective AES&L programs in each of the countries considered and identifies the participation and involvement of CSOs as an important ingredient in the overall success of the AES&L program. More specifically, CSO involvement strengthens several key factors that

contribute to a program's success. These factors include a strong legal and regulatory regime, adequate human and institutional capacity and resources, a strong communications strategy, robust monitoring and compliance mechanisms, and periodic program evaluation and refinement.

CSOs were not engaged at every stage of the design, implementation, and monitoring of AES&L programs in any of the countries studied. Nevertheless, each country showcases active civil society participation at some points in the policy process. Together, the countries demonstrate that where civil society is present, AES&L programs are more robust, comprehensible, widely recognized, and legitimate. This suggests that although rigorous AES&L programs can be developed without CSO involvement, their impacts may be weaker than what is possible when CSOs are involved.

Lessons learnt from the countries considered in this report are relevant to India as it strives to expand its AES&L program to new appliances. The report recommends that the government and AES&L program managers in India establish and strengthen channels for CSO participation in the design, implementation, and enforcement of AES&L programs. It also recommends that Indian CSOs need to move beyond their existing roles and prioritize energy efficiency given the value of energy efficiency from affordability, environmental protection, and energy security perspectives.

To play an enhanced contributing role in AES&L programs, Indian CSOs will need greater financial and technical support, as well as policy support (e.g. technical facilities and capacity building programs). Providing this support should become a priority for donors and the international community. With the right support, CSOs can play a crucial role in advancing India's AES&L programs and in realizing untapped energy savings potential.

INTRODUCTION

Participation of civil society organizations at each stage of the appliance efficiency standards and labeling program helps strengthen program impacts and achieve more robust and timely outcomes.

Appliance standards and labeling programs not only drive greater appliance efficiency, but also support progress toward larger goals, such as reducing energy demand and greenhouse gas (GHG) emissions. Globally, the residential sector accounts for 14 percent of energy consumption (US EIA 2011). Appliance standards alone could achieve a 17 percent energy reduction in that sector (Letschert et al. 2012). With respect to GHG emissions, broader coverage and application of standards and labeling schemes could save 3.1Gt of carbon dioxide (CO_2) a year by 2020 (CLASP 2013).

In India, the potential impacts of standards programs are significant. India's residential sector accounts for approximately 39 percent of the country's final energy consumption (Rao et al. 2009). If all the appliances purchased in India over a three-year period were energy efficient, India could avoid new capacity requirements of over 25,000 MW (Boegle et al. 2010)—close to an eighth of India's total installed capacity.[4]

The Indian Government has acknowledged the benefits of AES&L programs in managing energy demand, and implements national AES&L programs through the Ministry of Power's Bureau of Energy Efficiency (BEE). By focusing on the most widely used appliances, the BEE has had a non-trivial positive impact[5] on energy consumption patterns and has transformed India's air-conditioner and frost-free refrigerator markets. Presently, however, India's mandatory labeling scheme only extends to four categories of residential appliances. As India looks to bring more appliances into its AES&L program, it can learn from the experience of other countries.

Experience shows that the success of appliance efficiency standards and labeling (AES&L) programs depends on specific indicators. These include a strong legal and regulatory regime; a country's experience with similar measures; adequate human and institutional capacity and resources; a strong communications strategy; robust monitoring and compliance mechanisms; and periodic evaluations and refinement. Although these indicators contribute to the success of AES&L programs, research and analysis completed for this report demonstrates that civil society engagement in AES&L programs is also a necessary indicator for the sustainability and success of the programs. CSO participation at each stage helps strengthen AES&L programs and achieve more robust and timely outcomes. CSO involvement improves program impact and can lead to quicker uptake and successful outcomes.

However, beyond engaging CSOs in public information campaigns, there has been no concerted effort to strengthen their participation in the design, development, and monitoring of AES&L programs. Contribution to the development of standards and labels is often limited to appliance manufacturers, government agencies, and one or two consumer protection organizations. Even though AES&L programs seek to influence consumer behavior through information and performance, CSOs and the wider citizenry play a limited role in their development.

The absence of CSOs from the development of AES&L programs—coupled often with civil society's general unfamiliarity with the benefits of AES&L programs—impedes the progress of energy efficiency (EE) programs. As intermediaries between policymakers and citizens, CSOs can help correct the imbalance of information between government and citizen, 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. CSOs' inclusion can play a crucial role in advancing EE programs. In India, avenues for public participation in AES&L programs are limited, reducing the potential of achieving good governance goals,[6] including transparency, accountability, and participation, and restricting the impact of these programs.

In order to understand the potential for CSOs in India to contribute to AES&L programs, this report considers the contributions made by CSOs to AES&L programs in Australia, Chile, China, the European Union (a common program applies to all European countries), Ghana, Japan, Malaysia, South Korea, Thailand, and the United States. It identifies indicators of a successful AES&L program and explores how CSO involvement has strengthened the programs within each indicator. These programs and experiences offer valuable lessons for decision makers in India as they look to develop and strengthen their AES&L programs.

The indicators of success identified here are based on the stages of development of an AES&L program as described by the Collaborative Labelling and Appliance Standards Program[7] (CLASP) (Weil and McMahon 2005), and on findings from primary and secondary research. CLASP is a leading global research body focused on international AES&L programs. Through an extensive literature review of AES&L programs, the authors of this report identified CLASP's methodology in developing the AES&L stages to be the most comprehensive.

The relationship between successful AES&L program outcomes and increased CSO participation is one that has not been considered previously. The authors recognize that further research is required to better understand the relative importance of CSO participation in comparison to the other indicators identified for successful programs. This report, therefore, serves as a foundation for deeper analysis and comparison of the effectiveness of the various indicators.

The 10 countries examined here were selected based on the level of development of their AES&L program. For a wide range of perspectives and experiences, the report considers country programs from both the developed and developing world. The findings about national AES&L programs are based on initial desk research followed by interviews with stakeholders involved in AES&L programs, including consumer groups, advocacy groups, nongovernmental organizations, research institutions, and policymakers.

Section 1 briefly describes appliance efficiency standards, appliance efficiency labels, and AES&L programs. It also introduces the seven stages in developing an AES&L program (as described by CLASP), and summarizes the AES&L programs in each of the 10 case study countries. Section 2 delves into the components of successful AES&L programs and notes the role that CSOs have played in different AES&L programs. Section 3 considers the factors that enabled CSOs to play those roles, and recommends that the Indian government and AES&L managers support CSO participation and establish processes to engage them.

Section I

DEMYSTIFYING APPLIANCE EFFICIENCY STANDARDS AND LABELS

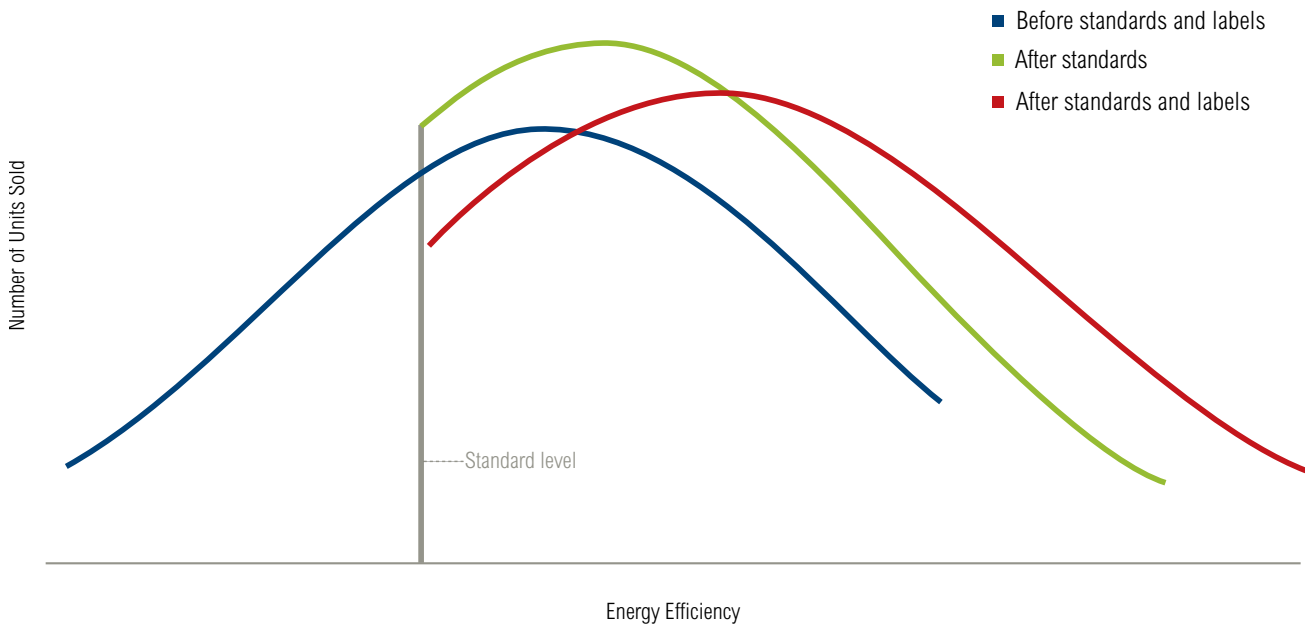
Standards and labeling programs co-exist and produce more desirable results by operating in tandem.

"Appliance efficiency standards" and "appliance energy labels" target the same objective: increased efficiency that minimizes energy consumption. However, standards and labels achieve this objective in different ways.

Appliance Efficiency Standards: Minimum Energy Performance Standards (MEPS, or simply standards), are procedures and regulations that prescribe the energy performance of manufactured products and prohibit the sale of products that are less efficient than required (Weil and McMahon 2005). MEPS are usually mandatory and are aimed at improving the average efficiency of products available. For example, MEPS requirements for refrigerators might mandate that the annual energy consumption of a particular model should not exceed a given level. Japan's Top Runner program functions as an efficiency performance standard program where manufacturers are required to meet efficiency requirements based on the best performance of current technologies (Hamamoto 2005). Other MEPS requirements can include product definition and efficiency levels of appliance models already on the market, calculation formula for MEPS cut-off level, and various testing procedures.

Appliance Energy Labels: Appliance energy labels describe a product's energy performance in terms of energy use, efficiency, and sometimes, energy cost. They are affixed to manufactured products to help consumers make informed purchases (Eil et al. 2005). Labels can be either endorsement labels or comparative labels, and can be voluntary or mandatory. Endorsement labels, such as the United States' ENERGY STAR® label, are "seals of approval" awarded according to predefined criteria. For instance, products can earn the ENERGY STAR label only if they meet the energy efficiency requirements in Energy Star product specifications (ENERGY STAR 2012c). Comparative labels, such as Thailand's Label No. 5, help consumers to compare performance across similar products and to select more efficient models. Comparisons can be made either through discrete categories of performance or along a continuous scale. For example, Thailand has a categorical label that uses

Figure 1 | **Standards and Labels Work in Tandem to Improve Product Efficiency—The Concept**[8]



a 1-to-5-point scale to display the relative efficiency of a product category (the higher the number, the higher efficiency). The label displays the model's energy consumption or energy efficiency value, which consumers can use to compare energy use or efficiency across models (Tathagat n.d.).

While standards help eliminate products with poor energy performance, labels encourage consumers to buy more efficient products. Labels can either complement standards or stand on their own. Standards and labeling programs often co-exist and produce more desirable results by operating in tandem (Figure 1). Australia's E3 program, for example, includes features that incorporate both standards and labeling: the government can withdraw the right of manufacturers, importers, and retailers to supply products that do not meet EE levels and products are required to carry mandatory comparative energy rating labels (Commonwealth of Australia 2011).

AES&L Programs: Typically, energy efficient standards and labeling programs fall under the authority of one or more government agency that is responsible for developing, issuing, and maintaining the standards and labels (Weil and McMahon 2005). Together, AES&L programs are market transformation mechanisms that aim to promote energy efficiency in residential appliances such as refrigerators, dishwashers, computers, lighting, and heating and cooling systems. When designed properly, AES&L programs can help increase consumer awareness of efficient products, drive substantial energy savings, and shift the market toward more energy efficient products.

