

# THE APPLIANCE MARKET IN BANGLADESH

Lessons Learnt from Field Visits & Interviews with Retailers

September 2019

EFFICIENCY FOR ACCESS COALITION



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## Abstract

Bangladesh is the eighth most populous country in the world and over 40 million Bangladeshis lack access to electricity.<sup>1</sup> Improving access to high quality and efficient appliances – both off- and on-grid - would not only benefit individuals but also generate global impact by reducing the emissions footprint of one of the most populous countries. In brief, Bangladesh presents unique opportunities for improved electrification and efficient appliance uptake due to its socio-economic, infrastructural, and geographic characteristics.

Access to reliable electricity supply and energy efficient appliances improves end-users quality of life and enables productivity gains in a modern society. This report contributes to the conversation on ways to improve availability of efficient solar appliances in Bangladesh. This study synthesizes findings from interviews with 55 appliance retailers in Bangladesh and finds that the Bangladeshi market is conducive to improving the quality and availability of appliances, creating opportunities for businesses and society.



**Figure 1: Sellers of appliances in Bangladesh are pivotal in preference shaping and have unique, intimate knowledge of consumers.**

<sup>1</sup> Based on IEA data from the IEA (2016) Population without access to electricity, <https://www.iea.org/energyaccess/database/>. All rights reserved

## Research Context

Efficiency for Access (EforA) is a global coalition promoting energy efficiency as a potent catalyst in clean energy access efforts. Coalition programmes aim to scale up markets and reduce prices for super-efficient, off- and weak-grid appropriate products, support technological innovation, and improve sector coordination. Efficiency for Access introduced a new UK aid-funded research and innovation program in early 2017, the Low-Energy Inclusive Appliances (LEIA) program. The LEIA program's goal is to double the efficiency and halve the cost of a range of appliances that are well-suited for energy access contexts. This report is one of many research pieces prepared under LEIA that aims to create a better understanding and shape market strategies for this nascent market sector.

In 2016, CLASP<sup>2</sup>, together with its partners, initiated a results-based financing (RBF) mechanism in Bangladesh. RBF focuses on developing countries and supports off-grid appliance manufacturers and distributors that are part of the supply chain of products granted Global LEAP Outstanding Off-Grid Appliance Awards (Global LEAP Awards). Through RBF, CLASP has supported the delivery and enhancement of energy access for almost 900,000 people across Bangladesh and East Africa. This paper is a contribution to research undertaken through the LEIA program that leverages data and observations CLASP's team collected while monitoring the sales of RBF incentivized appliances in Bangladesh.

Between July and September of 2018, CLASP conducted 55-in depth interviews with appliance sellers across Bangladesh and documented their perspective on the market. The selection of retailers depended on their participation in the RBF, as either sellers of selected off-grid fans or TVs. The findings of this report offer insights on ways to improve the availability of efficient solar appliances in Bangladesh. The main objective is to identify some of the opportunities and challenges appliance sellers see on the Bangladeshi market. Therefore, its findings should be of interest to businesses, policy makers, NGOs, and development partners interested in increasing the use of energy efficient appliances in the country.

The data sources (both qualitative and quantitative) are respondents who are part of the supply chain of RBF incentivized off-grid fans or TVs. The reader must therefore be aware that some information presented in this report may not offer a full representation of the broader appliance market in Bangladesh. Nonetheless, the report provides an exciting, up-to-date insight into it.

### Acknowledgements

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The LEIA team are especially grateful to Michal Pietrkiewicz, an independent consultant, for leading the design and analysis in this report and to Asif Hassan of CLASP for data collection, thought leadership, content review, and managing the overall process.

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### Disclaimer

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<sup>2</sup>An international and impartial nonprofit organization, first established in 1999 to mitigate the growing energy demand from the use of appliances, lighting, and equipment in the developing world.  
More on: <https://clasp.ngo/>

## How is Policy Shaping the Market for Appliances?

Bangladesh has made huge progress towards electrification in the last two decades, increasing access by more than threefold and developing ambitious plans to improve both the reach and quality of electricity. However, Bangladesh remains behind its regional and global peers at a similar level of income, in terms of both access to and quality of electricity (see Figure 2). The 2018 World Bank *Doing Business* report ranked the ease of gaining access to electricity in 190 countries; only seven nations scored lower than Bangladesh.

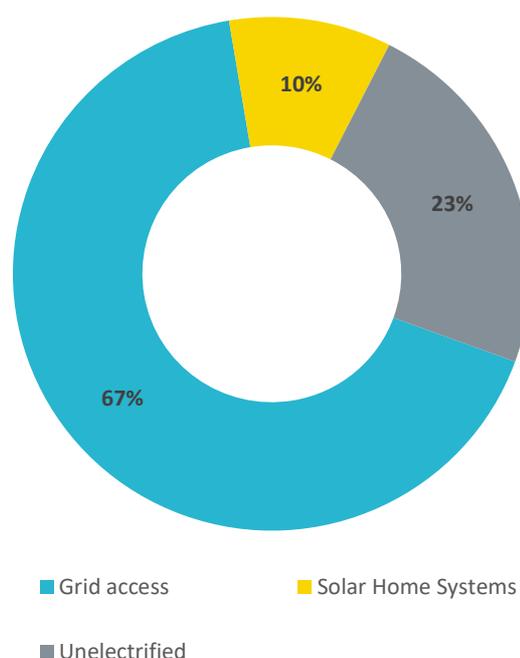
The Bangladesh government is aware that its inefficient grid, low generation level, and weak regulations reduce its growth potential. Therefore, the Bangladesh Power Development Board (the main body responsible for electricity provision in the country) has planned to increase electricity generation capacity by extending the grid through the addition of new transmission lines. In its Power System Master Plan, the Bangladesh government describes the country's strategy for strengthening the energy sector, predominately focusing on energy supply. This ambitious plan is to increase generation capacity by approximately 1.8 GW annually over the next 20 years. The Master Plan, which is the guiding document of the Power Development Board, is updated every five years, with the most recent iteration released in 2016.<sup>3</sup>

The government is also undertaking actions to address the efficiency of electricity consumption. In 2012, Bangladesh established the Sustainable and Renewable Energy Development Authority (SREDA), which has become the implementing agency for energy efficiency and renewable energy policies. The Energy Efficiency and Conservation Master Plan includes a roadmap for the authority, and one of its key priorities is to strengthen the existing voluntary EE labelling program.<sup>4</sup> The Master Plan also includes the introduction of preferential taxation on efficient equipment and appliances.

For off-grid appliances, Infrastructure Development Company Limited's (IDCOL) solar home system (SHS) program is arguably the most important policy in Bangladesh. IDCOL has implemented this large-scale SHS program since 2003 using a model that involves consumer credit based sales made through non-profit Partner Organizations (POs).<sup>5</sup> Its targeted lending through microfinance institutions has resulted in over four million system installations and more than 18 million people obtaining or improving access to electricity.<sup>6</sup> Today, SHSs provide roughly 10% of Bangladesh's population with access to modern energy services. At one point, 65,000 SHSs<sup>7</sup> were installed in Bangladesh each month, a pace which makes meeting the goal of six million systems in place by 2021 seem feasible.

