

# Stand Alone Solar (SAS)

## MARKET UPDATE

Ghana

February 2021



**Africa Clean Energy**  
Catalysing Africa's Solar Markets



**TETRA TECH**  
International Development





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The Ghana Stand-alone solar Market Update is one of a series of 14 national briefings published by the Africa Clean Energy (ACE) Technical Assistance Facility (TAF) to give stakeholders a snapshot of recent developments in the stand-alone solar sector, including those arising from the COVID-19 pandemic.

The Africa Clean Energy (ACE) Technical Assistance Facility (TAF) is a 4-year programme aiming to catalyse a market-based approach for private sector delivery of renewable energy electrification technologies, with a focus on high-quality stand-alone solar (SAS) systems. Funded by the UK Government through the Foreign, Commonwealth and Development Office (FCDO), and implemented by Tetra Tech International Development, ACE TAF is working in 14 African countries:

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## ABBREVIATIONS AND ACRONYMS

Acronyms	Definition
ACE TAF	Africa Clean Energy Technical Assistance Facility
AfDB	African Development Bank
AGSI	Association of Ghana Solar Industries
BOG	Bank of Ghana
COVID-19	New coronavirus disease
CHPS	Community-based Health Planning and Services
FCDO	Foreign, Commonwealth and Development Office
GDP	Gross Domestic Product
GH¢	Ghanaian cedi
GIZ	German Society for International Cooperation (Deutsche Gesellschaft für Internationale Zusammenarbeit)
GOGLA	Global Off-Grid Lighting Association
GRA	Ghana Revenue Authority
GSS	Ghana Statistical Service
KIF	Danish Climate Investment Fund
KfW	Credit Institute for Reconstruction, also known as the KfW Development Bank
MFIs	Microfinance Institutions
MSMEs	Micro, small and medium enterprises
NBSSI	National Board for Small Scale Industries
PAYG	Pay-As-You-Go
RDF	Rural Development Fund
REMP	Renewable Energy Master Plan
SAS	Stand-alone Solar
SHS	Solar Home System
UNDP	United Nations Development Programme
USAID	United States Agency for International Development
VSLA	Village Savings And Loan Association





## EXECUTIVE SUMMARY

**The COVID-19 pandemic has slowed the progress made in recent years** to increase access to affordable<sup>1</sup>, reliable electricity in Ghana. The health crisis has forced the government to shift its immediate priorities to emergency measures, including pledging USD100 million to the COVID-19 Preparedness and Response Plan and other response measures.<sup>2</sup> This reprioritisation is within the context of a shortfall in petroleum receipts, import duties and tax revenues, which has reduced available financing to expand and improve electricity infrastructure. Other concerns may be due to the cost of the preparedness plan itself, and the Coronavirus Alleviation Programme which will cost the economy about GH¢ 9.5 billion<sup>3</sup> (USD1.62 billion).

In addition, lockdown measures and related restrictions have affected the distribution channels of stand-alone solar (SAS) solutions and reduced sales for some SAS companies. Though the Global Off-Grid Lighting Association (GOGLA) January–June 2020 public report shows a spike in SAS products sold in Ghana, there is some indication the high number is due to a bulk procurement associated with an upcoming programme.

**Even with an electrification rate of about 85 per cent, there are still opportunities for SAS companies** to provide access to energy for the remaining 15 per cent of the population (five million people or about 1.2 million households).<sup>4</sup> The potential for SAS companies focused on solar home systems (SHS) is about 391,000 to 511,000 households, with the rest to be covered by grid electrification and mini-grid systems.

**The Renewable Energy Master Plan (REMP) 2019 maintains a goal of one million solar lanterns and 20.5MW of larger SAS by 2030.** It also proposes to cultivate and secure local solar manufacturing and assembling through the phasing out of SAS import exemptions and the phasing in of exemptions for components to be used in assembly. This potentially offers a great opportunity for businesses interested in the manufacturing industry; both local and international companies can set up their assembling plants in Ghana to benefit from this exemption. Companies such as Strategic Security Systems International Limited (3SiL), Halo International and Atlas Business and Energy Systems (ABES)<sup>5</sup> are already benefiting from this incentive. In addition, with the launch of the African Continental Free Trade Agreement, SAS manufacturing businesses can take advantage of the opportunity to distribute to the sub-region. The removal of tariffs on goods in particular is projected to increase the value of intra-African trade by 15 to 25 per cent by 2040.<sup>7</sup>

**The leading international SAS companies providing pay-as-you-go (PAYG) SHS in Ghana – PEG and ZOLA – are diversifying their operations** to address the challenges associated with COVID-19. PEG is adding healthcare solar electrification products to its portfolio, while ZOLA is introducing last mile distribution strategies through partnerships with distributors. Both companies have active consumer marketing, and PEG includes a community-based corporate social programme that conducts medical screening, trains community members on the importance of solar and employs community members as sales agents.

There is limited support by government for SAS because it not seen as a sustainable solution to the energy access challenge. It is also the reason why SAS is not considered in the computation of energy access numbers in the country. But **new policies have further boosted the enabling environment.** In 2020, the Digital Financial Service Policy was issued in order to increase the number of banked people, thus

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<sup>1</sup>IEA (2020). *The Covid-19 crisis is reversing progress on energy access in Africa.*

<sup>2</sup>KPMG (2020). *The economic impact and implications of COVID-19: The Ghanaian perspective*

<sup>3</sup>ibid.

