



# Access to Energy

Solar Home System Pay-As-You-Go : Energy affordable for all ?

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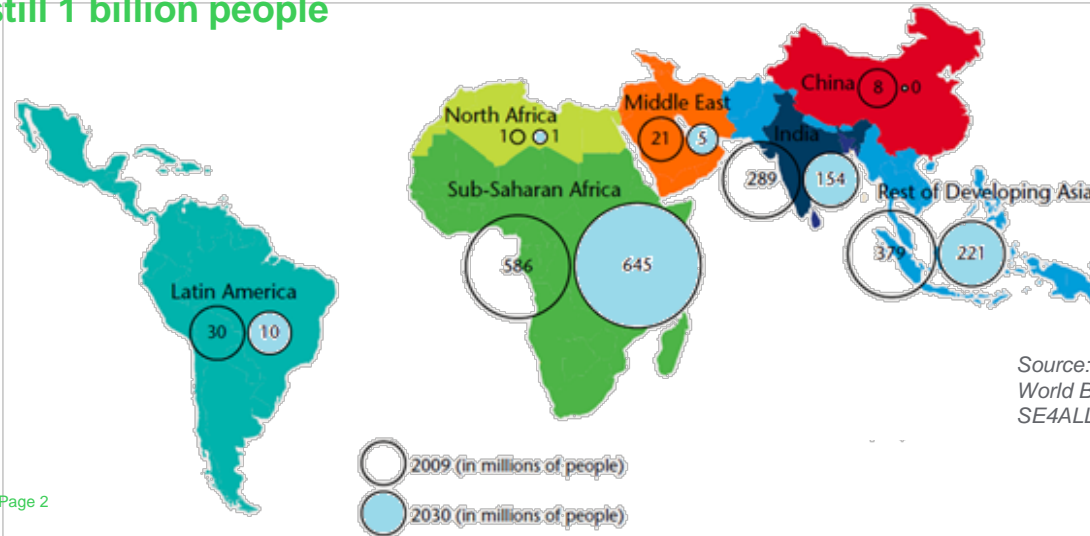
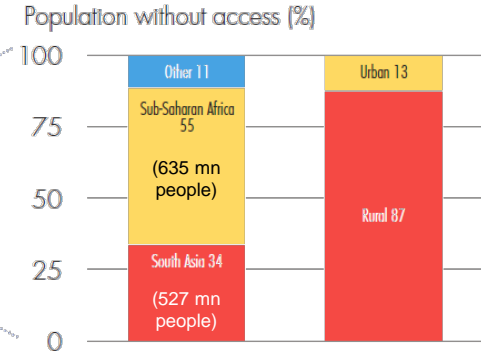
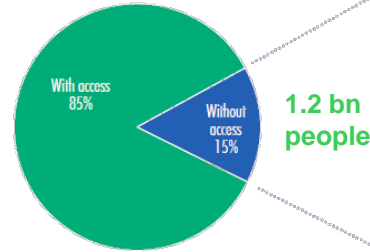
# Access to Electricity deficit

By 2030, 1.7 billion people will gain access to electricity

Since 2009: 222 million people gained access to electricity

Access to energy deficit:

- In 2013: 1.2 billion people
- In 2030: still 1 billion people



Source: World Bank Global Electrification database 2015 SE4ALL, GTF, 2015 & World Energy Outlook, 2013

# Access to Energy became a worldwide political commitment

A favorable international context, promoting the private sector intervention

## International Institutions put A2E as their top priority:

- **SE4ALL** 3 obj.: x2 renewables, x2 energy efficiency, **universal energy access**
  - At Rio+20, \$32 bn investments committed for A2E vs. \$320 bn committed in total
- **Sustainable Development Goal #7**: “Ensure access to affordable, reliable, sustainable and **modern energy for all**”

