

Pay-as-you-go Solar: A Revolution in Off-grid Electrification

In partnership with the Clean Energy Solutions Center

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Supporters of this Expert Training Series



ASSISTING COUNTRIES WITH CLEAN ENERGY POLICY

Overview of the expert

Factor is an international group, specialized in providing global, innovative and sustainable solutions in areas such as climate change, energy, sustainability, trading and innovation.

Our key value is our people. We have offices in six countries, where our interdisciplinary team works for public and private stakeholders, international organizations and non-profit entities.

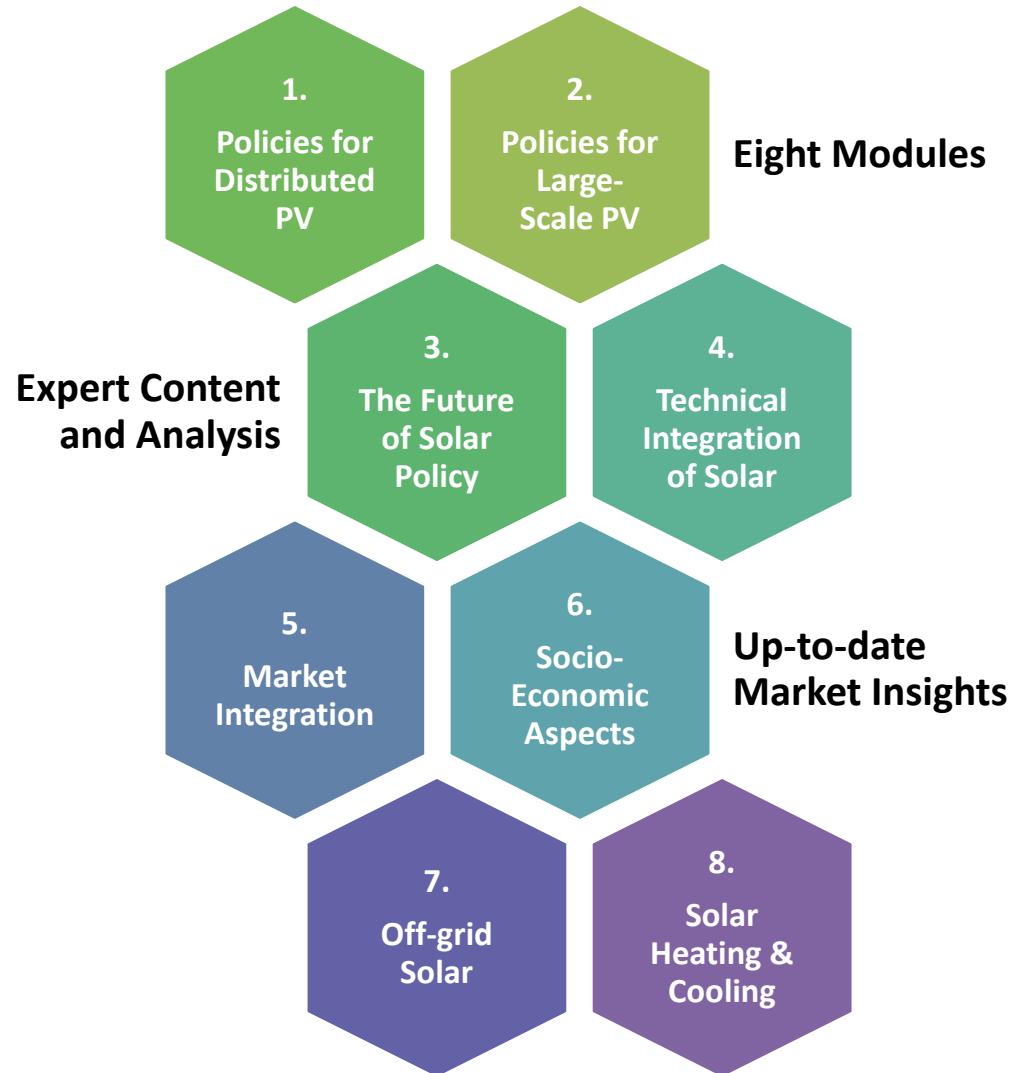
Our own history and experiences are based on constant innovation. This helps us target our services, by combining academic knowledge, technology and practical experience.



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Dept, [Factor](#)
20 years in RE
Sector
- Worked for
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private sector on
energy transition
strategies

Training Course Material

This Training is part of Module 7, and focuses on the Pay-as-you-go Solar Revolution



Overview of the Training

- 1. Introduction: Learning Objective**
- 2. Understanding PAYGO**
- 3. Main body of presentation**
- 4. Concluding Remarks**
- 5. Further Reading**
- 6. Knowledge Check: Multiple-Choice Questions**

1. Introduction: Learning Objective

Learning Objective

This module provides:

1. An introduction to the functioning of Pay-As-You-Go (PAYG) business models
2. A discussion of the funding needs of PAYGO business models
3. A analysis of the PAYGO business model specification landscape
4. An evaluation of the PAYGO market

2. Understanding Off-grid Solar Markets

Understanding Off-grid Solar Markets

Pay-as-you-go (PAYGO) is a digital financing technology that allows end-users to digitally pay for solar energy in instalments or prepaid.

