



Driving Sustainable Energy Access in Myanmar: Opportunities and Challenges



June 2017

Speakers



Bill Gallery

Bill Gallery is project manager for the IFC's Lighting Myanmar project, which is supporting the market for high-quality off-grid solar products in the country. Before joining the IFC, Bill worked in development for more than 10 years, with expertise in clean energy and energy access and a particular focus on Southeast Asia. Based in the region since 2012, he has worked for a range of energy sector clients, including the ADB, GIZ, and private companies. In Myanmar, he was Deputy Team Leader for the ADB's Off-grid Renewable Energy Project, and worked on other projects looking at industrial rooftop solar and related issues. In 2014 and 2015 he was Agenda Coordinator for the Asia Clean Energy Forum, one of the largest clean energy events in the region. He has also worked on regulatory issues in the electricity and water sectors, serving as lead author for an ADB study on regulatory effectiveness in eight countries in Southeast Asia.

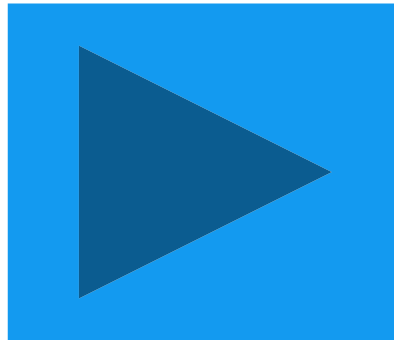


Damien Motteau

Damien Motteau works for the energy provider Total as Awango program coordinator of Asian affiliates.

Awango is a business response to the energy access issue faced by 1.3 billion people worldwide. Its mission is to enable low-income communities to meet some of their most basic needs by providing innovative, reliable and affordable solar solutions. After a Master Degree in Business, Damien started his career in CSR consulting companies and then worked for social business incubators in France, Germany and Colombia.

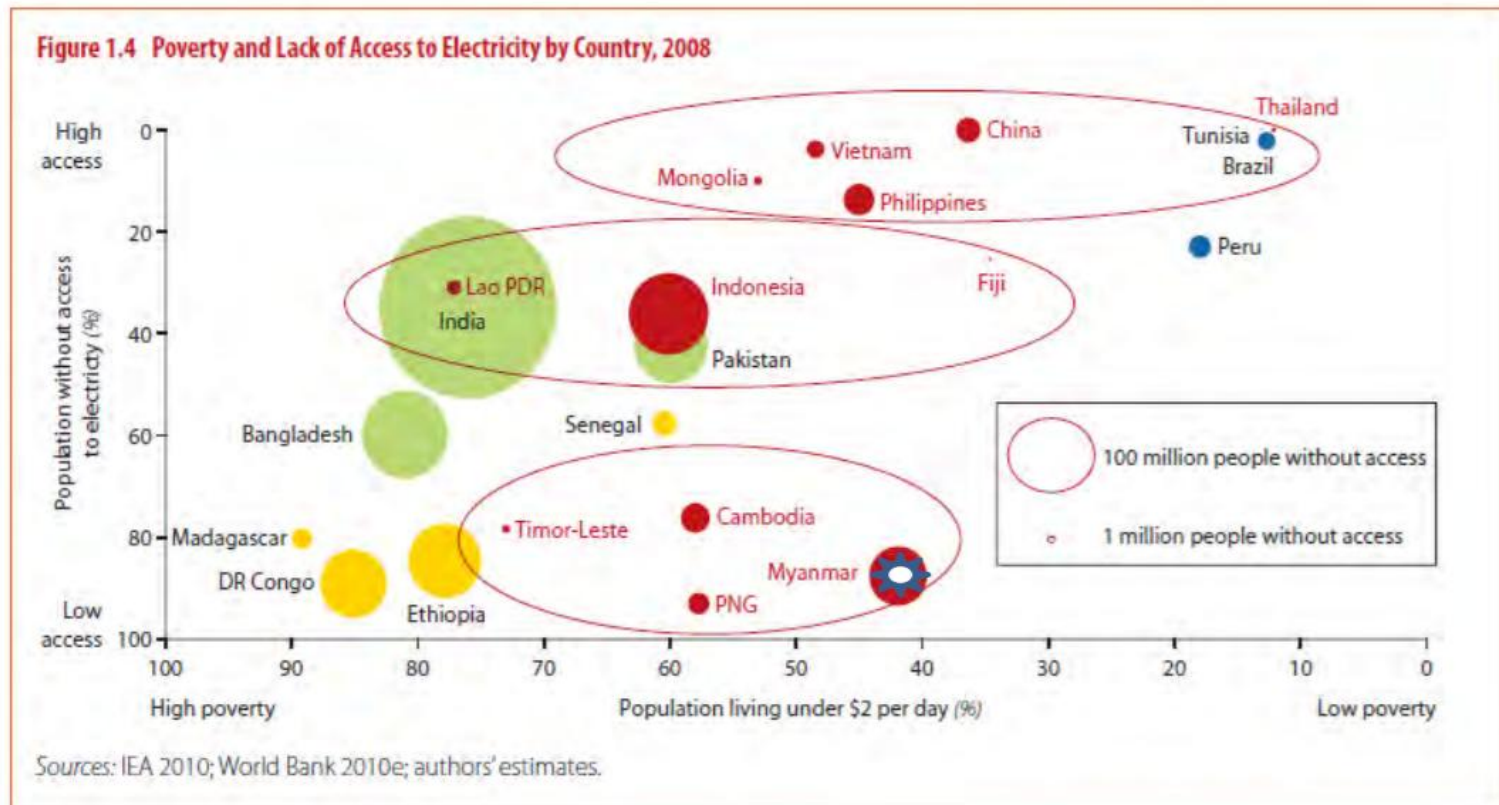




Source: Access to Electricity Vital for Ending Poverty in Myanmar, World Bank

A strong correlation between poverty and access to energy

Modern energy services are crucial to human well-being and to a country's economic development and prosperity.



