ESMAP

Knowledge Series 029/20

INTEGRATING BEHAVIOR CHANGE IN ENERGY EFFICIENCY PROGRAMS IN DEVELOPING COUNTRIES

A PRACTITIONER'S GUIDE

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ABBREVIATIONS

CFL	compact fluorescent lamp
DSM	demand-side management
HER	home energy report
KWh	kilowatt hour
LED	light-emitting diode
PSA	public service announcement
RISE	Regulatory Indicators for Sustainable Energy
TWh	terrawatt hour
UK	United Kingdom
WBG	World Bank Group

All currency is in United States dollars ($, US$, USD), unless otherwise indicated.

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The Energy Sector Management Assistance Program (ESMAP) is a partnership between the World Bank and 18 partners to help low and middle-income countries reduce poverty and boost growth through sustainable energy solutions. ESMAP's analytical and advisory services are fully integrated within the World Bank's country financing and policy dialogue in the energy sector. Through the World Bank Group (WBG), ESMAP works to accelerate the energy transition required to achieve Sustainable Development Goal 7 (SDG7) to ensure access to affordable, reliable, sustainable and modern energy for all. It helps to shape WBG strategies and programs to achieve the WBG Climate Change Action Plan targets. https://esmap.org

EXECUTIVE SUMMARY

Energy efficiency is among the cheapest, cleanest, and most widely available of energy resources. Improved energy efficiency provides opportunities to sustainably expand energy services and support development and economic growth, contributing to higher living standards, as well as reducing greenhouse gas emissions. In developing countries, where demand for energy is growing rapidly, the potential for energy efficiency improvements is significant, particularly in the residential sector. The purpose of this guide is to raise awareness of behavioral approaches to achieving development outcomes, demonstrate the role that behavioral sciences can play in promoting energy efficiency, and provide guidance on how to integrate behavior change approaches into projects.

Research has shown that understanding what motivates people and influences their behavior is central to successful policymaking—and this is the case broadly across different sectors, including energy efficiency.

By familiarizing development practitioners with methods and approaches for integrating behavior change strategies into energy efficiency programs, this guide can help them design more effective demand-side energy efficiency programs and contribute to generating better development outcomes. The guide offers relevant suggestions, references, and examples, with a focus on two aspects of the behavioral sciences: communication for behavior change, and the important role that gender equality considerations can play in effective interventions for energy efficiency.

Energy efficiency programs can have both technological and human behavioral dimensions. Traditionally, most efforts to enhance energy efficiency have focused on replacing old technology or hardware with more efficient models. Examples include using light emitting diode (LED) rather than inefficient incandescent lamps; more efficient motors; and better sealed windows or more insulation to provide better thermal comfort while reducing energy waste. While these technology-focused energy efficiency projects and policies have resulted in much energy savings over the past several decades, there is growing evidence that significant energy savings can be achieved by consistent changes in consumer behavior. Behavior change programs, most of them implemented in industrial economies to date, have delivered significant energy savings. For example, home energy reports—which are utility-based behavior change tools commonly used to promote energy efficiency—have cost-effectively generated 1 to 3 percent of consumer electricity savings per year, with a potential to be deployed at scale. While these findings are based on experience in the United States, the approach holds promise for developing countries, where experience to date has been limited, but is growing.

Global experience over the past two decades shows that the savings realized through behavior change approaches can offset significantly more expensive power generation investments and can often be achieved at a lower cost than through most other types of demand-side energy efficiency programs. This has been the experience of utilities in the United and States and Canada: only 2 percent of their overall demand-side management expenditures, on average, goes to residential behavioral interventions, but these interventions generate 10 percent of the energy savings achieved.

Barisal District, Bangladesh.

The behavioral approach to policy design draws on psychological, social, and contextual explanations of human behavior to provide innovative, usually inexpensive, solutions that are often used as complements to traditional policy approaches. Its application usually starts with defining the problem, diagnosing any barriers preventing people from adopting the desired behavior, and then designing interventions to address these.

As a good practice, energy efficiency behavior change programs should be conceived and designed taking into account local contexts, social norms, customs, and behavioral habits, and using the most accurate data about consumers' energy use. Behavior change programs may be implemented on their own or as part of a broader sectoral intervention. If they are to be integrated into an intervention, a variety of entry points may be considered that this guide will explain. Perhaps the most promising path forward is combining behavior change strategies with traditional technology-based energy efficiency programs.

The behavioral and social sciences have also demonstrated that it is important to consider gender equality issues when planning and implementing behavior change activities. Men and women tend to have different preferences and priorities that affect their use of energy and energy-consuming products—and, importantly, their willingness to change usage patterns based on new information. A focus on gender equality can be integrated into existing efforts at minimal (or no) cost, yielding significant potential returns in terms of uptake and impact.

In the field of energy efficiency, behavior change programs have generally been implemented by energy providers and utilities, energy ministries, or city agencies, and in some cases by the private sector with or without funding from any of these other actors. Like other demand-side energy efficiency programs, the roll-out of an energy efficiency behavior change approach should consider, early on, the metrics and data needed to evaluate and demonstrate its impact.

For example, in the United States, a "Saving Energy Saves You Money" campaign involved conducting a tracking survey that helped show significant improvements in energy saving behaviors from 2011 to 2012. After a series of public service announcements were promoted online, more people bought EnergyStar appliances (with the share of survey respondents who did so rising from 53 percent to 60 percent) and added insulation to their homes (rising from 24 to 28 percent). By the end of the first year of the campaign, 2012, more people believed that it's "not hard" to save energy (rising from 61 percent to 67 percent) and said they did things to save energy "often" (from 44 to 49 percent).

There is no single best design for energy efficiency behavior change programs, which may often involve a package of interventions that, combined, can have greater impact, as well as drive and sustain new behaviors and practices. Notwithstanding this, the success of a behavior change program is contingent on a well-designed, professionally managed communications campaign that draws on the latest scientific understanding of human decision-making and persuasion. Communication plans typically begin with research on opinions and social norms, and the identification of target audiences and optimal behaviors, followed by planning, implementation, and monitoring and evaluation. Before mass media products are rolled out to consumers, messages and materials are pretested and channels are selected to best support their reach and credibility.

Effective communication can help people initiate and sustain positive attitudes about a situation. Communicating with energy consumers and other key stakeholders about the benefits of energy efficiency, and the strategies that can help reduce energy use and costs, is most effective when the information is presented in a compelling way and is based on sound research. Engaging communications experts

who are familiar with local cultures and marketing channels is critical—a campaign that works well in one region will not necessarily translate to another region. Understanding the local context is critical for success. In all cases, the messages of a behavior change campaign should be crafted so that they are simple, concrete, credible, and convey a story. Designing effective messages for a campaign is a highly creative process that requires experienced communicators on a project team.

Practitioners should also keep in mind that implementing a behavior change program is a dynamic process that requires a solid measuring and reporting system to periodically evaluate results and adjust program design accordingly.

Yone Kone village, Myanmar. ©Arnfinn Oines/ Foundation (CC BY-NC-ND 2.0).

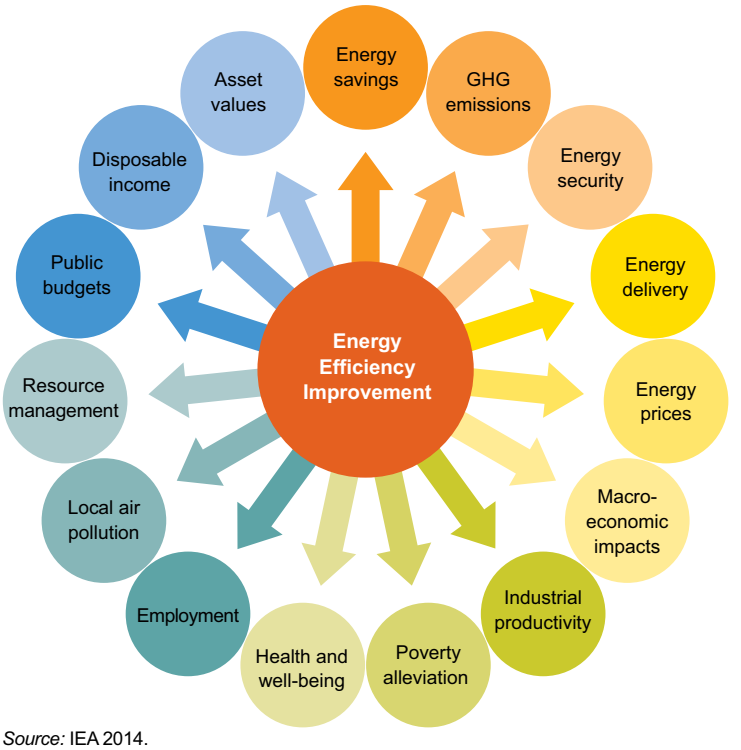
1. CHANGING HOW WE THINK ABOUT ENERGY EFFICIENCY

Energy efficiency has been labeled "the first fuel"—it is among the cheapest, cleanest, and most widely available of energy resources. Abundant energy efficiency opportunities are available across sectors and geographies, and avoid the higher costs of energy generated from other fuel sources.[1]

Energy efficiency provides a range of opportunities to sustainably expand energy services (e.g., lighting, heating, cooling, and cooking) and support development and economic growth, contributing to higher living standards, as well as reducing greenhouse gas emissions. In the fast-growing cities of developing countries, the potential for energy efficiency improvements, particularly in the residential sector, is enormous. For example, prospective energy efficiency policies and measures identified as relevant in the six largest emerging economies could save nearly $147 billion in household expenditures on energy by 2040 (IEA 2018a).

Energy efficiency generates multiple benefits for households, industry, governments, and society as a whole (Figure 1.1). At all levels of decision-making, these multiple benefits can be key motivators for undertaking efforts to enhance energy efficiency.

FIGURE 1.1 The Multiple Benefits of Energy Efficiency



Source: IEA 2014.

Yet significant potential to enhance energy efficiency remains untapped, and scaling up related efforts remains a challenge. Programs promoting energy efficiency need to be strengthened and redesigned to enhance their reach. Considering human behavior is an opportunity often overlooked by current approaches in many developing countries. A range of behavior changes can reduce energy consumption in homes and in businesses. Integrating behavior change strategies would enhance the effectiveness of many efforts to promote energy efficiency.

The purpose of this guide is to raise awareness of the role that behavioral sciences can play in promoting the more efficient use of energy. This guide provides energy practitioners with an introduction to behavior change approaches and a brief overview of how behavior change strategies, communication, and gender considerations can be integrated to enhance demand-side energy efficiency programs.

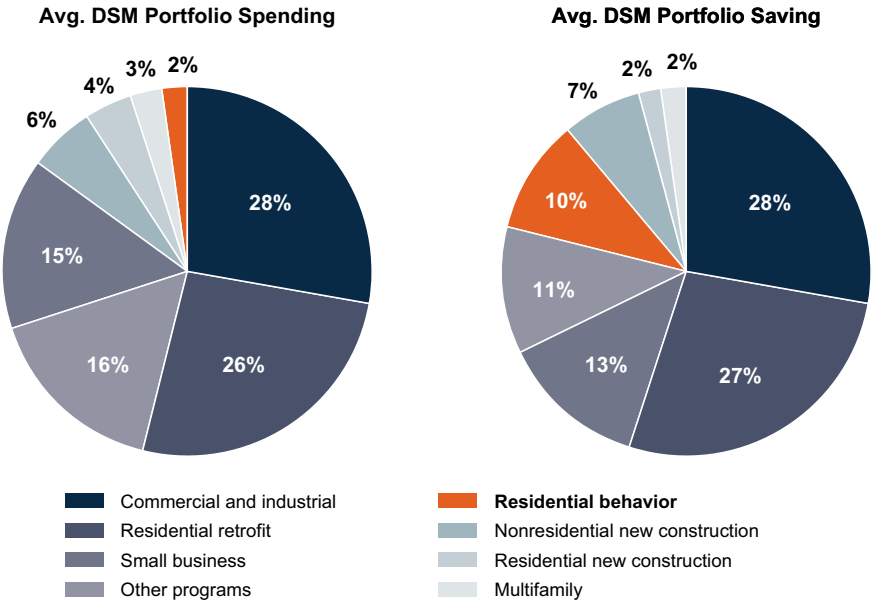
The topics of energy efficiency, behavior change communication, and gender equality are each the focus of a wide body of work; this guide aims to weave these topics together in a practical guide for development practitioners. This is not intended to be an exhaustive literature review; more detailed information can be gained from many of the references cited. This work also points to several areas requiring further research as the integration of these topics expands in developing country contexts.

Behavior change strategies can complement programs focused exclusively on more efficient technology investments. Once behavior change strategies are integrated into energy efficiency programs and policies, project teams are likely to see larger, and potentially more cost-effective impacts and benefits. This guide outlines how implementing institutions can incorporate these strategies into overall demand-side efficiency policies and programs. Behavior change can be applied to energy efficiency programs in various sectors (public, commercial, industrial, residential, and transport); this guide focuses primarily on the residential sector, but also includes some examples from other sectors.

Experience in North America has been positive in this regard: of utilities' overall expenditures on modifying consumer demand for energy (known as "demand-side management"), an average of 2 percent goes to residential behavioral interventions—yet an impressive 10 percent of the energy savings achieved is associated with those interventions (Figure 1.2; Fitzjarrald 2019).

With greater awareness and knowledge of how to incorporate human behavior into the design of energy efficiency programs, practitioners, working with communication experts, will be better prepared to promote positive behavior change among target audiences, resulting in greater adoption of measures to meet energy efficiency goals. Following this introduction, Chapter 2 provides examples of behavior change in a development context, and outlines opportunities for energy efficiency programs to integrate the behavioral sciences, and Chapter 3 suggests steps toward implementation, drawing on project examples and lessons learned. Chapter 4 offers a list of best practices to achieve these objectives.

FIGURE 2.1 **US and Canadian Utilities' Efforts to Change the Behavior of Residential Consumers (as a percentage of demand-side spending and savings)**



Note: DSM = demand-side management.

Source: Fitzjarrald 2019.

NOTE

1. The International Energy Agency has labeled energy efficiency as the "first fuel," given the large size of the energy efficiency market and assessments showing that energy efficiency investments have delivered significant energy savings (IEA 2014, 2015).

Balneario Camboriu, Brazil.

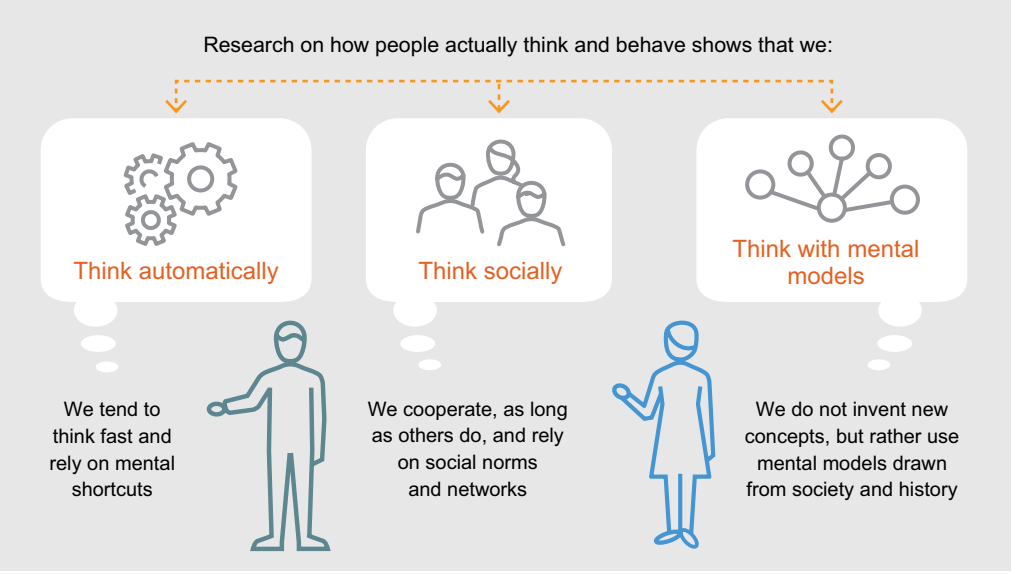
2. PROMOTING DEVELOPMENT AND ENERGY EFFICIENCY THROUGH BEHAVIOR CHANGE

WHAT IS BEHAVIOR CHANGE?

The term "behavior change" covers a broad range of activities and approaches that focus on individual, community, and environmental influences on human behavior. Understanding how to shift consumer behaviors or attitudes toward a desired goal has been the focus of the marketing and advertising industry for decades, and related communication strategies have been employed in a variety of social change fields, particularly with regard to public health. Examples include national anti-littering campaigns in the United States in the 1970s, anti-smoking public service announcements, safe sex campaigns to prevent HIV/AIDS, and the promotion of handwashing to prevent disease.