PAYGO is emerging as a solution that addresses both **end-customer affordability** and provides sufficient margins to **fuel operational models that can scale.**



Source: azuri-technologies.com

3. Main Body of Presentation

Main Body of Presentation

1 Introduction to the PAYGO Business Model

2 Funding Needs and Profitability

3 The PAYGO Specification Landscape

4 The PAYGO Market

PAYG Business Model – The Problem

The Problem:

Customer base in remote areas lacks financial infrastructure and resources.

High up-front costs of solar home systems excludes those in need.

The Solution:

PAYGO refers to a **business model** that allows users to pay for their product via **embedded consumer financing**.



PAYG Business Model – How does it work?



Mobile Money: Consumers top up mobile credit, buy prepaid usage, receive code to unlock device.



Service Provision Control: When prepaid usage is used, consumer receives message to top up, otherwise devices locks.



Data: Huge amount of data generated, facilitates operations and investment decisions.

Source: FIBR Project

PAYG Business Model – Data



1. Quantify risk factors
2. Practical to compute
3. Starting point for the identification of investment opportunities

PAYG Business Model – Data

Data and Privacy Concerns can arise:

- There is evidence that customers can find the contracts involved in **PAYG confusing**.
- 27% of customers felt that the agent **did not explain the contract** to them adequately, and 13% said that parts of the **payment plan were unclear**.
- The amount of information allows for **sensitive insights**.



Source: Acumen, 2017

Main Body of Presentation

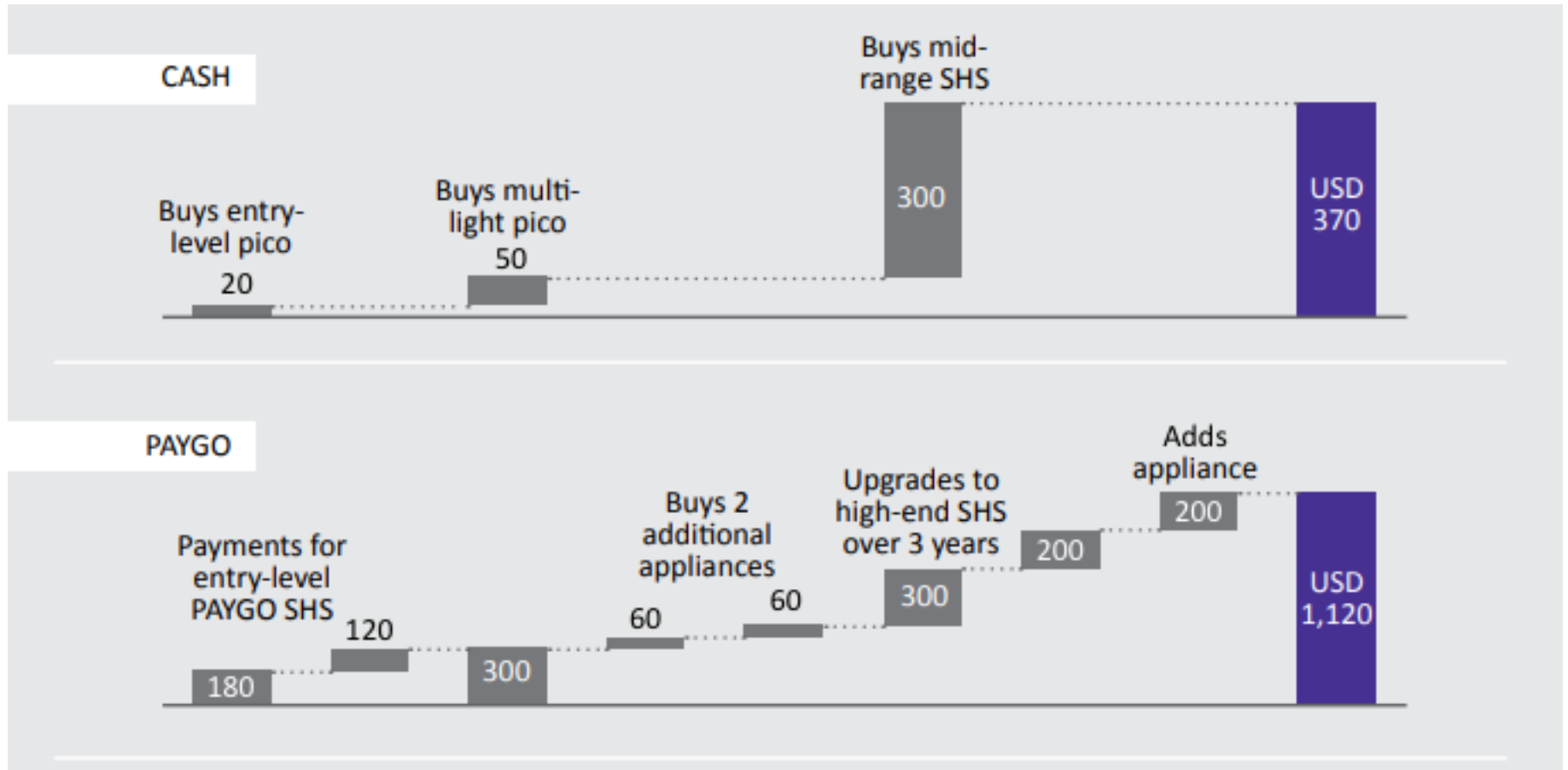
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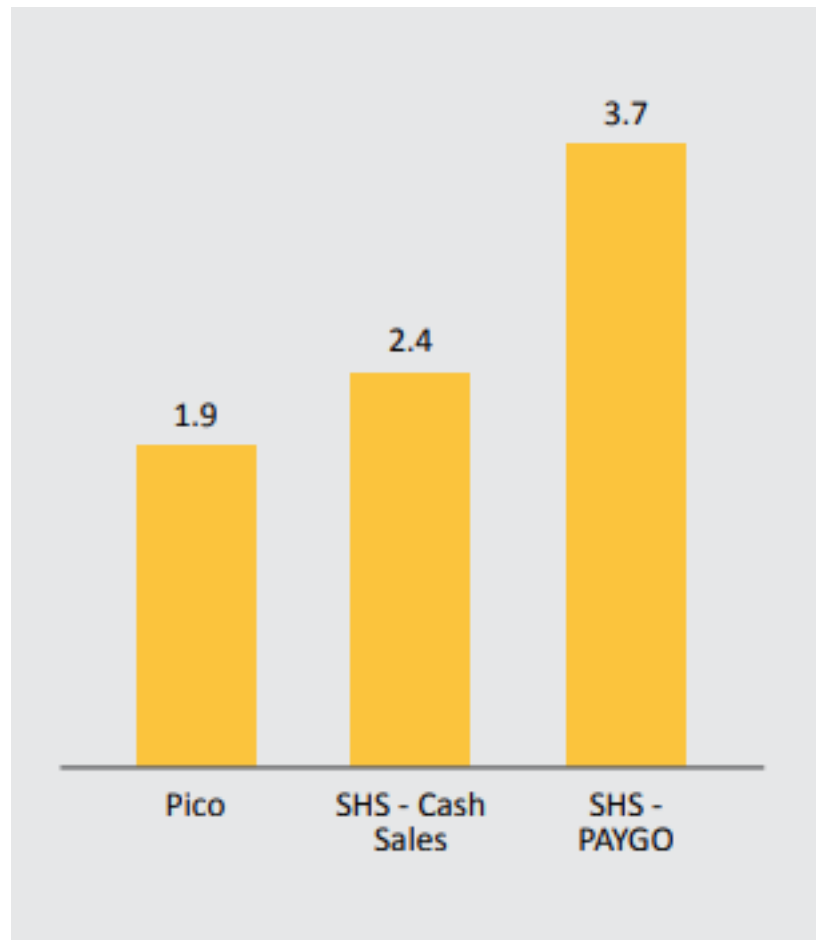
4 The PAYGO Market