<sup>4</sup>4.5 persons per household – Ghana Statistical Service.

<sup>5</sup>IESE Business School, University of Navarra (2019). *Solar home solutions using a pay-as-you-go model in Ghana: Exploring the opportunity.*

<sup>6</sup>REMP, 2019.

<sup>7</sup>Foreign Policy (2020). *Meet the worlds largest free trade area.*



increasing opportunities for businesses making use of digital payments, such as SAS companies. A proposed amendment to the Renewable Energy Act outlining fiscal incentives for off-grid companies has been sent to Parliament.

A number of organisations have provided COVID-19 relief funding support for the Ghanaian government and businesses, these include:

-  World Bank's USD100 million to the government.

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-  Grants by the United States Agency for International Development (USAID) through Power Africa and German Society for International Cooperation (GIZ) to provide electricity access to the grid for Community-based Health Planning and Services (CHPS) compounds.

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-  The National Board for Small Scale Industries (NBSSI) and Mastercard Foundation COVID-19 Recovery and Resilience Programme offering GH¢90 million (USD 15.4 million)<sup>8</sup> in support of micro, small and medium enterprises (MSMEs).

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-  Commercial banks engaged to provide a syndicated facility of GH¢3 billion (USD512.82 million) to support key industries; granted a six-month moratorium on principal repayments for selected businesses.<sup>9</sup>

Over the past few years, **the Association of Ghana Solar Industries (AGSI) has lobbied the government on issues of concern to solar energy businesses** and is recognised by the government as the appropriate channel for solar businesses to raise concerns. However, there are no paid members or employees that work exclusively for AGSI, which makes it difficult for them to follow through with all concerns raised, such as licensing and tax exemptions.

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<sup>8</sup>Joy Online (2020). NBSSI/Mastercard Foundation Resilience and Recovery Programme opens for applications.

<sup>9</sup>KPMG (2020). The economic impact and implications of COVID-19: The Ghanaian perspective.

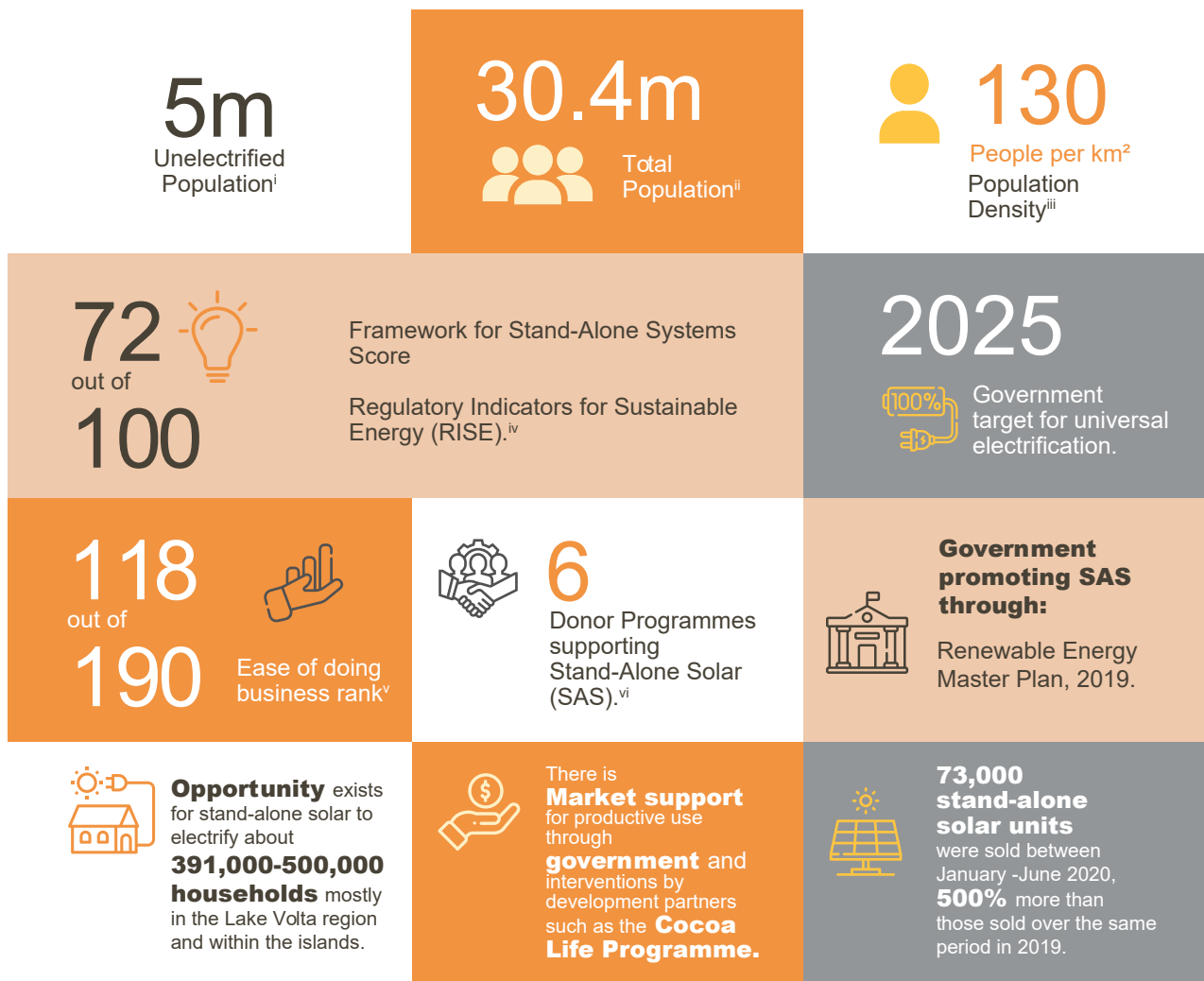


Figure 1: Ghana at a glance

i. International Energy Agency (2019)