## International and national commitments

- **COP21**: emergence of the **CLIMATE – ENERGY – POVERTY** nexus
  - New initiatives launched: Africa Renewable Energy Initiative (AREI), Breakthrough Energy Coalition, Climate Aggregation Platform, Clean Technology Fund, Green Climate fund
  - A2E will be a key topic of COP22 in Marrakech
- **EU**: **ElectriFI** – 3 calls of 210 M€ investments into private sector (equity & conv. Grants)
- **USA**: **Power Africa** – goal of additional 30,000 MW eq. to 60 M connections
  - Commitments: \$7bn (USA) + \$12bn (EU, WB, Sweden, AfDB) + \$31bn (private sector)



# Pico-Solar & Solar Home Systems

Products are available on the market

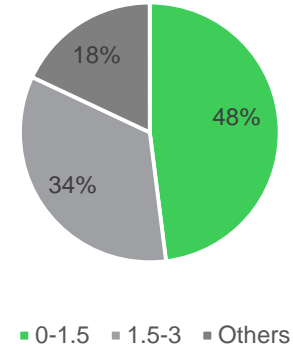


# Access to Electricity is a growing market

But concentrated on small cheap products

Since 2010 **27.2M** units have been sold:

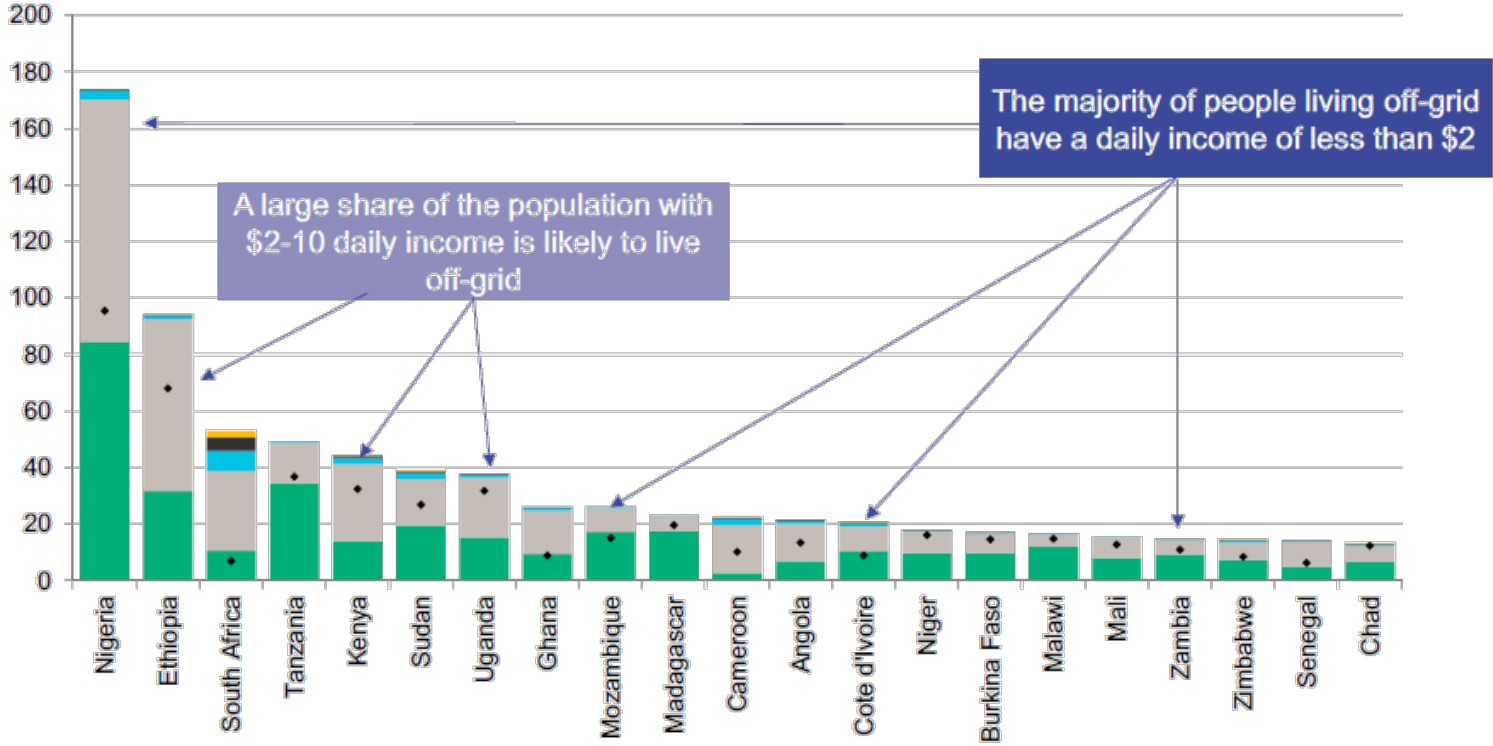
- Including 8M in 2016
- In the second half of 2016, 3.77M unites have been sold for a total of 155.4M\$
- The vast majority of the products 82% are pico solar products (under 3Wp) and they account for 50% of the turnover.
- The service rendered by such products is limited to one light and mobile phone charging (for the bigger ones)
- The bigger products providing more lights, radio, represents only 18% of the volume.