There is, however, a caveat to the growing importance of SHS. While Bangladesh has emerged as one of the world's largest markets for SHSs<sup>8</sup>, the average peak power of installed units is under 40 watts.<sup>9</sup> Households living away from the grid can only power the most basic appliances and must factor in the capacity of the system when purchasing a new device. Improving the efficiency of DC appliances that operate with these systems will increase the amount and range of services users can derive from the equipment working with small SHSs.

Figure 2: Electrification by electricity provider in Bangladesh



Source: Power System Master Plan 2016 Summary

<sup>3</sup> Power System Master Plan 2016 Summary, Ministry of Power, Energy and Mineral Resources, Government of Bangladesh

<sup>4</sup> EEC Master Plan up to 2030, Sustainable and Renewable Energy Development Authority of Bangladesh

<sup>5</sup> Loans are funded by World Bank, Islamic Development Bank, Asian Development Bank, Japan International Cooperation Agency and other development lenders

<sup>6</sup> IDCOL, <https://www.idcol.org/>

<sup>7</sup> Reuters (2015), 'Bangladesh fires up large-scale solar to boost power generation'

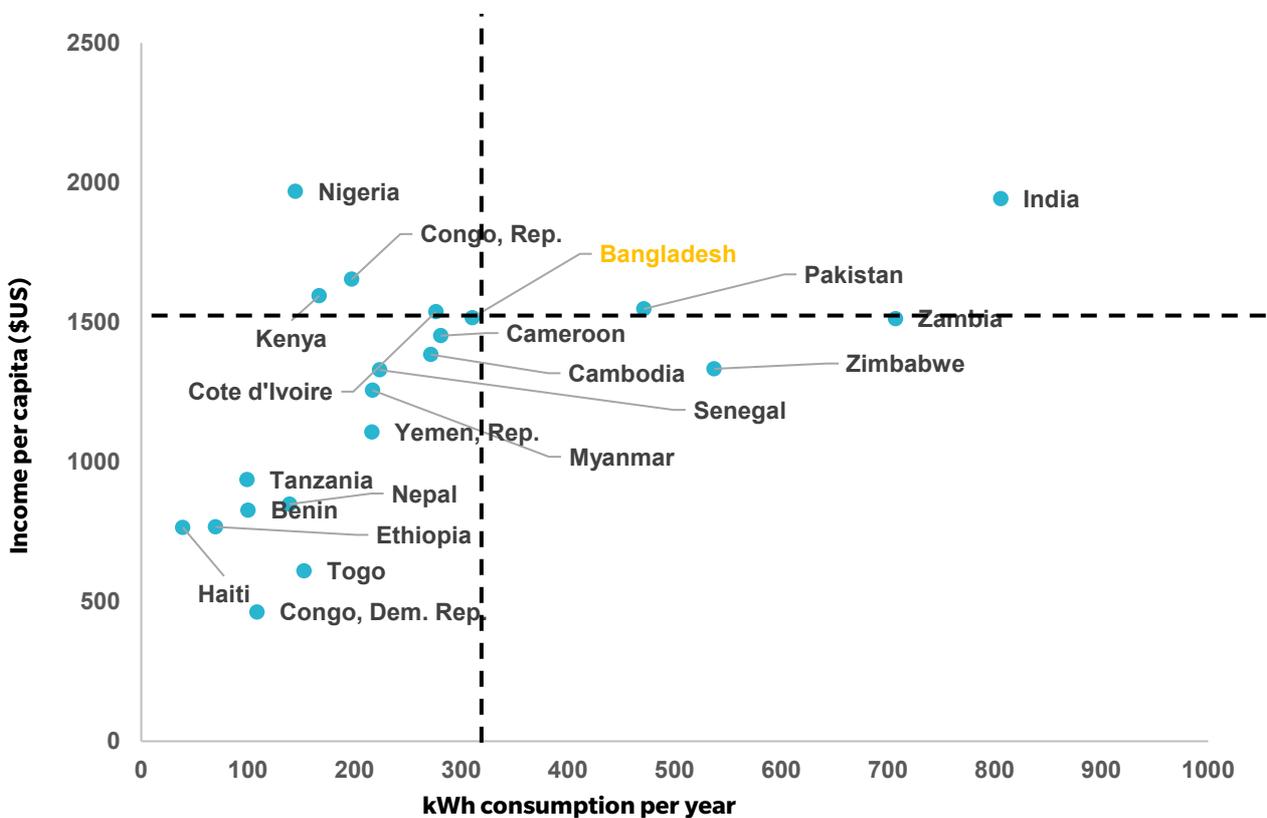
<sup>8</sup> Solar Magazine (2019), *Bangladesh, World Bank Team Up to Double Grid-Connected Renewable Energy Capacity*

<sup>9</sup> GSMA (2017), *Bangladesh goes PAYG!*



**Figure 3: In the last two decades Bangladesh has made significant progress towards electrification, increasing access by more than threefold and developing ambitious plans to improve both the reach and quality of electricity. Those who can afford it, are becoming increasingly able to enjoy modern appliances.**

*Figure 4: Relationship between income per capita and electricity consumption*



Source: World Bank

## Appliance Market Forces in Bangladesh

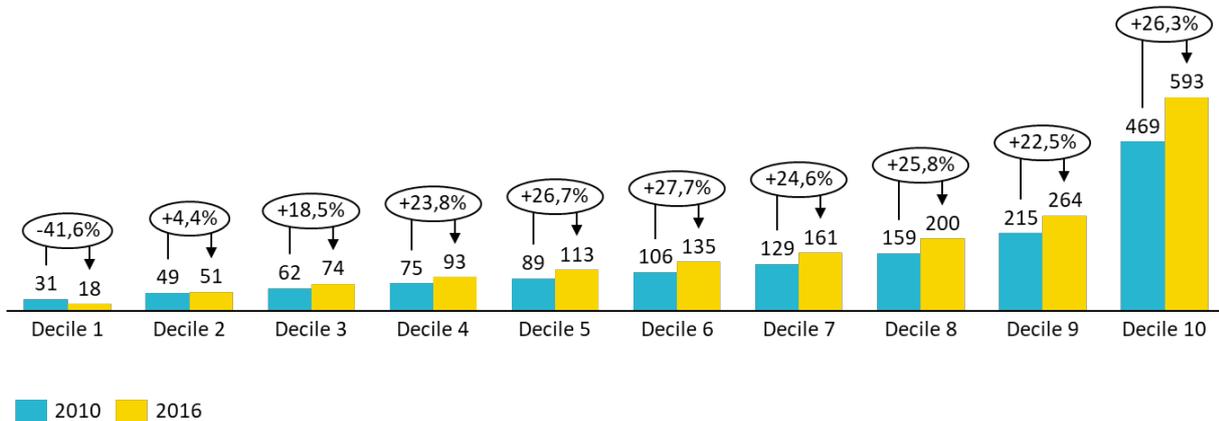
### Income profile of Bangladesh

Bangladesh has a rapidly growing population of over 160 million people.<sup>10</sup> Similarly, the Bangladesh economy is also experiencing considerable growth, with an average rate of approximately 6% over the last 20 years. Despite these positive growth trends, there is relatively little analysis available on the country's market potential and the global impact of consumption patterns that are emerging in Bangladesh. The interest in the market is often overshadowed by the country's larger neighbor, India, and the fact that only a small fraction of Bangladeshis have a significant disposable income. However, while a quarter of the country's population lives below the national poverty line and 15% of the employed Bangladeshi live on less than \$1.90 a day<sup>11</sup>, over the next few years the number of consumers with discretionary income is likely to triple.<sup>12</sup>