Designing an effective AES&L program involves a series of steps that include:

- deciding which products need energy efficiency labels
- identifying the minimum efficiency standards for various appliances
- testing methodologies
- defining the certification and monitoring process
- designing the label
- marketing the program
- evaluating and reviewing impacts

In this report, we use the seven stages in the development of AES&L programs identified by CLASP as an analytical framework (Box 1).

While standards help eliminate products with poor energy performance, labels encourage consumers to buy more efficient products.

Analysis of the national AES&L programs studied in this report demonstrates that public input and civil society participation is an important factor in the successful development of AES&L programs. However, AES&L development, design, and implementation processes are usually dominated by appliance manufacturers and government technical committees. AES&L program designers can improve the uptake of energy efficient products if they consider and include end-users and address public interest concerns. Increased cost of appliances, actual cost savings, long pay back periods, and misunderstanding label information are examples of public concerns that can limit the success of AES&L programs.

Countries have adopted different types of programs, including mandatory and voluntary approaches. Most countries start with voluntary programs and move toward a mandatory program after some years. Table 1 briefly describes the programs in the countries included in this report. Other supporting policies—such as rebates, incentive programs, and early replacement programs—may also facilitate energy efficient appliance uptake (Table 2). For example, a labeling program can be more effective when coupled with financial incentives or rebates for labeled products. Malaysia's SAVE Rebate Program is an example of a rebate system introduced to induce consumers to choose 5-star rated appliances over those that are less efficient. The SAVE Rebate Programs is viewed as an important step toward creating consumer awareness of the benefits of EE appliances in a market where labeling products is still voluntary (Choong 2011).

BOX 1 | STAGES IN THE DEVELOPMENT OF APPLIANCE EFFICIENCY STANDARDS AND LABELING (AES&L) PROGRAMS

1. **DECIDING WHETHER AND HOW TO IMPLEMENT AES&L PROGRAM** Policymakers must determine whether an AES&L program will be beneficial for a given jurisdiction; which appliances should be covered; what type of program to implement (i.e., MEPS, labels, both); and what institutional, regulatory, or capacity gaps should be addressed before initiating a program.

2. **DEVELOPING TESTING CAPABILITY** Program designers should establish uniform testing facilities for products at the beginning of program development.

3. **ANALYZING AND SETTING STANDARDS** Program designers must conduct analysis (e.g., engineering, market research, national impacts, and consumer and manufacturer analysis) to ensure that standards will achieve their purpose based on specific national situations.

4. **DESIGNING AND IMPLEMENTING LABELING PROGRAM** Program designers must conduct analysis to understand what type of label should be used (endorsement or comparative, mandatory or voluntary).

5. **DESIGNING AND IMPLEMENTING COMMUNICATIONS CAMPAIGN** Clear communications campaigns must be in place to build public support and acceptance of the program.

6. **ENSURING PROGRAM INTEGRITY** Program designers must plan ongoing program monitoring and compliance enforcement to ensure integrity is achieved.

7. **EVALUATING PROGRAM PERFORMANCE AND REFINE** Program evaluation must be completed by program designers to assess benefits and whether (and how) the program should be changed, adjusted, redesigned, or re-evaluated.

Source: Weil, S. & McMahon J.E. (2005). Energy-efficiency labels and standards: A guidebook for appliances, equipment, and lighting, 2nd Edition. Washington: CLASP.

Table 1 | **Appliance Efficiency Standards and Labeling (AES&L) Programs in 10 Countries**[9]

COUNTRY	YEAR FIRST LABELING PROGRAM IMPLEMENTED	CURRENT S&L PROGRAM NAME	CURRENT PROGRAM TYPE	IMPLEMENTATION YEAR OF CURRENT PROGRAM
Australia	1986 (mandatory for select appliances in NSW[10])	E3	Mandatory MEPS and labels, and voluntary endorsement label	1992
United States	1976 (has both mandatory and voluntary programs)	ENERGY STAR	Voluntary endorsement label	1992
Thailand	1994 (voluntary)	Label No. 5	Voluntary comparative label	1994
European Union	1992 (mandatory)	Energy Labelling Directive	Mandatory comparative label	1995
China	1989 (MEPS), 1999 (voluntary endorsement label)	Energy Label	MEPS, Voluntary endorsement label & Mandatory information label	1999, 1998, & 2005
South Korea	1992 (mandatory)	Energy Boy	Mandatory MEPS and label	1999

CURRENT PROGRAM DESCRIPTION	APPLIANCES INCLUDED
The E3 program seeks to improve energy efficiency in household appliances through mandatory MEPS, mandatory energy rating labels, and through voluntary endorsement labels, training and support. Labels display a star rating from 1 to 10 and are mandatory for seven products. More stars mean higher efficiency.	refrigerators, freezers, clothes washers, clothes dryers, dishwashers, A/Cs, and televisions
Products can earn the Energy Star label by meeting the energy efficiency requirements in Energy Star product specifications.	clothes washers, dehumidifiers, dishwashers, freezers, refrigerators, water coolers, computer displays, imaging equipment, uninterruptible power supplies, audio/video, cordless phones, set-top boxes & cable boxes, televisions, four types of battery chargers, air conditioning, central air conditioning, room boilers, ductless heating & cooling, fans, ventilating, furnaces, heat pumps (air source), heat pumps (geothermal), home sealing—insulation & air sealing, room air cleaners & purifiers, decorative light strings, fans (ceiling), light bulbs, light fixtures, five types of water heaters
The Label No. 5 program is a comparative label that rates products from 1 (least efficient) to 5 (most efficient). In practice, it serves mostly as an endorsement label because nearly all labels that are voluntarily placed on appliances carry the highest rating. Products with lower label rating often choose not to display the label. The program covers 12 product categories.	Room air conditioners, CFLs, ballasts, electric fans, rice cookers, lighting fixtures, T5 fluorescent lamps, stand by power for televisions and computer monitors (most recently)
The EU has a mandatory comparative labelling scheme with seven efficiency categories. Until 2010, the categories ranged from A (most efficient) to G (least efficient). In 2010, the Energy Labelling Directive was recast to include A+, A++, and A+++ categories. A+++ is the most efficient category.	Lamps, luminaires, household air conditioners, televisions, tumble driers, washing machines, dish washers, household refrigerating appliances, wine storage appliances
China has three major programs related to standards and labels: a mandatory minimum efficiency standard program based on a two-tiered standard approach; a voluntary energy efficiency label, functioning as an endorsement label; and a mandatory categorical energy information label program adapted from the EU categorical energy label. The label includes five categories of efficiency—100% (meeting the minimum standard) to 55% (at 55% of the minimum standard).	MEPS cover: air conditioners; household refrigerators; clothes washers; and unitary air conditioners
The program targets products with high energy consumption and uses mandatory energy efficiency grades from 1 to 5. It prohibits the production and sale of products that are below the 5th grade as determined by MEPS. The products that meet the energy saving standard can use the Energy Saving Label nicknamed “Energy Boy”.	Energy Efficiency Label and Standard Program fall under 24 categories including household appliances, lighting equipment, and automobiles

Table 1 | **Appliance Efficiency Standards and Labeling (AES&L) Programs in 10 Countries (continued)**

COUNTRY	YEAR FIRST LABELING PROGRAM IMPLEMENTED	CURRENT S&L PROGRAM NAME	CURRENT PROGRAM TYPE	IMPLEMENTATION YEAR OF CURRENT PROGRAM
Japan	1979 (voluntary)	Top Runner	Mandatory MEPS & voluntary labelling program	2001
Chile	2005	Programa Pais Eficiencia Energetica	Mandatory and comparative label	2005
Ghana	2005	Star Rating Labeling Program	Mandatory comparative label	2005
Malaysia	2005	Energy Labeling Program	Mandatory comparative label	2005

CURRENT PROGRAM DESCRIPTION	APPLIANCES INCLUDED
Manufacturers are required to meet efficiency requirements based on the best performing current technologies. The label provides consumers with information about the extent to which appliances have achieved the standard. For example, if a product is 20% more efficient than the Top Runner standard, it has a label indicating "120%". If the product is 20% less efficient than the standard, it has a label indicating "80%".	air conditioners, electric refrigerators, electric freezers, electric rice cookers, microwave ovens, lighting equipment, electric toilet seats, 10 TV sets, video cassette recorders, DVD recorders, computers, magnetic disk units, copying machines, space heaters, gas cooking appliances, gas water heaters, oil water heaters, vending machines, transformers, routers, switching units, passenger vehicles, freight vehicles
Chile's mandatory labeling scheme covers household appliances including refrigerators and freezers, light bulbs and CFLs. A comparative label with seven efficiency categories ranging from A (most efficient) to G (least efficient) is used.	Refrigerators and freezers, light bulbs, CFLs and microwaves. The PPEE also plans on applying mandatory labels to A/C, televisions and clothes washers
In Ghana, a comparative labelling scheme is used for room air-conditioners and CFLs. It uses five stars for different efficiency categories. More stars mean higher efficiency, i.e., a product with five stars is the most efficient.	Room A/Cs and CFLs
Malaysia's program is a comparative labeling program, ranking products with 3, 4, and 5 stars (5 is the most energy efficient and 3 is the average rating). The program covers several appliances, such as refrigerators, A/Cs, televisions, lamps, and fans.	High efficiency motors; domestic fans; televisions; air conditioners; ballast, lamps, and domestic refrigerators

Table 2 | **Policies to Promote Household Appliance Energy Efficiency**[11]

PROGRAM TYPE	ADVANTAGES	CHALLENGES	SAVINGS POTENTIAL	COUNTRY EXAMPLE
Minimum Energy Performance Standards (MEPS)	■ Eliminate low-efficiency products ■ Easier to increase efficiency levels over time ■ Technology costs borne by consumers and savings also accrue to them	■ Requires consensus/ cooperation among multiple stakeholders (manufacturers, environmental groups, consumer groups) ■ Can incur some up-front costs to consumers ■ Needs sound enforcement	■ Determined by available technology and cost-effectiveness	■ China's Mandatory minimum efficiency standards
Comparative label	■ Manufacturers have the option of a wide range of efficiencies ■ Provides strong market incentive for efficiency ■ Technology costs borne by consumers and savings also accrue to them	■ Impact of program less predictable ■ May be difficult to change labeling scheme ■ May or may not maximize consumer benefits	■ Determined by market demand for higher efficiency products	■ Australia's E3 program, which includes a mandatory comparative label
Endorsement label	■ Provides market association between efficiency and quality ■ Can have a large impact if endorsement level becomes the de facto standard ■ Technology costs borne by consumers and savings also accrue to them	■ Manufacturers can opt in or out ■ Impact of program difficult to predict ■ May or may not maximize consumer benefits	■ Determined by market demand for highest efficiency products	■ US's ENERGY STAR Label
Rebates and incentives	■ Consumers have the flexibility to opt in or out ■ Often implemented by utilities so program cost incurred by state agencies can be lower ■ Synergy with labeling programs	■ Relatively high costs on a per unit basis compared to standards and labels, though with enhanced market demand for more efficient products, per unit costs may reduce	■ Scale depends on the scope of the program	■ Malaysia's SAVE program
Early Replacement programs	■ Targets a small number of high energy consuming appliances ■ Voluntary in nature so consumers have the flexibility to opt in or out ■ Often implemented by utilities so program cost incurred by state agencies is lower ■ Synergy with labeling programs	■ Relatively high costs on a per unit basis compared to standards and labels	■ Can be large on per unit basis. Scale depends on scope of each program	■ South African utility's light bulb exchange program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Section II

INDICATORS OF SUCCESSFUL AES&L PROGRAMS

The ten case studies provide insight into each country's experience at different stages of appliance efficiency standards and labels development, and demonstrate how involvement of civil society organizations has helped strengthen the programs in these countries.

Based on experience in the 10 countries considered here, we have identified seven common indicators of a successful AES&L program. The identified indicators draw from CLASP's stages of development of an AES&L program (Weil and McMahon 2005), and from our own primary and secondary research.

