Global Off-Grid Solar Market Report

Semi-Annual Sales and Impact Data

January - June 2017, PUBLIC REPORT

GOGLA Global Off-Grid Lighting Association

LIGHTING GLOBAL Catalyzing markets for modern off-grid energy

AN INNOVATION OF WORLD BANK GROUP THE WORLD BANK IBRD · IDA IFC International Finance Corporation

Berenschot

Authors' Note

Our latest Global Off-Grid Solar Market Report presents sales and impact data covering January 1, 2017 to June 30, 2017, reflecting the performance of 65 GOGLA members and IFC Lighting Global Associates working in this vibrant sector. This represents the global market of branded solar devices and integrated solar home systems.

With the needs of investors, manufacturers, distributors, entrepreneurs, donors and policymakers in mind, the GOGLA and IFC Lighting Global sales data offers a uniquely detailed and robust snapshot of the development of the sector every six months. This report is built on a continuously growing data set to draw observations of key trends, insights and changes which underpin the market's development. As such, we seek to provide insightful market intelligence that sector players will find essential in making more informed decisions in the operation of their businesses.

With around 1.2 billion people living without access to the electric grid, spending about $27 billion annually on lighting and mobile phone charging, the sector still has a lot of work to do. Yet, distributed solar products are achieving unprecedented development impact as a commercial, affordable means of delivering modern energy services to achieve economic development at scale. To this end, our report will shine a light on the developmental impact the industry is making.

This public report features an aggregate of sales data shared with us by the companies that drive the sector. All companies that have contributed their sales data receive their own individual, tailored report, indicating their share of all relevant markets, and have access to a comprehensive online reporting platform that visualizes key market insights. If you would like to participate in our next data collection round, please get in touch with us.

IFC and GOGLA will continue to push for high-quality, nuanced data to accurately tell the story of the industry's evolution. In early 2018, we will publish our biennial Off-Grid Solar Market Trends Report, which will provide for deeper understanding of the sector, including research on investment trends, technology and policy developments, and the nuances of the beneficial social impacts created by the sector. We hope you will join us at the Off-Grid Solar Forum and Expo in Hong Kong in January 2018 (offgridsolarforum.org) to explore these topics with us and to shape the future of the off-grid solar sector.

Sincerely,

Koen Peters, *Executive Director, GOGLA*

Russell Sturm, *Global Head, Energy Access, International Finance Corporation*

Content Team
Laura Sundblad, Susie Wheeldon, and Johanna Diecker (GOGLA)
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About the Authors

This report is produced by GOGLA and Lighting Global with the assistance of Berenschot.

Global Off-Grid Lighting Association

GOGLA is a neutral, independent, not-for-profit industry association which acts as a sector enabler and advocate. GOGLA supports the growth and strengthens the market for clean, quality off-grid lighting and electrical systems for households, SMEs and communities in developing countries. Formed in 2012 as a public-private initiative, GOGLA was conceived out of a joint World Bank / IFC Lighting Africa and private sector effort to accelerate market development for energy access. Today, GOGLA comprises over 100 members from across the globe. Its main objective is to support industry in scaling the sector based on principles of the triple bottom line, thus contributing to the objectives of Sustainable Energy for All (SE4All) and the Sustainable Development Goals (SDGs).

Lighting Global

Lighting Global is the World Bank Group's platform to support sustainable growth of the international off-grid solar market as a means of rapidly increasing energy access to the 1.2 billion people without grid electricity. Through Lighting Global, the International Finance Corporation (IFC) and the World Bank work with the Global Off-Grid Lighting Association (GOGLA), manufacturers, distributors, and other development partners to develop the modern off-grid energy market. The Lighting Global program supports market development by working with private companies to lower first-mover risk and mobilize private sector investment through market intelligence, quality assurance, business support services and consumer education.

Berenschot

Berenschot

Berenschot is a leading Dutch management consultancy firm with an extensive track record in supporting industry associations, including on market data collection. Berenschot has recently been elected by clients as the best management consultancy firm of the Netherlands. Berenschot maintains a high standard of confidentiality, as stated in the Berenschot Terms and Conditions.

Participants

Table 1: List of Participants

List of respondents			
All Weather Solar	Jua Solar	Pawame	Sunlite (India Impex)
ARESS Sarl	Knights Energy	PEG Africa	Sunny Money (Solar Aid)
Azimuth	Lagazel	Philips Lighting	Sunstream Technology
Azuri	Little Sun	Qotto	Super Star Group Solar
BBOXX	Lumos Global	RAL Consumer Products Limited	Total
Biolite	Mibawa Suppliers	Renewit	True Solar
Bright Products AS	M-KOPA Solar	Schneider Electric	upOwa
BrighterLite	Mobisol	Shanghai Easy	Village Boom
d.light	M-PAYG	Simpa Networks	Village Power
EcoEnergy	Nadji-Bi	Sinoware	Waka-Waka (Off-Grid Solutions)
EcoZoom Limited	NewLight Africa (Heya!)	Solar Sister	Yingli
Enlight	Niwa	Solarkiosk	Zhejaing Holley
Fenix International	Off-Grid: Electric	SolarNow	Zimpertec
Fosera	OmniVoltaic Energy Solutions	SolarWay	Zonful Enterprises
Futura Sun	Oolu Solar	SolarWorks!	
Greenlight Planet	Orb Energy	Sosai Renewables Energies Company	
Jua Energy	OvSolar	Speedtech	

Methodology

The data in this report is limited to that provided by GOGLA member companies and companies selling Lighting Global quality verified products.

Companies are classified either as distributors of other companies' branded products or as manufacturers of their own branded products. Only aggregate data from companies categorized as manufacturers is presented here to avoid double-counting, and it is only included when it has satisfied the three data point rule, meaning that at least three separate product manufacturers have reported data for any single data point. When we have fewer than three responses, no results are shown. This protects the proprietary interests of the companies who have supplied data in support of this industry report.

All data is self-reported by the companies, and while it is cross-checked for consistency, the companies are responsible for accurate reporting of product specifications, pricing information, sales volumes and locations of sales. Companies may also choose to report sales volumes but not revenues. If not all information needed to calculate the impact of a product is provided, the product is not included in the impact data calculation.

As in the previous four collection rounds, this data collection and reporting process was overseen by Dutch management consultancy firm Berenschot, while Lighting Global and GOGLA provided specialized industry knowledge within the research team. The online questionnaire and results platform were programmed by Getting Social, a Dutch web development company.

Data Processing

Data Checks

The research team checked the submitted data for consistency and logic with respect to previously collected data by Berenschot or IFC. Based on these checks, some small adjustments have been made concerning product performance specifications and the 'quality verified' status of products where necessary.

Missing Data

Where meaningful data was missing, we tried to address this by consulting our existing data sets, or by contacting respondents. Unfortunately, even after these actions, some data is still missing.

Market Share Represented

This report covers data provided by GOGLA members and companies that sell Lighting Global quality verified products. It does not include products that are sold by other companies. Moreover, data is currently collected only about solar lantern and solar home system kit sales; this means that products that are sold as components (e.g. individual panels or batteries) or as top-up products (e.g. TVs, fans or radios that are sold as single appliances) are not included in the numbers reported here. An updated, detailed analysis of the total market will be available in the forthcoming Off-Grid Solar Market Trends Report in early 2018. This will enable an updated estimation of the market share held by GOGLA members and companies selling Lighting Global quality verified products.

Country Categorization

Sales data has been provided in this report for all countries where at least three companies reported sales. In this reporting round, this amounts to 50 countries. The regional groupings in this report follow the World Bank country and lending groups [1]. For sub-regional groupings in Sub-Saharan Africa, the United Nations categorization of geographical sub-regions is used[2].

Currency

All cash sales revenues provided in this report are denoted in US dollars ($).

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Product Categories

Data has been grouped into product categories to segment sales in a way that provides the most value and information to the market. From a market perspective, the most meaningful segmentation is based on functionality and capacity. Pico-PV product categories (for products with less than 11 Wp solar module capacity) are determined by the services that a product provides. For ease of reference, each of these categories is represented by an indicative wattage range of PV module output that is typical for the vast majority of products providing the respective services.

Panel wattage (in watt-peak) was used to categorize products with solar module capacities of 11 Wp and above. The definitions of these categories are presented in the table below.

The level of energy access enabled through use of these pico-PV products and solar home system kits is indicated below using the terminology of the multi-tier framework for measuring energy access. This was developed by the World Bank's Energy Sector Management Assistance Program (ESMAP)[3] under the Sustainable Energy for All initiative.

Table 2: Product Categories

Overall category	Solar module capacity , Watt Peak (Wp)	Categorization by services provided by product	Corresponding level of MTF energy access enabled by use of product
Pico-PV <10.999Wp	0 – 1.499 Wp (indicative)	Single Light only	Enables partial Tier 1 Electricity Access to a person / household
	1.5 – 2.999 Wp (indicative)	Single Light & Mobile Charging	Enables full Tier 1 Electricity Access to at least one person and contribute to a household
	3 – 10.999 Wp (indicative)	Multiple Light & Mobile Charging	Enables full Tier 1 Electricity Access to at least one person, up to a household
SHS >11Wp	11 – 20.999 Wp	SHS, Entry Level (3-4 lights, phone charging, powering radio, fan etc)	Enables full Tier 1 Electricity Access to a household
	21 – 49.999 Wp	SHS, Basic capacity (as above plus power for TV, additional lights, appliances & extended capacity)	Enables full Tier 2 Electricity Access to a household when coupled with high-efficiency appliances
	50 – 99.999 Wp	SHS, Medium capacity (as above but with extended capacities)	Enables full Tier 2 Electricity Access to a household even using conventional appliances
	100Wp +	SHS, Higher capacity (as above but with extended capacities	

NOTE

Cells highlighted in light blue indicate the means of determining the product category: products with solar module capacity of less than 11 Wp are categorized based on services provided, while products with capacity of 11 Wp and over are categorized based on wattage of the solar module provided.

[1] For more information, please visit: https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups.
[2] For more information, please visit: http://unstats.un.org/unsd/methods/m49/m49regin.htm#africa.
[3] For more information, please visit: https://www.esmap.org/node/55526

Global Highlights

Key figures

3.52 million
products sold globally in H1 2017

1.77 million
products sold in Sub-Saharan Africa

$95.57 million
cash sales revenues in H1 2017

30.72 million
cumulative product sales since July 2010

120.3 million
people with improved energy access, cumulatively

83.7 million
people with improved energy access, currently

39.7 million
people with (SE4All) Tier 1 energy needs met, currently

1.8 million
people with (SE4All) Tier 2 energy needs met, currently

1.9 million
livelihoods supported, currently

$192
savings on energy related spending, per household, total over product-lifetime

$5.2 billion
savings on energy-related spending, total over product-lifetime

188%
increase in available hours of light, per household

171%
increase in available light output, per household

18.6 million
status quo lighting sources no longer in use

28.6 million tons
of greenhouse gas emissions avoided

NOTE
For more details on the impact metrics presented above, please refer to the Impact Metrics section of this report. Further information on the multi-tier framework and the measurement of off-grid electrification can be found in Beyond Connections: Energy Access Redefined[4]

[4] https://www.esmap.org/node/55526

Global and Regional Sales Volumes and Revenues

At the global level, about 3.52 million products have been sold in the first half of 2017. Sub-Saharan Africa and South Asia account for approximately 1.77 million (50%) and 1.16 million (33%) respectively. The Middle East and North Africa region was the third largest regional market with 293,044 products reported as sold (8.5%). The combined sales of all other regions amount to 293,022 products (8.5%).

The combined cash sales revenues in H1 2017 amount to about $95.57 million globally. As expected, most of the revenues in H1 2017 were generated in Sub-Saharan Africa ($40.67 million) and South Asia ($30.20 million). Another 20% ($19.29 million) of all cash sales revenues come from the Middle East & North Africa region.

World:
3.52 million
$95.57 million
(cash sales revenues)

Latin America & Caribbean:
56,460
$1.39 million

East Asia & Pacific
121,175
$2.13 million

Middle East & North Africa:
293,044
$19.29 million

Sub-Saharan Africa:
1.77 million
$40.67 million

South Asia:
1.16 million
$30.20 million

East Africa:
1,218,853
$29.14 million

North America:
10,273
$0.33 million

West Africa
431,829
$9.81 million

Europe & Central Asia:
105,114
$1.56 million

Table 3: Top 10 Country Markets by Volume of Products Sold

Country names	Volume of Products Sold	Cash Sales Revenues of Products Sold
India	1,087,282	$26,660,327
Kenya	413,544	$6,377,033
Uganda	240,151	$8,275,353
Ethiopia	210,913	$7,643,643
Rwanda	190,781	$4,053,835
Burkina Faso	123,945	$3,356,392
Nigeria	107,999	$1,702,919
Tanzania	69,143	$342,369
Senegal	67,503	$499,390
Philippines	55,197	$1,028,589

NOTE
1. Only countries where more than three companies have provided data are included in this list.