ii. World Bank (2018)

iii. World Bank (2019)

iv. ESMAP (2019)

v. World Bank (2020)

vi. Lighting Global (2019)



# 1 NATIONAL OVERVIEW

## 1.1 Current Context

Ghana's Gross Domestic Product (GDP) in 2019 grew at a rate of 6.1 per cent, and further growth was projected in 2020. However, despite new oil discoveries and mining growth, the **GDP growth plummeted to 1.5 per cent<sup>10</sup> in 2020 as a result of the COVID-19 pandemic.**<sup>11</sup> The country was also faced with a decline of the cedi in 2019 and an inflation rate that rose to 9.7 per cent in 2020, and which is projected to decline marginally to 8.5 per cent in 2021.<sup>12</sup>

On March 30, 2020, a partial lockdown of Accra and Kumasi was enforced and all public gatherings banned to reduce the spread of COVID-19. Some

essential business activities were exempted from the restrictions. Some off-grid companies received permits to operate on a case-by-case basis during the lockdown, but for all, the importation of goods and services was significantly delayed due to the closure of land, sea, and air borders.<sup>13</sup> The pandemic heightened the demand for access to electricity, but due to the disruption in imports and distribution, some SAS companies were not able to meet customer needs.<sup>14</sup>

According to a survey conducted by the Ghana Statistical Service (GSS) in collaboration with the World Bank and the United Nations Development Programme (UNDP) to determine the impact of COVID-19 on business, the following was noted:<sup>15</sup>



**77.4 per cent of households in Ghana experienced a decrease in income** when COVID-19 restrictions were introduced. This means that approximately 22 million Ghanaians were affected by reduced household income.



**82.8 per cent of households that reported non-farm family business (36.1 per cent) as an income source said they experienced a decrease in income.**



**770,000 workers (25.7 per cent of the total workforce), had their wages reduced.**



**42,000 employees were laid off during the country's partial lockdown.**

To reduce the spread of COVID-19, the Bank of Ghana (BOG) worked with local banks and telecommunications companies to make all digital payments under GH¢100 (USD17.1) free, increase allowed daily transactions, and facilitate onboarding of new customers.<sup>16</sup>

countries in Africa, currently with an **access rate of 85 per cent**; 75 per cent of rural residents and 93 per cent of urban residents have access to the grid.<sup>17</sup>

As of 2020, the total installed renewable energy generation capacity in Ghana was estimated to be 42.6MWp.<sup>18</sup> This figure does not include estimations of community PV systems such as those for water pumping and irrigation, and other types of productive use solar. The Energy Commission does not include SAS as part of its energy access figures.

## 1.2 Energy Access

Ghana continues to be one of the most electrified

<sup>10</sup>Nordea (2021) *The economic context of Ghana*.

<sup>11</sup>The World Bank (2019). *Ghana: Overview*.

<sup>12</sup>IMF (2020). *World economic outlook*.

<sup>13</sup>KPMG (2020). *Ghana: COVID-19-related travel restrictions and safety directives*.

<sup>14</sup>Interviews with key informants.

<sup>15</sup>The World Bank (2020). *COVID-19 forced businesses in Ghana to reduce wages for over 770,000 workers, and caused about 42,000 layoffs - research reveals*.

<sup>16</sup>IPA (2020). *The Effects of COVID-19 on business and employment in Ghana*.

<sup>17</sup>IEA (2020). *SDG7: Data and projections*.

<sup>18</sup>ITA (2020). *Ghana: Country Commercial guide*.

## 2 DEMAND-SIDE: CONSUMER INSIGHTS

Over the last two decades, the demand for electricity has been growing by 10 to 15 per cent annually.<sup>19</sup>

**About five million people (1–1.2 million<sup>20</sup> households) still have no access to electricity:**<sup>21</sup>

a huge opportunity for the SAS sector. Most of Ghana's unelectrified communities are located around Lake Volta, the island communities and some areas in the northern part of Ghana. The country's Renewable Energy Master Plan (REMP) presents the view that the private sector will need to support the achievement of universal energy access by 2025.