PAYG Business Model – Life Time Value



Source: GOGA, 2018

PAYG Business Model – PAYGO Magnet: The Lion's Share of Capital



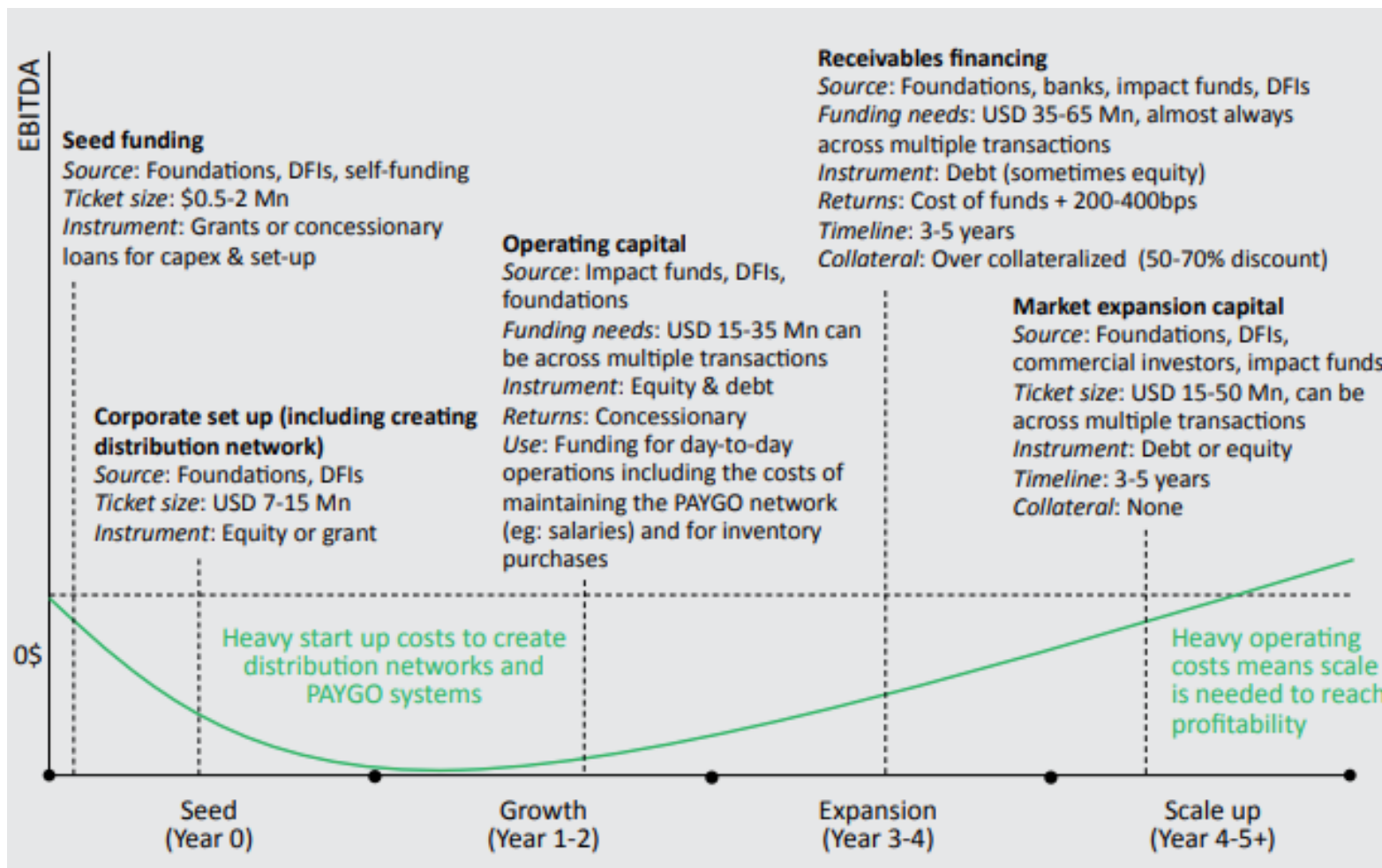
Average score from poll of funders; score out of 5 (1=Difficult, 5=Easiest to fundraise for a company operating under a specific business model); n=11 (2017)