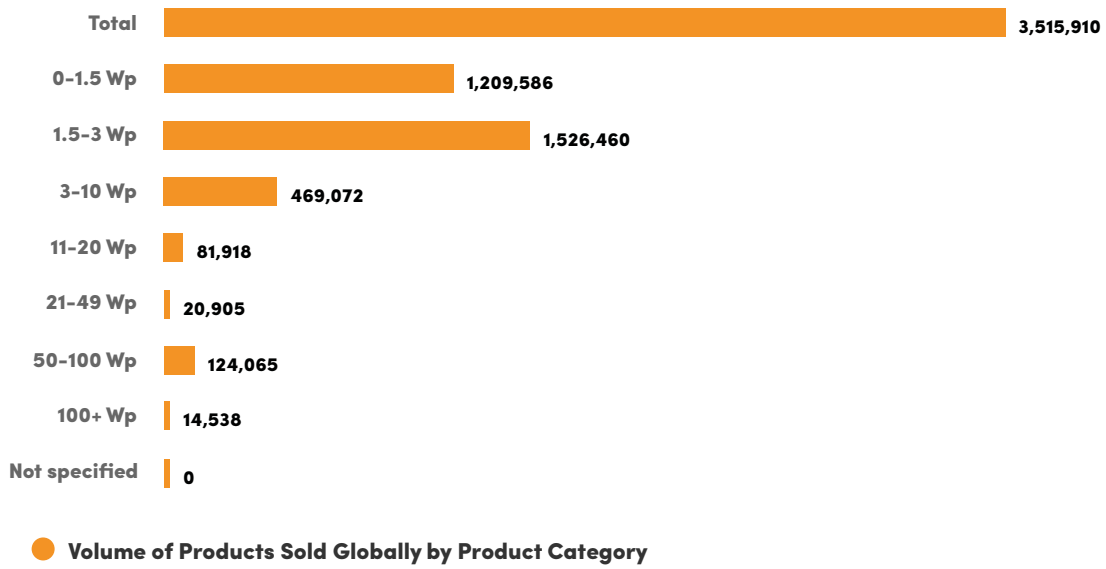
Highlights by Product Category

As shown in Figure 1, about a third of total reported products sold worldwide (nearly 1.21 million) were single light products without mobile charging. These are typically powered by a panel in the range of 0–1.5 Wp. However, revenues from cash sales of products in the 0–1.5 Wp range represent only 13% of the total cash sales revenues, or just over $12.36 million (Figure 2). This is due to the lower retail price of such products.

The next category, products with a single light and mobile phone charging capability (typically powered by a panel in the 1.5–3 Wp range), account for 43% of all reported sales, or 1.53 million units. These products generate the lion's share of overall revenue at $64.76 million, almost 68% of the global total reported cash sales revenues.

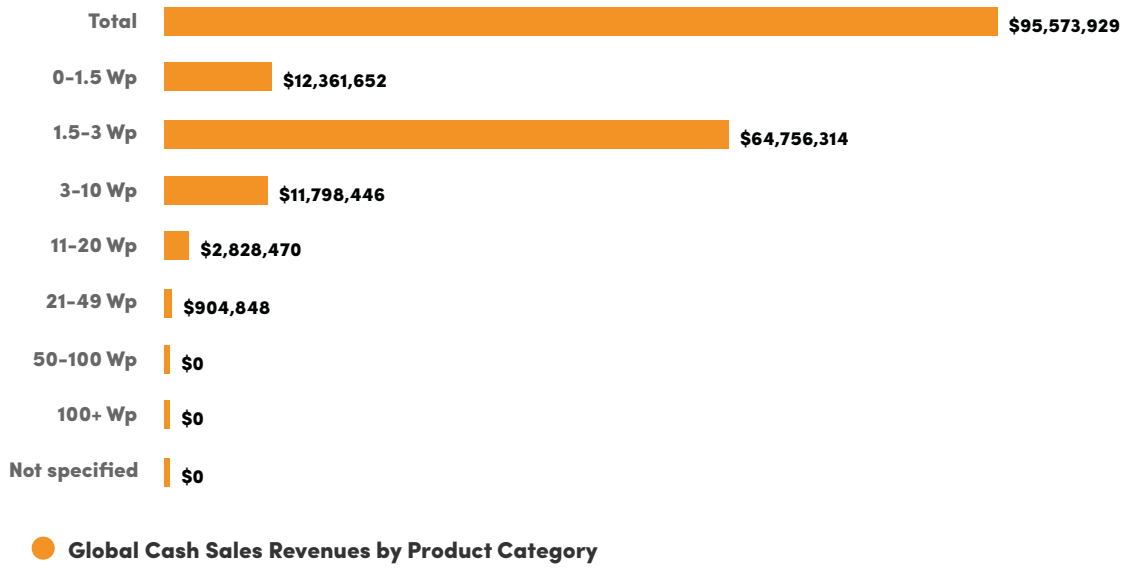
As observed in previous reporting cycles, the number of products sold in the larger, higher-cost product categories is lower than in the smaller product categories. 469,072 products providing multiple lights and mobile charging (indicative wattage 3–10.99 Wp) were sold in H1 2017 (over 13% of total global sales by volume) which generated 12% of total global cash sales revenues (about $11.8 million). Going further up in size, products in the 11–100+Wp ranges constitute about 7% of sales volumes. The relative importance of these categories has increased slightly; in H2 2016, they constituted 5% of total sales volumes. However, the revenues generated from these categories cannot be reliably stated, as data on PAYGO revenues are not available, and a large share of products sold in these categories are sold via PAYGO business models.

Figure 1: Volume of Products Sold Globally by Product Category



NOTE
1. Data is not shown for categories for which insufficient or no data points were provided.

Figure 2: Global Cash Sales Revenues by Product Category



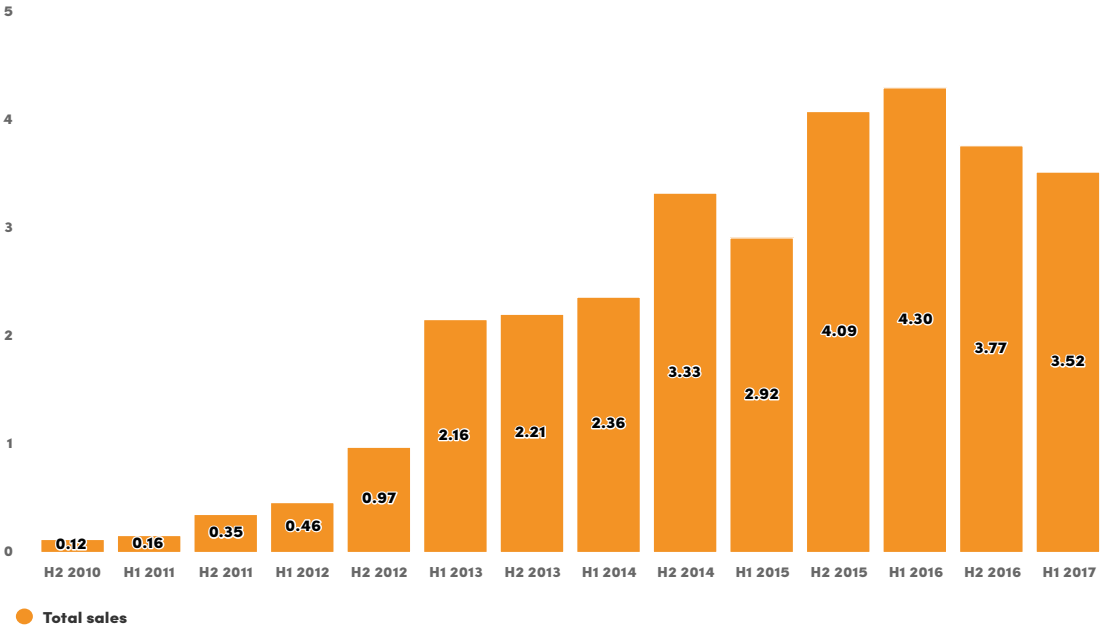
NOTE
1. Data is not shown for categories for which insufficient or no data points were provided.
2. Only cash sales revenues are presented – this excludes PAYGO revenues.
3. Dividing the presented sales revenues by the volume of products sold does not equate to the average product retail price.

Historical Product Sales

The following graphs compare the current sales count with previous counts, indicating a decrease in sales recorded in this period compared to H2 2016. Globally, reported sales volumes decreased by 7% between H2 2016 (3.77 million units) and H1 2017 (3.52 million units).

When looking at cumulative data since sales reporting began in July 2010 (see Figure 3), 30.72 million lighting products have been sold by IFC Lighting Global Associates and GOGLA members since H2 2010, when Lighting Global began collecting data.

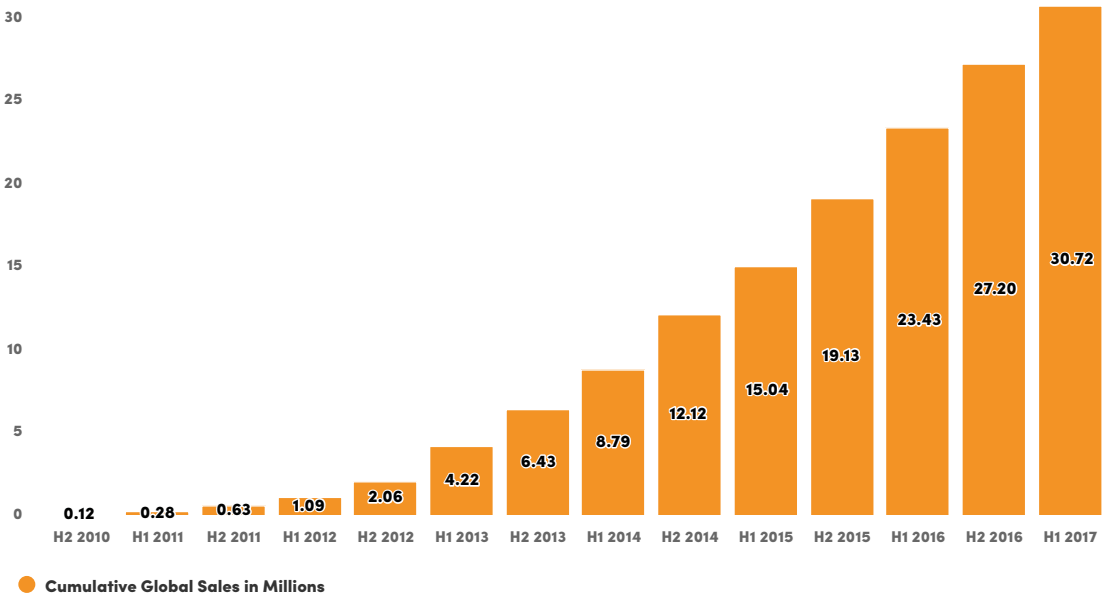
Figure 3: Volume of Products Sold in Millions (Historical) - (SOURCE - LIGHTING GLOBAL, GOGLA, BERENSCHOT)



NOTE

1. The data presented in this chart has been compiled from various sources: The data from H2 2010 to H1 2014 originates from Lighting Global's own data collection, while the data from H2 2014 to H1 2017 comes from the joint Lighting Global / GOGLA / Berenschot data collection process. The methodology and the questions used have evolved over time and the number of respondents has changed with each round of data collection. Therefore, the data presented above does not constitute the basis for an in-depth statistically correct analysis. However, it does indicate general market trends and reflects the evolution of the market as it encompasses data from most of the industry leaders. As the data collection process is improved with every round and with companies submitting their data on a consistent basis, we will be able to paint an ever more accurate picture of the market.
2. Based on previous analysis by Bloomberg New Energy Finance for the Off-Grid Solar Market Trends Report 2016, we estimate that the data reported here represents about 50% of all sales of off-grid solar products in the markets relevant to this report, when also considering non-branded generic products on offer.

Figure 4: Cumulative Global Sales: Volume of Products Sold



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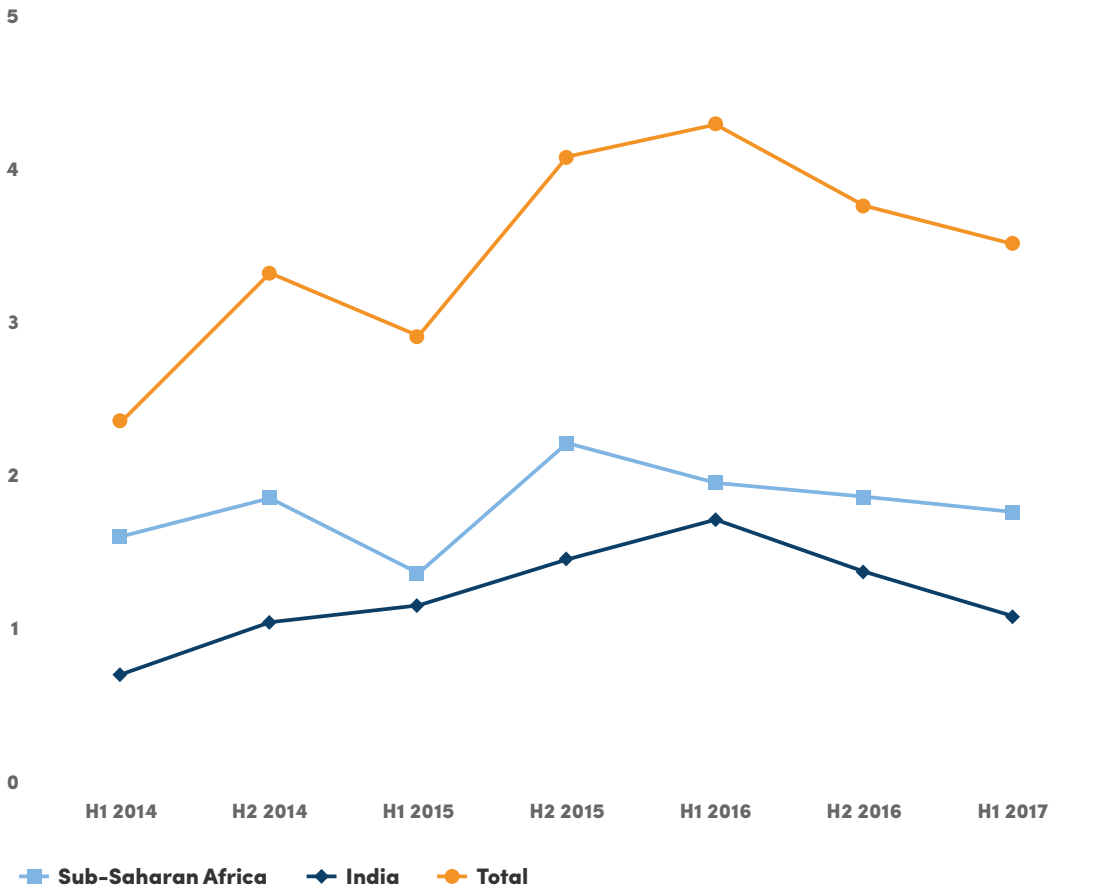
2. Based on previous analysis by Bloomberg New Energy Finance for the Off-Grid Solar Market Trends Report 2016, we estimate that the data reported here represents about 50% of all sales of off-grid solar products in the markets relevant to this report, when also considering non-branded generic products on offer.