**It is estimated that between 391,000 and 511,000 households could be electrified through solar home systems (SHS),** equating to a potential market of USD70 to USD92 million.<sup>22</sup> There has also been growing interest from urban and peri-urban individuals who already have access to the grid, which is now reliable, but are looking to reduce their household bills by connecting to SAS systems. In addition, there is a growing demand for electricity for productive uses such as irrigation.<sup>23</sup>

Access to information on unelectrified communities is not readily available for SAS companies to help them properly target locations where the grid will not be available within five to 10 years. The Energy Commission's Energy Resource and Access

Database only provides data on the regional/district access rate and not specific community access rate.<sup>24</sup>

As reported in the GSS survey on the **impact of COVID-19**, many households experienced an income reduction.<sup>25</sup> A survey by Research for Effective COVID-19 Responses (RECOVR) showed that women were the most affected by the pandemic – 33 per cent of women who were working pre-pandemic earned no income in the week before the survey, compared to 21 per cent of men.<sup>26</sup> Smallholder vegetable farmers were also affected due to restrictions imposed on their off-takers, especially hotels and restaurants, thus reducing their earnings. This drop in income almost certainly negatively impacted SAS repayments. There is however no immediate data on the extent of negative impact.

**SAS companies work with sales agents within off-grid communities to create awareness** through branded souvenirs, word-of-mouth and community service centres. PEG has developed PEGX, a continuous community-based corporate social programme that performs medical screenings and training of community members on the importance of solar.

<sup>19</sup>Energypedia (2020). *Ghana energy situation*.

<sup>20</sup>4.5 person per household – Ghana Statistical Service.

<sup>21</sup>IEA (2020). *SDG7: Data and projections*.

<sup>22</sup>IESE Business School, University of Navarra (2019). *Solar home solutions using a pay-as-you-go model in Ghana: Exploring the opportunity*.

<sup>23</sup>Cost-benefit analysis of interventions to improve electricity access in Ghana.

<sup>24</sup>Ghana Energy Access System (2021). *Electricity access rate (district)*.

<sup>25</sup>Ghana Statistical Service (2020). *Brief on COVID-19 households and jobs tracker: Wave 1*.

<sup>26</sup>IPA (2020). *The Effects of COVID-19 on business and employment in Ghana*.

### 3 SUPPLY-SIDE: STAND-ALONE SOLAR COMPANIES

#### 3.1 Pico-solar and Solar Home Systems (SHS)

Through 2020, COVID-19 affected supply chains, which resulted in a considerable slow-down in production and shipments from China. With the borders closed, there were concerns around the clearance process at customs. As SAS companies focused on protecting their employees and customers, some had to completely pause activities or change existing operations. Anecdotal reports indicate companies in Ghana renegotiated customer repayment plans, laid off staff in favour of outsourced distribution partnerships and halted planned rollout of retail sales outlets. Customers' spending capacity

and priorities changed, also negatively affecting sales.

Mid-2020 survey findings from SE4ALL indicated that globally, SAS companies would lose between 21 and 40 per cent of revenue in 2020.<sup>27</sup> Cash operations were distressed, with about 70 per cent of SAS companies having two months or less of operational expenses available. Interestingly, the January-June 2020 GOGLA sales report showed a significant increase in sales, with 73,000 units sold, the highest ever (see Figure 1) – most likely due to a bulk procurement. As such it is not yet possible to assess the impact of COVID-19 on off-grid sales. SAS appliances (TVs, fans, water pumps and refrigeration units) recorded 1,400 units sold, 69 per cent less than the second half of 2019.

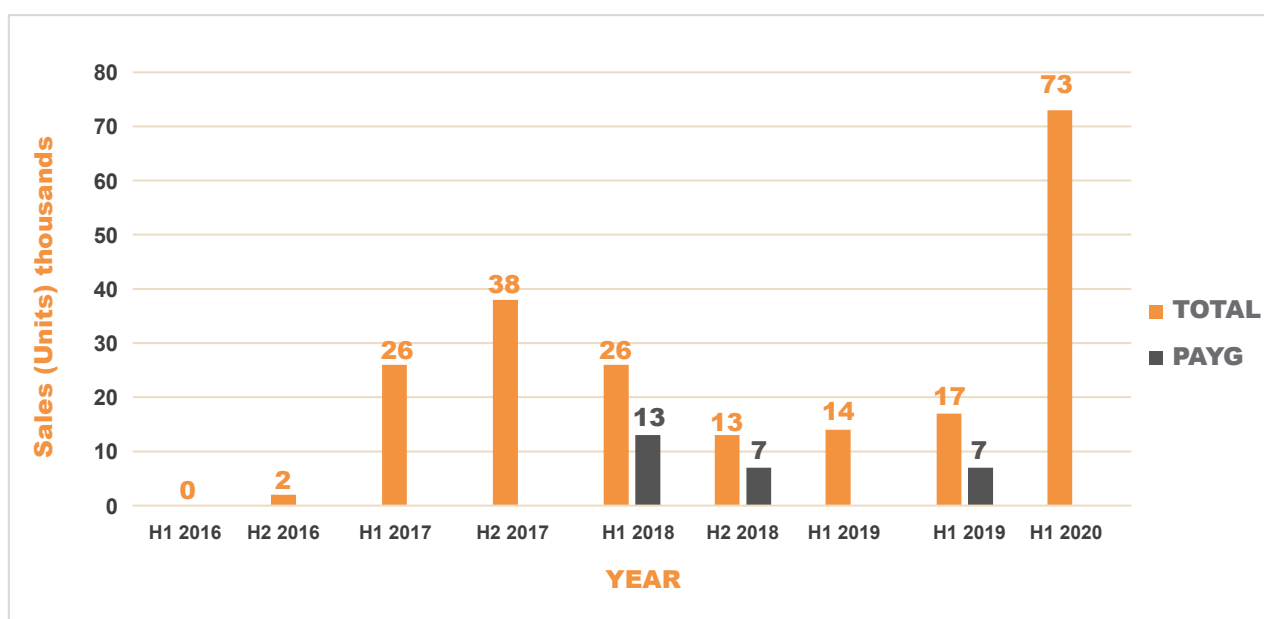


Figure 1: SAS sales from 2016 to first half of 2021

Source: GOGLA (2020)<sup>28</sup>. Total sales include both PAYG and cash sales but have not been broken out in this report