These indicators are:

a. Strong legal, regulatory and policy basis

b. Prior experience and maturity of program

c. Sufficient capacity, resources and funding

d. Strong communications strategy

e. Effective monitoring and compliance mechanism

f. Extensive stakeholder engagement

g. Periodic impact evaluation and revision

Experience in the 10 countries analysed demonstrates that although these indicators contribute to successful AES&L programs, the participation of CSOs throughout AES&L development and implementation processes is equally important. The role of CSOs should not be underestimated, especially because the targeted stakeholders are consumers and the general public. CSO participation can bring several benefits to any policy process (Box 2), including AES&L programs. CSO participation within each indicator has been shown to help strengthen AES&L programs, speed uptake, and achieve more robust and timely outcomes. For example, with earlier input from consumers, programs can be more easily targeted and customized to regional and contextual needs, boosting their impact. Furthermore, several countries have experienced setbacks that might have been avoided had CSO involvement been a priority from the beginning. In Ghana and Chile, hastily adopted AES&L programs did not anticipate problems relating to consumer awareness. Table 3 outlines how CSO participation can strengthen each of the indicators noted above and provides country-specific examples.

BOX 2 | BENEFITS OF CIVIL SOCIETY PARTICIPATION

- **ENHANCES LEGITIMACY:** Participation by CSOs builds legitimacy and public "buy-in" for the resulting decision.
- **BUILDS STAKEHOLDER CAPACITY:** Through the participatory process, CSO can gain and build skills and knowledge.
- **IMPROVES IMPLEMENTATION:** Building CSO capacity enables better implementation. Decisions made in a participatory manner are more likely to be fully implemented and sustained because they achieve more buy-in from the public. Additionally, cost savings can be achieved, especially when CSOs can carry through activities and share resources necessary in the program process.
- **REDUCES OPPOSITION AND DELAYS:** By enhancing program legitimacy and addressing public opinion and concern, programs face less opposition in the long term and fewer delays in implementation.
- **IMPROVES "QUALITY" OF THE DECISION:** CSOs bring specialized knowledge, often related to consumer preference, and differing perspectives to the table, raising the quality of decisions made.
- **MAKES DECISIONS REFLECT STAKEHOLDER VALUES:** When the public has the opportunity to influence a decision-making process, the resulting decision is more likely to reflect public values and interests than if it were top-down.

Source: Adapted from Foti, J. 2008. *Voice and choice: opening the door to environmental democracy.* Washington D.C.: World Resources Institute. Pg. 26

Table 3 | **Strengthening Success Indicators Through CSO Participation**

SUCCESS INDICATOR	CSO PARTICIPATION ADVANTAGE	COUNTRY EXAMPLE
Strong legal, regulatory, policy basis	CSOs can influence policy formulation, implementation, and help achieve buy-in from the public.	Australia's consumer group, CHOICE, has advocated and lobbied for the implementation of mandatory labels.
Prior experience and maturity of AES&L program	CSOs can provide important input by sharing knowledge acquired through their CSO network or prior experience. This input is especially helpful as implementing organizations gain their own experience and help strengthen credibility of programs.	The Malaysian Association of Standard Users (Standards Users) has provided valuable inputs based on knowledge gained during international workshops and working groups on AES&L schemes. Technical committees for AES&L have used these inputs.[12]
Adequate capacity and resources	CSO participation can help minimize capacity constraints and strengthen AES&L programs by providing needed expertise and capacities.	In Ghana, CSO-led market research and consumer surveys improved the proposed design for national energy labels.
Strong communication strategy	CSOs are often considered a trusted voice that can raise awareness, inform and advise consumers through communication campaigns.	Consumers Korea has played a central role in consumer outreach through various mechanisms, and has achieved better consumer understanding of benefits related to energy efficient appliances.
Strong monitoring and compliance mechanism	CSOs can serve as third party verifiers and help monitor specific provisions of AES&L schemes, and ensure compliance and program integrity.	Australia's CHOICE established a series of testing laboratories to help monitor appliance compliance. CHOICE publishes test results in its magazine, which has been crucial for program integrity.
Extensive Stakeholder engagement	CSO participation within multi-stakeholder participatory processes strengthens AES&L program outcomes by bringing forth and integrating public opinions and concerns. This helps minimize potential objections and delays, and helps maximize program acceptance and understanding.	In Malaysia, key stakeholders from both the manufacturing and consumer sector have been involved in the AES&L program, including Standards Users. Standards Users has contributed consumer perspectives to the program development process, including information about how and what the consumer needs to understand labels better.[13]
Impact evaluation and revision processes	CSOs can independently evaluate programs, contribute consumer insights, and influence label changes necessary for program improvements.	In the EU, a coalition of CSOs influenced a proposed label change to better reflect consumer preferences. These proposed changes arose as appliance efficiencies were improving.

In those indicators where CSO participation has been present, it has been significant, and has led to successful outcomes of the implemented AES&L programs.

CSOs can influence policy formulation and implementation and can help achieve buy-in from the public.

In none of the countries studied have CSOs participated in all indicators. However, in those indicators where CSOs have participated, that participation has been significant and has led to successful AES&L program outcomes. This section considers each of the indicators for a successful AES&L program and with the use of country examples, explains how CSO participation has helped strengthen each.

a. Strong legal, regulatory and policy basis

A strong legal and regulatory framework that defines policy objectives and targets, lays down the legal foundation for establishing AES&L schemes, and sets out compliance mechanisms is crucial to institutionalize and effectively implement AES&L programs. In some of the countries studied, AES&L schemes have been developed to further an overarching national plan or policy; in others, a specific and targeted law or directive produces the scheme. It is also common for a country to have both a regulatory framework and national plan supporting the AES&L scheme. For instance, in the United States, developments leading up to the implementation of the Energy Star program began in 1975 with the enactment of the Energy Policy and Conservation Act, which mandated an energy conservation program for major household appliances and called for energy efficiency targets (LBNL 2012).

Table 4 highlights some legal and regulatory provisions that promote the use of AES&L programs in some of the countries studied. In each of these countries, a strong legal or policy basis has stimulated the development of AES&L programs and has laid the foundation for new programs.

Although traditionally CSOs' role in law or policy making has been minimal, they can influence the policy choices being considered and can help achieve buy-in from the public on policy agenda items. In the 1980s, Australia's premier consumer group, CHOICE, was involved in the very early stages of developing a labeling program, as consultants to the government. It was also involved in advocating and lobbying for the implementation of mandatory labels, when the policy discussions were largely focused on voluntary labels.[14]

Table 4 | **Regulations for Promoting Appliance Efficiency Standards and Labeling Programs (AES&L)[15]**

COUNTRY	LEGISLATION/REGULATION & YEAR	DETAILS
European Union	Energy Labeling Directive, 1992	Made comparative labeling compulsory in all member countries. It has been amended and revised regularly to keep up with appliance efficiency achievements and market penetration. The addition of the A+++ rating to the energy label in 2010 is one such amendment.
	2020 Strategy	Sets an energy consumption reduction target of 20% compared to projections by 2020 and supports AES&L schemes.
Japan	Energy Conservation Law, 1979	Revised in 1999 to include the Top Runner Program under which over 20 appliances have been labeled.
	National Energy Strategy, 2006	Includes the Energy Front Runner Plan, which aims to achieve 30% energy efficiency improvements by 2030, relative to 2003 efficiency levels.
Korea	Rational Energy Utilization Act, 1979	Amended in 1992 to include efficiency standards and labels and provides the foundation for the current AES&L schemes.
	National Energy Basic Plan, 2007	Has a goal of 46% energy efficiency improvement by 2030, based on 2007 efficiency level, and anchors all AES&L schemes.
Thailand	Energy Efficiency Development Plan (2011-2030)	Recommends the establishment of minimum energy performance standards (MEPS) and voluntary labeling schemes to achieve energy intensity reductions.
	Energy Conservation Promotion Act, 1992	Mandates the improvement of appliance efficiency.
China	Energy Conservation Law, 1998	Promotes AES&L program and aids in its development.
USA	Energy Policy and Conservation Act, 1975	Establishes an energy conservation program for major household appliances and calls for energy efficiency targets.

b. Prior experience and maturity of program

Countries have developed appliance efficiency programs over varying periods of time. Most countries included in this study have had more than 10 years of experience in AES&L program development and outreach (Table 1). The countries examined took considerable time to design and develop their programs, bring stakeholders on board, and move the program from design to implementation.

China, Japan, and South Korea implemented their current labeling schemes roughly 13 years ago and have been improving upon them since. Countries like Australia, the European Union, Thailand, and the United States started implementing their current labeling schemes roughly 20 years ago and have seen varying degrees of label development and rescaling. Chile, Ghana, and Malaysia have a relatively shorter history of implementing labeling programs, but they have benefitted from the experience of other countries as their programs continue to evolve in diversity and strength. The Chilean

As implementing organizations gain experience, CSOs can share knowledge acquired through their networks and help strengthen program credibility.

labeling program, for example, has used the evolved European comparative labeling scheme as a model (IEA 2009).

Australia, Japan, China, the European Union and the United States have extensive experience in AES&L programs. These countries implemented their current standards and labeling programs within the last 20 years. In many cases, governments and states in these countries demonstrated an early interest in standards and labeling schemes, implementing one-off schemes before the current national programs came into existence. These early experiences significantly influenced national and regional labeling developments. In the case of the EU countries, for example, the earliest programs began in the 1960s when France introduced MEPS. By the mid-1970s, both France and Germany were implementing labeling programs. In the 1980s, a voluntary common EU label was developed for electric ovens. By 1990, Denmark, the Netherlands, and the United Kingdom also had legislation in place pertaining to energy labels and/or standards. In 1990 Denmark initiated an effort to introduce a mandatory energy labeling scheme, which led to the introduction of a common mandatory EU label (Harrington and Damnics 2004).

As countries gained experience in developing labels, they began to label more appliances. The first items tagged with the US Energy Star seal were computers and monitors in 1992. As the program evolved, the list of rated products continued to grow; today the Energy Star label can be found on

over 60 different product categories (Murray and Mills 2011). CSO input can grow in importance as they gain experience and develop knowledge of energy efficiency and the appliances market. The European Consumer Group on Standardization, ANEC, has played a key role in voicing consumer perspectives on the EU labeling scheme since modifications to the label were first proposed in 2002. Through consumer research and market surveys, ANEC has contributed to discussions concerning label design changes and consumer preference (ANEC 2002-2012).

c. Sufficient capacity, resources and funding

Another factor in the success of AES&L programs is the clear allocation of sufficient and stable funds for program development, upgrades, and monitoring. Monitoring, evaluation, and implementation of AES&L programs suffer when implementing agencies are not clearly identified and programs are inadequately staffed. In many countries, it is apparent that programs lack adequate budgets for some activities; responsibility for executing these activities is then often split between various agencies (Mark Ellis & Associates and CLASP 2010).

A number of programs are supported by clearly designated agencies and a dedicated staff. However, there are countries with less clearly defined implementing agencies, where AES&L programs fall under larger EE programs. The number of staff dedicated to EE, and S&L programs in particular, also varies substantially from country to country.

Table 5 | **Sample Budget Allocations for AES&L Programs**[16]

COUNTRY	BUDGET
Australia	3 year budget (2007-2010) of $ 10 million
Chile	Annual budget allocations of US$ 34 million since 2009
Malaysia	4 year budget (2006-2010) of US$ 6.3 million
U.S.	2009 Recovery Act allocated US$ 300 million

CSO participation can help minimize capacity constraints and strengthen AES&L programs by providing needed expertise and capacities.

Australia, China, Malaysia, Thailand, and the United States have established dedicated agencies for the promotion and implementation of AES&L schemes. The agencies involved in program execution are well-defined and have clear roles and mandates (APERC 2010). The China Energy Label Center (CELC), for example, was established to supervise the registration and monitor the use of energy information labels (Zhou 2008). Yet the CELC has no regular budget for monitoring the compliance of the energy information label, which seriously constrains the program (Zhou 2008).

Budgets allocated to AES&L schemes in Australia, Chile, Malaysia and the United States are clearly outlined in official plans, such as long-term energy plans, resource plans, or AES&L plans. In most cases, budgets are allocated for a definite period of time in advance by public funding (Table 5). These budgets, however, do not specify if a certain percentage is allocated to monitoring and compliance.