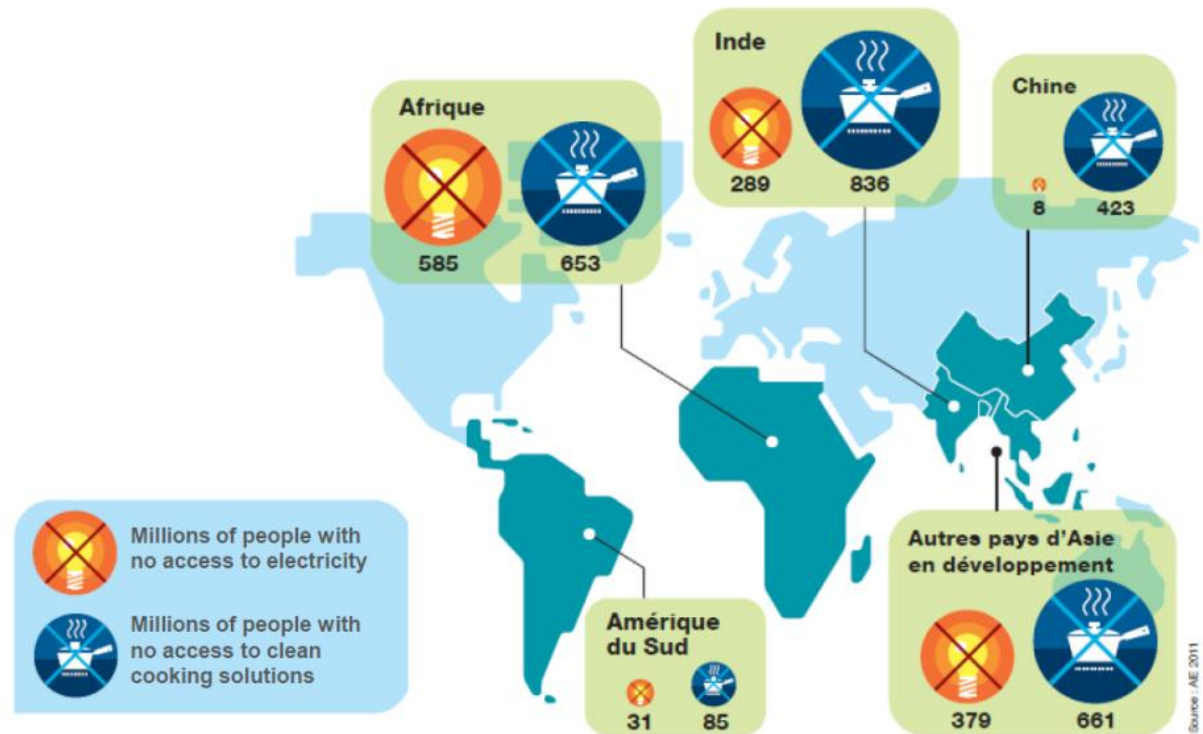
What do we mean by access to energy?

Access to energy =

Access to affordable, reliable, sustainable and modern **lighting** and **cooking** solutions

An estimated 1.2 billion people did not have access to electricity. More than 95% of those living without electricity are in countries in sub-Saharan Africa and developing Asia, and they are predominantly in rural areas (around 80% of the world total).

More than 2.7 billion people are estimated to have relied on the traditional use of solid biomass for cooking, typically using inefficient stoves or open fires in poorly ventilated spaces. Developing Asia and sub-Saharan Africa once again dominate the global totals.

