Choosing the Right PAYGO Platform and Business Model: A Look Ahead

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State of play with evolution of PAYGO in the off grid sector

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Setting the scene

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PAYG sector, a few headline numbers …
>2.3 million HH were PAYG customers by the end of 2017 vs. 1.1 mil in 2016 and <550k in 2015

Broad geographic footprint, **35+ countries** with some PAYG presence, but >95% of customers in SSA

**>100% YoY growth** of cumulative sector sales (active PAYG HHs) in the past year and booming revenues, but **few profitable** PAYG players

Growing eco-system with **10 PAYG players with >100k customers,** 30+ PAYG players with >20k PAYG customers, likely >100+ PAYG players overall (including distributors on B2B PAYG platforms)

Strong funding for PAYG sector with **~$1 billion** for top 10 PAYG players across equity, debt, grants in past 5-6 years, but highly concentrated among top players

**Rapidly evolving PAYG product offering** with migration across sector to bigger systems, broader eco-system of consumer appliances, increasing exploration of productive use appliances

Accelerating **shift away from vertically integrated models** to a much more complex and disaggregated PAYG value chain with SW platforms, HW manufacturers, distribution and financing specialists
Rapid PAYG sector growth which we expect to continue through 2020, though spread between potential growth pathways is large depending on industry dynamics and macro environment.

Global cumulative SHS PAYG penetration

In millions of PAYG households/customers

- Aggressive case for growth (100%+ CAGR)
- Base case for growth (85% CAGR)
- Low case for growth (70% CAGR)

1. Range based on high and low cases of growth of PAYG players. Low: 70% CAGR based on earlier Dalberg estimate pre B2B platform take-off and small scale PAYG system traction. Medium: 85% based on Dalberg analysis of historical and projected figures (compare to 82% CAGR in BNEF 2015 report for 2015-2020), High: 100%+ CAGR based on self-reported company projections. Source: Dalberg interviews, Dalberg analysis.
East Africa has become a global hub for PAYG, although expansion into West Africa, Asia, and Lat America is gathering steam, with deployments in 35+ countries tracked in 2017

Presence of PAYGO players by country (not exhaustive)

Number of players (2017)

- 1-2 suppliers
- 3-5 suppliers
- 5+ suppliers

(Notes: Does not consider pilots, only well-established sales presence; The data is not exhaustive, but is representative; (*) Distributor (**) New entrants (2015-2017) with low overall in-country sales; (***) M-Kopa has presence but bulk of their sales come from Kenya. Source: Dalberg research and analysis)
Established cash sales businesses and specialized firms have turned profitable, but breakeven for SHS/PAYGO players remains elusive

Overview of company profitability
N= 20 companies, EBITDA (2017)

Mostly early entrants with an established cash business, and companies specializing at a point on the value chain (e.g. design/manufacturing)

Mostly PAYGO providers operating along a vertically integrated value chain

Mostly new PAYGO distributors, particularly outside Africa

Design/ manufacture specialists
Branded distributors
Vertically integrated
Design/platform/finance (PAYGO)

(1) Mapping is relative and not exact (2) Estimates based on indicators self-reported by suppliers
Source: Dalberg Interviews, Dalberg Analysis
PAYGO ≠ PAYGO: Wide diversity of business models in place and rapid evolution is evident

PAYGO business model specification landscape
% of PAYGO players interviewed (2017)

Value chain presence
- Disaggregated: 32%
- Integrated: 68%

Platform technology
- Proprietary: 53%
- Third-party: 37%
- No platform: 11%

Mode of payment
- Mobile money: 63%
- Cash: 32%
- Airtime: 5%

Connectivity
- On-network (GSM/m2m): 33%
- Off-network: 68%

Length of lease
- Less than 1: 5%
- One to two: 68%
- Three or more: 16%
- Variable: 11%

Ownership
- Rent-to-own: 95%
- Perpetual lease: 5%
- Both: 0%

WHERE IS THE SECTOR HEADED IN 2018+?

Note: Based on the business model specifications of 19 PAYGO operators. While this number is not exhaustive, it is chosen to represent diversity of business models and geographies.
The PAYG ecosystem is rapidly migrating to larger SHS sizes

Annual global sales of affiliate PnP SHS devices by size
*Thousand units; >11Wp categories; (2014-17 est.)*

<table>
<thead>
<tr>
<th>Size</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>100+ Wp (Higher SHS)</td>
<td>100%</td>
<td>77%</td>
<td>36%</td>
</tr>
<tr>
<td>50-100 Wp (Medium SHS)</td>
<td></td>
<td>9%</td>
<td>28%</td>
</tr>
<tr>
<td>21-49 Wp (Basic SHS)</td>
<td></td>
<td>8%</td>
<td>22%</td>
</tr>
<tr>
<td>11-20 Wp (Entry-level SHS)</td>
<td></td>
<td>6%</td>
<td>14%</td>
</tr>
</tbody>
</table>

