

THE OFF-GRID SOLAR POLICY TOOLKIT

Supporting Inter-Ministerial Collaboration
to Advance Energy Access, Digital
Transformation, and Financial Inclusion

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The Energy Sector Management Assistance Program (**ESMAP**) is a partnership between the World Bank and [over 20 partners](#) to help low- and middle-income countries reduce poverty and boost growth through sustainable energy solutions. ESMAP's analytical and advisory services are fully integrated within the World Bank's country financing and policy dialogue in the energy sector. Through the World Bank (WB), ESMAP works to accelerate the energy transition required to achieve [Sustainable Development Goal 7 \(SDG7\)](#) to ensure access to affordable, reliable, sustainable, and modern energy for all. It helps to share WB strategies and programs to achieve the WBG Climate Change Action Plan targets. Learn more at <https://esmap.org>.



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Strategic Impact Advisors (**SIA**) is a women-owned global consulting firm with expertise in digital financial services (DFS), digital agriculture, off-grid energy, humanitarian assistance and women's economic empowerment. Our mission is to provide insightful technical assistance to help people overcome barriers and improve their lives through technology and analysis.

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CONTENTS

Acronyms and Abbreviations	viii
Executive Summary	1
Chapter One. Introduction: The Toolkit’s Structure	7
1.1 A Consumer-Centric Diagnostic Framework for the Enabling Environment	9
Chapter Two. How Off-Grid Solar and Pay-As-You-Go Accelerate Access to Electricity	12
2.1 OGS Sector Overview	12
2.2 Technologies and Products	15
2.3 PAYG and Consumer Financing of OGS Products	16
2.4 Impact of OGS	22
Chapter Three. The Pay-as-You-Go and Digital Economy Nexus	23
3.1 How OGS Uses the Digital Economy	23
3.2 How OGS Enables the Digital Economy	25
3.3 Promoting OGS, Digital, and Financial Inclusion Together to Build Resilience.....	33
Chapter Four. Policy Issues and Priorities.....	36
4.1 Signaling Support for OGS Sector Growth	38
4.2 Policy Approaches – Mix and Match	39
4.3 Issues and Policy Options.....	43
Chapter Five. Tools to Advance Policy Reform.....	71
5.1 Champion Identification.....	73
5.2 Stakeholder Identification and Influence	73
5.3 Stakeholder Capacity Building	75
5.4 Policy Analysis	75
5.5 Roadmap Development	79
5.6 Planning for Policy Implementation	79
Annex Section.....	82
Annex A: Potential Policy Options, Advantages, and Disadvantages.....	82
Annex B: Additional Resources	104
Annex C: Tools	109
Annex D: Sample Terms of Reference	128

List of Figure, Maps, and Tables

Figures

Figure 2.1: Global annual sales estimates of off-grid solar products, including affiliate and non-affiliate sales (2010-2021)	13
Figure 2.2: The PAYG Market Attractiveness Index Structure Pillars.....	14
Figure 2.3: Global affiliate sales volumes of OGS products by category (2017-2021).....	15
Figure 2.4: A Typical PAYG Product Cycle	17
Figure 2.5: PAYG SHS Cost Breakdown	19
Figure 2.6: PAYG SHS Value Chain	21
Figure 2.7: Value Chain Participants.....	21
Figure 3.1: PAYG Data Flows for GSM-Embedded Systems	24
Figure 3.2: Estimated Charging Cost of Off-Grid Smartphone Ownership.....	26
Figure 3.3: The Relationship Between OGS and Digital Transformation Digital Infrastructure	27
Figure 3.4: Overlap of OGS, Broadband and Financial Inclusion Policies.....	35
Figure 4.1: Policymaking Continuum	40
Figure 4.2: Cost Benefit Analysis of VAT and Duty Exemptions Across Malawi, Rwanda, Sierra Leone	51
Figure 4.3: E-Waste Management Approaches	69
Figure 5.1: Decision Tree	72
Figure 5.2: Example of Applying the Stakeholder Mapping Tool to Expansion of Digital Broadband Infrastructure (Tool 6).....	74
Figure 5.3: Structure of the Sierra Leone Off-Grid Working Group	76
Figure 5.4: Sample of Different Policy Outcomes for National Product Standards.....	78
Figure 5.5: Example of Applying the Risk Analysis Tool (Tool 18).....	78
Figure 5.6: Example of Applying the KPI and Milestones Tool (Tool 21)	79
Figure 5.7: Example of Applying the Communications Strategy Plan Tool (Tool 22)	80
Figure 5.8: Example of Applying the Budget Forecast Tool (Tool 23)	81

Maps

Map 3.1: Mobile broadband penetration in Africa by country (%), 2018	28
Map 3.2: Share of population with access to electricity (%), 2022	28

Tables

Table 1.1: Enabling Environment Components for OGS, Broadband and Digital Financial Inclusion.....	11
Table 2.1: Payment Channels by OGS Company & Partners	18
Table 3.1: MNO Benefits from OGS and Investment Areas	30
Table 3.2: Models of MNO and OGS Engagement.....	32
Table 3.3: Agent Roles in Digital Inclusion and Literacy	33
Table 4.1: Policy Issues.....	37
Table 4.2: Product Availability	44
Table 4.3: Product Affordability	50
Table 4.4: Accountability: Consumer Protection Across the Sales Cycle.....	59
Table 4.5: Key Elements of the GOGLA Consumer Protection Code and IEC Standard.....	63
Table 5.1: Micro-Level Issues- Across the Enabling Environment Components).....	73
Table 5.2: Example of Applying the Stakeholders Concerns Tool (Tool 9)	74
Table 5.3: Members of the Zambia Off-Grid Energy Task Force	75

Foreword



In just over a decade the number of people around the world living without access to electricity has been cut nearly in half, from 1.1 billion in 2010 to 675 million in 2021. This tremendous achievement, however, still leaves far too many people living without the benefits energy access has on health, education, income, and other measures of well-being. Those still unconnected today are more likely to have lower incomes, to live in more remote locations, and to live in countries affected by conflict, making them harder to reach than those that have been connected to date.

Insufficient broadband and digital financial infrastructure further hamper efforts to close the energy access gap, as they have an invaluable role to play in improving the affordability of off-grid solar solutions (OGS). Although OGS products are estimated to be the most cost-effective energy access option for 41 percent of new household connections - only 20 percent of those living without electricity access today can afford to pay the upfront cost of even a Tier-1 OGS product. By using pay-as-you-go (PAYG) these products become affordable for 62-76 percent of those still living without electricity. Thus, to realize off-grid solar's promise, PAYG is essential to affordability.

Efforts to deliver energy access through PAYG both contribute to – and benefit from – digital development and financial inclusion. PAYG providers use broadband infrastructure to accept digital payments, and off-grid solar providers use the same infrastructure to keep the products functioning properly through remote monitoring and support. Meanwhile, electricity access enables broadband and digital payment providers to reach more users for their services. Governments can take advantage of this synergy by coordinating their efforts to accelerate energy access, digital development, and financial inclusion, and through developing bespoke policy/regulatory frameworks for the PAYG sector.

ESMAP's Lighting Global program has been working to expand access to electricity through off-grid solar devices since 2009 by bringing down costs, building consumer demand, promoting quality and helping solar companies access the finance they needed to build out distribution networks and make products more widely available – continually adapting and fine-tuning efforts to keep pace with technological and sector developments. To develop this toolkit Lighting Global has partnered with PPIAF to assist governments with creating an enabling environment for OGS and PAYG sector growth, through a structured process of policy dialogue and reform. The project was supported by the Consultative Group to Assist the Poor (CGAP) and the Digital Development Partnership (DDP). Field tested in Ethiopia and Uganda, the toolkit guides governments through the process of stakeholder mapping, capacity building, policy analysis and development, all the way through to planning for policy implementation.

We hope the guidance and resources provided in these pages will help governments advance policy reforms that help them achieve their energy access, digital development and financial inclusion goals. With less than 10 years to go to achieve our shared goal of achieving SDG7 – universal energy access – working across these sectors in a coordinated way can accelerate progress, and reach more people, faster.

A handwritten signature in black ink, appearing to read 'Chandrasekar Govindarajalu', written over a horizontal line.

Chandrasekar Govindarajalu

Practice Manager, Energy Sector Management Assistance Program (ESMAP),
the World Bank

Acronyms and Abbreviations

ACE TAF	Africa Clean Energy Technical Assistance Facility	MLS	Multi-Light (Solar Home) System
AFI	Alliance for Financial Inclusion	MNO	Mobile Network Operators
ARPU	Average Revenue Per User	MTF	Multi-Tier Framework
CLASP	Collaborative Labeling and Appliance Standards Program	NFIS	National Financial Inclusion Strategy
CRB	Credit Reporting Bureau	Non-QV	Non-Quality Verified
DE4A	Digital Economy for Africa	OGS	Off-Grid Solar
DECIM	Digital and Energy Connectivity for Inclusion in Madagascar	OTC	Over the Counter
ECOWAS	Economic Community of West African States	PERFORM	Performance, Reporting, and Measurement
ESMAP	Energy Sector Management Assistance Program	PII	Personally Identifiable Information
FOREX	Foreign Exchange	PURE	Productive Uses of Renewable Energy
GIS	Geographic Information System	PVoC	Pre-Shipment Verification of Conformity
GSMA	Global System for Mobile Communications	QV	Quality Verified
HS	Harmonized System	RISE	Regulatory Indicators for Sustainable Energy
ICT	Information and Communications Technologies	SDG	Sustainable Development Goal
IEC	International Electrotechnical Commission	SHS	Solar Home Systems
IEP	Integrated Electrification Plans	SMS	Short Message Service
IFC	International Finance Corporation	ToR	Terms of Reference
ITU	International Telecommunications Union	UNCTAD	United Nations Conference on Trade and Development
KPI	Key Performance Indicators	UNDP	United Nations Development Programme
M2M	Machine-to-Machine	USD	United States Dollar
MFI	Microfinance Institutions	WP	Watt Peak

Executive Summary

This Off-Grid Solar (OGS) policy toolkit is designed to assist governments in creating an enabling environment for OGS and pay-as-you-go (PAYG) sector growth by establishing policy reforms determined through a structured process of inter-ministerial policy dialogue. It identifies 12 key policy issues and considers the advantages and disadvantages of different policy approaches to each issue. The toolkit then outlines a step-by-step process that governments can use to facilitate policy dialogue, providing guidance and tools at each step. This process envisions a scenario where government ministries and agencies work together to advance policy reforms that accelerate progress in energy access, digital inclusion, and financial inclusion.

This document's tools, methods, and ideas were field-tested through inter-ministerial policy dialogues in Ethiopia and Uganda. The two countries were selected for their contrasting policy environments for off-grid solar. The toolkit was instrumental in guiding inter-ministerial dialogue led by the ministry responsible for energy in both countries and supported by the firm that coordinated the toolkit's development. In 2023, the two countries officially launched policy roadmaps created and validated by participating stakeholders.

OGS products are essential for achieving universal access to electricity, often providing the most rapid and least-cost electrification solution, particularly in sub-Saharan Africa. In 2020, 733 million people still had no access to electricity, most of them in sub-Saharan Africa. OGS technologies are the least-cost solution for an estimated 41 percent of new household connections.¹ Governments and their development partners are scaling up efforts to deliver energy access through OGS.

Between 2020 and 2022, at least 12 countries developed integrated electrification plans that include OGS alongside grid and mini-grid electrification. In the same timeframe, at least eight countries either updated or revised their nationally determined contributions (NDCs) to include OGS solutions, taking the total to 33 countries.²

Beyond electricity access, OGS products bring multiple economic, social, and environmental benefits. Energy access is linked to 125 of the 169 targets set under the Sustainable Development Goals (SDGs), highlighting the key role of energy in supporting the broader development agenda.³ OGS enables households to save money on traditional energy sources, boosts productivity, job creation, and economic activity. They also improve health, safety, and quality of life and reduce carbon emissions.⁴ OGS also offers opportunities to close the gender gap, with evidence showing that increasing women's participation in the sector as entrepreneurs, employees, and customers can lead to market growth, better product uptake, and greater consumer satisfaction.⁵



Between 2020 and 2022, at least **12 countries** developed integrated electrification plans that include OGS alongside grid and mini-grid electrification.

1 Lighting Global/ESMAP, GOGLA, Efficiency for Access, Open Capital Advisors (2022), [Off-Grid Solar Market Trends Report 2022: State of the Sector](#). Washington, DC: World Bank.

2 *Ibid.*

3 [State of Electricity Access, World Bank, 2017](#)

4 GOGLA, 2022. Providing Energy Access through Off-Grid Solar: Guidance for Governments. Accessible [here](#).

5 ESMAP, 2022. Operational Handbook for Gender Equality in the Off-Grid Solar Sector. Accessible [here](#).

The PAYG model is crucial to increasing access to OGS, as it provides a payment scheme tailored to the budgets of bottom-of-the-pyramid customers. PAYG business models allow users to pay for their products via technology-enabled, embedded consumer financing. Only 20 percent of people living without electricity access today can afford to pay the upfront costs to purchase a Tier-1 OGS product.⁶ With PAYG, the product becomes affordable for 62 to 76 percent of them.⁷ PAYG makes it possible for more people to afford larger OGS products, allowing them to benefit from a range of domestic and productive use appliances, such as radios, fans, televisions, refrigerators, and solar water pumps. Moreover, several higher-tier OGS products are being sold through PAYG.⁸

The PAYG business model can scale more quickly if mobile and data connectivity and digital payment infrastructure are available.⁹ PAYG companies use Short Message Service (SMS) to communicate with customers over mobile payment networks and to take payments from customers at low cost. Mobile data networks also remotely monitor and control OGS products. Therefore, mobile phone usage and mobile phone platform availability have corresponded with the development of PAYG markets.



Only 20% of people living without electricity access today can afford the upfront costs to purchase a Tier-1 OGS product. With PAYG, these products become affordable for 62 - 76% of them.

At the same time, OGS and PAYG are also helping to build digital economies, supporting connectivity and financial inclusion. The opportunity to purchase a PAYG system incentivizes customers to open mobile money accounts and regularly use them to pay for the OGS devices, often doubling the frequency of transactions.¹⁰ PAYG is now being leveraged to offer consumer finance on smartphones, electric motorbikes, and many other devices, as well as to offer additional digital financial services.¹¹ Governments are increasingly going digital in the delivery of public services, encouraging citizens to transition to the formal economy through connected digital technologies and moving tax collection to digital channels — all of which depend on reliable electricity access.

This synergy calls for governments to coordinate efforts to accelerate the progress in energy access, digital inclusion, and financial inclusion. Governments can pursue a policy reform agenda alongside the provision of financing and other programmatic interventions to create an enabling environment for sector growth. A process of policy dialogue is needed, with strong participation from relevant government ministries and other agencies and dialogue between government and the private sector.

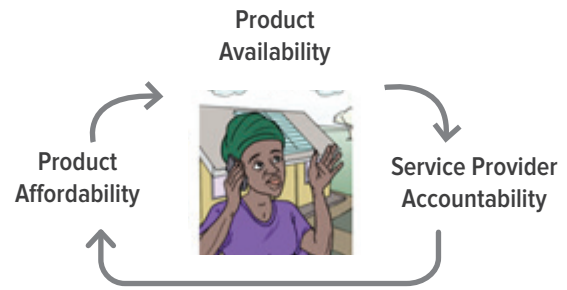
The toolkit uses a consumer-centric diagnostic framework to explore policy issues and options. Three market conditions are needed for the OGS sector to scale in a sustainable manner: Product **Availability**, Product **Affordability**, and Service Provider **Accountability** (the 3 As). The toolkit uses this framework to create a shared understanding of issues central to policymakers across government, including energy access, broadband access, and digital financial inclusion, to lay the groundwork for productive policy change.

- 6 Tier 1, per the [Multi-tier Framework \(MTF\)](#), enables a household to access a small quantity of electricity for a few hours daily, such as for electric lighting and phone charging.
- 7 Lighting Global/ESMAP, GOGLA, Efficiency For Access, Open Capital Advisors (2022), [Off-Grid Solar Market Trends Report 2022: State of the Sector](#) Washington, DC: World Bank.
- 8 According to GOGLA's [Semi-Annual Sales and Impact Report of July - December 2022](#), 90 percent of all OGS products categorized as Solar Home Systems (products of wattage 11 Wp and higher) were sold on a PAYG basis. For appliances (such as TVs, fans, solar water pumps, and solar refrigerators), 60 percent of all sales were on PAYG.
- 9 Lighting Global, Pay-As-You-Go Market Attractiveness Index 2021, 23. Accessible [here](#).
- 10 In a [2020 study](#) covering five Mobile Network Operators in five countries, GSMA found that mobile money users increased the frequency of mobile money transactions by 113 percent right after they started using PAYG solar services.
- 11 Lighting Global/ESMAP, GOGLA, Efficiency for Access, Open Capital Advisors (2022), [Off-Grid Solar Market Trends Report 2022: State of the Sector](#). Washington, DC: World Bank.




The toolkit identifies 12 issues of relevance that fall within governments’ zone of influence for policy reform.

These issues are presented in the diagram below, classified according to the 3 As diagnostic framework. Given the focus of this report on OGS, policy issues pertaining to broadband and digital inclusion are not explored in as much detail. For example, policies for improving the affordability of broadband or accountability of mobile money and broadband providers are not covered. Policymakers can use the policy issues and options covered in the toolkit as examples to draw from when evaluating policies in other areas.

The 3 As Diagnostic Framework



Twelve policy issues affecting the enabling environment for OGS and PAYG

AVAILABILITY 			
1. Ease of market entry and competition	2. Quality and reach of digital broadband infrastructure	3. Mobile money and digital financial inclusion	
AFFORDABILITY 			
4. Fiscal policies	Consumer Financing		
	5. PAYG provider availability and cost of capital	6. Access to data for credit scoring	7. Financial regulation
ACCOUNTABILITY 			
Sales Cycle			
Pre-Sale	At-Sale	Post-Sale	
8. Product standards	9. Transparency of terms and warranties 10. Data protection	11. Customer service and grievance redress 12. e-Waste	

The toolkit explores each policy issue and identifies potential responses across a “continuum of policy approaches.” There is no single policy approach to create an enabling environment for OGS and policymakers have various options. These are presented ranging from a ‘wait and see’ approach requiring the least amount of government oversight and resources to ‘prescriptive policy’ requiring significant government engagement. For example, when it comes to the availability of mobile money to offer PAYG

products, and depending on context, policymakers could pursue a “wait-and-see” approach that would not require any adjustments to current regulatory frameworks. Alternatively, governments could pursue a “light touch” approach that increases access to digital payment or banking agents in rural areas or adopt a more “prescriptive” policy where government regulations reduce or eliminate transaction fees for OGS consumers.

The different approaches enable stakeholders to choose policy options best suited to their country's contexts.

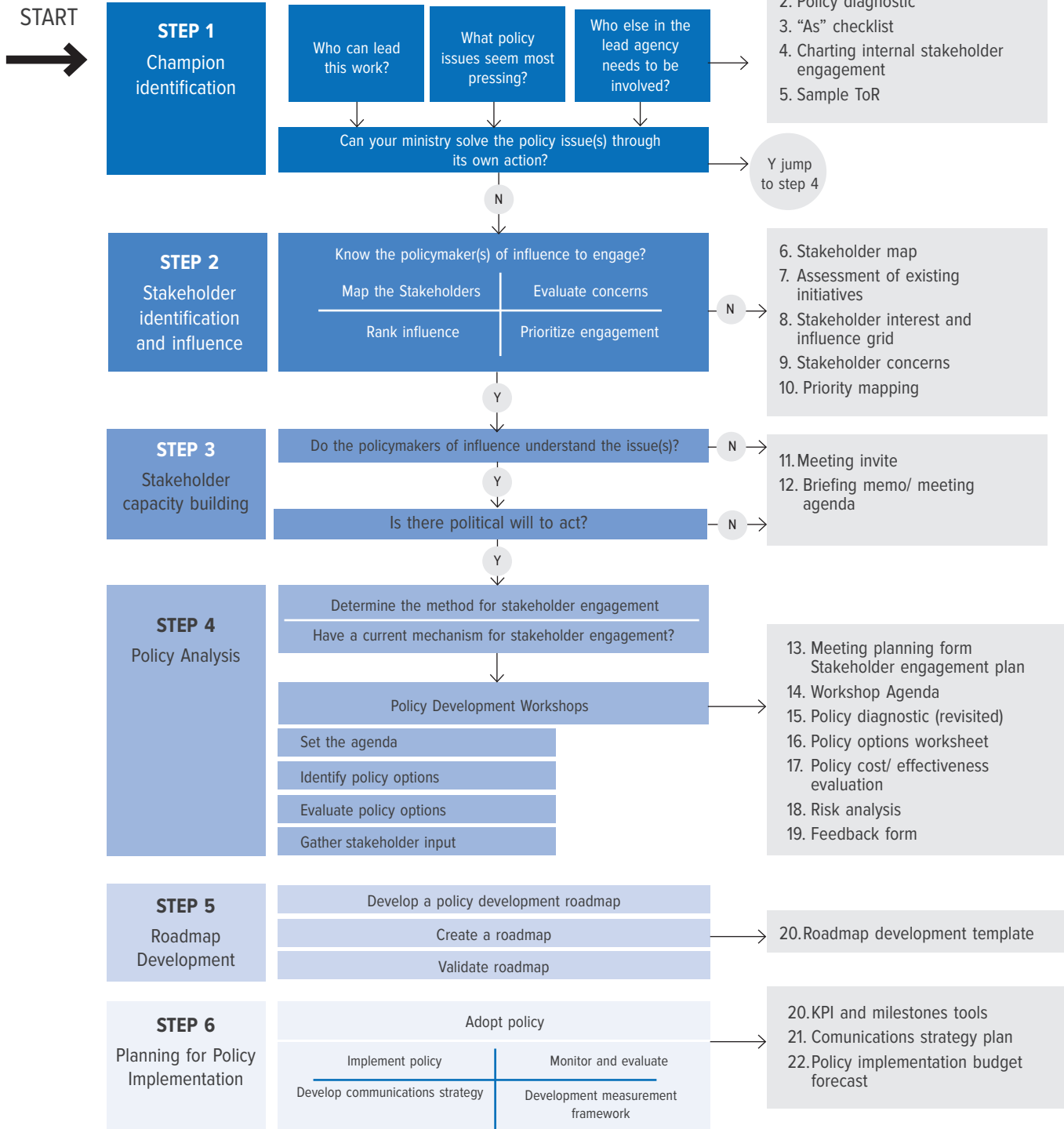
Example of policy approaches to addressing Issue 3 (availability of mobile money and digital payments)

Wait & See	Light Touch	Prescriptive Policy
Government relies on private sector providers and current regulatory policies to provide adequate mobile money and digital financial services for PAYG	Government financial services regulation increases access to rural digital payment agents or banking agents	Government regulation reduces, removes, or subsidizes transaction fees for digital payments made for OGS products and services
Advantage No need to adjust current regulatory framework	Advantage Increases rural mobile money agents and increases supply and purchase of PAYG products	Advantage Reduces consumer cost of mobile money payments for OGS services
Disadvantage Poor digital payment infrastructure restricts use of digital payments in PAYG offerings	Disadvantage Requires investment to adjust mobile money agent regulation to expand rural agent networks	Disadvantage Digital payments and banking industry may resist fee reduction for payments for specific services

Finally, the toolkit outlines how governments can facilitate inter-ministerial dialogue capable of creating a conducive policy environment for off-grid solar. This process follows six steps, with guidance and tools provided at each step.

- In **Step One**, the government selects a 'champion' from within the lead agency responsible for off-grid solar policy to lead the process.
- In **Step Two**, the champion identifies priority policy issues to be addressed, and maps key stakeholders relevant to those policy issues.
- In **Step Three**, the champion assesses stakeholder capacity and if necessary, engages stakeholders to build their knowledge and understanding of OGS and PAYG technologies, business models, and relevant policy issues.
- In **Step Four**, the champion holds meetings and workshops for stakeholders to consider the policy issue and agree on a policy response.
- In **Step Five**, governments can develop policy 'roadmaps' to communicate to the private sector and other stakeholders the policy reforms they are committing to (or considering), and how they propose to proceed.
- Finally, in **Step Six**, governments can build implementation plans to ensure they have the staff time and budget allocation necessary to implement the proposed reforms.

Decision tree and overview of tools to advance policy reform.





CHAPTER ONE

Introduction: The Toolkit's Structure

Off-Grid Solar (OGS) products are essential for achieving universal energy access. They often provide the most rapid and lowest-cost electrification solution, particularly in sub-Saharan Africa. OGS systems can provide quality modern electricity services to those not reached by traditional grid electrification. They can also bolster the reliability of electricity access for consumers and businesses in areas where the electric grid is inconsistent. Standalone OGS products are often the most affordable and quickest solution to provide entry-level sustainable energy access to consumers in rural communities and areas with low population density. Companies selling OGS products are addressing the affordability issue by offering financing through a model commonly referred to as pay-as-you-go (PAYG).

PAYG solar businesses provide solar energy with a payment scheme tailored to the budgets of bottom-of-the-pyramid customers. With PAYG, customers pay for OGS products in small daily, weekly, or monthly installments over a

certain period, typically six months to three years, depending on the product and the PAYG company. Payments are usually made using mobile money, or alternative methods including scratch cards, mobile airtime, and cash. PAYG OGS products have lockout technology that locks the products and their functions when installments are not made. This makes OGS products a manageable, “as-you-go” experience akin to a prepaid mobile phone plan.

PAYG is enabling an increasing number of bottom-of-the-pyramid customers to acquire OGS products. More than 80 percent of the 733 million people still living without access to electricity cannot afford an OGS product providing basic electricity access through direct cash payments. The end-user financing option available through PAYG, could reduce the proportion of those unable to afford such basic products to between 24 and 38 percent.¹² This makes the PAYG model an essential financing tool to address the affordability gap.



733 million people were still living without access to electricity in 2020, of which **298 million people** were in nascent OGS markets where there is little commercial OGS activity.

37 percent of all sales of high-quality OGS in 2021 were through PAYG, a share that has been steadily increasing year on year. PAYG is essential to make OGS systems affordable. It has a critical role to play in achieving SDG 7.

For 41 percent

of new household connections between 2020 and 2030, off-grid solar technologies are expected to be the least-cost solution on a trajectory to achieve universal access.

Source: Lighting Global/ESMAP, GOGLA, Efficiency for Access, Open Capital Advisors (2022), Off-Grid Solar Market Trends Report 2022: State of the Sector. Washington, DC: World Bank.

¹² Source: Lighting Global/ESMAP, GOGLA, Efficiency For Access, Open Capital Advisors (2022), *Off-Grid Solar Market Trends Report 2022: State of the Sector*. Washington, DC: World Bank. The affordability analysis is for multi-light and charging systems providing Tier 1 electricity access, per the definition of the [Multi-Tier Framework for Measuring Access to Electricity](#).

PAYG allows OGS customers - including women and girls - to access higher levels of energy service. Beyond the lighting and phone charging made possible by entry-level OGS products referenced above, larger OGS products can enable customers to enjoy the benefits of radio, fans, televisions, and appliances that reduce the time needed to complete household chores. The overwhelming majority of such larger products are sold using the PAYG model. According to sales data published by the Global Off-Grid Lighting Association (GOGLA), Solar Home Systems (SHS)¹³ sold through the PAYG model made up 84 percent of global sales in 2021.¹⁴ In addition, larger OGS systems are increasingly being used to power productive appliances. This includes water pumping and refrigeration, a key resource for rural communities, increasing crop yields and preserving produce.

This toolkit is for government policymakers and development partners interested in creating an enabling

policy and regulatory environment to accelerate OGS sector growth, focusing on the PAYG model. It provides guidance and tools to facilitate policy dialogue between government agencies and the public and the private sector. This enables the pursuit of policy reforms that contribute to energy access, digital transformation, and financial inclusion goals. Energy policymakers can use this toolkit to identify policy issues and options for enabling OGS and PAYG use, including critical issues that fall outside the traditional mandate of Ministries of Energy. Policymakers from other sectors, including finance and telecommunications, can use this toolkit to understand how OGS and PAYG can contribute to digital transformation and financial inclusion goals and work with energy sector colleagues to leverage the opportunity presented by off-grid energy access to help achieve these goals.

This toolkit is organized into five chapters and includes four annexes.

Chapter One introduces the diagnostic framework that examines the three elements that enable consumer purchasing of OGS products:

1. Product **Availability**
2. Product **Affordability**
3. Service Provider **Accountability**.

Policymakers' prioritization of action issues for policy action is aligned with these fundamental elements.

Chapter Two provides an overview of **how the digital economy supports the scale of OGS technologies. It also describes current market trends** in OGS offerings and business models and the unique cost components in the PAYG business model. Policymakers can use this chapter to build a shared understanding of the OGS sector within the energy authority and across relevant government agencies.

Chapter Three describes OGS's **role in achieving national goals for digital transformation and financial inclusion.** Policymakers can use this chapter to explore the intersection of policies that support OGS use for energy access and to advance broadband access and digital financial inclusion, especially for rural and underserved communities.

Chapter Four provides resources for policymakers to **identify and prioritize the policy issues that can create enabling market conditions for OGS consumers.** The chapter discusses twelve specific policy issues impacting PAYG product availability, affordability, and service provider accountability. It also outlines **potential policy options to address them.** Public funding initiatives play an important role in increasing consumer access to OGS products. However, they are not considered policy issues in this context and, therefore, not addressed in this toolkit. The policy options vary in the degree of government market oversight and are based on existing policy practices in the energy sector and potential new policy opportunities.

Chapter Five guides **stakeholders seeking to develop a 'roadmap'** to build a shared understanding of the policy issues and options among ministries and other key stakeholders to agree to key policy reforms and take steps toward policy implementation.

The annexes provide **concrete tools** for policymakers to identify policy issues and select policy options.

¹³ SHS are defined as having a solar panel rated from 11 Wp to usually up to 350 Wp and provide multiple electricity functions, such as lighting and powering a wide range of appliances such as TVs and fans. More details on these definitions are provided in section 2.2.

¹⁴ Lighting Global/ESMAP, GOGLA, Efficiency For Access, Open Capital Advisors (2022), [Off-Grid Solar Market Trends Report 2022: State of the Sector](#).

Policymakers can use this toolkit to address a specific policy issue or develop a comprehensive roadmap to address multiple policy issues to improve the enabling environment for OGS. The governments of Ethiopia and Uganda used a draft of this toolkit to develop off-grid solar policy roadmaps, and feedback from that process was used to improve and finalize this toolkit. Policymakers can also leverage the toolkit at any point in a policy dialogue. For example, if they have identified an issue to focus on, they can use the toolkit to help them think through policy options.

The toolkit does not suggest a particular policy outcome or endorse a regulatory approach. It is designed to help policymakers identify and prioritize policy issues, explore policy options, and develop a roadmap for policy action.

The toolkit complements other resources in the off-grid energy sector, including indicators for measuring the country-level legal and regulatory enabling environments for OGS and PAYG. Policymakers can use ESMAP’s set of regulatory indicators for sustainable energy (RISE) to benchmark and track their progress in creating an enabling environment for energy access and renewable energy against other countries.¹⁵ For PAYG in particular, policymakers will find the IFC/Lighting Global PAYG Market Attractiveness Index and the PAYG Performance, Reporting, and Measurement (PERFORM) Initiative’s key performance indicators helpful.¹⁶ Policymakers can identify additional resources by topic and issue in Annex B.

This toolkit also does not include an evaluation of public funding mechanisms, such as results-based financing, credit lines, or demand-side subsidies for OGS and PAYG products. ESMAP’s 2022 Designing Public Funding Mechanisms report is an excellent resource for policymakers considering which public funding mechanisms to deploy and how best to design them.¹⁷

1.1 A Consumer-Centric Diagnostic Framework for the Enabling Environment

Using this Section in the Policy-Making Process

1. Understand how to apply the “3 As” (Product Availability, Product Affordability, and Service Provider Accountability) diagnostic framework to create policy analysis and options that improve the market conditions for OGS.
2. Chart common challenges in Product Availability, Product Affordability, and Service Provider Accountability across the energy access, broadband, and digital financial services sectors using the diagnostic framework to promote inter-ministry dialogue and understanding.

We suggest governments use a consumer-centric diagnostic framework to identify policy issues and options to improve the market conditions for OGS and PAYG products. Three market conditions are needed for the OGS sector and PAYG providers to deliver sustainable solutions for energy access at scale to consumers:

- (1) Product **Availability**,
- (2) Product **Affordability**, and
- (3) Service Provider **Accountability** (“the 3 As”).



¹⁵ ESMAP, Rise Regulatory Indicators for Sustainable Energy, Sustaining the Momentum, 2020, 4- 5. Accessible [here](#).

¹⁶ The Market Attractiveness Index includes ten indicators to measure legal and regulatory policies that make a market attractive for PAYG offerings. Lighting Global, PAYG Market Attractiveness Index 2021. Accessible [here](#). The PAYGo PERFORM key performance indicators provide metrics to assist investors and others in evaluating the financial performance of PAYG companies and for operational benchmarking. Lighting Global, CGAP, GOGLA, PAYGo Perform: Financial, Operational and Portfolio Quality KPIs for the PAYGo solar industry 2021. Accessible [here](#)

¹⁷ Rysankova, Dana; Miller, Charlie, Designing Public Funding Mechanisms in the Off-Grid Solar Sector (English). Washington, D.C.: World Bank Group (2022). Accessible [here](#).

Defining the 3 As

Availability = a market state where consumers can conveniently purchase OGS products, including PAYG products with consumer financing, from competitive OGS providers.

Affordability = a market state in which consumers can afford to purchase OGS products with cash or financing at a suitable price for their income levels.

Accountability = a market state in which OGS companies are responsible for providing consumers with quality products, clearly communicating their product's features, performance, and financing terms, protecting consumer data, and managing and ensuring proper disposal of products.

Over the past ten years, the OGS sector has grown. However, availability, affordability, and accountability issues limit the sector's ability to meet consumer needs at scale. In particular, limited broadband and digital payments infrastructure negatively affects OGS PAYG market conditions, especially regarding availability and affordability. Policymakers can use the 3 As framework to analyze and address issues ranging from product quality and durability to PAYG consumer financing and management of e-waste.

The diagnostic framework of the 3 As has equal applicability to evaluating market conditions for broadband access and digital financial inclusion, as shown in Table 1.1.¹⁸ Applying the framework across the three sectors highlights the intersection of energy, broadband, and financial inclusion policies. It also helps to identify areas of opportunity for policymakers to develop coordinated policy strategies and take a whole-of-government approach to empowering inclusive rural communities through access to energy, broadband, and digital financial services. There have been significant gains in broadband access and financial inclusion, but issues around affordability (data plans or mobile money transaction fees), trust in services, and service provider accountability are still of widespread concern. Consumers not using mobile phones or mobile internet services often cite the high cost of data plans and mobile money fees as reasons for not being active service users. Women are disproportionately affected by affordability challenges in all three sectors.¹⁹

“There is a clear relationship between access to electricity and engagement with mobile services, as electricity provides the foundation for customers to adopt mobile money. Likewise, connectivity is central to the PAYG business model and is a critical enabler of access to electricity in the first place.”

(Source: GSMA The Value of Pay-as-you-go Solar for Mobile Operators, p. 41)

¹⁸ Researchers with the World Bank Group have identified three categories of policy enablers for enabling environments for digital financial services: (1) conducive legal and regulatory frameworks, (2) enabling financial and digital infrastructure, and (3) ancillary government support systems (such as national identification policies, access to government data, and migrating government-to-person payments to digital transactions), Ceyla Pazarbasioglu, Alfonso Garcia Mora, Mahesh Uttamchandani, The World Bank Group 2020, Digital Financial Services. Accessible [here](#).

¹⁹ GSMA, State of the Industry Report on Mobile Money 2023. Accessible [here](#). GSMA, The Mobile Gender Gap Report 2023. Accessible [here](#).

Table 1.1: Enabling Environment Components for OGS, Broadband, and Digital Financial Inclusion

Enabling Environment Component	OGS	Broadband	Digital Financial Inclusion
Product AVAILABILITY	Are off-grid products available to consumers regardless of their location?	Are quality and reliable broadband services and mobile devices available to consumers regardless of their location?	Are mobile money and other digital financial services available to consumers to pay for OGS regardless of their location?
Product AFFORDABILITY	Can consumers purchase OGS products within their income limits?	Can consumers purchase mobile devices and broadband services within their income limits?	Can consumers afford to pay the fees to use mobile money or digital financial services to purchase OGS products or services?
Service Provider ACCOUNTABILITY	Are there adequate industry standards or redress mechanisms to ensure OGS providers are accountable to consumers for the products and services they provide?	Are there adequate industry standards or redress mechanisms to ensure telecommunications providers are accountable to consumers for delivery of broadband services?	Are there adequate mechanisms or industry standards to ensure mobile money operators and digital payment providers are accountable to consumers for processing financial transactions?

CHAPTER TWO

How Off-Grid Solar and Pay-As-You-Go Accelerate Access to Electricity

Use this Chapter to build an understanding of:

- OGS product offerings.
- The components of the OGS value chain and how companies participate across the value chain.
- How PAYG incorporates digital technologies and financing to address consumer affordability.
- The cost components that drive PAYG product pricing.

2.1 OGS Sector Overview

Governments increasingly recognize that standalone OGS products constitute the least-cost solution to providing entry-level electricity access to consumers in rural communities and areas with low population density. Many governments are including OGS in their Integrated Electrification Plans (IEPs) alongside the national grid and mini grids. For example, Mozambique launched its IEP in 2017 with a target of 50 percent off-grid electrification by 2030.



Mozambique launched its IEP in 2017 with **a target of 50 percent off-grid electrification** by 2030.