Research has shown that understanding what motivates people and influences their behavior is central to successful policymaking. Government officials and policymakers have recognized that "nudges"—such as informational triggers, reminders, and social comparisons, among others—can affect behavior without legislation or changing prices or restricting choice sets (Allcott and Kessler 2015). Informed policymaking pays attention to how people think and act (Figure 2.1; World Bank 2015).

FIGURE 2.1 **Understanding How People Think**



Source: World Bank 2015.

For example, research has shown that people will work harder to reinforce their existing positions and views than they will to change their minds; people place more weight on the short-term effects than on the long-term effects of their decisions; and when people have something to lose, they are inclined to act to prevent the loss. Research has also consistently shown that pledges can help people act on their good intentions ("commitment bias"), and social incentives ("social recognition") can be as effective as economic incentives in keeping them aligned with a certain plan of action (World Bank 2015).

In a broad sense, the behavioral approach to policy design draws on psychological, social, and contextual explanations of human behavior to provide innovative, complementary, and usually inexpensive solutions for policy improvement.[2] The aim of this approach is to integrate the behavioral sciences to help make policies more effective (Table 2.1).

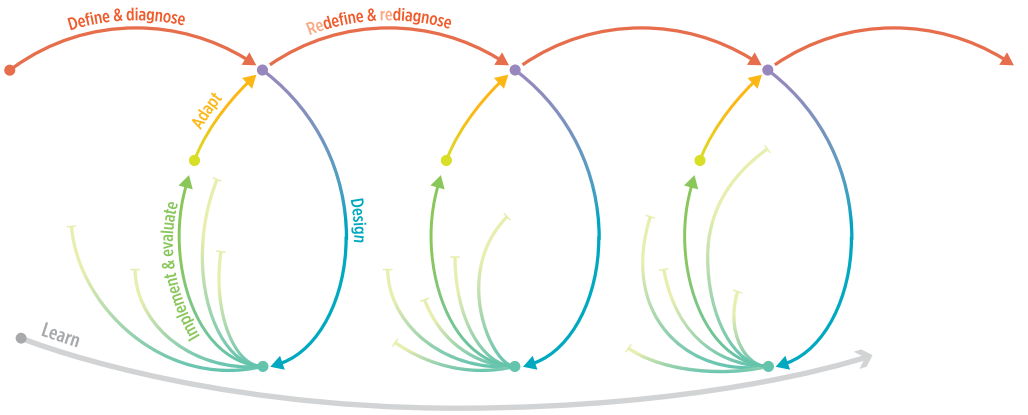
The behavioral approach typically starts with defining the problem and target audience, diagnosing the bottlenecks that keep stakeholders from switching to the desired behavior, and then designing interventions to address these. A thorough implementation and evaluation process follows, including redefining and rediagnosing, until an effective intervention has been identified (Figure 2.2).

TABLE 2.1 A Comparison of Traditional vs. Behavioral Approaches to Policy Design

	TRADITIONAL APPROACH	BEHAVIORAL APPROACH
What drives behavior?	Fixed preferences, values, and monetary incentives	Context, variable preferences, values, costs, and benefits
How is behavior changed?	Provide information and incentives	Remove barriers and create easier channels for decision and action
Reasons for inaction	Preferences or a lack of resources	Preferences, needs, context-specific complexities and barriers
Approach to poverty	Investigate structural barriers and deviations from assumptions	Investigate effects of poverty and the overall context on decisions and actions

Source: Adapted from Ideas42 (2015).

FIGURE 2.2 Iterative and Adaptive Process of the Behavioral Approach



Source: Adapted from World Bank 2015.

BEHAVIOR CHANGE PROGRAMS TO SUPPORT DEVELOPMENT

The World Bank's annual *World Development Report*—which provides detailed analysis and policy recommendations on a specific and important aspect of development—focused its 2015 edition on "Mind, Society and Behavior." It examined human decision making and development policy, and highlighted the idea that "paying attention to how humans think and how history and context shape thinking can improve the design and implementation of development policies and interventions that target human choice and action (behaviors)" (World Bank 2015).

In the health sector, a variety of behavior change campaigns have led to measurable, dramatic improvements in public health by addressing factors such as knowledge, attitudes, and the role played by public services. In Peru, a national multisectoral handwashing initiative was launched in 2003 to promote handwashing with soap among mothers and children. Rather than following a traditional approach focused on medicine and postinfection treatments, the initiative sought to apply innovative approaches to behavior change. Materials and training sessions were designed to motivate mothers and enhance their skills in managing soap for handwashing, and to stimulate and sustain handwashing behavior change. It involved reaching mothers by trained field agents managed by government and nongovernmental agencies from various sectors. This effort was accompanied by a mass media campaign designed to raise awareness of the importance of handwashing with soap and its link to children's health. By 2010, an estimated 6.1 million people were reached via radio broadcasts—as it was found that radio was better than television for reaching women—and 217,000 mothers and children were reached by some 21,400 trained front-line workers (WSP 2010).

Efforts to promote water conservation and efficient, clean cooking and heating have been utilizing behavioral science and related marketing and communications campaigns for close to 25 years. The examples most relevant to the energy sector highlighted in the 2015 World Development Report were water conservation programs. For example, in Bogota, Colombia, water consumption was reduced by nearly 14 percent through a well-planned, evidence-based information campaign (Box 2.1).

Other behavior change campaigns and interventions that have delivered significant results in reducing water consumption include those in Costa Rica and South Africa (Cape Town). Behavioral messages and social recognition in Cape Town were found to deliver a 1 percent monthly reduction in water consumption, on average (Brick, De Martino, and Visser 2017), while it is estimated that interventions including behavioral messaging and social comparison in Costa Rica delivered 4 to 6 percent water savings during their implementation (Datta et al. 2017).

In the transport sector, behavioral approaches have been used to help address development challenges associated with air quality problems and encourage a modal shift to more efficient and less polluting forms of transport. In the context of the Sustainable Transport and Air Quality for Santiago Global Environment Facility project[3] in Chile, a multipronged promotional strategy was developed, accompanying the construction of bike paths. Complementing the more traditional approach of providing people with information, promotional activities were put in place to help address social and cultural factors inhibiting bicycle use. These promotional activities included collaborating with citizens' groups to build grassroots support for nonmotorized transport, creating publicity campaigns to convey an attractive image of the bicycle as a mode of transportation, hosting training sessions on bicycle riding and safety in schools, developing traffic safety campaigns aimed at both drivers and cyclists, and setting up a website to provide useful information for cyclists. Bicycle use increased by 12 and 23 percent (in spring and winter, respectively) as a result of the project. Moreover, the share of women using bicycles increased from 8 to 20 percent (IEG 2016).

BOX 2.1

Behavior Change Campaign Promoting Water Conservation in Bogota, Colombia

In 1997, a critical tunnel providing water to the city of Bogota partially collapsed, triggering a serious water shortage. A communication plan was quickly organized to warn inhabitants that there was a risk that 70 percent of the city could be left without water if current water use was not reduced.

Initial communications—based on the assumption that if individuals were simply informed of the situation, they would reduce their water usage—were not successful, as individuals did not know they could make a difference or what actions were most important (some even stockpiled water). In fact, water consumption increased.

The Bogota government quickly changed its strategy and implemented a variety of new measures. First, the government reminded people to conserve water when they were most likely to overuse it. Stickers were made and people were asked to place them by faucets in frequent use. Daily reports of the city's water consumption were also widely disseminated. Second, the government launched a communications campaign to teach individuals the most effective water conservation techniques through smart slogans and by involving youth volunteers who informed people directly about the emergency. In TV advertisements, the mayor demonstrated conserving water in the shower, and Catholic priests asked their communities to join the cooperative efforts. Third, the city government publicized which neighborhoods were achieving the greatest cuts in water use, and which were lagging, and awards for the best neighborhoods were announced through the media.

The effects of the campaign were significant: citywide water savings reached 13.8 percent after eight weeks, and the reduction in water use persisted long after the tunnel was repaired and the emergency had passed. In fact, the new strategy, based on cooperative efforts toward behavior change, was credited with helping to make water conservation a social norm in the city.

Source: World Bank 2015.

In the context of fiscal policy in the energy sector, the World Bank has supported the inclusion of behavioral approaches in strategies to reform energy subsidies. These subsidies are creating heavy financial burdens for governments of several developing countries, and diverting public resources from other development priorities, and are also regressive; but they are notoriously difficult to alter and efforts to do so are almost always met with significant public opposition. Alongside a reform of natural gas subsidies in Ukraine, the World Bank provided technical assistance in developing a behavioral communications campaign. Efforts to promote citizen engagement and public awareness supported the reform (ESMAP 2017) in an affordable and socially acceptable manner. The communications activities underpinning the campaign included research assessing popular attitudes toward the reform, workshops informing the design of key campaign messages, training sessions for journalists, as well as the monitoring of media channels to enhance press coverage of the reform, and the development of animated advertisements for various types of media (print, Internet, and TV). These were key to help improve the general understanding of the subsidies' reform, how the population could mitigate its impacts (including by saving energy), and how low-income households—who were the most vulnerable to the impact of tariff increases—could avail themselves of social assistance mechanisms that the government had put in place.

INTEGRATING BEHAVIOR CHANGE IN ENERGY EFFICIENCY PROJECTS

Taking into account the drivers of behavior is important in the design of effective policy—and its implementation—in the field of energy efficiency. Well-designed energy efficiency and energy conservation programs[4] can dramatically reduce or avoid energy consumption by "nudging" people's decisions and behaviors, without negatively impacting the quality of energy end-uses or restricting the range of equipment options available to consumers.[5]

Improving energy efficiency is not only about encouraging technological change, it is also about stimulating behavioral change. How people make energy-related decisions and how they use and operate equipment can have a significant impact on overall energy consumption. Taking into account human-related factors in the development of strategies, the design of policies, the elaboration of business models, and promotion of technologies is key for achieving energy efficiency goals. As noted by the World Resources Institute, "a growing volume of research shows that energy consumption behavior is not always rational and can benefit from nudges to encourage households to be more energy efficient" (WRI 2018). Moreover, energy efficiency policies and programs can deliver better development outcomes by addressing implicit models of behavior at lower social, economic and political cost (see Shipworth 2018).

There are many behavioral choices that impact energy consumption, ranging from how a building is designed and constructed, to product and equipment choices and purchase options, to daily personal choices about turning off lights and other appliances. A thermostat's factory default settings and schedules can make a significant difference in the amount of energy used for heating or cooling a building—often a bigger difference than the amount of insulation or the quality of windows. For example, even high-quality windows will not save energy if they are open when heating or cooling systems are running. Encouraging consumers to reduce a thermostat's setting by 3 degrees Celsius (°C) when a housing unit is not occupied can save around 5 percent of heating costs; reducing the set point[6] at all times can have an even larger impact (US DOE 2019). A similar situation is found with cooling equipment: significant electricity use for air conditioning can be saved by raising the thermostat setting.

In the transport sector, driving habits (speed, rate of acceleration, braking) can have a large impact on the energy consumed, even when vehicles with identical technologies are being used. Behavior change has been demonstrated to result in substantial energy savings in transport, with research showing that providing businesses with eco-driving programs can reduce fuel use by between 3.5 and 7.0 percent (SEAI 2018). Many emissions reduction initiatives are promoting or financing electric alternatives to traditional combustion engines. If behavioral change strategies were integrated into these initiatives, the autonomy and range of electric alternatives could be enhanced without increasing battery size, thus saving additional capital costs.

The industrial sector, including small and medium enterprises (SMEs), also offers good opportunities to use behavior change approaches to cost-effectively increase energy efficiency and in doing so, improve the viability and competitiveness of enterprises. One such example can be found in the experience of ArcelorMittal Saldanha Works, a steel plant in South Africa's Western Cape. In the context of the 2008 economic downturn, energy supply shortages and low commodity prices, ArcelorMittal Saldanha Works was at risk of closure, with negative implications for local jobs and the economy. The company, supported by the United Nations Industrial Development Organization (UNIDO), turned to energy efficiency through behavior change and process innovation to help stem financial losses and increase profitability (Pegels, Figueroa, and Never 2015). An energy management system[7] was put in place, focusing initially on low capital expenditure efforts, which consisted of behavioral change and process innovation, complemented by technology upgrading. Behavioral measures included raising awareness through information campaigns and providing clear information to employees about energy efficiency, building capacity through training, rewarding

achievements, and drawing on social norms to develop a focus on energy efficiency. The approach resulted in substantial energy savings that contributed to improving the plant's competitiveness and viability.

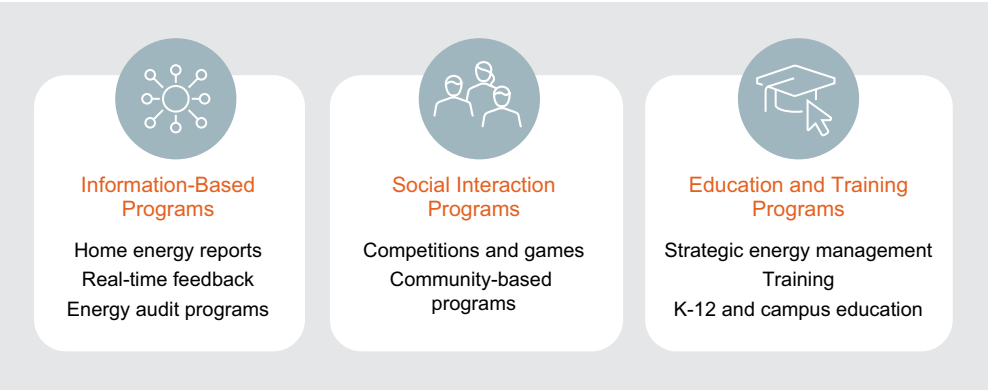
While many energy efficiency programs in industrial countries have addressed both technology and behavioral dimensions, the behavioral sciences have not yet been widely applied to energy efficiency efforts in developing countries. On the contrary, disincentives to efficient behaviors—such as heavily subsidized energy prices—are still in place in many countries. Moreover, practitioners may be reluctant to integrate behavioral change strategies into their energy efficiency programs because they may be uncertain about the benefits and impacts. They may also fear this would extend the time and cost required for project preparation and implementation, or they may just not know where to start.

In many cases, there are differences in how men and women respond to behavior change programs encouraging energy efficiency. Understanding these differences can lead to a greater impact. For example, research in Uzbekistan found that women took more responsibility than men for household energy conservation and for educating other household members, particularly children, to conserve energy (Hiller et al. 2016). This presents an opportunity to make progress toward energy efficiency goals. If well planned, behavior change strategies that integrate communication and gender aspects can be added to energy efficiency projects at minimal cost—and yield significant returns in a program's uptake and impact.

A detailed review of demand-side management programs conducted by the American Council for an Energy-Efficient Economy outlined three types of programs that use a behavioral approach to enhance energy efficiency (Sussman and Chikumbo 2016). As outlined in Figure 2.3, these are as follows:

i. **Information-based programs** seek to change behavior by providing information. They may provide facts regarding the consequences of certain behaviors, or provide persuasive messages that motivate action. Common types of information-based programs may utilize:
   - **Home energy reports** that provide information on recipients' residential energy consumption, and seek to use the power of social norms to encourage behavior change
   - **Real-time feedback**, that is, immediate information on energy use, delivered through digital devices or websites
   - **Energy audits,** or personalized evaluations of energy use in a home or business, followed by specific energy efficiency recommendations

FIGURE 2.3 Three Categories of Demand-side Behavior Change Programs



Note: K-12 = kindergarten through grade 12.
Source: adapted from Sussman & Chikumbo 2016

ii. **Social interaction programs** typically involve interactions between two or more people; examples include competitions and games, or community-based activities. Their goal is to encourage behaviors that reduce energy use. Energy-saving competitions, for example, can take place between—or within—residential buildings, office buildings, neighbors, or cities, as well as among individuals online. They motivate behavior change by offering rewards and by being entertaining to capture attention. Community-based activities are typically customized to specific groups (e.g., neighborhoods or the employees of a business, or workers in a building).

iii. **Education and training programs** primarily rely on teaching as the means of promoting behavior change, though they may include elements of other program categories. Examples include:

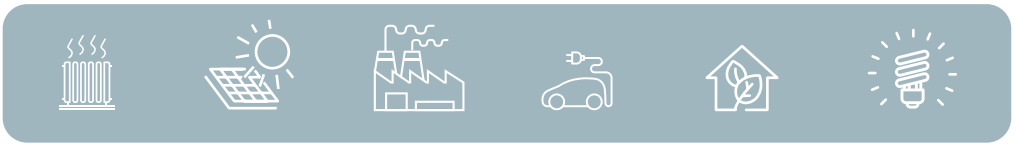
- Strategic energy management programs (or continuous energy improvement programs) that involve the training of industrial or commercial customers on how they can save energy within their organizations
- Programs in schools or on college campuses that include classroom education, the solicitation of students' commitments to promote energy efficiency, and student-led initiatives to use energy more efficiently
- Community training programs that typically target specific communities (such as low-income ones) and that feature a strong educational component

Together, these three types of programs cover a range of initiatives, from the classroom-style training of community groups to the customized provision of digital information to individual consumers.