Note: Figure reflects sales data of active Lighting Global and GOGLA affiliates in each year, and may not be representative of the total pico market. No affiliate PnP SHS sales were recorded prior to 2014. Source: Lighting Global/GOGLA sales data; Dalberg market model and analysis.
Disaggregation of PAYG business models – an accelerating trend

**Functions**

- **Hardware product design & manufacturing**
  - Designing physical solar products
  - Manufacturing parts and products

- **PAYG software development & deployment**
  - Operating software (PAYG functionality, CRM, FFM, logistics)
  - MNO/pmt integration
  - Data analytics/insights

- **Distribution & Marketing**
  - Marketing
  - Customer origination
  - Sales & logistics
  - Installation

- **Consumer finance**
  - Loan origination
  - Management of debt facilities
  - Collections

- **After sales support**
  - Warranty support hotline
  - Service/maintenance
  - Device/battery collection and disposal for replacements
  - Customer training

**Integrated service providers:** Work along entire value chain to capture value at each point, from product development to distribution, servicing, and maintenance. Entails heavy investment in local shops and training of local staff, sometimes w/ partners.

**Emerging models**

- **Hardware specialists**
  Designers and manufacturers who focus primarily on the development of off-grid solar household units and appliances

- **Software/data platform**
  PAYG software platforms (including hardware integrators) that allow others to distribute via PAYG models

- **Distribution specialists**: Country or regional distribution specialists, some integrating consumer financing on platform others solely focused on distribution

- **After Sales Support**: providers of after sales support services, warranty fulfillment, etc., sometimes including upfront logistics (e.g., SHS installation)

- **Hardware and software developer**: Couples hardware with PAYG and CRM software, decoupling distribution

- **Consumer financing specialists**: Niche consumer finance providers and financing risk management vendors
Disaggregation of PAYG business models – an accelerating trend

Integrated service providers

Hardware specialists

Software/data platform

PAYG distribution specialists

After Sales Support

Hardware mfg and software platform

Emerging models

Consumer financing specialists

Dalberg
Future models for success?

1. THE ENERGY LADDER COMPANION

2. THE BANKER

3. THE FAST FOLLOWER

4. THE VALUE CHAIN SPECIALIST
PAYG business model challenges and risks

**Four businesses in one**
Most PAYGO players make/assemble their own product, distribute it, create a technology platform, and run an effective lending bank. It is challenging to achieve excellence across all four.

**Deteriorating asset quality**
Rapid customer acquisition has, at times, led to expansion into segments that have increased bad-debt ratios.

**Increasing competition**
Pico leaders have entered the PAYGO market with strong product heritage and distribution relationships. Specialist hardware and software providers have lowered entry barriers for other new entrants.

**Limited economic engine**
Companies are competing for a limited share of wallet. Financing has helped address affordability concerns, but has yet to put money back into consumer wallets.

**Increasing policy scrutiny and risks**
Industry no longer below the radar for policymakers, so facing increasing scrutiny with potential for greater regulations (fin reg./KYC, licensing requirements, VAT/tariffs), also increasing risks and concerns on data privacy.

Note: Icons sourced from The Noun Project
The long view on upside – opportunities on the horizon?

• **Expanding the product line-up, consumer appliance opportunities** – rapid migration to expand product set to bigger systems and in-demand appliances beyond televisions (refrigeration, connectivity devices, cooking, etc.), move into new types of financial services

• **Productive use appliances** – increasing interest in productive use appliances, growing interest and some momentum from productive use funders and off-takers, particularly around the agriculture use case, but also small scale industrial uses

• **Data analytics and monetization opportunity** – large and untapped value in PAYG data, in immediate term likely much more valuable for internal operations optimization and upsell/cross-sell rather than external 3rd party monetization

• **Results based financing** – upside scenarios from government partnerships and donor RBF mechanisms designed to extend PAYG reach into new geographies and poorer/harder to access consumer segments

• **Under-electrified opportunity** – 50/50 off-grid vs. underelectrified globally, with underelectrified segment growing quickly, already tapped by a number of PAYG players but opportunity for more upside

• **Mini-grid + off-grid PAYG bundling** – opportunities for synergies in customer acquisition, payments, after sales support, appliance eco-system access
Evolution of the platforms
Connectivity and data use

- Services and data inputs
- AI and Machine Learning
Customer data:
Risks and opportunities

- Privacy
- Value of data
Poll
What will the most important development for PAYGO service platforms be in the next two years?

1. Creating new ways to derive value from customer data
2. More collaboration to enable more open services
3. Using machine learning and artificial intelligence to improve performance
4. Protecting customer data and resolving privacy issues
5. More connectivity and data acquisition
Discussion