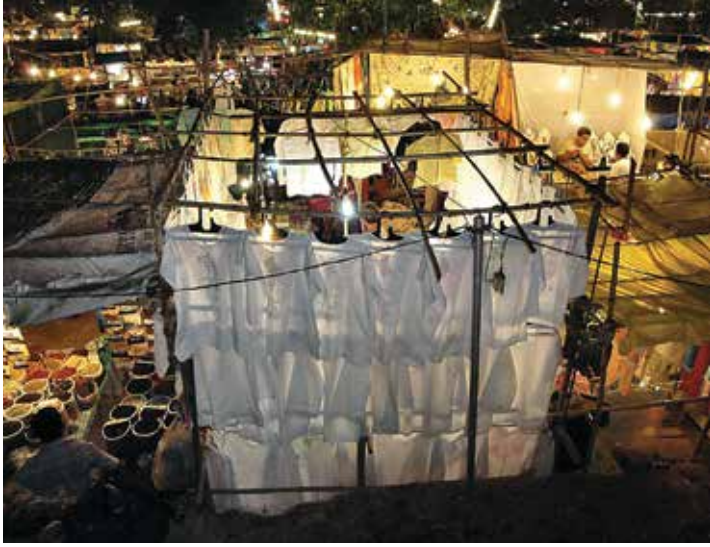
In Thailand, for example, the Thailand Promotion of Electric Energy Efficiency (TPEEE) Project has created considerable human resource capacity within the Electricity Generating Authority of Thailand (EGAT) and the Demand Side Management Office (DSMO). By the end of the TPEEE project in 2000, the DSMO consisted of about 250 staff members in two divisions (World Bank 2006). The Label #5 program, the most successful TPEEE initiative, continues to enjoy a strong DSMO staff and

CSOs are a trusted voice that can raise awareness and inform and advise consumers through communication campaigns.

budget. Over the years, the DSMO has developed competencies in monitoring, evaluation, compliance, and testing (World Bank 2006). It continues to test compliance in the use of Label No.5 through third party labs. The Consumer Protection Board supports the DSMO and receives complaints, and EGAT conducts random testing.

Despite their own capacity constraints, CSOs and consumer groups have provided useful inputs and insights to AES&L program managers. By conducting market surveys and monitoring the implementation of the AES&L programs across differing demographics, CSOs help identify where additional resources and attention is required. For instance, in Malaysia a survey conducted by CSOs concluded that additional resources and attention were required to make the labels more appealing and persuasive. The Malaysian study of comparative labels showed that those surveyed preferred star rating labels over letter grading or number rating labels (Mohd Taha 2003). Malaysia's "End Use Energy Rating Working Group"—made up of CSOs, appliance manufacturers, and government agencies—has undertaken extensive consumer surveys to investigate market preference and awareness to design better labels. The working group's participation has strengthened AES&L program implementation by bringing more stakeholders to the table. At the same time, it has brought local preferences and consumer perspectives to light, allowing them to inform decisions that would have otherwise been made by only appliance manufacturers and government.[17]

In Ghana, CSOs conducted market research and consumer surveys to improve the proposed design for national energy labels, thereby strengthening existing state resources. Label designs in the country were informed by market research using 10 focus groups in four cities to test consumer comprehension and qualitative impressions of four samples of labels. Uncertainties expressed during these focus groups were not anticipated in the original label design; for instance, consumers did not understand whether more stars indicated a more efficient product or a higher energy consuming product (Energy Foundation 2006). The label's symbol was subsequently redesigned to incorporate the market research results and more accurately convey product energy efficiency information to consumers. More effective labels have led to greater consumer understanding of product energy use, increased sales of efficient products, and market transformation toward energy efficient products (CLASP 2011b).



Collaboration and support from expert groups across the globe has helped to strengthen CSO capacity in developing countries. For example, China's AES&L scheme has benefitted from active collaborations with several international institutions, including the US Environmental Protection Agency (US EPA), Lawrence Berkeley National Laboratory (LBNL), the Energy Foundation (EF), and the Collaborative Labeling and Appliance Standards Program (CLASP) (Lin 2002). In Ghana, CLASP helped overcome some of the capacity constraints by providing technical assistance to the government and CSOs to help develop and strengthen AES&L schemes. In Chile, the Natural Resources Defence Council (NRDC) played a significant role in partnership with local universities and national CSOs to reduce the capacity gaps. The Malaysian Association of Standards Users attempted to deal with technical capacity challenges by developing a pool of experts from different individual CSOs. [18]

Capacity constraints can set back the development of a country's AES&L program, and having a clear understanding of the long term funding requirements necessary to maintain such programs is fundamental. CSO participation can help minimize capacity burdens by providing expertise and capacities, such as independent evaluation, that otherwise would not exist and help strengthen AES&L programs.

d. Strong communications strategy

A better understanding of how energy is used, opportunities for energy efficiency, and the economic and non-economic costs (social and environmental) of energy production can support successful uptake of AES&L programs by consumers. The US ENERGY STAR Label, for example, explicitly promises both private benefits for consumers in the form of cost savings from reduced energy consumption and public benefits in the form of reduced GHG emissions associated with reduced energy consumption (Ward et al. 2011). Appliance end-users need to understand how their homes use energy, the energy savings opportunities that are available, and which products represent energy-efficient and cost-effective choices (Wiel and McMahon 2005). High levels of label awareness and awareness of savings potentials can help determine the long-term success of the label (Tojo 2005).

Thailand's No.5 Program offers valuable insight into the importance of consumer awareness in achieving program success. It has achieved nearly 100 percent awareness among consumers (Du Pont 2002). Consumer interviews show that Label #5 is seen by consumers as a "seal of approval" and a symbol of energy efficiency, quality, and durability (World Bank 2006). The program's success is partly attributable to the emphasis placed on public awareness and understanding of efficiency benefits. Thailand's Demand Side Management Office (DSMO) and Energy Policy and Planning Office (EPPO) have contributed through related initiatives. DSMO public information campaign

activities have been highly effective in changing the purchasing behavior for residential appliances, and have helped convey to the public that energy is a measurable resource (World Bank 2006). Program outcomes demonstrate that customers are motivated by short-term cost savings. However, because cost savings are usually long-term, they need to be made clear from the beginning for consumers to factor in savings over the long-term in their spending decisions (World Bank 2006).

The US Energy Star program highlights the financial and environmental benefits of EE and encourages behavior change, such as the use of more efficient appliances, through its outreach and awareness activities (USEPA 2010). Public awareness has increased through wider outreach campaigns in recent years. For instance, between 1999 and 2010, Energy Star label recognition in the United States grew from 30 percent to 80 percent,[19] mainly due to ongoing outreach campaigns, including print, broadcast, social media channels, nationwide events, and grassroots-to-national partnerships (USEPA 2010). While the US Environmental Protection Agency (USEPA) leads the outreach on Energy Star, the Department of Energy also advertises and engages in public outreach about the benefits of energy use reduction and its relationship to economic growth and job creation (APERC 2010).

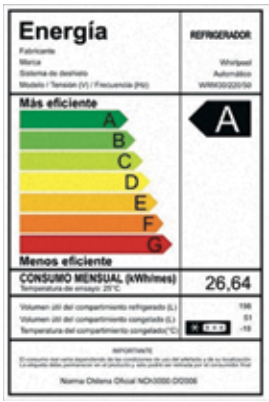
For a labeling scheme to be effective, consumers must be aware of the labeling/classification system. At the same time, the scheme should be able to influence purchase decisions made by the consumers (Mills and Schleich 2010). Therefore, it is important that labeling schemes include an outreach and awareness component to ensure that adequate information is available to the consumers.

Typically, raising awareness about labels and informing and advising consumers through communication campaigns is where CSOs play their greatest role in AES&L programs. This function is important: it recognizes the crucial role CSOs play in assisting consumers to navigate through the plethora of information available (e.g., labels, advertisements, brochures, product placements, and discounts) in order to make informed choices. Consumers often need trusted guidance on how to navigate this space—a role that independent, competent, and credible CSOs can play.

An example is Consumers Korea (CK), a consumer organization that has played a seminal role in consumer outreach on appliance efficiency in Korea. CK has conducted various outreach activities such as seminars, lectures, press conferences, surveys and polls, and through campaigns including the "Energy Efficiency Product Consumption and Product Promotion Campaign," which sought to change energy consumption patterns and increase the use of energy-saving devices in Korea (Consumers Korea 2012). In partnership with a national newspaper, CK established the Annual Energy Winner award in 1997 to encourage manufacturers to produce more EE products, and also annually rewards the "best of class" products (Moon and Hee Ko 2009). The awards gained international recognition with the United Nations Economic and Social Commission for Asia and the Pacific (UN-ESCAP) co-hosting the awards in subsequent years (UNESCAP 2002). This is not to say that CK was solely responsible for the success of the AES&L programs in Korea; it worked in close partnership with the Government of Korea's Energy Management Corporation and appliance manufacturers in the country. Together, these entities have helped Korean consumers better understand the benefits of purchasing energy efficient appliances.

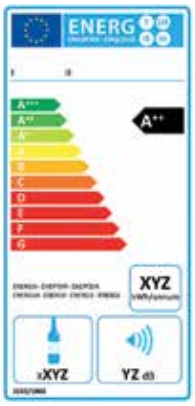
Chile offers an example of a less successful outcome. The government's efforts to promote EE through campaigns led by the Chilean Agency for Energy Efficiency (Agencia Chilena de Eficiencia Energética) included a consumer handbook that explained refrigerator and light bulb product labels. The guide explains the labels' contents: the annual potential energy and electricity cost savings that can be achieved through the proper use of appliances and behavioral measures that consumers can adopt to that ensure maximum efficiency is achieved (PPEE 2011). Despite these efforts, a study by the Chilean National Consumer Service, SERNAC, found that the current label design (Figure 2), which is based on the European energy label, is not fully understood by consumers. In particular, the correlation between the length of the horizontal arrows, indicating categories A-G, and the product energy efficiency appears to be counterintuitive. SERNAC has noted that further efforts must be made to educate consumers on how to read and interpret the information provided on the energy label (SERNAC 2007).

Figure 2 | **Energy Efficiency Labels As They Appear Internationally**

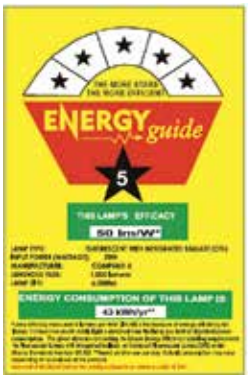


A

B



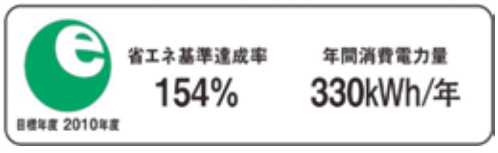
C



D

E

F



G

H

I

A: Chile energy efficiency label; **B:** Australia energy label; **C:** EU energy label; **D:** Ghana energy label; **E:** Thailand Label No. 5; **F:** Korean energy efficiency label; **G:** Japan Top Runner label; **H:** Malaysia energy label; **I:** US Energy Star.

In Ghana, program success has been linked to consumer outreach initiatives such as those led by the Energy Foundation (Ofosu-Ahenkorah and Constantine 2002), a non-profit private sector organization that provides information about energy labels. In 2006, a public education campaign to publicize the standards program and provide information on it to consumers preceded the move from a voluntary to a mandatory AES&L program (Energy Foundation 2006). In Malaysia, where consumer awareness of labels is still quite low at five percent (FOMCA 2010), the importance of promoting awareness has been acknowledged and efforts are being made through a variety of outreach programs. The Federation of Malaysian Consumer Associations (FOMCA) and the Malaysian Association of Standards Users have put in place a number of outreach programs to boost awareness about the benefits of energy efficiency and improve understanding of energy labels. Feedback from consumer surveys and outreach activities has helped FOMCA bring useful inputs into policy discussions, including weighing in favor of making the sales or manufacture of domestic energy efficient appliances mandatory among manufacturers and retailers (FOMCA 2010).

e. Effective monitoring and compliance mechanism

Ensuring that there are systems in place to monitor and assess whether industry is complying with all the provisions of the AES&L scheme is important to achieving success.

CSOs can serve as third party verifiers and help monitor specific provisions of AES&L schemes, and ensure compliance and program integrity.