There are several factors fueling the positive economic trend in Bangladesh that will shape the market for appliances. First, while a large share of the new income is captured by the top earners, large groups in the middle class becoming increasingly prosperous. Except for the poorest 10%, all other income groups participate in income growth. Likewise, the rural-urban divide, apart from the top 5% of urban earners, is slowly closing for most groups, both at the middle and the top of the income ladder. Finally, average household in Bangladesh is decreasing, with a reduction in the average size of 5.2 in 2000 to 4.1 in 2016<sup>13</sup>, furthering the purchasing power of many families. The demand for appliances is thus likely to increase both in value and volume as large groups of people are increasing their disposable income.

Approximately 40% of households in Bangladesh earn over \$150 a month and can afford some non-essential goods, and roughly 20% earn more than \$300 a month. Wealthier households can start investing in comfort and may consider prioritizing quality for some purchases. As the number of people with disposable income rises, it will become increasingly important to understand the preferences of Bangladeshi consumers. Businesses with a better grasp of clients' expectations are likely to derive higher profits from the positive economic trend. Forward-looking policymakers need to consider the impact that a large group of consumers will have on the economy and the environment. Therefore, both the private and public sector players should be interested in understanding and shaping the attitudes of the emerging group of consumers.

Figure 5: Monthly household income distribution and income growth [USD, rural areas]



Source: Bangladesh Bureau of Statistics

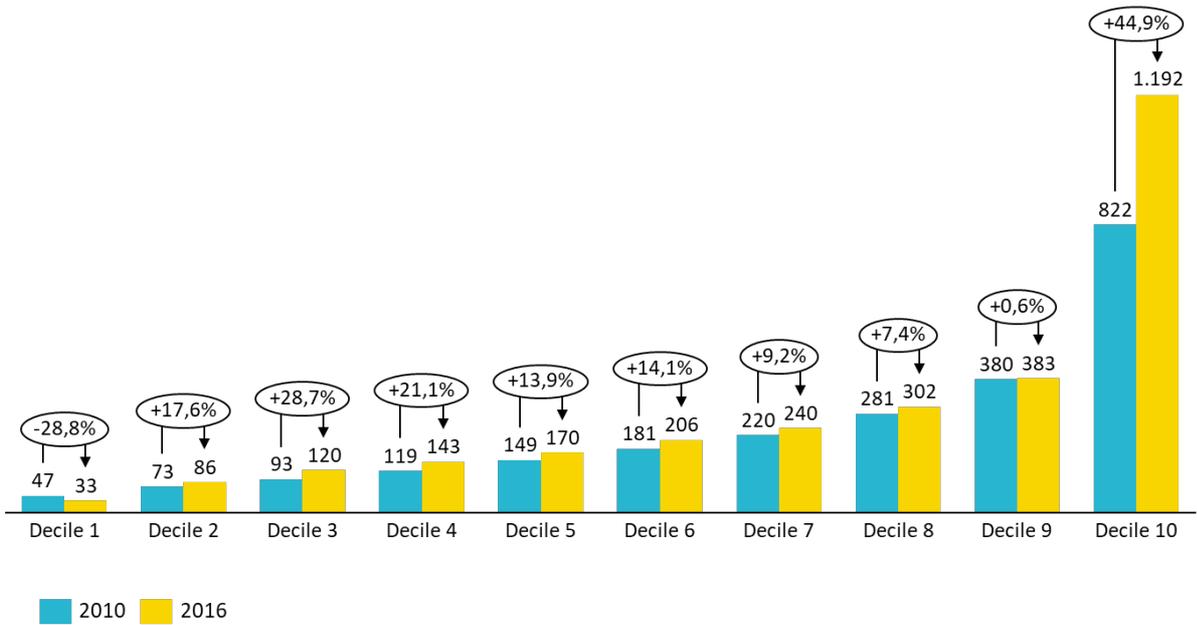
Figure 6: Monthly household income distribution and income growth [USD, urban areas]

<sup>10</sup> World Bank population data

<sup>11</sup> Asian Development Bank, "Poverty in Bangladesh", 2016

<sup>12</sup> Zafir Munir, Olivier Muehlstein and Vivek Naubhar, "Bangladesh: The Surging Consumer Market Nobody Saw Coming" BCG, October 2015

<sup>13</sup> Bangladesh Bureau of Statistics, "Preliminary Report on Household Income and Expenditure Survey 2016"



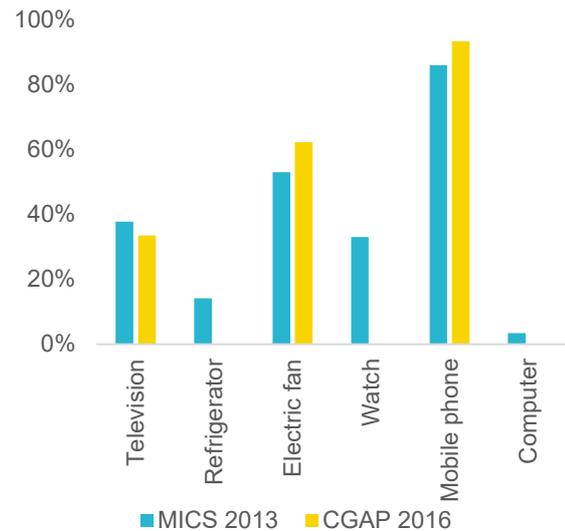
Source: Bangladesh Bureau of Statistics

Figure 7: Penetration levels of basic household appliances

### Current penetration level

The penetration of appliances in Bangladesh is still low. Even the most basic and relatively inexpensive appliances like fans are found in only approximately 60% of households. More advanced goods such as televisions are still a luxury, with approximately 35% penetration.<sup>14, 15</sup> Other white goods are even rarer.

The demand for and consumption of electricity and appliances is correlated with economic growth. Examples from China and India suggest that the use of energy increases above certain income, as people satisfy their most basic needs.<sup>16,17</sup> In Bangladesh, the demand for electricity is likely to increase disproportionately faster than the general growth or other expenditures due to its current income level.<sup>18</sup> However, the low quality of supplied electricity is a market force that works in opposite to the increasing disposable income, reducing the demand and consumption of electricity and of appliances.<sup>19</sup> The combination of these two market forces may create an opportunity for the incubation of DC technologies that can be solar-powered.