The choice and design of a behavior change intervention for energy efficiency should be informed by the best available evidence, specific to the local situation. Local cultural norms, customs, and habits are important to consider for energy efficiency behavior change programs to be effective.

The range of opportunities for how and in what ways behavior change can impact energy efficiency and energy consumption are highlighted in Figure 2.4.

FIGURE 2.4 Opportunities for Encouraging Energy Efficient Behavior Change



Encouraging homeowners to install energy efficiency measures

Encouraging businesses to install energy efficiency measures

Reducing energy use at work

Reducing transport-related emissions

Reducing energy use at home

Encouraging the purchase of energy efficient appliances

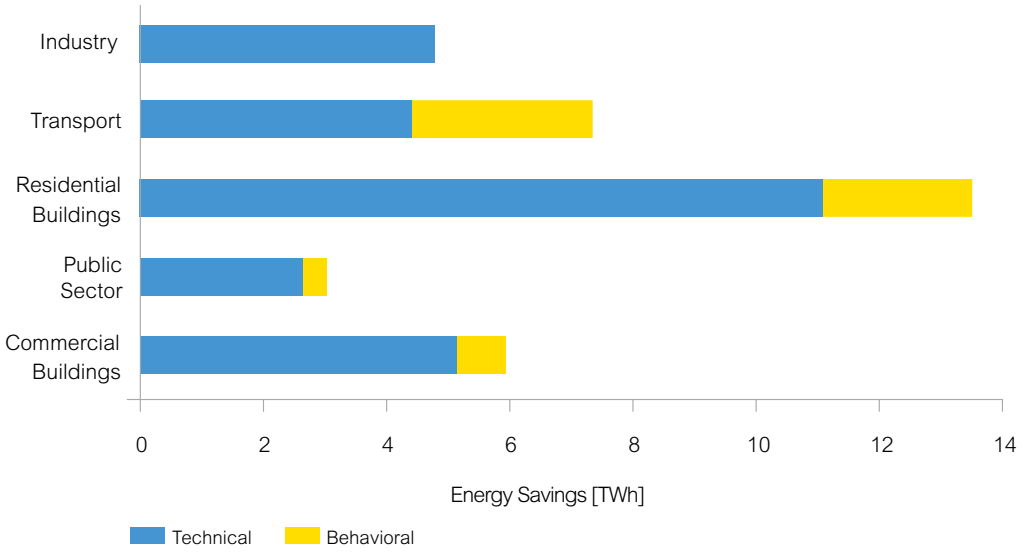
Source: SEAI 2018

POTENTIAL FOR SIGNIFICANT ENERGY SAVINGS

Most efforts to enhance energy efficiency in developing countries have focused on replacing old technology or hardware with more efficient models. Examples include using light emitting diode (LED) or compact fluorescent lamps (CFLs) rather than inefficient incandescent lamps,[8] more efficient motors, and better sealed windows or more insulation to provide better thermal comfort while reducing energy waste. Although these technology-focused projects and policies have resulted in energy savings, there is growing evidence that significant energy savings, and often at a lower cost, can be achieved by changing consumer behaviors. This has been demonstrated by behavior change programs implemented in industrial economies over more than two decades (Allcott and Mullainathan 2010).

More recently, a 2018 analysis of relevant international best practices estimated that, by implementing behavioral measures, Ireland could avoid 6.5 terawatt-hours (TWh) of energy consumption by 2020, most of it in transport and residential buildings (Figure 2.5). This is equivalent to approximately 5 percent of all the energy consumed across the country in the year 2015 (SEAI 2018). As noted earlier, behavior change programs have been found, in most cases, to be as or more cost-effective in delivering equivalent energy savings as technology-oriented demand-side measures (Allcott and Mullainathan 2010). While these findings are based on experience in mostly industrial economies, they are also relevant to developing countries.

FIGURE 2.5 Potential Energy Savings in Ireland Technical and Behavioral Efficiency Measures, as of 2020 (TWh)



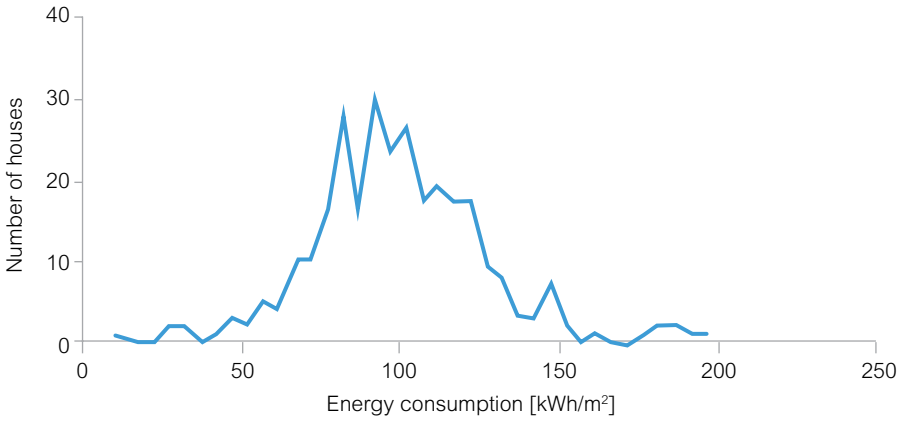
Source: SEAI 2018

The same analysis (SEAI 2018) found several ways that a behavior change approach could help save energy in Ireland:

- Providing **households with feedback on their energy use** through in-home displays and enhanced billing could lead to electricity savings of up to 3 percent of current use.
- Providing f**ree home energy audits** that supply homeowners with energy-saving technologies (such as LEDs) and a summary report of energy-saving measures appears to spur energy savings and investment in energy efficiency measures.
- Community-based approaches have proven effective in promoting the installation of energy-saving technologies and energy efficiency measures in households; the most effective of these use a **social marketing framework,**[9] including, for example, offering discounts and running in-store information events for energy-efficient products, distributing flyers, and home visits.
- By setting energy-saving goals, assigning energy champions, and providing employees with feedback on how their energy use compares with that of their colleagues, **businesses** can reduce their electricity use by 10 percent.
- Providing **commercial drivers with training in eco-driving** (and establishing fuel savings targets) can lead to significant reductions in fuel use (as mentioned earlier).

In residential buildings, where there is evidence of significant potential for energy savings, work by the International Energy Agency's Energy in Buildings and Communities Technology Cooperation Program (2013) shows that there can be a wide range of energy consumption in similar buildings due to differences in occupants' behaviors and operational choices. This was shown by a study of energy consumption in 290 homes in Denmark with near-identical technical characteristics in terms of their building insulation and envelope, and heating systems. While the two extremes of total energy consumed (Figure 2.6) are likely due to different occupancy rates (vacant, or home to a very large family), the wide range of energy consumption rates between those extremes shows the dramatic impact of occupant behaviors and daily energy use choices. The large number of households consuming more than 125 kWh/m^2 a year suggests potential for behavior change to bring consumption down closer to the median of 100 kWh/m^2 (IEA EBC 2013a).

FIGURE 2.6 **Range of Annual Energy Consumption in Identical Houses in Denmark**



Note: kWh/m^2 = kilowatt-hours per square meter.
Source: IEA EBC 2013a; Andersen 2012.

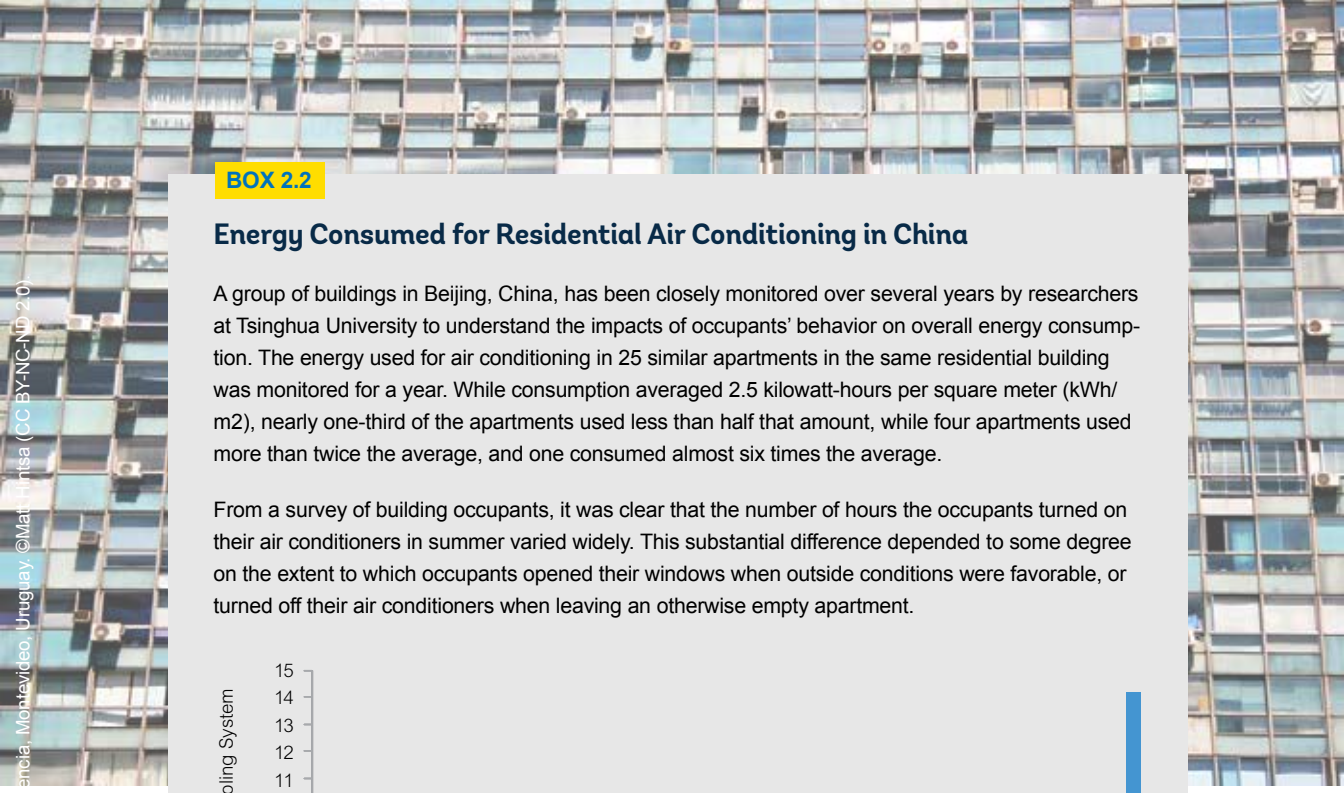
A similar empirical study of 25 apartments within the same building in Beijing, China, found that the energy consumed for air conditioning varied dramatically based on consumer behavior (Box 2.2).

Another study of households' energy consumption behavior, focused on air conditioning, comes from India. As part of the development of the India Cooling Action Plan (MOEFCC 2019), a detailed study was undertaken to better understand energy users' thermostat settings. The analysis found that while 24°C is the preferred thermostat set point, more than half of the surveyed population sets the thermostat below 24°C on a regular basis, contributing to higher energy consumption. A variety of air conditioner models was tested, and an energy savings potential of 8 to 10 percent was observed for a 1°C increase in the set point among units equipped with inverter compressor technology.[10] Also, the study found dramatic differences in annual consumption (ranging from less than 600 kWh to more than 1,800 kWh per year per unit), with the thermostat set point having nearly as big an impact as the technology chosen (Kumar, Kachhawa, and Kasamsetty 2019).

Energy and emissions reductions from changing thermostat set points were also demonstrated by Japan's "Cool Biz" campaign. Since 2005, the Japanese government has encouraged businesses to limit their use of energy for air conditioning by changing the standard office thermostat set point to 28°C. Importantly, the government has led by example. To ensure that employees remain comfortable even with a higher set point, government workers were given a more casual dress code than formal business attire during the hot summer months. By 2012, more than 2.2 million tons of carbon emissions had been avoided through this campaign.[11] To address the power shortages in Japan following the earthquake and tsunami in 2011, the program expanded into the "Super Cool Biz" campaign (see BBC 2011). The annual length of the Cool Biz campaign was also extended, from June–September to May–October.

Experience in the United States has demonstrated that electricity distribution utilities have been able to achieve 1 to 3 percent energy savings per household per year on average in a reliable and cost-effective manner simply by sending residential consumers home energy reports (HERs; see Box 2.3 for an example from Oracle Utilities Opower). HERs use a mix of data analytics and behavioral science to help utility customers better understand their energy usage by making it more "visible," and also empower them to take steps to adopt more efficient behaviors (Sachar et al. 2019). Such behaviors include: (i) simple changes in routines and habits (e.g., turning off lights, changing thermostat settings, turning off air conditioners or reducing their use, using cold water to wash clothes); (ii) infrequent and low-cost maintenance practices (i.e., replacing furnace filters, caulking windows, etc.); and (iii) investments in new, energy-efficient appliances and equipment (e.g., refrigerators, windows, insulation, etc.). Follow-up studies have found that most of the energy savings achieved through programs involving HERs are from changes in behavior (Ehrhardt-Martinez 2012).

Experience with HERs in developing countries to date is limited. In Thailand, a field experiment involving 138 households in Bangkok found that providing electricity saving tips along with feedback to households on both their own and peers' home electricity usage—similar to HERs—nudged behavior and led to a statistically significant impact (a 6 percent reduction) in residential electricity consumption compared with a control group. This result would have to be tested on a larger sample and for a longer period, but it is a positive indication of the potential effectiveness of such behavioral change approaches in developing countries (Thampanishvong 2015). In Malaysia, a HER program targeted at residential consumers has also shown positive results. It started with a pilot phase in 2015–16, involving approximately 200,000 consumers, which reportedly avoided close to 14,000 MWh. Subsequently, the program was expanded to 450,000 consumers. On average, Malaysian households receiving HERs have lowered their energy usage between 1 to 3 percent (compared to a control group). Over a period of 12 months, the aggregate impact of the program amounted to electricity savings of nearly 50,000 MWh. The experience gained from the HER pilot underway in India (Box 2.3) should also generate useful insights on the suitability of residential infor-

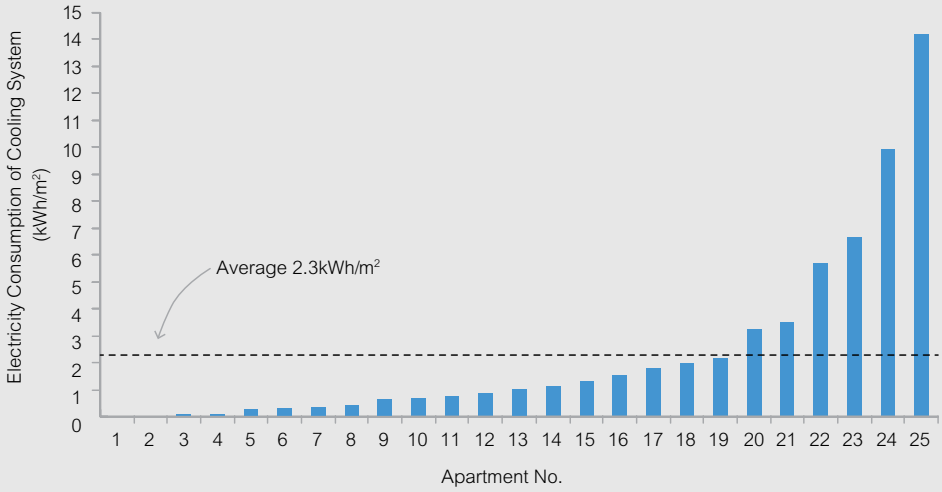


BOX 2.2

Energy Consumed for Residential Air Conditioning in China

A group of buildings in Beijing, China, has been closely monitored over several years by researchers at Tsinghua University to understand the impacts of occupants' behavior on overall energy consumption. The energy used for air conditioning in 25 similar apartments in the same residential building was monitored for a year. While consumption averaged 2.5 kilowatt-hours per square meter (kWh/m2), nearly one-third of the apartments used less than half that amount, while four apartments used more than twice the average, and one consumed almost six times the average.