Regional Sales

In Sub-Saharan Africa, 1.77 million units were sold and reported cash sales revenues amounted to $40.67 million. The number of units sold in South Asia was 1.16 million and reported cash sales revenues were $30.2 million. Reported sales remain concentrated in East Africa and India, though the relative share of East Africa has decreased since H2 2016. East Africa now represents about 69% of total sales volumes in Sub-Saharan Africa, with 1.22 million products sold, and 72% of revenues – with $29.14 million cash sales revenues reported. The vast majority of the sales reported in South Asia in this report are concentrated in India, which represents 94% of sales volumes and cash sales revenues, with 1.09 million units sold, and $26.66 million in cash sales revenues.

Figure 5: Regional Sales: Volume of Products Sold, in Millions (Historical)



NOTE

1. The data presented in this chart has been compiled from various sources: The data from H2 2010 to H1 2014 originates from Lighting Global's own data collection, while the data from H2 2014 to H1 2017 comes from the joint Lighting Global / GOGLA / Berenschot data collection process. The methodology and the questions used have evolved over time and the number of respondents has changed with each round of data collection. Therefore, the data presented above does not constitute the basis for an in-depth statistically correct analysis. However, it does indicate general market trends and reflects the evolution of the market as it encompasses data from most of the industry leaders. As the data collection process is improved with every round and with companies submitting their data on a consistent basis, we will be able to paint an ever more accurate picture of the market.

Table 4: Regional Sales: Volume of Products Sold and Cash Sales Revenues (Historical)

	2016 H1	2016 H2	2017 H1
Region	Total Market	Total Market	Total Market
World	4,298,655	3,770,855	3,515,910
Sub-Saharan Africa	1,956,810	1,870,821	1,768,196
West Africa	386,458	330,561	431,829
East Africa	1,388,531	1,487,758	1,218,853
Central Africa	73,191	47,688	80,390
Southern Africa	8,108	4,094	37,119
South Asia	1,758,239	1,413,805	1,161,648
East Asia & Pacific	112,268	96,456	121,175
Latin America & Caribbean	27,643	50,372	56,460
Middle East & North Africa	337,791	240,738	293,044
Europe & Central Asia	-	84,622	105,114
North America	-	14,041	10,273

	2016 H1	2016 H2	2017 H1
Region	Total Market	Total Market	Total Market
World	$138,962,441	$113,926,299	$95,573,929
Sub-Saharan Africa	$55,990,030	$53,256,791	$40,673,040
West Africa	$8,225,194	$8,055,171	$9,811,875
East Africa	$43,271,927	$44,066,849	$29,135,259
Central Africa	$903,548	$771,018	$1,007,080
Southern Africa	$475,065	$314,504	$718,675
South Asia	$48,202,809	$35,517,189	$30,198,359
East Asia & Pacific	$9,501,250	$4,332,820	$2,127,894
Latin America & Caribbean	$1,339,653	$1,499,418	$1,393,944
Middle East & North Africa	$20,328,584	$16,811,235	$19,292,976
Europe & Central Asia	-	$2,252,312	$1,556,993
North America	-	$256,532	$330,720

NOTE
1. Data is not shown for countries for which insufficient or no data points were provided.
2. The methodology and the questions used have evolved over time and the number of respondents has changed with each round of data collection. Therefore, the data presented above does not constitute the basis for an in-depth statistically correct analysis. However, it does indicate general market trends and reflects the evolution of the market as it encompasses data from most of the industry leaders.

Market Insights

Global Changes

The total volume of product sales reported worldwide decreased by 7% from 3.77 million to 3.52 million units from H2 2016 to H1 2017. Within these totals, the main observation is that sales results for smaller solar products (solar lanterns and multi-light solar products with wattage of 0-10.99Wp) declined across all categories in this segment; while sales for solar home systems (11-100+ W) grew, though not across all categories. Meanwhile, aggregate reported revenues generated through cash sales decreased by 16% in that same period, from approximately $113.93 million to $95.57 million. This does not include revenues from the growing segment of larger kits delivered through PAYG models.

At the global level, reported sales of products providing a single light only (indicative wattage 0-1.49 Wp) have decreased by 5% from H2 2016 to H1 2017; although this category's share of overall volumes sold remained the same in H1 2017 (34%) compared to H2 2016 (33%). Sub-Saharan Africa sales make up nearly half of all sales in this category, with East Africa making up 30% of this category's sales. South Asia (almost wholly dominated by India sales) contributes over 38% of the global total sales volumes in this category.

Reported sales of products providing a single light and mobile charging (indicative wattage 1.5-2.99 Wp) have decreased by about 15% from H2 2016 to H1 2017. Their share of total sales also decreased slightly, from nearly half of all products sold in H2 2016 to now representing 43% of the volume of all products sold. 40% of all single light and mobile charging products were sold in South Asia (again dominated by India), with 37% of the total in Sub-Saharan Africa. Almost 25% of global sales of this product category were in East Africa and 8% in West Africa.

Sales of small multi-light solar home systems (indicative wattage 3-10.99 Wp) fell marginally as well in H1 2017; the total sold was 4% less than in H2 2016. Over 88% of sales in this product category were in Sub-Saharan Africa, largely dominated by East Africa with 70% of the global total.

The global reported unit sales volume of solar home systems in the four categories ranging from 11-100+ Wp increased by 40% to over 241,000 sales, driven by growth in the 11-20 Wp and 50-100 Wp categories. 78% percent of sales in the 11-100+ Wp categories were reported in Sub-Saharan Africa.

Sub-Saharan African Markets

Between H2 2016 and H1 2017, reported unit sales volumes decreased by 5% in Sub-Saharan Africa, and reported cash sales revenues decreased by 24%. Within Sub-Saharan Africa, the trajectories were varied; the larger East African market reported an overall decrease in sales volumes of 18%, while West African markets saw a reported increase of 31% in sales volumes.
In the previous round (H2 2016), sales in the largest single African country market Kenya had increased by 18% since H1 2016. In H1 2017, however, while Kenya continues to be by far the largest market in Sub-Saharan Africa, reported sales volumes had decreased by 38% from the H2 2016 level. In other major East African markets, reported sales were varied. In both Ethiopia and Tanzania, reported sales dropped, most significantly in Tanzania, where sales fell from 185,073 in H2 2016 to 69,143 in H1 2017 (-63%). However, in both Uganda and Rwanda, significant increases in sales were reported, with those in Rwanda growing most dramatically from 89,161 in H2 2016 to 190,781 in H1 2017 (+114%).

Significant increases are also seen for the second consecutive round in reported sales volumes in the West African markets of Burkina Faso (+257%, increasing to nearly 124,000 products sold) and Senegal (+100%, increasing to about 67,500 products sold). These increases helped to achieve an overall increase of 31% in reported sales volumes in West Africa from H2 2016 to H1 2017, despite decreases in sales in Nigeria (-28%), Ghana (-33%) and Cameroon (-32%).

South Asian Markets

Reported sales volumes decreased by 18%, and cash sales revenues by 15%, in South Asia from H2 2016 to H1 2017. India accounts for nearly all reported sales in this market, representing nearly 94% of reported sales volumes (1.09 million units) and 88% of reported cash sales revenues ($26.66 million). 40% of all single light and mobile charging products (1.5-3Wp) were sold in South Asia, with India accounting for nearly all of these.

Impact Metrics

When translating sales into impact data, currently, more than 83.7 million people are actively using off-grid solar lighting and electrification products. Despite a slight slowdown in sales in H1 2017 – which has led to a slightly slower overall growth rate in impact – we observe an increase of people reaching Tier 1 and Tier 2 Energy Access as defined by the SE4All Global Tracking Framework; with the number of people with Tier 1 access now reaching nearly 40 million. More people reaching Tier 1 and Tier 2 energy access indicates that they are receiving higher levels of energy service. This rise is linked to increasing sales of solar home systems since 2015.

Over and above providing energy access, the sector also enables households to save money on energy related spending. On a global aggregate level, savings created over the lifetime of the products sold to date are now estimated to be over $5 billion.

In H1 2017, the light hours available to a household, as well as the light output from solar products (when compared to status quo lighting), also increased – likely to be a result of the continued improvements to product battery life and LED components. Products are providing brighter light to households, and allowing families to benefit from clean lighting for a longer period of time.

The reduction in greenhouse gases, including black carbon, as a result of switching from traditional lighting products to solar also continues to rise, with 28.6 million tons of CO2e now avoided. This is equivalent to taking eight coal fired power plants off-line for a year[5].

Please refer to Impact section for more detailed impact data and analysis.

[5] Calculation done using the US Environmental Protection Agency's Greenhouse Gas Equivalencies Calculator: www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

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Market Dynamics

The reported sales volumes and revenues presented in this report are influenced by a range of market drivers, including:

- Policy change affecting duties, taxes, and the regulation of the off-grid sector;
- Action by development finance institutions, donor agencies and government market interventions;
- Technology development;
- Availability of finance, in particular working capital and local currency financing;
- Macro-economic factors, including general economic conditions, currency fluctuations, and other factors affecting the purchasing power of customers;
- Seasonal trends and other environmental factors;
- Competitive dynamics, especially in relation to competition from generic, counterfeit and look-a-like products.

For the H1 2017 period, some significant points of influence included:

Demonetization: The demonetization that came into effect in India in November 2016 continued to negatively impact sales in the largely cash-based Indian economy, especially in the first quarter of the year. Microfinance institutions, which are major distributors of off-grid solar products in India, had to focus efforts on collecting repayments from existing customers, reducing the resources available for new customer acquisition. This is likely to have contributed to reduced sales in India.

Drought: The continued drought in East Africa had varying levels of impact across the region. In some areas, including Tanzania, the situation did show signs of improvement from January to June 2017. However, major food security emergencies were still occurring in many areas, particularly in the Horn of Africa impacting Ethiopia and Kenya. Overall, the drought continues to impact the livelihoods and purchasing power of at least some rural customer segments.

Increased government and development finance institution engagement: Off-grid solar has gained increased interest from governments and development finance institutions as a way to rapidly electrify previously unreached households. This interest can translate into growth, as has happened in Burkina Faso and Mali, where donor activity and results-based financing have helped to propel substantial growth. However, government activity can also be harmful when it results in uncertainty for existing market players and impedes new market entrants, as happened in some cases in Ethiopia, Bangladesh, and Myanmar.

Commodification of the market for entry-level products: In the portable solar lantern categories, generic, copycat and counterfeit products have been causing intensified competition for several years. However, companies also report increasing brand awareness among customers; this may contribute to the resilience of the smallest product category, where sales remained level from H2 2016 to H1 2017.

A view from the companies: A buoyant market despite rough waters

In this data collection round, 65 companies participated – a 15% increase from H2 2016 and over three times as many as participated in the first joint Lighting Global / GOGLA data collection round in H2 2014. Apart from providing data, companies also provided invaluable qualitative insights on how they view the markets they operate in, and how they view their own growth trajectories. Despite the decrease in unit sales volumes, companies reported optimistic views for the sector. There is an ongoing overall market shift in major pico-PV players expanding into the SHS market, often using PAYGO business models. At the same time, companies are expanding into new markets, including several West African markets, with innovation also occurring in different government partnerships that enable this expansion. Growth in scale and changes in business models mean that companies have new operational challenges, particularly in the areas of logistics, human resources, and data management. In some more mature markets, specialized B2B service providers are emerging to meet these needs and facilitate growth. Moreover, there are several large-scale debt facilities in the making that are due to come online in 2018 and beyond, which should ease one of the key bottlenecks to further growth, which remains the lack of access to affordable and appropriate finance.

Sales Volumes and Cash Sales Revenues by Country

What does this report cover?

This report covers data provided by GOGLA members and companies that sell Lighting Global quality verified products. It does not include products that are sold by other companies. Moreover, data is currently collected only about solar lantern and solar home system kit sales; this means that products that are sold as components (e.g. individual panels or batteries) or as top-up products (e.g. TVs, fans or radios that are sold as single appliances) are not included in the numbers reported here. An updated, detailed analysis of the total market will be available in the forthcoming Off-Grid Solar Market Trends Report in early 2018.

The majority of sales in Sub-Saharan Africa (SSA) have been recorded in East African countries, as they were in previous years. However, the picture is beginning to change. In H2, 2016 Kenya, Ethiopia, Uganda and Tanzania represented 70% of all sales in the region; in H1 2017 that figure is under 50%, and even by including Rwanda – another East African market that has continued to grow – the number only reaches 64%. Other SSA countries saw strong sales in H1 2017, including Burkina Faso (123,945 sales) and Senegal (67,503 sales), while Nigeria continues to see solid figures (107,999 sales). The cash sales revenues (Figure 7) also indicate increasing market diversity. East Africa continues to dominate, with Uganda and Kenya's cash sales revenues at $6.38 million and $8.28 million respectively – but newer markets are beginning to make their mark. Mali's cash sale revenues, for example, were over $1 million for the first half of 2017.

In South Asia, most sales were reported in India, with over a million products sold, representing 94% of reported sales in the region. Reported cash sales revenues in India amounted to $26.7 million in H1 2017, and made up 88% of South Asian cash sales revenues. Bangladesh (21,707 sales) and Pakistan (38,433 sales) represented other significant markets. It should be noted, however, that the data we are able to report on Bangladesh is limited to data reported by GOGLA members and companies selling Lighting Global verified products, and these sales do not provide a complete picture of the Bangladeshi off-grid market.

For the Middle East and North Africa (MENA) region, sales reached 293,044, while for East Asia & Pacific (EAP), reported sales were 121,175 with the highest sales volumes in the Philippines at 55,197 (46% of EAP sales).