Monitoring systems and compliance levels vary across the countries studied, ranging from weak or poorly defined to well-established mechanisms. Furthermore, a product may comply with some rules and fail to comply with others. For example, a product within an AES&L program may meet the energy performance criteria but fail to display the label correctly.

Careful planning and budgeting is necessary to establish and properly implement a strong compliance regime (see Box 3). Conformity and compliance may be promoted and assessed in various ways, including facilitation and education; provision of information about the supplier, product, and energy performance criteria; monitoring, verification, and enforcement (MV&E); and reporting (Ellis et al. 2010). Compliance with MEPS and mandatory labeling programs involves putting in place a set of mandatory regulations that strictly define and prescribe requirements for product suppliers, provide the scope of products covered, and other measures (Ellis et al. 2010). In voluntary programs, however, compliance is often overlooked in order to attract more participants, though in principle, once manufacturers have committed to participate voluntarily, they are often bound by the rules of the AES&L programs.

BOX 3 | BENEFITS OF ADDRESSING COMPLIANCE

Addressing compliance brings several short- and long-term benefits:

- High compliance rates help build the credibility of appliance AES&L programs
- Failure to address non-compliance can erode consumer confidence
- High compliance rates safeguard investment and encourage innovation in energy efficiency
- Without adequate compliance, industry participants who are compliant feel penalized
- Improving compliance rates is likely to improve key outcomes of S&L programs
- Understanding compliance rates is crucial for accurately forecasting outcomes of AES&L programs

Source: Ellis, M., Z. Pilvan, C. Evans, L. McAndrews, L. 2010. *Compliance counts: A practitioner's guidebook on best practice monitoring, verification, and enforcement for appliance standards and labelling.* New South Wales: Mark Ellis & Associates.

In some countries, CSOs monitor specific provisions of the AES&L scheme—label understanding and consumption changes in society, for example—and not the whole scheme. ANEC, the European Consumer Voice on Standardization, demonstrated through a 2008 market survey that the EU label is well-known across Europe and among European consumers, and is actively used in the household decision-making process (Stø and Strandbakken 2009). The survey also concluded that the "A-G" label is the easiest to understand across all markets and the overwhelming majority of consumers in each market correctly identify the label "A" as the most energy efficient product. When the "A-G" label was compared with a proposed numerical label (1-7), the majority of consumers found the "A-G" label easier to understand (Ipsos MORI 2008). Results like these strengthen ANEC's recommendation that proposed label changes be accompanied by extensive consumer surveys to determine which is best understood by end users.

Where consumer organizations have independent test laboratories or access to such laboratories, they have been involved in testing products to provide external, unbiased results (Weil and McMahon 2001). Such product testing is important for addressing quality issues, mitigating issues of low quality EE appliances, offering a decentralized monitoring and evaluation system, and ensuring program integrity. Furthermore, involving CSOs can reduce information asymmetry, where one set of actors (usually appliance manufacturers) has more relevant information than others. Information asymmetry could lead to inefficient standards and adversely impact program integrity. To meaningfully participate, CSOs need strong technical knowledge capacities, regular access to training opportunities to keep abreast of the dynamic nature of the sector, and the capacity to engage proactively on AES&L issues.

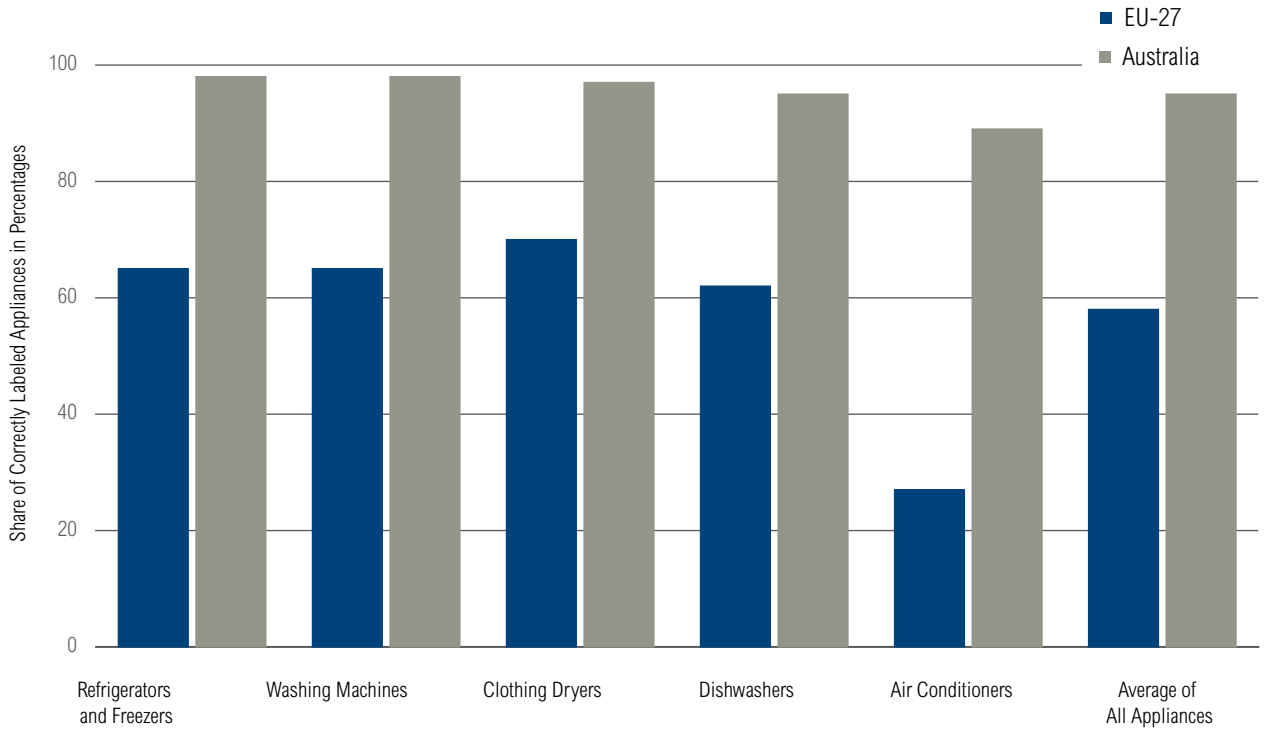
Australia's consumer group, CHOICE, has been able to build the technical knowledge capacity required to influence monitoring and compliance procedures. CHOICE has set up a series of testing projects, including lab tests and home monitoring systems,[20] and reports the outcome of the tests in their subscriber magazine (Holt et al. 2000). Such testing measures have proven to be essential for program integrity. Where measures found non-compliance, CHOICE notified the regulator, who then followed up with the manufacturer. There have been several instances where companies have been prosecuted as a result.[21]

China and Japan's experiences with standards and labels demonstrate that although label development procedures in these countries are well conceived and clear, monitoring and enforcement challenges remain. China's China Energy Label Centre (CELC) did not have a regular budget for monitoring compliance with the energy information label, suggesting that less attention had been paid to monitoring and enforcing the AES&L scheme (Zhou 2008). However, this is changing, and China has been strengthening enforcement and monitoring processes such as determining the need and scope of national compliance tests, testing infrastructure and developing a roadmap to plan for future needs. To date, these initiatives have shown positive results as improvements in compliance rates have been observed (Zhou 2008).

Japan's program evaluation process has proven to be challenging, primarily due to lack of adequate and transparent monitoring methods. During compliance periods, the regulator has no official monitoring task since compliance rests entirely with manufacturers and importers. Furthermore, only minimal information on progress reporting is available, which is insufficient to evaluate the program (Nordqvist 2006). It is unclear whether any sanctions have been applied in cases of non-compliance because sanctions are not reported. What has proved effective is the "name-shame" approach to enforcement and compliance. The majority of producers and participants in Japan's Top Runner program are large, well-known domestic companies that place great importance on how they are perceived (Tojo 2005). Program participants have demonstrated a particularly high willingness and capability to cooperate extensively with the regulator and each other, and have devoted considerable time and resources in the compliance process. Their acceptance of the program as a concept is also important (Nordqvist 2006). The Energy Conservation Centre, Japan, publishes catalogues (ECCJ 2012) that provide information about the degree of overall compliance achieved and makes them available to consumers, retailers, manufacturers, importers, and regulators (Nordqvist 2006).

Compliance is not strong in the EU, which has been cited as a challenge for the EU's AES&L programs. Testing for compliance is hampered by a lack of an adequate number of laboratories, even as penalties for non-compliance are too weak to act as a deterrent. Factors such as insufficient budget allocations, inadequate testing infrastructure, and understaffed programs (across the entire EU, only about 80

Figure 3 | **Share of Correctly Labeled Appliances in EU-27 and Australia**[22]



full-time staff members work on energy labeling compliance administration) continue to pose serious challenges (Waide 2011). Figure 3 compares the compliance level in appliances between the EU and Australia, which has a more stringent compliance regime (Ellis 2011). Australia places a great deal of importance on accurate performance information. The government requires technical information about products' energy performance before bringing them into the country or into the market. Under a check-testing program, appliances from retail outlets are tested in accredited independent laboratories to verify that the information provided on the label is accurate (Energy Charter Secretariat 2009).

Compliance is often overlooked in order to attract more participants or simply because regulators do not understand the benefits associated with compliance programs. Nevertheless, compliance is an important step resulting in increased appliance uptake, and it is often the least expensive way to achieve positive results (Ellis et al. 2010).

CSOs are important partners from the initial stages of identifying products and participating in standard setting processes, to monitoring and evaluating the success of the AES&L program.

f. Extensive stakeholder engagement

Comprehensive and multi-stakeholder engagement in AES&L schemes ensures that specific needs and concerns from different groups are taken into consideration. A more inclusive approach often leads to faster program uptake or early program buy-in, and results in more successful programs, desirable outcomes, and overall program acceptance and understanding. Enhancing participation requires deliberate actions including enabling laws and policies as well as resources and processes to support public participation. Every AES&L program included in this study had multi-stakeholder engagement processes as part of the development and review of the program.

In some programs, CSOs and consumer groups have helped in the initial stages of program development by identifying new products, establishing uniform testing facilities for products and participating in standard setting processes. CSOs like the Malaysian Association of Standard Users have actively participated as representatives of end-users at relevant technical committee deliberations in efficiency standards-setting decisions. In addition, the Association has raised understanding of how AES&L schemes have been developed globally, particularly in other developing countries. Its engagement added value to the process and improved the quality of the standards.[23]

In addition to engaging stakeholders (manufacturers, retailers, utilities, and local governments), program consultations in the studied countries have included environmental groups, energy efficiency interest groups, consumers and consumer groups, academics and broader civil society groups. In Chile, for instance, the standards development stage involves technical committees made up of manufacturers, state governments, consumer groups, and scientific experts who oversee and

BOX 4 | STAKEHOLDER INVOLVEMENT IN TECHNICAL ANALYSIS PROCESSES CAN OCCUR AT SEVERAL KEY POINTS

- Announcement of intention to create policies/regulatory frameworks
- Establishment of technical committees/working groups
- Collection of pertinent data:
  - Engineering data describing design options for efficiency and their costs
  - Market data to understand trends in sales and ownership
  - End-use data describing consumer use patterns
  - Energy/economic data describing energy prices, emissions factors, discount rates, etc.
- Review of preliminary/draft version of regulation, which usually entails a period for comments

Source: McMahon, J. 2011. Energy efficiency policies for appliances. Paris: LBNL.