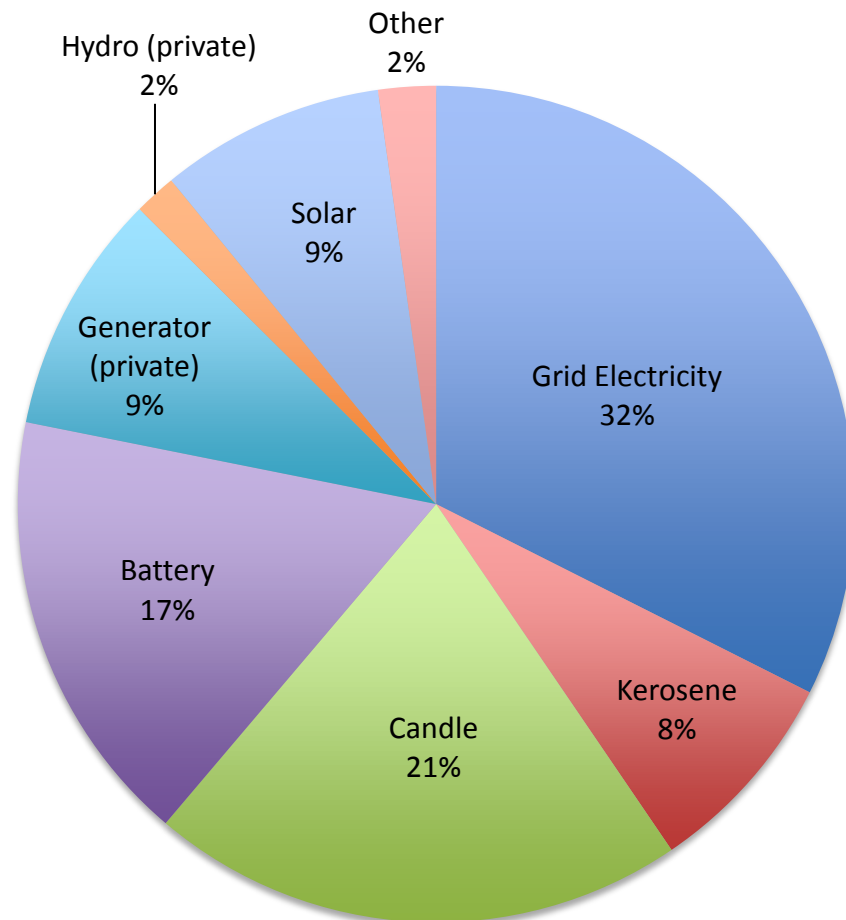


Electrification in Myanmar remains very low

- Only 32% grid-connected
- More than 7 million off-grid HHs

	Urban	Rural	Total
Grid Electricity	2,363,403	1,164,314	3,527,717
Kerosene	15,786	860,792	876,578
Candle	218,097	2,033,839	2,251,936
Battery	191,529	1,652,227	1,843,756
Generator (private)	177,309	835,840	1,013,149
Hydro (private)	25,786	151,721	177,507
Solar	42,811	902,431	945,242
Other	14,712	227,235	241,947
Total	3,049,433	7,828,399	10,877,832

Source: 2014 Census



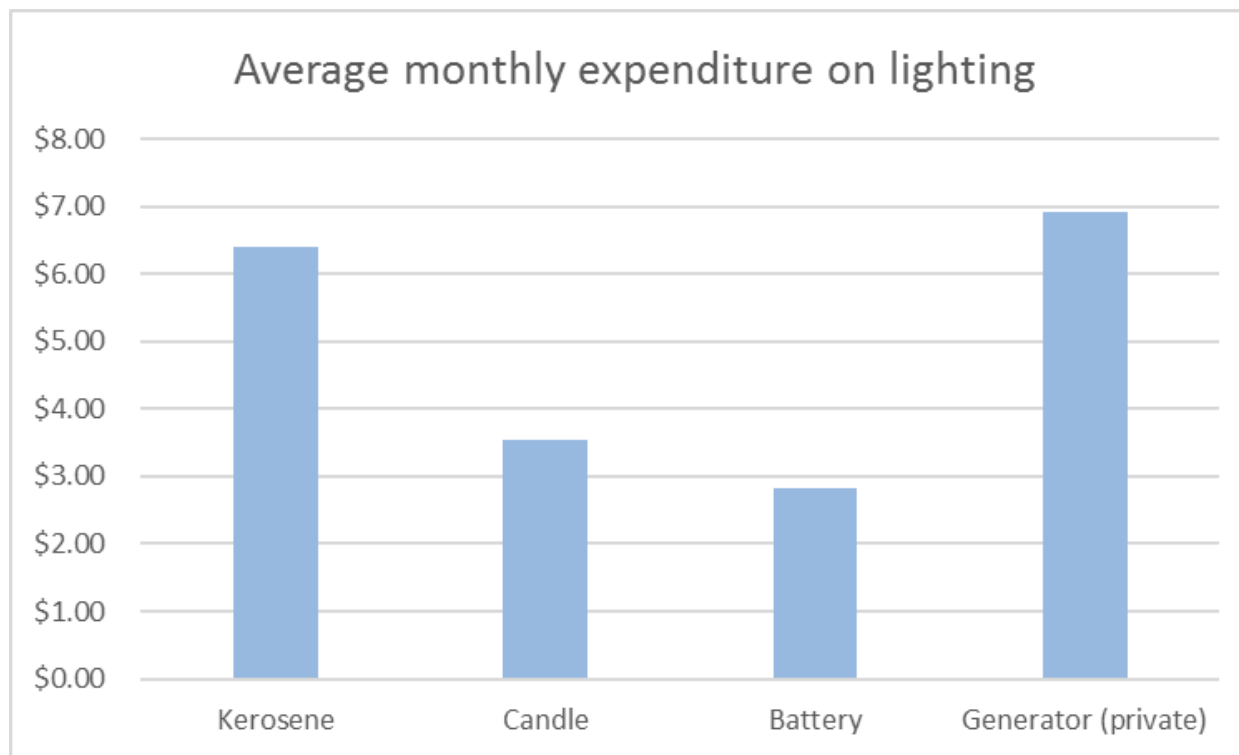
Most rural people are using inferior energy solutions

	Rural		Urban	
	#	%	#	%
Grid	1,164,313	15%	2,363,403	78%
Kerosene	860,792	11%	15,786	1%
Candle	2,033,839	26%	218,097	7%
Battery	1,652,227	21%	191,529	6%
Generator (Private)	835,840	11%	177,309	6%
Hydro (Private)	151,721	2%	25,786	1%
Solar	902,431	12%	42,811	1%
Other	227,235	3%	14,712	0%

Source: 2014 Census

Current expenditure on lighting

In central Myanmar, the unserved and underserved population is spending an estimated US\$18.5M to \$19.0M per month on lighting