Source: UNICEF/MICS and CGAP

<sup>14</sup> Bangladesh Multiple Indicator Cluster Survey 2012-2013, ProgotirPathey: Final Report. Bangladesh Bureau of Statistics (BBS) and UNICEF Bangladesh, 2014, Dhaka, Bangladesh.

<sup>15</sup> Anderson, Jamie. 2017. National Survey and Segmentation of Smallholder Households in Bangladesh: Household Level Data. Ref: BGD\_2016\_SHS\_v01\_M. Washington, D.C.: CGAP. Downloaded from <https://microdata.worldbank.org> on 12 July 2019

<sup>16</sup> Shiu and Pun-Lee Lam, "Electricity consumption and economic growth in China," ScienceDirect – Elsevier, Energy Policy Volume 32, Issue 1, January 2004

<sup>17</sup> Sajal Ghosh, "Electricity consumption and economic growth in India," ScienceDirect – Elsevier, Energy Policy Volume 30, Issue 2, January 2002

<sup>18</sup> Syed Abul Hasan and Pallab Mozumder, "Income and energy use in Bangladesh: A household level analysis," Crawford School Working Paper 1701, January 2017. Crawford School of Public Policy, The Australian National University

<sup>19</sup> Hussain Samad and Fan Zhang, "Heterogeneous Effects of Rural Electrification – Evidence from Bangladesh," World Bank Group, Office of the Chief Economist, South Asia Region, Policy Research Working Paper 8102



**Figure 8: The socio-economic, infrastructural, and geographic characteristic of Bangladesh present unique opportunities for improved appliance uptake, however many Bangladeshis are still presented with a very modest offering.**

## Retailer Surveys, Observations and Lessons Learnt

The Global LEAP Awards results-based financing mechanism reduces risks across the off-grid appliance supply chain by 1) lowering the cost of best-in-class off-grid appliances for early mover off-grid solar companies, and 2) generating increased demand for appliance manufacturers that have invested in the production of high-quality off-grid appliances. In Bangladesh, RBF has played a key role in supporting the development of the off-grid TV and fan markets, leveraging the favorable market conditions for appliances and encouraging a paradigm shift towards efficiency and quality. As a part of RBF mechanism, CLASP visited 55 retail outlets to confirm that the sales of incentivized appliances. The team leveraged this opportunity to interview retailers and learn more about the Bangladesh retail market. Their experience and unique insight into the market for appliances are summarized below.

Retailers' voices are important, as they are often pivotal in preference shaping and have unique, intimate knowledge of consumers. They also create the context in which end users make decisions. Their role is not only in determining available options, but also transferring knowledge guide customers toward the selection of a final product.



**Figure 9: A lot of sales happens at small, family-run outlets. RBF has played a key role in supporting the development supply chains, including small shops like this one.**

### Sample overview

CLASP collected data from 55 retail outlets across the country. The sample is representative of the shops that participated in the RBF. The 55 shops surveyed sell solar fans or TVs from selected brands. The data used to inform this study are not drawn from a nationally representative study, therefore, we have taken a conservative approach to presenting results. Our findings should be treated as an indication of trends and not a statistically significant study. Further caution needs to be exercised when analyzing information for different appliances, as many of them are not widely represented in the sample and therefore do not provide enough statistical relevance.

### Who are the sellers of appliances in Bangladesh?

Most of the shops visited employed few staff. This is unsurprising, as most of the retail business in Bangladesh happens at small shops, which are often located close to each other. In the sample of retailers over 60% of shops face competition of at least three other nearby shops. However, in line with the general trend of the growing significance of larger outlets, three of the sampled shops employed more than eight people and offered a significantly more diverse range of products than the rest of the sample. Further, interviewed sales representatives were better educated than the average Bangladeshi. This is good news from a market development perspective, as well-educated retailers are more likely to be successful promoters of new technologies and a source of information for many clients.

Figure 10: Spatial distribution of visited shops.

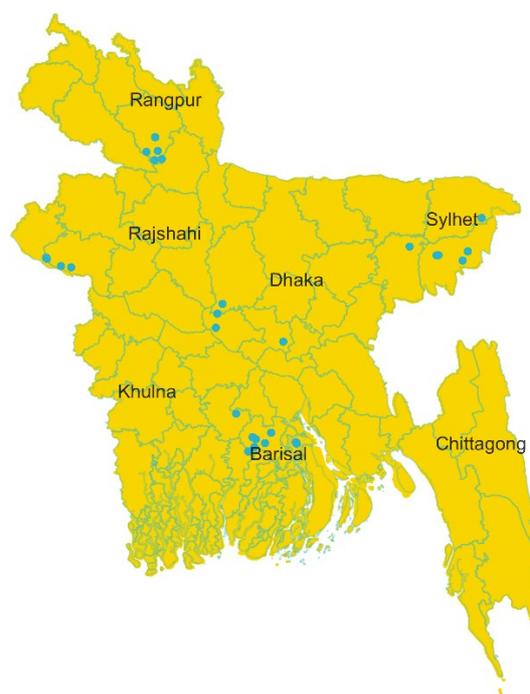
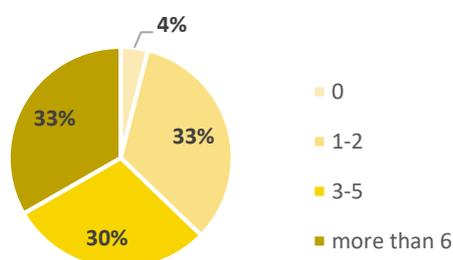
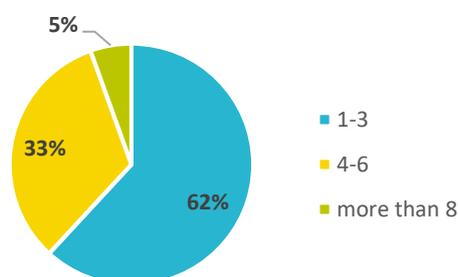