From a survey of building occupants, it was clear that the number of hours the occupants turned on their air conditioners in summer varied widely. This substantial difference depended to some degree on the extent to which occupants opened their windows when outside conditions were favorable, or turned off their air conditioners when leaving an otherwise empty apartment.



Source: IEA EBC 2013b.

mation-based behavior change interventions in the context of a large, rapidly growing developing country context, and any adaptation(s) that may be warranted in such an environment.

Smart meters, which generate information on an hourly basis (or more frequently) and provide key data measurements to networks and consumers, are an important tool in promoting energy efficiency. Smart meters are in place or being implemented in several countries including Canada, Chile, China, India, Italy, Finland, the Republic of Korea, Japan, and the United States. However, on their own smart meters are not sufficient to change household energy consumption practices. The data collected must be delivered to consumers in a useful format that contextualizes it and motivates recipients to take actions to tap their energy efficiency potential. In its Energy Demand Research Project examining a set of behavioral interventions covering more than 61,000 households, the UK Office of Gas and Electricity Markets found that the deployment of smart meters coupled with the installation of real-time information displays was most effective in reducing energy consumption (OECD 2017).

BOX 2.3

Providing Feedback to Consumers on Household Energy Use through Home Energy Reports

The home energy report (HER) is a common and well-proven tool used in behavioral programs targeting energy consumption. HERs provide detailed and comparative information on household energy use, and how it compares with use levels in similar homes.

One of the most popular HER packages has been developed by Opower,[12] acquired by Oracle in 2016. It was first deployed in the United States and is now in use in several other economies around the world. The Opower HERs have now been deployed by more than 100 utilities and have reportedly generated over 24 TWh of energy savings and US$2 billion in electricity savings for utility customers. Opower effectively combined behavioral science with proven methods of promoting energy efficiency, to create personalized energy reports that show utility customers how much energy they are using and that offer suggestions on how to cut back. The reports also include information on how each household's electricity use compares with that of other households in its neighborhood, as well as congratulatory or motivational cues. This approach is based on behavioral analysis (conducted in the United States), which found that consumers were not particularly motivated to save energy because it saves them money[13] or because it is good for the environment. Instead, they were motivated by knowing how their peers were behaving and what their peers cared about. Individuals were also motivated by recognition and reward. (A sample Opower HER is shown in Appendix A.)

A pilot Behavioral Energy Efficiency Program was launched in India in 2019 by the Delhi power distribution utility BSES Rajdhani Power Limited (BRPL), and implemented by Oracle Utilities with support from the US Trade and Development Agency (Economic Times 2018). The pilot program seeks to: (i) demonstrate the benefits of HERs for consumers (e.g., empowering consumers to save money through lower energy bills); (ii) demonstrate their benefits to the grid (including verifiable energy savings at scale and aggregated grid load reduction); and (iii) establish a model for ongoing utility-led, consumer-focused behavioral energy efficiency programs in India. The program involves surveying 200,000 customers in south and west Delhi regarding their lifestyle and energy consumption habits. The resulting information will then be used to inform the generation of HER reports individualized to each customer, with information on implementing efficient actions and achieving corresponding savings. Each participating customer will receive: (i) a bimonthly paper-based HER by post; (ii) web and mobile-based information, insights, and analysis; and (iii) monthly e-mail HERs.

Sources: AEEE and Oracle 2019; Oracle 2019.

With these promising insights into the potential for energy savings from behavior change interventions comes the need to examine the "persistence" of savings: how long will the energy savings encouraged by behavior change campaigns last, relative to investments in technology improvements? While a new, high-efficiency motor or LED lamp will have a quantified and defensible "useful life" over which it will deliver value, in terms of both functionality and energy savings, behavior change is associated with individual humans. Thus, the lifetime of resulting energy savings needs to be assessed differently than would be done for technology efficiency measures. This question of the longevity of the effects of behavior-focused energy efficiency programs is also relevant to the cost effectiveness of such programs. Analysis shows that these types of programs—which are typically rolled out through a utility—cost[14] far less than the con-

struction of a new power plant, or the expanded generation of electricity, and are also more cost efficient than most other types of energy efficiency programs. But estimates depend on lifetime assumptions.

More research is needed to better understand how long the savings due to behavior change programs persist, though a growing number of evaluations in the United States suggest that participants' efficient behaviors last longer than was earlier assumed (Hoffman et al. 2018). One meta-analysis (Khawaja and Stewart 2014) of evaluations of long-running behavior feedback programs in the United States recommends using a lifetime of 3.9 years. Another comprehensive review found that the savings due to two-year HER programs may decay by 11 to 32 percent annually (averaging 20 percent) in the two years immediately following the end of these programs (Sussman and Chikumbo 2016). A study of Opower HERs in the United States found the strongest effects in the short term, but also found enduring effects (Allcott and Rogers 2014). In fact, energy savings were initially driven by an immediate response to the receipt of the reports mailed to households, but eventually, the households receiving reports made long-term changes in energy consumption habits, continuing to save more energy than control groups. Those households that continued to receive reports after two years saved about 50 percent more than those that were dropped from the program. These empirical findings point to the positive persistence of the benefits of behavior change energy efficiency programs, though more research is needed across a range of program types, and particularly in developing countries.

THE IMPORTANCE OF GENDER CONSIDERATIONS IN BEHAVIOR CHANGE CAMPAIGNS

Growing evidence points to significant differences in the energy-related behaviors, attitudes, and decisions of women versus men. For example, differences can be observed in how men and women use and save energy on a daily basis, how much they are willing to adopt energy efficiency measures, and how they respond to campaigns marketing efficient products and services. It is therefore essential to tailor any efforts toward energy efficiency to the specific behaviors of men and women.

Gender gaps, such as in access to finance or affordability constraints (e.g., women have equal access to financial services in only 60 percent of the world's countries[15]), may make it relatively difficult for female-headed households or female business owners or farmers to adopt energy-efficient appliances. To reach policy objectives, it is important to consider these dynamics in the design of relevant programs.[16]

Several recent studies that consider differences in the energy-saving behavior of men and women (Permana, Aziz, and Siong 2015; Lee, Park, and Han 2013) find that, in general, women show a more positive attitude toward saving energy via behavior change. The European Institute for Gender Equality[17] found that women value eco-labelled products and green procurement higher than men, and they are more willing to modify their behavior to achieve environmental goals, including energy efficiency. A survey of 400 households in Bangkok also found that women are more likely to adopt energy-saving habits than men (Jareemit and Limmeechokchai 2017). A gender-focused assessment of the employees and users of public buildings, conducted as part of the World Bank's Energy in Public Buildings Project in Turkey, found that women often associate energy efficiency with energy conservation, and believe they need to sacrifice comfort to adopt efficient behaviors in public buildings. However, the research found no statistically significant difference between men and women in their knowledge of the government's energy efficiency policies. The assessment also found that both men and women agreed that women were more concerned than men about the impacts of energy consumption on the environment and its potential implications for future generations, including their own children (World Bank 2019a).

Men and women tend to have different metabolisms, and thus experience air temperature differently, with ramifications for the world's increasing use of air conditioning. In a field study of thermal comfort in offices in India, females were found to accept a wider range of temperatures than males, and require less mechanical cooling (Indraganti, Ooka, and Rijal 2014). Beyond India, a 2019 study conducted in Germany, found that women performed better on certain cognitive tests (especially math and verbal tasks) at higher temperatures than at lower ones, and that overcooled offices had a negative impact on women's productivity (Chang and Kajackaite 2019). In fact, while many offices are set at the cooler temperature preferred by men, the study suggests that gender-mixed workplaces may be able to increase workers' overall productivity by setting the thermostat higher than current standards.

Research has demonstrated that men and women respond differently to information and marketing campaigns. Surveys across countries and different economic conditions show that men tend to display higher levels of awareness and knowledge of environmental issues relative to women, though women exhibit a more positive attitude and behavior toward saving energy than men, suggesting that women are more willing to practice energy-saving behaviors (Huang and Chao 2017). It is likely that there are opportunities to improve the outcomes of the marketing campaigns of energy efficiency products by better understanding these differences, and targeting approaches to achieve desired results.

An "energy clinic" conducted by the Energy Management Centre in Kerala, India, demonstrated that women can be key agents of change in utilizing more efficient appliances. Women organized demonstration classes on energy conservation in their own villages, and attracted large numbers of attendees, including housewives, teachers, and local administrators (Unnithan 2018). Tata Power Delhi Distribution Ltd. has documented similar experiences by successfully appointing women as "brand ambassadors" to raise awareness about the benefits of legal connections, help facilitate new connections, and educate consumers on consumption patterns and bill payments, with each brand ambassador covering an area of about 300 households (Shrivastava 2017; World Bank 2017).

An important gender-related dimension of energy efficiency to consider is also the benefits generated in energy users' daily lives. Improving otherwise poor (excessively cold or hot) housing conditions, such as through better insulated buildings, can have a positive impact on women's health, as women often spend more time in homes. Another example may be investments in efficient and better-quality LED street lighting systems, which also help to improve women's sense of security and prevent violence against women in public spaces. Communicating and taking these benefits into account may help garner support for energy efficiency investments. In Brazil, a national survey conducted in 2017 found that many women have suffered aggression in public spaces.[18] This led the World Bank to launch a study in Brazil with ESMAP funding[19] to investigate how energy-efficient street lighting interventions in areas with high rates of violence against women can have a positive impact on the lives of women and girls. This analysis seeks to help inform street-lighting strategies and implementation decisions.

School-based education programs promoting energy efficiency can be an effective way to drive behavior change among households, as children can learn to integrate energy efficiency and sustainability in their own habits and consumption decisions.

NOTES

2. See, for example, information on the World Bank's Mind, Behavior, and Development Unit (eMBeD) at: https://www.worldbank.org/en/programs/embed.
3. The project (P073985) was implemented by the World Bank; the Project Appraisal Document is available at: http://documents.worldbank.org/curated/en/866141468770386434/pdf/26848.pdf.
4. This guide considers the term "energy efficiency" broadly—that is, utilizing energy efficiently (i.e., reducing the amount of energy needed to generate outputs and services), as well as conserving energy (implying an absolute reduction in energy end-use due to, for example, turning off lights).
5. "Nudging" is an approach drawn from behavioral economics that aims to influence decisions and behaviors towards certain options, without removing less preferred options. In many countries, it may be difficult for governments to adopt policies that restrict the range of options available to consumers.
6. The set point refers to the temperature that HVAC (heating, ventilation, and air conditioning) equipment is asked to reach and then maintain in a room or building.
7. An energy management system usually includes (i) a strategic plan; (ii) an energy manager; (iii) policies and procedures for the purchase, use, and disposal of energy-using equipment; (iv) a frequently updated energy manual; (v) key performance indicators; and (vi) periodic progress reports.
8. LED lamps are fast becoming the technology of choice—over CFLs—in most lighting programs focused on energy efficiency. LED costs have declined but are still higher than those of CFLs. However, LED lighting is more energy efficient than CFL bulbs, has a longer lifetime, and does not contain mercury (unlike CFLs).
9. Social marketing is an approach that uses commercial marketing techniques with the aim of encouraging positive behaviors for the benefit of individuals or society as a whole.
10. An inverter air conditioner has a variable-speed compressor and is more energy efficient than a non-inverter air conditioner, which has a fixed-speed compressor.
11. More information is available at EESI (2015).
12. For more information on Opower, see https://www.oracle.com/industries/utilities/products/what-is-opower.html.
13. This may be because electricity prices are not very high in the United States, and electricity costs represent a relatively small share of many households' budgets.
14. Analysis conducted in the United States (Allcott and Mullainathan 2010; Advanced Energy Economy 2016) estimates a cost of behavioral programs of about 2.5 US cents/kWh saved. This compares favorably to most other types of energy efficiency programs (in the United States) which have been found to cost between 1.6–6.4 US cents/kWh saved.
15. *The Global Gender Gap Report,* published by the World Economic Forum, benchmarks 144 countries in their progress toward gender parity across four thematic dimensions: economic participation and opportunity, educational attainment, health and survival, and political empowerment. It has been published annually since 2007.
16. World Bank teams that are designing projects and programs should become familiar with the Gender Tag, which is a key corporate commitment and priority for gender equality interventions in the design phase. The specific parameters of the World Bank Gender Tag are beyond the scope of this report. World Bank staff and consultants can access relevant guidance at: https://worldbankgroup.sharepoint.com/sites/Gender/Knowledge%20Base/Gender%20Tag%20Good%20Practice%20Note%20November%202019.pdf.
17. See the European Institute for Gender Equality (EIGE) website: https://eige.europa.eu/gender-mainstreaming/policy-areas/energy
18. The *2017 Public Security Yearbook,* published by the Brazilian Forum on Public Security, presents data that can reveal gender inequalities in relation to the types of crimes in which men and women are victimized. Women are more prone to rape, assault, and robbery, while men are exposed to robbery, murder, and homicide (http://www.forumseguranca.org.br/wp-content/uploads/2017/12/ANUARIO_11_2017.pdf).
19. In the context of the preparation of a report (World Bank 2018c) for a Bank-supported project named "Financial Instruments for Brazil Energy Efficient Cities." The Bank's investment project has since been canceled but the study is ongoing.

3. INTEGRATING BEHAVIOR CHANGE INTO ENERGY EFFICIENCY PROGRAMS

This chapter provides guidance on how to integrate behavior change strategies in the design of energy efficiency projects and in doing so, help strengthen development outcomes. It is important to engage a professional with expertise in one of the behavioral sciences—either social marketing, behavior change, communication, or citizen engagement—early in the process.

During the initial dialogue about an energy efficiency project, a team should identify whether there are opportunities to inform policymakers about the benefits of integrating behavior change programs into the project. Both the Sustainable Energy Ireland review (SEAI 2018), as well as comprehensive studies conducted by the American Council for an Energy-Efficient Economy (Sussman and Chikumbo 2016), have demonstrated that behavior change is an important element of energy efficiency programs and policy design, but their work also shows that institutions often lack knowledge and awareness about this potential. Government officials, utility representatives, and policymakers would benefit from gaining information on the opportunity to achieve lower cost energy savings by integrating behavior change components into projects.

UNDERSTAND THE LOCAL CONTEXT, INCLUDING ENABLING CONDITIONS AND BARRIERS TO BEHAVIOR CHANGE

The development of effective behavioral change strategies is predicated on knowing both what barriers exist to the adoption of a behavior as well as what efforts might motivate people to act. When considering a potential program's design, it is important to have an in-depth understanding of the enabling conditions for changing behaviors or any social norms that may act as barriers to the desired behavior. These are highly contextual and require survey research. During the planning and design of a behavior change program, the benefits that may motivate people to change their behaviors (e.g., reduced utility bills, higher indoor air quality, increased comfort, increased property value) will be identified. Similarly, any information gaps among consumers must be identified. Consumers need clear information to be able to differentiate between products that are energy efficient and those that are not in order to change purchasing behaviors. Many consumers may find it complex to compare the short-term purchase cost of an energy efficient domestic appliance with the expected long-term savings in energy bills. In this context, having an energy labeling system[20] in place is typically a key enabling condition, helping to guide consumers toward more energy efficient purchases.

A market assessment of the India Bureau of Energy Efficiency (BEE) labeling program found that the purchase of energy efficient products is highly dependent on consumers' level of awareness, enabled by the labeling program (CLASP 2015). More than 80 countries have energy efficiency labels,[21] although such energy efficiency enabling conditions are still lacking in many developing countries, according to the Regulatory Indicators for Sustainable Energy (RISE).[22] However, a label on its own is insufficient to motivate

consumers. The information that is provided to consumers and how it is presented matters; labels have to be easily understood, trusted, and valued by consumers.[23]

Common barriers to improved energy efficiency behaviors are a lack of information, competing priorities, and a lack of motivation. For example, the CLASP (2015) market assessment in India found that a low level of awareness was an important obstacle to the purchase of energy efficient products. An even larger barrier was the lack of priority given to the energy efficiency of a product when compared with other factors such as brand name or reputation. A limited willingness to pay a premium for more energy efficient products was also identified. The assessment found, however, that the relative low priority given to energy efficiency by consumers was not uniform across products, with energy efficiency given a relatively higher priority in the case of high energy consuming products such as refrigerators or air conditioners. The lack of availability of energy efficient products also constituted an obvious barrier in some markets.

IDENTIFY OPPORTUNITIES TO INCLUDE BEHAVIOR CHANGE APPROACHES

Behavior change programs can be strategic and implemented on their own, or as part of a broader, holistic sector intervention. Throughout the phases of an energy efficiency project there should be several opportunities to consider how a behavior change approach could enhance the project's effectiveness (Table 3.1).