Source: Lighting Myanmar research

National Electrification Plan

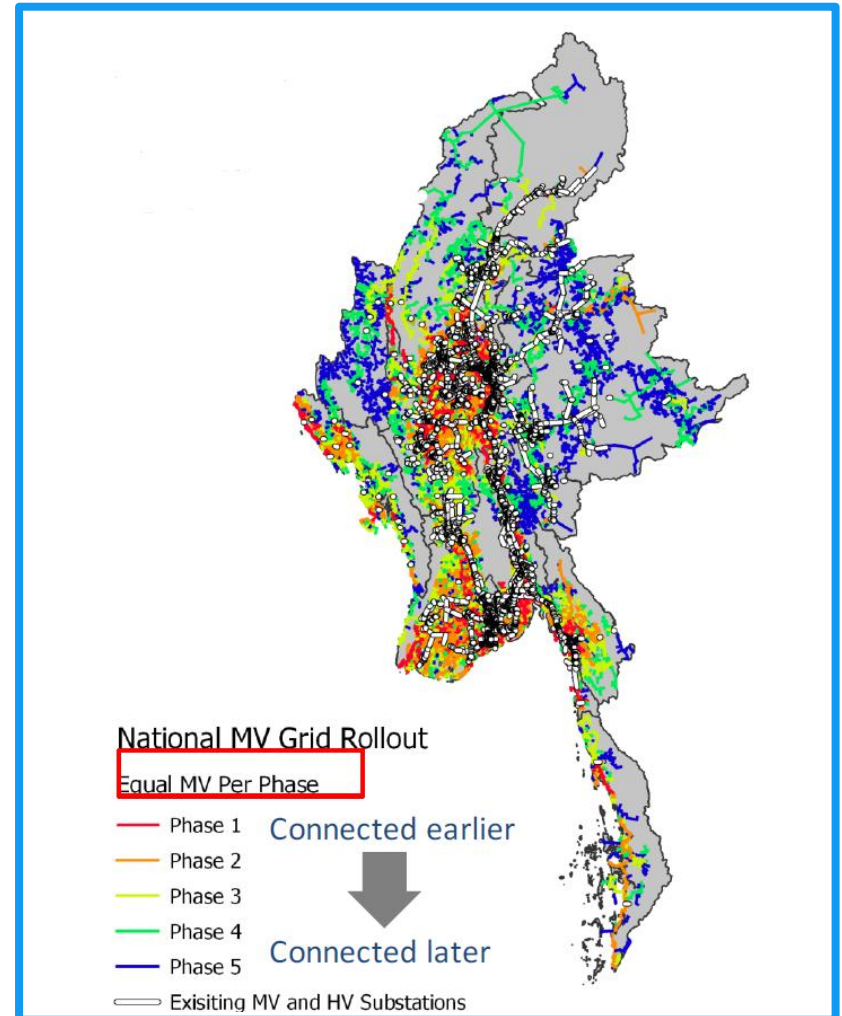
Strategy: action plan for developing, financing, and implementing electricity access scale-up program nationwide, with the target of achieving universal access by 2030.

It combines a threefold approach:

- Grid extension
- Mini grid
- Solar home systems

Cost: 7.2 million households to be covered by 2030 for a total cost around US \$6.0 billion

Roll out: focus on dense populated areas close to current grid (shorter distribution lines and lower cost per connection) and then to remote and less populated areas



Electrification Options | Grid Extension

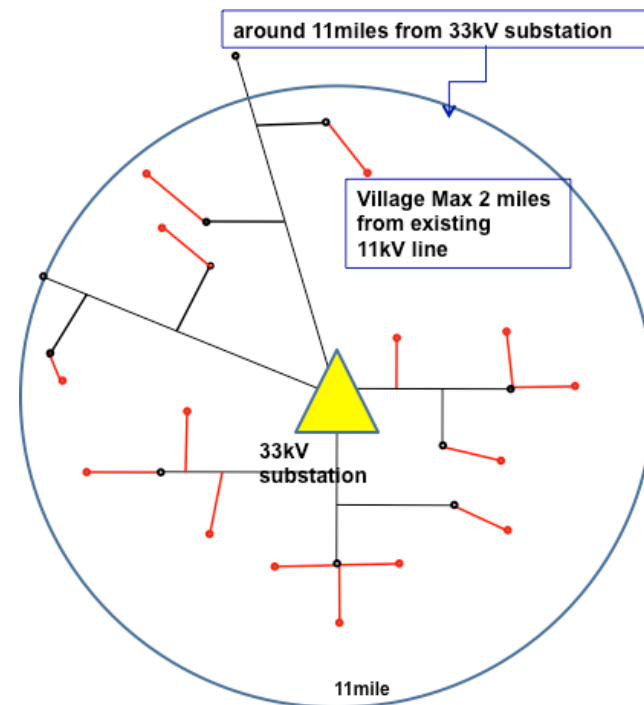
Phased rollout with goal of more than 7 million connections by 2030

NEP Stage 1:

- Within 2 miles of existing 11kV lines
- Initially no substation upgrades
- 627,000 HH through roughly 2019

NEP will pay for distribution lines, household must still pay connection fee

Consequence: Many households will wait for years before getting connected



Electrification Options | Mini-grids

Mini-grids: Village-scale (or larger) systems with integrated generation and distribution.

- Powered by solar, hydro, diesel, or hybrid depending on location
- Usually limited by number of hours or amount of energy provided each day
- Could be integrated to grid later, if built to grid standard

Cons:

- Generally more costly per HH
- Project development can be difficult and time-consuming
- Regulatory uncertainty
- No proven commercial models (yet)



Electrification Options | Household Solar

Household Solar: Includes a wide range of solutions for individual households, from small lanterns to large solar home systems that can power TVs and fans.