Figure 11: Density of shops selling solar appliances within 40 min walk



Source: Retailers' survey

Figure 12: Number of Employees hired by shops



Source: Retailers' survey

### What is on offer in shops selling appliances?

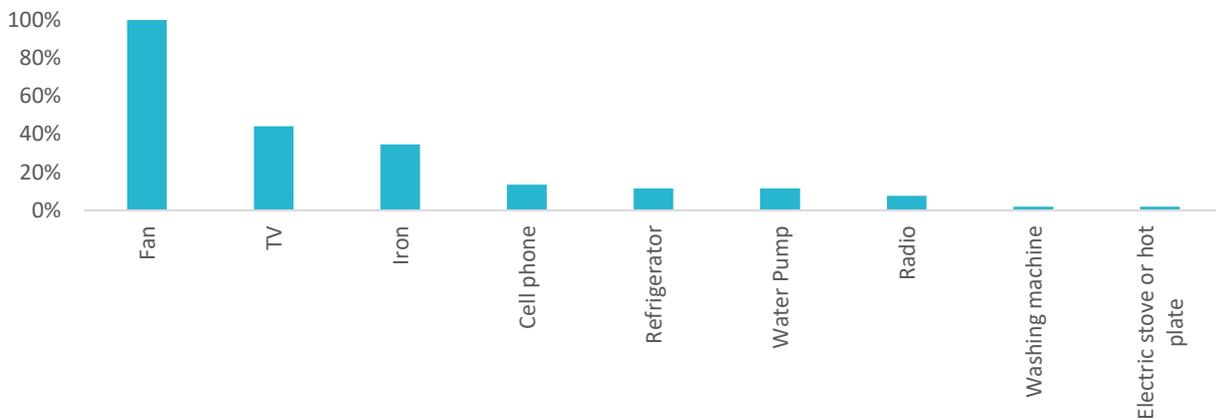
Most of the shops in our sample stock few appliances and sell basic tools, bulbs, batteries, and, in some cases, basic solar kits. These results may be skewed by sample selection: surveyed shops had to offer solar fans or TVs, which could bias results towards less specialized appliance outlets. However, even if one focuses only on the outlets selling more than one appliance—arguably more electronics-focused shops—the product offering remains very limited. While shops may offer a wider range of brands, they rarely offer different types of appliances. There also appears to be a correlation between the penetration of appliances and their availability, with fans, followed by TVs and fridges, remaining less common both in interviewed shops and, as reported by censuses, households. While it is not possible to establish the direction of causality with this survey, it is probable that low availability is among one of the factors reducing penetration. It is also likely that retailers lack the capital to afford larger stocks and, as reported by some of them, lack physical space in shops to store more products, especially less popular or bulky appliances. Manufacturers looking to increase sales should encourage retailers to maintain stock of their products.



**Figure 12: While shops may offer a wider range of brands, they rarely offer different types of appliances. Constraints they face range from financial, through access to distribution, risk aversion to, in many cases, simple lack of storage space.**

The availability of two appliances was unexpected: the high prevalence of irons and the scarcity of radios. The former appears to be as commonly available as televisions, despite being a significant energy consumer. While there is no reliable data on the level of penetration of irons, this could be partially explained by the anecdotal evidence showing that most Bangladeshis find it important to iron their cloths daily. On the other hand, radios—often assumed to be the appliance sought by electrified households as soon as lighting needs are satisfied<sup>20</sup>—are less frequently found at interviewed outlets than more expensive fridges. One possible explanation of this phenomenon is that radios have reached market saturation, or do not offer attractive margins to sellers. Mobile phones, mostly equipped with radios, are now a priority appliance which may reduce the demand for radios among poorer people, while wealthier households opt for televisions.

*Figure 13: Availability of appliances in interviewed shops\**



*\*sales of solar fans or TVs was a pre-requisite for participation*

*Source: Retailers' survey*

<sup>20</sup> UNESCO, Developing Communities Through Radio, 2018

Figure 14: Average number of basic appliances shops have on offer\*

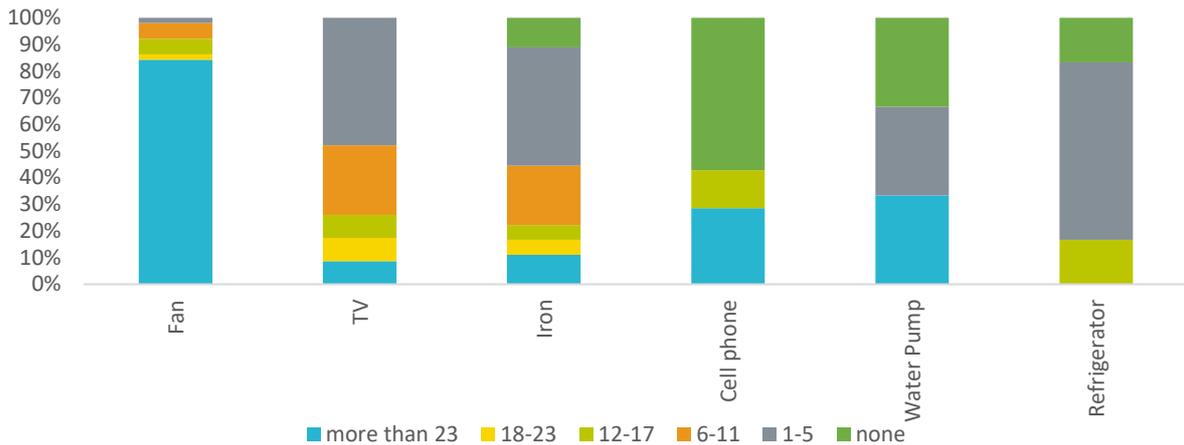


Source: Retailers' survey

**What is the sentiment of retailers?**

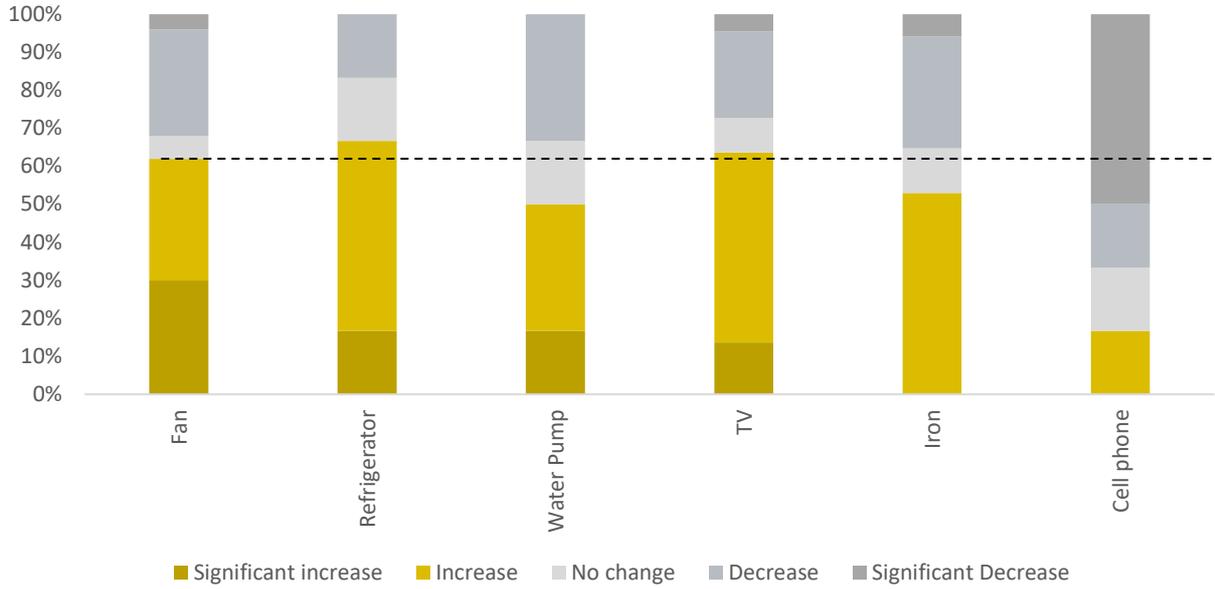
The experience of retailers in the sample confirms macroeconomic trends and a high potential market for appliances in Bangladesh. Most of the shops have seen an increase in demand for almost all types of goods. Importantly, the increasing demand seems to be strongest for appliances such as fridges and televisions, which until recently, have not been popular among average consumers and are typically purchased by wealthier households. The decrease in sales levels of phones suggests that the high-growth phase may be over and the market is reaching saturation.