**SAS companies were exempted from COVID-19 related travel restrictions** even though SAS was not designated as an essential service. In April 2020, the President of Ghana announced that the government would fully cover the bills of low-income consumers of grid electricity (consuming 0 to 50kWh/month) for the months of April, May and June. Consumers outside

of this category were granted a 50 per cent reduction in the cost of grid electricity for the same period.<sup>29</sup> For SAS customers, no relief measures were provided.

According to the GSS survey, close to 131,000 businesses had challenges accessing finance and expressed uncertainty in the business environment.

<sup>27</sup> SEforALL (2020). Identifying options for supporting the off-grid sector during COVID-19 crisis.

<sup>28</sup> Global off-grid solar market report: Semi-annual sales and impact data.

<sup>29</sup> Ibid.

Together, their average monthly decrease in sales was estimated at GH¢115.2 million (USD19.69 million). More than half of these firms had difficulties in sourcing inputs.<sup>30</sup>

The government instituted a variety of initiatives to limit the effects of the crisis under the Coronavirus Alleviation Programme (CAP). In collaboration with the National Board of Small-Scale Industries (NBSSI) and Mastercard Foundation, the government supported micro, small and medium enterprises (MSMEs) with USD15 million in loans that have a one-year moratorium and two-year repayment period.

## Major suppliers of pico-solar and SHS

**There are 55 licensed solar companies operating in Ghana**, most of them focused on residential and commercial installations. A few of these companies also provide pico-solar and SHS, while others focus

on providing solutions to the off-grid rural markets. The latter include PEG, Sunhut/Villageboom, ZOLA and Rasaboat.

Between 2016 and 2020, a number of solar companies shut down, including PAYGO Solar, Yenso Solar, Burro Brands, GTEC and Barefoot Power. The shut downs were mainly due to a shrinking and more competitive market. **Most successful SAS companies are now providing a variety of value-added services**, offering credit through PAYG technologies and undertaking last-mile distribution, going to locations that less well-resourced solar companies are not able to reach. PEG and ZOLA are marketing their SHS alongside hospital bill rebates, after-sales service and call centre support, product warranties and staggered repayment terms.

Some SAS companies without PAYG, such as Sunhut/Villageboom, have adopted an in-house financing model (e.g. village savings and loan associations (VSLAs) and a kiosk model) while companies such as NorthLite Solar work with microfinance institutions (MFIs) to sell SAS products on credit.

Table 1: Major SAS companies in Ghana

Company	Business model	Product focus
PEG	PAYG, last mile distribution, cooperatives, VSLAs, retail centres	SHS, productive use (irrigation, cooling, clinics)
ZOLA	PAYG, last mile distribution	SHS
Northlite Solar	Retail hubs, bank credit sales	Pico, SHS, residential
Suka Solar	Retail	Solar lamps, pico, SHS
Wilkins Engineering	Retail, PAYG, commercial and industrial (C&I), distribution partners	Lamps, SHS
Sunhut Enterprise – Villageboom	Retail kiosk outlets in off-grid communities, VSLAs	Pico, SHS
Solartail	Retail, business to business	SHS, C&I
Rasaboat	Retail	SHS

<sup>30</sup>The World Bank (2020). COVID-19 forced businesses in Ghana to reduce wages for over 770,000 workers, and caused about 42,000 layoffs - research reveals.

## 3.2 Productive Use Systems

Although solar for productive use of energy (PUE) systems have been in the market for some time, it is still an emerging segment. Through various development partner programmes, such as German Society for International Cooperation (GIZ) Energizing Development (EnDev), the Power Africa Off-Grid Program and USAID's Feed the Future's Innovation Lab for Small Scale Farmers, **the benefits of PUE are gradually being appreciated** by communities and individuals alike. Government and its partners have made solar PUE a priority by providing technical support, access to finance, training and development of a policy framework that includes an Agriculture Sector Policy, National Irrigation Development Master Plan, National Agricultural Investment Plan, Renewable Energy Master Plan (targeting the installation of 40,000 solar irrigation systems) and the SEforALL Action Plan that focuses on promoting PUE in agriculture, cold store processing, among others.<sup>31</sup>

**Some SAS companies are diversifying their portfolio to offer PUE technologies.** PEG, for example, is now providing solutions like irrigation and health centre electrification, and plans to pilot solar fridges and freezers.<sup>32</sup> Others offering PUE solutions include Hatoum Trading (irrigation pumps), DENG (Lorenz solar pump and Solar Vaccine Fridges), Suka Solar (irrigation water pump, developing solar milling technology). Mondalez International, under the Cocoa Life Programme, is offering 70,000 farmers solar irrigation systems to enable them to produce cocoa throughout the year.