Easily deployed, widely available, and a proven commercial market in many countries.

Cons:

- Generally lower level of service (though getting better)
- Uncertainty about quality/durability among consumers
- High quality brings high up-front costs



Current Solar Market in Myanmar

Solar is well-known and widespread

- Range of products and systems
- Quality and service is low



Strong private sector sales in the market

Solar Penetration Data:

- 2014 Census: 945,000 households using solar (8.7%)
- More recent data suggests ~1.7 million households using solar (16%)
- Government programs: around 500,000 free solar systems

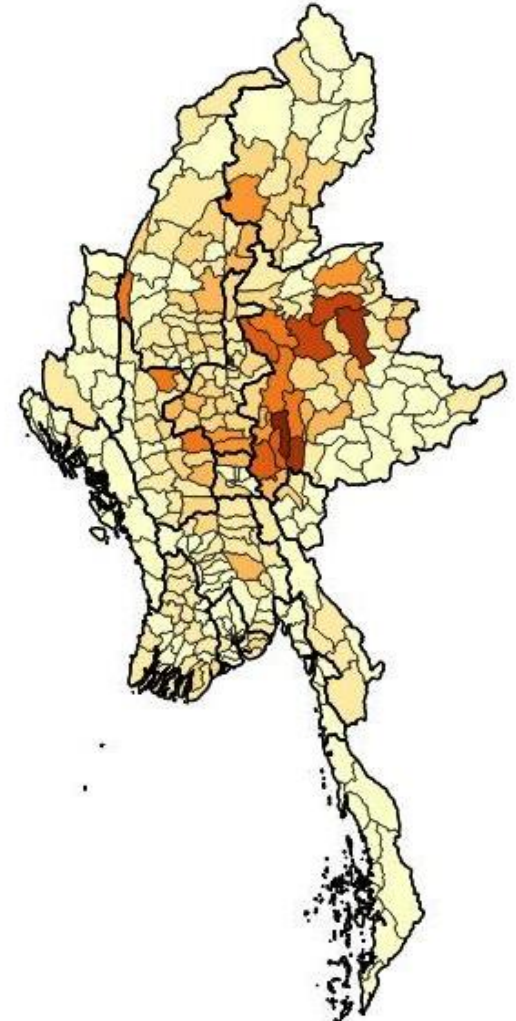
Around 1 million people in Myanmar have bought solar from the private market, mostly in the last 5 years.

Solar Penetration in Myanmar

Solar usage varies widely from region to region:

- Shan: 26.6%
- Magway: 10.1%
- Ayeyarwady: 4.4%

There are still large areas with relatively low penetration that make strong potential markets.



Solar users' consumer preferences

The highest use of solar is for consistent lighting, followed by powering TVs and charging phones.

What did you use the solar panels for?			
Lighting	Watching TV	Charging Phone	Charging Batteries

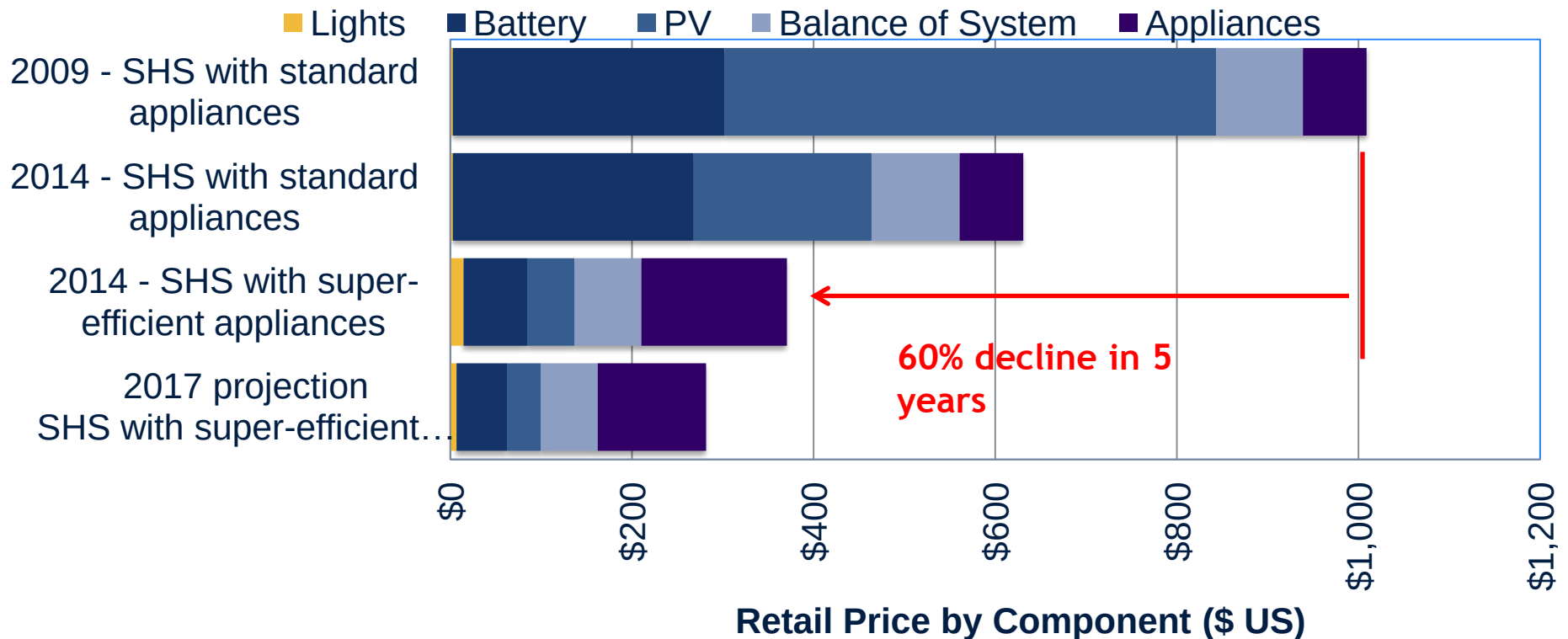
Overall	63%	19%	16%	2%
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Delta	Bogalay	68%	3%	29%	
	Kyait Latt	42%	26%	32%	
	Yegy	51%	28%	15%	6%
Dry Zone	Ma Hlaing	50%	43%		7%
	Nat Mauk	96%		4%	
	Pyaw Bwe	88%	12%	1%	