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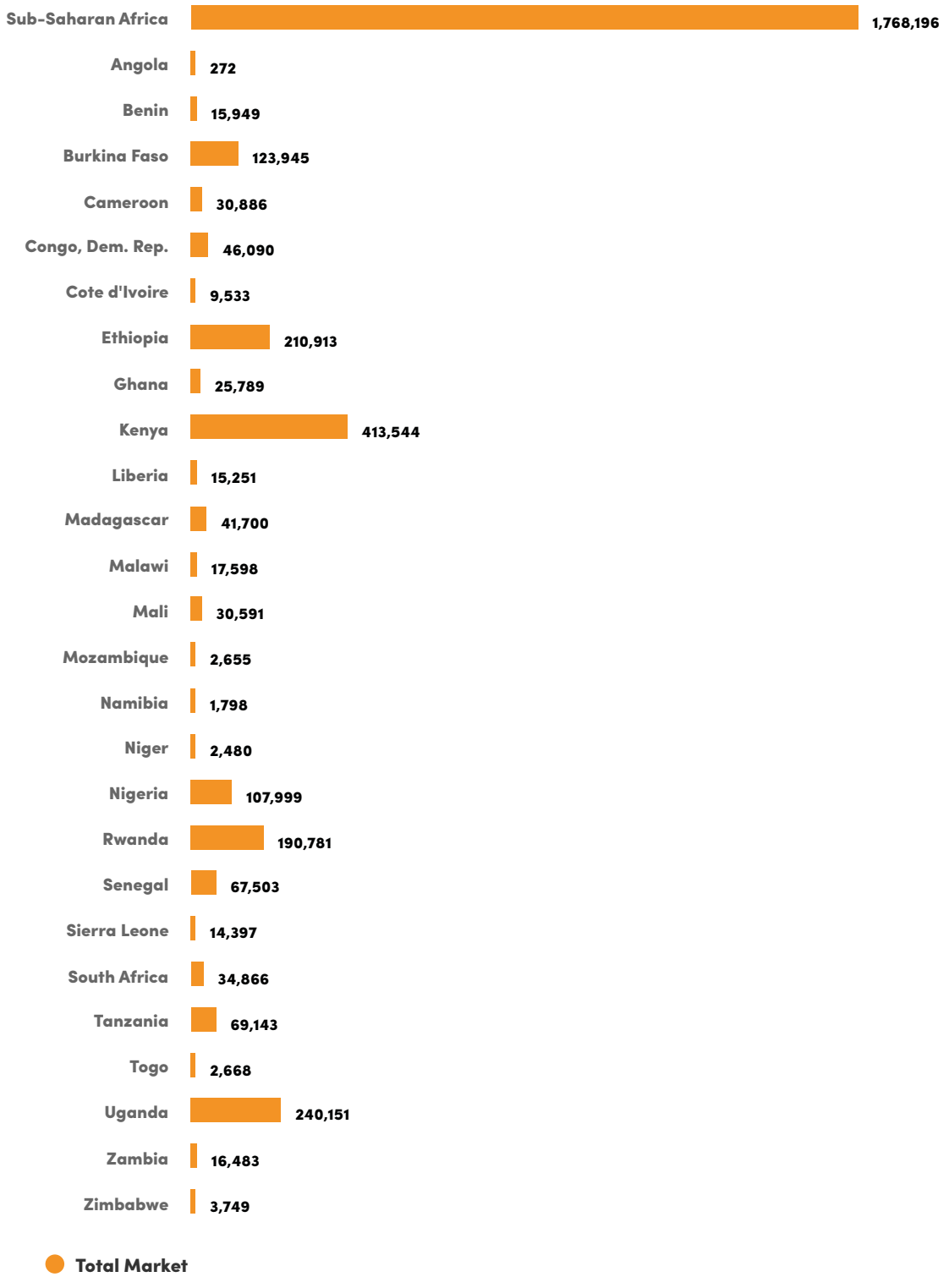
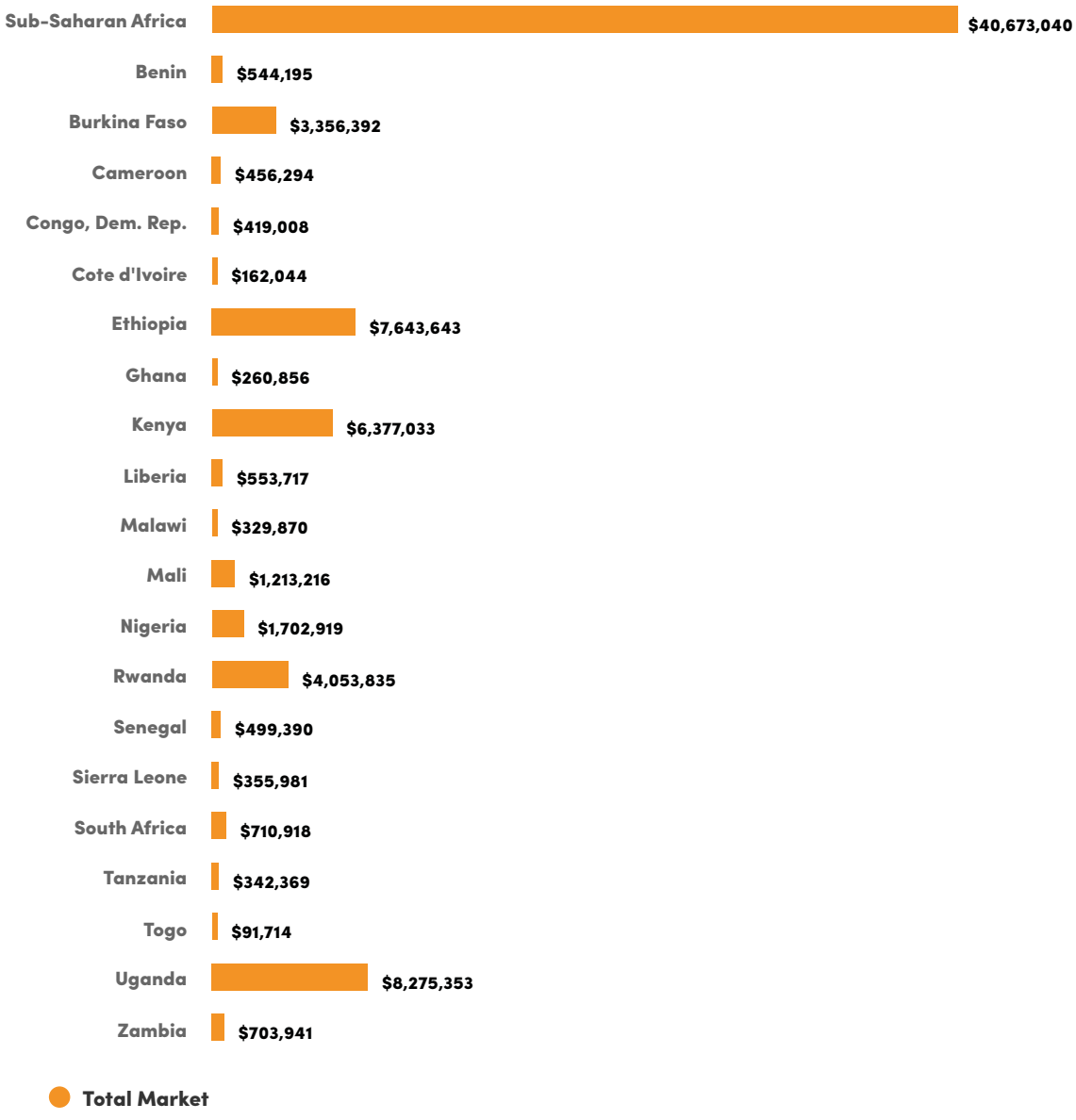
Figure 6: Sales Volumes by Country – Sub-Saharan Africa



NOTES
1. Data is not shown for countries for which insufficient or no data points were provided.

Figure 7: Cash Sales Revenues by Country – Sub-Saharan Africa



NOTE
1. Data is not shown for countries for which insufficient or no data points were provided.
2. Only cash sales revenues are presented – this excludes PAYGO revenues.
3 Dividing the presented sales revenues by the volume of products sold does not equate to the average product retail price.

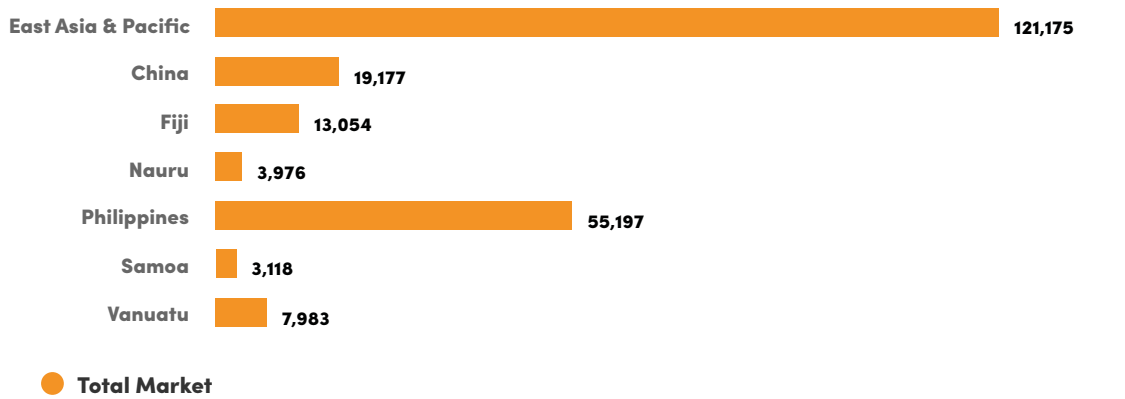
Figure 8: Sales Volumes by Country – South Asia

NOTE
1. Data is not shown for countries for which insufficient or no data points were provided.

Figure 9: Cash Sales Revenues by Country – South Asia

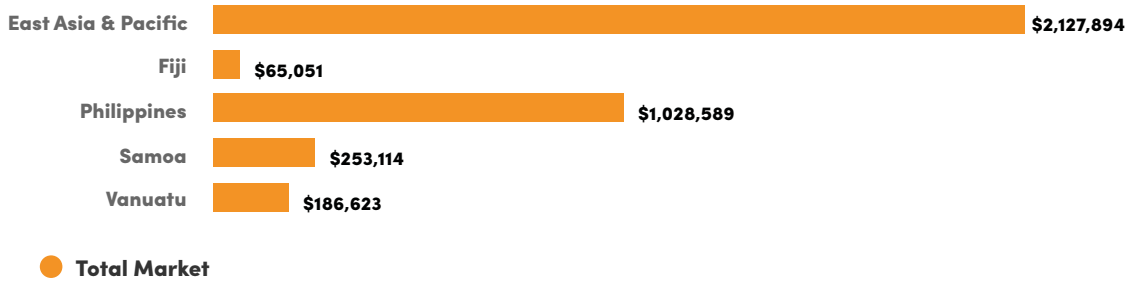
NOTE
1. Data is not shown for countries for which insufficient or no data points were provided.
2. Only cash sales revenues are presented – this excludes PAYGO revenues.
3. Dividing the presented sales revenues by the volume of products sold does not equate to the average product retail price.

Figure 10: Sales Volumes by Country – East Asia & Pacific



NOTE
1. Data is not shown for countries for which insufficient or no data points were provided.

Figure 11: Cash Sales Revenues by Country – East Asia & Pacific



NOTE
1. Data is not shown for countries for which insufficient or no data points were provided.
2. Only cash sales revenues are presented – this excludes PAYGO revenues.
3. Dividing the presented sales revenues by the volume of products sold does not equate to the average product retail price.

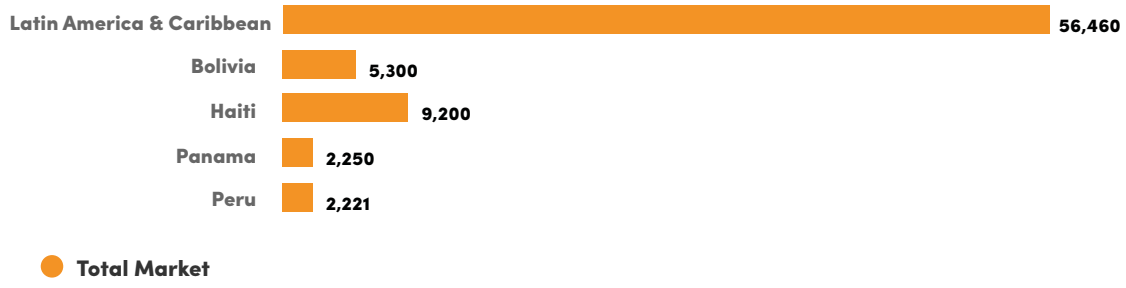
Figure 12: Sales Volumes by Country – Middle East & North Africa

NOTE
1. Data is not shown for countries for which insufficient or no data points were provided.

Figure 13: Cash Sales Revenues by Country – Middle East & North Africa

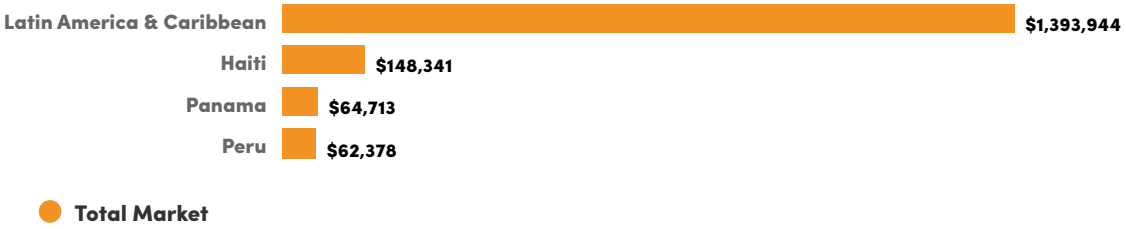
NOTE
1. Data is not shown for countries for which insufficient or no data points were provided.
2. Only cash sales revenues are presented – this excludes PAYGO revenues.
3. Dividing the presented sales revenues by the volume of products sold does not equate to the average product retail price.

Figure 14: Sales Volumes by Country – Latin America



NOTE
1. Data is not shown for countries for which insufficient or no data points were provided.

Figure 15: Cash Sales Revenues by Country – Latin America



NOTE
1. Data is not shown for countries for which insufficient or no data points were provided.
2. Only cash sales revenues are presented – this excludes PAYGO revenues.
3. Dividing the presented sales revenues by the volume of products sold does not equate to the average product retail price.