In 2020, Ecobank also partnered with the Energy Commission and the United Nations Environmental Programme (UNEP) to roll out eco-fridges through a Green On-Wage scheme (instalments deducted from salary payments), under an ECOWAS programme promoting affordable environmentally friendly refrigerators and air conditioners<sup>33</sup>.

Development partners have provided funding for health clinic electrification to support the fight against COVID-19, including the Power Africa Off-Grid Program grant to electrify 91 CHPS compounds (health centres) and GIZ's grant to electrify 30 CHPS compounds.

## 3.3 Association of Ghana Solar Industries (AGSI)

There are two industry associations: AGSI and the Renewable Energy Association of Ghana (REAG). AGSI is the more active one.

AGSI has 46 members comprising stakeholders from solar companies, NGOs, academia, development partners and individuals with affiliations to solar companies. **The group has been proactive in its support to the sector** and its members have high hopes of it becoming a stronger lobbying force. During the COVID-19 lockdown, AGSI lobbied the Energy Commission and the Ministry of Energy to declare solar businesses an essential service. Though this was unsuccessful, government agreed to review companies' requests on a case-by-case basis and ultimately most received permits to operate during the lockdown period.

AGSI also supported the government in rolling out the Kerosene Lantern Replacement Programme, which introduced solar lanterns as a preferred lighting option for some communities.

Its current advocacy priority is to strengthen the efficiency of customs tariffs and licensing procedures, as well as the certification for solar installers (currently in progress with support from GIZ). The lack of improvement on the tariffs and licensing has frustrated some members; this may be related to a reliance on voluntary staff.



The Cocoa Life Programme is offering 70,000 farmers solar irrigation systems to enable them to produce cocoa throughout the year.

<sup>31</sup>Ministry of Food and Agriculture (2020). National agriculture investment plan.

<sup>32</sup>PEG (2020). PEG Africa to make solar refrigeration products available in West Africa

<sup>33</sup>Ghana News Agency (2020). Ecobank partners ECOFRIDGES to roll out a Green on-wage scheme in Ghana.

## 4 POLITICAL FRAMEWORK

### 4.1 Government Institutions

The institutional framework governing the off-grid sector remains much the same, with the Renewable Electrification Unit under the Renewable Energy Directorate of the Ministry of Energy taking the lead on renewable energy-based electrification. Other government institutions are listed in Table 2.

Table 2: Government institutions governing the SAS sector in Ghana

Institution	Description and recent activity
<b>Ministry of Energy</b>	Formulation, monitoring and evaluation of energy policies. There has been a recent amendment to the Renewable Energy Bill, yet to be approved by Parliament.
<b>Energy Commission</b>	Charged with licensing companies working in the energy sector, including renewable energy supply and installation companies, under which SAS companies are categorised. Currently designing a certification for solar installers.
<b>Ghana Standards Authority (GSA)</b>	Ensures that imported SHS falls within the standard requirements of the Energy Commission. Developed standards for renewable energy technologies. Businesses are required to have their products certified.
<b>Environmental Protection Agency (EPA)</b>	Renewable energy companies that import or manufacture electrical or electronic equipment must apply for a permit to operate.
<b>Ghana Revenue Authority (GRA)</b>	GRA's Customs Division is responsible for the collection of indirect taxes for the state including duties, VAT, import excise, etc. During the pandemic it has given VAT/NHIL/GETFUND relief on donations toward COVID support and waived penalties to taxpayers. <sup>34</sup>
<b>Ghana Investment Promotion Centre (GIPC)</b>	Promoting various opportunities available to solar businesses, including solar vaccine refrigerators and school solar systems. <sup>35</sup>



The Energy Commission is currently designing a certification programme for solar installers.

<sup>34</sup>Ghana Revenue Authority (2020). guidelines for the implementation of tax incentives in support of taxpayers against the covid-19 pandemic.

<sup>35</sup>GIPS. Investment opportunities.



## 4.2 Policy and Regulatory Environment

In the last two years, the government made strides in further developing the regulatory environment for renewable energy. A 2020 amendment to the

Renewable Energy Act proposes financial incentives for solar companies and the 2019 Renewable Energy Master Plan outlines ambitious targets for SAS. The sector is governed by the 2010 Energy Policy, which acknowledges the role of off-grid solutions. A snapshot of recent and relevant developments is outlined in Table 3<sup>36</sup>.