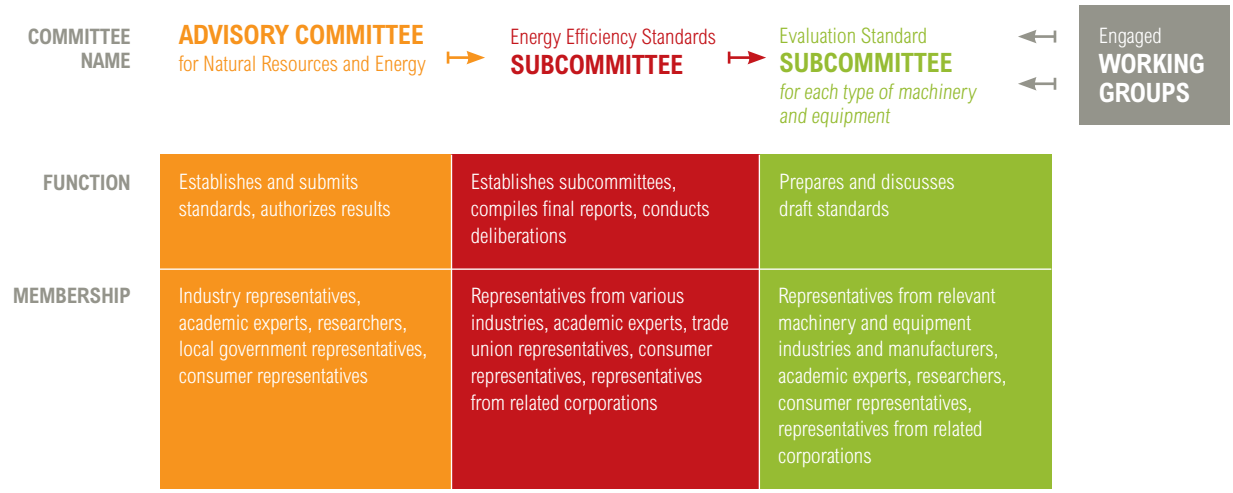
approve draft standard proposals. Further, standards are finalized only after the drafts have gone through a series of public consultations (Lutz et al. 2011). Involving stakeholders earlier in the process helps build strong relationships and encourages substantive contribution and participation. For instance, in Australia, collaboration with relevant stakeholders in the early stages built industry's confidence in the process and enlisted their support not only during the consultation process but also in improving outcomes (Holt et al. 2000). Often, stakeholder involvement occurs through working groups, technical committees, and public meetings, and through written comments and feedback (see Box 3).

In Korea, though the government had initiated an EE scheme in 1992, it was only after CSOs like Consumers Korea (CK) came on board in 1994 that consumers and CSOs began to pay more attention to EE in appliances. In 1996, even while EE labels were voluntary, CK initiated Korea's first agreement with four major household electrical appliance manufacturers to increase the energy efficiency of their products. CK also conducted surveys to identify popular appliances (e.g., electric rice cookers and kimchi refrigerators) and carried out campaigns publicizing test results showing the energy efficiency of these appliances.

The US Energy Star program partners with more than 15,000 private and public sector organizations, including manufacturers, retailers, builders, service providers, building and facility owners, utilities as program sponsors, financial institutions, architects, and engineers (USEPA 2010). This strategy has worked well in the product specification development process. Stakeholders increasingly inquire about the various aspects of the process, which has improved documentation and information collection practices, making it easier for the program team to justify decisions (McWhinney et al. 2005).

Japan's Top Runner Program has followed a similar process, involving various stakeholders in the development, revision, and implementation of the program. Academic experts, consumer groups, trade unions, local government representatives, and industry representatives have participated through technical committees and working groups to determine issues such as which products should be included, what the standards should look like, and what should be the target years (Tojo 2005). Figure 4 shows the current role of the committees and their membership.

Figure 4 | **Japan's Top Runner Program Consultation Process**[24]



Civil society groups are involved in all stages of the consultative process. Multi-stakeholder engagement processes have helped determine what should be included in an energy label to provide consumers with adequate efficiency-related information. As part of the process to establish the Energy Saving Labeling Program, the Energy Efficiency Standards Subcommittee led discussions with various stakeholders (representatives from various industries, academic experts, trade union representatives, consumers' representatives and representatives from related corporations) to determine the information to be included in the labels.

Civil society participation has strong good governance benefits, and provides opportunities to infuse local information and preferences that could be crucial to the selection of products for inclusion in AES&L programs and their uptake by consumers, and in designing and reviewing labels. For example, Consumers Korea identified kimchi refrigerators as a product for inclusion in Korea's AES&L program, based on surveys they conducted on popular appliances. CSO participation can also address inequity concerns in AES&L programs and help ensure that the poor do not disproportionally shoulder the burden of national energy efficiency targets. In 2001, CLASP partnered with Ghana's Electrical Appliance and Standards Program (GEALSP) to create an AES&L scheme customized to Ghana's energy needs, culture, and economic reality (CLASP 2011b). CLASP and GEALSP developed an AES&L plan that was implemented for room air conditioners and CFL bulbs and is being considered for refrigerators and freezers. The program considered the potential effect of EE standards on low-income groups, the need to make efficient appliances affordable, and the need to attract businesses to supply the technology and services before any regulation was drafted (McMahon and Van Buskirk 2012).

CSOs can independently evaluate programs, contribute consumer insights, and influence label changes necessary for program improvements.

g. Periodic impact evaluation and revision

An often overlooked part of AES&L program design is impact assessment and measuring effectiveness in order to inform and improve the program. An independent and thorough evaluation of AES&L programs is needed to assess their impacts and outcomes in a transparent manner. The evaluation exercise can reveal weaknesses in the program and provide an opportunity to rectify them, thus enhancing its effectiveness. If the impacts of AES&L programs are measurable, verifiable, and visible, it can help drum up support to scale up and justify allocation of adequate resources needed for expansion and implementation.

A comprehensive program evaluation usually includes both a process and impact evaluation. While a process evaluation examines all operational aspects of the program (like procedures to improve design and effectiveness), an impact evaluation assesses the program impact (e.g., electricity saved and sales of efficient appliances). The countries examined in this study use varying forms of impact evaluation, most assessing impact potentials. In Australia, energy savings, carbon dioxide reductions, and cost savings potentials are measured (Table 6).

Table 6 | **Cumulative Savings Potential of Select Products in Australia (2009-2020)[25]**

PRODUCT	SAVINGS PERIOD	ENERGY SAVINGS (GWH)	REDUCTION GHG (MT CO2-E)	COST SAVINGS (MILLIONS)
Lighting	2008-2020	30,000	28.5	$12
Television	2009-2020	40,000	37.7	$600
Air conditioners	2009-2025	34,000	28.4	$789
Refrigerators and freezers	2009-2020	1,370	0.55	$82

In Japan, impacts are evaluated as energy efficiency improvements achieved by appliance (Table 7).

Table 7 | **2010 Improvements in Efficiency for Select Products Under Japan's Top Runner Program[26]**

EQUIPMENT	ENERGY CONSUMPTION EFFICIENCY IN BASE YEAR	ENERGY CONSUMPTION EFFICIENCY IN 2010	IMPROVEMENT RATE
A/C (<4kW)	4.9 APF	5.7 APF	16.30%
A/C (>4kW)	4.5 APF	5.2 APF	15.60%
Refrigerators	572 kWh/year	326 kWh/year	43%
Freezers	482 kWh/year	362 kWh/year	24.90%
DVD	85.9 kWh/year	47.1 kWh/year	45.20%
Routers	6.1 W	3.6 W	40.90%

In Thailand, however, achieved energy savings and avoided carbon dioxide emissions are calculated as an impact evaluation (Table 8).

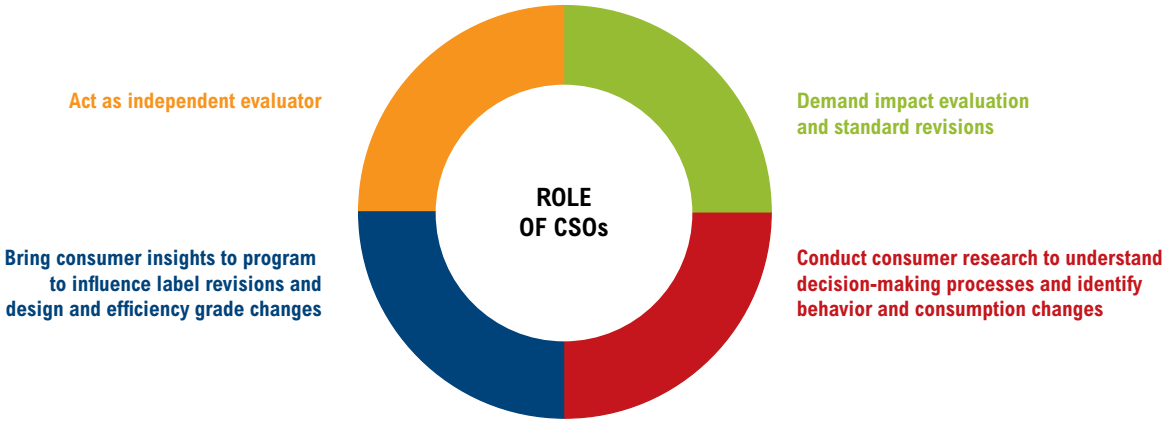
A good time to evaluate the program is when the standards have achieved a degree of market penetration. Efficiency levels that are set too low are not always effective in bringing about market transformation and can instead undermine the program. Some programs establish a timeline for rescaling/label revision at the outset, while others do it in a less planned manner. In both cases, it helps to regularly examine the program impact so that revisions can be made as the need arises, even ahead of the scheduled timeline if the market is saturated with efficient products. For example, appliance energy efficiency in Australia improved substantially, with many appliances in some product categories achieving top-level performance. Accordingly, the standards were revised in the late 1990s and made stricter to allow for additional improvements in efficiency (Artcraft Research 2006).

In Thailand, since the Label No. 5 program is voluntary, appliances that fail to achieve the highest rating are generally not labeled at all, resulting in a situation where most of the labeled appliances carry the highest rating.[28] As the country continues to rescale its Label No. 5 scheme for select appliances, as was done for air conditioners and refrigerators in 2012 (EGAT 2012), it will be important to assess how the efficiency thresholds and program ratings evolve and if the existing thresholds are set too low.

Table 8 | **Energy and Carbon Dioxide Savings Achieved by Thailand's Label No. 5 Program[27]**

ACHIEVED TO DATE (FEBRUARY 2013)			
PROGRAM	**MW**	**GWH**	**CO2 (TON)**
Lighting	938.0	5,182.9	3,158,875.0
Fluorescent Tube (T8)	401.5	1,957.5	1,446,682.0
Fluorescent T5 Program	122.3	557.8	296,964.0
FTL (T5)	87.7	398.7	217,265.0
ElecTronic Ballast T5	34.7	159.1	79,699.0
CFL (before labeling)	10.0	57.2	42,295.0
CFL (labeling 2008)	386.0	2,502.4	1,300,224.0
Low-Loss Ballast	18.2	90.8	59,986.0
HPSV Street Light	-	17.2	12,723.0
Refrigerator	597.8	3,764.8	2,461,029.0
1 door	404.8	2,810.3	1,969,445.0
2 doors	193.0	954.5	491,584.0
Air conditioner	1,219.7	7,569.3	4,393,145.0
Fan	53.9	470.0	239,105.0
Double oscillating fan	3.1	7.2	3,840.0
Rice cooker	20.8	27.7	14,158.0
Motor	0.2	1.2	909.0
Commercial	2.6	10.3	7,583.0
Standby: TV	0.7	2.4	1,336.0
Standby: Computer screen	-	2.3	1,241.0
TOTAL	2,836.8	17,038.1	10,281,221.0