Figure 15: Number of appliances sold in the previous month



Source: Retailers' survey

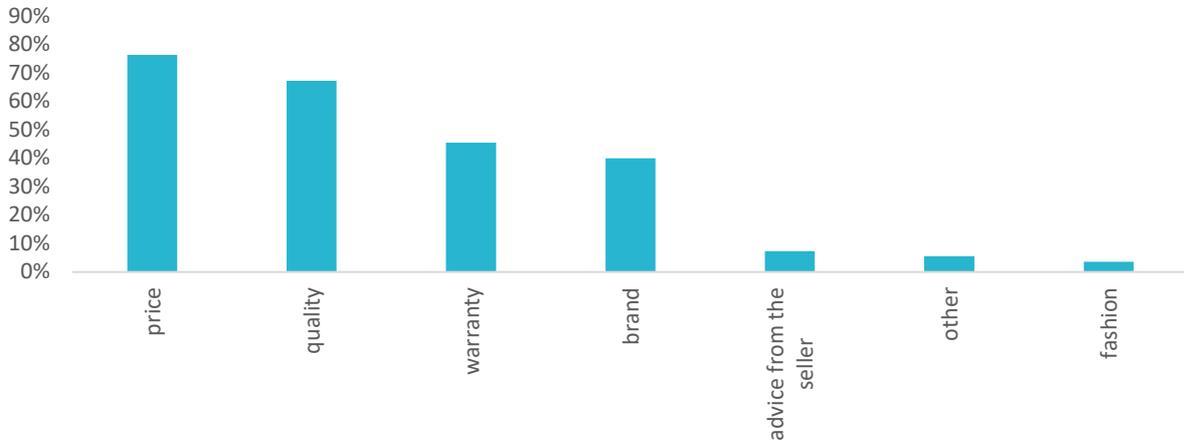
Figure 16: Trends observed by retailers in sales volumes of appliances



Source: Retailers' survey

**What are the perceived drivers of sales of appliances in Bangladesh?**

Figure 17: Share of retailers in the sample who mentioned listed drivers as important



Source: Retailers' survey



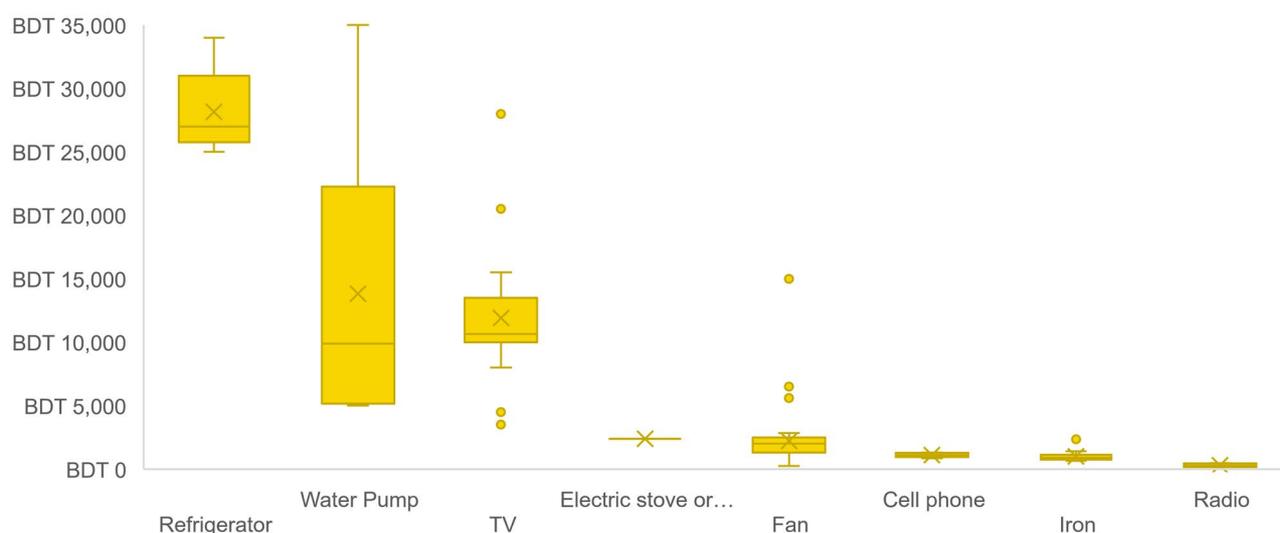
**Figure 18: 90% of households can cover the price of an iron with two weeks of income. This appliance as high levels of penetration, despite the high operational cost Bangladeshis find it important to iron their cloths daily.**

### Price

With low levels of disposable income, Bangladeshi clients are inevitably price sensitive. While the sample collected is limited, the survey data shows that price variations, with exception of more expensive products, tend to be low (see figure 14). This confirms what sellers also say directly: price is the most important sales driver.

This explains the observed price convergence which is inherently necessary for a retailer to remain competitive. While some appliances, such as televisions, show a wider range of price variation, sellers report the cheapest models see the highest sales volumes. New companies looking to enter the solar appliance market must be aware of the importance of price and consider business models that address liquidity constraints when introducing more expensive products.

*Figure 19: Prices of the most popular appliances available at visited outlets*



Source: Retailers' survey

## Financing

Surveyed shops did not mention financing options as an important driver or state that they offered financing plans. However, consumer inability to pay for a product up-front may be a particularly significant barrier in Bangladesh, where access to financing is low.<sup>21</sup>

Irons are an interesting appliance to consider due to their high availability and unique associated cash-flow implications. Irons are relatively inexpensive at approximately 1,000 Taka (\$12) and 90% of households can cover the price of an iron with two weeks of income. Their popularity does not seem to be affected by the fact that as a large resistor<sup>22</sup> they are relatively expensive to operate; in fact, they may have a similar annual cost of operation to a medium-efficiency fridge<sup>23</sup>, both of which consume around 300kWh/year of electricity assuming normal use.<sup>24</sup> This points at a potential reason for their relative availability: capital constraints of users and sellers, the former unable to finance the upfront cost but able to pay for the more distributed operational cost and the latter only able to afford to stock cheap appliances.