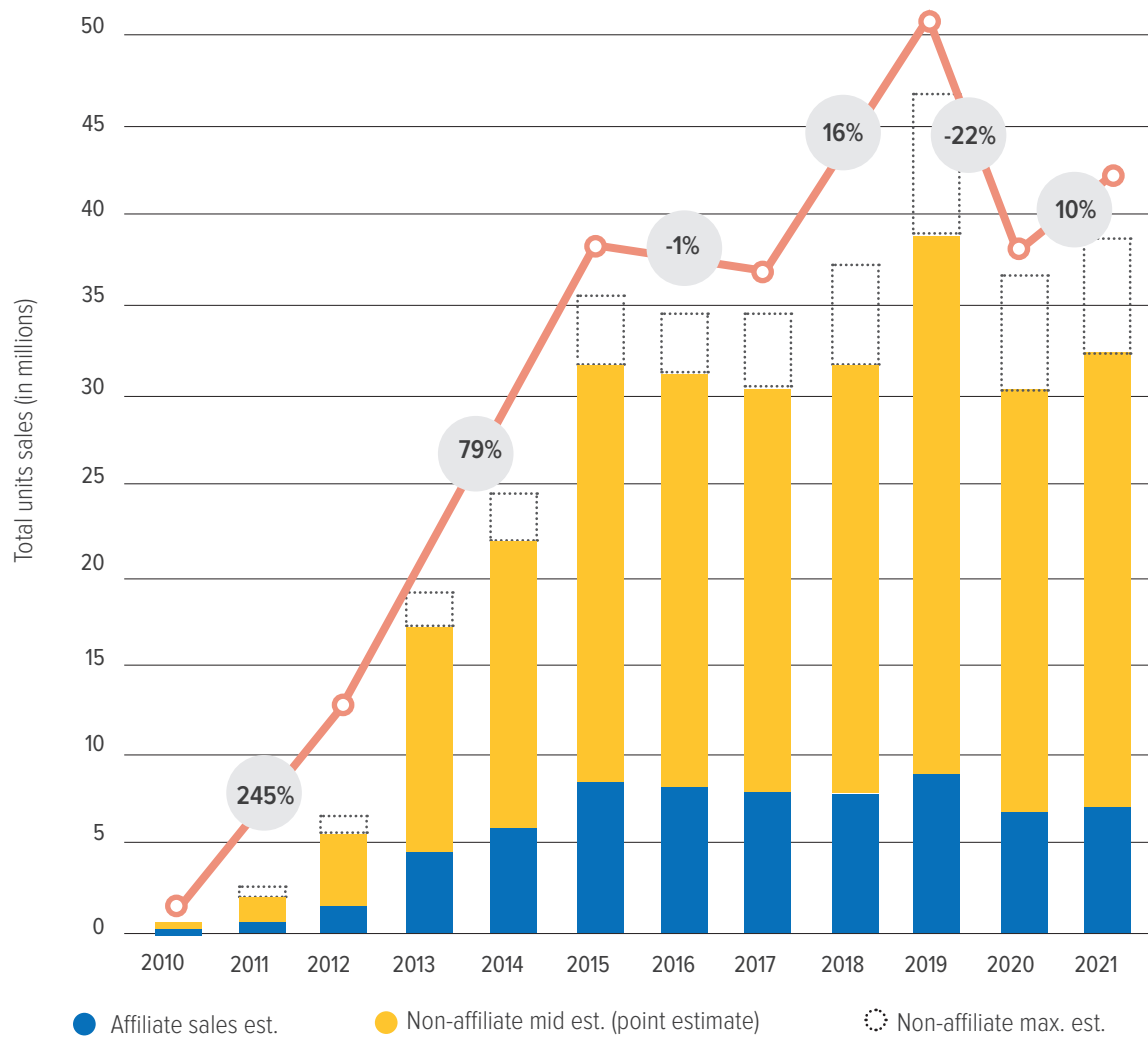
The Government of Kenya used integrated electrification planning in developing the Kenya National Electrification Strategy in 2018 to transition from segregated planning for grid and off-grid coverage.²⁰ In addition to these examples, at least twelve additional countries have completed their IEPs within the last two years.²¹

Global sales of off-grid solar products have increased steadily over the past decade, providing access to modern energy to tens of millions of households annually. As shown in Figure 2.1, the market for off-grid solar products has grown significantly over the past decade. While unit sales declined by 22 percent in 2020 compared to 2019, largely due to the COVID-19 pandemic, the period from 2020 to 2021 showed a ten percent recovery.

²⁰ Kenya National Electrification Strategy: Key Highlights, 2018. Accessible [here](#).

²¹ Lighting Global/ESMAP, GOGLA, Efficiency For Access, Open Capital Advisors (2022), *Off-Grid Solar Market Trends Report 2022: State of the Sector*. Washington, DC: World Bank.

Figure 2.1: Global annual sales estimates of off-grid solar products, including affiliate and non-affiliate sales²² (2010-2021)



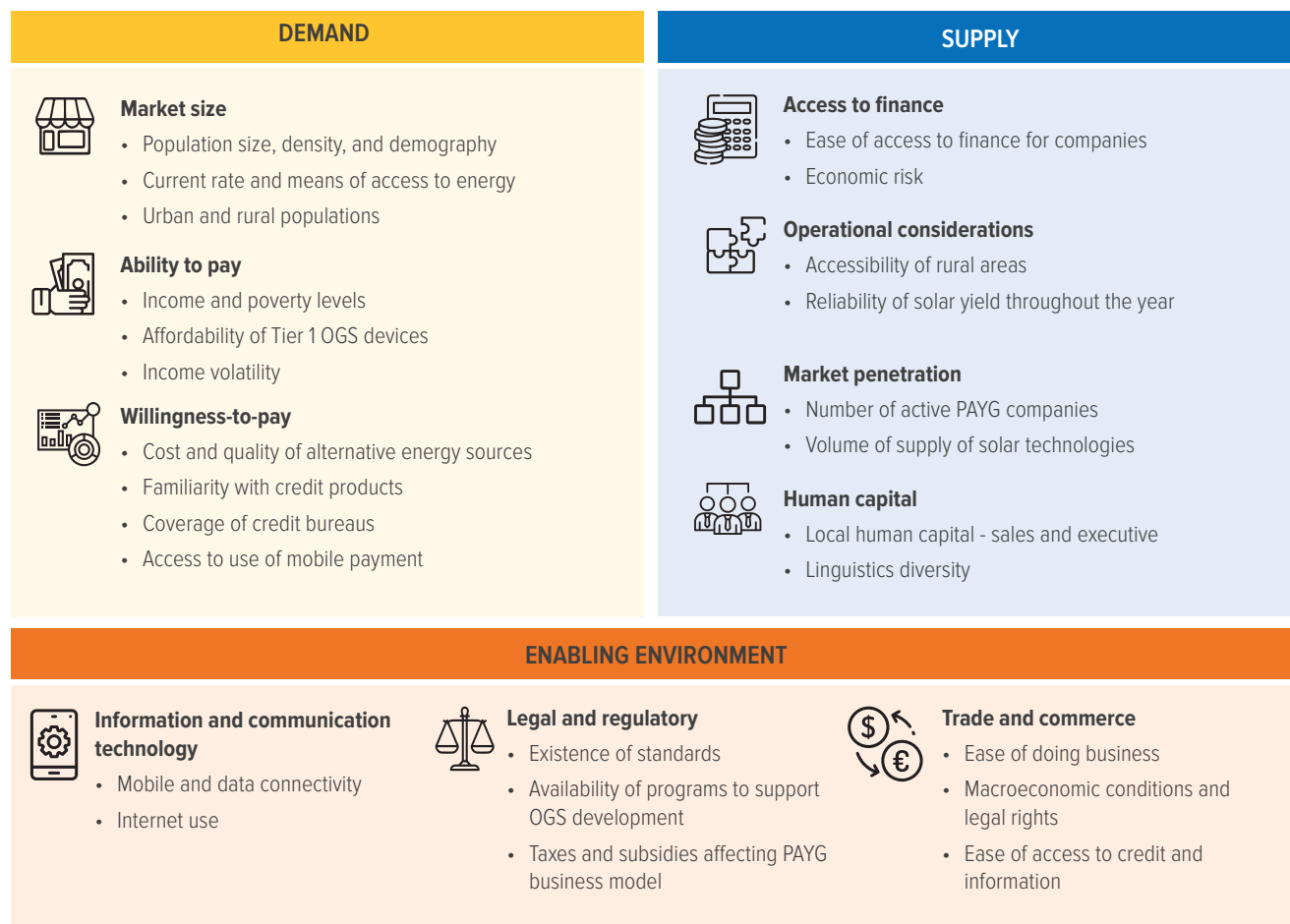
Source: Lighting Global/ESMAP, GOGLA, Efficiency for Access, Open Capital Advisors (2022), Off-Grid Solar Market Trends Report 2022: State of the Sector. Washington, DC: World Bank.

The private sector drives the sales of off-grid solar products (and PAYG products in particular).

Demand, supply, and enabling environment factors must be favorable for OGS markets to thrive. Figure 2.2 provides an overview of the factors that make a market suitable for developing energy services through PAYG. They include market size, ability, and willingness to pay, access to finance, human capital, and the legal and regulatory environment. The **PAYG Market Attractiveness Index** showcased in Figure 2.2 is a tool developed to provide information to companies, investors and policymakers on market attractiveness for PAYG energy services in several countries.

²² Affiliate products refer to products sold by GOGLA affiliate companies. Affiliate companies are connected to any of the partner organizations involved in the semiannual GOGLA sales data reporting process.

Figure 2.2: The PAYG Market Attractiveness Index Structure Pillars



Source: IFC, 2021. [PAYG Market Attractiveness Index 2021](#).

Rural households' access to energy and participation in the digital economy are interdependent. Access to energy promotes higher levels of mobile phone usage and mobile banking, and vice versa. The state of mobile and data connectivity and internet use are included in the **PAYG Market Attractiveness Index** as key enabling environment factors based on the finding that “usage of mobile phones and availability of mobile payment platforms has gone hand in hand with the development of PAYG markets.”²³ PAYG companies also use SMS to communicate with customers, mobile payment networks to take payments from customers at low cost, and mobile data networks to monitor and control SHS remotely.

Call detail records of consumers in Senegal demonstrated that rural users with access to electricity had higher rates of mobile connectivity, especially women.



Women in households with access to electricity subscribed to mobile telephony at a rate of four percent higher than those in households without access to electricity.²⁴

²³ Lighting Global, Pay-As-You-Go Market Attractiveness Index 2021, 23. Accessible [here](#).

²⁴ Source: Hounbonon, G.V., Le Quentrec, E. & Rubrichi, S. Access to electricity and digital inclusion: evidence from mobile call detail records. *Humanit Soc Sci Commun* 8, 170 (2021). Accessible [here](#)

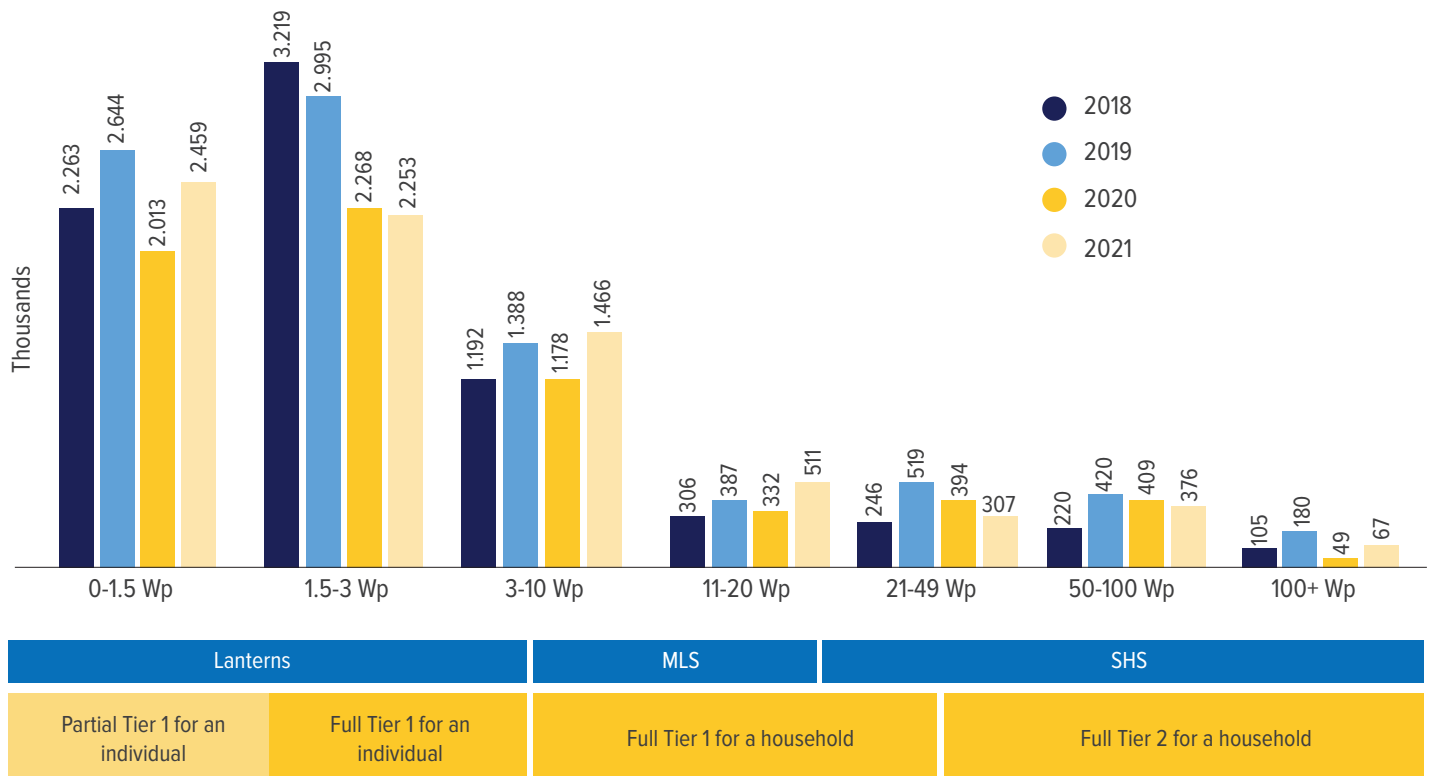
2.2 Technologies and Products

While off-grid solutions are not new, they are now more affordable with a continued reduction in component costs and, therefore, more widespread. Consumers can purchase OGS products in different configurations, including plug-and-play kits and component-based systems, that are sometimes sold bundled with efficient appliances. Plug-and-play kits include solar lanterns (one-light lantern with one LED light), multi-light systems (which include up to three or four LED lights with most models including USB charging for mobile phones), and solar home systems (which provide multiple electricity functions, such as lighting and powering a wide range of appliances such as TVs and fans). As markets mature and technology innovation continues, OGS suppliers

are expanding their product offerings to include solar-powered appliances that can be used in income-generating activities. The industry has categorized these solar-powered appliances as Productive Uses of Renewable Energy (PURE).²⁵

OGS technologies can now provide consumers with various services, including Tier 1²⁶ energy access and above. Solar lanterns often provide only partial Tier 1 access, yet they dominate global sales of OGS products. In addition, the share of Multi-Light Systems (MLS) and Solar Home Systems (SHS) providing full Tier 1 energy access and above to households is increasing annually, as shown in Figure 2.3.

Figure 2.3: Global affiliate sales volumes of OGS products by category (2017-2021)



Source: Lighting Global/ESMAP, GOGLA, Efficiency for Access, Open Capital Advisors (2022), Off-Grid Solar Market Trends Report 2022: State of the Sector. Washington, DC: World Bank.

²⁵ For more information on these technologies, refer to Lighting Global’s Market Research on Productive Use Leveraging Solar Energy (PULSE), accessible [here](#).

²⁶ ESMAP developed the [Multi-tier Framework \(MTF\)](#) through a consultative process — a framework used to assess energy access that goes beyond the traditional binary count of connections. The MTF categorizes energy access across five tiers, from Tier 0 (no access) to Tier 5 (the highest level of access).

In most markets, OGS supply includes a mix of quality-verified (QV) products, which providers have manufactured and tested to be in compliance with international standards, and those that have not (non-QV). The market for solar lanterns has become more commoditized with an influx of lower-quality products that have contributed to a decline in QV solar lantern sales.²⁷ MLS and SHS products that have higher price points are more likely to be QV, and growth in QV MLS and SHS product sales is outpacing QV solar lantern sales.²⁸

Countries are moving toward adopting quality standards in response to consumer complaints about low-quality products. Many are choosing to harmonize their standards with those adopted by the International Electrotechnical Commission (IEC). The unregulated supply of OGS products exposes consumers to risks from the purchase of low-quality or, in some markets, counterfeit products, which may lead to market spoilage. Lighting Global developed a series of Quality Standards and testing methods for off-grid solar lanterns, MLS, and SHS up to 350Wp. The IEC adopted these standards as a reference point for quality assurance of off-grid solar products ([IEC Technical Specification 62257-9-5](#)) in 2021. These standards are now maintained by VeraSol,²⁹ an organization that builds on Lighting Global's work in shepherding the ongoing development and maintenance of quality standards. It has also benefited from the foundational quality assurance framework launched by Lighting Global, CLASP, and the Schatz Energy Research Center in 2020. *Government policy options to protect consumers from the risk of poor-quality products are discussed in Chapter Four, Issue 8.*

2.3 PAYG and Consumer Financing of OGS Products

PAYG is fundamental to addressing the affordability challenge and enabling consumers to access a higher tier of energy service. According to market research, over 60 percent of off-grid solar customers now purchase energy access that meets or exceeds Tier 1 level access (as defined in the multi-tier framework (MTF)) driven by the increased sales of larger SHS units enabled by PAYG.³⁰ Consumer access to solar energy kits grew from 420 million people in 2019 to more than 490 million in 2021, with significant

growth (160 percent) in Tier 2 access between 2019 and 2021. Governments are also promoting PAYG as an important offering to increase solar adoption in rural communities. View resources for key data points and other trends in OGS and PAYG electrification in **Annex B**. There is limited data on the impact of PAYG offerings on women's access to electricity and empowerment. Additional research with intentional efforts to collect gender-disaggregated data is needed.³¹

PAYG uses consumer financing to make OGS products more affordable by spreading out the cost of ownership of the unit through monthly, weekly, or daily payments. These recurring payments are similar to the way people pay for grid electricity through prepaid meters. Financing terms typically include:

- An initial down payment of 10-20 percent.
- Subsequent recurring payments preferably made using digital financing, such as mobile money but also sometimes collected by agents or paid in person. These payments are typically spread out for a period of between one and three years.
- Cessation of service and, eventually, repossession of the solar unit when payments are not made.
- Transfer of asset ownership to the consumer when all payments have been made. Most PAYG companies only offer QV products and include a warranty that covers the product for the financing term.

PAYG companies use data they collect from the consumer or other institutions, such as mobile network operators (MNOs) or credit bureaus, to assess a consumer's repayment risk. The companies use this data in structuring their PAYG pricing and may, for example, increase or decrease the initial payment requirement based on the level of risk of the market. Fintech companies, like **Infibranches** in Nigeria, also are offering digital payment services and data collection platforms to help expand the reach of PAYG companies and empower companies with data analytics.³² The wealth of customer data that PAYG companies are collecting is creating opportunities to expand the PAYG model to other products and services. While leveraging data is useful to increase access to beneficial products and services, there is also a need to ensure consumer protection and data privacy. *These issues are discussed in Chapter Four, Issues 6 and Issue 10.*

²⁷ Lighting Global/ESMAP, GOGLA, Efficiency For Access, Open Capital Advisors (2022), *Off-Grid Solar Market Trends Report 2022*, p. 45.

²⁸ *Id.*, p. 46.

²⁹ Verasol website accessible [here](#).

³⁰ Lighting Global/ESMAP, OGS Market Trends Report, 51. As defined in the MTF Tier 1 access is access to electricity sufficient to use low power devices (below 3 watts) for a minimum of four hours during the day and one hour in the evening. Consumers with this level of access are able to use solar lanterns and charge their phones. ESMAP, "Multi-Tier Framework for Measuring Energy Access."

³¹ Kumaraswamy, Sai Krishna, Does PAYGo Solar Improve Women's Lives? A Look at the Evidence, CGAP. Accessible [here](#).

³² Infibranches' website here: <https://www.infibranches.com>



In Nigeria, **Infibranches** offers PAYG companies a digital aggregation platform to enhance digital payments. The platform allows customers to buy OGS products from PAYG companies and to make payments through a variety of mobile money providers and financial apps. Most PAYG providers in Nigeria are using the services of Infibranches.

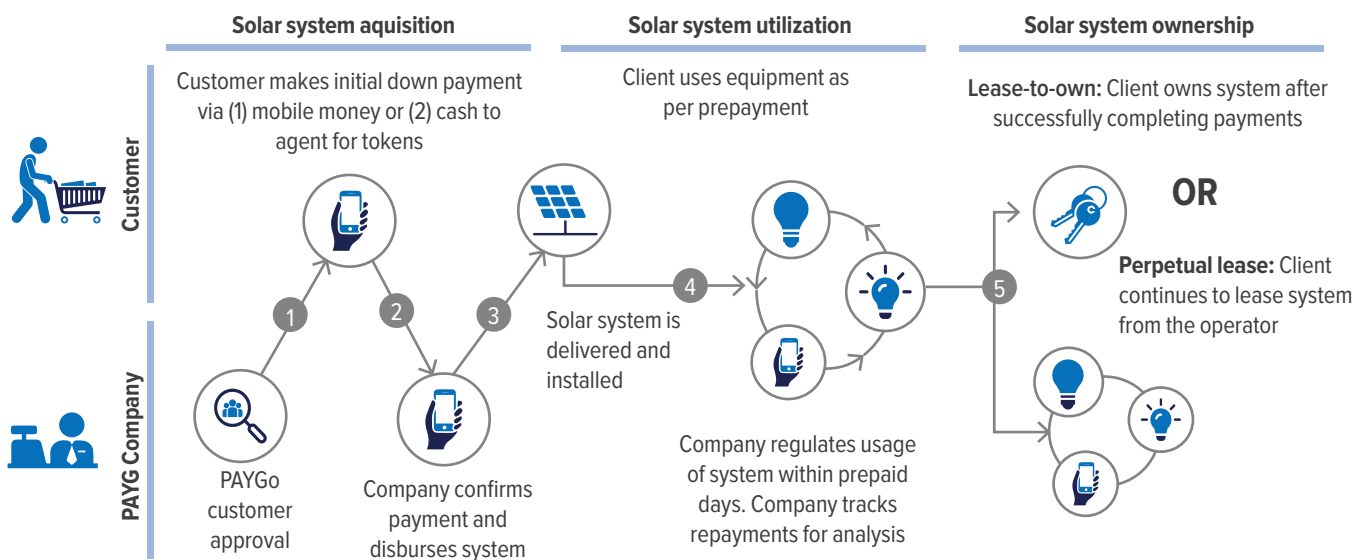
PAYG providers may also embed ‘lockout’ technology within the product to deny energy service if a customer’s prepaid balance has been used or expires, similar to pre-paid grid meters or airtime top-ups. Consumers can regain access by making payments on their accounts. Unlike other forms of financing (such as loans), PAYG providers typically only use the OGS system as collateral, where the system can be collected in case of customer non-payment. Unlike microfinance institutions (MFIs) or other cash-based lenders, PAYG companies do not provide customers with cash that can be used at their discretion. Instead, the PAYG financing is directly connected to purchasing the OGS asset. At the beginning of the loan or lease period, the customer receives an OGS product and has a financial obligation to repay it. Some PAYG companies are expanding their services to offer financing for customers to acquire other assets.³³ Figure 2.4 depicts a typical PAYG product cycle.

M-KOPA’s PAYG offerings now include smartphones, televisions, refrigeration, cookstoves and loan and insurance products.

Bboxx provides PAYG financing for the smartphones in partnership with the Government of Togo.

(Source: GSMA)

Figure 2.4: A Typical PAYG Product Cycle



Source: Vivid Economics and Open Capital Advisors; Lighting Global, GOGLA, ESMAP, Off-Grid Solar Market Trends Report 2020

33 GSMA, The Value of Pay as You Go Solar for Mobile Operators Insights from Customer Journeys in Benin and Cote-d’Ivoire (2022). Accessible [here](#).

PAYG providers integrate digital payments and remote monitoring into PAYG products to drive payment collection and processing efficiencies that can contribute to lower product pricing.

A country's legal and regulatory environment, often governed by central banks and financial regulators, determines the permitted forms of digital payments and the payment provider landscape. When available, and especially in markets in sub-Saharan Africa, PAYG providers typically use mobile money to facilitate customer payments. This helps PAYG providers lower payment collection costs, especially for rural customers. In sub-Saharan Africa, it is not unusual for the MNO to be the mobile money provider rather than the traditional financial services provider. The PAYG companies may use other payment options, including digital payment services offered by banks or the growing sector of FinTech companies that offer mobile wallets, payment apps, and agency banking, taking advantage of the adoption of smartphone and mobile broadband uptake.





In markets where digital payments are not as prevalent or digital networks have not reached the companies' service areas, PAYG companies may collect payments in alternative forms including cash, scratch cards, and mobile airtime. They can also use a payment process that does not rely on access to mobile devices or a mobile network.

A non-digital payment channel option can also be important for OGS to be inclusive of all segments of the population. For example, people with low levels of digital literacy or physical challenges in using mobile technology may need a non-digital solution to acquire PAYG systems. As shown in the scenario in Table 2.1, if the PAYG hardware does not connect with the mobile network, customers pay cash to appointed agents for a prepaid energy voucher, credit or scratch card and manually input unique usage codes into the OGS. In a few cases, PAYG companies may partner with financial institutions to provide the consumer financing and only provide the OGS product. Some financial institutions have seen an opportunity in PAYG and created subsidiaries that offer PAYG products.³⁴

In Pakistan, SHS companies rely on microfinance institutions to provide financing. The companies attribute low market growth to a lack of digital financial services (specifically mobile wallets) that enable high payment flexibility and have proven to be critical for SHS success in other markets.

(Source: World Bank 2022)

Table 2.1: Payment Channels by OGS Company & Partners

Payment Channel	PAYG Provider	Payment Technology Approach	Payment Process
Mobile Money		On-network	M-KOPA is a well-known PAYG provider in Kenya. Purchasers of M-KOPA PAYG systems make payments to M-KOPA using mobile money.
Mobile Money		On and off-network	Sunny Money offers customers in Malawi the option to make payments using their own mobile money account or with cash paid to mobile money agents.
Scratch Cards	 Azuri Technologies	Off-network	Azuri prints and distributes energy credit scratch cards through local agents. Customers purchase the scratch card with a unique numeric code and send it via SMS along with their product/customer ID. Azuri sends the customer an SMS with a single-use code, which they enter into a keypad on the solar device to use the product for the prepaid amount of time.
Airtime		On-network	Customers use their MTN mobile airtime to pay for MTN Mobile Electricity service. MTN credits the customer's Lumos account to receive power for the number of days selected. The SHS automatically shuts off after the credit is exhausted.

³⁴ Waldron, Daniel, Alexander Sotiriou, and Jacob Winiiecki. 2019. "A Tale of Two Sisters: Microfinance Institutions and PAYGo Solar." Focus Note. Washington, D.C.: CGAP. Accessible [here](#).

2.3.1 PAYG Pricing Components

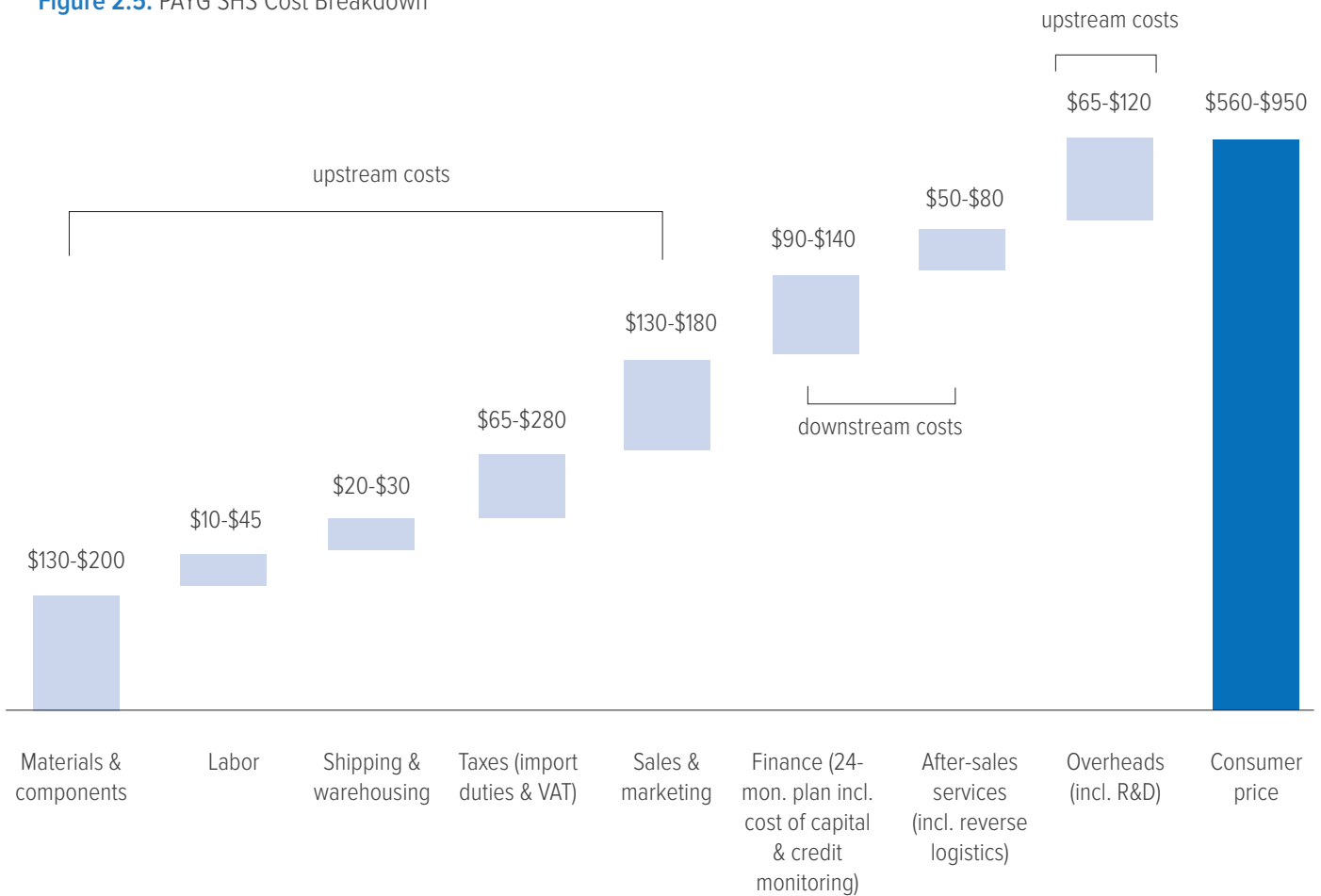
Consumers who buy an OGS product with financing pay more to purchase their unit than consumers who purchase the same product in cash due to the cost of providing consumer financing in the PAYG model.³⁵

Figure 2.5 provides an overview of the different upstream costs (costs to produce products and make them available to consumers) and downstream costs (costs of after-sales service and consumer financing) of OGS products. The finance costs of a PAYG offering reflect the cost of capital and additional operating costs of credit management, credit-related technology, and mobile money transaction costs, among others.

Upstream costs include materials and component costs (including research and development and product design costs), value-added taxes (VAT), and duty costs applied to OGS units and components, as well as operating costs (logistics, warehousing, sales, marketing).

A key cost driver for solar products is the materials and components themselves, including taxation. For PAYG companies, in particular, high-quality products - despite higher costs - are important to reduce after-sales and warranty costs, and to decrease risk of consumer non-payment (customers stop paying when their product is not working).

Figure 2.5: PAYG SHS Cost Breakdown



Source: Hystra Strategy Consulting, Pricing Quality Cost Drivers, and Value Add in The Off-Grid Solar Sector 2019

35 According to the 2022 Off-Grid Solar Market Trend Report (MTR), a typical PAYG business model features repayment over 12-24 months at a 40 percent annual equivalent rate, helping to spread what would otherwise be an upfront cost of 100 USD or more for a Tier 1 system.

The Africa Clean Energy Technical Assistance Facility and Open Capital Advisors published a [tool](#) governments can use to assess the impact of varying VAT and duty levies on consumer access to and purchase of standalone OGS products.

Therefore, many PAYG companies invest heavily in research and development and the purchase of quality solar components that meet international quality standards. A country's fiscal policies for OGS products influence upstream product costs and pricing. Recognizing that taxation can add to product costs and reduce affordability, governments are using a variety of fiscal strategies to address these costs, especially for purchasing QV products. *We explore policy approaches and options for fiscal policies in further detail in Chapter Four, Issue 4.*

Downstream costs include after-sales service and consumer finance, with the latter being the most significant. Consumer finance consists of the cost of capital and credit to provide funds for consumer financing over a multi-year term and mobile money transaction costs. It also covers additional operating costs triggered by consumer financing (credit management, after-sales support), and credit-related technology, such as firmware that enables remote lockout or GPS devices. Other costs are covered to manage foreign exchange risks between borrowing by the PAYG company in non-local currency and customer payments made in local currency, and costs of managing consumer non-payment risk through reserves.

PAYG companies price their products to cover their after-sales service costs and the risk they assume in financing consumer receivables. Hystra estimates that after-sales service costs for PAYG companies account for 5-15 percent of product pricing for quality SHS.³⁶ These costs cover replacement parts, call center operations, and reverse logistics. PAYG companies' after-sale service periods may be longer than other OGS providers, especially those not providing product warranties, as PAYG companies offer equipment repair and customer services throughout the financing cycle (often up to 24 months and sometimes longer).

When a PAYG company can lower its financing costs, this can translate into lower product pricing for consumers. OGS companies have their capital costs financing, which can represent up to 15-25 percent of the end-consumer price.³⁷ PAYG companies price into their products their cost of funds to supply consumer financing and to create a reserve for bad debt from consumer financing defaults. When a PAYG company can lower its financing costs, this can translate into lower product pricing for consumers. A company's financing cost can also determine whether it can offer a PAYG product. *We explore policy approaches and options to increase the availability and cost of capital to OGS providers in further detail in Chapter Four, Issue 5.*

2.3.2 OGS Value Chain and Business Models

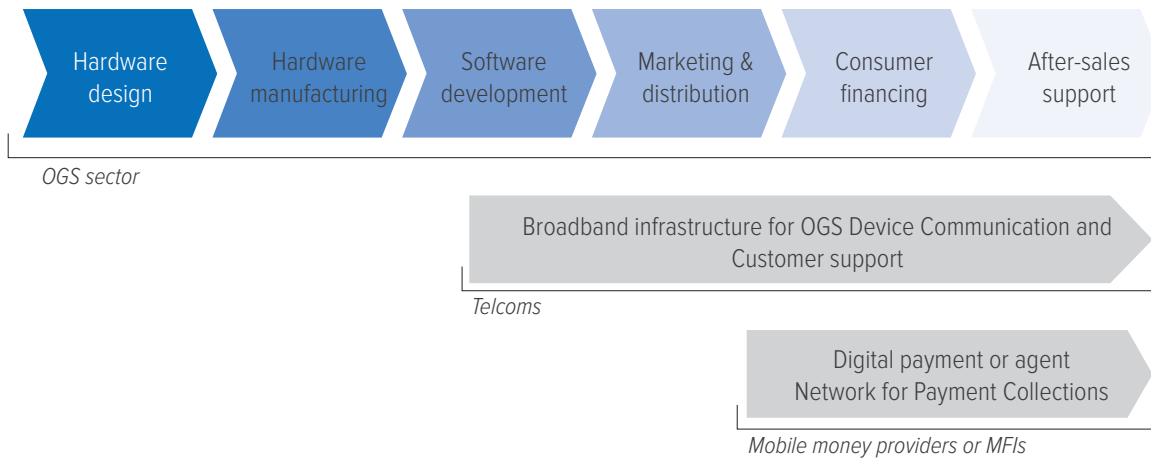
Companies in the OGS sector adopt various business models, including vertical integration across the value chain and specialization in one or a few parts. The OGS value chain can be depicted in six parts, as shown in Figure 2.6. In vertically integrated business models, one company operates across the value chain, engaging in product design, manufacture, retail sales and distribution, installation and maintenance, payment collection, financing, and customer service. In the early days of the PAYG sector, most companies adopted this vertically integrated business model and had to master all the disciplines in the value chain. Other companies specialize in one or two areas within the value chain.

36 Hystra Hybrid Strategy Consulting, Pricing Quality Cost Drivers, and Value Add in The Off-Grid Solar Sector, 2017. Accessible [here](#).

37 *Ibid.*

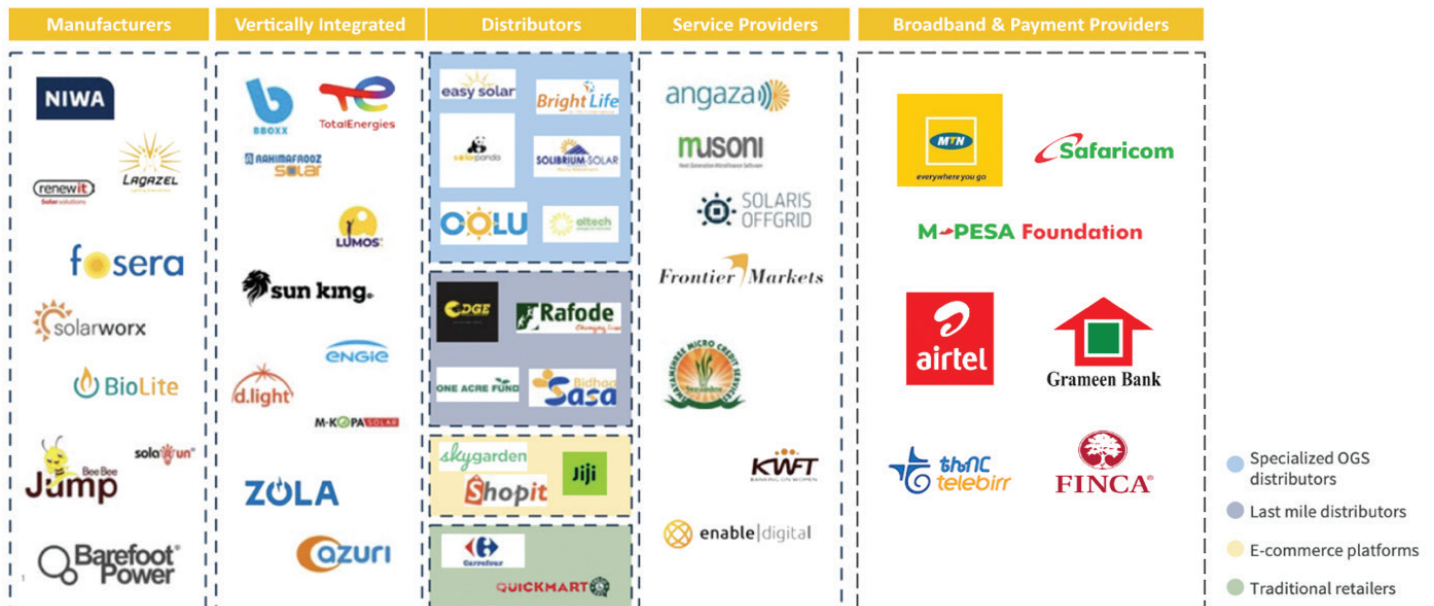
Market trends indicate that newer OGS providers are moving away from the vertically integrated business model and becoming more specialized.³⁸ The OGS sector continues to evolve with market participants experimenting with their service offerings and approaches to drive efficiencies, scale, and to reach profitability.

Figure 2.6: PAYG SHS Value Chain



The Off-Grid Market Trends 2022 report captures and categorizes some companies participating in different parts of the value chain, as shown in Figure 2.7.

Figure 2.7: Value Chain Participants



(Adapted from: Lighting Global/ESMAP, GOGLA, Efficiency for Access, Open Capital Advisors (2022), Off-Grid Solar Market Trends Report 2022)

Note: This mapping is not comprehensive of the entire sector, though it is representative of the types of currently operational companies.

³⁸ Consolidation has also begun to occur in some markets, with larger companies such as Engie acquiring early players in the OGS sector and PAYG space, Mobisol and Fenix. Lighting Global, GOGLA, ESMAP, Off-Grid Solar Market Trends Report 2020, p. 11.