Figure 5 | **Role of CSOs**

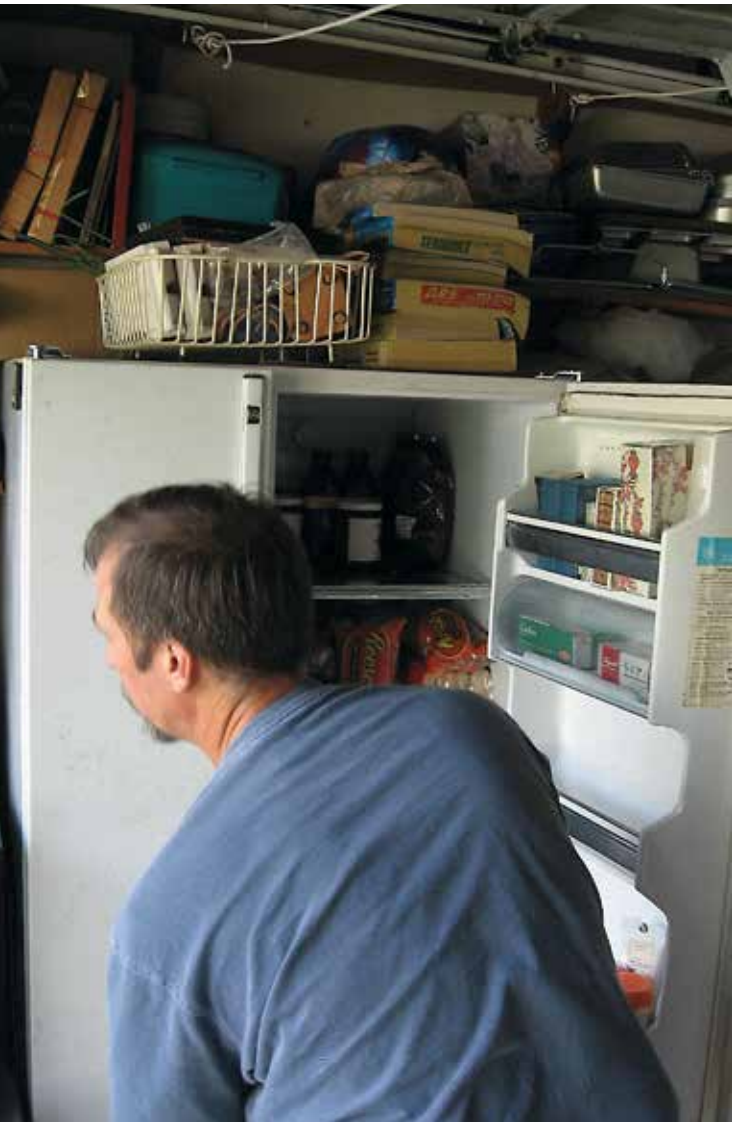


In the European Union, efficiency rescaling and label revision occurred in 2003 and 2010. After the labeling program was implemented in 1992, the highest efficiency level for many product categories was quickly achieved or even surpassed. For instance, 75 percent of the washing machines sold in 2001 were labeled either A or B. Furthermore, by 2004, the sale of A-labeled refrigerators reached 50 percent of the market share (CECED 2005). Significantly, consumer groups played an active role during label revisions, redesign, and efficiency grade changes. ANEC, the European Consumer Voice on Standardization, as well as other CSOs such as the European Consumers Organization, British Retail Consortium, European Environmental Bureau, La Fédération des entreprises du Commerce et de la Distribution, and World Wildlife Fund used market research to show that the proposal to change the energy label from A-G to a numerical scale was not helpful from the consumers' point of view (ANEC 2009). Consumers understood the message that 'A' products were the most efficient, were very familiar with the scale, and used it to guide their purchasing decisions. They found the numerical scale harder to understand (ECEEE 2010). Products labeled 'A' dominated the market for most product categories and there were hardly any appliances with an efficiency class below D in the market. Therefore, in 2003, the scaling system was expanded to include more efficient categories on top of class A (A+ and A++) and in 2010, it was again rescaled to add another class, A+++, which is currently the most efficient category (ANEC 2008).

Regular revisions are an integral part of Japan's Top Runner program as well, and it has seen similar success with continuously improving product efficiency in various categories (METI and ANRE 2010). Standard levels and target years are decided through an extensive multi-stakeholder, consultative process and manufacturers are free to decide what actions they need to take and when to comply with the standards (Nordqvist 2006). The regulator takes a backseat until the target year is reached and compliance must be assessed and revised standards put in place. However, informal evaluations can be undertaken in the interim and can lead to revision ahead of the scheduled time. Informal evaluations led to the revision of standards for computers before the scheduled time because all the manufacturers had achieved compliance well before the target year (Nordqvist 2006).

Establishing a realistic and credible business-as-usual scenario is always fraught with difficulties, but it is important to accurately evaluate program impacts. A baseline for existing technologies and practices, and market events (retrofit, renovation, remodeling and replacement or new purchase) will be useful both in designing programs and in assessing impacts (Vine et al. 2001). When the evaluation is done some years after the program has been implemented, the opportunity to establish a reference hypothetical baseline scenario before the program was implemented is lost.

While there has been a strong focus on creating consumer awareness around labels, there has been less attention to measuring consumer behavior and consumption changes. Even if the consumer is aware of the label, it may not result in the purchase of a more efficient appliance. However, there are some instances where the appliance labeling programs have included data on actual sales and behavior (e.g., labeling programs in Europe, Australia, Thailand, and the U.S.). This information allows a more accurate quantification of impacts and enables design improvements (Egan and Waide 2005).



Measuring consumer behavior and consumption changes allows for more accurate quantification of program impacts and enables design improvements.

Forecasting the impacts of AES&L programs on energy use and the economy has been a primary measure of effectiveness, where most forecasts are based on base year efficiency levels. In the United States, post-evaluation impact measures are more readily available and include impacts of AES&L on energy and costs savings, GHG emissions prevention, and consumer and stakeholder behavior.


冷蔵庫 450 Lクラス
Total Multimedia Life Yodobashi Camera
3%
5月6日まで
ヨドバシカメラ
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節約しましょう!
STOP
ヨドバシカメラ
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今がお得!!
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ご来店中のお客様限定の
大チャンス!
マルチメディアのヨドバシカメラ
¥146,800
省エネ大賞
プラス 3%
プラス 5%
対象商品
急速冷凍 & 低温冷凍
たっぷりスッキリ3段収納
よく使うからまんなか冷凍
はずして洗える製氷皿

Section III

LESSONS FOR INDIA

Asking Indian consumers to purchase energy efficient (EE) products, but not creating processes to involve them in other aspects of the program has had poor results: limited label awareness and a lack of understanding of the benefits of EE products.

In 2001, the Indian government put in place an overarching legal framework to promote EE through the Energy Conservation Act. The Indian Ministry of Power's Bureau of Energy Efficiency (BEE) leads AES&L programs at the national level. Under the BEE's AES&L program, appliances are rated on a scale of one to five stars, with the most efficient carrying a five-star label and the least efficient carrying a one-star label. Since its initial efforts, BEE has developed standards and labels for 12 categories of products (BEE 2012). Participation in the program is mandatory for four categories of products[29] and voluntary for the rest.[30] Despite the limited number of products, the BEE's efforts have had a non-trivial impact.

An impact analysis of the BEE's S&L program shows that energy savings (in terms of avoided generation capacity) for 2007-08 was around 260 MW. In 2008-09, energy savings increased to 599.44 MW and in 2009-10, increased again, to 2179 MW. This is equivalent to electricity savings of 4350.92 million units (National Productivity Council 2010). Table 9 shows the extent of savings per appliance as calculated by BEE.

India's Planning Commission has supported BEE's efforts in successive Five-Year Plans, as has India's National Mission for Enhanced Energy Efficiency (NMEEE).[32] This support highlights the importance of awareness programs through information campaigns, publication of manuals, and other activities.

Despite these efforts, only 19 percent of Indian consumers are aware of the energy labels (Jose 2011), which offers a different perspective on the program's effectiveness. The energy savings thus far can be attributed to BEE's decision to partner with leading appliance manufacturers and to focus on a few widely used appliance markets—in particular, the room air-conditioner, tubular fluorescent lamp, and refrigerator markets. Scaling up the AES&L program will, however, not be possible without significantly enhanced consumer awareness, including awareness of the benefits of using energy efficient appliances. Increasing awareness of the label must also go hand in hand with efforts to promote understanding of consumer preferences by manufacturers and decision makers; and therefore enhanced consumer participation in the various stages of the AES&L program and its implementation.

Table 9 | **Energy Savings and Avoided Generation Capacity[31]**

PRODUCT NAME	ANNUAL PRODUCTION/ SALES	SAVINGS IN MU	SAVINGS IN MW
Direct Cool Refrigerators	4,812,741	1737.78	317.51
Frost Free Refrigerators	1,594,802	892.05	163.22
Room Air Conditioners	2,232,603	1090.18	1455.89
Color Television Sets	1,763,849	147.38	26.96
Distribution Transformers	51,612	45.77	6.69
Ceiling Fans	253,886	9.27	1.69
Storage Water Heaters	199,814	25.98	4.75
Tubular Fluorescent Lamps (36 Watts)	35,728,733	171.49	160.30
Agricultural Pump Sets	69,254	230.99	42.25
	TOTAL	**4350.92**	**2179.31**

India could learn from the countries studied in this report and strengthen their AES&L programs by opening them to wider CSO participation. India has a lot to gain from strengthened AES&L programs: its residential sector accounts for about 39 percent of the country's final energy consumption (Rao et al. 2009). On average, space air conditioning accounts for 45 percent of residential electricity consumption and lighting accounts for 28 percent

(Boegle et al. 2010). More efficient appliances consume less energy and can help reduce total energy consumption. A 2010 study completed by Prayas Energy Group showed that if all the appliances purchased in India over a three-year period were energy efficient, India could avoid new capacity requirements of over 25,000 MW (Boegle et al. 2010)—close to one eighth of India's total installed capacity.[33]

This study has shown that, among other advantages, CSO participation:

- Brings good governance benefits, encourages bottom-up initiatives, enhances local participation and influence, and improves accountability to citizens and consumers.
- Helps strengthen the AES&L process by incorporating insights from the segment of society that is most affected by AES&L implementation, and is the primary influence group for these programs. Through consumer research and market surveys, CSOs have been able to influence AES&L program development and design to incorporate consumer preference.
- Provides opportunities to infuse local information and preferences into AES&L programs. It is important that AES&L program designers understand these perspectives when selecting the products to be covered by AES&L programs, and designing and reviewing labels.
- Commonly addresses inequity concerns in AES&L programs, helping ensure that the poor do not disproportionately shoulder the burden of national energy efficiency targets.
- Helps enhance consumer confidence and buy-in by representing a more collaborative way to implement government initiatives.
- Reduces capital costs of AES&L programs by sharing the monitoring and evaluation burden that would otherwise fall completely on regulators.
- Reduces information asymmetry, where one set of actors (such as appliance manufacturers) has more relevant information than other actors, which can lead to inefficient standards and adversely impact program integrity.

As of 2013, barring one or two voluntary consumer organizations, Indian CSOs and the general public do not participate in the design of the AES&L program or its implementation in the country. The BEE has co-organized awareness workshops with some CSOs to complement its own media campaigns to raise public awareness about EE. Yet, label awareness is very low. Evidently, asking consumers to purchase EE products, but not creating processes to involve them in the program has had poor results (Jose 2011).

With only four residential appliances under its mandatory labeling scheme, India is looking to bring more appliances under the AES&L program (Sethi 2012). This study has presented examples of how enhanced CSO participation in the design and implementation of AES&L programs in select countries has contributed to better impact and uptake of such programs. Opening the BEE's AES&L program to wider participation would be the first step toward achieving the full potential of energy savings in the country. This can happen only when governments

and AES&L program managers create enabling policies and forums for enhancing CSO participation. Equally important is for Indian CSOs to move beyond their current roles, and prioritize energy efficiency measures. This would require CSOs to understand the value of energy efficiency from an environmental, affordability, and energy security perspective. Donors and the international community should also prioritize CSO capacity building in their work plans.

Based on our analysis, the following actions and roles are recommended for different parties in the AES&L landscape in India:

Governments must create enabling policies for CSO participation: Enabling policies that encourage CSOs to participate in decision-making processes make it easier for them to be involved in AES&L program development. Though participation by civil society can happen on its own (bottom-up), it can also be induced by bureaucratic procedures (top-down) (Mansuri et al. 2013). For the latter, states need policies that support and promote civil society participation by incorporating appropriate laws, rules, and regulations. These policies can establish participatory forums and mechanisms such as expert sub-committees and public hearings to enable public input and information to flow into decision-making, and create information disclosure systems that put relevant information and underlying assumptions in the public domain. Cumulatively, these mechanisms enable CSOs to carry out independent research and analysis, and develop inputs that can support decision makers.

In the programs highlighted in this report, CSO participation has been generally backed by governments. Proactive, long-term and technically astute participation by civil society comes with a cost. It is important to identify what kind of support India can provide to CSOs to enable them to provide inputs that complement effective state and market institutions, while still allowing these organizations to function independently.