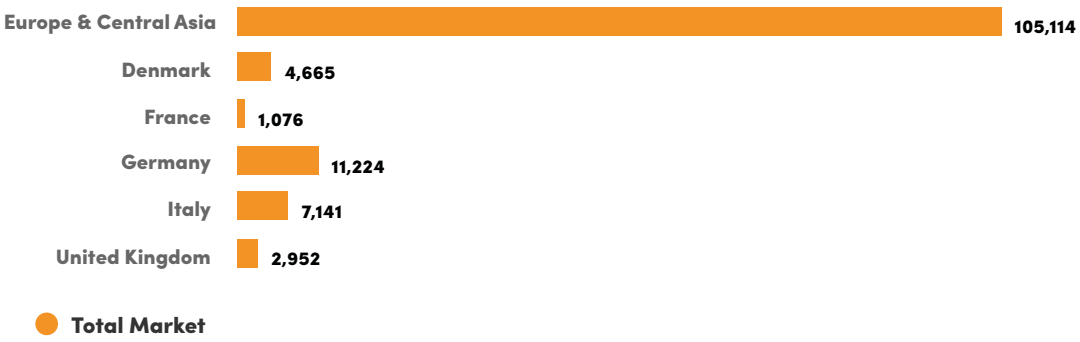
Figure 16: Sales Volumes by Country – North America

NOTE
1. Data is not shown for countries for which insufficient or no data points were provided.

Figure 17: Cash Sales Revenues by Country – North America

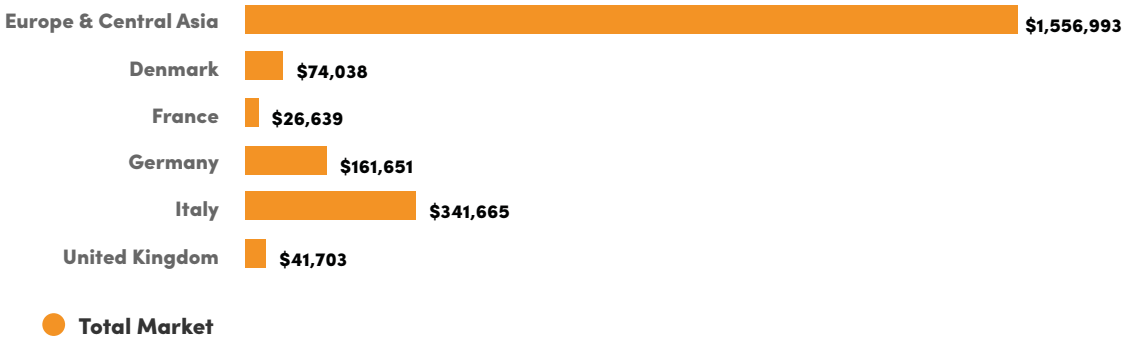
NOTE
1. Data is not shown for countries for which insufficient or no data points were provided.
2. Only cash sales revenues are presented – this excludes PAYGO revenues.
3. Dividing the presented sales revenues by the volume of products sold does not equate to the average product retail price.

Figure 18: Sales Volumes by Country – Europe & Central Asia



NOTE
1. Data is not shown for countries for which insufficient or no data points were provided.

Figure 19: Cash Sales Revenues by Country – Europe & Central Asia



NOTE
1. Data is not shown for countries for which insufficient or no data points were provided.
2. Only cash sales revenues are presented – this excludes PAYGO revenues.
3. Dividing the presented sales revenues by the volume of products sold does not equate to the average product retail price.

Sales Volumes and Revenues by Product Category

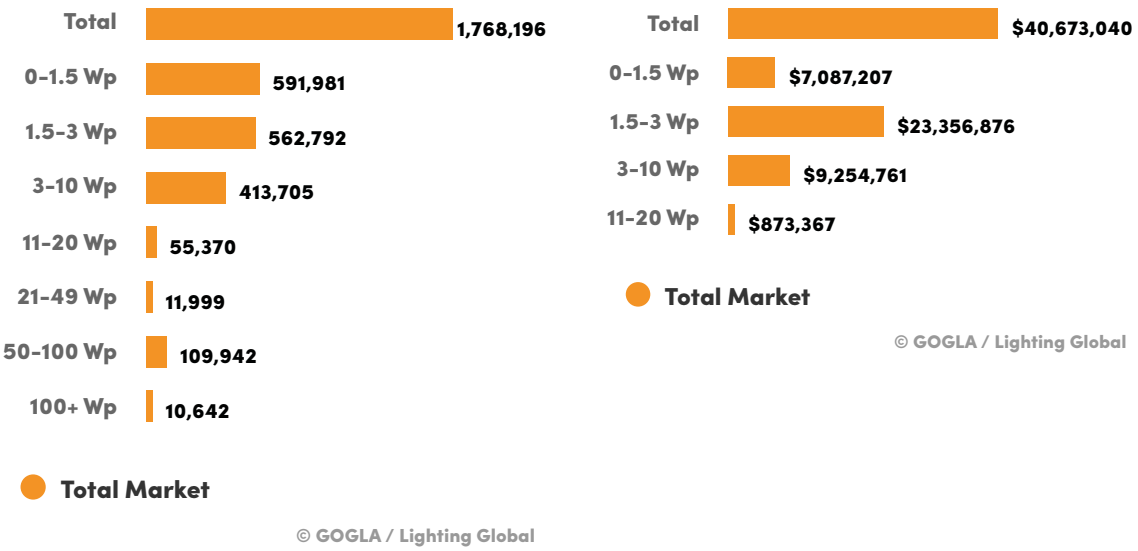
In Sub-Saharan Africa, entry-level products providing a single light without mobile charging represent about one third of products sold with 591,981 units out of 1,768,196 total products sold. Products providing a single light and mobile phone charging make up almost another third at 562,792 (32%), while products with multiple lights and mobile phone charging (with an indicative wattage of 3-10.99 Wp) represent 23% (413,705). In addition, 187,953 products (10.5%) were sold in the 21 Wp to 100+ Wp categories in the first half of 2017, more than double the 5% sold in this category in H2 2016. Still, over 57% ($ 23.4 million) of all reported cash sales revenues in the region stem from the products providing a single light and mobile phone charging, making it the single largest category in cash sales revenues in Sub-Saharan Africa.

In South Asia, 615,735 products providing a single light and mobile phone charging were sold, representing over half of all sales in the region (53%). The reported cash sales revenues from this product accounted for nearly $21 million, around 70% of cash sales revenues in South Asia.

86% of products sold in the East Asia & Pacific region are either a single light or a single light with mobile phone charging, yet these products represent only 69% of reported cash sales revenues with cash sales revenues from those products in the 3-10Wp range representing another 22%.

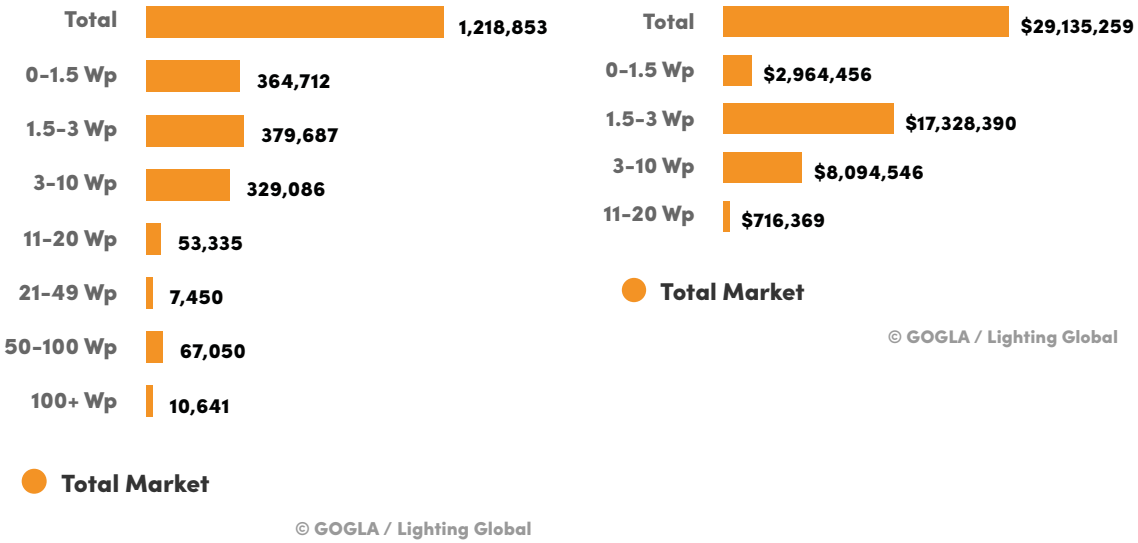
In the MENA region, products providing a single light and mobile phone charging represent 96% of products sold with 281,690 units. This category accounts for 94% of all reported cash sales revenues in the region ($18.9 million).

Figure 20a: Sales Volumes & Cash Sales Revenues by Product Category – Sub-Saharan Africa



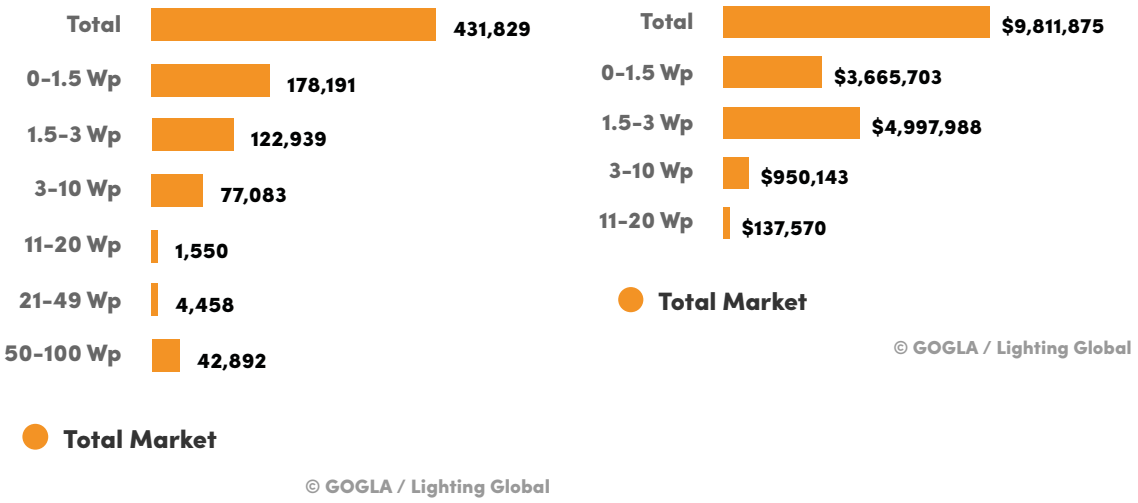
NOTE
1. Data is not shown in categories for which insufficient or no data points were provided.
2. Only cash sales revenues are presented – this excludes PAYGO revenues.
3. Dividing the presented sales revenues by the volume of products sold does not equate to the average product retail price.

Figure 20b: Sales Volumes & Cash Sales Revenues by Product Category – East Africa



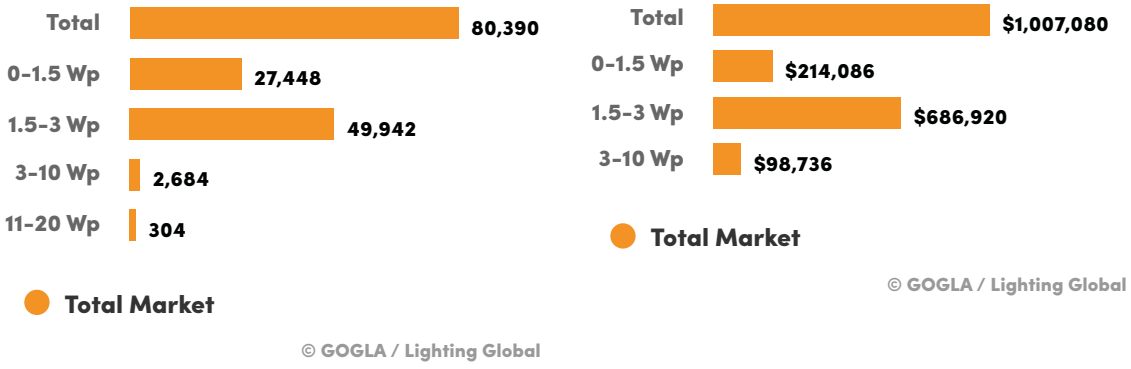
NOTE
1. Data is not shown in categories for which insufficient or no data points were provided.
2. Only cash sales revenues are presented – this excludes PAYGO revenues.
3. Dividing the presented sales revenues by the volume of products sold does not equate to the average product retail price.

Figure 20c: Sales Volumes & Cash Sales Revenues by Product Category – West Africa



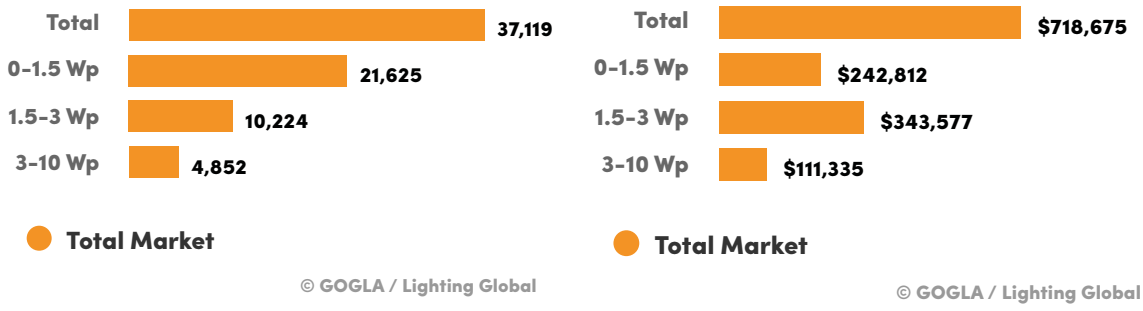
NOTE
1. Data is not shown in categories for which insufficient or no data points were provided.
2. Only cash sales revenues are presented – this excludes PAYGO revenues.
3. Dividing the presented sales revenues by the volume of products sold does not equate to the average product retail price.