Geographically sales concentrates in East Africa (1.5M units and India 1.4M units)

# Relative wealth in Africa

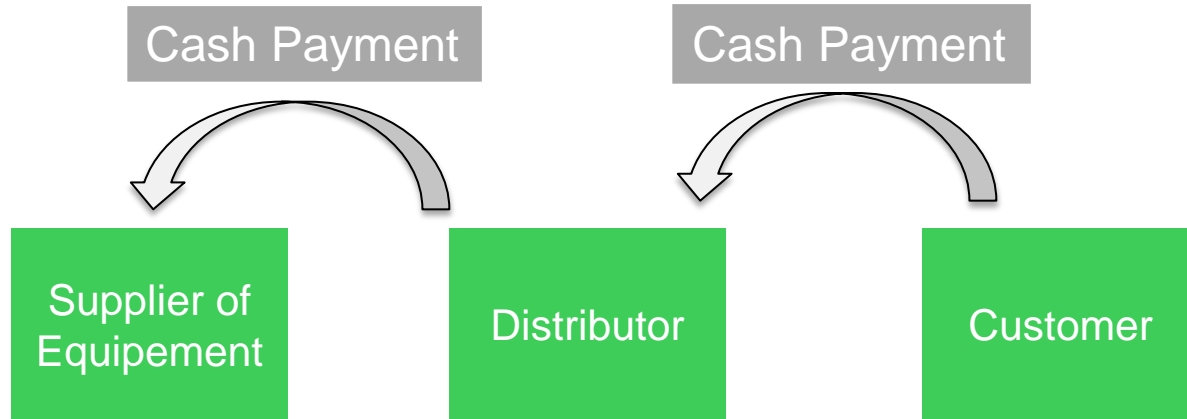
Population (in millions) by estimated per capita income



Daily per capita income in \$: ■ <2 ■ 2-10 ■ 10-20 ■ 20-50 ■ >50 • Total off-grid population