Table 3: Recent developments in the SAS regulatory framework

Policy/regulation	Description and relevance
<b>Energy</b>	
<b>Renewable Energy Act, 2011 – Renewable Energy (Amendment) Bill, 2020</b>	<p>FoA recent amendment to the Renewable Energy Act is yet to be approved by Parliament. The amendment establishes a competitive procurement scheme and a net-metering scheme in respect of electricity generated from renewable energy sources.<sup>37</sup></p> <p>Provides financial incentives, feed-in-tariffs, capital subsidies, production-based subsidies, and equity participation for SAS companies. Firms that import and install SAS are required by the Act to apply for import and installation licenses.</p>
<b>Renewable Energy Master Plan, 2019</b>	<p>Outlines the implementation schedule for the various renewable energy technologies that are to be achieved by 2030, including specifics of solar for households and PUE.</p> <p>Targets one million solar lanterns, 20.5MWp SAS PV, 46,150 units of solar irrigation, 700 units of solar dryers and 135,000 units of solar heaters.</p>
<b>Local Content and Participatory Act, 2017 L.I. 2354</b>	All foreign renewable energy businesses are required under the Act to, within 10 years of operation, achieve a minimum local content of 60% and local ownership of 51% in the electricity supply industry.
<b>Environmental Protection Agency (EPA)</b>	Requires all international SAS companies to comply with the local content act with an initial local ownership from commencement of at least 15%.
<b>E-waste</b>	
<b>Hazardous and Electronic Waste Control and Management Act 917 (2016)</b>	Implemented by EPA. It targets hazardous and electronic waste, including SHS products. Advance payment of an eco-levy (0.5 per cent included in import fees), which will fund enforcement of the regulation. SAS companies are to receive a permit from EPA, without which their goods will not be cleared from the port.
<b>Finance and mobile money</b>	
<b>Payment Systems and Services Act, 2019</b>	Allows telecoms, aggregators and fintech to apply for licences to become e-currency issuers or register to accept e-currency. Allows businesses, including SAS companies running PAYG, to accept payments via mobile money.
<b>Digital Financial Services Policy, 2020</b>	<p>Developed amid the COVID-19 pandemic to help Ghanaians access a broad range of affordable digital financial services, including payments and savings.</p> <p>The policy will allow businesses that use mobile money and related payment solutions (including SAS companies) to set up mobile money agents in locations where they have customers, effectively enabling them to bring more people into the financial system.</p>
<b>Gender and social inclusion mainstreaming</b>	
<b>Renewable Energy Master Plan on Gender Mainstreaming, 2019</b>	Places focus on gender inclusion. Mandates a gender-disaggregated database within the energy sector.

<sup>36</sup>This is not a comprehensive list of policies governing the sector.

<sup>37</sup>Parliament of Ghana (2020). The Renewable Energy (Amendment) Bill, 2020 read the third time and passed.

## 5 FINANCING

### 5.1 Supply Chain Financing

**The SAS sector in Ghana continues to face significant fiscal barriers** and uncertain returns. Barriers include high bank interest rates, short tenure loans, high inflation and currency depreciation. The current interest rate on loans is between 25 and 30 per cent depending on the risk associated with the borrower. Most banks willing to consider clean energy lending impose an interest rate of above 40 per cent, higher than any SAS company can afford. These high rates persist despite the Sustainable Banking Principles, which is a high-level framework provided by BOG to assist banks to provide long-term sustainable financing to low carbon projects, including renewable energy.

The USAID-supported Climate Economic Analysis for Development, Investment and Resilience (CEADIR)

programme, which closed in 2020, promoted clean energy lending by connecting banks with project developers and businesses seeking financing, resulting in several million dollars' worth of deals.

The Rural Development Fund (RDF) is providing credit guarantees and funding to rural banks, MFIs, commercial banks and companies. They have so far funded four MFIs to the tune of GH¢1 million (USD170,940) to lend to customers interested in off-grid technology and farm inputs. In quarter four of 2020, RDF opened the funding window to financial institutions and SMEs.

As of December 2020, the leading SAS company, PEG, had secured a number of funding rounds, including USD25 million Series C funding, taking its funding total to USD50 million.<sup>38</sup> Information on deals is difficult to obtain.

Table 4: Supply chain financing available to the Ghanaian SAS sector

Type	Financier	Investments/available funding
Commercial bank	Ecobank Ghana	USD250 million debt <sup>39</sup> (Green Climate Fund) and USD10 million debt (Development Credit Authority).
Commercial bank	Fidelity Bank	USD5 million debt. <sup>40</sup>
Commercial bank	CAL Bank	USD105 million debt. <sup>41</sup>
Investor	Wangara Green Venture	USD50,000 to USD500,000 as equity and quasi equity. <sup>42</sup>
Investor	Lendahand	USD1.8 to USD6 million debt/mezzanine. <sup>43</sup>
Investor	Energise Africa	USD2 million to USD6.8 million debt /mezzanine.
Investor	Danish Climate Investment Fund (KIF)	USD2.5 to USD60 million equity.
Development finance	Grofin SGB Fund	USD100,000 to USD1.5 million debt.

<sup>38</sup>PEG(2019). PEG Africa Raises \$25M to accelerate off-grid solar expansion in West Africa.

<sup>39</sup>FAAPA (2020). Ecobank Ghana receives Green Climate Fund Accreditation to support solar projects.

<sup>40</sup>Oiko Credit (2020). Fidelity Bank Ghana Limited: More financing solutions for SMEs in Ghana.

<sup>41</sup>CalBank (2018). CalBank signs USD 105 million credit facilities with Proparco, IFC, Norfund and Finnfund.

<sup>42</sup>Wangara Green Ventures.

<sup>43</sup>Get-Invest.

Type	Financier	Investments/available funding
Development finance	KfW	Refinancing public or commercial banks in order for them to provide loans for households and MSMEs for renewable energy and energy efficiency.
Crowdfunding	Bettervest GmbH	USD100,000 – USD3 million.

## 5.2 Consumer Financing

There are two major SAS companies in Ghana providing a PAYG option for SAS products: PEG and ZOLA Electric. Suka Solar, Richida Energy and Northlite Solar are planning to adopt PAYG solutions through strategic partnerships with an international PAYG firm.

Other consumer financing strategies adopted by SAS companies include partnership with VSLAs and cooperatives that provide credit guarantees for their members with an assurance of payment within a given period. If a member fails or delays payment, the leadership of the VLSA or cooperative takes the responsibility to follow up on the payment.