Figure 20d: Sales Volumes & Cash Sales Revenues by Product Category – Central Africa



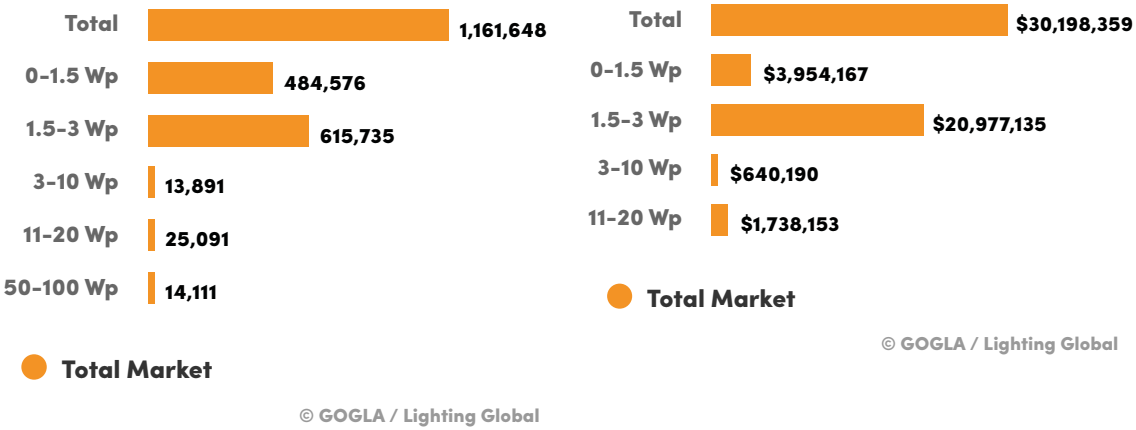
NOTE
1. Data is not shown in categories for which insufficient or no data points were provided.
2. Only cash sales revenues are presented – this excludes PAYGO revenues.
3. Dividing the presented sales revenues by the volume of products sold does not equate to the average product retail price.

Figure 20e: Sales Volumes & Cash Sales Revenues by Product Category – Southern Africa



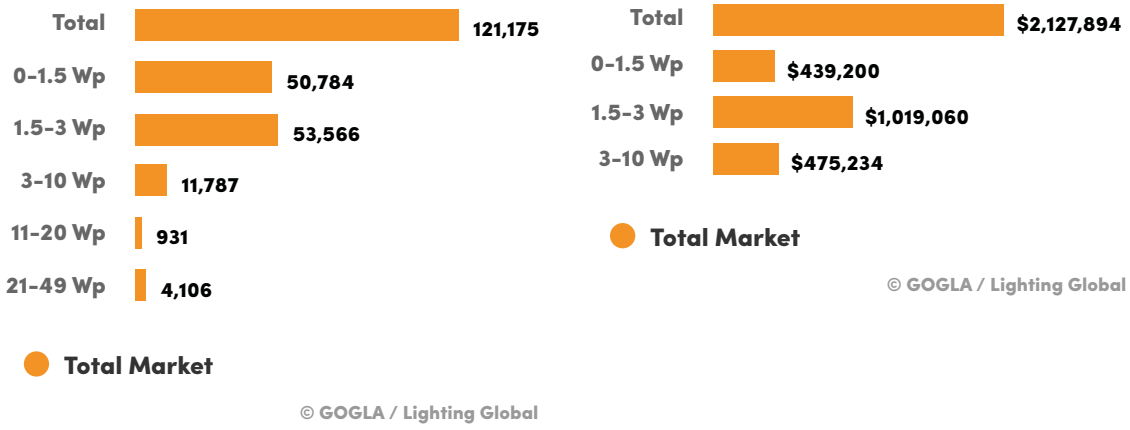
NOTE
1. Data is not shown in categories for which insufficient or no data points were provided.
2. Only cash sales revenues are presented – this excludes PAYGO revenues.
3. Dividing the presented sales revenues by the volume of products sold does not equate to the average product retail price.

Figure 21: Sales Volumes & Cash Sales Revenues by Product Category – South Asia



NOTE
1. Data is not shown in categories for which insufficient or no data points were provided.
2. Only cash sales revenues are presented – this excludes PAYGO revenues.
3. Dividing the presented sales revenues by the volume of products sold does not equate to the average product retail price.

Figure 22: Sales Volumes & Cash Sales Revenues by Product Category – East Asia & Pacific



NOTE
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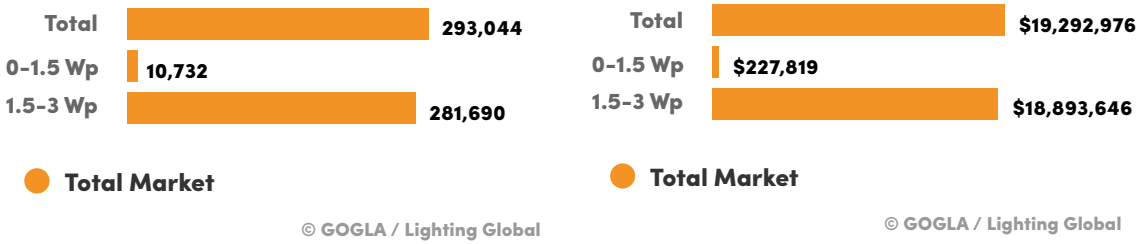
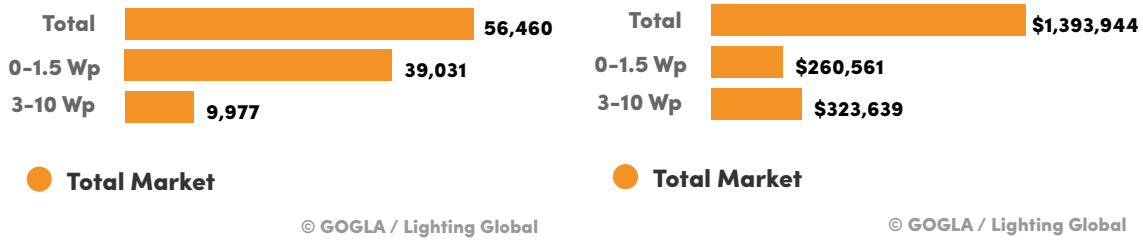
2. Only cash sales revenues are presented – this excludes PAYGO revenues.
3. Dividing the presented sales revenues by the volume of products sold does not equate to the average product retail price.

Figure 23: Sales Volumes & Cash Sales Revenues by Product Category – Middle East & North Africa



NOTE
1. Data is not shown in categories for which insufficient or no data points were provided.
2. Only cash sales revenues are presented – this excludes PAYGO revenues.
3. Dividing the presented sales revenues by the volume of products sold does not equate to the average product retail price.

Figure 24: Sales Volumes & Cash Sales Revenues by Product Category – Latin America



NOTE
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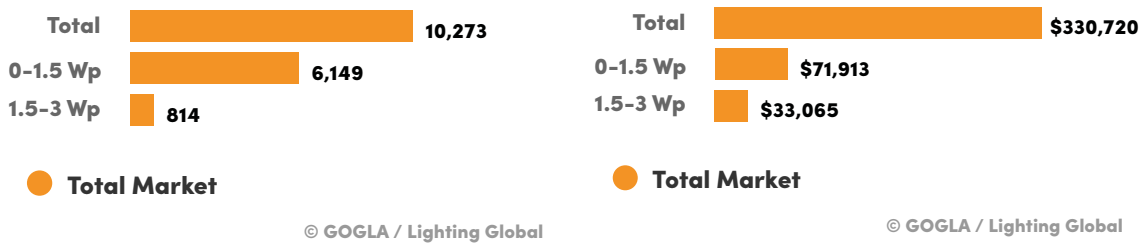
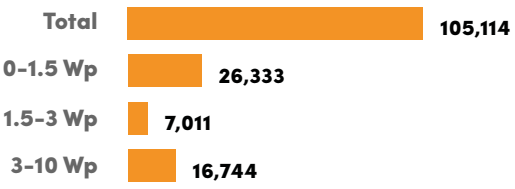
2. Only cash sales revenues are presented – this excludes PAYGO revenues.
3. Dividing the presented sales revenues by the volume of products sold does not equate to the average product retail price.

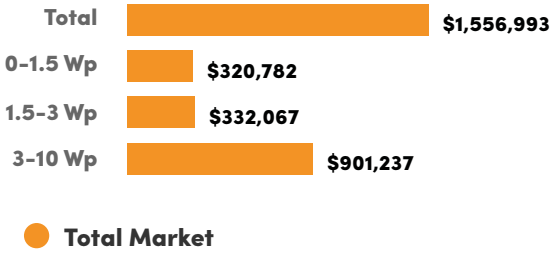
Figure 25: Sales Volumes & Cash Sales Revenues by Product Category – North America



NOTE
1. Data is not shown in categories for which insufficient or no data points were provided.
2. Only cash sales revenues are presented – this excludes PAYGO revenues.
3. Dividing the presented sales revenues by the volume of products sold does not equate to the average product retail price.

Figure 26: Sales Volumes & Cash Sales Revenues by Product Category – Europe & Central Asia





NOTE
1. Data is not shown in categories for which insufficient or no data points were provided.
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3. Dividing the presented sales revenues by the volume of products sold does not equate to the average product retail price.

Impact Metrics

Since 2013, GOGLA has had an Impact Working Group focused on examining the social impact of the off-grid solar industry. Together with external experts, this Working Group has developed a set of six metrics that help GOGLA Members and IFC Lighting Global Associates to collectively report on their social and environmental impact in a consistent and comparable way – providing a standard approach for the sector as a whole. The goal is to attract investment and increase regulatory support that will facilitate industry growth and enable greater energy access.

The following pages present the aggregated impact of the GOGLA Members and IFC Lighting Global Associates that participated in the data collection for H1 2017. The results are drawn from data provided by manufacturers only, to avoid double-counting. This is the fourth time GOGLA has reported on social and environmental impact.

Limitations of the Impact Metrics and Reporting

This report only estimates the impact made by participating companies: Therefore, while the numbers shown aggregate the impact of key players in the off-grid sector, this report does not present an estimate of all global impacts of off-grid solar for H1 2017.

This report takes a conservative approach to data inclusion, and may underestimate the total impact of participants: For example, if companies have not provided all of the product specifications needed for a particular impact metric, this product will not be included in the analysis.

Research on off-grid solar, and the GOGLA metrics, are being continuously improved: The impact metrics will continue to be refined and improved as GOGLA develops the way it collects data, and as the global body of research into off-grid solar is expanded. It is important to note, therefore, that the numbers presented are estimates and may change as new evidence becomes available.

Methodology

The six metrics we use to report impact data in this paper were developed by the GOGLA Impact Working Group. Each one is a combination of company data (such as sales, product characteristics, and other company information) and coefficients with default values. The default values of the coefficients were determined following a review of publicly available data, data made available by participating GOGLA members, and by the application of informed assumptions and calculations.

All metrics have been reviewed by external experts and are aligned with the IRIS impact metrics[6]. The following table gives an overview of all the metrics for which the estimated aggregate results are presented in this report.

All metrics, as well as the default values, their definitions and rationale (including the methodology and sources) can be found in the GOGLA Standardized Impact Metrics for the Off-Grid Energy Sector Whitepaper[7].

[6] https://iris.thegiin.org/off-grid-energy-metrics

[7] http://www.gogla.org/sites/www.gogla.org/files/recource_docs/gogla-standardised-impact-metrics-for-the-off-grid-energy-sector1_1.pdf

Measuring Impact: An Iterative Approach

The impact results in this report provide a robust estimate of the impact created by companies participating in this data collection. However, we continuously aim to improve and enhance the way we measure and use impact data.

When new research is published, we work to update our current impact metrics, and explore whether the new data can help us to quantify or communicate other impacts - such as the potential benefits of off-grid solar on health and safety.

In addition, we continue to develop our own database. For example, the data presented in this report only calculates the impact of products currently being sold by participating companies, however, for upcoming reports, we will be working to capture the details of all products sold previously by participating companies. We will also be exploring further the differences in impact between different system sizes, and will update our metrics to make the most of recently released and upcoming research. Watch this space!

List of Impact Metrics

1ai. Improved energy access, historically
Cumulative number of people who have ever lived in a household with an improved energy source (i.e. solar)

1aii. Improved energy access, currently
Number of people living in households currently using an improved source of energy (i.e. solar)

1b. Energy needs met (based on SE4All methodology)
Number of people with Tier 1 and Tier 2 energy access currently, based on the Sustainable Energy for All Global Tracking Framework

2. Livelihoods supported
Number of people whose livelihoods are supported by the solar off-grid market, including a) customers using products for their business, and b) distribution chain employees

3. Status quo lighting sources no longer in use
Number of status quo lighting sources, such as kerosene lanterns, candles or battery torches, no longer in use because customers have replaced them with solar lighting

4a. Household change in available hours of light (%)
Change in available hours of light per day from solar product, as compared to typical usage time for status quo lighting, for an average household

4b. Household change in available light output (%)
Change in available light output (lumens) from solar product, with the average output for status quo lighting

5a. Savings on energy-related expenditure, per household
Amount of money a household saves on lighting and phone charging due to the purchase of a solar product

5b. Savings on energy-related expenditure, in aggregate
Amount of money saved on lighting and phone charging after the purchase of a solar product

6. Greenhouse gas emissions offset through reduced use of status quo lighting
The volume of greenhouse gas emissions, including black carbon, offset by reduced use of status quo lighting source

GOGLA IMPACT METRICS

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Analysis

Currently, more than 83.7 million people around the world are actively benefitting from off-grid solar products that have been sold or distributed by GOGLA Members and IFC Lighting Global Associates; while, to date, more than 120 million people around the world have been reached by off-grid solar lighting and electrification technologies from these organizations. To calculate the number of people actively benefiting from off-grid solar (i.e. with improved energy access, currently) a conservative estimate has been made on the lifetime of each product - 1.5x the warranty period - after which its impact is no longer counted. Please note, however, that it is likely that many products survive far beyond this period, and continue to create benefits.

Calculations which show energy access by 'Tiers' are provided in this report so that it is possible to align the impact data with the SEforALL Global Tracking Framework (which attributes different levels, or Tiers, of energy access to the provision of both on and off-grid electricity, depending on the energy service provided). In H1 2017, the number of people currently benefiting from Tier 1 energy access increased from 38 million to 39.7 million. A slight increase was also observed in relation to Tier 2 energy access – with the number growing from 1.75 million people in H2 2016, to 1.8 million people in H1 2017. This rise is linked to increasing sales of systems with higher levels of energy service since 2015.