# Economical Challenges: Customer doesn't have cash

## Option 1: financing the customer MicroFinance



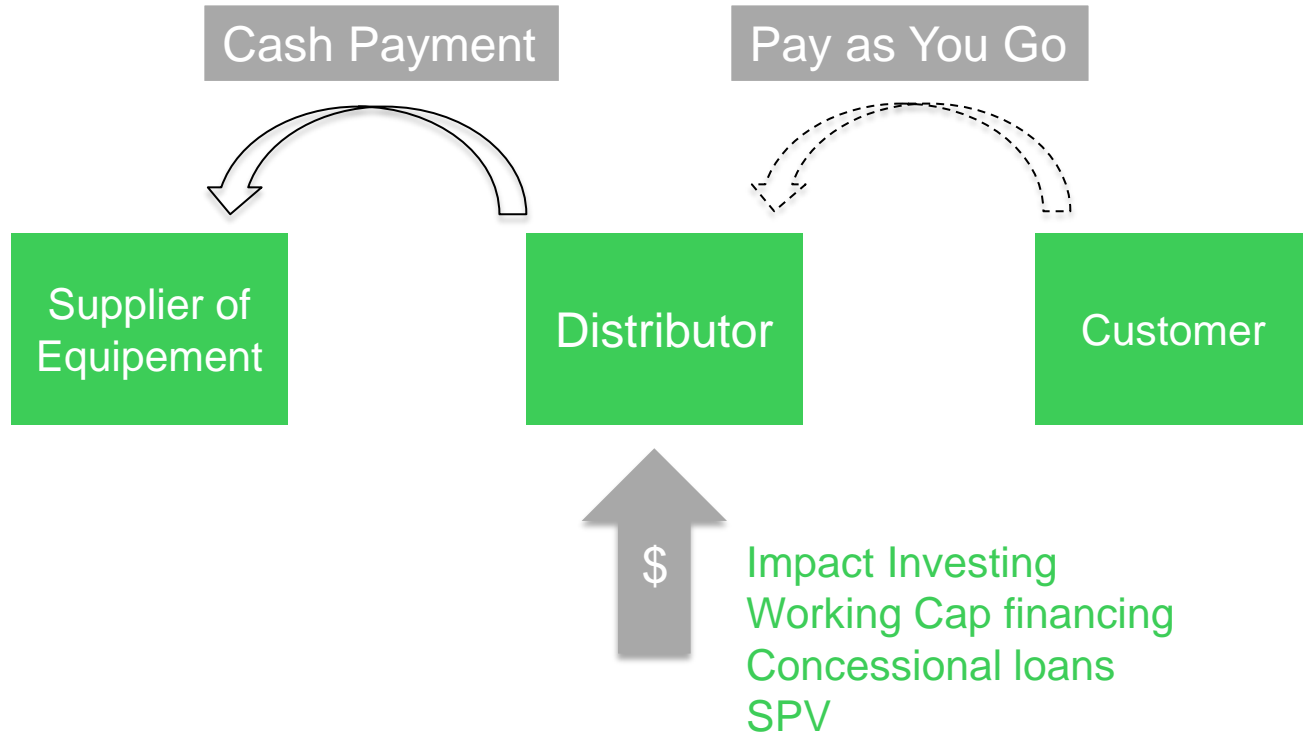
- But MFIs don't want to take the technical /quality risk on an energy product.
- But If you add the cost of distributing the energy products and the cost of distributing the loans it becomes unaffordable. (having the MFI distribute the energy product is tricky for regulatory reasons and for business reasons)



Micro Finance | Is On

# Economical Challenges : Customer doesn't have cash

## Option 2 : Financing the distributor PAYGo





# What is Pay As You Go ?

Solar Home System sold on a lease to own scheme that **switches off** if the customer misses the payment term.

Technically, the SHS embarks an **encryption system** to read the codes and may include communication capabilities.

In terms of Business Model most of the time (in Africa) payments are made through mobile money:

- Customer pays through the Mobile Money System (SMS)
- Receives a code that unlocks the system for a period of time corresponding to the amount paid
- When total price is reached the system unlocks
- Lease duration typically between 18 and 36 months

# What is Pay As You Go ? An exemple

## To buy ReadyPay Solar, a customer must have:



### Valid form of ID

- National ID
- Voter's Registration
- Passport
- Driver's Permit
- NSSF Card



### Registered SIM

SIM card can be MTN or Airtel but must be registered in the customer's name.



### Phone

ReadyPay must be able to reach the customer on the registered SIM before purchase.