Ghana's attempts to improve the economy include **steps aimed at encouraging the use of digital financial services for its adult population of 19 million** with 14.5 million active mobile money accounts.<sup>44</sup> The 2020 Digital Financial Policy is part of these efforts to increase financial inclusion. The objective is to work with various financial institutions,

mobile network operators (MNOs) and fintechs to help reduce the unbanked population.

### Microfinance institutions (MFIs)

There are a number of support initiatives for MFIs, rural community banks and savings and loans agencies. These include technical assistance and funding by RDF, Social Investors Managers and Advisors (SIMA) Funds and others, which theoretically increases financing options for MSMEs in the SAS and agriculture sectors, though to date it is only RDF that has disbursed its funds.

As of December 2020, regulatory restrictions on poor business practices and weak capital positions in Ghana's banking sector resulted in a series of market exits. This has created a more sustainable banking sector and a reduction of MFIs from 484 to 137 and 144 rural community banks.<sup>45</sup> **All MFIs provide loan facilities and asset financing products to their customers, but financing for solar is still at an early stage**, with high interest rates making it unattractive for SAS companies and customers.

Table 5: Local microfinancing sources for SAS

Institution	Description and recent activity
<b>Hopeline Microfinance</b>	Provides loan facilities for rural off-grid smallholder farmers.
<b>Opportunity International</b>	Provides asset financing for its customers.
<b>Advance Ghana</b>	Provides micro loans and SME loans.
<b>Fiaseman Rural Community Bank</b>	Consumer financing.

<sup>44</sup> <https://www.cgap.org/blog/ghana-launches-worlds-first-digital-finance-policy-amid-covid-19>

<sup>45</sup> Bank of Ghana (2021). *Rural and community banks*.

## Mobile money networks

Before 2020, the mobile money industry in Ghana had a transaction value of USD36.1 billion. **By the first quarter of 2020, this value had grown by 30 per cent<sup>46</sup>** and it's projected to hit USD204.3 billion by 2024, rising at a Compound Annual Growth Rate (CAGR) of 32.5 per cent between 2019 and 2024.<sup>47</sup>

Ghana has three major mobile money operators: MTN, Vodafone Cash and Airtel Tigo Money. MTN has more than 80 per cent of the market share. The

Payment Systems and Services Act, 2019 (Act 987) allows fintech aggregators and financial institutions to be registered to offer mobile money services. New additions to the mobile money space include ZeePay and Ghana Commercial Bank's G-Money. There are other institutions working to acquire licenses to operate as mobile money operators. On any merchant transaction, MTN charges a 1 per cent fee, which implies SAS companies selling through PAYG and making use of mobile money incur these charges on every transaction and would potentially pass these on to the customer.



Image Courtesy: [http://global.aviorenergy.com/?page\\_id=547](http://global.aviorenergy.com/?page_id=547)

<sup>46</sup>Ghana Talks Business (2020). Value of Mobile money transactions in Ghana grew by over 30% in March 2020.

<sup>47</sup>Business Wire (2019). Ghana Mobile Money Market Report 2019-2024.



## 6 MARKET SUPPORT

**Development partners are actively supporting energy access** in Ghana. To ensure alignment and address issues and lessons learnt, a working group meets periodically. COVID-19 relief support from development partners includes the following:



World Bank is providing USD100 million to assist in tackling the pandemic.



USAID (Power Africa) and GIZ provided grant financing to support access to the grid for 91 CHPS and 30 CHPS compounds (health clinics), respectively.



Mastercard Foundation COVID-19 Recovery and Resilience Programme which is supporting MSMEs.

Table 5: Local microfinancing sources for SAS

Development partner	Type of assistance	Objective/target
AfDB: Ghana Scaling-up Renewable Energy Program (SREP)	Grant	USD1.5 million preparatory grant facility.
FCDO: Africa Clean Energy (ACE) Technical Assistance Facility (TAF)	Technical assistance	Catalysing the enabling environment for market-based delivery of SAS.
FCDO: Africa Enterprise Challenge Fund (AECF) Renewable Energy and Adaptation to Climate Technologies (REACT) Household Solar Round 2	Grant Technical assistance Concessional loans	Competitive funding for solar companies. Tailored support to assist on company operations, access to finance and advocacy around policy and regulations.
GIZ	Grant	Grant financing for 30 health clinics in off-grid communities. Energy access, PUE and market development for solar water pumps for agriculture (smallholder farmers).
Power Africa Off-Grid Programme (PAOP)	Grant Technical assistance	Funding and technical assistance for the installation of 91 SAS systems for community-based health planning and service compounds.
World Bank: Ghana Commercial Agriculture Project	Grants Technical assistance	Technical assistance on off-grid electricity application for agricultural production.

A range of institutions provide **capacity development and incubation** for the sector, including Deng Solar Training School, Ghana Climate Innovation Centre, Women in Renewable Energy (WIRE) (a subsidiary of Suka Solar) and a number of vocational institutions.

**Data focused on the SAS market in Ghana is still lacking**, making it difficult for companies to conduct

targeted sales. Support to SAS companies over the past year has included the provision of market data on the impact of COVID-19 on MSMEs and providing market data on relief funds and business support opportunities.





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