Source: TNS Primary Research, n=128 households

Move to bigger systems

As the cost of Solar Home Systems has fallen dramatically, they have become a viable alternative to the grid.



Lighting Myanmar

Supporting manufacturers and distributors to build a sustainable commercial market for high-quality off-grid solar in Central Myanmar

IFC-led project launched in June 2016

Part of Lighting Global program, operating in more than a dozen countries



Lighting Global Approach

Working with manufacturers and distributors of high-quality solar products to build the market through 6 areas of activity

Quality Assurance

Policy & Partnering with Government

Market Intelligence

Access to Finance

Business Development

Consumer Awareness



Supply

Demand

Energy & Development

Energy access in Myanmar

Tackling energy access



International Finance Corporation
WORLD BANK GROUP

Lighting Global Products

100 products from 50 manufacturers that have passed Lighting Global Quality Assurance Testing



Pico PV

Category by Power

Category by Services

< 1.5 Wp

“Task Light”
Single Light only

1.5 – 3 Wp

“Area Lighting & Mobile”
Single Light & Mobile Charging

3 – 10 Wp

“Solar Lighting System & Mobile”
Multiple Light & Mobile Charging



Solar Home System (SHS)

11 – 20 Wp

SHS, Entry Level (3-4 lights, mobile charging, radio, fan etc)

21 – 49 Wp

SHS, Basic capacity
(as above, plus power for TV & extended capacity)

50 – 100 Wp

SHS, Medium capacity
(as above, plus extended capacities)

> 100Wp

SHS, Higher capacity
(as above, plus extended capacities)