## How ReadyPay Solar works:



# SHS PAYG companies accross Africa



**SENEGAL**  
Oolu Power

**SIERRA LEONE**  
Azuri

**GHANA**  
PEG Ghana  
Azuri

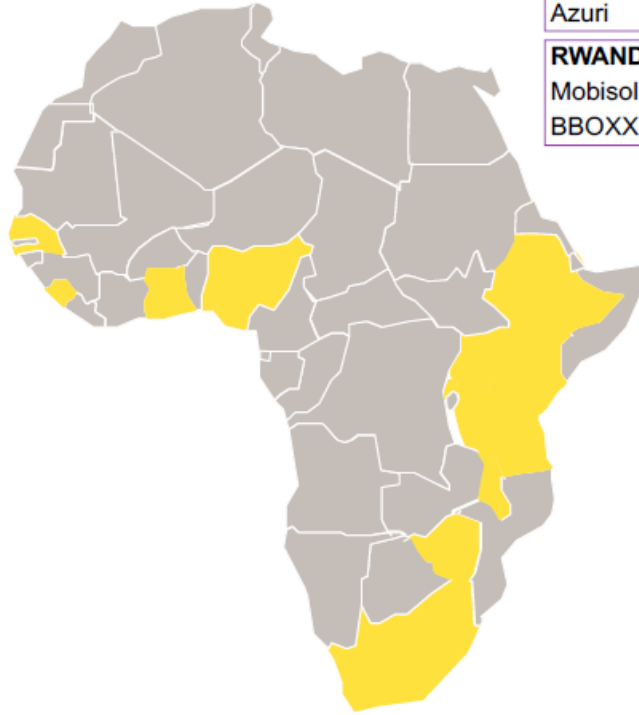
**TOGO**  
Azuri

**MALAWI**  
Azuri

**ZIMBABWE**  
Azuri

**NIGERIA**  
Nova Lumos

**SOUTH AFRICA**  
Azuri  
Kingo



**ETHIOPIA**  
Azuri

**RWANDA**  
Mobisol  
BBOXX

**UGANDA**  
Fenix International  
BBOXX  
Azuri  
M-KOPA  
Village Power  
SolarNow

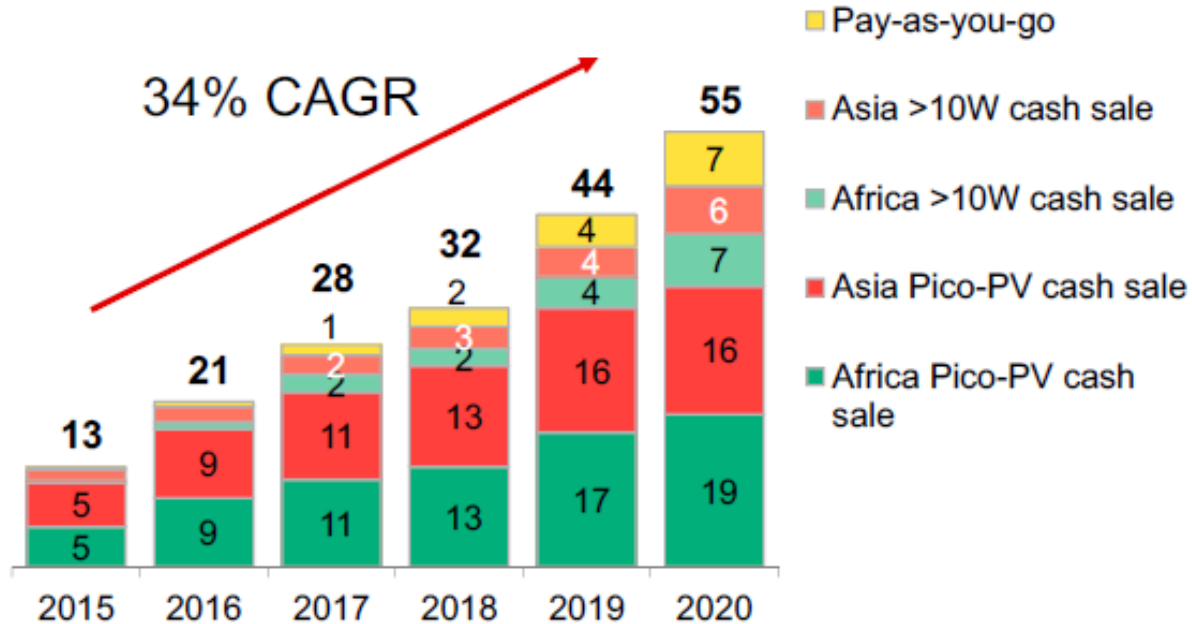
**KENYA**  
SunTransfer  
BBOXX  
M-KOPA  
Mibawa