2012 to 2017: PAYGO businesses raised USD 773 million.

This is equal to ~85% of all funds raised.

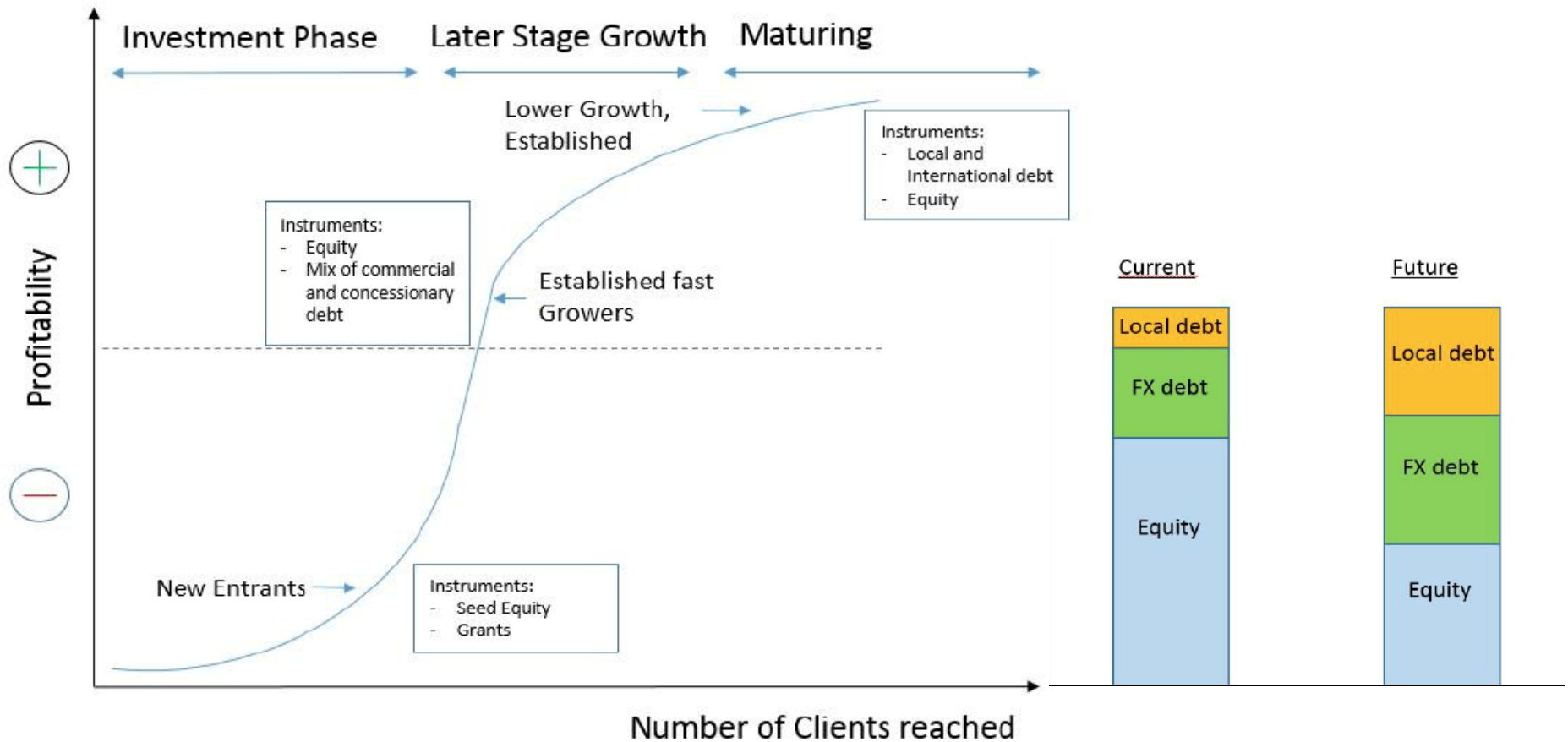
Source: GOGA, 2018

PAYG Business Model – PAYGO Financing



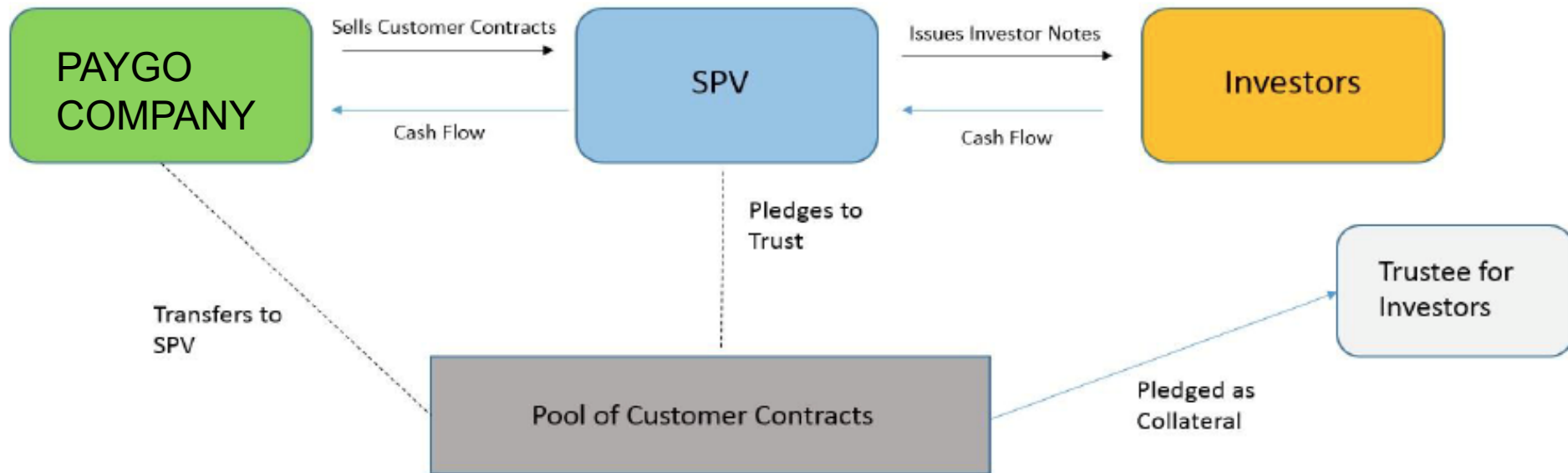
Source: GOGA, 2018

PAYG Business Model – PAYGO Financing



Source: GIZ, 2017

PAYG Business Model – PAYGO Financing



Source: GIZ, 2017