One key area where behavior change strategies can help is in how consumers evaluate, purchase, and invest in energy-using equipment. Considering energy efficiency in the decision-making process around investments (whether at the household or industry level) can have a significant lock-in effect for energy savings, as well as lower life-cycle costs.

TABLE 3.1 Behavior Change Opportunities During a Project

PHASE	BEHAVIOR CHANGE OPPORTUNITIES
Project identification/ policy discussions	During project identification discussions, there may be opportunities to raise policymakers' and regulators' awareness of the key benefits of behavior change (technical and technology-based measures tend to be the focus of energy efficiency programs and policies).
Public consultations throughout the project	Project development generally includes relatively wide consultations with different experts and stakeholders to further understanding of the current situation, and what changes might be achievable. Consulting behavior change experts will help identify key opportunities.
Data collection and survey efforts during project appraisal	As projects are being designed, surveys or other data collection activities may be used to assess baseline conditions. The data collected should be sex-disaggregated whenever possible. Collecting information about current energy behaviors, with an eye toward potential improvements, can help set targets and enhance project design.
Project communications and stakeholder engagement plans	Energy efficiency projects often include communications campaigns to raise public awareness of the benefits of energy efficiency. The initial communication planning discussions are an opportunity to consider applying behavior change approaches.
Market assessments and program design	In any market assessment, it is important to document the baseline conditions of energy-using equipment, and also operating conditions, such as the hours that lights or air conditioners are kept on, thermostat set points, and other areas where behavior change can result in energy savings. Program design will need to address the identified behavior change opportunities as well as efficient technology investment options.

Source: Authors.

In the residential sector, for example, opportunities for expanding energy efficiency programs through behavior change approach could focus on one—or more—of three types of behavior (WRI 2018):

- Curtailment (repetitive efforts, such as switching off lights, fans and other appliances)
- Maintenance (practices to ensure appliances and equipment are in proper running condition)
- More efficient purchasing (involving one-time purchases of energy efficient products and services)

While there is no single best behavior change program, experience with demand-side management programs in developed countries (Susman and Chikumbo 2016; Yoeli et al. 2017) is showing that programs that use more behavior change strategies typically save more energy than those that involve fewer strategies. The same research is also showing that timing is an important element in identifying opportunities for behavior change interventions, taking advantage of milestones when changes in habits can occur more easily (for example, when buying a new home, when an electrical household appliance breaks, or when energy prices increase). When identifying opportunities to include behavior change approaches in energy efficiency projects, it is also important to look for potential metrics for evaluation.

An example of campaign metrics used for the impact evaluation of the "Saving Energy Saves you Money" public service announcement campaign launched in 2011 in the United States is presented in Box 3.1.

IDENTIFY THE BEHAVIORS THAT SHOULD BE ENCOURAGED AND THE INTENDED AUDIENCE

Once an opportunity for expanding energy efficiency through behavior change has been identified, the next step is to clearly identify the behaviors that need to be changed and by whom. This process, sometimes called "diagnostics mapping,"[24] enables the identification of the specific actions required. There may be a number of factors at play that prevent energy-efficient behaviors, and interventions need to be tailored to the specific situation, including the target audience and their behaviors. Table 3.2 provides examples of behavior change strategies to address different barriers or bottlenecks to enhancing the uptake of energy-efficient appliances.

While a variety of project beneficiaries may see the impacts of behavior change programs, each audience must be targeted in a different way for maximum effect. For example, residential energy consumers will need to receive different communications to better understand and harvest their savings opportunities than will large industrial firms with dedicated energy managers. Among the residential energy consumers, communications and interventions should be tailored to target different groups. For example, a 2013 study on energy efficiency in the United States residential market conducted by McKinsey & Company identified five customer segments, with a roughly equal distribution, based on attitudes and behavior:

1. **Green advocate energy savers,** those with the most positive overall energy saving behaviors, strongest positive environmental sentiments, and greatest interest in new technologies
2. **Traditionalist cost-focused energy savers,** whose extensive overall energy-saving behavior is motivated by cost savings, and who have limited interest in new technologies or new service programs
3. **Home-focused selective energy savers,** who are concerned about saving energy and particularly interested in home improvement efforts, driven by interest in new technologies and cost savings
4. **Non-green selective energy savers,** whose energy saving behavior is selective and not concerned with environmental considerations
5. **Disengaged energy savers,** who are relatively less motivated by saving money through energy savings; not concerned about environmental considerations; not interested in new technologies

BOX 3.1

Raising Awareness and Changing Attitudes and Behaviors: A Campaign Impact Evaluation from the United States

A tracking survey is one of several tools used by the US Ad Council to evaluate the impact of its campaigns. When the Ad Council got ready to launch, with the US Department of Energy, the "Saving Energy Saves You Money" energy efficiency campaign, a national campaign to help consumers save money on utility bills, it designed surveys to measure trends in public service advertising (PSA) recognition and relevant attitudes and behaviors, such as seeking more information and taking steps toward greater energy efficiency. In June 2011, before the campaign's launch, the Ad Council fielded a benchmark tracking survey. A follow-up survey was fielded in June 2012.

Significant improvements in energy saving behaviors were observed from 2011 to 2012. More people bought Energy Star appliances (rising from 53 to 60 percent), added insulation (24 to 28 percent), and undertook home energy audits (18 to 21 percent). Also, in 2012 more people believed that it is "not hard" to save energy (61 to 67 percent). People were also more likely to say they did things to save energy "often" (44 to 49 percent). In 2012, almost one in five homeowners (17 percent of the total) recognized at least one of the nine campaign PSAs. All key measures were significantly higher among those who saw or heard the PSAs. Ad-aware respondents were more likely to say that saving energy is extremely important (48 versus 36 percent), that they do things to save money in the home often (58 versus 47 percent), had undertaken a home energy audit (13 versus 7 percent), and had saved electricity as a way to save money (7 versus 2 percent). They were also more likely to have visited a website to get more information about how to save energy in the home (23 versus 12 percent), and to have said they changed a light bulb in order to gain greater energy efficiency (73 versus 51 percent).

Sources: Ad Council 2013.

The situation may be different in developing countries, where behavior change programs may need to differentiate target beneficiaries according to income levels. This may be particularly important given that while the ownership of high energy consuming appliances (e.g., air conditioners or refrigerators) may be common in virtually all households in some developed countries, they may be rare in most low-income households in many developing countries (e.g., in India, around 70 percent of people do not have refrigerators). Demographic segmentation of consumers, such as by age, gender of household head, household size, or location (e.g., whether households are in urban or rural areas) may also be ways to segment the targeted audiences of a behavior change program.

CONDUCT AUDIENCE ANALYSIS

Understanding target audiences, including both men and women, is critical when designing behavior change interventions. Before deciding on a specific plan of action, it is important to engage various stakeholders, particularly policymakers and regulators, to better understand local customs and cultural norms and to essentially define what goals are realistic, and the types of policies and programs that might best meet them.

Once a certain level of buy-in to behavior change policies or programs has been achieved, then strategies need to be developed to drive potential behavior changes. Different stakeholder groups—whether policymakers, residential consumers and small businesses, or large industrial industries—have different motivations for changing behaviors to reduce energy use (Table 3.3).

TABLE 3.2 Examples of Energy Efficiency Behavioral Interventions

DESIRED BEHAVIOR	BOTTLENECKS	BEHAVIORAL INSIGHTS
Aspire to own energy-efficient appliances	Social norms	Identify and promote entrepreneurs to lead the charge in shifting social norms. For example, in rural areas, promote the use of energy-efficient appliances (e.g., refrigerators, fans) among prominent leaders whose behavior is visible in the community. If households have access to television or radio, incorporate the norms of using appliances in common programming (soap operas, for example). If there is limited access to broadcast media, promote the demonstration and use of efficient appliances in local community centers, or even community theaters.
	Social efficacy	Promote women's self-efficacy by exposing them to influential individuals in their networks who are using energy-efficient appliances for the benefit of their families. Use empowered female characters when displaying information about appliances and demonstrate the advantages in terms of health, savings in the duration and frequency of shopping trips, food maintenance, and benefits to the household, especially children.
Demand quality energy-efficient products	Hyperbolic discounting (i.e., opting for smaller rewards sooner rather than larger-later rewards)	Help household heads focus on the long-term gains of the technology (time savings, health, comfort, and disposable income) while dividing the cost of adoption through various pricing schemes (e.g., rent-to-own schemes). Use loss aversion framing.[a]
	Risk perceptions	Offer warranty schemes, rent-to-own schemes, and free trial periods. Promote benefits including reduced food waste, longer preservation of food, greater comfort, and energy cost savings over time, among others.
Buy energy-efficient appliances	Bandwidth overload	Identify bottlenecks in the research process and make it easier to find the right appliances. Provide clear information on the quality of appliances being promoted and their competitors.
	Economic constraints	Test the impact of schemes to lower up-front costs, such as rent-to-own schemes, financial incentives, and microcredit. Use incentives in the face of high financial barriers.
	Low trust in salespeople	Enlist local leaders to introduce salespeople properly to the community (endorsement).
		Train and recruit respected local community members, including women, to be salespeople.
		Offer free trial periods for technology.
Use energy efficient appliances	Habit	Create an SMS campaign featuring timely tips and nudges for using the technology.
		Proactively visit households for maintenance checkups.
		Provide financial incentives.
	Maintenance	Proactively offer check-ins for maintenance and troubleshooting.
		Offer in-home training sessions to teach households how to handle simple fixes.

a. "Loss aversion" refers to people's preference to avoid a loss over gaining the equivalent amount, a concept summarized in the expression "losses loom larger than gains" (Kahneman and Tversky 1979). "Framing" refers to the informational emphasis—that is, whether the positive or the negative aspects of a decision are highlighted. The way a message is framed can affect the degree to which it persuades its audience.

Source: Adapted from World Bank (2019b).

It is also important to identify vested interests, and potential opponents to the behavior changes being considered. This process will help in proactively designing alternative messaging and communication actions in case a campaign is undermined by opposition groups. In the same vein, identifying allies may be helpful to increase the impact of a campaign, and to reduce costs if different allies help in spreading the message and backing it. It may be useful to identify target audiences using three main categories:[26] (i) the primary audience (i.e., those whose behavior a program seeks to influence); (ii) influencers (i.e., those who can influence the primary audience); and (iii) gatekeepers (i.e., those who can facilitate or prevent access to the primary audience). In a behavior change program targeting households, the primary audience might be homeowners; the influencers could be electrical utilities, local media, elected officials, environmental groups, or even coworkers; while the gatekeepers could be community leaders and local media.

In some cases, there may be split incentives when decision makers are not the energy consumers. These situations, while not uncommon, require special attention. In leased office spaces (or housing), for instance, the building owner decides on many investments affecting the energy consumption associated with the building, but the renters are the ones who bear the energy cost burden of, for example, less-efficient equipment. It is important to understand these issues, and aim campaigns at all stakeholders who may need to change their behaviors.

A variety of methods can be used to analyze audiences, collect baseline data, and understand the opportunities for behavior change. Communications and/or opinion research can use different qualitative and quantitative methods to explore stakeholder opinions and attitudes, such as focus groups, public opinion surveys, and workshops (Table 3.4).

In Panama, for example, the World Bank supported the government in a technical assistance program focused on promoting energy efficiency[27] and used a focus group approach to gain insights on consumer behavior, beliefs, and attitudes. Forty percent of participants left their air conditioners on at night or when

TABLE 3.3 Motivations of Different Stakeholder Groups

STAKEHOLDER GROUP	GOAL	POTENTIAL MOTIVATIONS
Policymakers, regulators	Include behavior change programs as a key part of energy efficiency programs and policies.	Enhance the effectiveness of energy efficiency programs and policies; meet energy efficiency policy targets; progress toward climate change goals; lower program costs for delivering energy and cost savings to consumers; lower or shift peak demand.
Small energy users (residential consumers, small businesses)	Have greater awareness and take actions to reduce energy consumption by turning off lights, changing thermostat set points, closing doors of refrigerators, etc.	Lower energy costs; increase disposable income; generate benefits for the environment; keep up with peers or neighbors who are taking action.
Large industrial energy users, enterprise energy managers	Focus on operational changes that can significantly reduce energy consumption beyond new technology investments. Have greater awareness of savings opportunities from operator choices and control strategies.	Reduce operations and maintenance costs; improve profitability and productivity; generate less material waste; make good on social and environmental responsibility; mitigate reputational risk.

Source: Authors.

TABLE 3.4 Research Methods Behind an Evidence-Based Communications Program

METHOD	DESCRIPTION
In-depth interviews	Qualitative interviews with individuals, usually at the household or business decision-making level. Interviews can be structured with formal written guidance or with semi-structured guidance. They can also be unstructured but organized around specific topics. Interviews provide in-depth views of the most influential people and groups related to an issue. Generally, 12 to 15 in-depth interviews can be sufficient to begin a communication-planning process.
Focus groups	Semi-structured qualitative discussions with small groups (generally 6–12 participants). Focus groups are generally used to inform a larger public opinion poll. They seek to obtain broad views on an issue. They can also be used with in-depth interviews to inform programs as they progress. Focus group discussions can also be used before rolling out a campaign to "pre-test" campaign messages with a small group of people before airing messages on mass media.
Public opinion surveys	These use a structured survey questionnaire and are conducted face to face or by phone. Public opinion surveys should be conducted with a statistically relevant percentage of the population. They provide specific empirical information that can be used to inform campaign messages. They are useful when considering broad programs that might target an entire population. Surveys can provide a significant depth of information that can be disaggregated in many ways.
Online and written consultations	These usually involve either a Web page with information that people can respond to or a structured and facilitated online discussion. These formats can be effective sources of information at a very low cost, but have limitations in that only literate people with good Internet access can participate. That said, they are a way to quickly reach large audiences. When choosing online communication as a channel, it is important to plan for hosting and curating the online conversation, including determining how to check comments before they are posted and how to respond quickly to negative comments or misperceptions that are being disseminated through a comments section.
Public meetings	Public meetings may be open to all or by invitation, and take place at any level (e.g., community, regional, or national). Large groups can make it difficult to give everyone a voice, so expert facilitation is needed. Public meetings can function like large focus groups. There are key opportunities to integrate gender considerations into the organization and design of public meetings, among other program elements.
Workshops	Workshops involve the gathering of a group of people in a structured format for a specific agenda.
Public inquiries or regulatory processes	These may be required by regulators in some cases. Public inquiries are a formal process that can involve calling for submissions of interest, holding hearings, inviting written submissions, and issuing recommendations for comment.

Source: Adapted from World Bank 2018b.

leaving a building without changing the thermostat setting, while 27 percent regulated their thermostats as needed. Fewer than half of the sample believed that the temperatures set in homes (33 percent), workplaces (40 percent), and public settings (47 percent) were "just right" (World Bank 2018a). This feedback, combined with data collected through surveys, provides useful insights for designing an energy efficiency behavior change communication strategy, and shaping a national energy efficiency program to reduce the pace of growth in electricity demand for air conditioning (see Appendix D for an example survey used to inform a communications campaign).

Box 3.2 provides an example of an audience mapping exercise, conducted in India in 2016.

BOX 3.2

Mapping Key Stakeholder Segments in India

With energy efficiency widely recognized as a key strategy for reducing India's carbon dioxide emissions and improving energy security, a study was conducted in 2016 to better understand the attitudes of policymakers, energy efficiency implementers, and consumers (including industries and the general public from various energy-consuming sectors). A detailed mapping of stakeholders and their activities, impacts, motivations, and potential roles in expanded energy efficiency project work in India was conducted as part of the World Bank activity on "Scaling up the Demand-Side Energy Efficiency Business Line in South Asia" to gauge informational needs and preferred channels of information on energy efficiency issues. The report includes an in-depth review of the major energy efficiency communications campaigns over the preceding five years, the experiences of managers of major energy efficiency programs, and consumers' perceptions of energy-efficiency-related activities in India, collected through a field survey.

Three key groups were identified as the targets of energy efficiency communications: (i) policy-makers and nodal agencies for energy efficiency implementation; (ii) energy efficiency program implementers; and (iii) consumers, including end-users from major energy-consuming sectors. A mapping exercise was then conducted, outlining the ongoing activities of the major entities, the types of programs being offered, and the effects of relevant communications efforts.

This stakeholder mapping exercise informed the development of a communications strategy and outreach program aimed at increasing awareness and fostering an enabling policy and business environment for energy efficiency in India.