Energy & Development

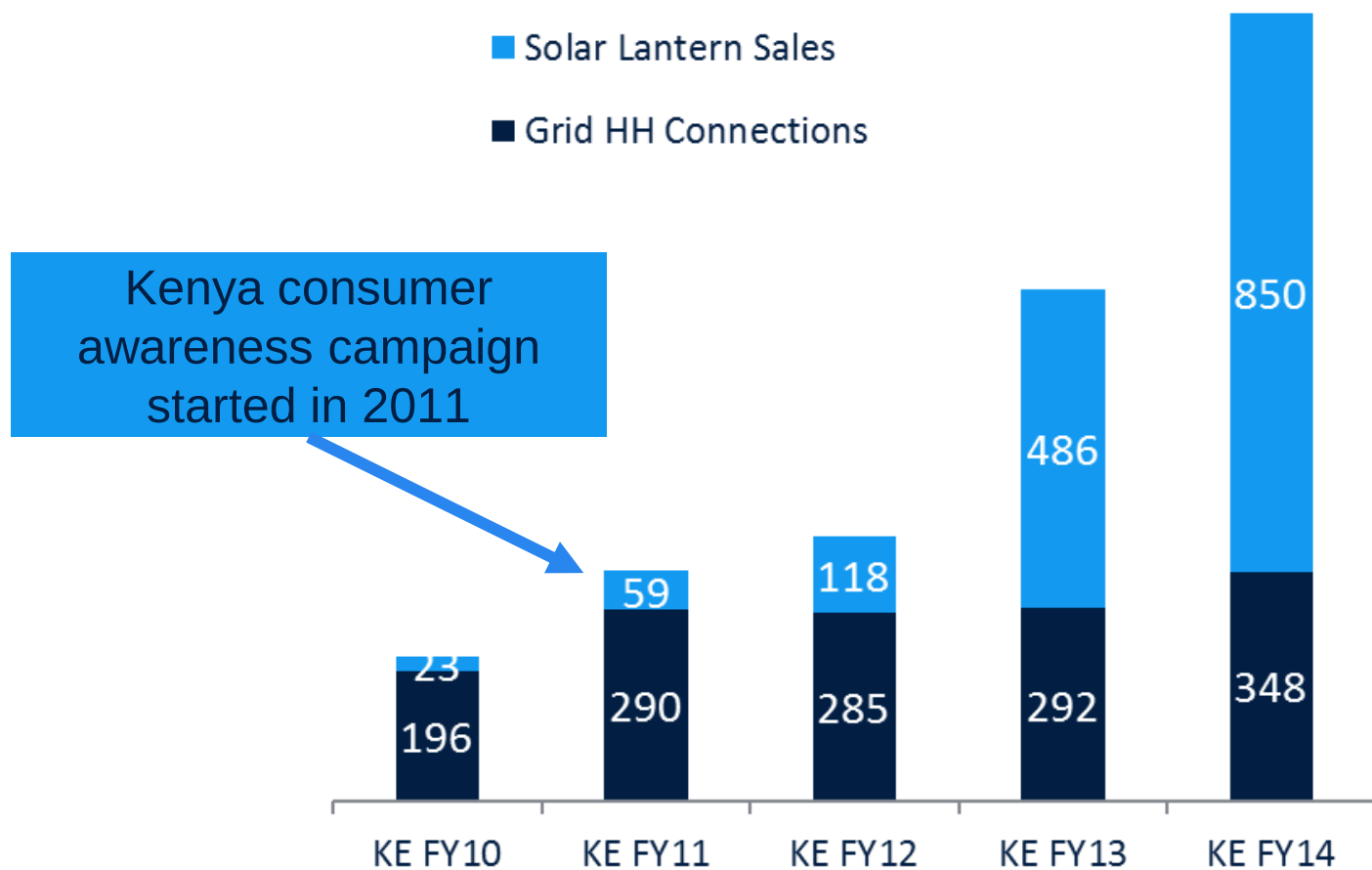
Energy access in
Myanmar

Tackling energy access

LIGHTING ASIA
Catalyzing markets for modern off-grid energy
MYANMAR

AN INNOVATION OF
IFC International
Finance Corporation
WORLD BANK GROUP

Lighting Global Impact



Source: IFC Lighting Global and World Bank/SE4ALL team analysis, 2014

Energy & Development

Energy access in
Myanmar

Tackling energy access



IFC

International
Finance Corporation
WORLD BANK GROUP

Lighting Myanmar in 2017

Market Intelligence: Research to help companies enter and succeed in the market

Business Development: Partnering international manufacturers with local distributors, retailers, MFIs and other organizations

Consumer Awareness: Launching campaign to promote quality-verified products and companies in Myanmar

Policy and Regulatory: Engaging with government on solar programs, tariffs, and other issues



Total

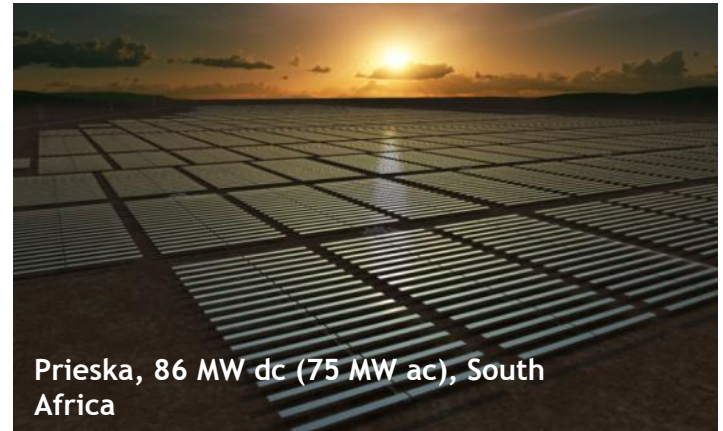
Profile

Total is the world's **4th**-ranked oil and gas company¹ and a global **leader** in solar energy with SunPower.

WITH OPERATIONS IN MORE THAN

130 COUNTRIES,

we have over **96,000** employees who are fully committed to better energy.



Prieska, 86 MW dc (75 MW ac), South Africa

Ambition: Become the Responsible Energy Major

ACCESS TO
ENERGY



RESIDENTIAL
ROOFTOP



COMMERCIAL
ROOFTOP



GROUND MOUNT
POWER PLANT



Ikeja (70 kWp + 250 kWh batteries)

¹ Based in market capitalization in dollars on December 31, 2015

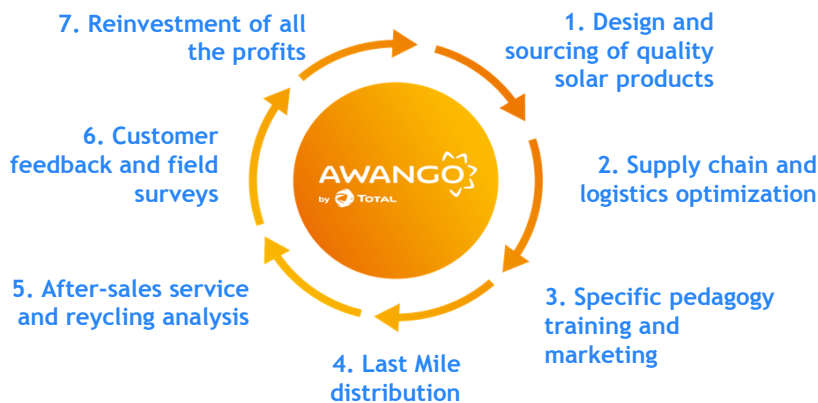
Awango by Total program presentation

Total is committed to **Corporate Social Responsibility** as a core policy embedded in its operations. As such Total as implemented since **1995** major **socio-economic programs** (from health, education, microfinance up to infrastructure, skills training and more) in the area where it conducts its operation as well as at national scale.

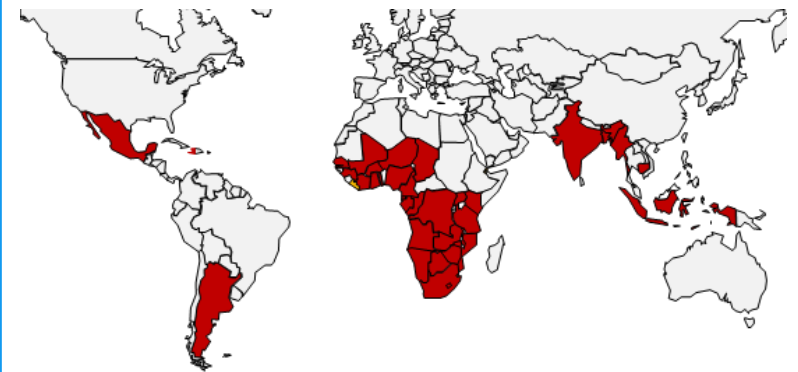
Awango is one of these programs. Its mission is to **enable off-grid, low-income communities to meet some of their most basic everyday** needs by providing innovative, reliable, affordable and versatile solar lighting and phone charging solutions.