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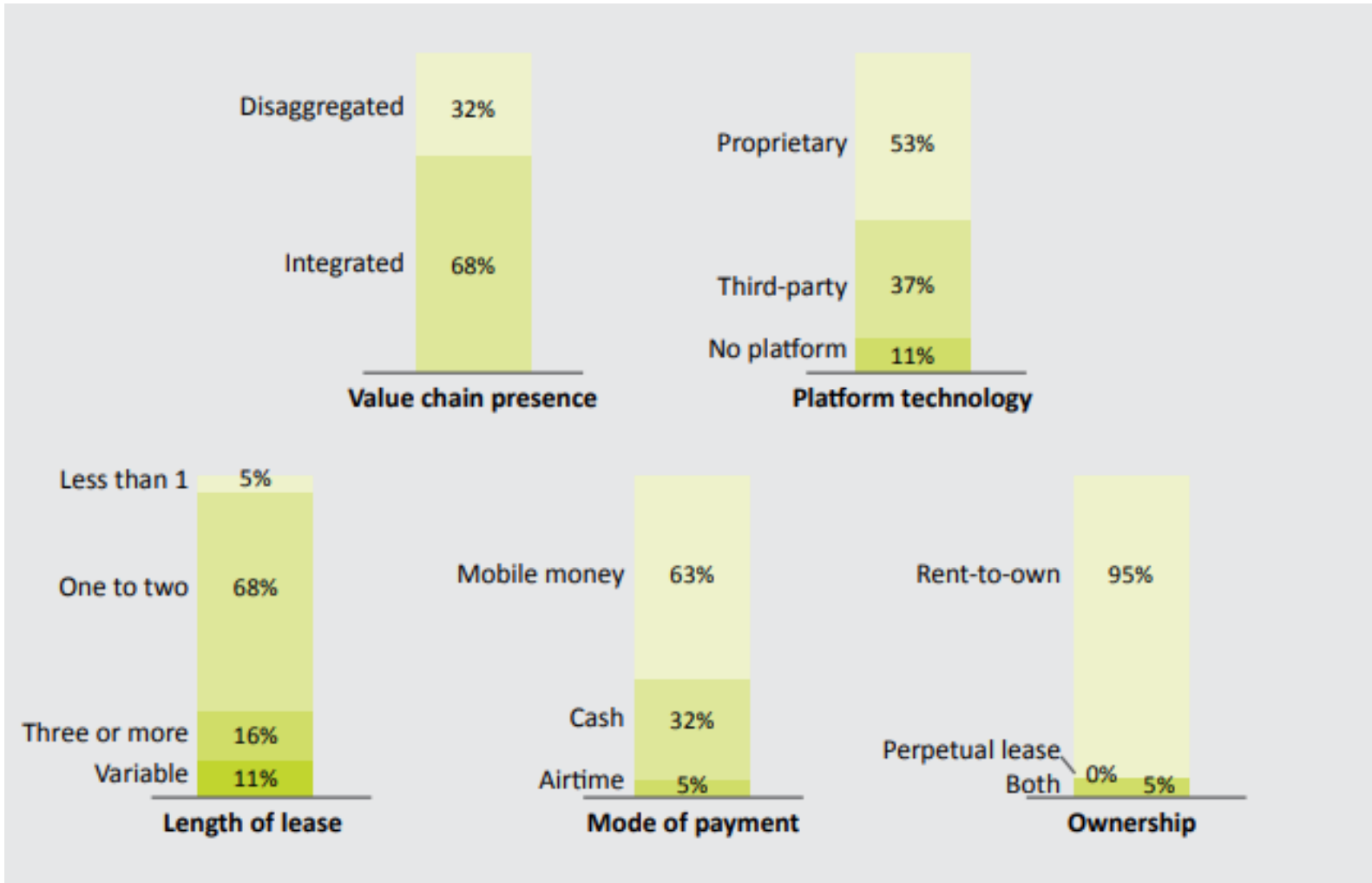
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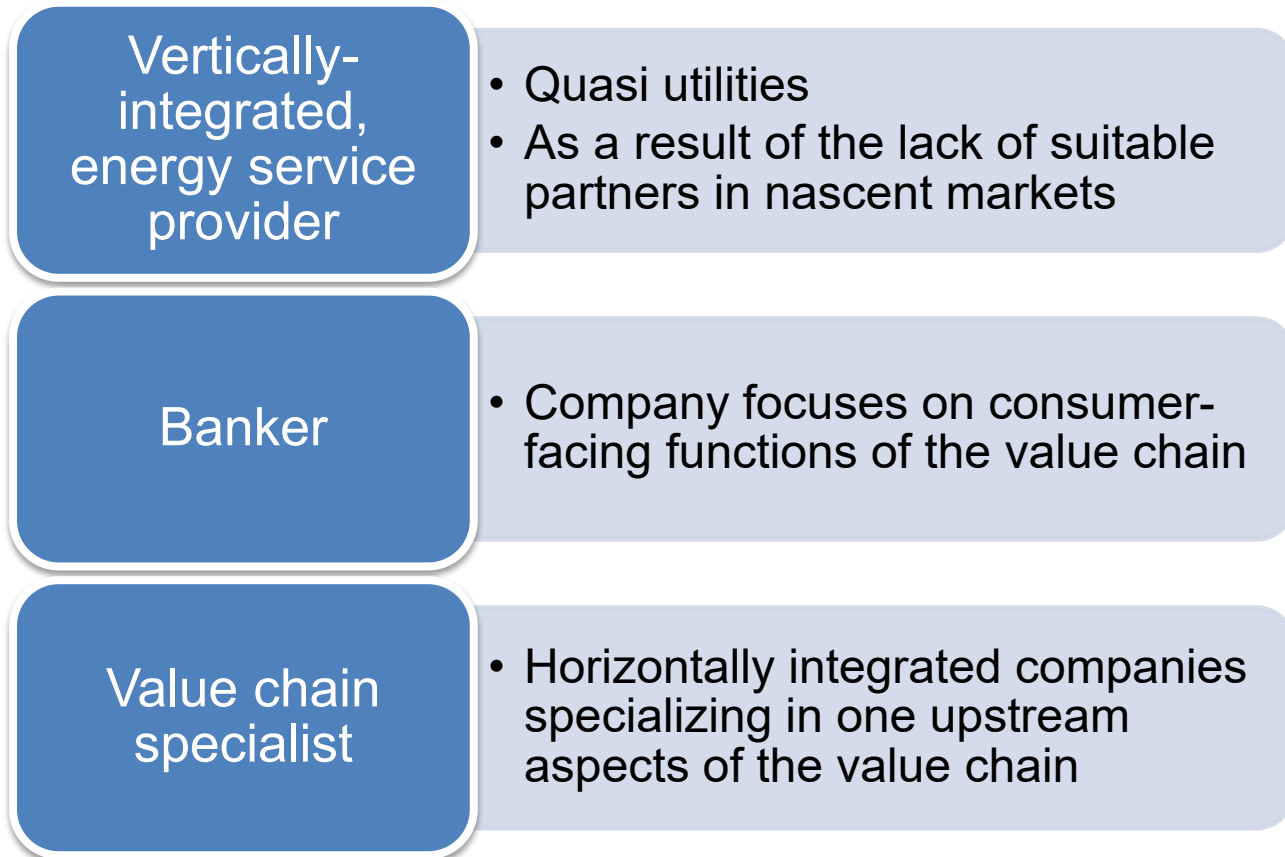
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PAYG Business Model – Specification Landscape



Source: GOGA, 2018

PAYG Business Model – Specification Landscape



Source: GOGA, 2018

PAYG Business Model – Ownership



Source: solarplaza.com

PAYG Business Model – Mobile Money

Mobile money is now available in TWO THIRDS of low- and middle-income countries



Source: global-climatescope.org

PAYG Business Model – Mobile Money

CGAP research (2015) suggests that **30-50%** of PAYG solar customers outside of Kenya are **new to mobile money** and opened a mobile wallet in order to purchase a digitally-financed SHS.