Despite the proliferation of clothes irons, the surveys indicate that consumers do consider operating costs when making purchasing decisions. Retailers reported that reduced operating costs, due to elimination of the cost of electricity, is the second most important reason buyers opt for solar solutions. Nonetheless, smoothing the cash-flow of both end-users and sellers may be pivotal for increased penetration of appliances. Currently, the low recognition of the importance of financing options as a driver of sales prevails.

## Quality

Many retailers recognize quality and reputation of a brand as important drivers of sales. Most sellers claim that Bangladeshi clients are quality sensitive, yet they continue to trade quality for price. As quality and durability are closely related, the tradeoff between price and quality results partially from customers' access to funds. While the demand for higher quality is determined by many factors, one could expect that if Bangladeshi customers were offered improved financial options, they would be more likely to start acting on their preference for quality products.

## Warranty

Appliance malfunction is a serious concern among off-grid consumers, which emphasizes the relevance of warranty as part of the product offering. Ninety-eight percent of surveyed sellers believe the primary concern of buyers when purchasing a new appliance is the possibility of it breaking, and 45% think product warranties are among the main drivers of sale. Retailers therefore readily offer warranty for some (and in select cases all) of their products. They also deal with the claim themselves, rather than expecting clients to contact the manufacturer.

## Grid Quality

Retailers did not explicitly mention grid quality as purchase driver. However, we cannot assume it is not an important factor consumers consider when purchasing an appliance. Those who face consistent outages may rule the decision to purchase an appliance like a refrigerator entirely, as they require consistent energy supply and lose their productive value if disconnected from a power source for a long period of time. Poor quality of the grid may be one factor explaining the overall low penetration of refrigerators in Bangladesh. Unlike refrigerators, utility of fans and televisions decrease linearly as the as the quality of electricity reduces.

Shopkeepers indirectly confirm that the quality of electricity, and not its availability, is the next frontier in electrification of Bangladesh (see Figure 15). According to 38% of shop owners, most consumers looking for solar fans are on-grid users seeking a solution that does not depend on the grid and works during load shedding. These answers reveal the potential of the solar appliance market in countries with grid reliability challenges, like Bangladesh.

Improvements in the grid may cause the market for solar and DC appliances to change. Solar appliances will have to competitively address other drivers, such as price, cost of operation, quality, or environmental considerations. However, until the grid improves, solutions that help consumers access energy services despite poor grid quality have a chance to penetrate the market in Bangladesh.

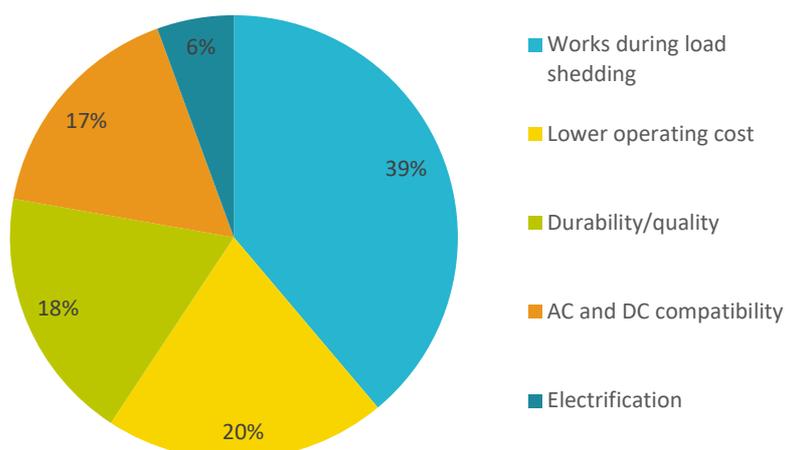
*Figure 20: Retailers' view on the main advantages of solar-powered appliances*

<sup>21</sup> Zafir Munir, Olivier Muehlstein and Vivek Naubhar, "Bangladesh: The Surging Consumer Market Nobody Saw Coming" BCG, October 2015

<sup>22</sup> A resistor is an electrical component that limits the flow of electric current. It is meant to regulate the actual load on the system, meaning that it uses up electricity and dissipates it as heat.

<sup>23</sup> Energuide.be, "How much energy do my household appliances use?"

<sup>24</sup> 240 liter fridge, operating 24/7 using 270kWh and an iron used for 5 hours a week.



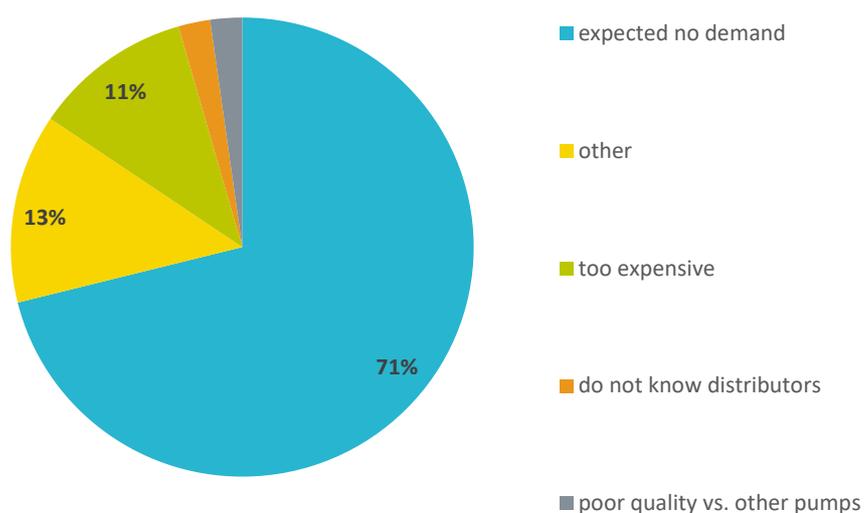
Source: retailers' survey

### What factors influence the potential for solar appliances in Bangladesh?

#### Solar Water Pumps

With 45% of Bangladeshis employed in agriculture, one would expect a high demand for solar water pumps. In our sample, 93% percent of interviewed retailers claim people employed in agriculture are their main client group. Despite the high potential for solar water pumps, supply and demand (real and anticipated) remain low. Only 11% of the interviewed shops sell any water pumps and two of the retailers (4%) offer solar pumps. Even though 89% of sellers are aware of the solar technology in water pumping, the overwhelming majority does not stock them – anticipating no demand, and possibly fearing the risk associated with a relatively expensive appliance.

Figure 21: reasons for not stocking solar water pumps



Source: Retailers' survey

There may be latent consumer demand for solar water pumps; however, a consumer awareness campaign or an incentive program would be needed to generate sales. Some retailers reported that as the grid has extended to rural communities,

the demand for solar solutions has declined. According to retailers, AC pumps remain useful even with frequent blackouts. Most farmers use water pumps for only a few hours each day and many have flexibility in when they use them. Pairing an AC pump with an elevated water tank also gives farmers a cheap and efficient form of water storage. According to some retailers, solar water pumps still do not perform well enough to become price and technologically competitive with AC devices. It seems that for SWP to succeed on the market manufacturers need to address this perception, with either improvements to technology or more effective communication strategies.