The number of livelihoods supported by off-grid solar products meanwhile stayed roughly the same in both half year periods, with around 1.9 million people estimated to be either a) working directly in the distribution chain of off-grid solar companies, or b) using the technology to support their business or for income generating activities. The average saving per household – over the lifetime of the solar product – decreased slightly from $200 in H2 2016 to $192 in H1 2017. This is linked to changes in the number of products sold at different system sizes (as savings vary). However, the aggregate savings created across the lifetime of all products sold continues to rise, and has now reached more than $5 billion. Available hours of light and light output from solar products also increased – and are likely to be a result of continued improvements to batteries and LED lights.

Similarly, increases were seen in avoided greenhouse gas emissions, including black carbon – the second biggest contributor to climate change. 28.5 million tons of CO_2e have now been avoided[8] due to the switch from kerosene to solar lighting. This is the equivalent to taking eight coal fired power plants off-line for a year.

[8] It should be noted, however, that this figure is not discounted by the embodied emissions of the solar product itself.

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Total Impact Created

120.3 million
Improved energy access, historically

How many people, cumulatively, have ever lived in a household with an improved energy source? (i.e. solar)

83.7 million
Improved energy access, currently

How many people, currently, live in a household with an improved energy source? (i.e. solar)

39.7 million
Tier 1 energy needs met, currently

How many people have access to basic energy on Tier 1 (or the "first rung on the energy ladder") of the SE4ALL Global Tracking Framework[1]?

1.8 million
Tier 2 energy needs met, currently

How many people have access to Tier 2 energy in their homes (or the "second rung on the energy ladder") of the SE4All Global Tracking Framework[1]?

18.6 million
Number of status quo lighting sources no longer in use

How many traditional lighting sources (kerosene lanterns, candles and battery-powered torches, etc.) are no longer used since the customer replaced them with solar lighting?

28.6 million tons
Greenhouse gas emissions avoided, total

How much greenhouse gas, including black carbon, is cumulatively avoided through reduced use of traditional lighting sources?[3]

Please note that all impact figures are estimates, and relate only to the impact of the GOGLA Members and IFC Associates who have participated in this research.

188%
Increase in available light output, per household

What is the difference in available light output (in lumens) from solar products, compared to the output of previous light sources (such as kerosene or candles), on average*?

171%
Increase in available hours of light, per household

What is the difference in available hours of light, per day, available to a household, owing to solar products, compared to available time from previous light sources (such as kerosene or candles), on average[2]?

$192
Savings on energy-related spending, per household

After buying a solar product, how much money does a household save on lighting and phone charging, on average[2]?

1.9 million
Livelihoods supported

How many people see their livelihoods benefit from the use of off-grid solar products? This includes people who use their products for their business (or business-related activities) as well as direct employees within the distribution chain of such products.

$5.2 billion
Savings on energy-related spending, total

After buying a solar product, how much money is saved on lighting and phone charging, in aggregate?

NOTES

1. The Global Tracking Framework was introduced by the UN's SE4ALL program and comprises five tiers which address a previous shortfall in energy access categorization. Before the framework was introduced, a household either had a grid connection or it did not i.e. electricity access was seen as binary.
2. The averages are built on products not households, i.e. we assume one product per household. The average is based on a weighted average of product sales, i.e. products with higher sales volumes are weighted higher than those where fewer have been sold.
3. This number is an aggregate of greenhouse gas emissions offset over the product life time of off-grid solar products. The embodied greenhouse gas emissions of off-grid solar lighting products is not accounted for.

Impact Created by Product Category

Figure 27: Improved Energy Access, Historically (number of people)

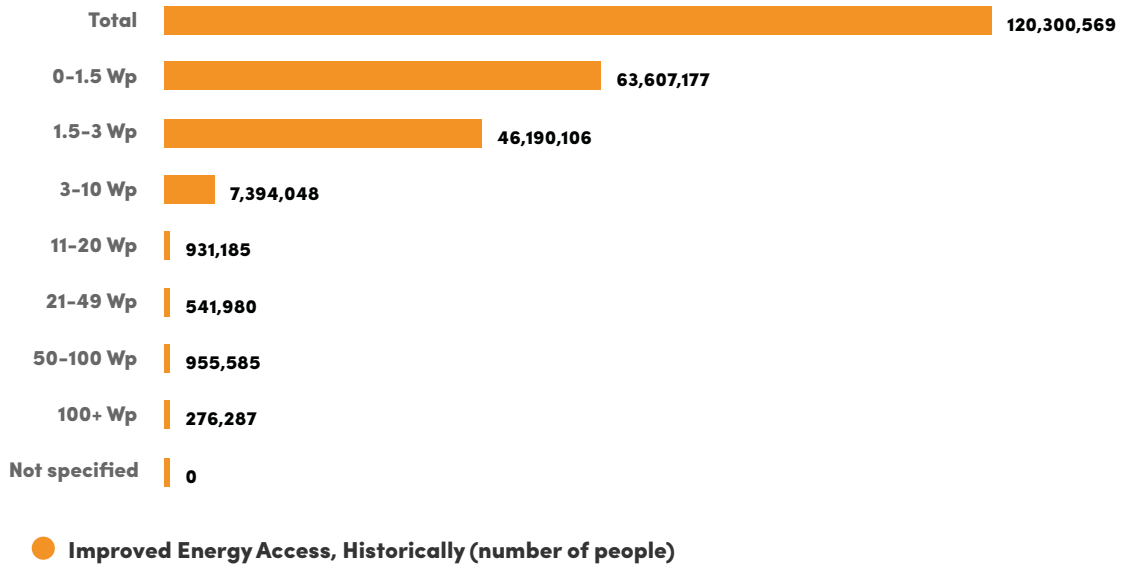


Figure 28: Improved Energy Access, Currently (number of people)

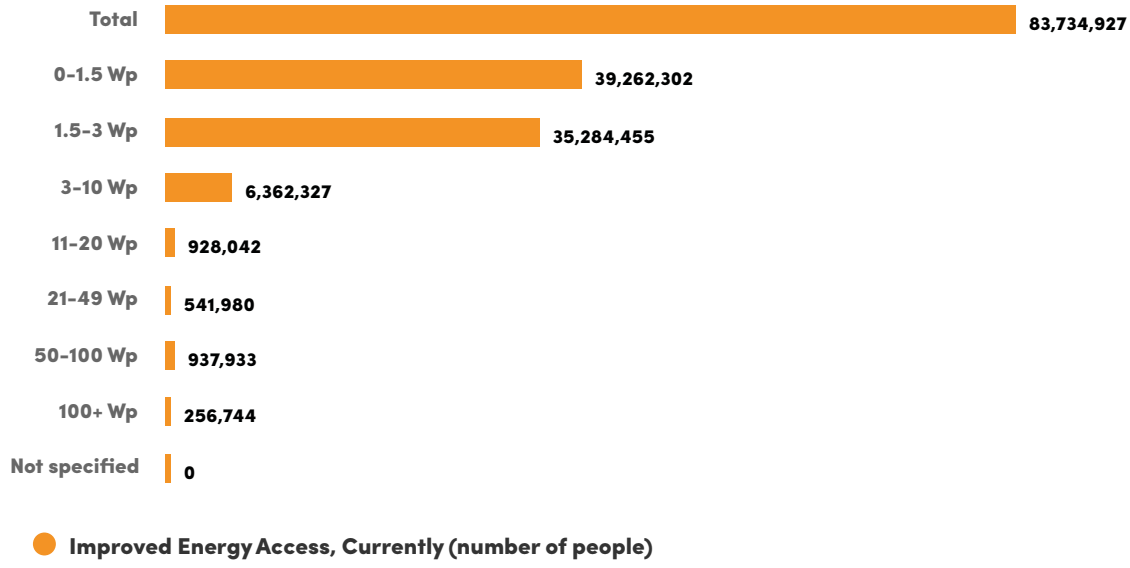


Figure 29: Energy Needs Met, Currently (According to SE4All Methodology) – Tier 1 and Tier 2 (number of people)

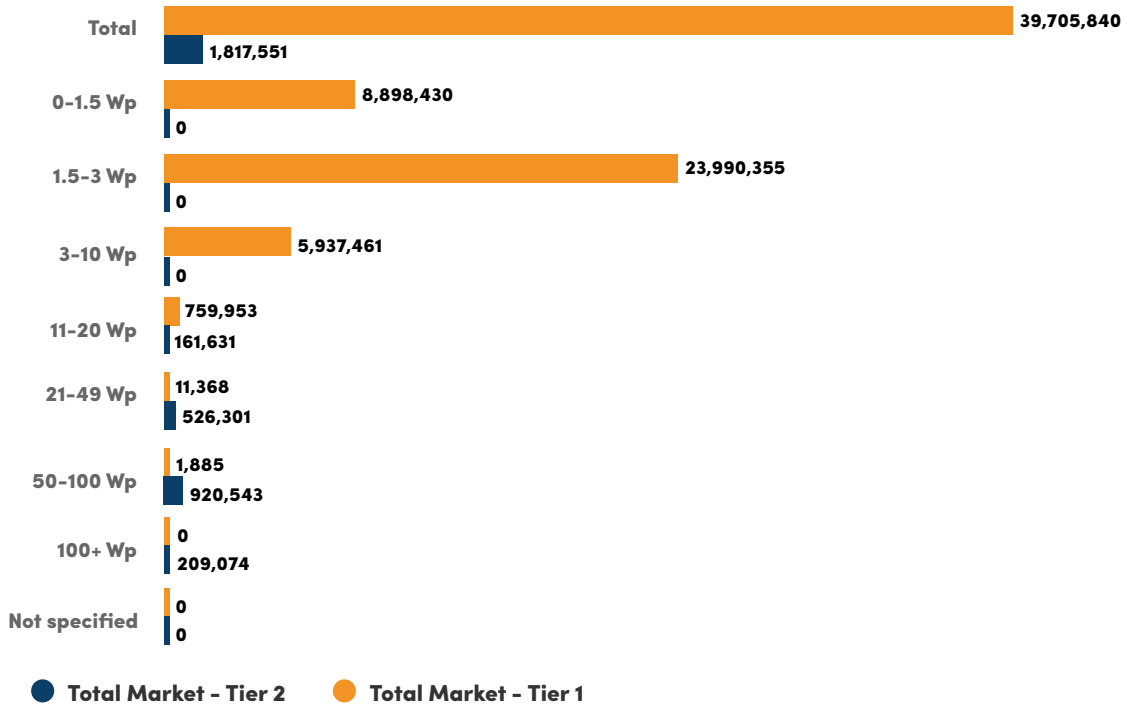


Figure 30: Savings on Energy-Related Spending ($)

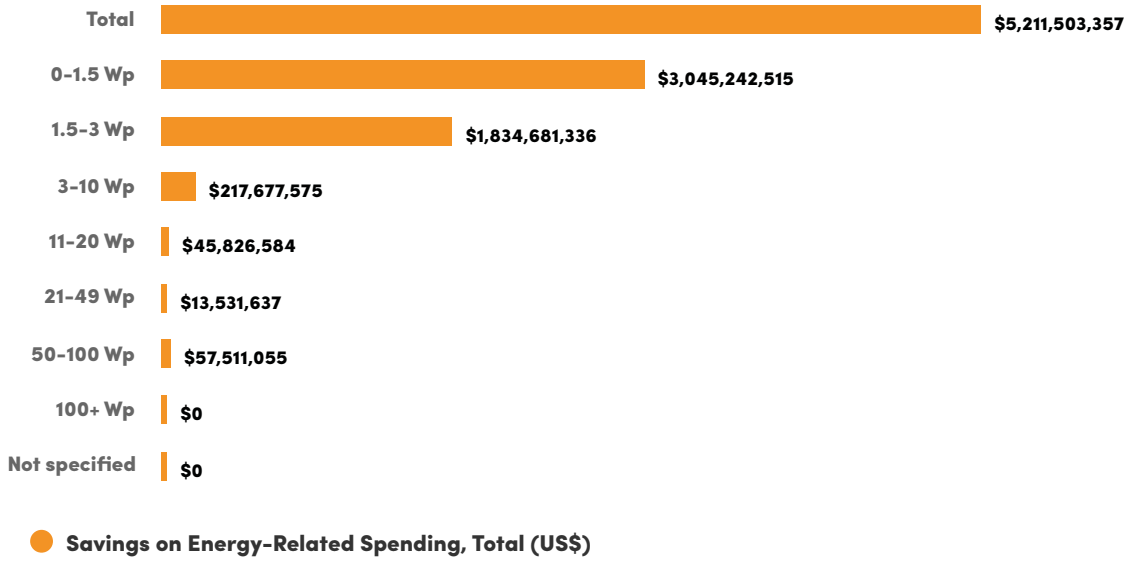


Figure 31: Savings on Energy-Related Spending, per Household ($)

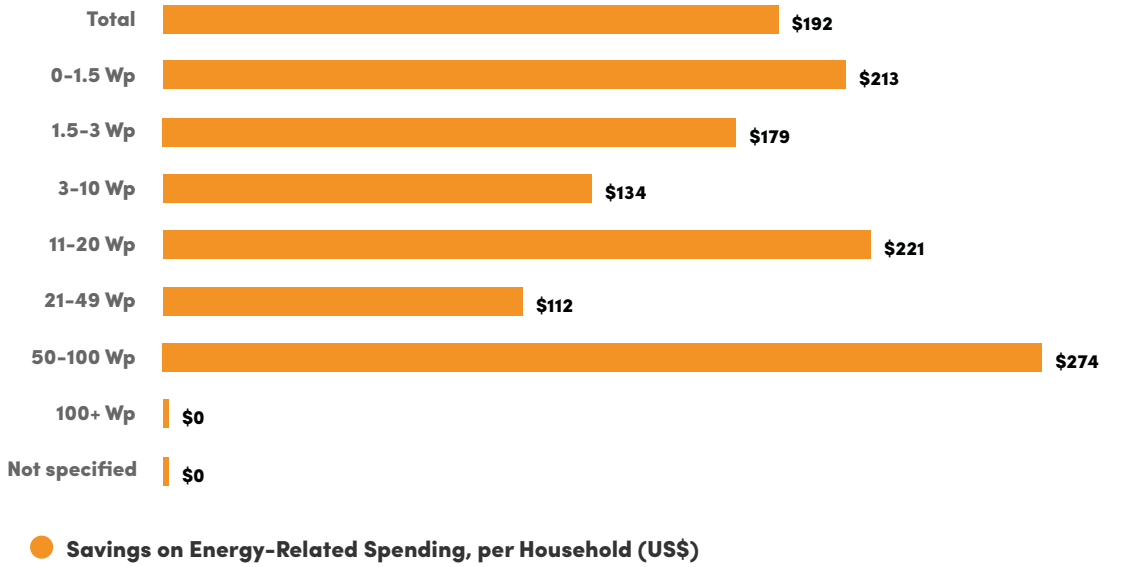


Figure 32: Livelihoods Supported (number of people)