Model

A business response to a social issue through a market-driven approach in which solar solutions are sold to ensure the financial sustainability of the program while allowing people get access to high quality products.



Worldwide footprint



40

Active
countries

10 M

People positively
impacted

2 M

Solar lighting
solutions sold

Tried and true offer for off grid people

Key Advantages

- All in a box
no need to buy any external equipments (screwdriver, etc.)
- Plug and play
no need of prior training to use the product
- Stand alone
no need of external maintenance from experts
- High quality
certified by the main market regulator (IFC)

Sunking Pico



Brightness setting	Type of Use	Maximum Battery Capacity	Brightness (lumen)
High	Studying & Precision Work	6 hours	25
Medium	Torch	12 hours	13
Low	Ambiance light	72 hours	2

Sunking Pro2



Brightness setting	Type of Use	Maximum Battery Capacity	Brightness (lumen)
High	Studying & Precision Work	6 hours	150
Medium	Lighting for Cooking & Working	12 hours	75
Low	Ambiance light	36 hours	25

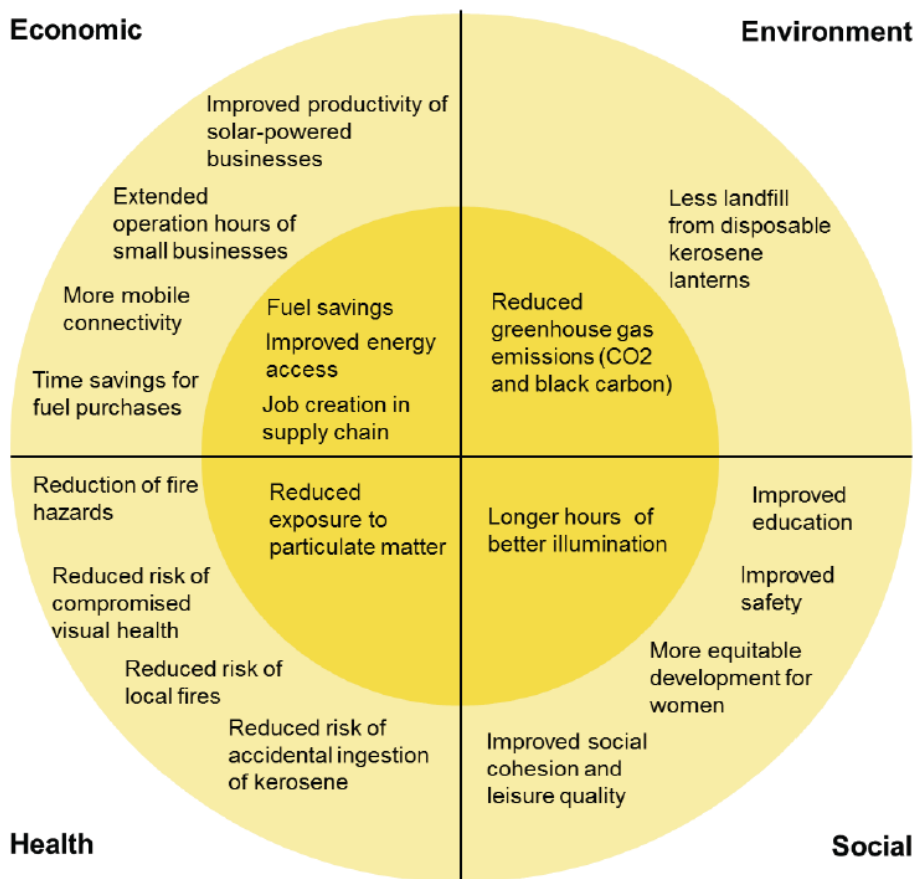
Sunking Home



Brightness setting	Type of Use	Maximum Battery Capacity	Brightness per light (lumen)
High	Studying & Precision Work & Daily chores at home	5 hours	100
Medium		10 hours	50
Low	Ambiance light	20 hours	24

Impacts reported by beneficiaries

Awango solar lamps positively impacts people in many different ways



Examples of win win partnerships



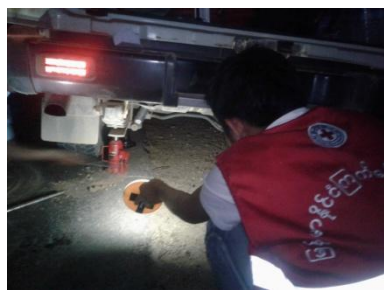
Private companies

Access to energy conducted as a CSR program to support the communities while increasing companies' operations acceptability



Microfinance Institutions

MFI provides loans to access solar lighting solutions to their borrowers



Humanitarian organizations

Distribution of solar lamps for emergency relief to victims of 2015 natural disaster



NGOs

Distribution of solar lamps for rural communities through trained entrepreneurs under a program of the United Nation



Social enterprises

Network of entrepreneurs reselling health related products and solar lamps to improve people life



Independent resellers

Selling solar lamps to access to energy to low income people and income generation activity for independent resellers

Questions?



Thank You

Contacts

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