PAYG solar providers are pushing mobile money services into **frontier areas**.

PAYG solar companies are providing off-grid, predominantly **unbanked consumers** with their **first access to formal financial services**.

Source: CGAP, 2015

PAYG Business Model – The Value Chain

Retail (Durable Goods) Value Chain



Lending / Leasing Value Chain



Supporting Activities

Customer Research

Customer Base Expansion

Data Collection and Analysis

Source: CGAP, 2018

PAYG Business Model – Cost-related Barriers to Entry

Investments in technology: USD 1-10 million for software development

High customer acquisition costs: large, commissioned sales teams needed

High transaction costs: follow-ups/repossessions

High after-sales costs: post-sales servicing

High corporate costs: expert teams responsible for multiple value chain nodes

Source: GOGLA, 2018

PAYG Business Model – The Unbundling

Unbundling of vertically integrated companies can create more product options and greater flexibility.

The unbundling can **lower start up costs** for the second generation of PAYGO operators.

Requirement for the expansion of the market **beyond low-hanging fruits.**

Example: Mobisol's Paygee

PAYG Business Model – The Specialist



Source: paygee.com

AVAILABLE MODULES

Customer Relationship Management

Payment Collection & Management

Workforce Management

Product & Service Management

Inventory Management

Credit Management

Business Intelligence

Main Body of Presentation

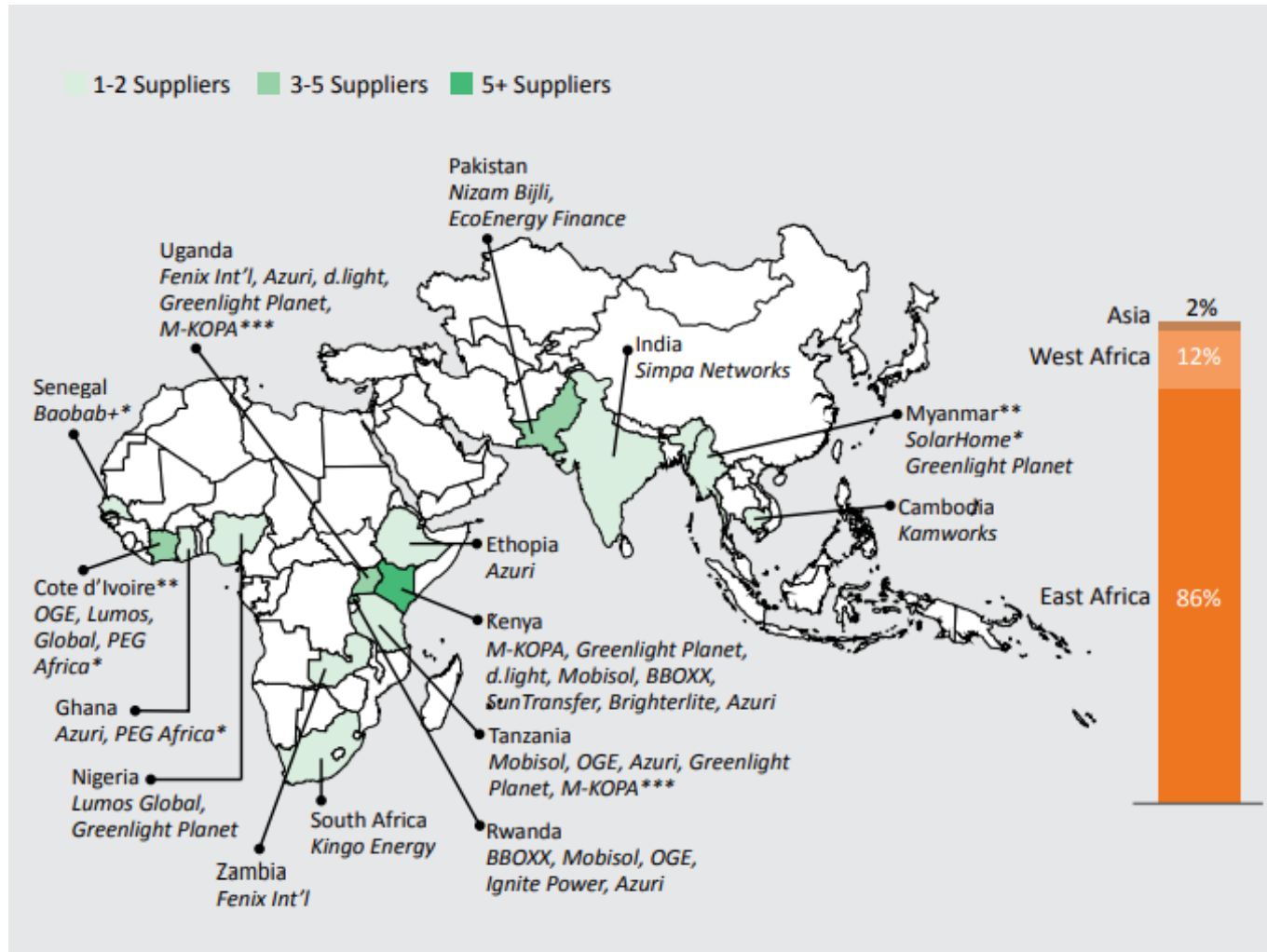
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The PAYGO Market – Current Presence