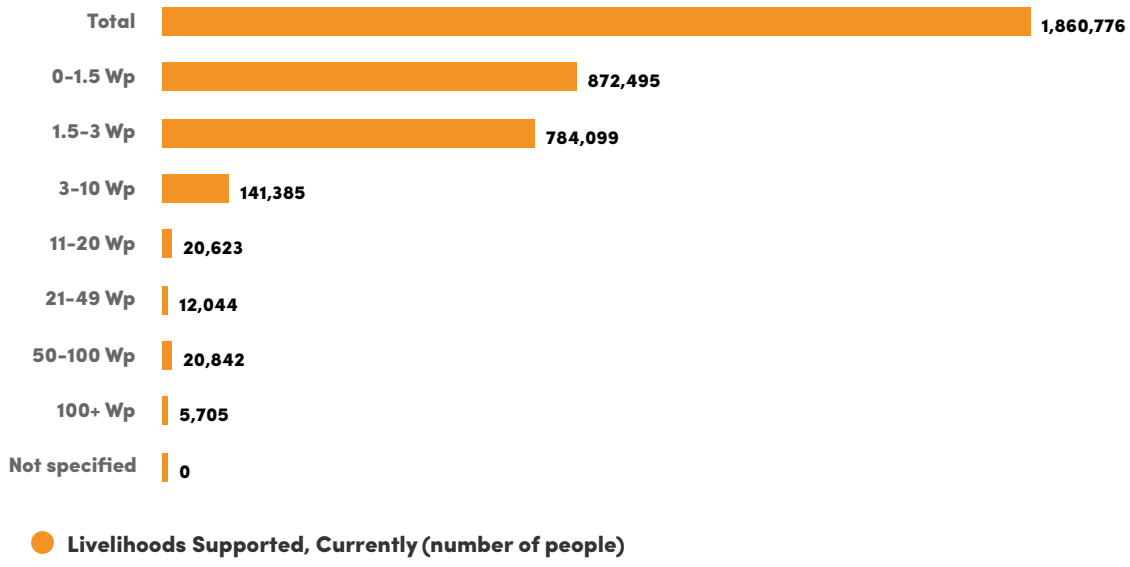


Figure 33: Household Increase in Available Hours of Light (%)

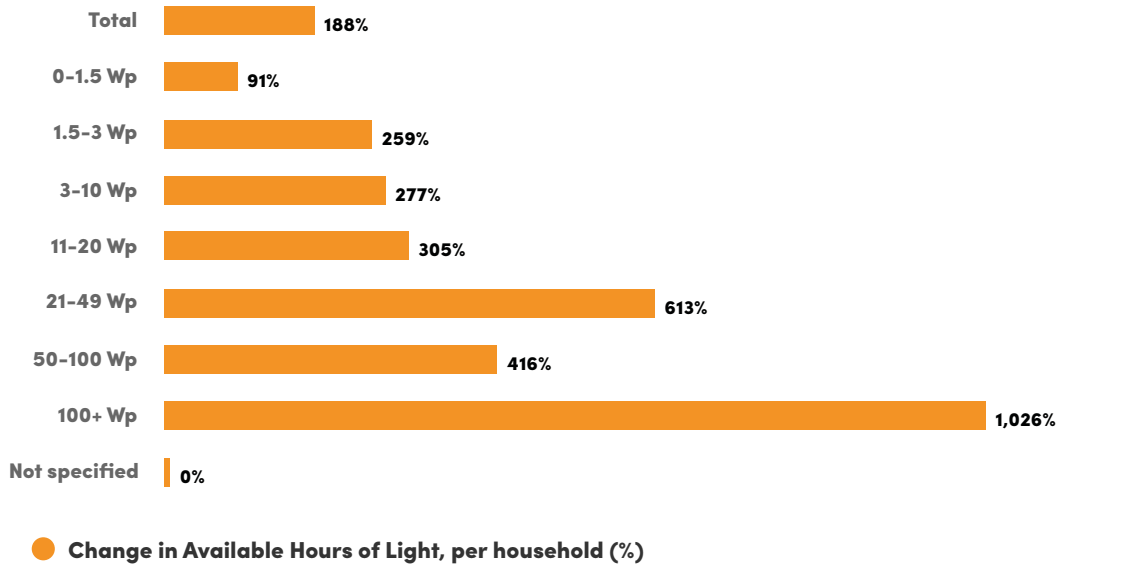


Figure 34: Household Increase in Available Light Output (%)

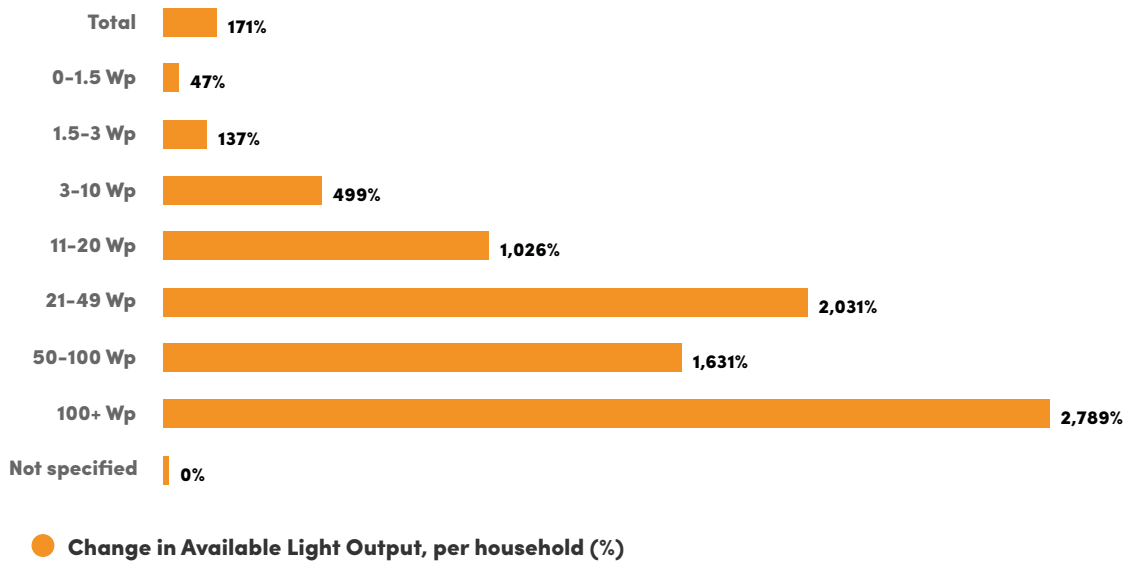


Figure 35: Number of Status Quo Lighting Sources no Longer in Use

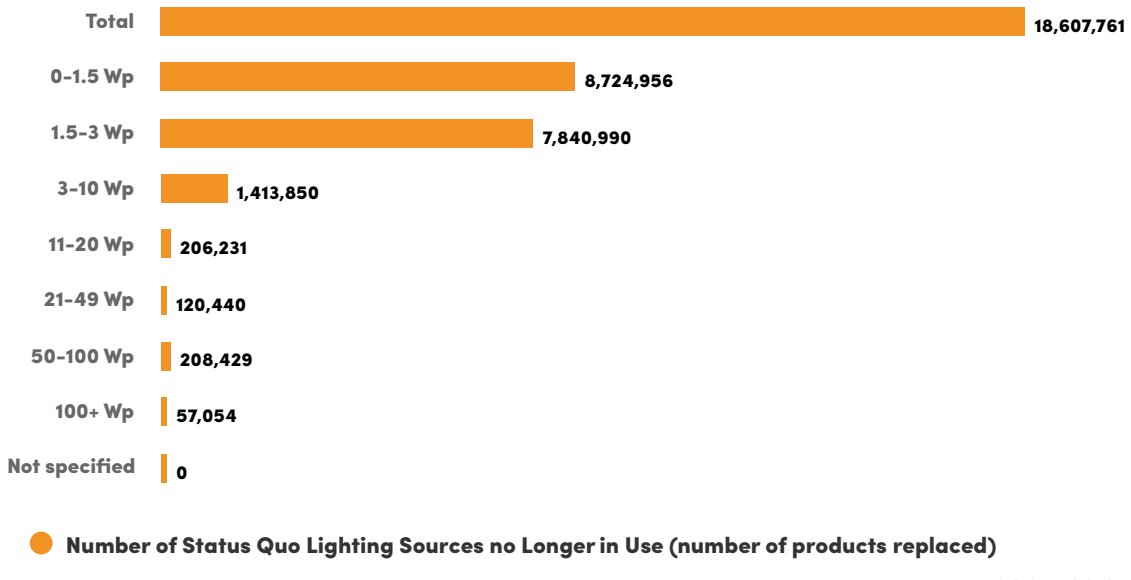
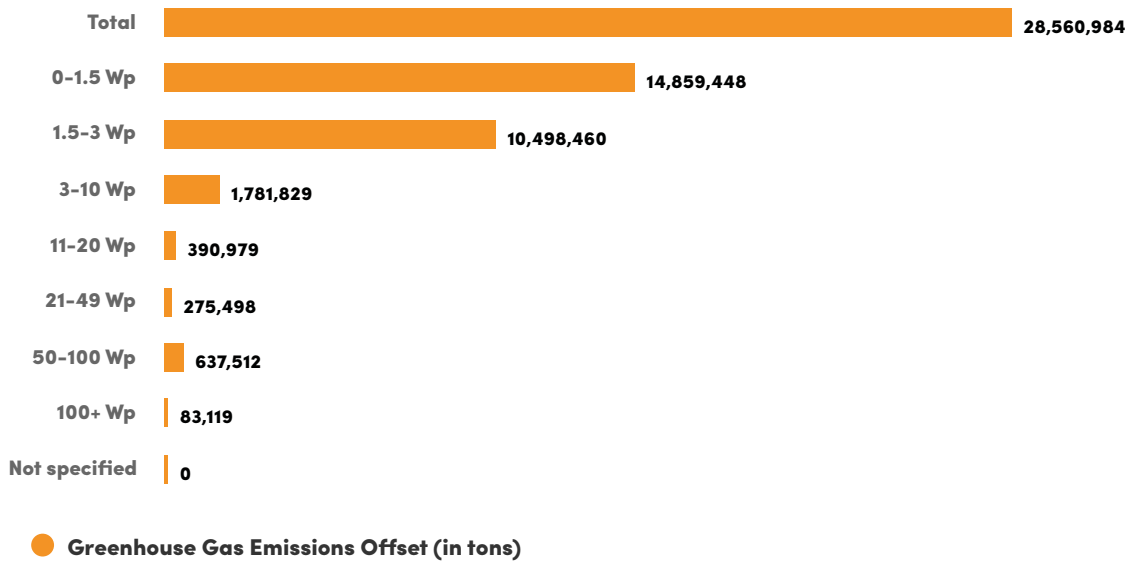


Figure 36: Greenhouse Gas Emissions Offset through Reduced Use of Status Quo Lighting (tons)



Summary

Table 5: Global Impact by Product Category

	Improved Energy Access, Historically (number of people)	Improved Energy Access, Currently (number of people)	Livelihoods Supported, Currently (number of people)	Tier 1 Energy Needs Met, according to SE4All methodology (number of people)	Tier 2 Energy Needs Met, according to SE4All methodology (number of people)
World	120,300,569	83,734,927	1,860,776	39,705,840	1,817,551
0–1.5 Wp	63,607,177	39,262,302	872,495	8,898,430	–
1.5–3 Wp	46,190,106	35,284,455	784,099	23,990,355	–
3–10 Wp	7,394,048	6,362,327	141,385	5,937,461	–
11–20 Wp	931,185	928,042	20,623	759,953	161,631
21–49 Wp	541,980	541,980	12,044	11,368	526,301
50–100 Wp	955,585	937,933	20,842	1,885	920,543
100+ Wp	276,287	256,744	5,705	–	209,074
Not specified	–	–	–	–	–

	Savings on Energy-Related Spending, Total (US$)	Savings on Energy-Related Spending, per Household (US$)	Number of Status Quo Lighting Sources no Longer in Use (number of products replaced)	Change in Available Hours of Light, per household (%)	Change in Available Light Output, per household (%)	Greenhouse Gas Emissions Offset (in tons)
World	$5,211,503,357	$192	18,607,761	188%	171%	28,560,984
0–1.5 Wp	$3,045,242,515	$213	8,724,956	91%	47%	14,859,448
1.5–3 Wp	$1,834,681,336	$179	7,840,990	259%	137%	10,498,460
3–10 Wp	$217,677,575	$134	1,413,850	277%	499%	1,781,829
11–20 Wp	$45,826,584	$221	206,231	305%	1026%	390,979
21–49 Wp	$13,531,637	$112	120,440	613%	2031%	275,498
50–100 Wp	$57,511,055	$274	208,429	416%	1631%	637,512
100+ Wp	$-4,043,502	$-36	57,054	1026%	2789%	83,119
Not specified	–	–	–	–	–	–

References and Credits

References

- The contents of this report present market data based on the reported sales of Lighting Global quality verified products and products from 65 companies which are GOGLA members or IFC Lighting Global Associates. https://www.lightingglobal.org/products/

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Photo Credits

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