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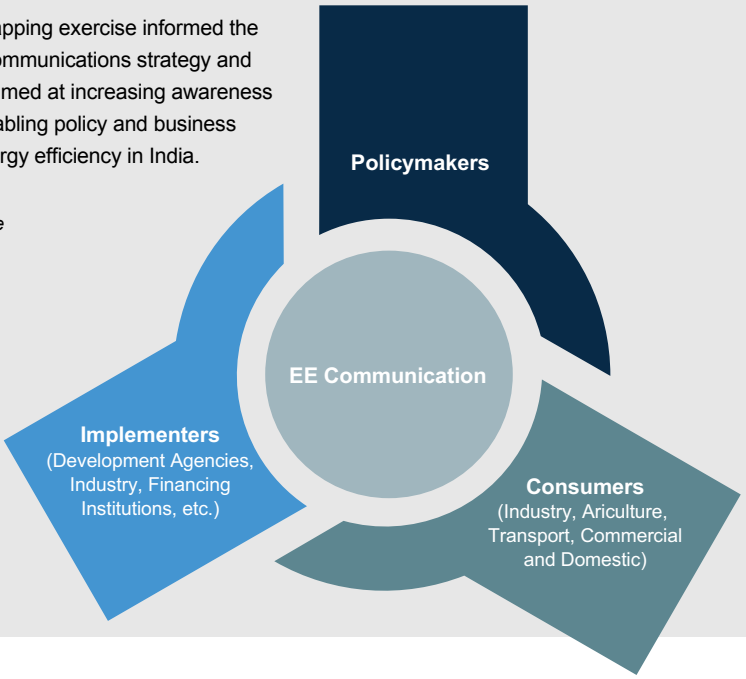
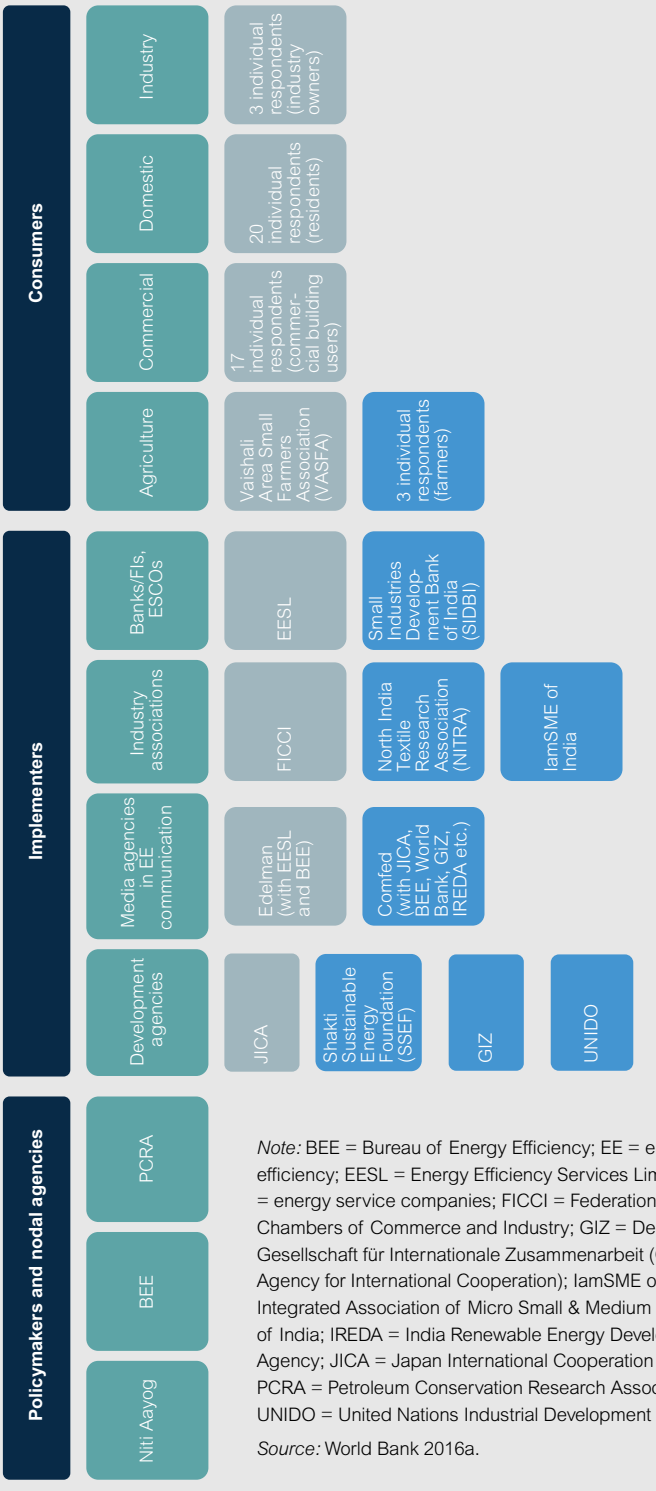


BOX 3.2, *continued*



Note: BEE = Bureau of Energy Efficiency; EE = energy efficiency; EESL = Energy Efficiency Services Limited; ESCOs = energy service companies; FICCI = Federation of Indian Chambers of Commerce and Industry; GIZ = Deutsche Gesellschaft für Internationale Zusammenarbeit (German Agency for International Cooperation); IamSME of India = Integrated Association of Micro Small & Medium Enterprises of India; IREDA = India Renewable Energy Development Agency; JICA = Japan International Cooperation Agency; PCRA = Petroleum Conservation Research Association; UNIDO = United Nations Industrial Development Organization.

Source: World Bank 2016a.

DESIGN A PUBLIC INFORMATION CAMPAIGN TO ENCOURAGE ENERGY EFFICIENT BEHAVIORS

Any changes to consumer behavior will typically rely on well-planned marketing and communications campaigns and strategies. Communications programs nudge citizens to make more informed choices about their energy use and motivate them to take actions that lead to more efficient consumption and demand patterns. Once an audience has been analyzed and stakeholders have been mapped, communications experts who are familiar with local cultures and marketing channels can help design an effective public information/communications campaign that resonates in the local context.

Well-designed communications campaigns are critical to the success of any behavior change campaign. Communicating with energy consumers and other key stakeholders about the benefits of energy efficiency, and the strategies that can help reduce energy use and costs, is most successful when the information is presented in a compelling way and is based on sound research. These factors are significant to ensure long-standing behavior change.

The contributions of local marketing experts and communications firms can typically be very valuable. Local experts and firms already have significant knowledge of local markets; potential experience and familiarity with key stakeholders; and awareness of what sorts of market assessments, messaging, and tools might be most effective. Effective messages are needed to be able to communicate in a way that motivates people to take action. In all cases, the message should be crafted so that it is:

- **Simple:** clearly conveys the key message
- **Concrete:** is easy to understand and clarifies the expected action to be taken
- **Credible**
- **Conveys emotions:** makes people care
- **Tells a story**

In some cases, energy efficiency information campaigns may include incentives to reduce energy use. In most cases, there is a need to communicate the energy efficiency opportunity and then follow up and monitor the impacts.

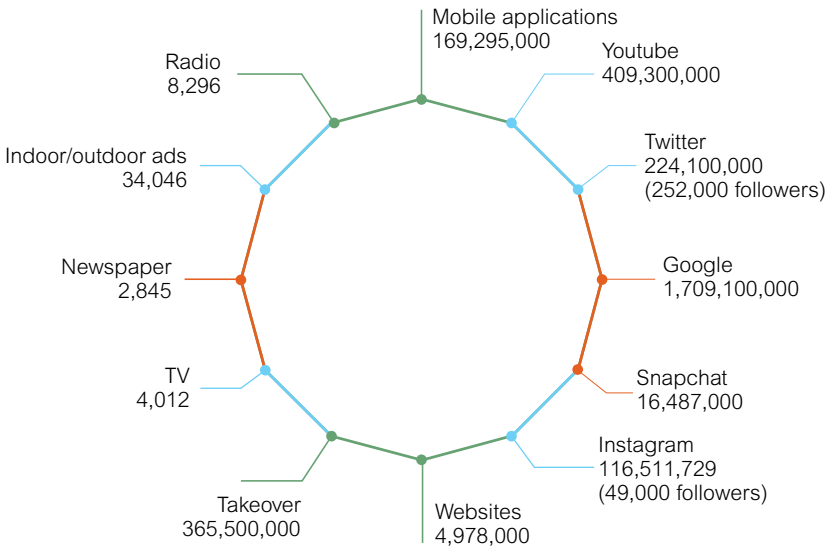
A number of communications modes will be needed, with information coming from credible sources that will vary across countries and regions. Consumers are found to be more comfortable making decisions when the information is received in their preferred mode (e.g., verbal or print) and format (e.g., tables or information graphics). A wide variety of platforms can be used to communicate the importance of energy efficiency.

For example, the Saudi Energy Efficiency Program, an interagency effort in Saudi Arabia, has been tracking coverage across different communications platforms since the program's launch in 2014. As of mid-2018, the energy efficiency program was covered in radio, newspapers, the Internet, and social media and mobile applications (Figure 3.1). Social media platforms were particularly effective in reaching large numbers of potential energy consumers.

Communication campaigns in support of energy efficiency can take many forms. However, certain common elements and proven practices transcend country borders and political contexts. Broadly speaking, practitioners interested in designing and planning communication campaigns for energy efficiency behavior change can follow the checklist outlined in Box 3.3.

Appendix B offers a useful visual guide on how to sequence successful communications campaigns.

FIGURE 3.1 **Media Impressions, by Platform, for Saudi Energy Efficiency Program**



Source: Al Asaly 2018.

BOX 3.3

Communications Campaign Design and Planning Checklist

- ✓ Determine a timeline and budget.
- ✓ Set measurable goals and track results.
- ✓ Design activities to encourage and inform two-way dialogue among community members.
- ✓ Conduct opinion research to determine what the public thinks or feels about the benefits of energy efficiency (e.g., saving money, reducing pollution, or having quality appliances).
- ✓ Interview key stakeholders and energy consumers to understand their relevant opinions and to help identify barriers to the adoption of energy efficiency measures.
- ✓ Determine objectives regarding what the audience might think or do differently after a communication campaign.
- ✓ Design compelling messages to motivate attitudinal and behavior change that reaches both men and women, and also resonates with both.
- ✓ Identify optimal channels for people to obtain trusted information.
- ✓ Assign a credible spokesperson to deliver energy efficiency messaging.

Source: Authors.

When crafting messages to nudge behavior change, to ensure that the information is easy to understand is essential. For example, Yoeli et al. (2017) argue that "intuitive" metrics such as comparisons based on consumption (e.g., liters per 100 km, seasonal energy efficiency ratio ratings for air conditioners, or thermal resistance ratings for insulation) can be clearer than those based on efficiency (e.g., liters per km or kilowatt hour). The energy consumption of a household compared with that of a neighbor (as per the Opower HER report discussed earlier) is also a more intuitive measure than kilowatt hours. Communicating a norm—either what one ought to do or what others are doing—has been found to be effective in nudging people to engage in a particular behavior. If the communication involves the presentation of various options, experience shows that fewer is better, to avoid overwhelming the target audience and to facilitate the selection of the most relevant option. A checklist of actions involved in the implementation of a communications campaign is given in Box 3.4.

Selecting appropriate and credible messengers and spokespeople is important to consider when planning and designing communications campaigns. Lack of trust in the messenger can impede energy efficient behavior. For example, distrust in the local utility (due, for example, to perceptions of fraud, unclear electricity bills, or experiences of quick disconnection) can lead consumers, at the residential, commercial, or industrial level, to resist the uptake of new products, services, and recommended behavior (Pegels, Figueroa, and Never 2015). On the other hand, trusted messengers and high-profile personalities adding their voices to a communications campaign can have a significant impact in helping attract interest and attention to the campaign, and also help overcome barriers (such as social norms that may conflict with the desired behavior), as well as model the desired behavior. An innovative example of behavior change communication is planned as part of a World Bank initiative in Tajikistan,[28] where community youth energy ambassadors will lead awareness-building activities to promote changes in behavior and household investments that improve energy efficiency. These youth energy ambassadors from different communities will be selected and trained to host energy efficiency events and to inform their communities regarding how to improve livelihoods and reduce household costs (World Bank 2019c).

Finally, communication programs are most effective if they are evidence based and socially inclusive. They should take into consideration context-specific social and cultural norms, and women's priorities in the project communities. A well-researched, two-way communications program that pays attention to social norms and broader gender equality issues in all efforts to meet its objectives—informational, attitudinal, and behavioral—can serve to improve a program's reach and the resulting adoption of energy efficiency measures (Table 3.5).

BOX 3.4

Communications Campaign Implementation Checklist

- ✓ Prior to launching the campaign, design compelling slogans and messages, and pretest them with a select group for feedback.
- ✓ Communicate the benefits of energy efficiency clearly and consistently.
- ✓ Provide communication that might prompt individuals to make decisions.
- ✓ Establish frequent, two-way engagement activities.
- ✓ Produce testimonials with people who have already adopted the new technology; use local people in workshops, advertising, messaging campaigns, or picture-based instructions.
- ✓ Set energy efficiency reminders and provide timely feedback (e.g., through mobile phones).

Source: Authors.

TABLE 3.5 **Engaging Men and Women in Behavior Change Communications**

GOAL TYPE	OBJECTIVE				
Informational	Educate households on the benefits of energy efficiency. Address key benefits that would resonate with women.	Educate households on how to access energy efficiency financing.	Educate women on how to save energy in their homes. Educate women on how saving energy lowers monthly bills.	Educate and empower women to become energy entrepreneurs.	Send households their monthly energy bills, highlighting energy consumption and money that the adoption of energy-efficient technology would have saved.
Attitudinal	Address perceptions that the adoption of energy efficiency measures is unaffordable.	Design messages for men and women that highlight the ease with which households can adopt energy efficiency technologies.	Acknowledge and celebrate households that have achieved energy savings. Promote leaders of change in public marketing to develop new social norms (e.g., through women role models, etc.).		
Behavior Change	Motivate men and women to pledge to save energy. Motivate men and women to set realistic goals for limiting energy consumption.	Encourage social influence through energy-saving competitions between residential buildings, neighborhoods, and cities.	Use competitions and games to effectively change behavior and reduce energy consumption. Use rewards and incentives to influence adoption.	Compare neighboring household behaviors and cost savings to encourage the uptake of energy efficiency initiatives.	Provide relevant testimonials, using pictures with prompting messages, on what actions some households in the community have taken to save money and optimize energy consumption.

Source: Authors.

Further ways to integrate gender equality in energy efficiency behavior change programs are outlined in the section below.

ENTRY POINTS FOR INCORPORATING GENDER EQUALITY LINKAGES

When designing energy efficiency programs with a behavior change lens, there is ample opportunity to also consider gender equality issues. In addition to communications strategies, there are potential linkages to behavior change at a number of project entry points, as shown in Table 3.6.

Additional resources for developing energy efficiency projects with a focus on gender gaps are outlined in Appendix C.

TABLE 3.6 **Gender Equality Linkages to Behavior Change, by Project Entry Point**

ENTRY POINT	GENDER EQUALITY LINKAGE TO BEHAVIOR CHANGE AND ENERGY EFFICIENCY
Policy level	In many cases, policy targets for closing gaps between men and women can be addressed through actions in energy efficiency programs, especially behavior change initiatives. For example, national or sectoral targets for enhancing engagement with women's groups and enhancing the voice and agency of female citizens in service delivery or development programs could be met through relevant approaches in project design. Looking at the interplay between policy and opportunities in program design is therefore key.
Data collection/ surveys	Men and women have different motivations and priorities with regard to the use of energy services and adoption of energy technologies and products, and make decisions differently. Collecting baseline information about the sex of prospective beneficiaries and respondents (e.g., by household) in surveys or other information-gathering activities can provide useful input to policy and program design.
Consultations	In consultations with different stakeholder groups, such as focus groups, all efforts should be made to include diverse participants, in order to understand if there are significant differences in the energy needs and consumption patterns of men and women. Diverse stakeholder groups and networks should also be engaged (e.g., female business owners or agricultural associations).
Communications	Different communications modes (television, social media, traditional advertising) may be more effective for women than men, and understanding appropriate communications strategies, depending on the behaviors that need to change, is critical.

Source: Authors.