2.4 Impact of OGS

Beyond delivering electricity access, OGS has multiple economic, social, and environmental benefits. According to the World Bank's 2017 State of Electricity Access Report, a review of all SDG targets indicates that energy is interconnected with 125 (74 percent) out of the 169 targets, making it crucial for all societies to recognize the key interlinkages of energy and the wider development agenda³⁹. A report by GOGLA⁴⁰ cites household and national savings, and job creation and economic activity among others. For example, research in East Africa and Mozambique found that nearly 60 percent of customers who purchased solar home systems reported increased economic activity due to a household member being able to spend more time working, getting a new job, or

using the system to support enterprise. The same report highlights health, safety, and quality of life improvements in transitioning from traditional energy sources, such as kerosene and candles. Beneficial climate change impacts are also associated with the same transition from fossil fuels to renewable energy.

OGS also offers benefits for women and girls. OGS products can reduce the time it takes to complete certain household chores - tasks disproportionately carried by women - and be used to generate income.⁴¹ Girls also greatly benefit from electricity access. For instance, girls living in rural areas that have access to electricity are 59 percent more likely than those without electricity access to complete primary education by the time they turn 18.⁴²

³⁹ State of Electricity Access, World Bank, 2017

⁴⁰ GOGLA, 2022. Providing Energy Access through Off-Grid Solar: Guidance for Governments. Accessible [here](#).

⁴¹ Ungari, Barbara; Schomer, Inka Ivette; Rysankova, Dana, Operational Handbook for Gender Equality in the Off-Grid Solar Sector, Washington, D.C., World Bank Group, p. 43. Accessible [here](#).

⁴² *Ibid.*

CHAPTER THREE

The Pay-as-You-Go and Digital Economy Nexus

Use this Chapter to:

- Understand how PAYG contributes to the demand and use of digital payments (including mobile money).
- Identify how access to OGS supports the five foundations of a digital economy.
- Explore where governments' policy initiatives for increasing energy access, digital inclusion, and financial inclusion may overlap and provide an opportunity for inter-ministerial coordination.

The OGS sector contributes to and builds on the global transformation toward digital economies. The Global System for Mobile Communications Association, GSMA, describes the PAYG solar model as the perfect example of a “second wave of inclusive digital innovation.”⁴³

In this Chapter, we explore how OGS integrates digital technology and enables the digital economy, and how policymakers can promote common and mutually reinforcing strategies for digital transformation, financial inclusion, and energy access.

3.1 How OGS Uses the Digital Economy

Digital Payments and Mobile Money

Digital payments and mobile money are fundamental to off-grid energy expansion and an enabling market factor for PAYG. Mobile money services are key to the PAYG model. While mobile money is not the only payment option for OGS purchases, most companies use it (or other forms of digitally enabled payments) to eliminate direct cash handling and the need to establish payment collection points. The specific payment provider may vary. In the case of mobile money, Mobile Network Operators (MNOs), not banks,

typically own and operate mobile money services using their mobile services brand and contracting local agents to provide customer service. Licensed financial institutions, including banks or FinTechs, may provide digital payments or mobile money in some markets. You can find resources with key data points on how inclusive digital economies can use OGS energy in Annex B.

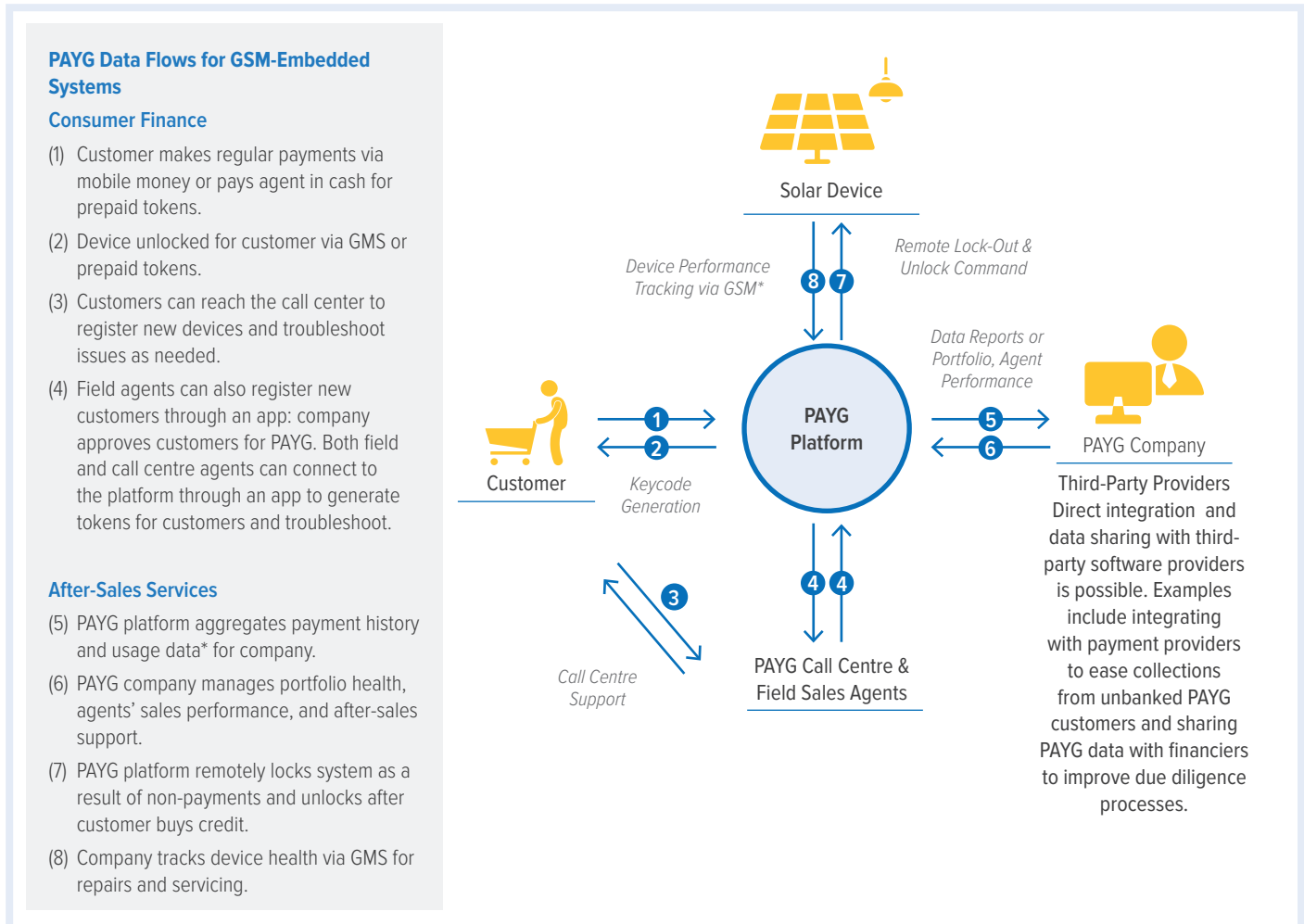
Connected Devices, Customers, and Distribution

OGS companies are designing, prototyping, and programming microcontrollers that regulate the use and functionality of OGS units. In PAYG products, broadband networks transfer proxy information and data between the consumer device and the OGS company, as shown in Figure 3.1. OGS companies use this data to analyze system performance and customer payment trends and inform real-time financing and business decisions. OGS companies also use machine-to-machine (M2M) connections to facilitate remote system activation and deactivation based on a customer's payment activity. As the OGS industry evolves, solar lanterns and SHS are mature product offerings catalyzing a market trend toward more customized, interoperable, modular, and circular products.

43 GSMA, Mobile for Development Utilities, Lessons from the use of mobile in utility pay-as-you-go models, 2017. Accessible [here](#).

These products offer consumers flexibility and choice in purchasing a “family of products” or mixing products from different suppliers.⁴⁴ In 2021, GOGLA launched an initiative to promote OGS and PAYG systems interoperability. Through its **Connect Initiative**, GOGLA’s technical working committee defined a set of common, voluntary technical standards for SHS kits and PAYG firmware to promote device and PAYG platform interoperability.⁴⁵ Leading PAYG software platform providers, Angaza, PaygOps, and Paygee, have embraced interoperability by enabling SHS kits integrated with one of the platforms to be usable with the two other platforms.⁴⁶

Figure 3.1: PAYG Data Flows for GSM-Embedded Systems



(Source: Vivid Economics and Open Capital Advisors; Lighting Global, GOGLA, ESMAP, Off-Grid Solar Market Trends Report 2020)

Beyond device communication, OGS companies use SMS and other mobile messaging systems to communicate with their customers. Angaza estimates that PAYG distributors send more than 60 SMS messages to customers during the financing period.⁴⁷

44 Lighting Global/ESMAP, GOGLA, Efficiency For Access, Open Capital Advisors (2022), *Off-Grid Solar Market Trends Report 2022: State of the Sector*. Washington, DC: World Bank. p. 6.

45 GOGLA, *The Connect White Paper*, 2021. Accessible [here](#).

46 *Ibid.*

47 Angaza offers a bulk SMS package to PAYG distributors described in more detail [here](#).

We address policy issues and options for promoting the availability of digital infrastructure and services to support M2M communications and customer communication in Chapter Four, Issue 2.

MNO Partnerships for Last Mile Distribution

Last-mile retail agents play an important role in accelerating both OGS sales and adopting digital payments.⁴⁸ While some companies operate as wholesalers of OGS products, selling their products to businesses who then take on the business of selling to consumers, others rely on retail agent sales and distribution networks to facilitate sales. PAYG companies rely on local agents to enable mobile money account opening and payments. OGS companies are adopting retail and last-mile distribution strategies using local agents in a variety of combinations, including the following:

1. Working through proprietary networks.
2. Engaging independent retail distributors and sales agents.
3. Opening mobile money accounts and conducting transactions for PAYG customers.
4. Partnering with MNOs to recruit agents to serve as both mobile money and OGS sales agents.

In some markets, MNOs partner with OGS providers in last-mile distribution to reinforce their brand and drive customer acquisition and retention.⁴⁹ In Uganda, Fenix International and mobile money provider MTN used a combined field force of co-branded agents (Fenix and MTN) who serve as mobile money agents and PAYG merchants. MNOs have wide retail distribution networks with reach and visibility in areas beyond the grid that are providing sales and service channels for OGS. The growth of MNO services in rural areas and the saturation in urban markets have prompted some MNOs to customize services to meet the needs of rural, off-grid customers.⁵⁰ By partnering with MNOs, PAYG providers may be able to share the costs of sales and marketing with the MNO, thereby reducing their costs and in turn customer pricing.

3.2 How OGS Enables the Digital Economy

PAYG companies prompt customers to open mobile money accounts and use them regularly. Customers purchasing PAYG products made more mobile money transactions, not only to pay for their SHS but for other products as well. In a 2020 study covering five MNOs in five countries, GSMA found that mobile money users increased the frequency of mobile money transactions by 113 percent right after they started using PAYG solar services. In 2022, GSMA updated its research, collecting data in Benin and Côte d'Ivoire on how energy access and mobile phone use - including mobile money transactions - influence each other and create customer behavior change that drives usage.⁵¹

Consumers' increased use of mobile money and PAYG also open the gateway to digital financial inclusion and access to additional financial services. Some PAYG companies have begun to offer customers access to additional financing secured by their systems.

For example, Engie Energy Access provides school fee loans to help their customers manage the discrepancy between when school fee loans are due and when farmers receive payments for their harvests.⁵² PEG, a PAYG provider in Ghana, acquired by Bboxx in 2022, offered the option to include health insurance premiums to PAYG customer payments. As PAYG provider financing moves beyond purchasing the solar unit, governments may need to evaluate how that financing is classified under a country's financial services regulation. *We explore policy issues and options in Chapter Four, Issue 7.*

“Mobile operators provide the basic ingredients for PAYG — mobile money and connectivity — while PAYG solar boosts operator revenues from mobile money transactions and other services, aided by reliable phone charging.”

(Source: GSMA)

⁴⁸ In 2019 the Global Distributors Collective published a state of the sector report on last mile distribution. Sixty-five percent of the distributors surveyed for the report sell off-grid solar lighting and appliances. Global Distributors Collective (2019) Last Mile Distribution: State of the sector report, Rugby, UK: Practical Action Publishing, p. 11. Accessible [here](#).

⁴⁹ Most OGS products today are sold through direct sales agents. Lighting Global, GOGLA, ESMAP, Off-Grid Solar Market Trends Report 2020, p. 77. 3 Jennifer Frydrych and Hege Aschim, GSMA, *Extending reach: mobile money in rural areas*, October 2014.

⁵⁰ GSMA, *The Value of Pay As You Go Solar for Mobile Operators Insights from Customer Journeys in Benin and Cote-d'Ivoire*; GSMA, *The Value of Pay-as-you-go Solar for Mobile Operators*, 2020. Accessible [here](#); GSMA (Producer) *The Value of Pay-as-you-go Solar for Mobile Operators* (Webinar), 2020.

⁵¹ Emmot, C. *Next Billion: Paygo solar industry products*, January 2020. Accessible [here](#).



Women who acquire PAYG products can also benefit from the bridge to financial inclusion paved by PAYG.

Research on the popular Kenyan mobile money platform M-Pesa has shown that access to mobile money improves the economic lives of women with lower income and members of female-headed households.⁵³ Despite the benefits of mobile money, data from the World Bank’s 2021 Global Findex Survey showed that women globally were six percentage points less likely to have a formal financial account than men.⁵⁴ Consumer insights data collected by the firm 60 Decibels show that gender targeting of OGS products to women may be necessary as men are the primary purchasers of solar lanterns and SHSs.⁵⁵ Women in the study sample purchased only 38 percent of solar lanterns and 32 percent of SHS. In 2022, the World Bank published an [operational handbook on gender equality in the OGS sector](#), which guides stakeholders on approaches for closing gender gaps at the consumer and enterprise levels.⁵⁶

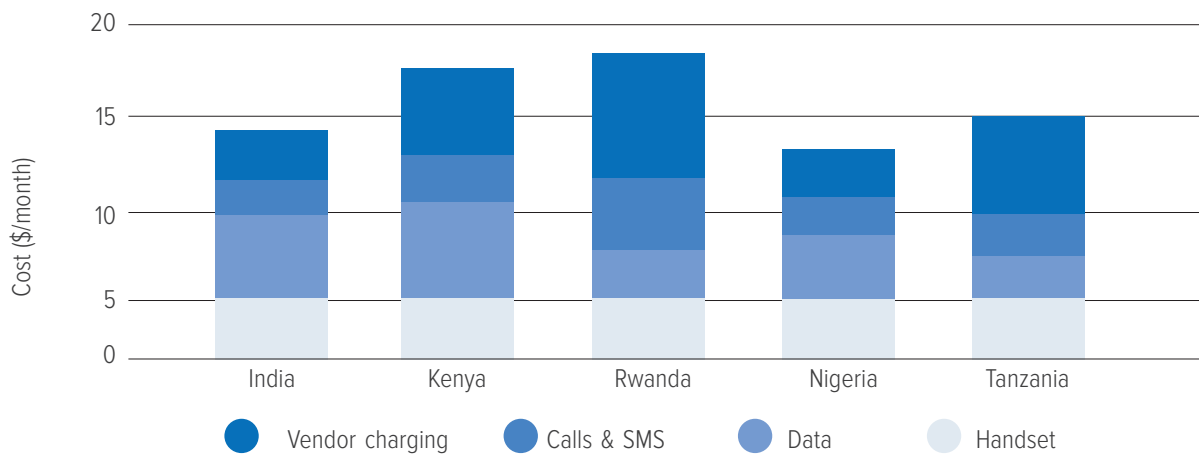
Consumer access to reliable, high-quality energy is essential to creating inclusive digital economies. The Broadband Commission Working Group on Broadband

for All: A “Digital Infrastructure Moonshot” for Africa (the Broadband Commission Working Group) classifies the absence of access to reliable electricity as a significant constraint to digital infrastructure expansion in Africa.

OGS companies are providing energy solutions that can support inclusive participation in the digital economy — especially by those in rural areas. Digital products and services all need to be powered by electricity. This could be the mobile phones used by individuals, point-of-sale devices used by entrepreneurs, or educational videos viewed by students in a classroom. Mobile phone charging can be expensive for those without energy access at home. Those relying on energy kiosk vendors to charge their mobile devices can face charging costs that add up to a third of the cost of owning an internet-capable device, depending on the distance to the charging station.⁵⁷

GSMA research continues to confirm the deep synergies that exist between mobile and PAYG energy services, “With new energy access, via SHSs, we see all aspects of customer behavior shift. These changes reflect the transformation in peoples’ lives that come with reliable energy access.”

Figure 3.2: Estimated Charging Cost of Off-Grid Smartphone Ownership



Source: Bloomberg New Energy Finance, Research ICT Africa, Facebook. Assumes the handset costs are distributed over 36 months. Five battery charges per week.

53 Suri, T. & Jacks, W, The long-run poverty and gender impacts of mobile money, Science 354 (6317), 2016, 1288-1292. Accessible [here](#).

54 Demircüç-Kunt, Asli et al, 2021 Findex.

55 60 Decibels, Why Off-Grid Matters, Feb. 2020, 26. Accessible [here](#).

56 Ungari, Barbara et al, [Operational Handbook for Gender Equality](#)

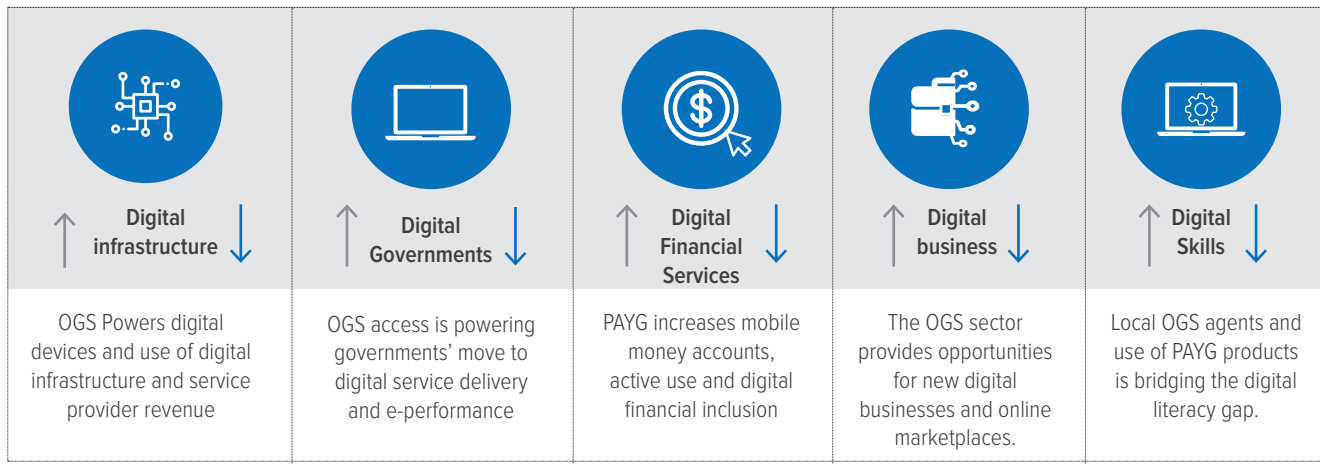
57 Facebook, Bloomberg New Energy Finance, Powering last-Mile Connectivity, 2018. Accessible [here](#).

The World Bank's Digital Economy for Africa (DE4A) initiative includes a framework that identifies key components of the digital economy ecosystem.⁵⁸ This includes five foundational elements, as illustrated in Figure 3.3:

1. Digital infrastructure.
2. Digital government.
3. Digital financial services.
4. Digital business.
5. Digital skills.

We explore the connection between OGS and digital transformation in the following sections of this chapter.

Figure 3.3: The Relationship Between OGS and Digital Transformation Digital Infrastructure



Digital Infrastructure

The geographical gaps in consumer use of broadband service mirror those for energy, allowing the government to coordinate policies that can advance digital transformation and increase energy access. Consumers in many countries, especially in rural areas, access broadband services through mobile networks. The quality, reliability, and affordability of these broadband services vary widely. This means that internet access is far from equal or universal, despite the increasing ownership and usage of mobile phones. Globally, only 63 percent of people are connected to internet services. The level of internet use in low-income

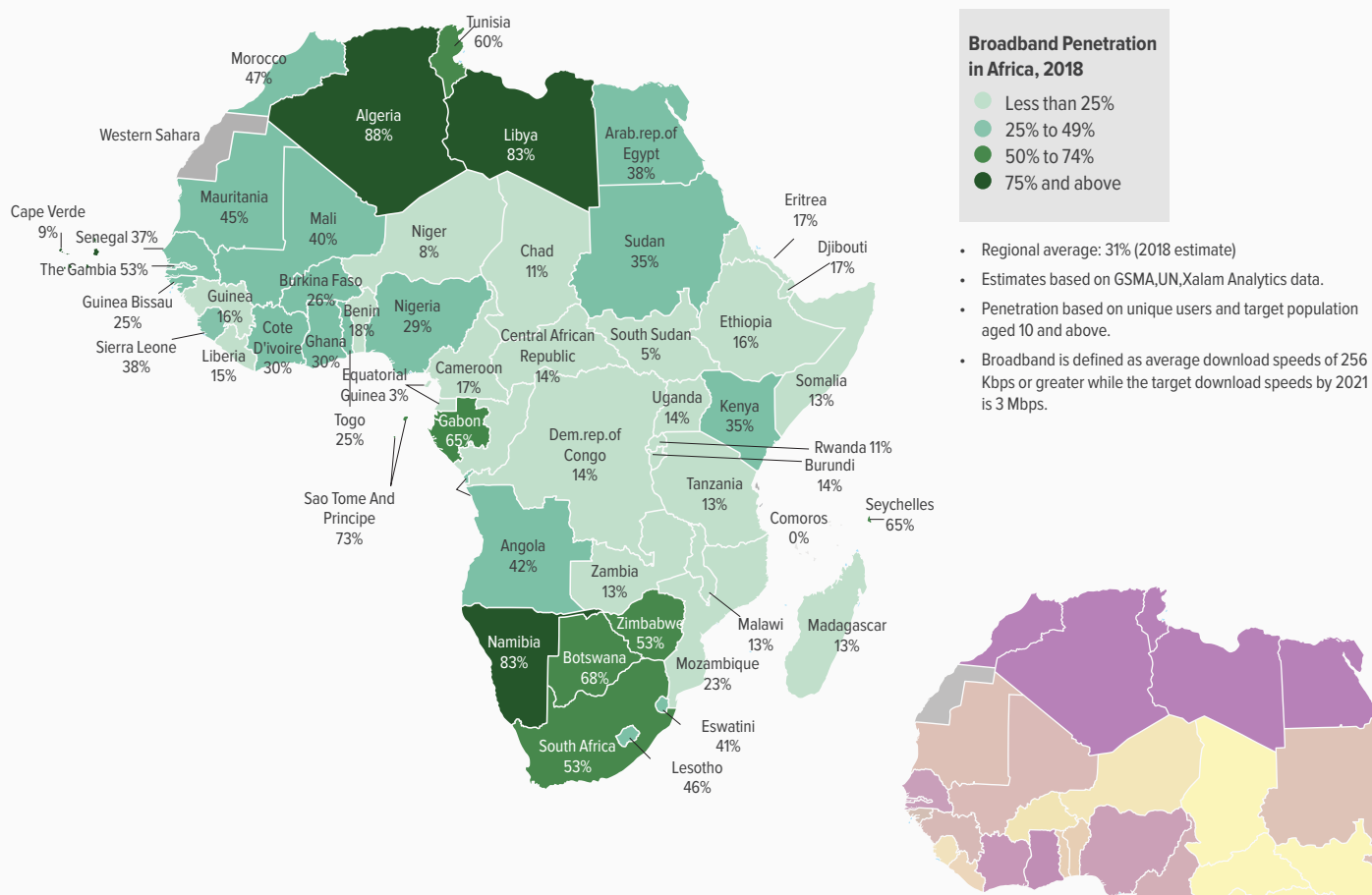
countries (22 percent) remains far below that of high-income countries, which are close to universal usage (91 percent).⁵⁹ The gaps in service coverage and use are most acute in rural areas, which are the most expensive for providers to serve. Mobile network deployment to rural and remote locations is adversely impacted by a lack of basic infrastructure, including reliable electricity provision.

⁵⁸ The World Bank's Digital Economy for Africa (DE4A) initiative supports the African Union's Digital Transformation Initiative and sets goals: to double broadband connectivity penetration in Africa by 2021 from 2016 levels; and achieve universal, affordable, and good quality broadband access in Africa by 2030. Broadband Commission Working Group on Broadband for All: A "Digital Infrastructure Moonshot" for Africa, Connecting Africa Through Broadband A Strategy for Doubling Connectivity by 2021 and Reaching Universal Access by 2030. Accessible [here](#).

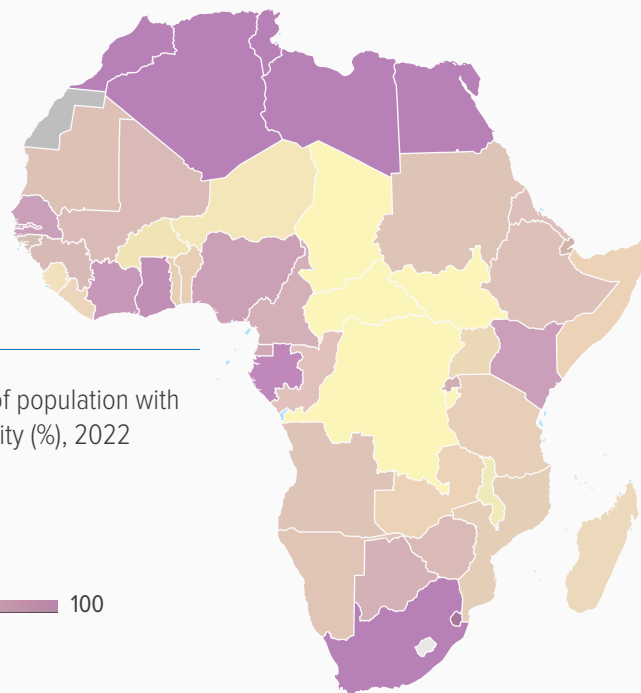
⁵⁹ ITU, Global Connectivity Report 2022, 2022. Accessible [here](#). & GSMA, The Mobile Gender Gap Report, 2022, Accessible [here](#).

In situations where mobile network coverage does exist, consumers' uptake of the services is only a fraction of the network coverage.⁶⁰ Government policies that coordinate broadband service delivery and access to energy can help accelerate the reach of both in rural areas.

Map 3.1: Mobile broadband penetration in Africa by country (%), 2018
 Source: GSMA, UN, Xalam Analytics data



Map 3.2: Share of population with access to electricity (%), 2022
 Source: IEA



60 Per the Global Connectivity Report referenced above, the coverage gap, currently at five percent, is dwarfed by the usage gap: 32 percent of people within range of a mobile broadband network and could, therefore, connect remain offline.



In recent years, consumers in the African region have seen reduced prices for mobile devices and airtime. However, many consumers continue to find that costs for mobile devices and mobile internet services exceed their purchasing power. Africa has the highest level of broadband exclusion in the world. Such high levels of exclusion are mostly the result of the cost of broadband services, the cost of devices, and insufficient infrastructure to provide reliable broadband service to remote and rural populations. Africa also has the highest prices globally for mobile broadband services, as measured relative to income. The Broadband Commission for Sustainable Development defines affordable broadband access as two percent or less of the average monthly income for entry-level mobile broadband data.⁶¹

Most countries in sub-Saharan Africa fall short of this target. On average, current prices on the subcontinent represent 6.8 percent of income.

By making smartphones more affordable and easier to charge, PAYG is helping people access the internet. In July 2020, Safaricom, the Kenyan MNO, in partnership with Google, launched Lipa Mdogo, a PAYG plan for 4G phones. Qualified consumers can purchase a 4G mobile device by making an upfront deposit followed by daily installments until the phone is paid for in full.⁶² PAYG providers M-KOPA and Bboxx are offering PAYG financing for smartphones to customers in addition to their traditional OGS product offerings.⁶³

61 Broadband Commission for Sustainable Development. 2021. The State of Broadband: People Centred Approaches for Universal Broadband. Accessible [here](#); GSMA, The Mobile Economy in Sub-Saharan Africa 2020. Accessible [here](#).

62 Learn more about Lipa Mdogo [here](#).

63 Learn more about M-KOPA's financing plans [here](#). Learn about Bboxx's PAYG offerings [here](#).

OGS companies are providing the necessary electricity solutions to support consumer use of mobile services and boost revenues for MNOs. MNOs set their service provision based on their costs and revenue forecasts driven by consumer and enterprise customers' use of their services. Customers who use PAYG OGS products increase their internet and mobile money use. In the 2022 GSMA study, surveys of mobile phone users in Benin and Côte d'Ivoire show that voice and data usage jumped sharply for SHS customers compared to those in a control group. The average revenue per user (ARPU) for mobile phone users with PAYG OGS was nine percent higher than for customers without PAYG OGS products.⁶⁴ The need for OGS solutions will increase as consumers continue to purchase smartphones which require more frequent charging than feature phones. As discussed in Section 3.1, the OGS sector is also driving the use of mobile services by embedding digital technology in its products for M2M communication and to power its last-mile distribution networks. Table 3.1 illustrates the economic benefits and investment areas needed for MNOs to participate in and benefit from the OGS sector.

“By far the greatest impact on increased data and voice usage is that SHS allow users to charge their phones more easily and, therefore, use their phones more often.”

(Source: GSMA The Value of Pay-as-you-go Solar for Mobile Operators, p.24)

Table 3.1: MNO Benefits from OGS and Investment Areas

PAYG Use of MNO Services	MNO Revenue Growth	Investment Areas for Expanding Rural Service
Signing up new customers	Customer use of network services like Internet/SMS/Voice (revenue from airtime sales), as well as additional digital financial services for which the MNO may receive a revenue share	Encouraging expansion of distribution networks, mobile money agents and quality network infrastructure
Repayment of PAYG solar product	Mobile money transaction fees or charges	<ul style="list-style-type: none"> • Increase in training of agents to advance their own digital literacy and to train customers on digital technologies. • Increase mobile money tiers.
Mobile money repayment data used for PAYG credit scoring and evaluation	Mobile money fees generated through increased use of complementary financial service offerings	<ul style="list-style-type: none"> • Increase agent management structures (liquidity management)
M2M communication for equipment monitoring	Fees/charges/licenses for SHS metering and monitoring and bulk SMS	Improved technology and expansion of infrastructures in rural areas

Policymakers can influence investments in broadband network reach and OGS solutions through coordinated and supportive frameworks, especially in underserved rural areas. Despite growing consumer demand for digital services, MNOs and OGS companies are often challenged to source sufficient service revenue from rural customers to cover their infrastructure and operational costs. Advocates for digital inclusion and universal energy access recognize that they need more than private sector investment to bridge the affordability gap for consumers to acquire off-grid energy solutions and purchase broadband access. GSMA estimates that MNOs will invest US\$52 billion in expanding network infrastructure in sub-Saharan Africa between 2019 and 2025 to meet growing consumer demand for mobile services.⁶⁵ *We explore policy approaches and options for coordination of broadband and OGS strategies in further detail in Chapter Four, Issue 2.*



GSMA estimates that **MNOs will invest US\$52 billion in expanding network infrastructure in sub-Saharan Africa** between 2019 and 2025 to meet growing consumer demand for mobile services.

64 GSMA, The Value of Pay As You Go Solar for Mobile Operators Insights from Customer Journeys in Benin and Cote-d'Ivoire, p. 13.

65 GSMA, The Mobile Economy in Sub-Saharan Africa 2020. Accessible [here](#).



Digital Governments

Many governments are converting to digital technology to deliver public services. This encourages citizens to transition to the formal economy by applying connected digital technologies and moving tax collection to digital channels. This all depends on reliable energy access. Whether disbursing government support payments, targeting OGS subsidies to enable energy access, or managing data to monitor government programs, closing the gaps in universal energy access and digital inclusion will be critical to governments' success in migrating service delivery to digital platforms and driving efficiencies in tax collection.

In Togo, the government uses SHS subsidies to also drive electricity access and digital development. Households in Togo who purchase a SHS from authorized providers can access a subsidy of US\$ 4 (2,000 FCFA) per month for the SHS payment plan. The government pays the subsidy through mobile money. Building on these electrification efforts, the government is working to digitally transform the economy. The government plans to provide one solution to improve access to a variety of public and social services with its ambitious E-ID Togo biometric identification program.⁶⁶ The government expects that the E-ID program will facilitate access to services including credit and health and improve administrative operations for citizens.



Digital Financial Services

Consumers' use of PAYG products drives active use of digital financial services and mobile money beyond basic money transfers. Excluding PAYG, data from the Global Findex showed an increased use of mobile accounts to pay utility bills following COVID-19, with 18 percent of adults in developing economies paying utility bills directly from an account (compared to eight percent in

2014).⁶⁷ PAYG purchases similarly motivate mobile money account opening and active use generating revenue for MNOs. In Rwanda, about 20 percent of OGS company Mobisol's customers were new MTN mobile money customers. In Uganda, more than 13 percent of Fenix International's OGS customers were new MTN mobile money users.⁶⁸ PAYG users also made more frequent mobile money transactions than non-PAYG users, not only towards payments for solar products but also for savings, peer-to-peer transfers, merchant payments, withdrawals, and purchase of airtime.⁶⁹ In Benin and Côte d'Ivoire, mobile money usage by SHS customers increased sharply after they started using their OGS systems. In Côte d'Ivoire, the average number of monthly transactions jumped by 33.8 percent after OGS adoption versus just 11 percent in the comparison group and in Benin by 84 percent.⁷⁰ In Ghana, PAYG provider PEG customers generated 122 percent more revenue per active user for the mobile money provider, Tigo Cash, than non-PEG customers in CGAP's research sample.⁷¹ *We address policy issues and options for advancing access to digital payments and mobile money in Chapter Four, Issue 3.*

In some markets, MNOs recognize the benefits of participating in the PAYG sector to empower inclusive rural digital communities. MNOs and PAYG providers are partnering in new ways, such as sharing customer data for mobile-based credit scoring. By using data analytics, companies can structure more appropriate financing products for customers, reduce the risk and costs of managing consumer financing defaults, and create potential new revenue streams.



Data from the Global Findex showed an **increased use of mobile accounts to pay utility bills following COVID-19, with 18% of adults in developing economies paying utility bills directly from an account.**

66 Alex Irwin-Hunt, Togo ramps up digitalisation development, FDI Intelligence.com, (2020). Accessible [here](#).

67 Demirgüç-Kunt, Asli et al, 2021 Findex.

68 GSMA, Mobile for Development Utilities, Lessons from the use of mobile in utility pay-as-you-go models, 2017, 15. Accessible [here](#).

69 GSMA, The value for PAYG solar for mobile operators, 2020. Accessible [here](#).

70 GSMA, *The Value of Pay As You Go Solar for Mobile Operators Insights from Customer Journeys in Benin and Cote-d'Ivoire*, p. 27.

71 Daniel Waldron, Michiel Wolvers (CGAP), Daily Energy Payments Powering Digital Finance in Ghana, February 27, 2017. Accessible [here](#).

In addition to MNOs, FinTech companies that operate and integrate with mobile networks and sometimes mobile money systems are developing new products to reach underserved markets. Data sharing raises issues with consumers' right to control the use of their data and policy issues of data privacy and protection. *We discuss policy issues and options for data governance of commercial agreements on consumer data sharing and to protect consumers' rights to data privacy in Chapter Four, Issues 6 and Issue 10.*

MNOs' level of engagement in the OGS sector can range from providing merely the digital infrastructure and platform, to partnering with OGS and PAYG companies in sales and distribution strategies, or to leading their own OGS offerings, as illustrated in Table 3.2.

Table 3.2: Models of MNO and OGS Engagement

Engagement Type	Integrated Elements	Partnership Roles	MNO PAYG Level of Engagement
Service as a Platform	Connectivity	OGS companies use mobile networks for remote monitoring through M2M communications, and as a platform for PAYG consumer financing, SMS messaging, and customer service	Low
Collaboration	Mobile Money	Specific mobile money agreements integrate mobile money platforms to push payment notifications to customers through their mobile phones and to allow OGS providers to track customer payments by integrating data into their customer management systems	High
	Mobile Money	Merchant accounts set up to accept mobile money for PAYG payments	Low
	Sales and Distribution	Distribution and revenue-sharing partnership with agents and for sales	High
	Credit Scoring	MNO user data shared to assist PAYG providers in consumer credit evaluations for financing eligibility	High
	Marketing	MNO-led marketing of PAYG products to mobile money customers	High
Solo Offering	Value-Added Services	MNO-owned offerings for off-grid sales, such as notification of successful payments, reconciliation and receipts, call center equipment, and services	High



Digital Business

The OGS sector provides opportunities to build digital businesses and support entrepreneurs. Reliable access to electricity is important for participation in online marketplaces that facilitate e-commerce. Low levels of access to basic electricity can inhibit participation in e-commerce as noted by UNCTAD in its eTrade readiness assessment of market conditions in Uganda: "Without a proper and reliable power system, the development of e-commerce will remain constrained."⁷² The Boston Consulting Group estimates that the expansion of online marketplaces in Africa, like e-commerce company Jumia, could create about three

million new jobs, ranging from delivery drivers to retail and hospitality workers, across the continent by 2025.⁷³ During the COVID-19 pandemic, the United Nations Development Programme (UNDP) in partnership with Jumia Uganda, connected with consumers and sold their products and services. Retail merchants' acceptance of digital payments in physical marketplaces is another important building block in a country's transformation to a digital economy.

Merchants need reliable access to energy solutions and the internet to process transactions online in real time and move away from accepting cash.

⁷² UNCTAD, Rapid eTrade Readiness Assessment Report, Republic of Uganda, 2018, p. 17. Accessible [here](#).

⁷³ Patrick Dupoux, Lisa Ivers, Amane Dannouni, Zineb Sqalli, and Guy Ngambeket, How Online Marketplaces Can Power Employment in Africa, 2019. Accessible [here](#).



Digital Skills

Local OGS agents and consumers' use of PAYG products is helping to bridge the digital literacy gap. As recently as 2021, research continued to show digital literacy as a barrier to digital inclusion, particularly for women.⁷⁴ Retail OGS agents can play a role in building digital literacy. Customers who purchase OGS products may have limited experience using mobile phones and mobile money or sending text messages. Customer service agents for a PAYG provider in Mozambique addressed this capacity gap by using their first call to customers to ensure they knew how to use mobile money to make payments. The Mozambique PAYG provider also produced visual aids and sales materials to explain the steps in the payment process. PAYG company staff are also building their digital skills, with some PAYG companies developing software platforms and apps to provide agent training and management. Table 3.3 highlights how digitally enabled retail agents can help bridge digital literacy gaps and increase digital inclusion in low-use areas.