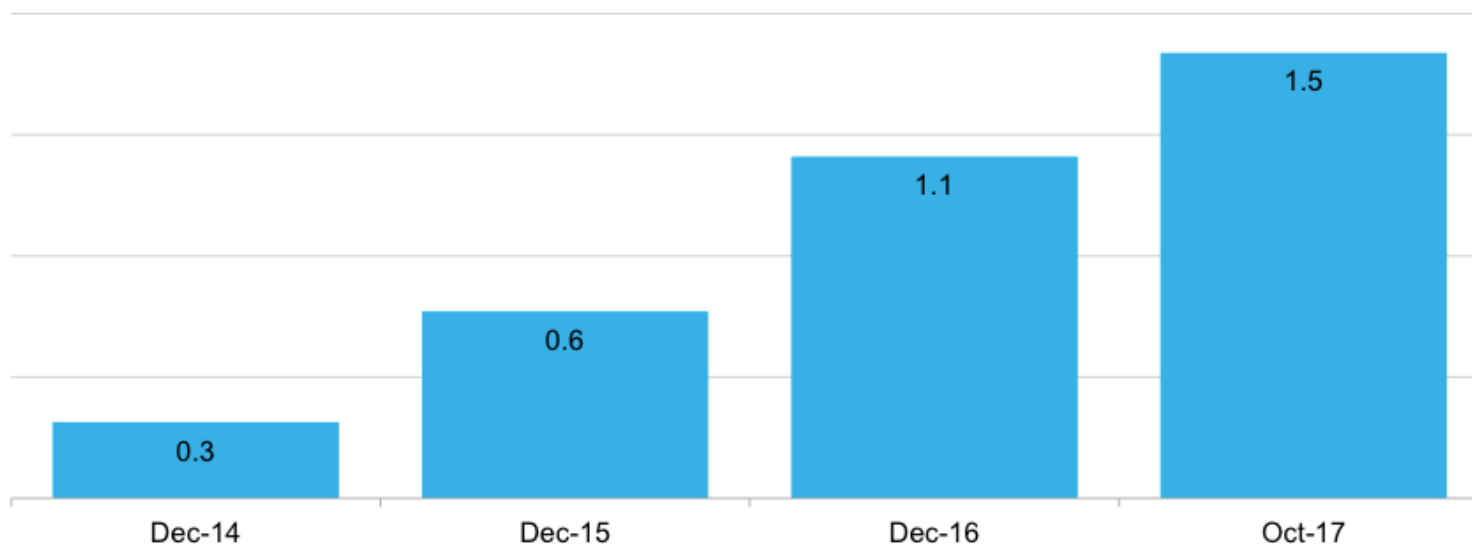


Source: GOGLA, 2018

The PAYGO Market – Market Size

Cumulative unit sales by pay-as-you-go operators

Cumulative products sold (millions)



Source: BNEF, 2017

The PAYGO Market – PAYGO Disappointment

Why has the PAYG sector **grown more slowly** than anticipated?

- Building distribution networks in emerging markets **takes longer than anticipated**
- **Consumer habits** have surprised many
- **Overhead costs** are substantial
- Lack of **Capital**

Source: Shell Foundation, 2018

4. Concluding Remarks

Concluding Remarks

1. PAYGO makes SHS affordable and allows businesses to scale quickly
2. PAYGO business models require massive funding and take long to gain profitability
3. Unbundling can be an important pathway
4. The PAYG market will sustain, conditional on willingness of investors to support the industry

Thank you for your time!



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5. Further Reading

Acumen, 2017, An Evidence Review: How affordable is off-grid energy access in Africa?
<https://acumen.org/wp-content/uploads/2017/07/Evidence-Review-On-Affordability.pdf>

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<https://data.bloomberglp.com/bnef/sites/14/2017/11/BNEF-2017-11-21-Distributed-Energy-in-Emerging-Markets-White-Paper1.pdf>

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FIBR Project, How Flexible Financing, Solar Panels and Data Could Be Key to Financial Inclusion. <https://medium.com/f4life/how-flexible-financing-solar-panels-and-data-could-be-key-to-financial-inclusion-9221a5274106>

GIZ, 2017, Financing the Off-grid Sector: Turning Portfolio into Finance

GOGLA, 2018, Off-Grid Solar Market Trend Report 2018. https://www.sun-connect-news.org/fileadmin/DATEIEN/Dateien/New/2018_Off_Grid_Solar_Market_Trends_Report_Full.pdf

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Hystra, 2017, Reaching Scale in Energy Access. https://static1.squarespace.com/static/51bef39fe4b010d205f84a92/t/594a8a4f86e6c05c7d651eb1/1498057514242/Energy_Report+%28ADB+excluded+++license%29.pdf

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6. Knowledge Checkpoint: Multiple Choice Questions