NOTES

20. There are two main types of energy efficiency labels: (i) endorsement labels, such as Energy Star (i.e., a product that is awarded the label is endorsed as being energy efficient); and (ii) comparative labels (i.e., the label compares the performance of a given appliance with that of similar products in the market). A third type of label, an "informative" one that simply states the actual energy consumption of the appliance, is rarely used, as it has been found to be less effective at communicating information to consumers.
21. The Energy Star label in the United States is reported to have contributed to 370 billion kWh in electricity savings in 2017; and the energy efficiency label in the European Union is expected to lead to 38 TWh per year by 2030 (Valache 2019). To continue to be effective, energy efficiency labels need to be updated.
22. RISE is a set of indicators to help compare national policy and regulatory frameworks for sustainable energy. See https://rise.esmap.org/.
23. A field experiment to compare various label designs covering nine European countries revealed that labels that are more intuitive were found most effective, particularly to inform consumers who do not typically pay attention to energy consumption and to guide them toward more energy efficient choices.
24. An example of diagnostics mapping can be found in the eMBeD brief, "Behavioral Solutions for Youth Unemployment" (World Bank 2018d).
25. "Loss aversion" refers to people's preference to avoid a loss over gaining the equivalent amount, a concept summarized in the expression "losses loom larger than gains" (Kahneman and Tversky 1979). "Framing" refers to the informational emphasis—that is, whether the positive or the negative aspects of a decision are highlighted. The way a message is framed can affect the degree to which it persuades its audience.
26. See, for example, information on the US Department of Energy's Office of Energy Efficiency and Renewable Energy website: https://www.energy.gov/eere/better-buildings-neighborhood-program/step-4-identify-target-audiences-and-behavior-changes#categorize.
27. This technical assistance program, "Towards an Effective Implementation of Energy Efficiency Initiatives," was supported by ESMAP.
28. CASA1000 Community Support Project.

Kyat Tel village, Myanmar. ©Arnfinn Oines/ Soneva Foundation (CC BY-NC-ND 2.0).

4. RECOMMENDATIONS FOR GOOD PRACTICES

Energy efficiency is among the cheapest, cleanest, and most widely available of energy resources. While progress has been made over the years in increasing energy efficiency; globally, annual improvements have been weakening since 2015; and there remains a large untapped economic potential to enhance and scale up energy efficiency across countries. Improving energy efficiency can help generate multiple socio-economic, as well as environmental, benefits. It is one of the most cost-effective measures for addressing climate change, and essential to meeting the related targets set by the international community.[29] As noted by the International Energy Agency, "energy efficiency will need to increase much more quickly to achieve a level of energy intensity improvement consistent with meeting global climate change and sustainability goals" (IEA 2019).

Behavior change has been identified as an important element of energy efficiency programs and policies. Combining behavior change strategies with traditional technology solutions can result in greater and more cost-effective energy savings than just addressing the technical replacement solutions that have been the key focus of most energy efficiency programs to date in developing countries. Inclusion of energy efficiency behavior change interventions can enhance the overall reach and improve outcomes of energy efficiency programs focused on different sectors, and may be particularly effective in the context of energy efficiency programs targeting the residential sector.

While there have been proven savings and wide experience with behavior change energy efficiency programs in industrial countries, the experience has been more limited in developing countries. Nonetheless, the experience and results of behavior change efforts to date are promising for countries that are only now considering such an approach. For example, the North American experience in energy efficiency behavior change approaches, as applied in many utilities' demand-side management (DSM) efforts, shows that while a sample of utilities spent 2 percent of their DSM budgets on residential behavioral interventions, these were responsible for 10 percent of the overall energy savings achieved. Another review of these types of energy efficiency behavior change approaches estimated that, on average, their cost compared favorably (at about 2.5 cents/kWh saved in 2016) to other types of energy efficiency efforts, and were much lower than the costs associated with constructing a new power plant. The use of home energy reports—which have achieved 1 to 3 percent consumer electricity savings per year in the United States, while also helping utilities save costs—is a type of behavioral DSM effort that holds promise, but that requires further deployment in developing country contexts to realize its potential. In this regard, a pilot using home energy reports underway in India is expected to generate valuable insights into their applicability, and any particular adaptation that might be needed, in the context of a rapidly growing developing country. As several developing countries are facing rapidly increasing cooling demand, which is expected to stretch already strained electricity systems, an energy efficiency approach combining more traditional technology-based measures with behavior change interventions could be particularly effective.

There is no single best design for energy efficiency behavior change programs, which may often involve a package of interventions that, combined, can have a greater impact, as well as drive and sustain new behaviors and practices. Notwithstanding this, several good practices in the development of energy efficiency behavior change programs are broadly applicable:

- The conception and design should be evidence based, taking into account local social norms, customs, and habits.
- Implementation plans should consider differences in energy-related behaviors, attitudes, and decision-making processes between men and women.
- The development of a clear understanding of the context, including enabling conditions and barriers to the adoption of a new behavior (e.g., lack of information, competing priorities, lack of motivation of limited willingness, or capacity, to pay). These may be highly contextual and require on-the-ground research.
- Identifying opportunities to include behavior change approaches. There may be several opportunities to consider behavior approach throughout the phases of an energy efficiency project. Also, at the level of the energy efficiency behavior change program, timing is important to consider to take advantage of opportunities associated with milestones when changes in habit can occur (e.g., when an appliance breaks, when buying a home, or when energy prices rise).
- The identification of the behaviors that should be encouraged and the intended audience. Each audience should be specifically targeted. The segmentation could be done according to attitudes and behavior. It may also be appropriate to differentiate according to income levels, or according to demographic factors, such as age, gender, or location, for example.
- Conducting audience analysis. The target audience may be categorized between (i) the primary audience; (ii) the influencers; and (iii) the gatekeepers.
- Planning for the evaluation of the impact of the program and in particular the identification metrics.
- Well-designed and planned communications campaigns and strategies are key elements of any efforts to encourage specific consumer behaviors. Campaigns should be developed with local communications experts, and involve: (i) clarity on timeline and budget; (ii) the establishment of goals and a tracking of results; (iii) conducting opinion research and interviewing key stakeholders; (iv) clear and compelling messaging which resonates with both men and women; (v) the selection of credible messengers; and (vi) the identification of communication modes and platforms
- Putting in place a measuring and reporting system to periodically evaluate results and adjust program design accordingly.

It is hoped that this guide can help spur practitioners' interest and awareness of energy efficiency behavior change strategies and lead to more impactful energy efficiency programs, and also contribute to generating a growing body of experience and evidence in developing countries.

NOTE

29. According to IEA (2018b) estimates, energy efficiency can deliver 35 percent of the cumulative carbon dioxide savings required by 2050 to meet climate change goals.

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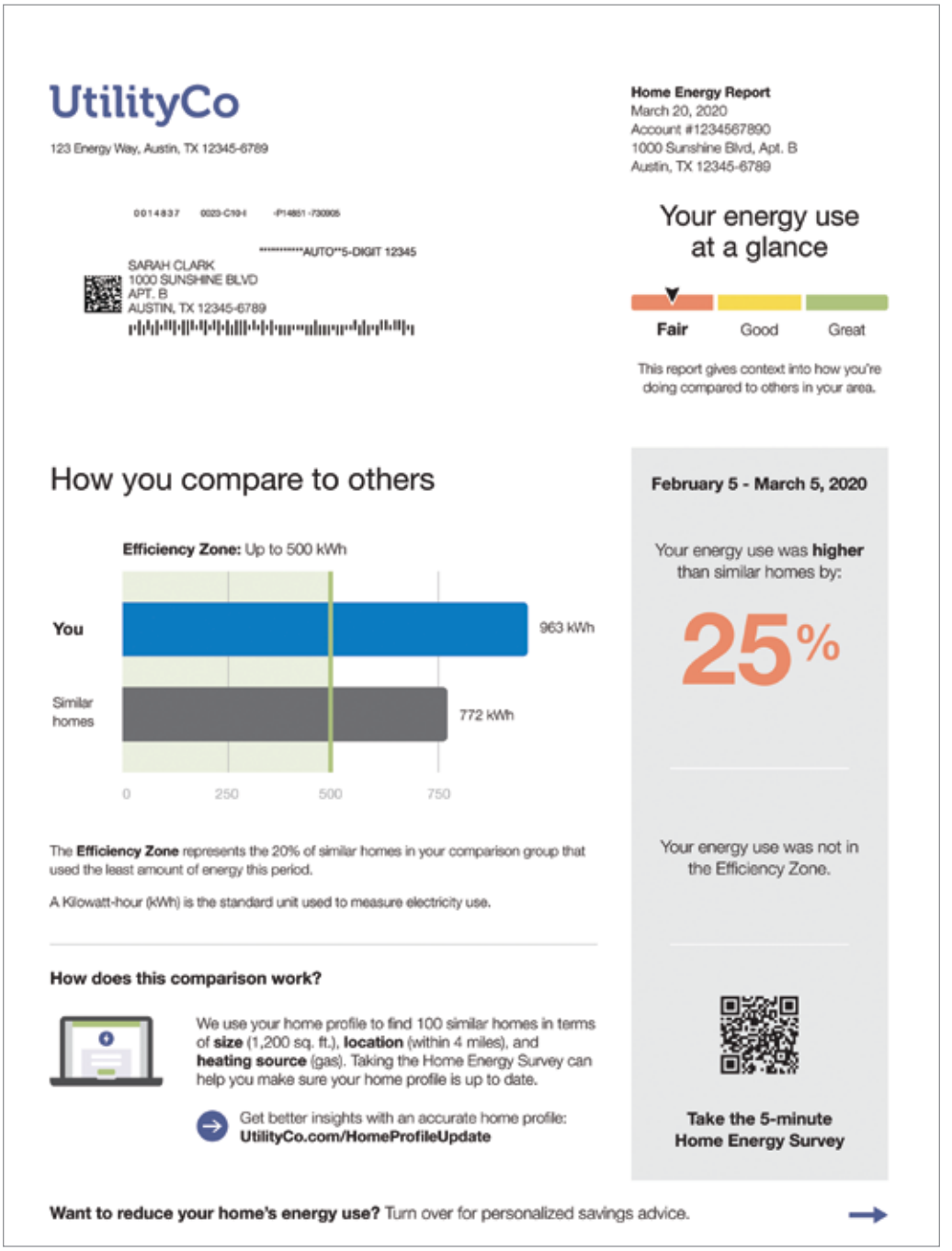
APPENDIX A

Example of a Home Energy Report on Consumers' Energy Use



Source: Oracle 2020.

Your energy use compared to last year

What could have caused your energy use to decrease?

Changes in your household this period, like less appliance use or fewer people at home, may have lowered your energy use.

This period, your energy use **decreased** by:

14%

Top recommended tip for you

Run ceiling fans in reverse during the winter to circulate warm air.

Warm air rises and collects near ceilings. In the winter, you can run your ceiling fan in reverse on a low setting to circulate warm air more evenly. Then lower your thermostat to save on heating costs.

Save up to $22 per year

According to your smart meter, your energy use was highest in:

Heating

Save more with a heat pump

What better way to celebrate Earth Day than by making a few simple changes that will conserve energy, save you money, and reduce your impact on the environment. Take one of these first steps:

- Turn off lights and power strips when you leave a room.
- Use up to 75% less energy for lighting by upgrading to LED bulbs.
- Choose an ENERGY STAR® model whenever you buy or replace an appliance.

To learn more, scan the QR code or visit utilityco.com/heatpumprebate

We're here to help 1-888-999-0000 efficient@utilityco.com UtilityCo.com/HomeEnergyReport

Save more with special rebates and energy-efficient products you can buy at:
www.UtilityCo.com/energysavingproducts

UtilityCo

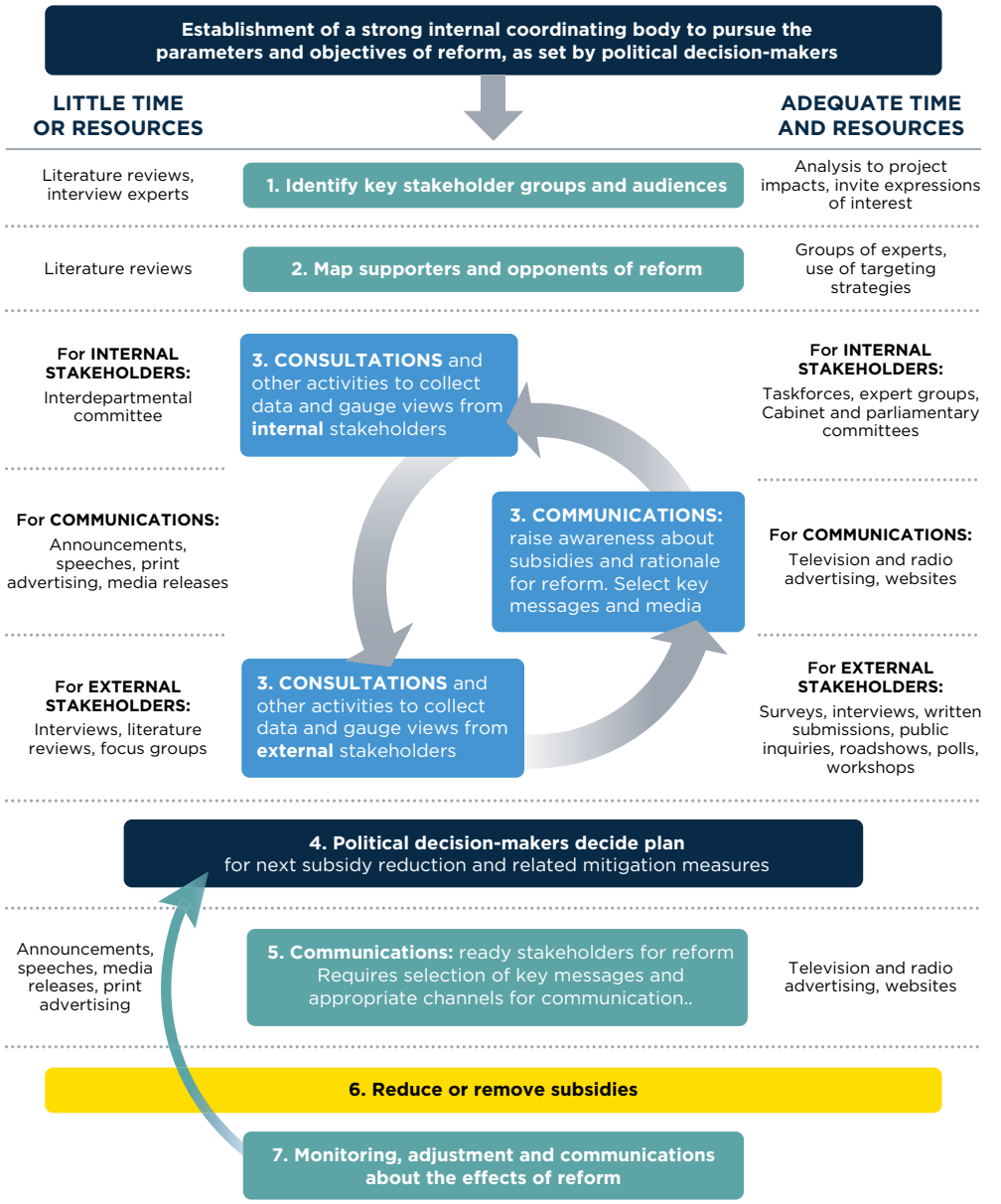
Source: Oracle 2020.

APPENDIX B

Designing Effective Communications Campaigns

As part of the ESMAP Energy Subsidy Reform Assessment Framework, a good practice note on "Designing Communications Campaigns for Energy Subsidy Reform" (World Bank 2018b) was published. Much of the content of that document is relevant to behavior change energy efficiency programs, including the figure reproduced below.

FIGURE B.1 How to Sequence a Successful Communications Campaign



Source: World Bank 2018b.

APPENDIX C

Resources for Developing Energy Efficiency Projects with a Focus on Gender Gaps

This appendix lists additional resources that may be useful in developing energy efficiency projects with a focus on gender gaps.