Table 3.3: Agent Roles in Digital Inclusion and Literacy

Retail Agent Role	Digital Capacity (Skills/Literacy)	OGS Sales/Distribution
Digital skills to understand and interface with PAYG platform for sales and service issues	<ul style="list-style-type: none"> Digital technology usage Digital commerce platform use Digital data collection and reporting 	Increases digital literacy and capacity of retail agents to participate in the digital economy.
Registering customers	<ul style="list-style-type: none"> Digital technology usage Digital technology agency 	Increases the energy-addressable market.
Educating customers about products and services, including usage of digital platforms	<ul style="list-style-type: none"> Digitally accessed information for customers - credit scoring (pre-sales) Digital recourse and communication support channels for customers 	<ul style="list-style-type: none"> Increases informed decision making on suitable finance. Bridges digital literacy gaps and increases digital inclusion of customers and agents.
Facilitating payment transactions	Use of mobile money in repayment of PAYG services	<ul style="list-style-type: none"> Bridges digital literacy gaps and increases digital inclusion of customers and agents. Increases repayments by PAYG customers, provides more financing channels, and expands credit promotion for customers.

3.3 Promoting OGS, Digital, and Financial Inclusion Together to Build Resilience

Governments recognize the growing imperative to transform their economies into digital economies for individual socioeconomic development, build resilience to shocks such as the COVID-19 pandemic, and global competitiveness. The global COVID-19 pandemic highlighted the benefits of equitable access to reliable energy, broadband, and digitally enabled financial services. Country policymakers recognize that digital transformation will generate returns by boosting GDP growth, creating new jobs and income opportunities, and providing tools to reach socioeconomic goals. You can find resources with more information in Annex B.

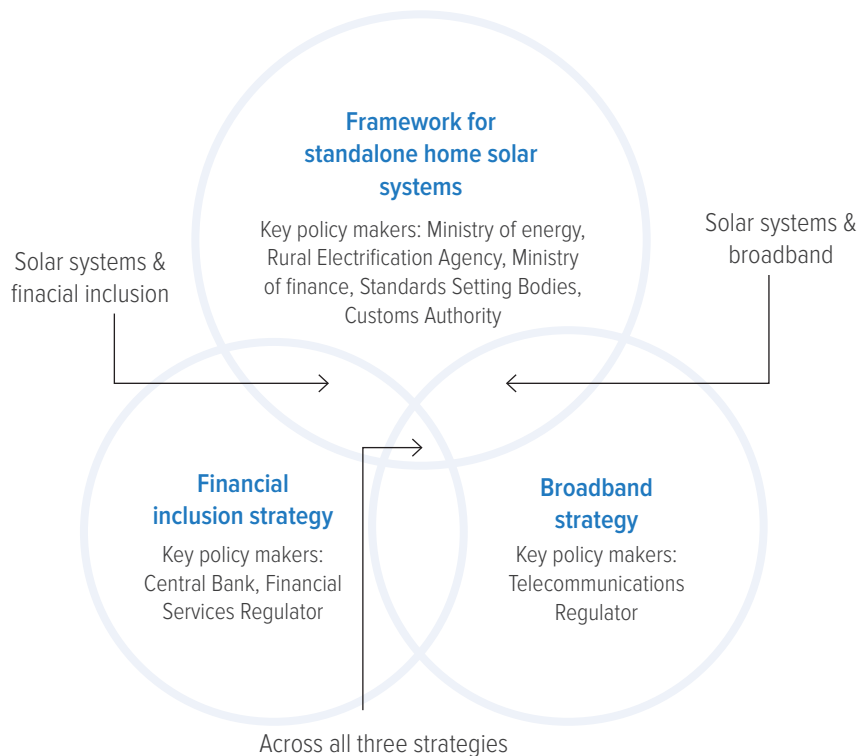
As with energy access and digital inclusion, governments have set national goals and adopted strategies to eradicate barriers to individuals' access to formal financial services. Many countries are adopting or updating national financial inclusion strategies (NFIS) that include promoting and using mobile-enabled financial services and agents as new drivers for financial inclusion. As of May 2022, 71 percent of the participants (63 countries) in the financial services regulator peer group run by the Alliance for Financial Inclusion (AFI) have already established an NFIS.

74 Matthew Shanahan, GSMA Connected Women, The Mobile Gender Gap, 2022. Accessible [here](#).



National goals for energy access, digital inclusion, and formal financial inclusion intersect. The intersection allows governments to coordinate and align policies to accelerate progress toward the development goals and build resilience in the face of shocks such as the COVID-19 pandemic. For example, in 2023, the Government of Madagascar and the World Bank approved the Digital and Energy Connectivity for Inclusion in Madagascar (DECIM) project to invest in both electricity and digital infrastructure in a coordinated manner.⁷⁵ Figure 3.4 demonstrates the overlap between national strategies for energy access through OGS, broadband inclusion, and financial inclusion.

Figure 3.4: Overlap of OGS, Broadband and Financial Inclusion Policies



Several indexes are used to track and measure the strength of a country's legal and regulatory policies to support the OGS, financial inclusion, and digital sectors. ESMAP developed a set of Regulatory Indicators for Sustainable Energy (RISE), which policymakers can use to benchmark and track their progress against other countries. RISE includes specific indicators to evaluate a country's legal frameworks for renewable energy and frameworks for standalone solar systems.⁷⁶ Lighting Global developed the PAYG Market Attractiveness Index that includes ten indicators to measure legal and regulatory policies for market attractiveness for PAYG. The International Telecommunications Union (ITU) tracks countries' adoption of broadband plans, and the Alliance for Financial Inclusion

reports on a country's adoption of financial inclusion plans.⁷⁷ Governments can use these indexes and the indicators to evaluate how their policies signal support for the OGS sector.⁷⁸

Governments should strive to develop a policy environment that holistically and comprehensively addresses consumer needs. Consumers seeking access to electricity are also likely to face challenges participating in the digital economy and accessing financial services. By looking beyond sector silos, governments can address the needs of consumers through coordinated policies that support and accelerate development in these communities.

⁷⁵ DECIM project information document available [here](#).

⁷⁶ ESMAP, Regulatory Indicators for Sustainable Energy, Indicator 5.

⁷⁷ See ITU's website, accessible [here](#) & AFI's website, accessible [here](#).

⁷⁸ Lighting Global, [PAYG Market Attractiveness Index 2021](#).

CHAPTER FOUR

Policy Issues and Priorities

Use this Chapter to:

- Identify and understand issues that affect availability, affordability, and service provider accountability for standalone OGS products.
- Explore the twelve policy issues in further detail.
- Examine the potential policy options to address the twelve issues across a continuum of policy approaches.
- Evaluate the advantages and disadvantages of the different policy approaches for the government, the OGS sector, and most importantly, the consumer.

In this chapter we move beyond understanding the OGS and digital sector dynamics covered in Chapters Two and Three. We will identify and analyze the specific issues governments can address through policy reform to create an enabling environment for OGS. We define policy reform as an intentional decision by policymakers to take a given policy approach. Section 4.1 outlines some ways governments can signal their support for the growth of the OGS sector. This includes pursuing policy reform, designating a clear lead agency responsible for the OGS sector, undertaking integrated electrification planning, or providing public funding to support OGS sector growth.

We focus on issues that governments can address through policy reforms adopted at the ministerial level. This toolkit does not provide guidance on additional non-policy approaches that governments can take to accelerate OGS growth, such as creating funding mechanisms or technical assistance facilities. ESMAP's 2022 Designing Public Funding Mechanisms report is a useful resource for evaluating the design of public funding mechanisms for OGS.⁷⁹

In Section 4.2, three broad policy approaches are defined along a continuum — from 'wait and see,' to 'light touch,' to 'prescriptive policy.' A 'policy' refers to a set of ideas or a plan regarding what to do in a particular situation that has been agreed to officially by a government.⁸⁰ A 'regulation' is

an official rule or law that businesses or other stakeholders must adhere to.⁸¹ An intentional decision not to develop policy or regulation is also a viable, and sometimes attractive, policy approach.

Section 4.3 explores each policy issue and identifies potential policy solutions across the continuum of policy approaches. We apply the diagnostic framework of the 3 As: product availability, product affordability, and service provider accountability to examine options for the government to use policy to address consumer needs for OGS products. We have identified twelve issues of relevance that fall within governments' zone of influence for policy reform (see Table 4.1). The list of issues is not exhaustive. We encourage policymakers to apply the tools provided in this toolkit to identify additional issues for policy action using this framework.

As with the issues, the policy options we identify are not exhaustive. Given the focus of this report on OGS, policy issues pertaining to broadband and digital inclusion are not explored in detail. For example, this section does not cover policies for improving the affordability of broadband or accountability of mobile money and broadband providers. Policymakers should use the policy issues and options included in this section as examples they can draw from in their policy evaluation.




79 Rysankova, Miller, [Designing Public Funding Mechanisms in the Off-Grid Solar Sector](#).

80 Cambridge Dictionary, "policy," n.d. Accessible [here](#)

81 Cambridge Dictionary, "regulation," n.d. Accessible [here](#).

We include real-world examples to demonstrate where the policy approach is being applied. In the tables in Annex A, we explore additional policy options and identify potential advantages and disadvantages to three key stakeholders: the government, the OGS sector, and the consumers.

Table 4.1: Policy Issues

Enabling Environment Component	AVAILABILITY 	AFFORDABILITY 	ACCOUNTABILITY 
Policy and Regulatory Zones of Influence, With Policymakers of Influence	<p>1. Ease of market entry and competition Policymakers with influence:</p> <ul style="list-style-type: none"> Ministry of Trade Competition Authority Lead Energy Policymaker Financial Services Regulator <p>2. Quality and reach of digital broadband infrastructure Policymakers with influence:</p> <p>Telecommunications Regulator</p> <p>3. Mobile money and digital financial inclusion Policymakers with influence:</p> <ul style="list-style-type: none"> Financial Services Regulator Central Bank Lead Energy Policymaker 	<p>4. Fiscal policies Policymakers with influence:</p> <ul style="list-style-type: none"> Revenue Authority Ministry of Finance <p>Consumer Financing</p> <p>5. PAYG provider availability and cost of capital Policymakers with influence:</p> <ul style="list-style-type: none"> Lead Energy Authority Financial Services Regulator <p>6. Access to data for credit scoring Policymakers with influence:</p> <ul style="list-style-type: none"> Lead Energy Authority Data Protection Supervisory Authority <p>7. Financial regulation Policymakers with influence:</p> <ul style="list-style-type: none"> Lead Energy Authority Financial Services Regulator 	<p>Sales Cycle</p> <p>Pre-Sale</p> <p>8. Product standards Policymakers with influence:</p> <ul style="list-style-type: none"> Lead Energy Authority Standards Setting Body <p>At-Sale</p> <p>9. Transparency of terms and warranties Policymakers with influence:</p> <ul style="list-style-type: none"> Lead Energy Authority Consumer Protection Agency Revenue Authority Standards Setting Body Financial Services Regulator <p>10. Data protection Policymakers with influence:</p> <ul style="list-style-type: none"> Lead Energy Authority Revenue Authority Standards Setting Body Data Protection Supervisory Authority <p>Post-Sale</p> <p>11. Customer service and grievance redress Policymakers with influence:</p> <ul style="list-style-type: none"> Lead Energy Authority Consumer Protection Agency Revenue Authority Standards Setting Body Financial Services Regulator <p>12. E-Waste Policymakers with influence:</p> <ul style="list-style-type: none"> Lead Energy Authority Environmental Regulator

We briefly touch on three high-level issues in Section 4.1, given their importance in setting the context for policy development, before turning to twelve issues that can be addressed by policy reforms

4.1 Signaling Support for OGS Sector Growth

4.1.1 Integrated Electrification Planning Informed by GIS Data Supports OGS Investment.

With integrated electrification planning, governments can clearly define the role of off-grid solutions in their electrification plan. An increasing number of governments are engaging in integrated electrification planning and using it to target where OGS can provide the lowest-cost solution for electrification.⁸² Ethiopia, Kenya, Rwanda, Tanzania, and other sub-Saharan countries have used GIS data to develop National Electrification Plans or rural electrification strategies.⁸³ In 2019, ESMAP and the World Bank launched the [Global Electrification Platform](#), an open access, interactive, online platform tool that provides an overview of electrification investment scenarios for a selection of countries. The platform can be used to explore 216 different scenarios to meet defined energy access goals.⁸⁴

Governments can also leverage the household insights available through the MTF surveys to support targeted investment in OGS. MTF surveys have been used to inform energy access planning in many countries, including Cambodia, Ethiopia, Kenya, Liberia, and Rwanda.⁸⁵ The demand side data generated from these surveys explores both the quality and availability of energy available to households, as well as spending, energy use, user preferences, willingness to pay, and customers' satisfaction with their primary energy source.

To ensure that women receive the benefits of energy access, governments need to establish gender-responsive global and national energy sector policies.⁸⁶ Any data collected on energy access should be gender-disaggregated to enable measurement of gains for women. While researchers have found that higher electrification rates in a country correlate to greater gender equality, it is not yet standard for governments to collect and report gender-disaggregated data on access to electricity for women and men. This makes it difficult to measure how women are faring in the gains being made in energy access.

4.1.2 Setting Targets for Households to be Electrified with Off-Grid Solutions

Governments that set targets for households to be provided with Tier 1 electricity access through off-grid solutions, encourage OGS providers to enter their markets and invest in their countries. According to GOGLA, “clarity and continuity of government support can improve market and investor confidence in a government’s commitment to promoting growth in the sector. Setting targets based on the multi-tier framework can send a powerful signal to companies and investors that a government is committed to creating the conditions for off-grid solar market growth.”⁸⁷

4.1.3 Public Funding Mechanisms Can Address Financing Gaps and Accelerate OGS Use

Governments can use a range of public funding mechanisms to address market barriers and accelerate OGS sector growth. Funding mechanisms include tax exemptions, upfront grants, results-based financing, credit lines, guarantees, demand-side subsidies and public procurement. They address supply and demand issues that include inadequate access to capital, high cost of service delivery to rural areas, and customer affordability. Analysts estimate that the global OGS sector will need an estimated US\$ 23 billion in funding to deliver Tier 1 OGS products to all consumers by 2030. This includes people without energy access, people with weak grid connections, and the replacement of existing SHS. An additional US\$ 13.5 billion is needed in the form of debt and equity, and a further US\$ 9.8 billion in grants and subsidies is needed to bridge the affordability gap.⁸⁸

In addition to energy access, governments may also fund initiatives to expand access to broadband and financial services. These parallel efforts provide an opportunity for governments to pool resources to address a spectrum of rural community needs and drive efficiencies in the use of public funds.

82 Sustainable Energy For All, [Integrated Electrification Pathways for Universal Access to Electricity: A Primer](#), 2019; ESMAP, [Regulatory Indicators for Sustainable Energy](#).

83 ESMAP, [Regulatory Indicators for Sustainable Energy](#); Alexandros Korkovelos, Babak Khavari, Andreas Sahlberg, Mark Howells 1 and Christopher Arderne, [The Role of Open Access Data in Geospatial Electrification Planning and the Achievement of SDG7. An OnSSET-Based Case Study for Malawi](#), *Energies* 2019, p. 12, 1395.

84 Access the [Global Electrification Platform](#) [here](#).

85 For more information, see https://www.esmap.org/mtf_multi-tier_framework_for_energy_access

86 ENERGIA, ESMAP and UN Women, [Policy Brief 12 Global Progress of SDG 7 – Energy and Gender](#), 2018. Accessible [here](#).

87 GOGLA, [Providing Energy Access through Off-Grid Solar: Guidance for Governments](#). Accessible [here](#).

88 [Lighting Global/ESMAP, GOGLA, Efficiency For Access, Open Capital Advisors \(2022\), Off-Grid Solar Market Trends Report 2022: Outlook](#), Washington, DC: World Bank. Accessible [here](#).



Analysts estimate that the global OGS sector will need **US\$23 billion in funding to deliver Tier 1 OGS products to all consumers** by 2030. This includes people without energy access, people with weak grid connections, and the replacement of existing SHS.

Subsidies, and public funding mechanisms in general, are essential components for governments to address affordability. However, these are not included in this toolkit. For a thorough discussion of public funding mechanisms, refer to ESMAP's recent report on "Designing Public Funding Mechanisms in the Off-Grid Solar Sector".⁸⁹



Toolkit Tip: Use Chapters Two and Three to build staff knowledge on the OGS sector and PAYG model and help them identify how policies for the energy, broadband, and financial services policies sector intersect.

4.1.4 The Energy Authority as the Lead Agency

Governments need to designate a lead agency and give them a clear mandate to facilitate inter-ministerial policy dialogue to advance policy reforms that support OGS sector growth. This toolkit is designed to support energy sector policymakers in assuming the leadership role in facilitating a whole-of-government approach to create an enabling environment for the OGS sector. Policymakers can create new policies or work to reform or clarify the application of existing policies to improve the enabling environment for consumer purchase of OGS products. The specific energy authority assigned that leadership role and the scope of their authority to direct an interagency policymaking process may not always be clear. If ambiguity exists or there is a leadership vacuum, governments may need to clearly designate and endow the lead energy authority with the mandate to lead this process. In addition, depending on the depth of current expertise in the OGS sector, governments may need to build the lead energy policymaker's expertise in off-grid technologies and evolving OGS business models to prepare them for this leadership role.

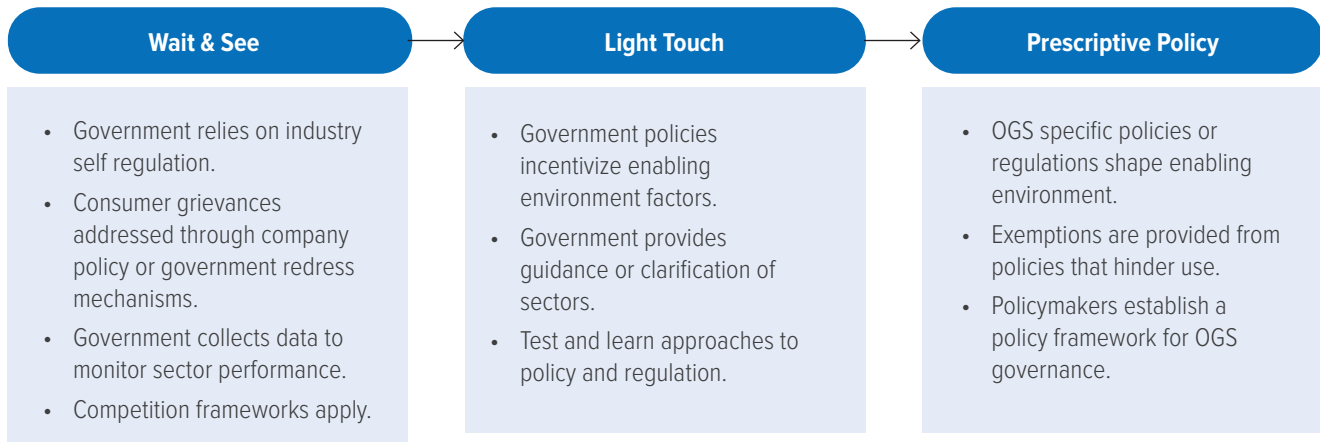
4.2 Policy Approaches – Mix and Match

In this section, we identify the different policy approaches governments can use to address issues restricting the use of OGS products. We also explore the advantages and disadvantages of each policy approach. Policymakers have a range of options to create an enabling environment for OGS. In addition, policymakers often find it advantageous to adopt policies with levels of oversight that are proportionate to the level of risk. Policies should account for the size, structure, and composition of the OGS market, its importance in reaching national electrification goals, and the consumer risks. When proportionate to the risk, policies can support confidence, growth, and innovation in a sector.

Figure 4.1 identifies three policy approaches commonly available to policymakers through a continuum. This begins at the left, with the least amount of government oversight and resources, and progresses to the right, with increasing levels of government engagement. Policymakers may find the best approach is to combine policy approaches, so they are best suited to each different issue. For example, policymakers may decide to impose minimal market entry requirements for OGS providers to "wait-and-see" how the market develops but take an active role in developing prescriptive policies to expand the reach of mobile services in rural areas to support PAYG offerings. To illustrate these policy approaches, we provide three case studies on the quality standards for OGS products.

⁸⁹ Rysankova, Dana; Miller, Charlie. Designing Public Funding Mechanisms in the Off-Grid Solar Sector (English). Washington, D.C.: World Bank Group. Accessible [here](#).

Figure 4.1: Policymaking Continuum



Government oversight and investment of supporting resources



Toolkit Tip: Use this continuum to facilitate an inter-ministerial dialogue for possible policy actions.

Wait-and-See.

In this policy approach, the government exercises no central authority or governance over the relevant market sector; the government lets the market develop before deciding if and how to intervene. The market is shaped by the behavior of actors in the supply chain rather than government regulation. In the OGS sector, companies decide what OGS products and services they offer, how they price their services, and how they respond to consumer grievances. Governments using this option set the lowest policy barrier to market entry. This approach can be especially advantageous for emerging sectors characterized by high levels of innovation. Governments can adopt this approach as a temporary state to wait-and-see how the market develops and then apply a higher level of government oversight or maintain this policy approach based on the results.

Wait-and-see is a low-cost option for governments as there is no need to invest in developing policy frameworks or growing capacity to provide oversight and manage compliance. In addition to service providers, governments may rely on other market actors, like industry associations, to influence market behavior and provide a form of “self-regulation.” One disadvantage of this minimalist approach is that governments forbear, at least temporarily, the management of consumer risk. The significance of this disadvantage will depend on the level of risk. Another drawback to the wait-and-see approach is that it does not proactively seek to modify existing policies restricting the enabling environment.



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CASE STUDY

Wait-and-See: Producer Choice on Product Quality Standards

In this scenario, the government plays no active role in setting the quality standards for OGS products. The OGS suppliers have the discretion to sell OGS products that vary in quality. They may have their products tested and certified to meet certain quality standards (including the internationally recognized IEC standard) or choose to offer products that only meet the companies' own standards. Industry associations and development partners may provide guidance on quality standards and publish data on market offerings which can be used by the government to observe OGS market dynamics.

Advantages of Wait & See

- Low cost.
- Promotes market entry and free and open competition.
- Provides consumers choice in purchasing OGS products of different quality and price.

Disadvantages of Wait & See

- No government oversight over counterfeit or low-quality products.
- OGS providers offering QV equipment may find it difficult to compete on price with non-QV equipment.
- Consumers may lose money on sub-standard or counterfeit products.
- E-waste generated by discarded, low-quality products with short lifespans.

REAL-WORLD EXAMPLES: Malawi and Somalia. These countries have not yet adopted quality standards for OGS products allowing OGS companies to offer QV or non-QV products.

Light-Touch.

In this policy approach, government policymakers actively invest resources to guide (not just observe) the OGS market. This approach is characterized by a government exercising limited control and exhibiting flexibility. Policymakers refrain from direct regulation and rely on incentives, guidance, and clarification to encourage sector development that aligns with their policy goals.

Policymakers may also test policy approaches for a limited time or context and evaluate their success. An example is governments adopting fiscal policies that temporarily reduce the taxation of OGS products. These governments could test and learn whether there are gains in consumer affordability of OGS products before adopting longer term or permanent incentives.



CASE STUDY

Light Touch: Voluntary Compliance with Product Quality Standards

The light touch approach is exemplified by governments that encourage (but do not require) OGS providers to sell OGS products that meet established quality standards. Policymakers may incentivize providers to offer QV products through favorable fiscal policies for QV equipment or by making financial support available only to companies selling QV products. The voluntary approach to standards has proven to be advantageous in emerging OGS markets where the sector is still developing and in markets where compliance and enforcement capacity is limited. In addition, policymakers may find value in creating a transitional pathway to adoption of mandatory quality standards.

Advantages of Light-Touch

- Government encouragement increases the supply of QV OGS products.
- OGS providers can still offer a diversity of products with variable quality and pricing.
- Fiscal incentives can lower the consumers' purchase price of OGS products.

Disadvantages of Light-Touch

- Low-quality OGS products are available.
- OGS providers offering QV equipment may find it difficult to compete on price with non-QV equipment.
- Consumers may lose money on sub-standard or counterfeit products.

REAL-WORLD EXAMPLE: The World Bank's Lighting Global program designed standards for OGS products up to 350Wp to ensure quality, which have been adopted by the IEC as [TS 62257-9-8](#).⁹⁰ More than 20 countries have voluntarily adopted national standards harmonized with these.⁹¹

⁹⁰ VeraSol now maintains the quality assurance work for these standards.

⁹¹ Efficiency for Access Coalition, Promoting High-Performing Off-Grid Appliances, 2019. Accessible [here](#).

Prescriptive Policy

In using this most active approach, government policymakers use their authority to adopt specific policies and regulations for the OGS sector. The government’s policy choices directly influence the supply composition of OGS products and services, and the government assumes an active role in managing consumer risk. Policymakers can design policies and regulations to promote OGS supply (such as favorable fiscal policies) or to restrict or control certain market behaviors. This approach requires the highest level of government investment in time and resources to develop, implement, and enforce the chosen policy. The relative advantages and disadvantages of this approach on the OGS sector and consumers will depend on the type and design of the policy.



Policymakers can design policies and regulations to **promote OGS supply or to restrict or control certain market behaviors.**



CASE STUDY:

Prescriptive: Mandatory National Product Quality Standards

In this approach the energy authority and government standards-setting bodies coordinate to adopt mandatory national quality standards for the OGS products sold in the country. The OGS providers are required by law to only offer products that comply with mandatory standards. Countries can develop their own standards or adopt standards harmonized to meet existing international standards such the IEC standard for PICO and SHS kits. The government makes the investment necessary to support implementation of the standards and monitor and enforce compliance.

Advantages of Prescriptive Policy

- Government protects consumers from risk of counterfeit or low-quality products.
- If harmonized standards are adopted, OGS providers can offer standard products across multiple markets tested using the same verification scheme.
- QV products include warranties and after-sales service.

Disadvantages of Prescriptive Policy

- Government investment is required to build staff capacity to implement and enforce compliance with the standards.
- Limits market participation to suppliers of QV OGS products.
- Excludes low-quality OGS products that may be more affordable to consumers.

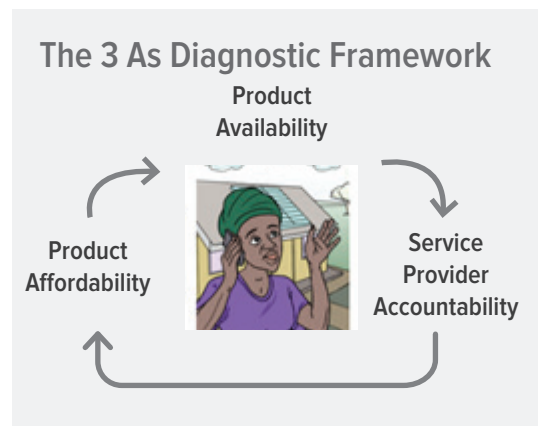
REAL-WORLD EXAMPLE: ECOWAS. In 2023, the Economic Community of West African States (ECOWAS) adopted a regional approach to SHS quality standards. Nine countries, including Kenya, Rwanda and Tanzania have adopted quality standards for PICO solar products harmonized to the IEC standard.⁹²

4.3 Issues and Policy Options

In this section, we move to an analysis of the 12 policy issues identified in Table 4.1, using the diagnostic framework of the 3 As.

For most of these issues, energy policymakers will not have the primary jurisdiction to provide policy solutions and must engage in dialogue with other ministries. We have included guidelines for energy policymakers to facilitate the inter-ministerial dialogue in our discussion of the relevant issues.

92 ECOWAS Centre for Renewable Energy and Energy Efficiency, ECOWAS industry ministers adopt regional standards on standalone solar systems and solar PV Mini Grids. Accessible [here](#).



4.3.1 Product Availability

Three common policy issues that impact product availability are shown in Table 4.2.

Table 4.2: Product Availability

Enabling Environment Factor	Policy and Regulatory Zones of Influence		
AVAILABILITY	Ease of market entry and competition.	Quality and reach of digital broadband infrastructure.	Mobile money and financial inclusion.

Reminder: Availability = a market state in which consumers can conveniently purchase OGS products, including PAYG products with consumer financing, from competitive OGS providers.

Issue 1: Ease of Market Entry and Competition

POLICYMAKERS OF INFLUENCE: Ministry of Trade, Financial Services Regulator/the Central Bank, Competition Authority

RELATED ISSUES: Financial Regulation, Product Standards



Inter-Ministerial Dialogue Tip: In most countries, the Ministry of Trade sets the rules for commercial companies to do business. If a ministry is unfamiliar with the OGS sector, Chapters Two and Three can be used to improve their understanding of the sector, and variations in the business models. The policy diagnostic tool (Tool 2, available in the Annex section) can also be used to evaluate how current policies may encourage or restrict OGS companies from operating in the market.



Toolkit Tip: A country's approach to applying OGS product standards, and finance and PAYG regulation also influences market entry. Evaluate policy options for Issues 1, 7 & 8 together.

Governments have a range of policy options for defining the requirements that OGS and PAYG companies must meet, before being allowed to do business in a country. OGS companies often make a go/no-go decision based on the time and cost of meeting those requirements. The lower the government entry requirements, associated costs, and time for approval, the easier it is for companies to enter a market and compete. If companies find a country's regulatory requirements complex, costly, or the time for approval uncertain they may forego operating in the market, despite high potential consumer demand. Government rules for entry may differ for domestic and international companies. Creating a neutral business licensing process for both domestic and international OGS companies bolsters competition and supports investment in local companies as well as multi-market providers.

Governments, especially in markets with an emerging OGS sector, may find having entry requirements that are easy to meet to be the most effective approach for attracting OGS providers and creating a competitive OGS market. Typically, OGS companies seeking to sell SHS and Pico solar products in a market are *not* required to meet licensing or registration requirements beyond those that apply to other commercial companies and are *not* subject to sector specific regulation.⁹³ This has been cited as an important enabling factor in the development of the OGS and PAYG markets.⁹⁴

⁹³ Governments are more likely to require licensing of mini-grid OGS providers. As discussed in Section 4.3.3, Issue 8, governments may restrict the OGS products to those that meet certain quality standards. While not a restriction on market entry per se, the standards requirements may dissuade some suppliers from providing their products in a market.

⁹⁴ Lighting Global, *PAYG Market Attractiveness Index 2019*, p. 23.

While keeping entry requirements low, governments can observe the market as they wait-and-see if a need arises that warrants higher standards for approval for market entry. In Kenya, the Central Bank issued a letter of no-objection to Safaricom in 2007 allowing the company to launch its M-Pesa mobile money service without first obtaining a banking license. The Central Bank required that Safaricom submit monthly data on its transaction payment volumes and values providing data to monitor the services' development.⁹⁵ M-Pesa spread quickly, and by 2010 had become the most successful mobile-phone-based financial service in the developing world. Governments could take a similar approach to the OGS sector, observing the market and collecting data from OGS providers. Industry associations such as GOGLA, at the global level, or renewable energy associations at the regional and local level, can be a source for industry data.⁹⁶

Governments can rely on general competition frameworks as a backstop to monitor and restrict behavior, when and if competitive concerns surface, even in sectors they have chosen not to regulate. While market concentration and anti-competitive behavior is not currently a concern in the OGS sector, government regulators have used competition laws to put a check on company behavior and practices in other sectors as they developed and could do the same in the OGS should the need arise. According to the World Bank, more than 100 countries have enacted competition laws.⁹⁷ In most countries, competition authorities exist to implement the policy framework and many of those provide advice to sector regulators on competition issues.⁹⁸ For example, in the mobile money sector, the Competition Authority of Kenya reached an agreement with Safaricom to remove exclusivity requirements from its mobile money agents' contracts, following allegations from Airtel, another mobile network provider, that the practice was anti-competitive.⁹⁹

Governments seeking to set specific approval standards for the OGS provider market entry can require that OGS providers register or be licensed before they operate in the market, although this is not yet common practice. While this approach provides a high degree of control, governments adopting this approach will need to invest in creating a licensing process and allocate the resources needed to manage the review and approval process. In sectors with high levels of innovation, government requirements and regulations often fail to keep pace with the level of innovation in a sector, creating a risk that prescriptive licensing policies could restrict innovation.

POTENTIAL POLICY OPTIONS:

Wait & See	Light Touch	Prescriptive Policy
Government applies business registration requirements to OGS companies.	Government issues guidance on OGS company classification.	Government licences OGS companies.
Advantage <ul style="list-style-type: none"> Promotes market entry and competitive product offerings. 	Advantage <ul style="list-style-type: none"> Prevents conflicting entry regulations and provides regulatory clarity. 	Advantage <ul style="list-style-type: none"> Imposes highest level of government control and establishes government oversight authority over OGS companies.
Disadvantage <ul style="list-style-type: none"> Limited control/review of OGS providers. 	Disadvantage <ul style="list-style-type: none"> Requires government determination of regulatory categorization of OGS companies. 	Disadvantage <ul style="list-style-type: none"> Increases cost of market entry and for regulatory compliance.

95 Alliance for Financial Inclusion, Case Study: Enabling mobile money transfer: The Central Bank of Kenya's treatment of M-Pesa, 2010. Accessible [here](#).

96 GOGLA and The World Bank Group's Lighting Global program publish semi-annual data on the sales and impact of off-grid solar lighting products sold by GOGLA and Lighting Global affiliates.

97 The World Bank Group. Markets and Competition Policy Website. Accessible [here](#).

98 *Ibid*.

99 Mazer, R., Pillai, R., Staschen, S., Agents for Everyone: Removing Agent Exclusivity in Kenya & Uganda, CGAP, 2016. Accessible [here](#).

Real-world Examples:

Tunisia and Senegal were the first two African countries to pass “Startup Acts” – laws designed to make it easier for local entrepreneurs to start and run a business.¹⁰⁰

Twenty-four OGS companies in Rwanda have signed MOUs with the Energy Development Corporation Limited, a subsidiary of the national utility to sell OGS and PAYG products.

The Government of Togo, through a public procurement process under its CIZO program, licensed five PAYG companies.¹⁰¹

For additional resources on issue 1, refer to:

Annex A to evaluate additional policy options and for a deeper analysis.

Annex B for a detailed bibliography

Issue 2: Quality and Reach of Digital Broadband Infrastructure**POLICYMAKERS OF INFLUENCE:** Telecommunications Regulator**RELATED ISSUES:** Mobile Money and Digital Financial Inclusion, Customer Service and Complaint Resolution

Inter-Ministerial Dialogue Tip: The telecommunications regulator has policymaking authority over broadband service providers and broadband services. Chapter Three can improve the understanding of the overlapping policy goals for improving broadband and energy access, and how OGS supports digital transformation. Key concerns to discuss are how the telecommunications regulator licenses and defines service coverage requirements for broadband providers, particularly MNOs, and current rural initiatives championed by the telecommunications regulator to support broadband investment in rural areas including use of universal service and access funds.



Toolkit Tip: The PAYG Market Attractiveness Index includes indicators on broadband and mobile money use. Consider measuring your country against those indicators or see if your country is among the 24 countries evaluated in the published report.

Telecommunications and energy agencies have an opportunity to develop a coordinated policy agenda to meet national goals for digital inclusion and universal energy access. As discussed in Chapter Three, consumers and OGS providers need reliable access to quality digital networks to:

1. Use OGS products that integrate digital technologies.
2. Process PAYG payments with mobile money
3. Communicate about after-sales service and payment issues.

OGS companies provide the necessary energy solutions that support use of these digitally enabled services. Many governments recognize digital transformation as a growing imperative to economic growth and for building resilience. Therefore, they are developing digital transformation strategies and taking an active role in promoting broadband investment, network expansion, and digital inclusion.

Telecommunications regulators have several policy tools within their authority to advance MNO investment in network infrastructure and to promote digital inclusion. Within their licensing authority, telecommunications regulators can set the requirements for MNOs to provide minimum levels of network coverage and meet service quality standards. Telecommunications regulators can also lead national efforts to build the digital literacy and capacity of consumers to use digital services.

¹⁰⁰ Google and IFC, a member of the World Bank Group. e-Economy Africa 2020, Africa’s \$180 billion Internet economy future, Nov. 2020. Accessible [here](#).

¹⁰¹ GOGLA, Case Study: Togo CIZO Cheque Program, 2022. Accessible [here](#).

For women, digital literacy is one of the top barriers to mobile phone ownership and the use of the mobile internet.¹⁰² Increased use of digital services can support the business case for MNOs' investment in digital infrastructure, especially in rural areas. Advocates for digital broadband inclusion recognize that the private sector investment alone may not be enough to bridge the investment gap for consumers to have access to adequate digital services. Telecommunications regulators typically have access to and manage public funds, such as universal service and access funds, designated for use to offset the high costs of rural broadband service delivery. This funding can be applied to de-risk MNO investment in network expansion in rural areas that are also priority areas for energy access.

POTENTIAL POLICY OPTIONS:

Wait & See	Light Touch	Prescriptive Policy
Broadband providers offer services in compliance with their licenses and business decisions.	Government agencies jointly map areas with overlapping need for OGS and mobile network infrastructure.	Government allocates universal service and access funds to improve MNO coverage in areas with OGS need.
Advantage <ul style="list-style-type: none"> Low cost and effort. 	Advantage <ul style="list-style-type: none"> Creates common policy agenda among energy and telecommunications sector policymakers that can promote coordinated efforts to target areas for digital transformation and increased energy access. 	Advantage <ul style="list-style-type: none"> Use of universal service and access funds de-risks investment in broadband infrastructure in low density areas.
Disadvantage <ul style="list-style-type: none"> Can result in poor digital infrastructure in remote and scarcely populated areas, which restricts supply of OGS offerings with remote monitoring and PAYG. 	Disadvantage <ul style="list-style-type: none"> Requires investment of time and resources to create and pursue shared agenda among energy and telecommunications policymakers to target digital infrastructure and off-grid sector expansion. 	Disadvantage <ul style="list-style-type: none"> Requires investment in establishing a process to administer and allocate universal service and access funds or public funding.
REAL WORLD EXAMPLES:		
Licensing of additional MNOs in Mozambique pushed mobile service prices down and increased network investment in infrastructure in rural areas. ¹⁰³	Telecommunications companies licensed in Cameroon are required to contribute three percent of their revenues to the country's universal service fund. ¹⁰⁴	Nigeria's Rural Broadband Initiative applied Universal Service Provision Funds to provide operators subsidies to invest in network infrastructure in rural/semi-urban areas. ¹⁰⁵

102 GSMA, The Mobile Gender Gap Report, 2022, Accessible [here](#).

103 World Bank Group. 2019. Digital Economy for Mozambique Diagnostic Report. Washington, DC: World Bank. License: Creative Commons Attribution CC BY 3.0 IGO, p. 27. Accessible [here](#).

104 World Bank Group. 2019. Digital Economy for Cameroon Diagnostic Report. Washington, DC: World Bank. License: Creative Commons Attribution CC BY 3.0 IGO, p. 39. Accessible [here](#).

105 World Bank Group. 2019. Nigeria Digital Economy Diagnostic Report. Washington, DC: World Bank. License: Creative Commons Attribution CC BY 3.0 IGO, p. 17. Accessible [here](#).

For additional resources on issue 2, refer to:

Annex A to evaluate additional policy options and for a deeper analysis.

Annex B for a detailed bibliography

Issue 3: Mobile Money and Digital Payments**POLICYMAKERS OF INFLUENCE:** Financial Services Regulator/Central Bank**RELATED ISSUES:** Quality and Reach of Digital Broadband Infrastructure, Fiscal Policies, Financial Regulation

Inter-Ministerial Dialogue Tip: The financial services regulator (often a country's central bank) has policymaking authority over mobile money operators and other digital payment providers. Use Chapter Three to build an understanding of how PAYG products can provide an entry point for use of mobile money and advance financial inclusion. Key concerns to consider are how the financial services regulator licenses mobile money and digital payment providers, as well as policies that promote rural access to mobile money agents and digital payment services to advance financial inclusion.