CSOs must understand the benefits of energy efficiency: Energy efficiency programs present a win-win option for policy-makers and consumers alike. In addition to the public benefits of EE programs, such as environmental and security benefits through the form of reduced emissions and reduced energy consumption, EE programs also offer private benefits to consumers in the form of cost savings from reduced energy consumption. Indian CSOs should make an effort to understand these benefits, and help consumers understand them as well. In places where environmental, energy security, or affordability concerns have prompted CSOs to prioritize these programs, their

participation and involvement has increased and improved. For instance, in Chile, CSOs started to pay attention to EE only after it was presented as an energy security solution in light of a proposed hydropower plant in Patagonia.[34] In Australia, the consumer organization CHOICE initially engaged in product performance issues through independent laboratories that tested and reported on product performance in order to inform consumers and influence manufacturers and governments. While testing appliances, it became apparent to CHOICE that although appliance energy consumption was important to consumers (in terms of costs), it was not at the forefront of manufacturers' design considerations. CHOICE lobbied for the government to include energy consumption information in product labels.[35] More recently, EE has been garnering attention for its links to reducing greenhouse gas emissions. This mounting awareness has motivated initiatives like CLASP (CLASP 2011a), which in turn support various in-country AES&L efforts. In Korea, the continued participation by CSOs in energy and environmental policy has led to the emergence of a paradigm that emphasizes energy efficiency (Kim et al. 2011).

However, energy efficiency has not yet become a priority for most CSOs in India. This can be attributed to a range of issues, including technical capacity challenges and limited financial resources. However, it is also true that in India the benefits associated with AES&L have still not been made clear, and measuring these benefits is a challenge (for consumers). Current Indian EE labels provide a 5-star rating to inform consumers about electricity savings compared with other products. In the United States, the energy savings are referenced to a range of running costs, which make the comparison simpler for consumers to comprehend. Indian CSOs should introduce these end-user perspectives to AES&L programs and identify options to further strengthen the program and its implementation. Enhancing their own understanding of energy efficiency from environmental, affordability, and energy security perspectives would be crucial toward this objective.

Donors must support CSOs to help improve their capacity: EE and, more specifically, AES&L programs are technically complex and require the proper capacity for setting standards, product testing, and product evaluation and monitoring. Once CSOs have established the spaces required for participation through government support, and have demonstrated a commitment to EE programs, they will require the capacity to participate effectively and legitimately. For this reason donors must provide the support needed to overcome a technical capacity barrier that often exists. Indian CSOs need to develop the financial and human capacity to effectively participate in the technical space

around AES&L programs. In developed countries like Australia, Japan, Korea, the United States, and the European Union, CSOs generally have strong financial and human capacities, and have developed in-house expertise on appliance efficiency.

In developing countries like Chile, China, Ghana, Malaysia, and India, the human and financial capacity challenges are greater. Limited financial and human capacity to participate in the AES&L programs, including technical expertise to meaningfully support the more technical stages of the AES&L program affects CSOs' participation in the program design and implementation. Collaboration and support from expert groups across the globe can help strengthen CSO capacity in developing countries. Despite these efforts, the scale of the market means that CSOs and other community groups tend not to actively participate in the energy efficiency debates. Ensuring sustained financial and human capacity continues to be a challenge, and requires dedicated resources and training for CSO development. Allocating dedicated financial and technical resources to Indian CSOs will go a long way in building long-term support to the AES&L program, and to the energy savings that will result from these programs. Similarly, supporting the establishment of publically accessible laboratories and testing facilities in capacity-building programs will be important. The international community and donors need to prioritize these requirements in their work plans. In addition to financial support for CSOs to hire technical experts and train staff, Indian CSOs could come together and form networks and coalitions that allow them to share skills and expertise and focus on specific products, specific geographies, and specific policies.

Section IV

CONCLUSION

This report has presented the experience of 10 countries that have implemented AES&L programs. In each country, CSO involvement in the development and implementation stages has added value to the program. The report identifies indicators that facilitate the success of AES&L programs and presents examples where CSOs were involved, illustrating the resulting benefits for the programs. While further research is required to understand the relative importance of CSO participation in comparison to other indicators, this report serves as a foundation for deeper analysis of the effectiveness of the various indicators.

However, this report also finds that while CSOs can be involved in all stages of AES&L programs, this potential has not been fully realized for several reasons. CSO involvement in AES&L programs may be hampered by a lack of participatory spaces for civil society, a lack of understanding of the benefits of EE, and a lack of sufficient capacity (technical and financial), among others. All of these lessons are important for India.

India has the opportunity to meet its energy needs through aggressive investments and programs in energy efficiency. A key step toward this objective is to open the AES&L process to a wider section of CSOs. At the same time, governments and donors should support CSOs with resources that can enable them to strengthen AES&L schemes through the roles discussed in this report.

ENDNOTES

1. The democratic benefits of CSO participation include (among others): enhanced program legitimacy, enhanced stakeholder capacity, implementation improvements, reduced opposition, improved decisions, and decisions that reflect stakeholder values.
2. Civil Society Organizations as defined by WRI's Access Initiative are organizations that are neither part of the private (for profit) nor governmental sectors. They include nongovernmental organizations (NGOs) and community-based organizations (CBOs). This study also considers consumer protection groups as part of civil society.
3. Australia, Chile, China, the European Union (a common program applies to all European countries), Ghana, Japan, Malaysia, South Korea, Thailand, and the United States.
4. India's current total installed energy generating capacity is 210,936.72 MW. Ministry of Power Government of India, 2012. "Power sector at a glance 'All India'". Online at http://www.powermin.nic.in/indian_electricity_scenario/introduction.htm
5. According to the BEE, as on January 2011, overall savings of 4350.92 million units equivalent to avoided generation capacity of 2179.31 MW has been achieved by implementation of AES&L schemes. Source: BEELINE (quarterly newsletter of BEE, Jan 2011).
6. The Electricity Governance Indicator Toolkit elaborates on a comprehensive set of transparency, accountability, and participatory indicators, and measures for achieving them. Available at http://electricitygovernance.wri.org
7. The Collaborative Labeling & Appliance Standards Program (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. www.clasponline.org
8. Weil, S. and J. McMahon, Energy-efficiency labels and standards: A guidebook for appliances, equipment, and lighting, 2nd Edition (Washington: CLASP, 2005), pg. 11.
9. Information for Table 1 was retrieved from the following sources: Alliance to Save Energy 2010, APEC 2011, Asawutmangkul 2011, Artcraft 2006, CLASP 2011, Commonwealth of Australia 2011, E3 2012, Energy Star 2012a, Energy Star 2012b, European Commission n.d., European Commission 2003, European Commission 2010, Foran et al. 2010, Fundación Chile Programa de Energía Sustentable n.d., Kim 2011, McMahon et al. 2012, Hamamoto 2011, METI and ANRE 2010, Choong 2011, Zhou 2008, Waide 2011, Bogner 2006, and Lutz et al. 2011.
10. Australia's standards and labeling program commenced in 1986 and had been implemented at varying degrees. The label was mandatory for refrigerators and freezers in NSW, and later became mandatory in Victoria as well (Artcraft 2006).
11. Presentation on Energy Efficiency Policies for Appliances, Apr. 4-7, 2011, IEA Energy Training and Capacity Building Week.
12. Personal communication with in-country expert.
13. Personal communication with in-country expert.
14. Personal communication with in-country expert.
15. Information for Table 4 was retrieved from the following sources: European Commission 2011, Lutz et al. 2011, Thailand MOE 2011, APEC 2010, Lin 2002, Zhou 2008 and LBNL n.d.
16. Information for Table 5 is retrieved from the following sources: Commonwealth of Australia 2011, Lutz et al. 2011 and APERC 2010.
17. Personal communication with in-country expert.
18. Personal communication with in-country expert.
19. Household surveys of consumer awareness of Energy Star are performed on a yearly basis by the USEPA in order to measure label recognition. Source: EPA Office of Air and Radiation, Climate Protection Partnerships Division. National Awareness of ENERGY STAR® for 2010: Analysis of 2010 CEE Household Survey. U.S. EPA, 2011.
20. Personal communication with in-country expert.
21. Personal communication with in-country expert.
22. M. Ellis, "Compliance Comparisons- A summary of compliance rates in Australia and other jurisdictions." Stamford Plaza, Sydney. October 17, 2011. http://www.energyrating.gov.au/wp-content/uploads/Energy_Rating_Documents/Library/General/Compliance/Compliance-Comparisons.pdf
23. Personal communication with in-country expert.
24. METI and ANRE, Top Runner Program: Developing the world's best energy-efficient appliances. (Tokyo: METI &ANRE, 2010).
25. Savings for lighting, televisions, and air conditioners were retrieved from: Commonwealth of Australia, Program Achievements 2009/2010- Equipment Energy Efficiency Program Annual Report (Sydney: Equipment Energy Efficiency Program, 2011). Savings for refrigerators and freezers, and set top boxes were retrieved from Commonwealth of Australia, Program Achievements 2008/2009 Equipment Energy Efficiency Program Annual Report. (Sydney: Equipment Energy Efficiency Program, 2009).

26. ANRE. 2010b. Standard equipment on target for fiscal year 2010 for efficiency improvement status.
27. EGAT. 2013. "Engineering estimates of DSM program impacts." Online at: http://www.dsm.egat.co.th/en/file/Archive/by program-month_0256.pdf
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29. Frost Free Refrigerators, Tubular Fluorescent Lamps, Room Air-conditioners, Distribution Transformers.
30. Direct Cool Refrigerators, Induction Motors, Agricultural Pump Sets, Ceiling Fans, LPG Stoves, Electric Geysers, Colour TVs, Washing Machines.
31. National Productivity Council. 2013. "Report on Verified Energy Savings with the Activities of "Bureau of Energy Efficiency" for the year 2009-10." Online at: http://beeindia.in/content.php?page=miscellaneous/energy_savings_achieved.php.
32. The NMEEE is one of eight Missions included in India's National Action Plan on Climate Change (NAPCC). The NAPCC outlines existing and future policies and programs addressing climate mitigation and adaptation in India.
33. India's current total installed energy generating capacity is 210,936.72 MW. Ministry of Power Government of India, 2012. "Power sector at a glance 'All India'". Online at http://www.powermin.nic.in/indian_electricity_scenario/introduction.htm
34. In the late 90s, demand for electricity in Chile was on the rise and the government had put forward plans to build a hydropower project in Patagonia. This proposal was considered as a threat to the environment by several CSO groups. It was not until this point that CSO groups started getting involved and conducting their own research, and looking for alternative options such as EE to avoid added generation. These groups included: Fundacion Chile, University of Chile, Chile Sustentable and Universidad Santamaria. Personal communication with country expert.
35. Personal communication with in-country expert.

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ACKNOWLEDGMENTS

We would like to thank the many people who contributed thoughtful discussions and ideas that helped shape this report and put time and thought into helping us review drafts, and providing us with valuable feedback. These include:

Our colleagues at WRI: Nate Aden, Pankaj Bhatia, Cynthia Cummis, Sarah Forbes, Taryn Fransen, Robin King, Sarah Lupberger, Janet Ranganathan, Emily Schabacker, Ranping Song, David Tomberlin, Peter Veit, Jake Werksman, and Davida Wood.

Our global expert group:
Gilberto M Jannuzzi, International Energy Initiative, Brazil
Ratna Devi Nadarajan, Malaysian Association of Standard Users
Eunyoung Lee, Consumers Korea
Jaiok Kim, Consumers Korea
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John Ashes, CHOICE, Australia
Michael Hohl, CHOICE, Australia
Sara Larrain, Programa Chile Sustentable
Noah Long, National Resources Defense Council, New York
Marcelo Padilla, Energy Efficiency Division, Chile Ministry of Energy
Michelle Tan, Nippon Consumer Voice for Better Standards, Japan

We would also like to thank Shakti Sustainable Energy Foundation/ ClimateWorks Foundation, whose financial support made this report possible. In particular, we are grateful to Ms. Seema Paul, Ms. Alpana Jain, and Ms. Smita Chandiwala with whom we worked closely from the inception and who provided many ideas, thought-provoking inputs, and detailed reviews that helped to shape this report.

Any omissions, inaccuracies, or errors in the case studies are our own.

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Shakti Sustainable Energy Foundation works to strengthen the energy security of India by aiding the design and implementation of policies that support energy efficiency and renewable energy.

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An initiative supported by

SHAKTI
SUSTAINABLE ENERGY
FOUNDATION

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ISBN 978-1-56973-809-2