RESOURCE	SUMMARY
Gender Equality in the Geothermal Energy Sector: Road to Sustainability (ESMAP 2019)	The report is a primer on advancing gender equality in the geothermal energy sector. Based on good practices and lessons learned, it introduces ways that geothermal projects can mitigate risks and pursue opportunities to address gender gaps within the project cycle. It outlines the risks and opportunities associated with (i) changes in land and natural resource use, (ii) changes to employment and economic patterns, and (iii) changes to the environment and health. Beyond mapping risks and opportunities in another energy sector, the report makes the case for focusing on the gaps between men and women from a project's outset.
Key Entry Points for Gender Equity in Energy Access, Energy Policy, Renewable Energy, and Transmission and Distribution (World Bank 2019d)	Short one-pagers provide hands-on, practical guidance to help task teams close gender gaps in energy operations. They address four energy subsectors—energy access, energy policy, renewable energy, and transmission and distribution—and provide entry points for achieving objectives of the World Bank's Gender Strategy.
Getting to Gender Equality in Energy Infrastructure: Lessons from Electricity Generation, Transmission, and Distribution Projects (ESMAP 2018)	The report examines the social and gender footprint of large-scale electricity generation, transmission, and distribution projects to establish a foundation on which further research and replication of good practices can be built. The main impact pathways analyzed are access to land and labor markets, along with social sustainability considerations, including health and education.
Integrating Gender Considerations into Energy Operations (World Bank 2013)	Provides project teams with basic tools for integrating gender considerations into energy sector activities with country examples and a focus on monitoring and evaluation.
Good Practice Note for the Gender Tag* (World Bank 2019e)	The World Bank is committed to addressing gender equality and social inclusion in energy infrastructure development as part of its Gender Strategy and through the Gender Tag. Four pillars of the World Bank's broader 2016–23 Gender Strategy are relevant to the energy practice: (i) improve human endowments, such as education, health, and social protection; (ii) remove constraints to more and better jobs; (iii) remove barriers to ownership and control of productive assets; and (iv) enhance women's voice and agency while engaging men and boys. Use of the Gender Tag prompts discussion aligned with these four pillars at the project design stage. It identifies operations that are critical to closing key gaps between men and women and helps corporate reporting capture the good work that project teams are doing to address gender inequalities and achieve tangible outcomes.
Gender Briefing Notes-Supporting Active Inclusion of Women in Energy and Development Projects (EUEI PDF 2013)	The document provides information on gender issues in different energy fields, including energy efficiency.

* "Good Practice Note for the Gender Tag" is only available to World Bank staff and consultants.

Source: Authors.

APPENDIX D

Examples of Consumer Survey Questions Used in Communications Campaigns and Focus Groups

D.1 Example electricity survey questions used to inform a communications campaign around energy subsidy reform, including energy efficiency*

A. General

1. In <OUR COUNTRY> the government subsidizes a number of things. Do you think the government should keep subsidizing any of the following?

	REFUSE TO ANSWER	DO NOT KNOW	NO	YES
1. Electricity	❑	❑	❑	❑
2. Food	❑	❑	❑	❑
3. Fuel	❑	❑	❑	❑

B. Tariff policy and electricity consumption

2. Do you know how much you pay for your monthly electricity bill on average?
   a. Yes
   b. No
   c. Don't know

3. If yes, then how much?

ID CURRENCY				
1	25.000		12	276,000–300,000
2	26000–50.000		13	301.000–325.000
3	51.000–75.000		14	326.000–350.000
4	76.000–100.000		15	351.000–375.000
5	101.000–125.000		16	376.000–400.000
6	126.000–150.000		17	401.000–425.000
7	151.000–175.000		18	426.000–450.000
8	176.000–200.000		19	451.000–475.000
9	201.000–225.000		20	476.000–500.000
10	226.000–250.000			If more, please specify
11	251.000–275.000			Don't know

4. How often do you pay your electricity bills on time?
   a. Always
   b. Usually
   c. Sometimes
   d. Seldom
   e. Never
   f. I don't receive a bill
   g. I receive a bill, but I don't pay for electricity
   h. None of the above
   i. Don't know

If g), what are the main reasons for you not paying your electricity bill?

a. Quality of service is too poor
b. There are no consequences by not paying
c. I don't think it's fair that I should pay when others are not paying
d. Electricity should be provided free of charge
e. Don't know
f. Other

C. Quality of electricity service

5. How often does your household have access to functioning electricity?
   a. Always
   b. Most of the time
   c. Sometimes
   d. Almost never
   e. Never
   f. (Don't know/Refused)

6. [if answered b–e] Roughly how many hours last week did you experience power cuts/outages?_____

7. Which of the following do you think are the main reasons you experience power shortages?

	YES	NO	DO NOT KNOW	REFUSE TO ANSWER
1. Excessive demand	❑	❑	❑	❑
2. Damage to critical infrastructure due to conflict/ fighting (e.g., power stations, electricity grid)	❑	❑	❑	❑
3. Lack of general maintenance of critical infrastructure by the central government	❑	❑	❑	❑
4. Lack of general maintenance of critical infrastructure by the regional/local government	❑	❑	❑	❑
5. Electricity theft	❑	❑	❑	❑
6. Other (please specify) _____				

8. To what extent do you agree or disagree with the following sentence: I am concerned with the reliability of electricity supply (i.e., repetitive shortages)?
   a. Completely agree
   b. Somewhat agree
   c. Somewhat disagree
   d. Completely disagree
   e. Don't know

D. Energy efficiency

To what extent do you agree or disagree with the following statements:

	A COMPLETELY AGREE	B SOMEWHAT AGREE	C SOMEWHAT DISAGREE	D COMPLETELY DISAGREE
1. I am concerned about energy efficiency in my home.	❑	❑	❑	❑
2. I take measures in my home to reduce electricity consumption.	❑	❑	❑	❑
3. I turn off the lights when I leave a room.	❑	❑	❑	❑
4. I am conscious about saving energy from heating/ACs in my home. For example, in rooms that are not in use or when I am/we are not at home, [the thermostat setting is set at a lower temperature] [the air conditioning set point is increased to a higher temperature]	❑	❑	❑	❑

10. Do you use energy-efficient light bulbs?
    a. Yes, in all lamps
    b. Yes, in some lamps
    c. No
    d. Never heard about such bulbs
    e. Don't know

11. Do you pay attention to energy efficiency when deciding to purchase a new appliance?
    a. Yes, and it is an important factor in my decision-making
    b. Yes, but it is not an important factor in my decision-making
    c. No, it is not important.
    d. No, because I do not know where to find information.
    e. No, because I do not understand the information.

E. Impacts

12. I would like to know more about how you spend your household expenditure. Please estimate the relative contribution to total expenditure of each of the following activities:

[for interviewer] Please complete the table one activity at the time, for the past 30 days		
A	Food	|___|___|___|%
B	Health	|___|___|___|
C	Education	|___|___|___|
D	Rent	|___|___|___|
E	Transportation	|___|___|___|
F	Electricity	|___|___|___|
G	Other expenditures	|___|___|___|
		100 %

13. How would you cope if electricity prices increase?
    a. Consume less electricity
    b. Cut down on other costs in your budget
    c. Do nothing, it will come out of savings or other monies
    d. Other

14. What level of price increase of electricity could you realistically manage without needing to cut expenditure on critical items (e.g., food, health costs, clothes, children's education, etc.)?
    a. 0–<5%
    b. 5–<10%
    c. 10–<15%
    d. 15–<25%
    e. 25%+
    f. Don't know

15. If electricity prices were increased more than that and you would have to adjust your household expenditures, how would you adjust the relative contribution to total expenditure of each of the following activities:

[for interviewer] Please complete the table one activity at the time, *for the past 30 days*		
A	Food	|___|___|___|%
B	Health	|___|___|___|
C	Education	|___|___|___|
D	Rent	|___|___|___|
E	Transportation	|___|___|___|
F	Electricity	|___|___|___|
G	Other expenditures	|___|___|___|
		100 %

F. News and information

16. What is your main source of news and other information? Mention all that apply.

a. TV
b. Radio
c. Newspapers
d. Websites
e. Facebook
f. Twitter
g. Community leader
h. Head of family
i. National political party leaders
j. Local politicians

17. What websites do you visit most often to receive news online?

		1
		2
		3
		4
		5
		6
		7
		8

Not applicable –9

18. What TV station do you most regularly watch to get your news?

		1
		2
		3
		4
		5
		6
Others		7
Don't know/Refused		8

Not applicable –9

19. Which newspaper do you read the most?

		1
		2
		3
		4
		5
		6
Others		7
Don't know/Refused		8

Not applicable –9

20. What radio station do you listen to most?

		1
		2
		3
		4
		5
		6
Don't know/Refused		8

Not applicable –9

21. In your opinion, which is the most trusted source of information in <OUR COUNTRY>? Mark first response:

1. TV
2. Radio
3. Newspapers
4. Websites
5. Facebook
6. Twitter
7. Community leader
8. Head of family
9. National political party leaders
10. Local politicians

D.2 Example of questions for focus group discussions on energy efficiency and gender**

1. Introduction and meeting with participants

- Name, age, sex
- Education—number of years
- Employment (or not)
- Family status—married, child, head of the family
- Type of housing—single family home; apartment building with 10 or fewer units; apart-ment building with more than 10 units; other *(specify)*
- How many people are in your home during the day? *(adults, children; female, male)*

2. Daily energy use, expenditure, and purchase habits in households

2.1 Energy use

- What are the energy sources used in your home? For cooking, space heating/cooling, lighting, water heating (*e.g., natural gas; grid electricity; district energy; solar photovol-taic; solar water heaters; diesel; biomass; other*)
- What heating type(s) do you have in your home? (*gas fired boiler and central heating; electric room heaters; district heating; warm air system; open fire; wood burning stove; solar thermal; other; don't know*)
- Does your home have a cooling system? If so, what type? (*ceiling fans; central units; win-dow units; split system; evaporative [water] cooler[s]; other*)
- At what temperature do you keep your home during the winter (*and summer*)? Daytime and nighttime?
  - Do you usually find the temperature in your home just right? Too cold? Too hot? (*Any difference between summer and winter? Night and day?*)
  - Do you think there is a difference between men and women in your household in how they perceive the temperature (*comfort*)?
- How many light/lamps do you have in your home?
- How many hours a day (*on average*) are the lights turned on in your home?
  - Are lights on when there is nobody in the home? (*always; frequently; sometime; rarely; never*)
  - If so, why? (*e.g., safety reasons; don't think it matters; forget; habit; don't know)*
- What are the energy-using equipment or appliance(s) in your home? (*please list*)
  - Which equipment/appliances use most energy in your home (*list top 3 or 4*)
- Who do you think uses more energy at home? You or someone else? Do you think that the use of energy of male and female household members is different? How?

2.2 Energy efficiency/energy savings

- Do you pay attention to saving energy where you live? (*a lot; a fair amount; not very much; not at all*)
- What do you do to save energy? (*heating, cooling, lighting, use of electronic equipment and appliances; question may be asked in detail*)
- What do you think is the single most effective thing that you can do to save energy/use less energy in your home?

- Who cares more about saving energy where you live? Why? (*Examine male/female differences*) Have you noticed any differences in energy-saving behaviors between men and women? If yes, could you explain/give example(s)?
  - What motivates you (or would motivate you) to save energy in your home and/or purchase more efficient equipment/appliances? (*e.g., possibility to lower energy bills; help the environment; good citizen; better comfort; emu-late role models; friends/family do it; other*)

2.3 Expenditure/purchase decisions

- What is your level of awareness of energy costs in your home? (*unaware; somewhat aware; mostly; very*) (*Examine male/female differences*)
- Can you provide an estimate of the average monthly energy bill in your home?
- How do you pay your household energy bills? (*monthly; included in the rent; quarterly bill; direct debit; prepayment; other*)
- Who usually pays the energy bills in your household?
- How concerned are you about expected/possible future price increase in energy? (*a lot; a fair amount; not very much; not at all*)
- What are the most important criteria for you when buying electronic equipment or ap-pliances for use in your home? (*Make a list*)
- Do you pay attention to the energy efficiency of appliances or equipment that you a-ready use or buy? How?
- What is your level of awareness of energy consumption associated with applianc-es/equipment? (*unaware, somewhat; aware; mostly; very*) Where do you get the infor-mation? (label, seller, catalog, internet, family member, other)
- **Ask the participants who can't get the information:** What is the most important obstacle in terms of not getting this information? How do you think you could access this infor-mation? (*Examine differenc-es between male and female participants*)
- Are women or men more aware of the energy consumption associated with applianc-es/equipment? Why?
- Who makes the decision to purchase household appliances/equipment in your home? (*How do you contribute to the decision-making process?*)
  - **If not contributing to the decision-making:** do you agree with these purchase de-cisions? How is it possible for you to participate in these decisions? (*Investigate the differences between men and women*)

3. Daily use of energy in public buildings***

- What energy sources are used in this public building? Where do you think the energy is mostly used? (*Heating, lighting, air-conditioning, electronic equipment, etc.*)
- What is your general attitude toward energy efficiency in this public building? (*Examine differences between female/male, as well as any differences between different work-ing/user groups*)
- During what time of day do you think energy is used most? Why?
- Who do you think uses more energy sources in this building? Why?
- Do you think there are differences in the duration and type of energy use between male and female public building users/workers? Can you explain/give examples?

3.1 Space heating/cooling

- Are you aware of the heating/cooling system of this building? If so, what is it? (*central system, district energy, air conditioners, etc.*)
- Are you satisfied with the heating and/or cooling of the building?
  - If not, what problems do you encounter?
  - During what period(s) of the year/day?
  - What do you think are the reasons for these problems? (*lack of insulation, cooling/heating system is broken, cooling/heating costs are too high, build-ing's energy bill not paid, etc.*)
  - Do you think that female/male workers/users are affected differently from the building being too cold/too hot ?
- How does over/under heating/cooling in the building affect you (*productivity, health, safety, etc.*)?
- How do you deal with the building being too cold/too hot? (*e.g., do you dress different-ly; do you bring additional cooling/heating appliances into the buildings; do you re-port the situation to a manager; do you open/close windows; do you not stay long in the building; do nothing; other*) (*Examine differences between women/men and differ-ent working/user groups*)

3.2 Lighting

- Do you think that the lighting conditions in your workplace are adequate?
  - If not, what problems do you encounter?
  - During what period(s) of the year/day?
- Are there particular areas in the buildings where you feel more lighting problems? (*e.g., hallways, bathrooms, meeting rooms, classes, offices*)
  - What are the reasons? (*e.g., old building/system; inadequate use of daylight; insufficient lighting devices; broken light bulbs; missing light bulbs; other*)
  - How are you and your colleagues/other users affected by over/under lighting problems? (*Examine differences between women/men, different working/user groups*)
  - How do you deal with these lighting quality problems? (*use additional light-ing products, work in different rooms at different times of the day, etc.*) (*Examine male/female differences*)
  - Do you think men and women react differently to inadequate/lack of light-ing? Can you explain/give examples?

3.3. Energy efficiency/energy saving

- Does the management of the building encourage energy efficiency in the building? If so, how?
  - Do you think it is effective?
- Do you think more efforts should be made to save energy in the building? If so, can you give examples? If not, can you explain?
- Do you think there is a difference between men and women in their attitude toward saving energy in the public building where you work/seek a service? (*Examine the dif-ferences between female/male and different working/user groups*)
  - Have you noticed any differences in energy-saving behavior between male and female employees/users? If yes, can you explain?
- Are there actions you personally take to help save energy in the building? Are others doing this as well? If not, why not? (*Investigate the differences between female/male and different working/user groups*)
- What do you think would encourage people working in (or using) the public building to behave differently or take actions to save energy in the public building where you work/obtain a service? (*e.g., government directive/instruction on what to do; recogni-tion for the efforts to save energy; knowing that you can help lower energy costs of the organization; help improve comfort in the*

public building; help the country's energy situation [blackouts]; benefit the environment; see others in the building taking action; incentives; other; don't know)

- Do you think men and women will be motivated differently? How?

- Do you think that there are particular situations or reasons that cause inefficient use of energy (*or waste of energy*) in the public building? (*Building infrastructure; corporate attitude; purchasing decisions that do not favor energy-efficient equipment; energy bill not paid by ministry or public entity housed in the building; lack of information pro-vided to users/employees; different needs of individuals in common areas; etc.*)
- Is there a difference between your energy use/behavior at home and in the public building where you work/receive a service? If so, what is it and why? (*e.g., prioritizing comfort; preferring to charge mobile devices in the public building; not turning off lights/equipment at work*)

4. Information sources

- Do you think there is a difference between men and women's knowledge on energy efficiency and ways to save energy? Do men and women get information from differ-ent sources?
- What are the sources of information you use? (*TV; radio; newspaper; social media, information meetings, Internet, government; boss, friends; family member; school; other*)
- Which information source(s) would you trust most to convince you/motivate you to save energy? (*TV; radio; newspaper; social media; information meetings; Internet; government; boss; friends; family member; school; other*) (*Examine the differences be-tween female/male and different working/user groups*)
- When you see/hear information on energy efficiency and on how to save energy, do you think it is presented clearly and easy to understand? If not, what could be done to improve? (*Examine the differences between female/male and different work-ing/user groups*)
- What do you think could be done to increase awareness and knowledge on energy efficiency and ways to save energy? (*Examine the differences between female/male, different employee/user groups*)

NOTES

* As outlined in this guide, it is a key priority to ensure that sex-disaggregated information is collected at the household level.

** Which questions to select (and how they are formulated) should take into account the local context, the target audience, and the time available for discussions. For example, if there is no residential heating or if certain energy sources are not available, there is no need to mention them.

*** Public buildings include any type of building accessible to the public and funded from public sources (e.g., schools, hospitals). All types of governmental offices are also considered public buildings.

ESMAP MISSION

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