Government policies influence the availability of mobile money and digital payments that can be used to offer PAYG products. Countries with licensing regimes that promote competitive mobile money offerings, ease of account opening, and low-cost provision of digital payments to service rural communities create an attractive market for PAYG. Mobile money operates within regulatory contexts shaped by banking laws and policies designed to promote financial sector stability, counter risks of money laundering or financing of terrorism, and protect consumers against risk of loss. For some financial service regulators, the concept of mobile money can raise concerns. However, recognizing that lower volume transactions pose lower risks, regulators interested in furthering financial inclusion have found value in adopting proportional risk-based frameworks to ease the requirements for opening accounts to conduct lower value transaction values and volumes. These rules have been important to facilitate the use of mobile money, especially by those whose incomes may be limited and who may not yet be participating in the formal financial sector, as well as to close the gender gap in financial inclusion.

In most countries, financial services regulators (often central banks) regulate digital payment services, including mobile money services offered by MNOs. The licensing and regulatory infrastructure for digital or e-money services are often regarded as a platform to advance a country's goals for financial inclusion. Beyond licensing, the financial services regulator's governing policies for digital financial services impact OGS consumers' access to mobile money by:

1. Establishing the rules for mobile money and other digital payments agents including the services they can offer.
2. Validating the legal requirements for proof of identity to open mobile money accounts (know-your-customer rules).
3. Regulating the terms, conditions, and pricing of account and transaction services.

Last-mile agent networks can be challenging in rural areas with limited population density. Governments can support agent revenue generation by endorsing agent "interoperability," and prohibiting providers from signing exclusive agent agreements. This will clear agents to sell multiple services (airtime, mobile money, OGS) and offer competing brands. In addition, having both male and female agents can also help increase use of mobile money by women. In India, for example, women in self-help groups have been trained to be banking agents, as part of the government's effort to reach women in rural communities with financial services.¹⁰⁶

106 Martinez, Cristina; Arora, Amit; Raman, Anand, Doing Good by Doing Well: Women Banking Agents in India, CGAP, 2023. Accessible [here](#).

Financial service regulators also look at broader digital financial services ecosystem issues that can improve services and advance the government’s goals for financial inclusion, such as account-to-account interoperability. When digital payment systems are interoperable, consumers can make payments that cross between accounts on different payment systems, increasing the versatility of their mobile wallets. While initially resisted by digital payment providers, there is a growing movement towards interoperability of digital payment systems.¹⁰⁷ Governments can also support interoperability by encouraging commercial agreements such as the agreement between the mobile money providers in Tanzania, encouraged by the Bank of Tanzania.¹⁰⁸ Some governments are leading the move to interoperability by developing common settlement platforms such as Ghana’s Interbank Payment and Settlement System.¹⁰⁹ For the OGS sector’s purposes, account-to-account interoperability would give consumers flexibility to use the payment modality of their choice to make PAYG payments, regardless of the payment processor used by the PAYG provider.

POTENTIAL POLICY OPTIONS:

Wait & See	Light Touch	Prescriptive Policy
Government relies on private sector providers and current regulatory policies to provide adequate mobile money and digital financial services for PAYG.	Government financial services regulation increases access to rural digital payment agents or banking agents.	Government regulation reduces, removes or subsidizes transaction fees for digital payments made for OGS products and services.
Advantage <ul style="list-style-type: none"> No need to adjust current regulatory framework. 	Advantage <ul style="list-style-type: none"> Increases rural mobile money agents and increases supply and purchase of PAYG products. 	Advantage <ul style="list-style-type: none"> Reduces consumer cost of mobile money payments for OGS services.
Disadvantage <ul style="list-style-type: none"> Poor digital payment infrastructure restricts use of digital payments in PAYG offerings. 	Disadvantage <ul style="list-style-type: none"> Requires investment to adjust mobile money agent regulation to expand rural agent networks. 	Disadvantage <ul style="list-style-type: none"> Digital payments and banking industry may resist fee reduction for payments for specific services.
REAL-WORLD EXAMPLES:		
Looking at mobile money agents in Kenya, Tanzania, Bangladesh, and India, consulting firm BCG found that approximately 85% of successful rural agents were in hubs of economic activity, such as regional markets or fuel stations, with limited reach beyond these hubs which could limit mobile money access and customers for OGS PAYG products. ¹¹⁰	The Shared Agent Network Expansion Facilities Initiative is a joint initiative of Nigeria’s financial service regulators and the financial sector to deepen the reach of financial services in Nigeria by adding 500,000 financial access points and shared agents.	During the COVID-19 pandemic, many central banks, including the Bank of Ghana, suspended fees for mobile money transactions. ¹¹¹

107 GSMA, Tracking the Journey Towards Mobile Money Interoperability, 2020. Accessible here. Cook, William, Dylan Lennox, and Souraya Sbeih. 2021. “Building Faster Better: A Guide to Inclusive Instant Payment Systems.” Technical Guide. Washington, D.C.: CGAP. Accessible [here](#).

108 GSMA, The Impact of Mobile Money Interoperability in Tanzania, 2016. Accessible [here](#).

109 More information about the Ghana Interbank Payment and Settlement Systems is accessible [here](#).

110 Shalini Unnikrishnan, Jim Larson, Boriwat Pinpradab and Rachel Brown, How Mobile Money Agents Can Expand Financial Inclusion, blog, bcg.com/ (Feb. 2019). Accessible [here](#).

111 GSMA, Mobile Money Recommendations to Central Banks in Response to COVID-19, 2020. Accessible [here](#).

For additional resources on issue 3, refer to:

Annex A to evaluate additional policy options.

Annex B for further reading.

4.3.2 Product Affordability

The target consumer market for OGS products is price sensitive. Even with PAYG financing, consumers’ ability to pay for OGS products remains a significant barrier to their purchase. It is important to note that, even with favorable government policies that seek to reduce OGS providers’ costs, many consumers may still face an affordability gap. As with on grid affordability challenges, government provision of

public funding mechanisms may be needed to address the affordability gap that remains.

Subsidies, and public funding mechanisms in general, are key for governments to address affordability. These are however not examined in this toolkit. For a thorough discussion of public funding mechanisms, refer to ESMAP’s recent report on “[Designing Public Funding Mechanisms in the Off-Grid Solar Sector](#)”.¹¹²

We have classified the key policy issues that impact affordability into the four categories shown in Table 4.3.

Table 4.3: Product Affordability

Enabling Environment Factors	Policy and Regulatory Issues			
AFFORDABILITY	Fiscal policies	Consumer Financing		
		PAYG provider availability and cost of capital.	Access to data for credit scoring.	Financial regulation.

Reminder: Affordability = a market state in which consumers can afford to purchase OGS products with cash or financing at a price that is suitable for their income levels.

Issue 4: Fiscal Policies for OGS Products, Services, and Mobile Money

POLICYMAKERS OF INFLUENCE: Revenue Authority, Ministry of Finance, Customs Authority

RELATED ISSUE: Product Standards



Inter-Ministerial Dialogue Tip: Modifying a government’s fiscal policies and tax base requires extensive consultation within the government to evaluate the trade-offs of tax policy in the context of national priorities. As the sector lead for OGS, the energy authority can provide data and analysis on the OGS sector to provide an evidence base for fiscal policy decisions. Governments are often looking for ways to broaden the tax base to support government services, so be sure to model different scenarios for fiscal policies.

Governments can use fiscal policy or public funding mechanisms to address affordability issues. While tax reductions or exemptions are untargeted (i.e., all customers in a country benefit equally), other public funding mechanisms can provide a more targeted way of addressing affordability, for example by making products more affordable only in a specific location. In Kenya, UNICEF is using conditional cash transfers to help vulnerable recipients in the government’s national safety net program purchase OGS products.¹¹³

Increasingly, governments have begun to evaluate the impact of their fiscal policies on the OGS sector. Governments often struggle to mobilize sufficient domestic tax revenue to fund their budgetary expenditures.

¹¹² Rysankova, Dana; Miller, Charlie. *Designing Public Funding Mechanisms in the Off-Grid Solar Sector* (English). Washington, D.C.: World Bank Group. Accessible [here](#).

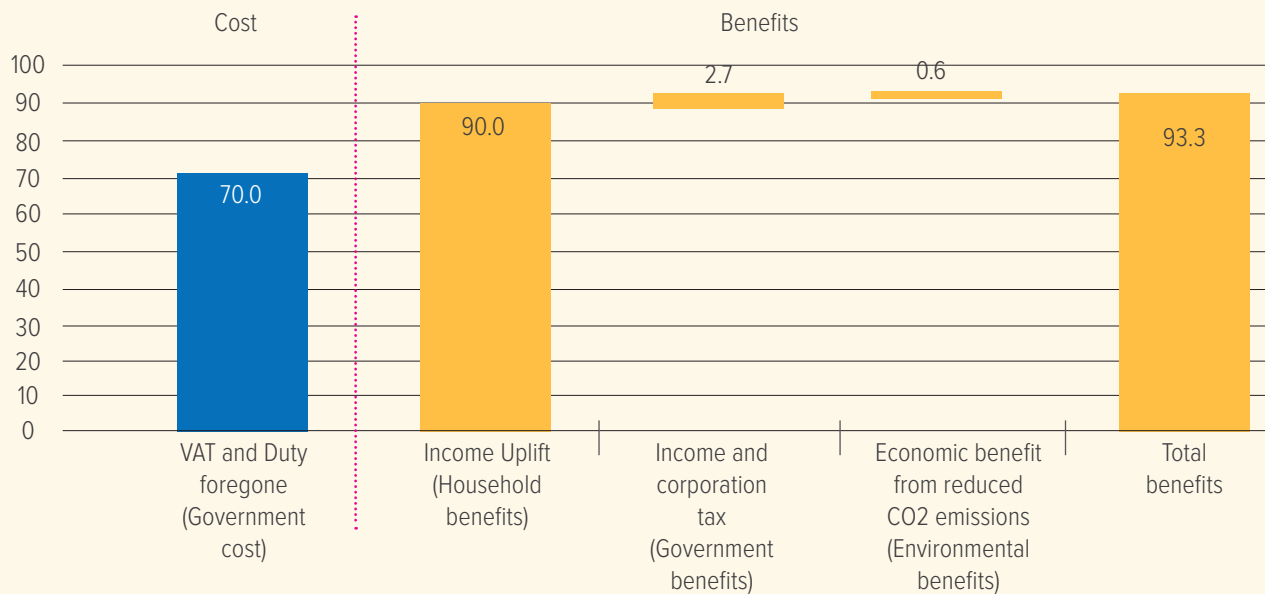
¹¹³ Lighting Global, GOGLA, ESMAP, *Off-Grid Solar Market Trends Report 2020*, p. 176.

This challenge is particularly significant for developing countries, where tax-to-GDP ratios are much lower than they are in developed countries.¹¹⁴

For this reason, governments continually look for sources to broaden the tax base to close budget deficits. OGS products are often treated as taxable products. Government taxation of OGS products typically includes import duties or tariffs paid by OGS providers and value-added taxes (VAT) paid by consumers at the point of sale. Mobile money taxes may also apply to consumers' PAYG payments.

Governments using fiscal policy to make OGS more affordable face a loss of tax revenue, but may benefit household savings on energy, as well as increased incomes, job creation and economic growth from the productive use of OGS systems. In a study of the impact of VAT and duties on OGS, the Africa Clean Energy Technical Assistance Facility (ACE TAF) found that the gains to households from accelerated access to stand alone OGS technologies and the environmental benefits outweighed the foregone tax revenues. Applying its tax evaluation tool across three countries, Malawi, Rwanda and Sierra Leone, ACE TAF found that economic benefits from increased energy access through OGS resulted in increased income, government revenue from individual and corporate taxes and reduced carbon dioxide emissions.

Figure 4.2: Cost Benefit Analysis of VAT and Duty Exemptions Across Malawi, Rwanda, Sierra Leone (USD Millions) (Source: ACE TAF, Tetra Tech, UKAID report)



As with other consumer products, government taxation of OGS products increases prices, which negatively affects affordability as well as OGS sector growth rates. Researchers modeling the impact of import tariffs on SHS systems in East Africa estimated that a 20 percent import tariff would reduce sales of smaller systems by 18 percent and larger kits by 32 percent.¹¹⁵ In response to the pandemic, the Kenyan government reintroduced a VAT on solar products which increased the end-consumer cost by up to 40 percent and sales decreased by 11 percent in the first half of 2020. In 2021, Kenya removed the VAT and data suggests the benefits of tax exemption for the government far exceed the tax at 7 to 1.¹¹⁶

114 UNU-WIDER, Government Revenue Dataset, (2019). Accessible [here](#).

115 Rob Fetter, Jonathan Phillips, Duke, Energy Access Project, "The True Cost of Solar Tariff East Africa", 2019. Accessible [here](#).

116 ACE TAF, 2021. Economic Impact Assessment of VAT and Import Duty on SAS Products. Accessible [here](#).



Researchers modeling the impact of import tariffs on SHS systems in East Africa estimated that a **20% import tariff would reduce sales of smaller systems by 18% and larger kits by 32%.**

There are a variety of policy approaches governments can take to align their fiscal policies with policy goals for increasing OGS use. Governments can choose to reduce the rate of taxation or provide wholesale exemptions for taxes that apply to OGS products. These exemptions can be temporary or permanent. Governments can limit the exemptions to specific items such as solar modules, SHS components, or apply them to bundled products such as SHS kits. Some governments are using fiscal policies, such as incentives, to influence OGS supply. In this case, OGS providers may find they benefit from favorable tax treatment when they import QV equipment or participate in programs that target OGS supply to specific high need areas or customer segments. The PAYG Market Attractiveness Index and ESMAP's RISE Index include positive indicators such as government fiscal policies that provide duty exemptions for solar modules, SHS components, and bundled SHS systems.¹¹⁷

When governments choose to adjust taxation for OGS products, they need to ensure there is sufficient guidance and capacity for officials to apply and enforce the policies consistently. This requires the government to clearly classify OGS products and components and their tax treatment so customs officials can understand and apply the correct tax treatment when OGS products are imported. For customs officials, this can be particularly challenging when OGS products are taxed based on whether they meet a quality standard, rather than the more familiar Harmonized System (HS) codes they are imported under. In addition, governments may need to invest in building expertise in the tax authorities and customs agencies to understand and consistently apply the tax policies to OGS products. In 2020, a group of renewable energy associations in East Africa published a handbook on solar taxation designed to help customs officials and importers to clearly identify and consistently apply the tax policies for solar products.¹¹⁸

As the use of mobile money has increased, governments have shown interest in taxing mobile money services as an area for domestic revenue mobilization. Some countries, particularly those in sub-Saharan Africa, tax mobile money transactions. Taxes can include excise duties that governments impose on mobile money transaction fees, specific taxes on total mobile money revenue, and direct taxes on the transaction amounts.¹¹⁹ Some PAYG companies are adjusting their payment practices to lessen the impact of fiscal policy on consumer pricing. For example, companies may provide consumers with the option to make smaller, more frequent mobile money payments to minimize taxation. Countries continue to revise their approach to mobile money taxation. In May 2018, the government of Uganda levied a one percent tax on the value of all mobile money transactions. With the mobile money tax, PAYG providers in Uganda saw an average 10-15 percent reduction in mobile money transactions (volume) per customer. In November 2018, the Government of Uganda eliminated the general mobile money tax and chose to tax mobile money withdrawals only, at a rate of 0.5 percent. In 2022, the Government of Ghana introduced a 1.5 percent tax on all electronic and mobile money transactions above 100 Ghanaian Cedis (US\$8.45). The GSMA studied the impact of the mobile money tax in Ghana over nine months and concluded that it resulted in a 25 percent reduction in access and use of mobile money services.¹²⁰ In 2020, GSMA published a study that looked at the motivation and unintended consequences of taxation on mobile money services in four countries.¹²¹

117 Lighting Global, *PAYG Market Attractiveness Index 2019*, Indicators EE11,EE12, EE14; ESMAP, *Regulatory Indicators for Sustainable Energy*, Electricity Access Indicator 5.

118 USEA, KEREAA and UNREEEA, *The East African Regional Handbook on Solar Taxation*, 2020. Accessible [here](#).

119 UNCDF, *Understanding the Consequences of Mobile Money Taxation in Uganda*, 2018. Accessible [here](#).

120 GSMA, *The E-Levy Impact in Ghana: Economic Impact Assessment*, 2023. Accessible [here](#).

121 GSMA, *The Causes and Consequences of Mobile Money Taxation*, 2020. Accessible [here](#).

POTENTIAL POLICY OPTIONS:

Wait & See	Light Touch	Prescriptive Policy
Government does not adjust fiscal policies that apply to OGS products or services to promote market development.	Government offers limited (by type or duration), fiscal incentives to incentivize supply of specific OGS products or services (such as quality-verified products).	Government reduces duties or VAT applied to OGS products without limitation in scope or time.
Advantage No impact on government revenue.	Advantage Government allocation of fiscal resources promotes specific market behavior by OGS providers.	Advantage Lowers cost of goods sold and increases consumer affordability of OGS products.
Disadvantage Fiscal policies that add costs to OGS products are paid by consumers and reduce consumer affordability.	Disadvantage Reduces short-term fiscal revenue from taxation of OGS products.	Disadvantage Reduces fiscal revenue from taxes or fees levied on OGS products.
REAL-WORLD EXAMPLES:		
Governments' fiscal incentives are typically a part of government frameworks to support SHS use. In countries that have not yet developed those frameworks, no specific tax policies are likely to exist. ¹²²	In Ethiopia, the Ministry of Finance and Economic Development through a 2010 MOU allows OGS products certified to meet the quality standards to be imported duty-free. ¹²³	In 2020, the government of Senegal passed a bill exempting off-grid solar products from the country's VAT of 18%. ¹²⁴

For additional resources on issue 4, refer to:

Annex A to evaluate additional policy options and for a deeper analysis.

Annex B for a detailed bibliography

Issue 5: Availability and Cost of Capital

POLICYMAKERS OF INFLUENCE: Ministry of Finance, Financial Services Regulator

RELATED ISSUE: Financial Regulation



Inter-Ministerial Dialogue Tip: The financial services regulator, often the central bank, has policymaking authority over banking practices and influence over the supply of local lending that can address FOREX risk. Financial services regulators can be an ally for building local capacity to lend to the OGS sector and sourcing FOREX. Use Chapter Three to build the financial service regulators' understanding of the cost factors that go into PAYG pricing including the cost of managing FOREX risk. Key concerns to consider are the financial services regulator's licensing authority over local lenders, perceptions of the risk of lending into the OGS sector and FOREX risk management.

122 This data is captured in ESMAP's Regulatory Indicators for Sustainable Energy, Electricity Access Indicator 5.

123 Power Africa, Off-grid Market Assessment Ethiopia, 2019, 23. Accessible [here](#).

124 GOGLA, Policy Alert, Senegal Introduces VAT Exemption for Off-grid Solar Products, July 24, 2020. Accessible [here](#).

PAYG business models that combine retail and financing activities have a different cost structure than cash business models. Researchers estimate that the cost of providing end-user financing under the PAYG model can contribute 15-25 percent of the consumer purchase price for PAYG products.¹²⁵ Government policies can influence the magnitude of those costs as well as product affordability in key areas including the three policy issues discussed in this section:

1. Availability and cost of capital especially FOREX.
2. Access to data for credit scoring to better manage payment default risks.
3. Classification of PAYG providers under financial services regulation.

Government encouragement of local financing for OGS providers can reduce the cost of OGS provider financing and FOREX risk. PAYG providers' cost of financing includes managing the cost of foreign exchange risk. PAYG providers have historically sourced equity investments from foreign investors and secured debt financing from lenders who transact in foreign currencies that do not match the local currency consumers use to make payments. To mitigate the foreign exchange risk, PAYG companies are trying to tap into local sources of lending.¹²⁶ It has been challenging for PAYG companies to access credit support from local lending institutions, which often have limited understanding of the OGS sector, limited experience with SME lending, and/or limited data to evaluate the opportunities and risks.¹²⁶ In addition, some lenders are reluctant to accept off-grid products or customer receivables as collateral.¹²⁷

Some governments are using local currency credit facilities or guarantees to de-risk local currency lending to address PAYG companies' need to access local capital and currency. For example, in 2017, the Government of Rwanda launched the Renewable Energy Fund. Among several financing mechanisms, the fund provides a credit line for locally registered OGS companies supporting Tier 1 and above solar systems.¹²⁸ For government-sponsored facilities or localized lending to be useful, PAYG providers need to meet the lending criteria while also offering competitive and flexible terms and pricing. Governments should also structure financing mechanisms to be gender informed given the benefits of energy access for women.¹²⁹ If PAYG providers find it difficult to meet the lender's criteria or if the cost of financing is too expensive to profitably offer its products, PAYG companies may limit their financed product offerings or stay out of the market entirely.

In countries where access to USD is limited, some governments, such as Ethiopia, have established financing facilities that enable OGS and PAYG companies to access FOREX.¹³⁰ If a country provides FOREX to aid in the supply of fuels (such as kerosene) or to meet capital needs of the grid energy sector, governments could include PAYG companies within these classifications for access to priority FOREX windows.

A GOGLA report that included interviews with suppliers of solar powered productive use products in Ethiopia revealed that all suppliers view the lack of access to FOREX as a major constraint to operations and scale-up.

125 Hystra Hybrid Strategy Consulting, [Pricing Quality Cost Drivers, and Value Add in The Off-Grid Solar Sector 2017](#).

126 Open Capital Advisors, GOGLA, [Increasing local financial institution investment in the off-grid solar sector. Lessons from East Africa, Sept 2018](#). Accessible [here](#).

127 *Ibid.*

128 *Ibid.*

129 Energy Sector Management Assistance Program (ESMAP). 2022. [Designing Public Funding Mechanisms in the Off-Grid Solar Sector](#). Washington, DC: World Bank. Available [here](#).

130 OECD, Chapter 8. Women and SDG 7 – Affordable and Clean Energy – Ensure access to affordable, reliable, sustainable and modern energy for all, Gender and the Environment, Building Evidence and Policies to Achieve the SDGs, 2021. Accessible [here](#).

131 ACE TAF, [Unlocking Forex for the Off-Grid Solar Sector: Ethiopia Policy Brief](#). Accessible [here](#).

Local manufacturing and production of OGS products can also ease the pressure of FOREX risk but must be weighed against costs and capacity to serve as a source of units in the supply chain.

POTENTIAL POLICY OPTIONS:

Wait & See	Light Touch	Prescriptive Policy
Government forebears from restricting OGS providers sources of financing and from providing government assistance to access financing.	Government offers public funding to de-risk private investments and the cost of credit for OGS (blended finance).	Financial services regulator sets portfolio target for local bank lending to OGS companies.
Advantage No restrictions on sources of funding.	Advantage Additional funding sources reduces cost of financing and increases consumer affordability.	Advantage Increases local financing of OGS companies.
Disadvantage High cost of capital for OGS providers contributes to OGS product pricing and reduces consumer affordability.	Disadvantage Requires investment of government resources to support investment in blended finance facilities.	Disadvantage Leadership for financial services regulation is outside the zone of influence of the energy authority.
REAL-WORLD EXAMPLES:		
Foreign exchange constraints in Burundi are a deterrent to OGS providers entering the market. ¹³²	Bboxx tapped People’s Bank of Rwanda’s \$2-million debt facility in local currency to grow Bboxx’s operations in Rwanda.	In Niger two local banks, ONIBANK and BSIC, have partnered with the Government’s NESAP program to lend to OGS providers. ¹³³

Issue 6: Access to Data for Credit Scoring

POLICYMAKERS OF INFLUENCE: Financial Services Regulator, Data Protection Supervisory Authority

RELATED ISSUES: Data Protection



Inter-Ministerial Dialogue Tip: Many countries are setting up specialized supervisory authorities to regulate and enforce data protection standards. The country’s data protection framework may define the boundaries for data sharing and consumers’ right to restrict the sharing of their personal data. Use Chapter Two to help to build an understanding of PAYG companies’ use of consumer data to manage risk and product pricing. Key concerns are consumers’ right to control their data and with whom it is shared, consumer portability of credit scores, and negative credit reporting.



Toolkit Tip: The issues of data protection and data sharing are linked. Consider policy options on access to data for credit scoring and data protection and privacy, Issues 6 and 10, together.

132 See Lighting Global’s analysis of the opportunity for OGS in Burundi [here](#).

133 Power Africa Off-Grid Project, Niger Market Assessment, 2018. Accessible [here](#).

Access to customer data improves PAYG providers' ability to assess customers' ability to pay and reduce default risks. While not currently a major issue, consumer over-indebtedness through PAYG product offerings has become an increasing concern for the PAYG sector and its investors. PAYG companies' ability to offer customized financing to their customers could be enhanced by improving access to shared data sets and building the capacity of their teams to process available data. With limited customer data, PAYG companies manage risk by using deposits, pricing products to cover potential risk of non-payment or through post-sale interventions such as sending SMS messages to remind customers to make their payments. Companies' data use and sharing, however, can impact consumers' rights to data privacy and protection if companies do not manage the data responsibly.¹³⁴ The issue of data access is tied to the broader set of issues of data protection and privacy discussed in Issue 10.

PAYG providers may engage directly in data collection to screen customers for financing, use information shared with other commercial providers, or incorporate data from credit bureaus into their credit models.

Shared data can facilitate financing. Researchers studying the impact of information-sharing platforms on loan performance found that platforms that enabled coordination and screening among lenders can lead to more loans, better repayment, and fewer defaults.¹³⁵ For customers making their first PAYG purchase, data may be limited or non-existent. This may be particularly true for women who often work outside the formal economy and have limited access to the mobile phones that can be used to create data increasingly being used for credit scoring. When customer data does exist, such as a mobile money transaction history, it may be viewed as proprietary. PAYG agents often collect consumers' data at the time of sale. With time, PAYG companies can use their experience with existing customers to develop credit profiles to inform suitable financing terms and, in some cases, to offer financing for additional products such as appliances or productive use equipment. Through partnerships with mobile money providers, MFIs, or other entities, PAYG companies may receive and share information on customers' data to inform their financing decisions. With any credit scoring, it is important to be aware if intentional or unintentional gender bias may disadvantage women from accessing credit.

Another source of data for PAYG providers to use in credit screening is information reported to credit bureaus. Governments can influence the level of required reporting to credit bureaus by setting standards for reporting. Lighting Global's PAYG Market Attractiveness Index includes private and public credit bureau coverage and a depth of credit information index as indicators for consumers' demand and willingness to pay for PAYG products.¹³⁶ OGS companies may decide to voluntarily report data to a credit bureau or governments may require or restrict that sharing. With the rise of digital credit, researchers have raised concerns that government policies requiring companies to report all consumer credit defaults, especially by first-time borrowers with micro-loans, may negatively influence the availability of credit and present a narrow view of a consumer's ability to repay future financing.¹³⁷ In 2020, the Central Bank of Kenya set a minimum threshold for negative credit reporting to credit reference bureaus of KES1,000 and prohibited unregulated digital (mobile-based) and credit-only lenders from providing credit information to CRBs. The Central Bank cited public complaints over misuse of credit information by the unregulated digital and credit-only lenders and their poor responsiveness to customer complaints as the basis for its withdrawal of reporting authority.¹³⁸ Providing consumers with the right to easily access, correct, and share their financial histories across providers is one solution to empower consumers as digital credit expands.¹³⁹

134 As a matter of corporate practice, OGS providers and especially PAYG providers should have clear policies on data governance and sharing that incorporate measures and safeguards to protect consumers. This includes corporate procedures for record keeping, negotiating appropriate contractual agreements for data sharing between parties, and providing modes for redress for consumers. Industry associations are leading efforts to develop best practices companies can follow as providers' use of consumer data to inform financing decisions continues to grow. GSMA, *Data Protection in Mobile Money*, 2019. Accessible [here](#).

135 Dean Karlan, Jake Kendall, Rebecca Mann, Rohini Pande, Tavneet Suri, Jonathan Zinman, *Research and Impacts of Digital Financial Services*, 2017. Accessible [here](#).

136 See Lighting Global, *PAYG Market Attractiveness Index 2019*, Indicators D20, D21, EE17.

137 Juan Carlos Izaguirre, Rafe Mazer, "How Regulators Can Foster More Responsible Credit", CGAP, November 5, 2018. Accessible [here](#).

138 The Central Bank of Kenya (April 14, 2020) Publication of The Credit Reference Bureau Regulations, 2020 and Additional Measures on Credit Information Sharing [Press Release]. Retrieved from [here](#).

139 Mazer, *Digital Credit: Data Sharing Can Improve Product Diversity*.

POTENTIAL POLICY OPTIONS:

Wait & See	Light Touch	Prescriptive Policy
OGS companies are not restricted from entering into commercial relationships to share data with third parties (including MNOs) for credit scoring.	Government encourages reporting and provides OGS providers access to data from credit agencies (private or public) to support OGS financing availability.	Government establishes and maintains credit bureaus with data used by OGS companies for credit scoring.
Advantage Provides an opportunity for OGS providers to prove their ability to self-regulate without government intervention.	Advantage Access to credit bureau data increases efficiency of credit scoring and supports increased supply of PAYG offerings.	Advantage Reporting of data to credit bureaus facilitates consumers' access to formal credit beyond PAYG.
Disadvantage Consumers bear the risk of OGS providers sharing their data without their consent.	Disadvantage OGS providers reporting of data to credit bureaus could create negative credit scores for consumers.	Disadvantage Credit bureaus may not exist or have limited data on prospective PAYG customers.
REAL-WORLD EXAMPLES:		
The Government of Sierra Leone is one African country that has yet to enact a data privacy or protection law that would define the rules for data sharing. ¹⁴⁰	The Government of Ghana added mobile money providers to those required to report information to credit bureaus. ¹⁴¹	The Central Bank of Brazil manages a credit registry that financial institutions can access with a customers' consent in evaluating credit risk. Positive credit bureaus managed by banks also provide a data resource on consumers who can opt out of participation. ¹⁴²

For additional resources on issue 6, refer to:

Annex A to evaluate additional policy options and for a deeper analysis.

Annex B for a detailed bibliography

Issue 7: Financial Regulation**POLICYMAKERS OF INFLUENCE:** Financial Services Regulator**RELATED ISSUES:** Ease of Market Entry and Competition, OGS Provider Availability and Cost of Capital

Inter-Ministerial Dialogue Tip: Financial services regulators derive their regulatory authority from banking laws that are unlikely to address how to classify PAYG financing. Use Chapter Three to build the financial services regulators' understanding of how PAYG financing works. Key concerns to consider are how small-value financing is treated, differences and similarities between PAYG financing and micro-credit, regulatory conditions that apply to credit providers, including minimum capitalization and risk management, and how they might affect PAYG product pricing and market participation by PAYG providers if applied.

¹⁴⁰ UNCTAD maintains a database to track data privacy and protection legislation by country. Accessible [here](#).

¹⁴¹ The Bank of Ghana requires bank and non-bank financial institutions in Ghana to submit data to licensed credit bureaus on a form specified by the Bank of Ghana. Learn more [here](#).

¹⁴² More information about Brazil's approach to the credit bureau is available [here](#).

PAYG providers consider if and how a government classifies lending, and who is eligible to lend under its banking laws and financial services regulations, when evaluating market attractiveness. When PAYG providers offer direct financing of their OGS products, they often choose to enter markets where governments do not regulate their financing offering. This has kept the cost of market entry and regulatory compliance low for PAYG providers. With the rise in innovation in the financial services sector, many countries are reforming their approach to financial sector regulation to address micro-credit, micro-leasing, and digital credit offerings. The evolving policy landscape can create an issue of whether PAYG financing falls within the scope of regulated financial service offerings. If financial service regulations are applied to PAYG providers, companies can incur significant costs meeting requirements for licensing and ongoing regulatory compliance. For a PAYG provider such requirements can affect decisions around whether to enter a market or whether to offer consumer financing in that market.

The PAYG model of consumer financing is very different from traditional credit offerings, suggesting a different policy and regulatory approach may be needed. Unlike generalized credit offerings such as those of MFIs, or the digital credit offerings of M-Shwari in Kenya and M-Pawa in Tanzania, PAYG providers tie their consumer to the OGS unit being purchased and are not offering savings products. There is no general flow of funds (or lending), and the PAYG company is not holding savings deposits for its customers.¹⁴³ A PAYG company's recourse when a consumer fails to pay is limited to de-activation and for some providers includes repossession of the OGS unit. When consumers miss payments, they do not incur further costs from accruing interest. Unlike digital credit offerings, PAYG providers offer financing at the time of purchase of the retail OGS product from a retail product sales agent providing an individual channel, rather than a purely digital channel. Finally, PAYG companies are not deposit-taking institutions; they collect payments for the product's use that either lead to its purchase or fund its servicing costs and do not hold the funds for return to the customer. Since the company is not holding consumer deposits or savings if the PAYG company goes out of business, any loss is borne by the company's shareholders, rather than its customers. Energy policymakers need to take a leadership role in working with financial sector regulators to help them understand the PAYG lending model and how it differs from traditional credit offerings, and to consider policy/regulatory options accordingly.

With some PAYG companies beginning to provide more conventional forms of digital and micro-credit, existing policies and regulations for these sectors may become applicable. PAYG companies have begun to diversify their offerings to provide consumers financing that they can use to purchase non-energy assets such as mobile phones or agriculture inputs, or to pay other expenses such as school fees. If the continued use of the solar unit is conditional on repayment, regardless of how a consumer uses the financing, these offerings could arguably still be considered 'energy services' rather than 'consumer loans.'



With the rise in innovation in the financial services sector, **many countries are reforming their approach to financial sector regulation to address micro-credit, micro-leasing, and digital credit offerings.**

143 Michelle Kaffenberger and Edoardo Totolo, with Matthew Soursourian, Working Paper: A Digital Credit Revolution Insights from Borrowers in Kenya and Tanzania, 2018. Accessible [here](#).

POTENTIAL POLICY OPTIONS:

Wait & See	Light Touch	Prescriptive Policy
Government forebears from oversight of OGS companies' consumer financing and does not require government licensing or pre-approval.	Government offers guidance through clarification or letters of no-objection on regulatory classification of OGS providers offering financing.	Government issues rules on classification of OGS financing that determines level of oversight and minimum entry requirements.
Advantages Eases market entry and no minimum capital requirements.	Advantages Reduces risk of regulatory uncertainty for OGS providers providing consumer financing.	Advantages Establishes regulatory framework for the consumer financing of OGS products.
Disadvantage Limits government oversight over OGS financing.	Disadvantage Continued innovation in financing models may continue to raise issues of classification.	Disadvantage Increased compliance costs may increase cost of goods sold, increasing product pricing, and reducing consumer affordability.
REAL-WORLD EXAMPLES:		
PAYG providers in Ethiopia are not allowed to issue financing and must collaborate with a licensed financial institution.	The Central Bank of Kenya issued a no-objection letter to Safaricom for its initial mobile money offering. FinTech companies in Senegal face challenges from a lack of clarity of their legal classification. The regulator classifies some FinTechs as "technical operators." ¹⁴⁴	In Tanzania the OGS providers filed a request with the Central Bank of Tanzania to clarify if the regulations it adopted for Tier 2 non-deposit taking MFIs are applicable to PAYG providers.

For additional resources on issue 7, refer to:

Annex A to evaluate additional policy options and for a deeper analysis.
Annex B for a detailed bibliography

4.3.3 Service Provider Accountability Across the Sale Cycle

We have classified the key policy issues that impact accountability across the sales cycle into five categories shown in Table 4.4.

Table 4.4: Accountability: Consumer Protection Across the Sales Cycle

Enabling Environment Factors	Policy and Regulatory Zones of Influence				
ACCOUNTABILITY	Sales Cycle				
	Pre-Sale	At-Sale		Post-Sale	
	Product Standards	Transparency of terms and warranties	Data protection	Customer service and grievance redress	e-Waste

Reminder: Accountability = OGS companies are responsible for providing consumers with quality products, clearly communicating about their products features, performance, and their financing terms, protecting consumer data and managing and ensuring proper disposal of products.

144 World Bank. 2019. "Information and Communications for Development 2018: Data-Driven Development." Overview booklet. Information and Communications for Development. World Bank, Washington, DC. License: Creative Commons Attribution CC BY 3.0 IGO, p. 61.

Governments play an important role in holding service providers accountable, especially when an OGS provider's own policies and self-regulation fail to protect consumers. OGS providers should be accountable to customers for their products and services across the sales cycle. Consumers that report facing challenges using OGS products and consumers over-indebtedness resulting from PAYG purchases is a small but growing concern.¹⁴⁵ As the OGS sector has grown, stakeholders have recognized a need to develop cross-cutting standards and principles on consumer protection. Some standards and principles already exist to manage pre-sale and at-sale consumer risks; these include the international quality standard IEC TS-62257-9-8 that includes standards for truth in advertising and minimum warranty coverage, and the industry association led consumer protection code developed by GOGLA.¹⁴⁶ The

GOGLA code includes six core principles. GOGLA created a self-assessment tool of 37 indicators for OGS providers to assess and track their performance against the Consumer Protection Code's principles. More than 25 OGS providers have committed to following the GOGLA code. It is important to note that while the GOGLA's Consumer Protection Code provides a framework for industry self-regulation, there are no enforcement mechanisms in the code for GOGLA or governments to require the companies comply with the principles.



Toolkit Tip: Consider collecting data or engaging in market surveillance to assess the level of customer satisfaction and seek input from OGS providers to inform your evaluation of the need for consumer protection policies.

Issue 8: Product Standards

POLICYMAKERS OF INFLUENCE: Standards Setting Body

RELATED ISSUES: Transparency of Terms and Warranties, Customer Service and Grievance Redress



Inter-Ministerial Dialogue Tip: Government standards setting bodies' authority extends to OGS products. In developing standards, inter-ministerial coordination between the government's standard setting body and energy authority is essential. Ideally, the standards setting process should also be structured to include input from non-government stakeholders including the OGS sector.

Consumer complaints and government concerns about low-quality products have prompted many governments to evaluate whether to adopt national standards for OGS products.¹⁴⁷ There are several contextual factors policymakers may consider in evaluating the need and impact of adopting quality standards. These include the state of the OGS market, a government's institutional capacity to manage the standards adoption process, the availability of government resources to implement the standards once adopted, and the impact on consumer product choices and affordability.

As discussed in Section 2.2, consumers often have a choice in the quality of OGS product they purchase. OGS providers may compete in offering consumers non-QV OGS products and offering QV OGS products that have been tested for compliance with national and/or international standards. Consumers may find that QV products cost more than non-QV products reflecting the costs suppliers incur to produce and test QV products. Researchers have dubbed this pricing differential a "quality premium."¹⁴⁸ Some consumers may opt out of purchasing QV equipment if the quality premium is beyond their ability to pay. A consumer's willingness or ability to pay is one factor she may apply in purchasing OGS products.¹⁴⁹

145 60 Decibels, *Why Off-Grid Matters*, p. 15.