### Solar Fridges

While fridges are a popular appliance in Bangladesh, only 10% of the shops surveyed stocked them. None of the shops surveyed stocked solar (DC) fridges, largely due to low expectations in consumer demand. The general awareness among retailers of solar technology for fridges was much lower than it was for water pumps. When asked about solar fridges, 25% of retailers were not aware the technology existed. The gap in awareness of solar fridges and pumps among retailers may be a result of national policies. Government and development partner programs, as well as IDCOL's plan to finance 50,000 solar pumps in the country, may have helped boost visibility among retailers; solar fridges have not received such publicity.<sup>25</sup>

### Other Observations

Retailers' perceptions may need to be addressed to foster the development of the solar market for more expensive technologies. Most of the sellers anticipate no demand despite their reported positive trends in general sales volumes of more advanced appliances (e.g. 67% of retailers have seen an increase in sales of fridges), market development, technology price reductions, and the poor quality of the grid. In the case of some technologies, like productive use equipment (e.g. solar water pumps), the sector may rely on government programs to jump start the market. Other technologies, like fridges, may receive less government support and require more work from manufacturers to build a case for their products.

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<sup>25</sup> IDCOL, [http://idcol.org/home/solar\\_ir](http://idcol.org/home/solar_ir)

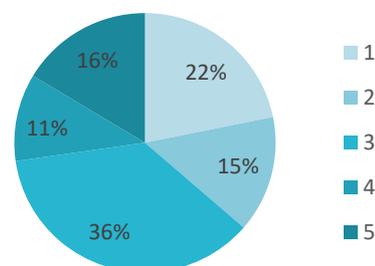
### Spotlight on distributors and manufacturers

Appliance distributors provide retailers with options for commercial product offerings, which trickle down to buyers. In many sectors, distributors and their representatives play a vital role in disseminating information to retailers, conducting market and consumer research, and—in some cases—offering extra services such as financing, product warranties, customer helplines, etc.

CLASP asked retailers about the role of distributors in the solar appliance market and found landscape to be moderately concentrated, with differences across appliance type. Of the distributors identified by retailers, only five have a market penetration of over 10%. As with many appliances, the market is dominated by small distributors. Small players are the leading distributors for over 30% of the shops surveyed. Even among more significant players, concentration is relatively small, with none of the distributors playing the dominant role for any appliance.

With much of the distribution happening through small players, their ability to benefit from economies of scale is limited. They inevitably face higher distribution costs and find it more difficult to provide financial services or customer service. Despite differences in dominant suppliers between appliances the fact that for many of the shops small distributors remain significant creates an opportunity for new players to enter the market as the low concentration reduces barriers to entry. It also points at a potential opportunity that would stem from market consolidation.

Figure 22: Number of distributors shops work with



Source: Retailers' survey



Figure 23: It is still relatively easy to enter the market, as most of sales happens at small shops with a limited offer.

## Conclusions and Key Findings

**The Bangladeshi population remains mostly poor, but the country's economic outlook is positive and the market potential for appliances – both AC and DC – is strong.** Furthermore, the distribution of income and growth, the preferences of buyers and weak infrastructure favor the development of the off-grid sector and provides a good environment for growth for affordable and energy efficient appliances. While there are some positive trends in electrification and quality of grid power in Bangladesh, in a short- and medium- term, it seems that grid-independent solutions, like efficient DC appliances, may see a competitive advantage over traditional appliances. This means that, while the Bangladeshi market appears attractive for appliances in general, producers and sellers of off-grid solutions may enjoy an incubation period that will allow them to enter the market and establish their technologies.

**The current market penetration of most appliances remains low and is reflected in low availability of devices at shops.** Almost all interviewed shops supply few appliances. Those kept in stock are mostly small and relatively cheap. Low availability of appliances in shops is often due to experience or expectation of no demand for certain products. Lack of capital and physical space also impact availability. Mechanisms—facilitated by manufacturers, distributors or other parties—that make it easier or less risky for retailers to increase the number and type of appliances sold in shops would likely drive demand and increase sales levels.

**Appliance shops in Bangladesh offer a very limited range of appliances. These businesses are small, relatively densely distributed, and operated by less than three people.** As a result, appliance shops in Bangladesh are inherently risk averse. Many have limited bargaining power and cannot make large-scale investments. At the same time, retailers have a thorough knowledge of the local market and its needs. Such market profile means that costs of distribution are high, and shops may need to transfer some of their risk onto other players, such as distributors, manufacturers, or government supported programs before they increase their product offering, provide extra services (e.g. finance) or undertake promotional efforts. In return, retailers may become agents whose intimate knowledge of the local market can be leveraged.

**According to retailers, price of appliances remains the main driver of sale and while consumers would like to invest in higher quality appliances, liquidity constraints prevent them from doing so.** For sellers of appliances it means that they should be careful when deciding on pricing strategies. Interestingly, there are indications that market would benefit from financing options that would allow consumers to smoothen cash-flows, but sellers seem to have a relatively low awareness of financial solutions' benefits. Therefore, while access to financing for appliances would most likely increase the size of the market, new solutions will need to address the problem of lack of awareness among retailers.

**The market in Bangladesh should be attractive to both large and small players.** The former, could back their appliance offering with extra services, such as financing for end users and shop owners. Smaller players could benefit from still limited barriers to entry and a possible better understanding of local client needs. Regardless of size, all players on the off-grid and on-grid appliance market should leverage the opportunities that stem from increasing economic prosperity and increased disposable income.

**Solar solutions, especially among more advance appliances, could leverage the potential created the ability to function independent from a weak grid and lower operating costs. However, companies will have to overcome low levels of awareness among retailers.** Interviewed retailers, in overwhelming majority, point at the quality of the grid as main drivers of sales for solar appliances. This conclusion, however, needs to be seen from the perspective of the general low awareness of more advance solar appliances such as fridges and solar water pumps. It is likely that in the case of larger appliances other aspects such as quality or cost efficiency would become more relevant, but for now, the very low awareness of the existence of such technologies is a barrier for market growth.

**Government programs or initiatives by external partners may be crucial elements during the initial phase of market creation.** A case in point is the success of the IDCOL's financing of SHSs, now providing 10% of all access to electricity. The Efficiency for Access Coalition supports programs and initiatives that improve the cost and efficiency of appliances designed for weak- and off-grid contexts. For example, the Global LEAP Awards Competition develops appropriate test methods and efficiency benchmarks for off-grid appliances, making it easier for participants in the supply chain to decide which products to offer. The Global LEAP Awards also create a reference point which policy makers may reference when developing national standards. The results-based financing mechanism, supported by EnDev and other partners, further subsidizes best-in-class appliances to bridge other gaps in the market, including capital constraints, risk aversion of distributors and retailers to try new technology, and lack of exposure among end users. In the long term, these initiatives aim to unlock the vast potential of the Bangladeshi market while steering demand towards efficiency and sustainability.