**TANZANIA**  
Mobisol  
Fenix International  
M-KOPA  
Off-grid Electric  
Eternum energy  
EEG energy



# PAYGo Business Model

Baseline forecast annual sales (million units)

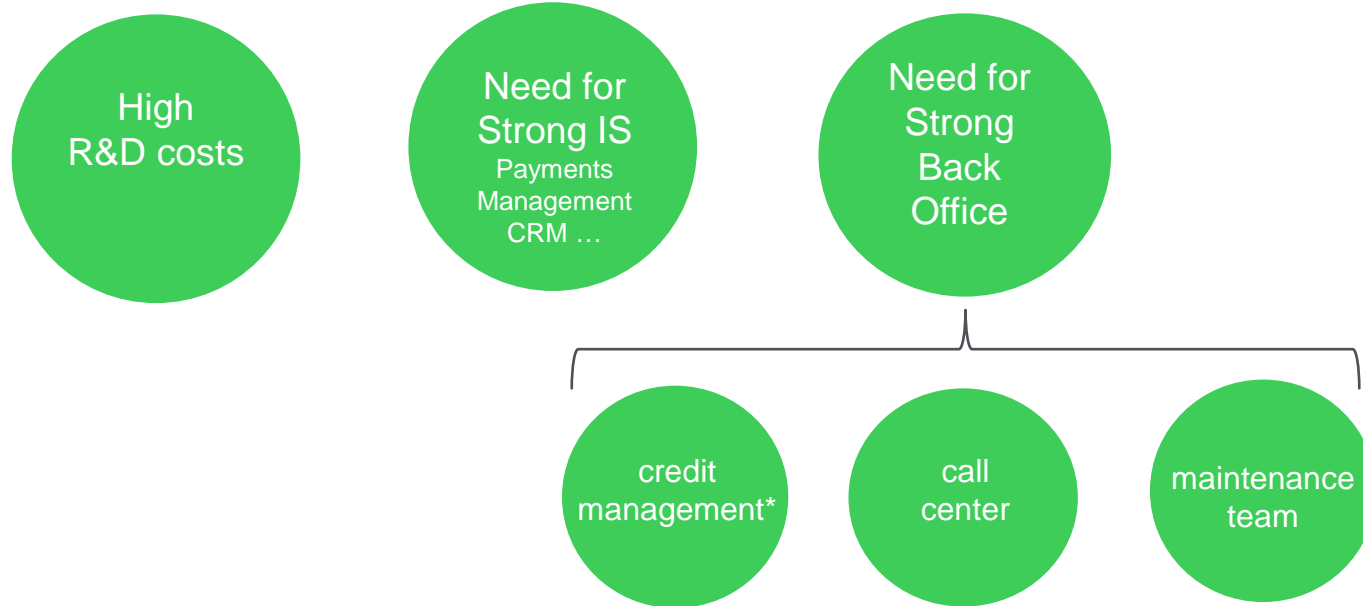


Source: Bloomberg NEF, Lighting Global

# PayGo needs High Volumes

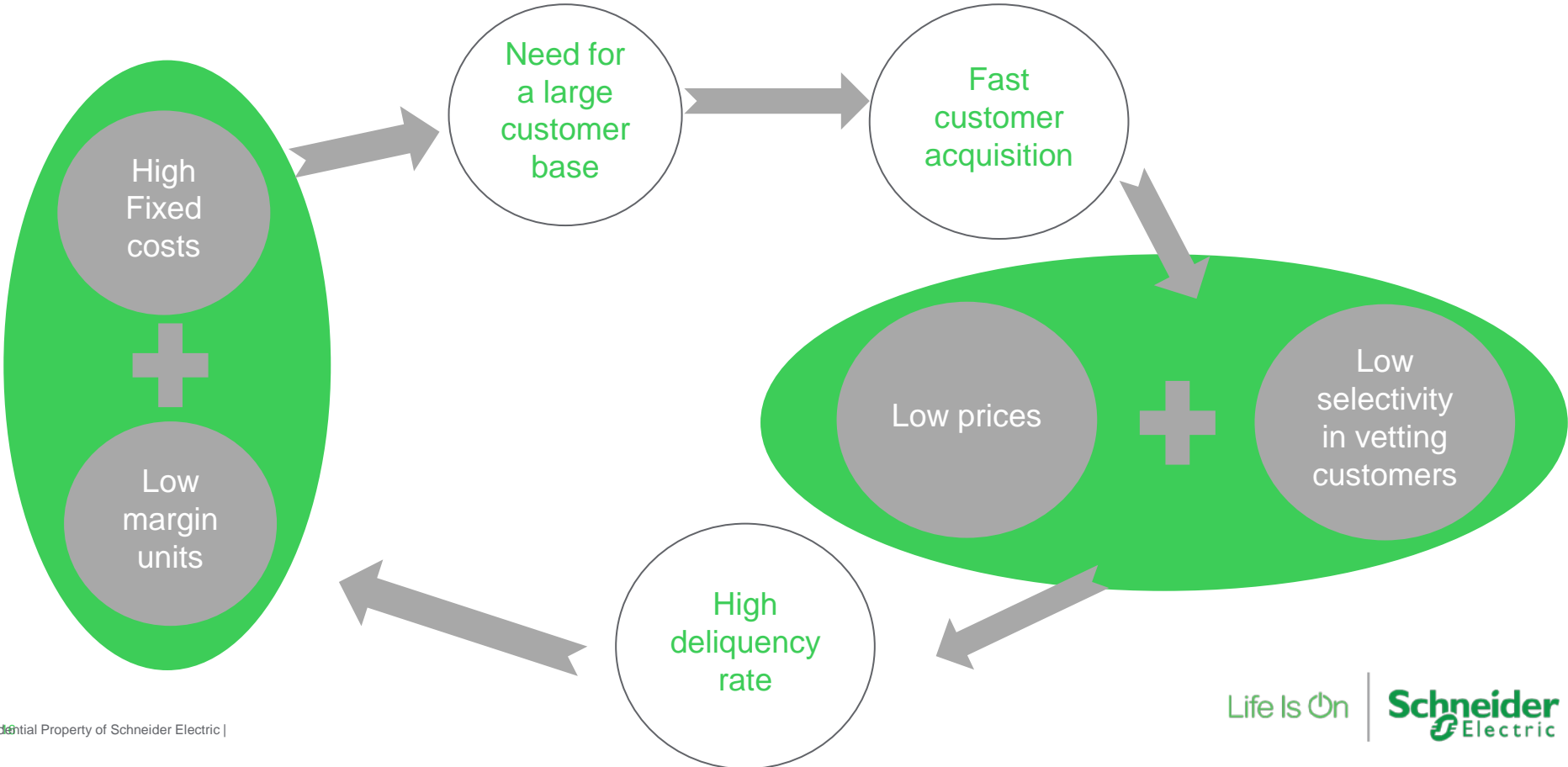
It's a High Fixed Costs Low Margin business

Main Fixed Costs for PAYGo Companies:



\*(vetting process, customer visit, product recovery and recycling...)

# But there are a few snags ...



# Nevertheless, PAYGo is a breakthrough in Access to Energy

Technology is moving fast

- Batteries are more **efficient** and **increase** their life span (increased period during which the customer is saving money)
- **Low cost** communication improving (more and more systems are communicating)
- Appliances are becoming more and more efficient
- **Product data management** reduces maintenance costs
- **Customer data management** improves vetting process, and marketing efficiency

Energy is more and more seen as part of an eco system:

- Partners are ready to **share costs** (MNO, Banks, Utilities)
- Access to information improves the customers revenues (agricultural apps, market infos, ..)

# It's still difficult to conclude

What are the strenghts of PAYGo?

- SHS is affordable
- Enables people to get access to more comfort and safety

What are the weaknesses?

- SHS won't enable the customers to significantly increase their revenues and change their lives
- SHS companies are still struggling with their Business Models

Favorable tendancies:

- More and more companies are breaking even
- More and more investors are interested in the field. Commercial investors are now showing up
- **The next step to boost SHS sales would be to unlock debt financing at a large scale**



Life Is On

**Schneider**  
Electric