146 GOGLA, Consumer Protection Code. Accessible [here](#).

147 African Clean Energy Program Technical Assistance Facility, *Standards for Stand-Alone Solar: Guidance for Governments*, 2020. Accessible [here](#).

148 Global Distributors Collective, HYSTRA Hybrid Strategy Consulting, Verasol, *Finding the sweet spot: identifying affordable quality solar products for the last mile*.

149 Lighting Global, GOGLA, ESMAP, *Off-Grid Solar Market Trends Report 2020*, p. 83.

Another factor in consumer purchasing is whether the consumer has information or awareness to distinguish between QV and non-QV products and reduce her exposure to financial risk from products with short life cycles.

In the absence of quality standards and adequate information, consumers may also be exposed to counterfeit products that enter the market. Counterfeit products have the look and feel of quality, branded products but are sold at a lower price point. In some countries, such as Ethiopia, consumers have high levels of awareness of counterfeit products and can spot the products.¹⁵⁰ In other markets, governments may need to invest in building consumer awareness and capacity to identify counterfeit products.

When a government decides to move toward adoption of national standards, key decisions include: (1) when to adopt standards, (2) what standards to adopt, and (3) how to implement and enforce those standards.

When to adopt standards: The maturity of the OGS sector and the capacity of the government to enforce standards is relevant to a government's approach. Governments may find mandatory standards prove useful in more mature markets where the risk of counterfeit and inferior products is high, and they have the capacity to implement and enforce the standards. In emerging markets, governments may find it preferable to start with voluntary standards that are recommended or only applied by the government in its own procurements or programs for OGS products. Some level of industry self-regulation may already exist. For example, OGS providers may limit their product offerings to QV products as a matter of business practice and to comply with requirements from their investors and creditors, or to meet eligibility criteria for participating in donor-funded programs. Governments may also find voluntary standards more useful in markets where their compliance and enforcement capacity are limited, and they need time to structure and complete an inclusive standards-setting process that features a range of stakeholders and industry participation. The standards adoption process requires an investment of time and resources governments must consider in the timeline for adoption of national standards.

Which standards to adopt: Countries may choose to develop their own standards, adopt standards harmonized with other countries in their region, and harmonize or align those standards with the IEC standard IEC TS-62257-9-8. Several countries have developed national standards for SHS kits that align with the IEC standard. Rwanda's standards for SHS kits align with the IEC standard and include additional requirements. Ethiopia has adopted mandatory pico-solar standards and voluntary SHS kit standards aligned with the IEC standard. The Economic Community of West African States (ECOWAS) validated draft regional standards for SHS kits.¹⁵¹ Government adoption of internationally harmonized standards can produce economies of scale for OGS producers who can sell standardized products across markets and centralize product testing for quality verification.

How to implement and enforce those standards: Governments' adoption of standards will only prove effective if governments make the necessary investment to support consistent application and enforcement of compliance with those standards. Effective standards enforcement requires investment in coordinated planning across government authorities, clear communication with the OGS sector, development of capacity for market surveillance, and ongoing investment in capacity to monitor and enforce compliance. Government strategies for compliance with quality standards can be multi-faceted and applied at various points in the supply chain. At importation, governments can conduct conformity assessments by requiring pre-shipment verification of conformity (PVoC). Governments can engage in market surveillance to check current supply, including field testing, laboratory testing, or visual inspections. Governments also need to have enforcement processes in place to intervene against suppliers whose products are found non-compliant and to require the suppliers to take corrective action.¹⁵²

¹⁵⁰ *Ibid.*, p. 55.

¹⁵¹ *Ibid.*

¹⁵² *Ibid.*

POTENTIAL POLICY OPTIONS:

Wait & See	Light Touch	Prescriptive Policy
Government forebears from placing any restrictions on or promoting minimum quality standards for OGS components or configurations.	Government develops a road map for standards adoption starting with adoption of voluntary quality standards for OGS products.	Government adopts national quality standards for OGS products.
Advantage Promotes market entry and free and open competition.	Advantage Increases supply of quality OGS products.	Advantage Government protects consumer from risk of counterfeit or low-quality products.
Disadvantage No government oversight over counterfeit or low-quality products.	Disadvantage Low-quality OGS products are available.	Disadvantage Requires investment to build staff capacity to implement and enforce compliance.
REAL-WORLD EXAMPLES		
The governments of Malawi and Somalia have not yet adopted quality standards for OGS products allowing OGS companies to offer QV or non-QV products.	Lighting Africa is working with government agencies of Madagascar — particularly the Bureau of Standards — in developing and adopting national quality standards for off-grid solar products that are appropriate for the Malagasy context ¹⁵³	Rwanda included quality standards for SHS systems in its Ministerial Guidelines on Minimum Standards Requirements for SHS.

For additional resources on issue 8, refer to:

Annex A to evaluate additional policy options and for a deeper analysis.

Annex B for a detailed bibliography

Issue 9: Transparency at Sale: Disclosure of Fees, Terms of Services, and Warranties

POLICYMAKERS OF INFLUENCE: Standards Setting Body, Consumer Protection Agency

RELATED ISSUE: Product Standards



Inter-Ministerial Dialogue Tip: Some governments have consumer protection ministries or bureaus within a ministry that have the mandate to enforce consumer protection standards for truthful marketing and transparency at the point of sale. The policymakers enforcing those laws may not be familiar with the OGS sector or PAYG. Use Chapter Three to build their understanding of how the OGS and PAYG offerings work as well as the current practices in disclosure of fees, terms of service, and inclusion of product warranties.



Toolkit Tip: Look for existing consumer protection policies that may apply to OGS products and service providers before creating new policies.

153 Explore more about this work [here](#).

Consumers rely on OGS providers to be transparent about the quality and terms and conditions of their products to make informed purchasing decisions. Consumer sentiment towards the OGS industry and/or solar products can sour if they receive inadequate, false, or unclear information about products. Consumers purchasing PAYG products also need to receive clear and adequate information about the terms and conditions of the consumer financing. If they are unable to understand the terms, consumers are at risk of default and loss of energy access if their OGS units are shut off or repossessed due to non-payment. Inadequate assessment of a customer's ability to pay not only hurts consumers, but it also hurts the financial performance and long-term viability of OGS providers and the reputation of the sector overall.

Truth in advertising is a key component of the international OGS product quality standard, IEC TS-62257-9-8. Transparency, consumer information and warranties, as well as responsible sales and pricing, are covered by GOGLA's voluntary Consumer Protection Code. Governments seeking to improve service provider accountability can evaluate the OGS sector's performance in these areas, in their market, before considering policy/regulatory responses.

Table 4.5: Key Elements of the GOGLA Consumer Protection Code and IEC Standard

GOGLA CODE INDICATORS RELATED TO AT-SALE DISCLOSURES	IEC STANDARD TRUTH IN ADVERTISING AND WARRANTY STANDARDS (IEC TS-62257-9-8)
Transparency Indicators	Consumer Information
Consumers are informed of key terms and conditions of contract.	All product descriptions are truthful and accurate and available to customers prior to sale.
All fees and charges are clear and included in total price (financed or cash).	The PAYG system should be capable of accurately metering service to customers so they reliably get the service they paid for.
Consumers are advised on all available products and options.	If there are both PAYG and non-PAYG versions of a product, each must be truthfully advertised.
Communication is in clear, simple and appropriate language consumers can understand.	Information is presented clearly and legibly.
Sales and marketing materials accurately reflect the product's features and performance and customers are given a manual, warranty, and customer service information.	Product accurately specifies manufacturer, product name, and unique model no. Product packaging and labeling meets performance reporting requirements and is accurate.
Responsible Sales and Pricing Indicators	Warranties
The company insures consumers understand the key terms and conditions of any payment plan.	Warranties of at least one year are provided for Pico products, at least two years for SHS kit systems, and one year for included appliances.
If additional products are bought with the OGS product as collateral this is done with the informed consent of consumers.	User manuals are included with SHS kits. Information is provided on component specifications and replacement methods for SHS kits.

Consumer research conducted around the GOGLA Consumer Protection Code found that consumers were familiar with the terms and conditions of PAYG service offerings and had adequate information to compare the costs of purchasing with cash and PAYG financing.¹⁵⁴ Researchers found that consumers thought marketing and sales materials were generally clear but contract language for PAYG services was more challenging for them to understand. In addition, consumers reported that agents who sold products were not always transparent in providing full and accurate information about product pricing or terms.¹⁵⁵

¹⁵⁴ GOGLA, Consumer Protection Insights: Learning and Recommendations from the GOGLA Consumer Protection Code, 2019. Accessible [here](#).

¹⁵⁵ *Ibid*.

Beyond industry self-regulation, countries may also have existing consumer protection frameworks that establish standards for company product and service disclosures that may apply to the OGS sector, including in areas like consumer financing.¹⁵⁶ If those protections are inadequate, governments may find they need to create specific standards for the OGS sector which they can capture in setting national quality standards or by issuing industry specific directives. In its Ministerial Guidelines for SHS, Rwanda describes what SHS providers should include in their product purchase agreements.¹⁵⁷

Consumers who purchase OGS products with warranties are purchasing a commitment to after-sales service and repair that should protect them from financial loss if an OGS product fails to perform as represented at the time of sale. The IEC standard requires that OGS products certified to meet the standard include a warranty of one year for Pico products and two years for SHS kits, with one year for included appliances. Most PAYG companies include a warranty for the duration of the financing term. Rwanda set its own warranty requirements for SHS.¹⁵⁸ The value of warranties to consumers is dependent on a company's commitment to honoring those warranties and providing after-sales service. Governments may need to consider how to support consumer redress if OGS providers do not honor the warranties and fail to repair or replace the product, for example through a grievance redress mechanism (see Issue 11).

POTENTIAL POLICY OPTIONS:

Wait & See	Light Touch	Prescriptive Policy
Government relies on OGS providers to set their own policies for disclosure of terms.	Government encourages PAYG providers to follow GOGLA's Consumer Protection Code principle for responsible sales and pricing.	Government sets and enforces minimum standards for disclosure of terms and conditions of OGS products and services
Advantage Provides an opportunity for OGS providers to prove their ability to self-regulate without government intervention.	Advantage Consumers have adequate information to make informed decisions in purchasing OGS and PAYG products, increasing consumer satisfaction and reducing over-indebtedness.	Advantage Consumers have adequate information to make informed decisions in purchasing OGS and PAYG products at the point of sale.
Disadvantage Consumers bear the risk of OGS providers providing incomplete or inaccurate product information.	Disadvantage OGS providers differ in their disclosure practices and create reputational risk for the industry.	Disadvantage Requires government investment to build staff capacity to implement and enforce compliance.
REAL-WORLD EXAMPLES:		
Companies who have committed to the GOGLA Consumer Protection Code are listed on GOGLA's website. The list includes companies that provide products in multiple countries. ¹⁵⁹		Rwanda's Ministerial Guidelines for SHS identify terms that must be included in SHS purchase agreements and includes detailed responsibilities of the purchaser and the supplier.

156 In Tanzania, Part XI of the Electronic Money Regulations requires mobile money issuers to "display and disclose charges and fees for their services to customers and any changes thereof" and "inform consumers of their referral rights on unresolved complaints". Alliance for Financial Inclusion, *Digital Credit Regulation in Tanzania*, 2020. Accessible [here](#).

157 Republic of Rwanda Ministry of Infrastructure, "Ministerial Guidelines on Minimum Standards Requirements for Solar Home Systems," 2019. Accessible [here](#).

158 *Ibid.*

159 Find the list of companies [here](#).

For additional resources on issue 9, refer to:

Annex A to evaluate additional policy options and for a deeper analysis.

Annex B for a detailed bibliography

Issue 10: Data Protection

POLICYMAKERS OF INFLUENCE: Data Protection Supervisory Authority, Consumer Protection Agency

RELATED ISSUES: Access to Data for Credit Scoring



Inter-Ministerial Dialogue Tip: Many governments have created specialized authorities to implement and enforce compliance with data protection laws. Enforcement may also reside within agencies with broader mandates, such as financial service regulators or consumer protection agencies. A determination of where this authority lies will be an important first step in working to address data privacy and protection issues that impact the OGS sector enabling environment.



Toolkit Tip: A country's approach to data protection also sets the boundaries for permitted data sharing. Evaluate policy options for these two issues, Issues 6 and 9, together.

Countries are creating or updating their data protection laws and establishing supervisory authorities to enforce compliance. UNCTAD tracks data protection and privacy legislation by country and shows the growing trend towards government adoption of data protection and privacy frameworks. Thirty-three countries in Africa have adopted data protection and privacy laws and legislation is pending in six countries.¹⁶⁰ Many governments are designing data protection and privacy laws that follow the approach of the European Union in its General Data Protection Regulation that takes a rights-based approach to data protection.¹⁶¹ This approach establishes standards and provides consumers the right to consent and opt out of data sharing.

How OGS providers and PAYG companies use and protect customer data raises important issues of consumer protection, specifically around consumers' rights to data privacy and protection. PAYG companies need to gather and use customers' personally identifiable information (PII) to qualify them for suitable financing. Data generated by customers' payment patterns for PAYG products is also valuable for its use in creating a deeper profile for the customer, which can be used by the PAYG company or the customer to qualify for opportunities for additional financing. As discussed in Issue 6, PAYG companies may have commercial agreements to share some level of customer data with third parties for credit scoring. Governments and donors may also require companies to report data in some form (perhaps anonymized or aggregated) to show company performance as a condition of their financing, as part of participation in donor-led programs or at the request of government policymakers.

With the advance of the digital economy, companies are making data-driven decisions. In addition, many governments are addressing data privacy with updated laws anchored in a rights-based approach that empowers consumers but makes companies responsible for data protection. PAYG companies are likely to collect and manage customer data that must be handled in compliance with the law. As a matter of corporate practice, companies are adopting data governance policies that control how they use and manage data. Company policies include requirements to comply with governing laws in countries where they operate and collect data. The GOGLA Consumer Protection Code, while voluntary and therefore not enforceable, includes a data privacy principle with three components, including compliance with local laws and regulations:

1. Apply good practices and comply with relevant laws and regulations governing consumer data privacy.

¹⁶⁰ UNCTAD, Data Protection and Privacy Legislation Worldwide. Accessible [here](#).

¹⁶¹ General Data Protection Regulation, Regulation (EU) 2016/679. Accessible [here](#).

2. Only collect, use, retain, and share personal information that is necessary for the stated consumer service and legitimate interests of the business.
3. Ensure consumer data is kept secure and confidential.

Policymakers need to consider how to balance PAYG providers’ need for customer data, the cost of compliance to companies, and government enforcement in developing frameworks providing consumers’ right to data privacy and protection. Common principles in data protection frameworks include consumer consent to data collection, a company’s lawful and legitimate need for the data, minimization of data collected, locations where PII can be stored, rules on data sharing, and security and accountability. Some countries have requirements on data localization which prohibit cross-border data flows and require investment in local data storage. For the OGS sector and PAYG companies some of these restrictions may make service delivery in a country prohibitive.

POTENTIAL POLICY OPTIONS:

Wait & See	Light Touch	Prescriptive Policy
Existing government data privacy laws and regulations apply to the OGS sector without modification.	Government provides guidance on how existing data protection policies apply to the OGS sector.	Government adopted policies and directs specific application of policies for protection of data collected by OGS companies.
<p>Advantage</p> <p>No additional regulation on data use by the OGS sector.</p>	<p>Advantage</p> <p>Guidance informs data use.</p>	<p>Advantage</p> <p>Data policies specific to the OGS increase OGS and PAYG supply and suitability of financing terms.</p>
<p>Disadvantage</p> <p>Current data privacy laws and regulations may limit OGS companies’ use of data or increase cost of compliance.</p>	<p>Disadvantage</p> <p>Not all OGS providers may choose to commit to industry principles for protecting data privacy.</p>	<p>Disadvantage</p> <p>Inadequate government enforcement of standards does not protect consumers against improper use and disclosure of their data.</p>
REAL-WORLD EXAMPLES		
Togo’s data protection law (No. 2019-014), enacted in October 2019, regulates the collection, processing, transmission, storage and use of personal data by public or private entities, as well as automated or non-automated processing of data.	The European Data Protection Board issues general guidance to promote a common understanding of European data protection laws, both across the European Union and around the world.	

For additional resources on issue 10, refer to:

- Annex A to evaluate additional policy options and for a deeper analysis.
- Annex B for a detailed bibliography

Issue 11: Customer Service and Grievance Redress**POLICYMAKERS OF INFLUENCE:** Standards Setting Body, Consumer Protection Agency**RELATED ISSUES:** Product Standards

Inter-Ministerial Dialogue Tip: Some governments have established positions such as that of an ombudsman to help customers get commercial companies to address grievances about their products and services. If such dynamics exist, use Chapter Three to build the Ombudsman's understanding of how the OGS and PAYG offerings work as well as the role of standards and product warranties.



Toolkit Tip: Look for existing consumer protection policies that may apply including minimum customer service standards that apply to licensed mobile money and payment providers.

When company customer services processes fail, consumers may need to have access to a government process to hold OGS providers accountable. Governments can choose to set standards for customer service and rely on existing complaint mechanisms or establish new mechanisms consumers can use to seek redress for grievances against OGS suppliers. Countries may have consumer protection frameworks that set standards for responsiveness to consumer complaints and sector specific regulations may apply. For example, mobile money regulations often impose specific timelines for mobile money operators to respond to consumer disputes and require the staffing of customer response teams.

Companies should be responsive to consumer complaints about their products. OGS providers that offer warranties with their products commit to providing after-sales service. This after-sales service can include the repair or replacement of faulty equipment, resolution of customer complaints, and management of payment-related disputes in the case of PAYG financing. In 2020, in consumer research conducted by the firm 60 Decibels, more than one-third (34 percent) of OGS customers surveyed reported challenges using their OGS product or service. Challenges included technical faults but also mismatched expectations and/or misuse. The report recommends that OGS companies create a culture and operating model for strong after-sales service.¹⁶²

Many OGS companies have established customer support service centers and customer service procedures. These include hiring field staff or agents to provide technical support to address equipment issues at the customer's location and staffing of centralized call centers to respond to customer inquiries. Some companies also actively seek customer feedback by contacting customers about system performance and their product experience. Consumer research shows there is room for companies to improve in providing after-sales support, and best practices are beginning to emerge.¹⁶³ Companies can choose to but are not required to follow the Consumer Protection Code. GOGLA also includes a principle on good customer service that includes the following four requirements:

1. Ensure availability of technical and after-sales service support, including warranty and post-warranty service for a reasonable period.
2. Provide accessible, effective, and timely mechanisms for complaints and problem resolution.
3. Instruct consumers on proper use, care, and any health and safety risks related to the product usage or disposal.
4. Consider measures to enable continued operability of the product in the event of the failure of the company.

¹⁶² 60 Decibels, *Why Off-Grid Matters*, p. 24.

¹⁶³ *Ibid.*, p. 73.

POTENTIAL POLICY OPTIONS:

Wait & See	Light Touch	Prescriptive Policy
Government relies on OGS providers to establish consumer complaint processes to resolve product and service issues and comply with product warranties.	Government develops voluntary quality standards for OGS products that include warranty coverage requirements and standards for post-sale services.	Government sets and enforces standards for minimum levels of post-sale consumer service and warranty coverage for OGS products.
Advantage Provides an opportunity for OGS providers to prove their ability to self-regulate without government intervention.	Advantage Increases choice of OGS products with warranties that include after-sales service for repair and replacement.	Advantage Highest level of consumer protection.
Disadvantage Consumers bear the risk of poor after-sales service for OGS products and failure to provide warranty coverage.	Disadvantage Requires government investment in evaluation of standards.	Disadvantage Requires government investment to build staff capacity to implement and enforce compliance.
REAL-WORLD EXAMPLES		
Consumers purchasing Engie Energy Access products get a three-year warranty and access to a customer service line operational 7 days a week and providing answers in 60 languages. ¹⁶⁴	For companies to be eligible to participate in the KOSAP program in Kenya their SHS systems must meet the IEC QV standards.	Rwanda's Ministerial Guidelines for SHS require that SHS provide a minimum three-year warranty and technical service for a minimum five years after the installation of the system.

For additional resources on issue 11, refer to:

Annex A to evaluate additional policy options and for a deeper analysis.

Annex B for a detailed bibliography

Issue 12: E-Waste

POLICYMAKERS OF INFLUENCE: Environmental Regulator, Consumer Protection Agency

RELATED ISSUES: Product Standards



Inter-Ministerial Dialogue Tip: Many governments are addressing e-waste generated by electronic equipment, including mobile phones and appliances. Jurisdiction over e-waste management may fall within ministries with supervisory authority over specific industries or be led by the country's environmental regulator. Look to see who has jurisdiction and what frameworks may be in place to address e-waste management from products with higher volumes than OGS.

As the use of solar products has increased, governments are confronting policy issues on how to manage e-waste generated at the end of the lifecycle of OGS products. An in-depth exploration of the policy issues and options for e-waste management are beyond the scope of this toolkit but are covered in detail in other resources, including the African Clean Energy Technical Facility's E-waste Policy Handbook¹⁶⁵ and GOGLA's e-waste Toolkit.¹⁶⁶

¹⁶⁴ Engie Energy Access advertises these product features on its website accessible [here](#).

¹⁶⁵ Africa Clean Energy Program Technical Assistance Facility, e-Waste Policy Handbook. Accessible [here](#).

¹⁶⁶ GOGLA, E-waste Toolkit. Accessible [here](#).

We present a brief overview of policy considerations in this section to help policymakers determine if this is a policy priority and potential pathways to approach e-waste management.

In general, OGS products have a variety of components with different levels of environmental risk and longevity. The proper disposal of lithium batteries (with a defined lifespan of two to six years) is the OGS product component that is posing the greatest challenges and raising concerns about proper e-waste management.

Governments are considering a variety of models for e-waste management. These include creating policy frameworks, often accompanied by financial incentives and technical support, to promote product takeback and reverse logistics, before either repairing, recycling or safely disposing of products at end-of-life. Policymakers need to determine who will bear the costs, be it consumers, taxpayers, or participants in the supply chain who assume the responsibility for e-waste management. In parallel with creating a policy framework consumer awareness, education, and incentives for managing e-waste from OGS products are critical.

Figure 4.3: E-Waste Management Approaches



(Source: Africa Clean Energy Technical Assistance Facility, e-Waste Policy Handbook)

POTENTIAL POLICY OPTIONS:

Wait & See	Light Touch	Prescriptive Policy
Government relies on OGS providers to develop and follow their own policies to manage e-waste and recycling of OGS products.	Government encourages OGS providers to properly dispose of e-waste by publishing data on effects of e-waste and giving suggestions of programs such as takeback programs and schemes.	Government adopts a financing structure to manage e-waste that covers OGS products.
<p>Advantage</p> <p>Low cost.</p>	<p>Advantage</p> <p>e-waste management and recycling framework is tested on higher producing e-waste streams.</p>	<p>Advantage</p> <p>Government framework produces responsible e-waste management and reduces environmental impact of improper disposal of e-waste generated by OGS products.</p>

Disadvantage	Disadvantage	Disadvantage
Adverse environmental impact of improper disposal of e-waste generated by OGS products.	Limited government support or oversight for management of e-waste generated by OGS products.	Imposition of fees could increase product price and reduce consumer affordability.
REAL-WORLD EXAMPLES:		
The Democratic Republic of Congo has no regulations that govern the management of e-waste from OGS products. ¹⁶⁷	The Uganda Ministry of Information and Communication Technology developed and published e-waste management guidelines to provide clarity on stakeholders' roles in the lifecycle of electronic and electric products. ¹⁶⁸	The Rwandan government has created a legal and policy framework for e-waste, that includes solar products in the scope. It is based on the principle of producer responsibility, specifying the role and responsibilities of various stakeholders involved. ¹⁶⁹

For additional resources on issue 12, refer to:

Annex A to evaluate additional policy options and for a deeper analysis.

Annex B for a detailed bibliography

167 Power Africa Off-Grid Project, Off-Grid Market Assessment: Democratic Republic of Congo, 2019, 43. Accessible [here](#).

168 The guidelines are accessible [here](#).

169 Access the Rwanda e-waste regulations [here](#).

CHAPTER FIVE

Tools to Advance Policy Reform

In this final chapter, we provide a decision tree and tools for energy policymakers to use in addressing the issues constraining the scale of OGS through policy reform. The decision tree is broken down into six steps as illustrated in Figure 5.1. This toolkit includes 23 tools we have aligned to the six steps. The six steps to advancing policy reform help guide policymakers through champion identification, stakeholder identification, stakeholder capacity building, policy analysis, identifying policy options, and policy action. The complete set of tools can be found in Annex C. A few of the tools are highlighted as examples in this chapter.

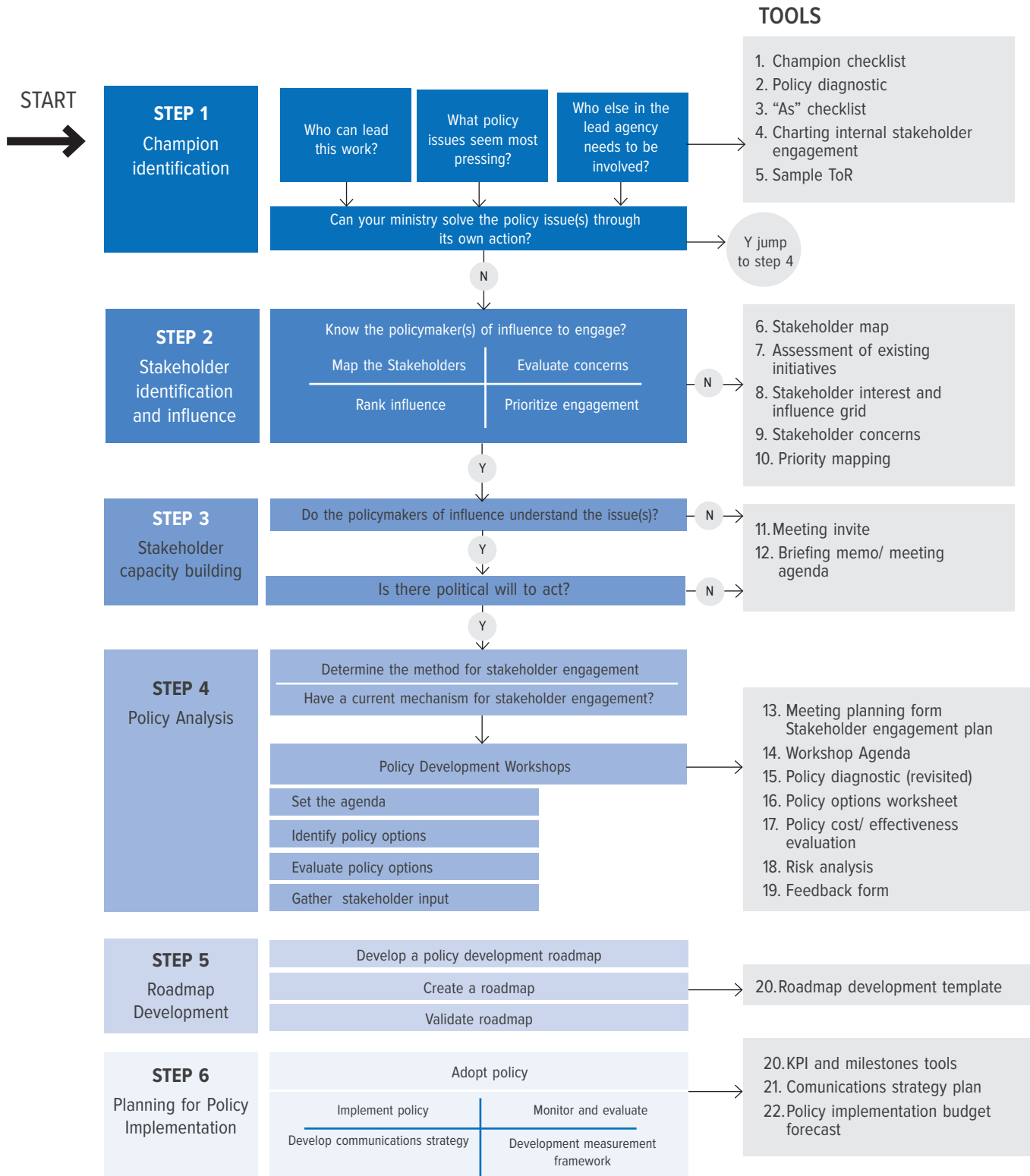
Policymakers can pick and choose which steps and associated tools are relevant for their context. The tools can be used to address one policy issue or can be used in

a broader approach that considers the universe of policy issues. While both approaches can use the same tools and process, the latter, broader approach can benefit from the formulation of a roadmap to policy adoption and implementation. A policy roadmap can support a complete reform agenda by identifying: (1) the landscape of policy issues and their associated policy options, (2) discrete steps to implementing each policy option, and (3) the feasibility, timelines and specific stakeholders required for implementation. The policy roadmap can be used to secure buy in and validation with relevant actors across ministries or government agencies and can serve as the foundation of a government's policy agenda to support the scale of PAYG enabled OGS.

The six steps to advance policy reform are identified below.

- In **Step 1**, users of this Toolkit can use Tool 1 to identify the government authority who can lead the work applying the Toolkit and select an individual within the authority to champion the work. Once selected, the champion can use Tool 2 to complete an initial analysis of policy areas that impact consumer purchase of OGS products. Tool 3 is a checklist to quickly look across the 3As and where issues in a market may be most salient. With these issues in mind, the champion can use Tool 4 to build support for the work across the hierarchical structure of their organization. Tool 5 provides a sample ToR that can be used and adapted to seek experts to help the champion work through the process of applying the toolkit to address market specific issues.
- In **Step 2**, the champion expands its analysis to look beyond its own organization and identifies relevant stakeholders to select for the inter-ministerial dialogue. Policymakers can use Tools 6-10 to select the participants in the inter-ministerial, policy development process.
- In **Step 3**, the stakeholder capacity building phase, the champion can use Tool 11 and Tool 12 to conduct initial outreach to other external policymakers focusing on how OGS and PAYG relate to issues within that ministry's realm of influence and concern.
- In **Step 4**, the policy analysis phase, policymakers can adapt Tools 13-19 (and revisit Tool 2) in a series of workshops that focus on evaluating policy options and designing approaches to implementation. The OGS industry and industry-level associations are particularly important stakeholders to include in this phase.
- In **Step 5**, informed by the work completed in the inter-ministerial workshops, the champion can develop a draft roadmap for policy action. Tool 20 provides a template for structuring a roadmap.
- In **Step 6**, the policy adoption and implementation phase, Tools 21-23 are designed to help government actors take policy action.

Figure 5.1: Decision Tree



STEP 1

5.1 Champion Identification

The Toolkit includes three tools for use in selecting the government authority who will lead the work and helping them get buy-in throughout their organization.

Tool 1 provides a checklist to identify the individual or team within the lead agency that can lead this work. This is likely someone at the technical staff level but with sufficient authority to manage the process.

The champion can use the policy diagnostic tool, **Tool 2**, to do a first-order assessment on possible policy issues that could affect the market conditions for OGS and PAYG applying the consumer centric lens of the 3As. **Tool 3** (3 As checklist) can also help with this assessment.

The champion will need to garner support across the ministry in which they work. The champion can use **Tool 4** to identify stakeholders within the lead ministry that need to be aware and supportive of the work and identify pathways for continued engagement. This may include capacity building as was shown in the testing of this Toolkit in Ethiopia and Uganda. Establishing a baseline understanding of the value chain is a crucial first step in facilitating productive policy dialogue.

The sponsor of the work, if outside the government, including donors like the World Bank, can also play a role in empowering the champion and generating high-level buy-in for the work at the state minister level. This early endorsement can be key to building momentum with the authority in charge and other ministries.

Subject matter experts may be needed to support the champion. **Tool 5** provides a sample of the terms of reference (ToR) that can be used and adapted to seek experts to help the champion work through the process of applying the toolkit to address market specific issues.

STEP 2

5.2 Stakeholder Identification and Influence

Stakeholder mapping helps to identify participants to engage in the policy development process. In general, stakeholders will fall into three categories, as shown in the Stakeholder Map (**Tool 6**) used in Figure 5.2. Government policymakers with decision-making authority over policy form the core stakeholder group. Key influencers are those whose input is important but not decisive to policy decisions. This group includes OGS companies, their investors, creditors, and donors funding initiatives to expand OGS use. The public and consumers are the ultimate stakeholders as the target beneficiaries of policies that seek to improve the enabling environment for OGS use. In Annex C we include suggestions of stakeholders that fall into each stakeholder category based on their roles. Not all stakeholders will have an equal interest in engaging in the policy development process. Policymakers can use **Tool 8** (Stakeholder Influence and Interest Grid) to evaluate the interest and influence of stakeholders before moving forward to inform the engagement strategy and assess the likelihood that a stakeholder will be willing to participate in the policy development process. To illustrate the use of the stakeholder mapping tool, we used it below for the issue of expanding the reach of quality digital broadband infrastructure to support PAYG product offerings in rural areas.

Table 5.1: Micro-Level Issues- across the Enabling Environment Components

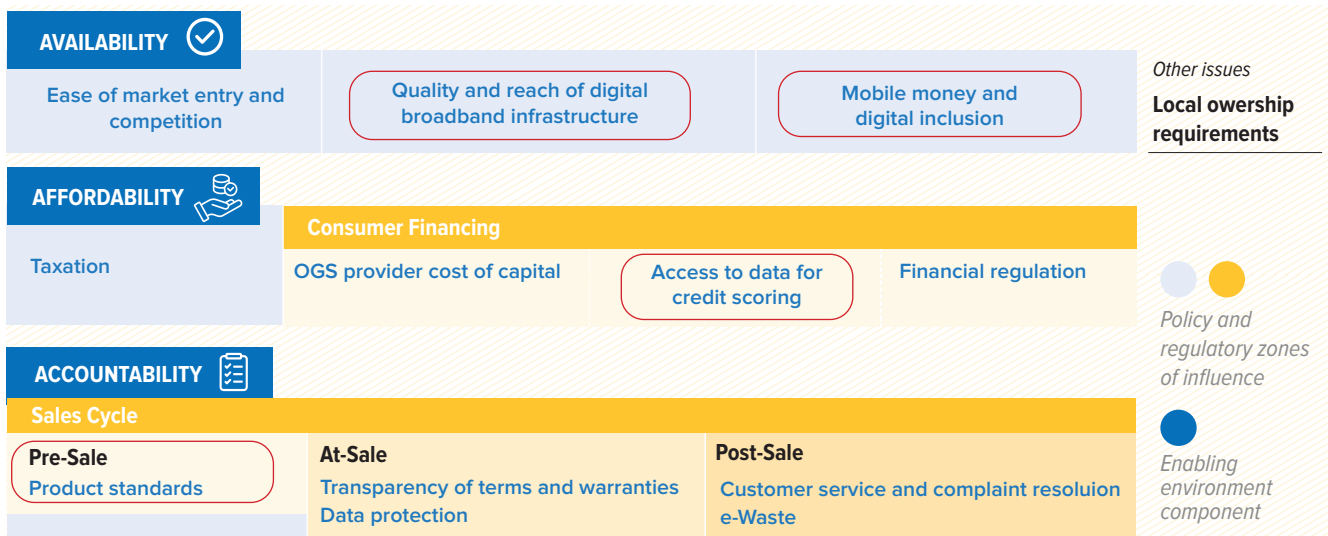
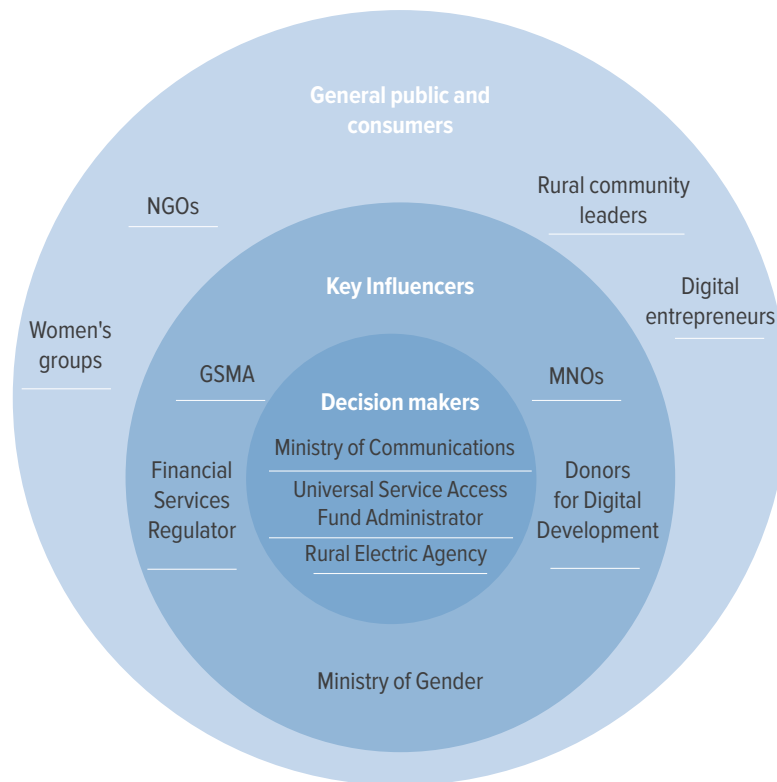


Figure 5.2: Example of Applying the Stakeholder Mapping Tool to Expansion of Digital Broadband Infrastructure (Tool 6)



Many of the policy issues that affect PAYG offerings are dependent on the maturity of the digital economy and financial services offerings. There may be existing initiatives or policies in place to address those issues. Rather than assume that nothing has been done, the champion should canvas existing initiatives to address those issues. **Tool 7** is designed to help the champion conduct an inventory of existing initiatives or policies that may affect the approach to engagement on the policy issues.

Tool 9 is designed to help energy policymakers anticipate possible points of resistance from other policymakers and develop strategies for addressing those concerns. Using the example of the policy issue of exempting SHS products from VAT, the Stakeholder Concerns Tool could be used to map stakeholders' concerns as shown in Table 5.2.

Table 5.2: Example of Applying the Stakeholders Concerns Tool (Tool 9)

Policy Issue: Exemption of SHS systems sales from VAT			
Stakeholder	Possible Concerns	Priority (Low-Medium-High)	Response to Concerns
Finance Ministry	Decrease in tax revenue collection	High	Point 1: Projections on how energy access will increase income generation and economic activity producing new tax revenue. Point 2: Suggested test and learn timeline for VAT exemption to monitor impact and conduct cost/benefit analysis. Point 3: Engage Ministry of Trade to show impact of VAT exemption on flow of products and market suppliers

Tool 10 (priority mapping) is designed to plot the urgency and importance of policy issues to determine priority issues to address.

STEP 3

5.3 Stakeholder Capacity Building

In some cases, there is need for capacity building to facilitate a multisectoral approach to policymaking. This will ensure each ministry understands the relevance of the OGS sector and PAYG products to their own policy goals and in achieving national goals for energy access. It may not be immediately apparent to policymakers who do not regulate the energy sector why they should engage or have an interest in supporting the scale of OGS. If this is the case, energy policymakers will need to work to build the case for these policymakers to engage in an inter-ministerial dialogue through an initial exploratory meeting or workshop.

Policymakers may want to consider being strategic in who issues the invitation for this engagement. Should the meeting be requested by the energy minister? Do staff-level working groups exist on other issues that would make staff-level communication more effective? Policymakers can use **Tools 11 and 12** to think through how to request the initial engagement.

STEP 4

5.4 Policy Analysis

Once the lead energy policymakers have developed political will among other policymakers to engage in the policy process, it is time to activate a coordinated policy development process. The vehicle of engagement will depend on whether there are pre-existing relationships between relevant policymakers. Some countries may already have established inter-ministerial or multi-stakeholder mechanisms to address issues in the OGS sector. **Tool 13** (Exploratory Meeting Planning Form) provides resources for the preparation of such multi-stakeholder discussions. If current engagement mechanisms do not exist, policymakers can use the Stakeholder Engagement Plan, **Tool 14**, to identify strategies for engagement.

The Zambia Ministry of Energy created the Zambia Off-Grid Energy Task Force in 2018 to coordinate and oversee OGS initiatives and increase energy access particularly in rural areas in line with government objectives. The task force has six government representatives as well as eight cooperating partners, and five members representing the private sector as seen in Table 5.3.¹⁷⁰

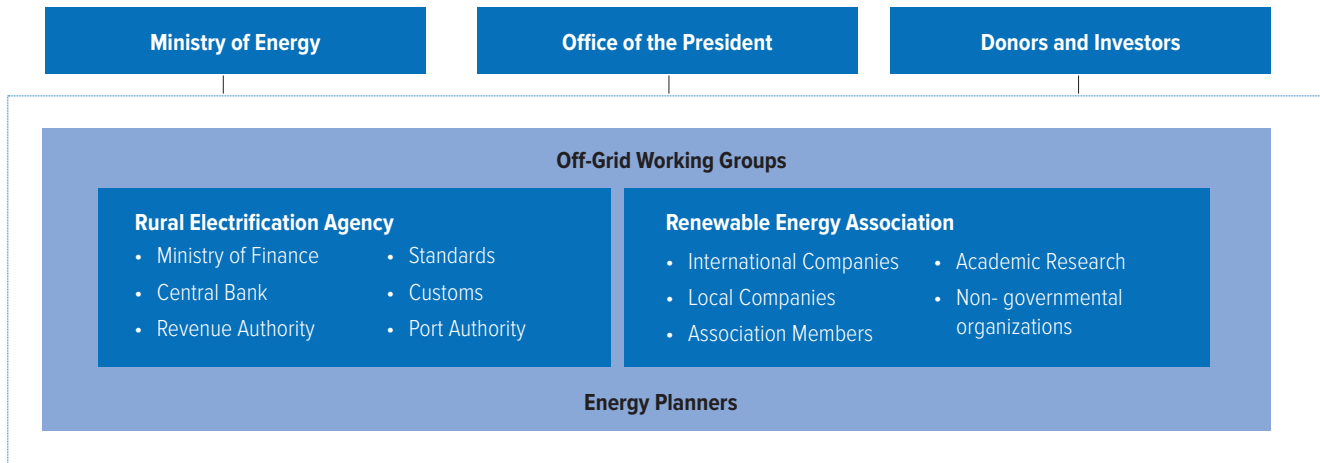
Table 5.3: Members of the Zambia Off-Grid Energy Task Force

Government	Cooperating Partners	Private Sector	
Permanent Members	Department for International Development (DFID)	Solar Industry	
Ministry of Energy (MOE)	Swedish International Development Cooperation Agency (SIDA)	Association of Zambia (SIAZ)	
Ministry of Finance (MOF)	College of Eastern Europe (EU KEW)	Zambia Renewable Energy Association	
Ministry of National Development Planning (MNDP)	International Finance Corporation (IFC)	Mini Grid Cluster	
Office of the Vice President (OVP)	African Development Bank (AFDB)	Bioenergy Cluster	
Rural Electrification Authority (REA)	World Bank (WB)	Finance Cluster	
Energy Regulation Board (ERB)			
Others			Sub-Committees:
Zambia Bureau of Standards (ZABS)			Land Rights,
Zambia Environmental Management Agency (ZEMA)			Consumer Affordability, Fiscal Incentives
Ministry of Local Government (MLG)			
Ministry of Community Development & Social Services (MCDSS)			

¹⁷⁰ Africa Clean Energy Program Technical Assistance Facility, Coordination in Africa's off-grid sector is accelerating progress towards universal energy access, 2020, p. 4. Accessible [here](#).

Sierra Leone has an off-grid working group that includes multiple government ministries as shown in Figure 5.3. Led by the Ministry of Energy, functions of the working group include serving as a platform for addressing policy issues affecting rural electrification and supporting the Ministry of Energy’s result-based approach to rural electrification.¹⁷¹

Figure 5.3: Structure of the Sierra Leone Off-Grid Working Group



Once the engagement mechanism is established, we suggest policymakers schedule a series of workshops with different stakeholders and sub-working groups to analyze specific policy issues and options. Given the complexity of the issues and the need to solicit input from stakeholders outside the government, we suggest spacing the workshops out over a three-to-four-month period to allow time for reflection, additional fact finding, and evaluation.

Workshops should be adopted with a test and learn approach, knowing it may take a few rounds of engagement to identify the stakeholders best suited for the subsequent policy dialogues. It is important to allow the first workshop to serve as a foundation for later discussions around policy options.

Beginning the policy option discussions too soon can create resistance and it will likely take time to identify the right ministry representatives to be engaged in those discussions. As the policy focus narrows, small workshops on the priority issues work better. We provide a sample Workshop Agenda, **Tool 15**, that includes activity-based approaches and policy option scenarios. These workshops can be used to engage

policymakers to ground truth the influence of current policies and market conditions and explore policy solutions.

It is important to factor in that policymakers may be at different levels of decision making and at different starting points. Some policymakers may have already identified policy priorities, in which case they may be ready to move ahead to the policy development and implementation. Those who are just starting the process can use Tools 2 and 10 to identify the key policy issues. For example, in Chapter Four, Tool 2 is applied and uses the 3 As framework to identify 12 issues. This can serve as a good starting point.

After the priority policy issues are identified, it is important for policymakers to define the desired policy outcome. We suggest four potential policy outcomes: (1) policy coordination, (2) policy modification, (3) policy adoption, and (4) policy enforcement. A policymaker’s preferred outcome will depend on the current state of the policy on the priority issue. Using the example of the issue of national product standards of SHS products, we explore in Figure 5.4 how different contexts could lead a policymaker to select a different outcome as its policy goal.

¹⁷¹ Id., 5.



Figure 5.4: Sample of Different Policy Outcomes for National Product Standards

<p>Policy coordination</p> <p>A good choice if the energy policymaker wants to promote consumer purchase of SHS products that meet international quality standards through policy coordination with a rural development agency allocating funding to support residents purchase of SHS equipment.</p>	<p>Policy enforcement</p> <p>A good choice if national product standards for SHS exist but the energy policymaker believes that limited understanding or enforcement of the standards is leading to low-quality products entering the market.</p>
<p>Policy adoption</p> <p>A good choice if national product standards for SHS have not been established and the energy policymaker wants the standards setting body to set national product standards for SHS equipment to reduce the supply of low-quality products.</p>	<p>Policy modification</p> <p>A good choice if national product standards for SHS exist but the energy policymaker wants the standards setting body to modify those standards to harmonize with international standards.</p>

The Policy Options Worksheet, Tool 16, can be used to plot policy options across the policymaking continuum applied in Chapter Four: (1) wait-and-see, (2) light-touch, and (3) prescriptive. Facilitators of the workshop can use Tool 16 to help workshop participants assess the benefits and disadvantages of specific approaches through the lens of different stakeholders including the government, OGS providers, and consumers.

We also included a tool, Tool 17, to gather stakeholder input on the cost and effectiveness of the policy options

being considered. Stakeholders will also need to consider the risks that accompany each policy option. The Risk Analysis, Tool 18, is designed to help policymakers identify and measure the magnitude of risks of pursuing each policy option. For example, rules for e-waste management may increase the costs of SHS units and reduce consumer purchasing, as shown in Figure 5.5. Tool 19 provides a questionnaire to collect and track feedback from participants after each policy dialogue.

Figure 5.5: Example of Applying the Risk Analysis Tool (Tool 18)

Policy Risk	E-waste management fees assessed on the consumer at the time of purchase may increase the costs of SHS units and reduce consumer purchasing	
Likelihood of Happening	Increase Cost of SHS units	Reduce Consumer Purchasing
High	X	
Medium		X
Low		

STEP 5

5.5 Roadmap Development

If the toolkit is being used to pursue a broader policy dialogue process and associated reform agenda, toolkit users can design a policy roadmap. Once the stakeholders through the consultations have reached a point of general agreement on priority policy issues and possible policy options the champion can draft a roadmap for policy action. Based on use of the toolkit in Ethiopia and Uganda we developed a template that can be used to generate buy-in on policy approaches and activities to be taken to address the issues identified as impeding the growth of the OGS and PAYG market. This template is provided in **Tool 20**.

When the champion and lead agency have approved the draft roadmap, the champion should engage in a round of validation of the roadmap. Testing of the toolkit revealed this is best conducted by the champion through individual discussions with policymakers identified as owners of the activities in the roadmap. These one-on-one consultations, as opposed to the setting of a multi-stakeholder workshop, provide an opportunity for more candid feedback on selected approaches and the stakeholders' willingness to assume ownership of the process or policy activities identified as within its jurisdiction in the roadmap. Stakeholders may suggest a shift in ownership of the issues or prioritization in these meetings that can lead to revision of the roadmap. As a final step the government should

publish the roadmap with endorsement by all the associated ministries. It is important to generate commitment to move forward on the actions in the roadmap.

STEP 6

5.6 Planning for Policy Implementation

It is likely that the roadmap will present a pathway to policy adoption, but it may fall short of reaching policy adoption. The policy adoption process will be driven by the governing administrative rules of the ministry with jurisdiction to adopt the policy. It will also depend on the policymaker's choice of policy instrument. Adopting a new policy will likely take longer than modifying a policy or developing a strategy for policy enforcement or coordination.

Effective policy implementation is the end goal — not policy adoption. One way to measure a policy's effectiveness and incentivize implementation is to establish a set of Key Performance Indicators (KPIs) and milestones during the policy development process. This can be done using the KPI and Milestones Tool, **Tool 21**, designed to help policymakers set KPIs and assign responsibility for providing data to analyze market performance against those KPIs. Figure 5.6 uses an example of the policy issue on reducing duty tax on OGS to support access to lower cost PAYG product offerings to show how the tool can be used to monitor a policy's effect.

Figure 5.6: Example of Applying the KPI and Milestones Tool (Tool 21)

KPIs and Milestones							
Policy:							
Desired Outcome	Indicators	Data Source (Who/Frequency)	Data Analysis (Owner)	Publicly Available (Y/N)	Milestones (Market Shift to QV Products)		
					Year 1	Year 2	Year 5
Increased supply and use of QV OGS products	Unit sales	Industry/semi-annually	Rural Electric Agency	Y	15% market shift to QV products	25% market shift to QV products	90% market shift to QV products
	Import data	Customs Office/monthly					
	Customer complaints	Rural Electric Agency/semi-annually					

As part of the policy implementation, a communications strategy should be developed to announce and build support for the policy action. The communications strategy should outline key messages designed to reach the target audience and identify the messengers who will lead the communications. Communications channels should also be identified, as well as the frequency of communications by channel. **Tool 22** can be used to identify these key components of the communications strategy. Figure 5.7 uses the example of policies to accelerate consumer awareness of how to recycle OGS product components to show how the communications plan tool could be used to communicate the policy change and incentivize consumer behavior.

Figure 5.7: Example of Applying the Communications Strategy Plan Tool (Tool 22)

Why	Increase recycling of OGS product components			
Purpose				
What Information	What can be recycled and how to recycle the components			
Target Audience Target group	Consumers; OGS retailers; E-waste handlers			
Who	Lead	Renewable Energy Assoc.	Partners	Ministry of Environment Ministry of Energy Rural Electric Agency
How Type	Flyers; Radio spots; Posters; Newspaper			
When Timeframe and frequency	Constant; Weekly; Annually			
Evaluation	Recycling volume			
COMMUNICATIONS BUDGET (5,700)				
Type of Communication	Per Unit Cost	Quantity	Subtotal	Funder
Flyers (Design and Printing)	.10	5000	500	Renewable Energy Association
Radio spots	100	12	1200	Ministry of Environment
Posters	25	1000	25000	Rural Electric Agency
Newspaper	75	20	1,500	Ministry of Energy
Social Media	.02	1000	200	Renewable Energy Association

As part of the planning for policy implementation we recommend policymakers create a budget forecast to determine the resources needed to support effective implementation and to identify the mechanism and source of revenue to pay for those resources. If you consider the cost and effectiveness of the policy in the policy analysis phase using Tool 18 you can use that analysis as the starting point for the budget. Depending on the level of detail, you might want to supplement that analysis to build a more specific budget with line items. Use **Tool 23** to identify the implementation resources needed, quantify the costs, and identify the funding source.

Figure 5.8: Example of Applying the Budget Forecast Tool (Tool 23)

POLICY IMPLEMENTATION BUDGET (TOTAL)				
Resource Need	Per Unit Cost	Quantity	Subtotal	Funding Source
Additional staff:				
Monitoring and evaluation				
Industry liaison staff member				
Data analysts				
Market surveillance/data collection				
Staff				
Travel costs				
Policy trainings				
Staff				
Meeting costs				
Inter-ministerial/task force semi-annual meetings				
Staff				
Meeting costs				
Communications strategy				
Consultants				

Annex Section

Annex A: Potential Policy Options, Advantages, and Disadvantages

Issue 1: Ease of Market Entry and Competition

A government's requirements for market entry to do business will impact the composition of OGS product suppliers. Policymakers have options across the policymaking continuum to establish market entry requirements for companies to do business.

Enabling Environment Component: Availability	ISSUE: EASE OF MARKET ENTRY AND COMPETITION		
	Wait-and-See	Light-Touch	Prescriptive
Policymakers with Influence	Ministry of Trade, Lead Energy Policymaker, Competition Authority	Ministry of Trade, Lead Energy Policymaker, Financial Services Regulator	Ministry of Trade, Lead Energy Policymaker
POLICY OPTIONS	<ul style="list-style-type: none"> Government allows OGS companies to do business after meeting general business licensing requirements. Government requires OGS to submit quarterly data on OGS sales and use. Government uses its competition policy framework to address allegations of anti-competitive behavior. 	<ul style="list-style-type: none"> Government issues guidance on regulatory classification of OGS/PAYG companies that provides clarity on sector regulation. Government becomes a purchaser of OGS products and services and selects specific OGS providers as suppliers through a procurement process. 	<ul style="list-style-type: none"> Government issues rules that require OGS companies to register. Government issues rules that require OGS companies to be licensed. Government issues rules that require licensing of OGS companies' consumer financing activities. Government grants OGS companies' exclusivity to serve certain areas in exchange for incentives.
ADVANTAGES	<p>Government:</p> <ul style="list-style-type: none"> Low cost and effort. Promotes free and open competition among OGS providers. Enables informed decision making for future policy decisions. Increased visibility from sector data enables monitoring to determine if and when additional entry requirements are needed. 	<p>Government:</p> <ul style="list-style-type: none"> Prevents imposition of entry regulations beyond those determined as appropriate for the sector. Controls OGS purchasing process and selection of preferred vendors. 	<p>Government:</p> <ul style="list-style-type: none"> Establishes government authority to approve OGS companies or specific activities. Establishes government authority to exercise ongoing oversight over OGS companies. Establishes government authority to penalize OGS companies or rescind their authorization to operate. Enables targeting of OGS service delivery to specific areas.
	<p>OGS Sector:</p> <ul style="list-style-type: none"> Speeds up market entry. Low cost, no additional regulatory burden to do business. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> Prevents conflicting entry regulations and provides regulatory clarity. Government bulk purchasing reduces cost and associated risk of individual sales. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> Provides regulatory clarity. Increases investors' confidence in OGS companies who value government approval in due diligence.

		<ul style="list-style-type: none"> Government targeted incentives subsidize consumer purchase costs for OGS units and increase sales. 	
	<p>Consumer:</p> <ul style="list-style-type: none"> Competitive offerings increase consumer choice of OGS products and pricing. 	<p>Consumer:</p> <ul style="list-style-type: none"> Regulatory clarity increases sector investment and choice of OGS products and pricing. Government purchasing reduces or eliminates consumer cost of OGS purchase. 	<p>Consumer:</p> <ul style="list-style-type: none"> Government vetted OGS supply chain reduces consumer risk. Government incentives increase OGS supply in target areas and reduce consumer cost of OGS purchase.
DISADVANTAGES	<p>Government:</p> <ul style="list-style-type: none"> Limited control/review of OGS providers by energy authority. Incomplete information for future policy decisions. Competition framework and competition authority may not exist or be under-resourced to address anti-competitive market behaviors. 	<p>Government:</p> <ul style="list-style-type: none"> Requires government determination of regulatory categorization of OGS companies. Requires investment to cover cost of OGS bulk purchases. 	<p>Government:</p> <ul style="list-style-type: none"> May limit OGS sector supply and competition. Requires investment to implement registration or licensing regime and provide ongoing oversight. Requires investment to define optimal competition level.
	<p>OGS Sector:</p> <ul style="list-style-type: none"> OGS providers offering counterfeit or low-quality products can enter the market and hurt consumer sentiment toward quality providers. Adds burden of data submission. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> Moves OGS sector towards potential regulation, increasing effort and cost to comply. Government purchasing could distort the market for consumer purchasing and benefits preferred vendors. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> Increases cost of market entry and regulatory compliance. Lowers speed of market entry. Restricts market opportunity to select number of providers. Restricts competitive offerings in exclusive distribution territories.
	<p>Consumer:</p> <ul style="list-style-type: none"> Consumers could buy counterfeit or low-quality products. 	<p>Consumer:</p> <ul style="list-style-type: none"> Restricts product supply or increases product pricing. Delays consumer access to OGS products until government purchases and distributed products. Increases product prices for consumers not receiving government purchased products. 	<p>Consumer:</p> <ul style="list-style-type: none"> Limits competitive OGS providers and product offerings. Increases product prices to recover regulatory compliance costs. Restricts number of OGS providers and product offerings. Delays distribution of products to areas not targeted for priority distribution.

Issue 2: Quality and Reach of Digital Broadband Infrastructure

Consumers and OGS providers need reliable access to broadband services. Policymakers have options across the policymaking continuum to address expanding the quality and reach of broadband infrastructure.

Enabling Environment Component: Availability	ISSUE: QUALITY AND REACH OF DIGITAL BROADBAND INFRASTRUCTURE		
	Wait-and-See	Light-Touch	Prescriptive
Policymakers with Influence	Telecommunications Regulator	Telecommunications Regulator	Telecommunications Regulator
POLICY OPTIONS	<ul style="list-style-type: none"> MNOs provide services in compliance with their licenses and business decisions. 	<ul style="list-style-type: none"> Government agencies share data to map areas of need for OGS and improved mobile network infrastructure. 	<ul style="list-style-type: none"> Government requires data reporting on mobile network coverage and customer penetration.
	<ul style="list-style-type: none"> Consumers rely on existing redress mechanisms provided by the telecommunications regulator and provider to address poor service availability. Competition authority investigates and monitors market concentration and anti-competitive behavior in the telecommunications market. 	<ul style="list-style-type: none"> Government creates a multi-agency and stakeholder working group to collaborate on improving access to energy and mobile services. Government offers access to public funding and universal service and access funds to support mobile network upgrades in rural areas. 	<ul style="list-style-type: none"> Government allocates universal service and access funds and public funding to improve broadband coverage in areas with high OGS need. Government sets rural network coverage targets for mobile network service providers as a condition of their spectrum licenses that support OGS use.
ADVANTAGES	<p>Government:</p> <ul style="list-style-type: none"> Low cost and effort Government relies on telecommunications regulators to address grievances. 	<p>Government:</p> <ul style="list-style-type: none"> Government creates common policy agenda among energy and telecommunications sector policymakers. Access to public funding de-risks investment in mobile network infrastructure and increasing mobile network coverage in OGS priority areas. Improved access to broadband services and PAYG products enables participation in the digital economy 	<p>Government:</p> <ul style="list-style-type: none"> Use of universal service and access funds de-risk investment in broadband infrastructure in low density areas. Increased digital inclusion and energy access enable broader participation in the digital economy.
	<p>OGS Sector: None</p>	<p>OGS Sector:</p> <ul style="list-style-type: none"> Government data informs marketing and distribution strategies for OGS products. Government investment in digital infrastructure supports offering OGS products with remote monitoring and PAYG. Reliable digital infrastructure supports use of digital platforms across distribution channels and with sales teams. Reliable digital infrastructure and mobile phone use allow SMS push messaging to customers and support call center customer service. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> Government data informs marketing and distribution strategies for OGS products. Government investment in digital infrastructure supports offering OGS products with remote monitoring and PAYG. Reliable digital infrastructure supports use of digital platforms across distribution channels and with sales teams. Reliable digital infrastructure and mobile phone use allow SMS push messaging to customers and support call center customer service.
	<p>Consumer: None</p>	<p>Consumer:</p> <ul style="list-style-type: none"> Improved access to broadband services and PAYG products enables participation in the digital economy. 	<p>Consumer:</p> <ul style="list-style-type: none"> Improved access to digital services and PAYG products enables participation in the digital economy.

		<ul style="list-style-type: none"> • OGS products are used to power mobile devices and digital services. • Increased opportunities to create digital businesses. 	<ul style="list-style-type: none"> • OGS products are used to power digital devices and digital services. • Increased opportunities to create digital businesses.
DISADVANTAGES	Government: <ul style="list-style-type: none"> • No influence over investment in mobile network infrastructure. • Service complaints may not prompt additional investment in broadband infrastructure. • Grievance mechanism is outside the zone of influence of the energy authority. • Competition framework and competition authority may not exist or be under-resourced to address anti-competitive market behaviors. 	Government: <ul style="list-style-type: none"> • Requires investment of time and resources to create and pursue shared agenda with telecommunications policymakers. • Requires investment in establishing a process to administer and allocate universal service and access funds or public funding. • Requires investment of universal service and access funds or other public funds. • Telecommunications regulation is outside the zone of influence of the energy authority. 	Government: <ul style="list-style-type: none"> • Requires investment of universal service and access funds or other public funding. • Requires investment in establishing a process to administer and allocate universal service and access funds or public funding. • Modifying MNO licenses may not be feasible. • Telecom regulation is outside the zone of influence of the energy authority.
	OGS Sector: <ul style="list-style-type: none"> • Poor digital infrastructure restricts offering of OGS products with remote monitoring and PAYG. 	OGS Sector: None.	OGS Sector: None.
	Consumer: <ul style="list-style-type: none"> • Poor digital infrastructure restricts supply of OGS offerings with remote monitoring and PAYG. • Service complaints may not prompt additional investment in digital infrastructure. • Cost to consumers to seek redress through formal channels. 	Consumer: None.	Consumer: None.

Issue 3: Mobile Money and Digital Payments

PAYG offerings have accelerated in markets where mobile money is available. Policymakers have options across the policymaking continuum to support the availability and consumers' use of mobile money.

Enabling Environment Component: Availability	ISSUE: MOBILE MONEY AND DIGITAL PAYMENTS		
	Wait-and-See	Light-Touch	Prescriptive
<p>Polymakers with Influence</p>	<p>Financial Services Regulator, Central Bank</p>	<p>Financial Services Regulator, Central Bank</p>	<p>Lead Energy Authority, Financial Services Regulator, Central Bank</p>
<p>POLICY OPTIONS</p>	<ul style="list-style-type: none"> Government relies on private sector providers and current regulatory policies to provide adequate mobile money and digital financial services for PAYG. Consumers rely on redress mechanisms provided by the financial services regulator to resolve grievances for transaction errors. 	<ul style="list-style-type: none"> Government conducts consumer education campaign to raise consumer awareness on OGS products and increase digital financial literacy. Government financial services regulation increases access to rural digital payment agents or banking agents. Government financial services regulation allows tiered KYC that increases consumer’s ability to meet the identity requirements to open a digital payments account. Government regulations promote interoperability of mobile wallets including open APIs to expand payment options for PAYG consumers. 	<ul style="list-style-type: none"> Government regulation reduces, removes, or subsidizes transaction fees for digital payments made for OGS products and services. Government refrains from taxation of digital payments transactions made for OGS products and services. Government programs reduce cost of mobile phone purchase and airtime.
<p>ADVANTAGES</p>	<p>Government:</p> <ul style="list-style-type: none"> Low cost and effort. No need to adjust to the current regulatory framework. Government relies on financial services regulators to address consumer grievances on payment transactions. Investment may be needed to adequately resource consumer redress mechanisms to ensure consumers’ grievances are resolved efficiently. 	<p>Government:</p> <ul style="list-style-type: none"> Consumers increased understanding of and capacity to use digital financial services, like mobile money, increases PAYG purchases and energy access. Increase in rural mobile money agents increases supply and purchase of PAYG products. Tiered KYC increases consumers with mobile money accounts used for payments for PAYG products. Interoperability and open APIs increase consumers digital payment options for PAYG products. 	<p>Government:</p> <ul style="list-style-type: none"> Reduces consumer cost of mobile money payments for OGS services. Improves digital inclusion through mobile phone ownership and increased affordability of mobile services.
	<p>OGS Sector:</p> <ul style="list-style-type: none"> Consumer grievances on payments are directed to the regulator with jurisdiction over payment providers for resolution. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> Consumers increased understanding of and capacity to use digital financial services, like mobile money, increases PAYG purchases. Increase in rural mobile money agents increases PAYG distribution and payment points and purchase of PAYG products. Increase in mobile money account openings increases purchase of PAYG products. Digital payments interoperability provides efficiencies and reduces consumer financing costs. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> Reduces consumer cost of mobile money payments for OGS services. Improves digital inclusion through mobile phone ownership and increased affordability of mobile services.
	<p>Consumer:</p> <ul style="list-style-type: none"> Protected by existing financial services regulation on transaction disputes. 	<p>Consumer:</p> <ul style="list-style-type: none"> Access to additional information increases consumer capabilities to use digital financial services including for PAYG purchases. 	<p>Consumer:</p> <ul style="list-style-type: none"> Reduces consumer cost of mobile money payments for OGS services.

		<ul style="list-style-type: none"> Increased mobile money agents improve convenience of making PAYG payments and PAYG purchases. Tiered KYC requirements provide more options to meet identity requirements for opening a mobile money account. Increases payment options for PAYG products. 	<ul style="list-style-type: none"> Improves digital inclusion through mobile phone ownership and increased affordability of mobile services.
DISADVANTAGES	Government: <ul style="list-style-type: none"> Limited control/review of OGS market conditions. Consumers may prefer government mechanisms that provide redress against the PAYG provider not the payment provider. Grievance mechanism is outside the zone of influence of the energy authority. 	Government: <ul style="list-style-type: none"> Requires investment of resources to build, create and administer education campaigns to increase consumer awareness of OGS and improve digital financial literacy. Requires investment to adjust mobile money agent regulation. Digital payments and banking industry may resist interoperability for cost and competitive reasons 	Government: <ul style="list-style-type: none"> Requires investment in financial services regulation to adjust transaction pricing. Digital payments and banking industry may resist fee reduction for payments for specific services. Preferred taxation of specific transaction types may be challenged.
	OGS Sector: <ul style="list-style-type: none"> Poor digital payment infrastructure restricts use of digital payments in PAYG offerings. 	OGS Sector: None.	OGS Sector: None.
	Consumer: <ul style="list-style-type: none"> Poor digital infrastructure restricts use of digital payments in PAYG offerings that may provide convenience and cost savings. 	Consumer: None.	Consumer: None.

Issue 4: Fiscal Policies for OGS Products, Services, and Mobile Money

Governments can use fiscal policy to support OGS affordability and provide incentives to OGS providers. Policymakers have options across the policymaking continuum to use fiscal policy to support OGS use.

Enabling Environment Component: Affordability	ISSUE: TAXATION		
	Wait-and-See	Light-Touch	Prescriptive
Policyholders with Influence	Revenue Authority, Ministry of Finance	Revenue Authority, Ministry of Finance	Revenue Authority, Ministry of Finance
POLICY OPTIONS	<ul style="list-style-type: none"> Government does not adjust fiscal policies that apply to OGS products or services to promote market development. 	<ul style="list-style-type: none"> Government publishes guidance clarifying the fiscal policies that apply to OGS products and services to address inconsistent application and confusion. 	<ul style="list-style-type: none"> Government uses fiscal policy to reduce fees and taxation to promote affordability and use of OGS: 1. Exempts OGS products from duties, value added tax (VAT); 2. Reduces duties or VAT applied to OGS products without limitation in scope or time.

		<ul style="list-style-type: none"> Government studies the impact of adjusting fiscal policy for the OGS sector including increased fiscal revenue. Government offers limited (by type or duration) fiscal incentives to incentivize supply of specific OGS products or services (such as quality-verified products). 	<ul style="list-style-type: none"> Government refrains or exempts from taxation mobile money and other payment transactions for OGS products and services.
ADVANTAGES	Government: <ul style="list-style-type: none"> No impact on government revenue 	Government: <ul style="list-style-type: none"> Fiscal policies are applied consistently to OGS products. Research quantifies potential impact and trade-off of different fiscal policies for the OGS sector. Government allocation of fiscal resources promotes specific market behavior by OGS provider. 	Government: <ul style="list-style-type: none"> Changes to fiscal policy prompt OGS providers to reduce product pricing, increasing consumer affordability and use of OGS products. Increased use of OGS products generates additional economic activity that contributes to government revenue.
	OGS Sector: None	OGS Sector: <ul style="list-style-type: none"> Government fiscal policies are consistently applied eliminating uncertainty of fees and taxes applied to OGS products. Government fiscal incentives reduces cost of goods sold. 	OGS Sector: <p>Government fiscal policy adjustments reduces cost of goods sold.</p>
	Consumer: None	Consumer: <ul style="list-style-type: none"> Lower cost of goods sold lowers product prices and increases consumer affordability of OGS products. 	Consumer: <ul style="list-style-type: none"> Lower cost of goods sold increases consumer affordability of OGS products
DISADVANTAGES	Government: <ul style="list-style-type: none"> Fiscal policies are not used to increase consumer affordability or use of OGS products. 	Government: <ul style="list-style-type: none"> Requires investment in fiscal authorities, custom office, and lead energy policymaker to build government understanding of OGS products and capacity to consistently apply fiscal policies. Requires investment to study impact of fiscal policy alternatives. Reduces short-term fiscal revenue from taxation of OGS products. 	Government: <ul style="list-style-type: none"> Requires investment in development of new fiscal policy and to build capacity for consistent application. Reduces fiscal revenue from taxes or fees levied on OGS products. Reduces fiscal revenue derived taxes or fees levied on mobile money or other payment transactions.
	OGS Sector: <ul style="list-style-type: none"> Fiscal policies that apply to OGS products and services may reduce consumer affordability of OGS products. Inconsistent application of fiscal policies to OGS products and services are not addressed. 	OGS Sector: <ul style="list-style-type: none"> Limited adjustment of fiscal policy may not be enough to impact consumer affordability and demand. 	OGS Sector: None
	Consumer: <ul style="list-style-type: none"> Fiscal policies that add costs to OGS products are paid by consumers and reduce consumer affordability of OGS products. 	Consumer: <ul style="list-style-type: none"> Limited adjustment of fiscal policy may not be enough to impact consumer affordability and demand. 	Consumer: None

Issue 5: Availability and Cost of Capital

Governments can influence the supply and cost of funding available to OGS providers. Policymakers have options across the policymaking continuum to influence OGS providers' cost of capital.

Enabling Environment Component: Affordability	ISSUE: AVAILABILITY AND OGS COST OF CAPITAL		
	Wait-and-See	Light-Touch	Prescriptive
Policymakers with Influence	Lead Energy Authority, Ministry of Finance, Financial Services Regulator	Lead Energy Authority, Ministry of Finance, Financial Services Regulator	Lead Energy Authority, Ministry of Finance, Financial Services Regulator
POLICY OPTIONS	<ul style="list-style-type: none"> Government forbears from restricting OGS providers sources of financing and from providing government assistance to access financing. 	<ul style="list-style-type: none"> Government encourages sources of local funding for OGS companies in collaboration with financial services regulators. Government offers public funding to de-risk private investment and the cost of credit for OGS (blended finance). 	<ul style="list-style-type: none"> Government establishes public credit facility with concessional rates for OGS providers. Government provides subsidies to consumers to offset financing costs incurred by OGS providers. Financial services regulator sets portfolio target for local bank lending to OGS companies.
ADVANTAGES	Government: <ul style="list-style-type: none"> Low cost. 	Government: <ul style="list-style-type: none"> Increases OGS supply. Additional funding sources reduce cost of financing and increasing consumer affordability. 	Government: <ul style="list-style-type: none"> Increases OGS supply. Additional funding sources reduce OGS provider cost of financing and increase consumer affordability. Consumer subsidies offset OGS provider financing costs and increase consumer affordability. Increases local financing of OGS companies.
	OGS Sector: <ul style="list-style-type: none"> No restrictions on sources of funding. 	OGS Sector: <ul style="list-style-type: none"> Government support of blended finance reduces financing costs. Access to local funding reduces foreign exchange costs. 	OGS Sector: <ul style="list-style-type: none"> Additional funding sources provide lower cost financing. Access to local funding reduces foreign exchange costs.
	Consumer: None.	Consumer: <ul style="list-style-type: none"> Lower cost of financing reduces OGS product pricing and increases consumer affordability of OGS products 	Consumer: <ul style="list-style-type: none"> Lower cost of financing reduces OGS product pricing and increases consumer affordability of OGS products.
DISADVANTAGES	Government: <ul style="list-style-type: none"> No oversight over ownership or financing sources of OGS companies. 	Government: <ul style="list-style-type: none"> Requires investment to collaborate with financial services regulator. Requires investment of government resources to support investment in blended finance facilities. 	Government: <ul style="list-style-type: none"> Requires investment of government resources to establish, support and administer credit facilities that offer competitive pricing. Requires investment of government resources to establish, support and administer subsidies. Leadership by financial services regulation is outside the zone of influence of the energy authority.

	OGS Sector: <ul style="list-style-type: none"> No government support for increasing access to local sources of financing or public funding. 	OGS Sector: None	OGS Sector: None
	Consumer: <ul style="list-style-type: none"> High cost of capital for OGS providers contributes to OGS product pricing and reduces consumer affordability. 	Consumer: None	Consumer: None

Issue 6: Access to Data for Credit Scoring

PAYG providers use data to qualify consumers for PAYG financing. Policymakers have options across the policymaking continuum to support OGS providers access to data for credit scoring.

Enabling Environment Component: Affordability	ISSUE: DATA FOR CREDIT SCORING		
	Wait-and-See	Light-Touch	Prescriptive
Policymakers with Influence	Lead Energy Authority, Data Protection Supervisory Authority	Lead Energy Authority, Data Protection Supervisory Authority	Lead Energy Authority, Data Protection Supervisory Authority
POLICY OPTIONS	<ul style="list-style-type: none"> Government does not regulate use of consumer data for credit scoring. OGS companies are not restricted from entering commercial relationships to share data with third parties (including MNOs) for credit scoring. Government relies on OGS companies to self-regulate by endorsing and following the GOGLA Code of Consumer Protection principle on personal data privacy. 	<ul style="list-style-type: none"> Government provides guidance on how existing data regulation and data protection policies apply to use for credit scoring in the OGS sector. Government encourages reporting and provides OGS providers with access to data from credit agencies (private or public) to support OGS financing availability. 	<ul style="list-style-type: none"> Government adopts policies on data sharing between OGS companies and third parties (permissive or restrictive). Government requires OGS providers to report consumer repayment data to credit bureaus. Government establishes and maintains credit bureaus with data used by OGS companies for credit scoring.
ADVANTAGES	Government: <ul style="list-style-type: none"> Low cost and effort. Consistent application of data protection framework across sectors. Commercial data sharing may increase availability of PAYG and consumer financing. Provides an opportunity for OGS providers to prove their ability to self-regulate without government intervention. 	Government: <ul style="list-style-type: none"> Increased responsible use of data. Access to credit bureau data increases supply and demand for PAYG. 	Government: <ul style="list-style-type: none"> Data policies specific to the OGS sector increase PAYG supply and suitability of financing terms. More consumers qualify for suitable PAYG financing.

	<p>OGS Sector:</p> <ul style="list-style-type: none"> No additional regulation on data use by the OGS sector. Flexibility to develop data policies. Commercial data sharing arrangements can inform PAYG financing decisions. Provides an opportunity for OGS providers to prove their ability to self-regulate without government intervention. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> Guidance informs data use for credit scoring. Access to credit bureau data increases efficiency of credit scoring and supports increased supply of PAYG offerings. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> Exemption from regulation allows efficient data management for credit scoring. Data sharing informs PAYG financing decisions. Credit bureaus reduce OGS providers' data collection costs and improve credit scoring.
	<p>Consumer:</p> <ul style="list-style-type: none"> Company data policies provide sufficient protection against risk. Data collection and sharing arrangements may increase availability of PAYG financing. 	<p>Consumer:</p> <ul style="list-style-type: none"> Increases consumer protection through some level of government oversight over OGS providers' use of data for credit scoring. Increased access to PAYG financing. 	<p>Consumer:</p> <ul style="list-style-type: none"> Increases access to PAYG products and suitable OGS financing. Increases consumer protection from government oversight over OGS providers use of data for credit scoring. Reporting of data to credit bureaus facilitates access to formal credit beyond PAYG.
DISADVANTAGES	<p>Government:</p> <ul style="list-style-type: none"> Consumers bear the risk of OGS providers sharing their data without their consent. Industry self-regulation is not effective in protecting consumers. 	<p>Government:</p> <ul style="list-style-type: none"> Data protection policies and data scoring fall outside the expertise and zone of influence of the lead energy authority. Credit bureaus may not exist or have limited data on prospective PAYG customers. 	<p>Government:</p> <ul style="list-style-type: none"> Data protection policies and data scoring fall outside the expertise and zone of influence of the lead energy authorities. Tailoring data policies to the OGS sector creates inconsistency in application of national data policies. Credit bureaus may not exist or have limited data on prospective PAYG customers.
	<p>OGS Sector:</p> <ul style="list-style-type: none"> Access to shared data is limited to negotiation of commercial agreements. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> Government guidance may restrict optimal use of data for credit scoring and reduce PAYG offerings. OGS providers may find limited value in data from credit bureaus. OGS providers lose a competitive advantage in reporting data to credit bureaus. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> Government policies for the sector may restrict optimal use of data for credit scoring and reduce PAYG offerings. Rules that restrict data sharing with third parties could eliminate access to valuable data for PAYG offerings. OGS providers may find limited value in data from credit bureaus. OGS providers lose a competitive advantage in reporting data to credit bureaus.
	<p>Consumer:</p> <ul style="list-style-type: none"> Consumers' redress for grievances on misuse of data is limited to commercial practices of OGS provider. 	<p>Consumer:</p> <ul style="list-style-type: none"> Policies could reduce PAYG offerings. OGS providers reporting of data to credit bureaus could create negative credit scores for consumers. 	<p>Consumer:</p> <ul style="list-style-type: none"> Policies could reduce PAYG offerings. OGS provider reporting of data to credit bureaus could create negative credit scores for consumers.

Issue 7: Financial Regulation

PAYG providers permit consumers to pay for products over time; how that financing is classified under a country’s banking laws can affect PAYG providers costs and product offerings. Policymakers have options across the policymaking continuum on how they classify that financing.

Enabling Environment Component: Affordability	ISSUE: FINANCIAL REGULATION		
	Wait-and-See	Light-Touch	Prescriptive
Policymakers with Influence	Lead Energy Authority	Lead Energy Authority, Financial Services Regulator	Lead Energy Authority, Financial Services Regulator
POLICY OPTIONS	<ul style="list-style-type: none"> Government forbears from oversight of OGS companies’ consumer financing and does not require government licensing or pre-approval. Consumers rely on current consumer protection laws and processes to resolve complaints on OGS product and service financing. 	<ul style="list-style-type: none"> Government publicly signals its support for consumer financing for OGS purchases. Government offers guidance through clarification or letters of no-objection on regulatory classification of OGS providers offering financing. 	<ul style="list-style-type: none"> Government issues rules on classification of OGS financing that determines level of oversight and minimum entry requirements.
ADVANTAGES	Government: <ul style="list-style-type: none"> Low cost and effort. Promotes PAYG market entry and competition. 	Government: <ul style="list-style-type: none"> Increases PAYG product supply and competition. Clarifies policymakers with oversight authority over PAYG companies. 	Government: <ul style="list-style-type: none"> Establishes regulatory framework for the consumer financing of OGS products.
	OGS Sector: <ul style="list-style-type: none"> Flexibility in structuring financing. No minimum capital requirements. Easier market entry. Low cost of regulatory compliance. 	OGS Sector: <ul style="list-style-type: none"> Reduces risk of regulatory uncertainty for OGS providers providing consumer financing. 	OGS Sector: <ul style="list-style-type: none"> Reduces risk of regulatory uncertainty for OGS providers providing consumer financing.
	Consumer: <p>Increases choice of sources of consumer financing.</p>	Consumer: None	Consumer: <ul style="list-style-type: none"> Government oversight of the consumer financing in the OGS sector provides highest level of consumer protection.
DISADVANTAGES	Government: <ul style="list-style-type: none"> Limited oversight. Requires investment to adequately resource consumer redress mechanisms to ensure consumers’ grievances are resolved efficiently. 	Government: <ul style="list-style-type: none"> Requires investment in collaborative efforts with non-energy policymakers. Continued innovation in financing models may continue to raise issues of classification. 	Government: <ul style="list-style-type: none"> High cost requires investment to develop and implement regulatory framework and different models of consumer financing. Regulation may not keep up with sector innovation. Increased compliance costs could impact consumer affordability of OGS products. Could pose a barrier to market entry.

	<p>OGS Sector:</p> <ul style="list-style-type: none"> Regulatory uncertainty could inhibit market entry. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> Regulatory classification could result in additional regulation or oversight. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> Regulatory compliance costs may exclude some providers. Increased compliance costs increase cost of goods sold, increasing product pricing, and reducing consumer affordability. Reduces the models for providing consumer financing for OGS products.
	<p>Consumer:</p> <ul style="list-style-type: none"> Limited government oversight of financing practices or terms Grievance mechanism may not exist. Cost to consumers to seek redress through formal channels. 	<p>Consumer:</p> <ul style="list-style-type: none"> Regulatory classification could increase sector regulation and compliance costs, reducing market entry and consumer financing for OGS products. Regulatory classification may limit government oversight of financing practices or terms. 	<p>Consumer:</p> <ul style="list-style-type: none"> Regulatory classification could increase sector regulation and compliance costs, reducing market entry and consumer financing for OGS products. Regulatory classification could limit government oversight of financing practices or terms.

Issue 8: Product Standards

Governments can influence the quality of OGS products sold in their markets. Policymakers have options across the policymaking continuum to address OGS product quality.

Enabling Environment Component: Accountability	ISSUE: QUALITY STANDARDS		
	Wait-and-See	Light-Touch	Prescriptive
<p>Policymakers with Influence</p>	<p>Lead Energy Authority, Standards Setting Body</p>	<p>Lead Energy Authority, Standards Setting Body</p>	<p>Lead Energy Authority, Standards Setting Body</p>
<p>POLICY OPTIONS</p>	<ul style="list-style-type: none"> Government forebears from placing any restrictions on or promoting minimum quality standards for OGS components or configurations. Government relies on industry to offer quality OGS products and services. Consumers rely on current consumer protection laws and processes to resolve complaints on low-quality OGS products or services. 	<ul style="list-style-type: none"> Government conducts sensitization and awareness campaigns for consumers to assess product quality. Government conducts market surveillance to monitor mix of quality product offerings and consumer complaints. Government develops a roadmap for standards adoption starting with adoption of voluntary quality standards for OGS products. Government offers fiscal incentives for quality-verified products that meet specific standards. 	<ul style="list-style-type: none"> Government adopts national quality standards for OGS products. Government develops monitoring, verification, and enforcement framework for compliance with national quality standards.

ADVANTAGES	<p>Government:</p> <ul style="list-style-type: none"> • Low cost. • Promotes market entry and free and open competition. • Provides an opportunity for OGS providers to prove their ability to self-regulate without government intervention. 	<p>Government:</p> <ul style="list-style-type: none"> • Government encouragement of supply and purchase of quality OGS products increases supply of high-quality OGS products. • Government does not have to invest in standards-setting and capacity to enforce compliance with product standards. • Government creates a transitional path to the adoption of national OGS quality standards. 	<p>Government:</p> <ul style="list-style-type: none"> • Government protects consumers from risk of counterfeit or low-quality products. • Quality standards can be harmonized with international standards and those of other countries in the region, eliminating the need to invest in local testing.
	<p>OGS Sector:</p> <ul style="list-style-type: none"> • Flexibility in designing OGS products. • No testing or certification required. • Easier market entry. • Low cost of regulatory compliance. • Provides an opportunity for OGS providers to prove their ability to self-regulate without government intervention. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> • Consumers increase demand for high-quality OGS products. • OGS providers retain discretion in determining the quality of their OGS product offerings. • OGS providers who offer quality products may be eligible for government incentives not available to lower-quality products. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> • OGS providers do not have to compete with lower quality products. • If harmonized standards are adopted, OGS providers can offer products across multiple markets and use the same verification scheme. • Industry can participate in standards setting process to inform standards.
	<p>Consumer:</p> <ul style="list-style-type: none"> • Access to a range of OGS products with different quality and variable pricing. • Some level of government protection and redress when OGS providers misrepresent OGS product and service quality. 	<p>Consumer:</p> <ul style="list-style-type: none"> • Consumers have more information to make informed purchasing decisions on quality of OGS products. • Increased supply of quality OGS products. • Fiscal incentives could lower the price of OGS products. • Quality OGS products may include warranties and after-sales service. 	<p>Consumer:</p> <ul style="list-style-type: none"> • Highest level of consumer protection against counterfeit and low-quality OGS products • Quality OGS products may include warranties and after-sales service.
DISADVANTAGES	<p>Government:</p> <ul style="list-style-type: none"> • Low-quality OGS products are available. • Investment may be needed to adequately resource consumer redress mechanisms to ensure consumers' grievances are resolved efficiently. • E-waste generated by discarded low-quality products with limited lifespans. 	<p>Government:</p> <ul style="list-style-type: none"> • Low-quality OGS products are available. • Requires investment to run consumer awareness campaign. • Requires investment to fund fiscal incentives for high-quality products. • Requires investment to conduct market surveillance. • E-waste generated by discarded low-quality products with limited lifespans. 	<p>Government:</p> <ul style="list-style-type: none"> • Requires investment in standard setting process. • Limiting the supply of OGS products may impact consumer affordability of OGS products. • Requires investment to build staff capacity to implement and enforce compliance. • If not harmonized with regional or international standards requires investment in local testing.
	<p>OGS Sector:</p> <ul style="list-style-type: none"> • No government oversight over counterfeit or low-quality products • OGS providers offering quality-verified equipment may find it difficult to compete on price with non-quality verified equipment. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> • Fiscal incentives may benefit only providers of certified quality products. • OGS providers offering quality-verified equipment may find it difficult to compete on price with non-quality verified equipment. • Companies have to pay testing fees to prove compliance. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> • Limits market participation to suppliers of quality-verified OGS products. • If not harmonized with regional or international standards, suppliers have to manufacture bespoke products and use customized testing for verification.

	<ul style="list-style-type: none"> Counterfeit or low-quality providers may hurt consumer sentiment toward solar products in general, since consumers are unlikely to be able to distinguish quality products. 		
	<p>Consumer:</p> <ul style="list-style-type: none"> Redress for grievance on low quality OGS products is limited to commercial practices of OGS provider. Consumers may lose money on sub-standard products. Consumers may have limited awareness of the technology and an inability to distinguish quality products. 	<p>Consumer:</p> <ul style="list-style-type: none"> Potential impact on consumer pricing and affordability. Consumers may lose money on sub-standard products. 	<p>Consumer:</p> <ul style="list-style-type: none"> Exclusion of lower-quality OGS products has the potential to impact consumer pricing and affordability.

Issue 9: Transparency At Sale: Disclosure of Fees, Terms of Services, and Warranties

Consumers purchasing PAYG products need to receive adequate information to evaluate the terms and conditions of the consumer financing and can be protected against product failure when OGS providers include warranties with their products. Policymakers have options across the policymaking continuum to set minimum standards for disclosure and to encourage product warranties.

Enabling Environment Component: Accountability	ISSUE: TRANSPARENCY OF TERMS AND WARRANTIES		
	Wait-and-See	Light-Touch	Prescriptive
<p>Policymakers with Influence</p>	<p>Consumer Protection Agency, Lead Energy Authority</p>	<p>Lead Energy Authority, Revenue Authority, Standards Setting Body, Consumer Protection Agency</p>	<p>Lead Energy Authority, Financial Services Regulator, Consumer Protection Agency</p>
<p>POLICY OPTIONS</p>	<ul style="list-style-type: none"> Government relies on OGS providers to set their own policies for disclosure of terms. OGS providers are not required to offer warranties. Government relies on industry self-regulation such as OGS providers' commitment to the GOGLA Consumer Protection Code principles for transparency and responsible sales and pricing decisions. Consumers rely on existing consumer protection laws and processes to redress grievances regarding false representation of OGS products and PAYG financing terms. 	<ul style="list-style-type: none"> Government conducts an information campaign to increase consumers' capacity to evaluate terms and conditions of OGS products and the suitability of PAYG financing terms. Government encourages PAYG providers to follow GOGLA's Consumer Protection Code principle for responsible sales and pricing. Government conducts market surveillance to monitor consumer complaints about misrepresentation of products and defaults on PAYG financing. Government offers fiscal incentives or conditions access to public funding to products that include warranties. Government develops voluntary standards for OGS products that include standards for disclosure and inclusion of product warranties. 	<ul style="list-style-type: none"> Government sets and enforces minimum standards for disclosure of terms and conditions of OGS products and services. Government requires warranties for OGS products. Government sets and enforces minimum standards for disclosure of terms and conditions for PAYG financing.

ADVANTAGES	<p>Government:</p> <ul style="list-style-type: none"> • Low cost and low effort. 	<p>Government:</p> <ul style="list-style-type: none"> • Consumers make informed decisions in purchasing OGS and PAYG products, increasing consumer satisfaction and reducing over-indebtedness. • Increased warranty coverage increases after sales service and repair by OGS providers. • Government has data to analyze risk to consumers and need for government oversight. • International quality standard (IEC TS-62257-9-8), if adopted as voluntary, signals government expectation for product disclosure, truth in advertising and warranty coverage. 	<p>Government:</p> <ul style="list-style-type: none"> • Government protects consumers by prescribing the minimum level of information consumers must receive on OGS products and PAYG financing. • Warranty coverage of increases after sales service and repair by OGS providers. • International quality standard (IEC TS-62257-9-8), if adopted as mandatory, sets government standards on product disclosure, truth in advertising and warranty coverage.
	<p>OGS Sector:</p> <ul style="list-style-type: none"> • Flexibility in design of disclosure policies • OGS providers have discretion to include warranties. • Low cost of regulatory compliance. • Provides an opportunity for OGS providers to prove their ability to self-regulate without government intervention. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> • Consumers make informed decisions in purchasing OGS and PAYG products, increasing consumer satisfaction and reducing over-indebtedness. • Fiscal incentives can offset costs of after sales service from warranties reducing costs of goods sold and contributing to consumer affordability. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> • Government’s warranty requirement reduces industry reputational risk and eliminates cost advantage of not offering warranties.
	<p>Consumer:</p> <ul style="list-style-type: none"> • Low cost of compliance lowers product prices and increases consumer affordability. • Access to a range of OGS products sold with and without warranties at variable prices. • Some level of government protection and redress when OGS providers misrepresent product and service quality. 	<p>Consumer:</p> <ul style="list-style-type: none"> • Informed decision making in purchasing OGS and PAYG products increases consumer satisfaction and reduces over-indebtedness. • Access to a range of OGS products sold with and without warranties at variable prices. • Increased choice of OGS products with warranties that include after-sales service. 	<p>Consumer:</p> <ul style="list-style-type: none"> • Highest level of consumer protection. • Adequate information is provided at the point of sale to make an informed purchasing decision. • All OGS products include warranties for after-sales service.
DISADVANTAGES	<p>Government:</p> <ul style="list-style-type: none"> • Consumers bear the risk of OGS providers providing incomplete or inaccurate product information. • Investment may be needed to adequately resource consumer redress mechanisms to ensure consumers’ grievances are resolved efficiently. 	<p>Government:</p> <ul style="list-style-type: none"> • Requires government investment in consumer awareness campaign. • Requires government investment in market surveillance. • Requires government investment to fund fiscal incentives for products with warranties. • Requires government investment in evaluation of standards to apply as “voluntary”. 	<p>Government:</p> <ul style="list-style-type: none"> • Requires government investment in standard setting. • Requiring warranties for all products may increase cost of goods sold and reduce consumer affordability.

			<ul style="list-style-type: none"> Requires government investment to build staff capacity to implement and enforce compliance.
	<p>OGS Sector:</p> <ul style="list-style-type: none"> OGS providers differ in their disclosure practices and create reputational risk for the industry. OGS providers offering warranties incur costs of after-sales service and may find it difficult to compete on price with products offered without warranties. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> OGS providers differ in their disclosure practices and create reputational risk for the industry. OGS providers offering warranties incur costs of after-sales service and may find it difficult to compete on price with products offered without warranties. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> Cost of compliance may increase cost of goods sold and reduce consumer affordability.
	<p>Consumer:</p> <ul style="list-style-type: none"> Redress for grievances for misrepresentation of OGS products and service is limited to commercial practices of OGS providers. 	<p>Consumer: None.</p>	<p>Consumer:</p> <ul style="list-style-type: none"> Cost of compliance may increase product prices and reduce consumer affordability. Inadequate government enforcement of standards does not increase availability of product information.

Issue 10: Data Protection

OGS and PAYG companies gather and use customers' data in selling their products and qualifying customers for financing. Policymakers have options across the policymaking continuum to address data protection.

Enabling Environment Component: Accountability	ISSUE: DATA PROTECTION		
	Wait-and-See	Light-Touch	Prescriptive
Policymakers with Influence	Lead Energy Authority	Lead Energy Authority, Consumer Protection Agency, Data Protection Supervisory Authority	Lead Energy Authority, Consumer Protection Agency, Data Protection Supervisory Authority
POLICY OPTIONS	<ul style="list-style-type: none"> Existing government data privacy laws and regulations apply to the OGS sector without modification. Government relies on OGS providers to establish data protection policies. Government relies on OGS providers to self-regulate by committing to and following the GOGLA Code of Consumer Protection principle on personal data privacy. 	<ul style="list-style-type: none"> Government provides guidance on how existing data protection policies apply to the OGS sector. Government encourages voluntary adherence to industry data protection standards such as GOGLA's Consumer Protection Code principle on data privacy. 	<ul style="list-style-type: none"> Government adopts policies and directs specific application of policies for protection of data collected by OGS companies. Government adopts policies to monitor and enforce compliance with data protection policies by OGS companies.

	<ul style="list-style-type: none"> Consumers rely on existing consumer data protection laws for rights and to resolve consumer grievances about OGS and PAYG providers for data privacy infringements or violations. 		
ADVANTAGES	<p>Government:</p> <ul style="list-style-type: none"> Consistent application of data privacy laws and regulations across commercial sectors. Low cost and low effort. Industry self-regulation of data practices protects consumers. 	<p>Government:</p> <ul style="list-style-type: none"> Increased responsible use of data in the OGS sector. Industry self-regulation of data practices protects consumers. 	<p>Government:</p> <ul style="list-style-type: none"> Data policies specific to the OGS increase OGS and PAYG supply and suitability of financing terms.
	<p>OGS Sector:</p> <ul style="list-style-type: none"> Flexibility to develop data protection policies to meet business needs. No additional regulation on data use by the OGS sector. OGS providers can evaluate their data protection against industry developed principles for responsible data management. Provides an opportunity for OGS providers to prove their ability to self-regulate without government intervention. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> Guidance informs data use. OGS providers can evaluate their data protection against industry developed principles for responsible data management. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> Exemption from regulation allows for efficient data management. Customer data sharing increases access to funding. Data use informs PAYG financing decisions.
	<p>Consumer:</p> <ul style="list-style-type: none"> Company data policies may provide sufficient protection against risk. Data collection and sharing arrangements may increase availability of PAYG financing. Some level of government protection and redress of grievances when OGS providers fail to comply with data protection laws. 	<p>Consumer:</p> <ul style="list-style-type: none"> Government guidance provides some level of government oversight over OGS providers use and protection of customer data. OGS providers follow industry principles on data privacy. 	<p>Consumer:</p> <ul style="list-style-type: none"> Increased access to OGS products and PAYG products with suitable financing. Government exercises oversight over data practices of OGS companies increasing consumer protection.
DISADVANTAGES	<p>Government:</p> <ul style="list-style-type: none"> Consumers bear the risk of OGS provider misuse of data. Requires government investment to adequately resource consumer redress mechanisms to ensure consumers' grievances are resolved efficiently. 	<p>Government:</p> <ul style="list-style-type: none"> Data protection policies fall outside the expertise and zone of influence of the lead energy authorities. Not all OGS providers may choose to commit to industry principles for protecting data privacy. 	<p>Government:</p> <ul style="list-style-type: none"> Data protection policies fall outside the expertise and zone of influence of the lead energy authorities. Tailoring data policies to the OGS sector creates inconsistency in application of national data policies.
	<p>OGS Sector:</p> <ul style="list-style-type: none"> Current data privacy laws and regulations may limit OGS companies use of data or increase cost of compliance (data localization). 	<p>OGS Sector:</p> <ul style="list-style-type: none"> Government guidance may restrict optimal use of data and reduce PAYG offerings. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> Government policies for the sector may restrict optimal use of data and reduce PAYG offerings. Rules restrict data sharing and eliminate access to valuable data for PAYG offerings.

	<p>Consumer:</p> <ul style="list-style-type: none"> • Consumers’ redress for grievances on misuse or improper disclosure of their data is limited to commercial practices of OGS provider. • Costs borne by consumers to seek redress through formal channels. 	<p>Consumer:</p> <ul style="list-style-type: none"> • Guidance may reduce OGS supply and PAYG offerings. • Level of government oversight may not be sufficient to protect consumers against improper use or disclosure of their data. 	<p>Consumer:</p> <ul style="list-style-type: none"> • Policies could reduce OGS supply and PAYG offerings. • Inadequate government enforcement of standards does not protect consumers against improper use and disclosure of their data.
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Issue 11: Customer Service and Grievance Redress

Policymakers have options across the policymaking continuum to address how consumers can seek redress for their grievances and receive after sales services for OGS products that fail.

Enabling Environment Component: Accountability	ISSUE: POST-SALE SERVICE AND COMPLAINT RESOLUTION		
	Wait-and-See	Light-Touch	Prescriptive
Policymakers with Influence	Lead Energy Authority	Lead Energy Authority, Consumer Protection Agency, Standards Setting Body	Lead Energy Authority, Consumer Protection Agency
POLICY OPTIONS	<ul style="list-style-type: none"> • Government relies on OGS providers to establish consumer complaint processes used to resolve product and service issues and comply with product warranties. • Government relies on OGS providers to self-regulate by committing to and following the GOGLA Code of Consumer Protection principle on good company service. • Consumers rely on current consumer protection laws and processes to resolve consumer grievances of inadequate post sales service or warranty coverage. 	<ul style="list-style-type: none"> • Government conducts an information campaign to increase consumers’ capacity to evaluate post-sales service and warranty coverage. • Government encourages OGS providers to commit to following industry standards such as GOGLA’s Code of Consumer Protection principle on good customer service. • Government conducts market surveillance to monitor consumer complaints on post-sales services and warranty coverage. • Government develops voluntary quality standards for OGS products that include warranty coverage requirements and standards for post-sale services. • Government offers fiscal incentives or conditions access to public funding to OGS providers that include warranties and commit to minimum post-sales service levels. 	<ul style="list-style-type: none"> • Government sets and enforces standards for minimum levels of post-sale customer service and warranty coverage for OGS products. • Government develops policies to “blacklist” OGS companies or require them to discontinue market operations.
ADVANTAGES	<p>Government:</p> <ul style="list-style-type: none"> • Low cost and low effort. • Industry self-regulation and commitment to established principles for providing post-sale customer service protects consumers. 	<p>Government:</p> <ul style="list-style-type: none"> • Consumers make informed decisions in purchasing OGS products that includes consideration of post-sale customer service and warranty coverage. 	<p>Government:</p> <ul style="list-style-type: none"> • Government protects consumers by prescribing the minimum level of customer service and warranty coverage for OGS products.

	<ul style="list-style-type: none"> Promotes market entry and competition. 	<ul style="list-style-type: none"> OGS providers' post-sales service and warranty coverage improves increasing consumer protection. Government has data to analyze risk to consumers and need for government oversight. 	<ul style="list-style-type: none"> Warranty coverage of OGS products increases after sales service and repair by OGS providers, contributing to a longer product lifecycle. International quality standard (IEC TS-62257-9-8), if adopted as mandatory, sets standard for warranty coverage.
	<p>OGS Sector:</p> <ul style="list-style-type: none"> Flexibility to develop post-sale customer service policies. OGS providers can assess their post-sales servicing against industry developed principles and indicators for good company service. Ease of market entry. Low cost of regulatory compliance. Provides an opportunity for OGS providers to prove their ability to self-regulate without government intervention. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> Consumers consider post-sale customer service and warranty coverage in purchasing OGS products increasing consumer satisfaction. Fiscal incentives can offset costs of after sales service and warranty coverage, reducing costs of goods sold and contributing to consumer affordability. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> Government's standards reduce industry reputational risk and eliminate cost advantage of not providing post-sale service or offering warranties.
	<p>Consumer:</p> <ul style="list-style-type: none"> Low cost of compliance reduces cost of goods sold contributing to consumer affordability. Access to a range of OGS products sold with and without warranties at variable prices. Some level of government protection and redress when OGS providers misrepresent OGS product and service quality. 	<p>Consumer:</p> <ul style="list-style-type: none"> Informed decision making includes consideration of OGS provider commitment to post-sale service and warranty coverage increasing likelihood of product and service repair. Increased choice of OGS products with warranties that include after-sales service for repair and replacement if OGS products fail. Access to a range of OGS products sold with and without warranties at variable prices. 	<p>Consumer:</p> <ul style="list-style-type: none"> Highest level of consumer protection. All OGS products include warranties for after-sales service.
DISADVANTAGES	<p>Government:</p> <ul style="list-style-type: none"> Consumers bear the risk of poor after-sales service for OGS products and failure to provide warranty coverage. Investment may be needed to adequately resource consumer redress mechanisms to ensure consumers' grievances are resolved efficiently. 	<p>Government:</p> <ul style="list-style-type: none"> Requires government investment in consumer awareness campaign. Requires government investment to fund fiscal incentives for post-sale services and warranties. Requires government investment to conduct market surveillance activities. Requires government investment in evaluation of standards. 	<p>Government:</p> <ul style="list-style-type: none"> Requires government investment in standard setting. Requiring warranties for all products may increase cost of goods sold and impact consumer affordability. Requires government investment to build staff capacity to implement and enforce compliance.

	<p>OGS Sector:</p> <ul style="list-style-type: none"> OGS providers differ in their post-sales customer service and warranty coverage creating reputational risk for the industry. Limited government oversight over counterfeit or low-quality products. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> OGS providers' investment in good customer service increases cost of goods sold, making it difficult to compete on price with OGS providers who don't invest in post-sale customer service or warranty coverage. OGS providers differ in their post-sales customer service and warranty coverage creating reputational risk for the industry. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> Cost of compliance may increase cost of goods sold and reduce consumer affordability.
	<p>Consumer:</p> <ul style="list-style-type: none"> Redress for grievances on poor post-sale OGS product service and to enforce warranty coverage is limited to commercial practices of OGS providers. Cost to consumers to seek redress through formal channels. 	<p>Consumer: None.</p>	<p>Consumer:</p> <ul style="list-style-type: none"> Cost of compliance may increase cost of goods sold and reduce consumer affordability. Inadequate government enforcement of standards does not increase delivery of post-sales service or warranty coverage.

Issue 12: E-Waste

Policymakers have options across the policymaking continuum to address the management of e-waste generated by OGS products.

Enabling Environment Component: Accountability	ISSUE: E-WASTE		
	Wait-and-See	Light-Touch	Prescriptive
Policymakers with Influence	Lead Energy Authority	Lead Energy Authority, Environmental Regulator, Consumer Protection Agency	Lead Energy Authority, Environmental Regulator, Consumer Protection Agency
POLICY OPTIONS	Government relies on OGS providers to develop and follow their own policies to manage e-waste and recycling of OGS products.	<ul style="list-style-type: none"> Government encourages OGS providers to properly dispose of e-waste by publishing data (advisories/circulars) on effects of e-waste and giving suggestions of programs such as take back programs and schemes. Government provides incentives and/or subsidies for proper e-waste management and recycling of OGS products. Government creates permitting process for private sector companies to create and manage e-waste and recycling facilities. Government adopts quality standards for OGS that increase supply of durable OGS equipment with longer life cycles (thereby reducing e-waste). 	<ul style="list-style-type: none"> Government classifies OGS products in its e-waste regulatory framework and requires mandatory take-back. Government adopts a financing structure to manage e-waste that covers OGS products that could include: <ul style="list-style-type: none"> Extended Producer Responsibility (EPR) where the OGS equipment manufacturer or importer pays a fee for e-waste and recycling. Consumer fee at the time of purchase of OGS products. Waste dumper pays fee at disposal. Government taxation to cover e-waste disposal costs and facility management.

	<p>Government:</p> <ul style="list-style-type: none"> • Low cost. • Low volumes of e-waste pose low environmental risk. 	<p>Government:</p> <ul style="list-style-type: none"> • E-waste management and recycling framework is tested on higher producing e-waste streams. • Reduced environmental impact of improper disposal of e-waste generated by OGS products. 	<p>Government:</p> <ul style="list-style-type: none"> • E-waste management framework clarifies responsibility and funding for management of OGS generated e-waste. • Reduced environmental impact of improper disposal of e-waste generated by OGS products.
	<p>OGS Sector:</p> <ul style="list-style-type: none"> • Low cost of regulatory compliance. • No mandatory fees for e-waste management. • Provides an opportunity for OGS providers to prove their ability to self-regulate without government intervention. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> • Fiscal incentives offset the cost of e-waste management. • E-waste facilities exist to receive and manage e-waste responsibly. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> • Government framework produces responsible e-waste management and reduces environmental impact of improper disposal of e-waste generated by OGS products. • Government fee structure provides source of funding for responsible e-waste management. • Consistent e-waste management across the OGS supply chain.
	<p>Consumer:</p> <ul style="list-style-type: none"> • No mandatory fees for e-waste management paid by the consumer. 	<p>Consumer:</p> <ul style="list-style-type: none"> • More OGS providers have e-waste management and recycling programs. • Fiscal incentives offset the cost of e-waste management. • E-waste facilities exist to receive and manage e-waste responsibly. • Increased quality of OGS products purchased reduces volume of e-waste. 	<p>Consumer:</p> <ul style="list-style-type: none"> • Government framework produces responsible e-waste management and reduces environmental impact of improper disposal of e-waste generated by OGS products. • Fee structure provides source of funding for responsible e-waste management.
DISADVANTAGES	<p>Government:</p> <ul style="list-style-type: none"> • No government oversight over management of e-waste generated by OGS products. • Adverse environmental impact of improper disposal of e-waste generated by OGS products. 	<p>Government:</p> <ul style="list-style-type: none"> • Requires government investment to develop e-waste guidance for OGS products which may not be proportionate to contribution of OGS products to e-waste stream. • Requires government investment to fund fiscal incentives for e-waste management. • Requires government to commit to establish and implement e-waste management permitting process. • Requires government investment in setting quality standards for OGS products. 	<p>Government:</p> <ul style="list-style-type: none"> • Requires government investment to incorporate OGS e-waste into e-waste framework. • Requires government enforcement of fee structure and possible administration of e-waste funding flows. • Imposition of fees could increase product price and reduce consumer affordability.
	<p>OGS Sector:</p> <ul style="list-style-type: none"> • No government support for management of e-waste generated by OGS products. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> • Companies may follow different e-waste practices creating inconsistency in the supply chain. 	<p>OGS Sector:</p> <ul style="list-style-type: none"> • E-waste fees may increase product pricing and reduce consumer affordability. • Logistics and facilities may not exist to receive and manage e-waste.

	<ul style="list-style-type: none"> • Companies may follow different e-waste practices creating inconsistency in the supply chain. • Adverse environmental impact of improper disposal of e-waste generated by OGS products. 		
	<p>Consumer:</p> <ul style="list-style-type: none"> • No government support or oversight for management of e-waste generated by OGS products. • Adverse environmental impact of improper disposal of e-waste generated by OGS products. 	<p>Consumer:</p> <ul style="list-style-type: none"> • Limited government support or oversight for management of e-waste generated by OGS products. • Adverse environmental impact of improper disposal of e-waste generated by OGS products. 	<p>Consumer:</p> <ul style="list-style-type: none"> • E-waste fees may increase consumer pricing and reduce consumer affordability. • Logistics and facilities may not exist to receive and manage e-waste.

Annex B: Additional Resources

In this Annex we provide additional resources that users of this toolkit can use to deepen their understanding of the OGS sector and PAYG products and to support their exploration of specific policy issues. We have organized the resources by chapter and by the 12 issues examined in Chapter Four.

CHAPTER TWO: OFF-GRID SECTOR DATA SOURCES, INDICATORS, TRENDS, AND INSIGHTS

Data Sources and Indicators

Lighting Global, IFC, 2018. PAYG Market Attractiveness Index. This index provides 70 indicators that can be applied at the country level to measure the market attractiveness for PAYG. Indicators are divided into three pillars: (1) demand, (2) supply, and (3) the enabling environment.

Ten of the indicators relate to a country's legal and regulatory environment.

Energy Sector Management Assistance Program (ESMAP), 2020. Regulatory Indicators for Sustainable Energy (RISE) Sustaining the Momentum. This publication provides an analysis of a set of 31 indicators to compare the policy and regulatory frameworks of countries and support the achievement of Sustainable Development Goal 7 on universal access to clean and modern energy. The indicators are cast across three pillars: (1) electricity access, (2) renewable energy, (3) energy efficiency.

IEA, IRENA, UNSD, World Bank, WHO. 2022. Tracking SDG 7: The Energy Progress Report. This report provides 2021 data to assess progress against the goal of achieving universal access to affordable, reliable, sustainable, and modern energy for all by 2030 in SDG7.

IRENA, 2022. Off-grid renewable energy statistics 2022. This report provides statistics that include data on SHS units.

SE4All, 2019. Integrated Electrification Pathways for Universal Access to Electricity: A Primer. This report outlines key steps to guide policymakers in creating and developing strategies, policies, and programs to support a full-systems approach to electrification planning.

SE4All, 2020. Analysis of SDG7 Progress. The report provides a snapshot of current state of progress on meeting

the goal of SDG7: to ensure access to affordable, reliable, and sustainable energy for all.

SE4All, 2020. Data Standards for Integrated Energy Planning, Workshop Report. The report synthesizes the improvements and standardization of data used by governments and their partners for integrated energy planning.

SE4All, 2020. Energizing Finance: Understanding the Landscape. The report tracks the energy access financing landscape of 2020 considering the COVID-19 pandemic and provides recommendations for developing countries to increase their resilience to future challenges and inclusive growth for the energy sector.

Trends

Lighting Global/ESMAP, GOGLA, Efficiency for Access, Open Capital Advisors (2022). Off-Grid Solar Market Trends Report 2022: State of the Sector. This report measures the pulse of the off-grid solar market and includes comprehensive sales and impact data as well as an in-depth analysis of current market dynamics and an outlook on the future of the industry.

60 Decibels, 2020. Why Off-Grid Energy Matters. This report provides consumer insights from data collected from 35,000 OGS customers across 17 countries.

PAYG Business Model

IRENA, 2020. PAYGO Innovation Landscape Brief. This brief analyzes key factors to successfully deploy PAYG, including how a government's electrification strategy for OGS and policies can incentivize PAYG business models.

The Africa Clean Energy Technical Assistance Facility, 2020. Access to Consumer Finance for Vulnerable Groups. This report examines the role of consumer finance in serving vulnerable groups by assessing the ability of consumer finance models to improve the affordability and accessibility of OGS products.

IFC, CGAP, 2018. Strange Beasts Making Sense of PAYGo Solar Business Models. This report explores the components of PAYG business models.

GOGLA, Hystra Hybrid Strategy Consulting, 2017. Pricing Quality Cost Drivers and Value Add in The Off-Grid Solar Sector. This report explores the cost components and pricing of Pico and SHS systems, including costs of the PAYG model and the difference in costs and pricing of products verified to meet quality standards.

Hystra, Global Distributors Collective, 2020. Identifying affordable quality solar products for the last mile. This report explores the procurement challenges felt by last-mile distributors and explores possible solutions for procuring the right products for their target audience, at the right prices, in the right places, and within acceptable time frames.

How Women Benefit from Energy Access

ESMAP, 2022. Operational Handbook for Gender Equality in the Off-Grid Solar Sector. The handbook provides operational guidance and case studies on closing the gender gap in the OGS sector, with a particular focus on women's roles at the consumer and enterprises level.

OECD, 2021. Gender & the Environment, Chapter 8: Women and SDG7 – Affordable and Clean Energy: Ensure access to affordable, reliable, sustainable, and modern energy for all. This chapter from OECD's Gender & the Environment publication reviews the barriers and opportunities to improving women's access to energy and their role in supporting a clean energy transition.

CHAPTER THREE: HOW OGS CONTRIBUTES TO THE DIGITAL ECONOMY

How OGS Uses Digital

GSMA, 2023. The State of the Industry Report on Mobile Money 2023. GSMA's annual report outlines the state of the mobile money industry and provides data on the rate of digitization of payments and the growth of the industry as well as an overview of the role of mobile money in bridging the digital inclusion divide.

GSMA, 2023. The Mobile Gender Gap Report 2023. GSMA's annual report on the gender gap in mobile phone and internet use in lower- and middle-income countries.

GSMA, 2020. The Value of Pay-as-you-go Solar for Mobile Operators. This report provides a multi-country analysis from five mobile money providers to quantify the commercial value and synergy opportunities the PAYG solar industry has for the mobile industry.

How OGS Enables the Digital Economy

GSMA, 2022. The Value of Pay-As-You-Go Solar for Mobile Operators: Insights from customer journeys in Benin and Côte d'Ivoire. This report applies research with PAYG customers in Benin and Côte d'Ivoire to analyze how energy access can drive behavior change in customer to increase mobile use and mobile money transactions providing a benefit to both OGS companies and telecommunications providers.

ITU, Broadband Commission for Sustainable Development Broadband Commission Working Group on Broadband for All, 2020. A "Digital Infrastructure Moonshot" for Africa, Connecting Africa Through Broadband A Strategy for Doubling Connectivity by 2021 and Reaching Universal Access by 2030. This report sets an agenda for digital economy transformation across Africa. It stipulates the importance of energy access for broadband inclusion and the need to increase network capacity and quality and offers a roadmap on how to achieve broadband for all in Africa.

Facebook, Bloomberg New Energy Finance, 2018. Powering Last-Mile Connectivity. This report provides data and analyzes the connection between energy access and providing last mile connectivity to digital services by broadband network providers and to consumers seeking to charge their internet-enabled devices and use digital services.

African Union, 2019. The Digital Transformation Strategy for Africa (2020-2030). This strategy is based on foundation pillars and critical sectors to drive digital transformation, including the need for governments to create appropriate policies and an enabling environment with critical policy reforms. It also provides recommendations and proposed actions for policymakers.

Promoting OGS and Digital Together

USAID, 2017. Pay-As-You-Go Solar as a Driver of Financial Inclusion. This assessment provides an overview of key considerations relevant to determining where PAYG solar is more likely to drive financial inclusion through mobile money adoption. It informs the development of an investment strategy in PAYG that may contribute to a complementary goal of financial inclusion.

Alliance for Financial Inclusion, 2019. Policy and Regulatory Reforms in the AFI Network. This report provides a unique and integrated snapshot of policy and regulatory reforms that enable the development of appropriate digital financial services and products that increase women's financial inclusion.

The World Bank Group, 2020. Digital Financial Services.

This publication reviews the elements of an enabling environment for digital financial services.

The report also discusses how the COVID-19 pandemic has amplified the benefits of expanding digital financial services by reducing the need for physical contact in retail and financial transactions.

Mastercard, 2018. Pay-As-You-Go and the Internet of Things: Driving Financial Inclusion in the Developing World. This white paper explores the potential of PAYG and IoT for driving financial inclusion in developing markets.

CHAPTER FOUR: POLICY ISSUES AND PRIORITIES**GOGLA, Lighting Global, ESMAP, DFID, Sustainable Energy for All, IFC, Power Africa, 2019. Providing Energy Access through Off-Grid Solar: Guidance for Governments.**

This guide provides a holistic overview of issues to consider in the design of policies and programs intended for governments to deliver on energy access goals.

Issue 1: Ease of Market Entry and Competition

Lighting Global, IFC, 2019. PAYGo Market Attractiveness Index. This index provides a set of indicators and an online tool that can be used by policymakers and practitioners to assess the attractiveness of a national market for PAYGO energy services.

Issue 2: Quality and Reach of Digital Broadband Infrastructure

World Bank, 2020. Digital Economy for Africa (DE4A) Country Diagnostics Reports. This report provides a snapshot of the state of the digital economy in different African countries for each of the five pillars of the DE4A initiative: digital infrastructure, digital public platforms, digital financial services, digital businesses, and digital skills. It also outlines opportunities for future growth.

IFC, GOOGLE, 2020. e-Conomy Africa 2020 Africa's \$180 billion Internet economy future. This publication offers an analysis of Africa's current Internet landscape, key trends, and a roadmap of investment opportunities for accelerating the growth of the Internet economy, including the role of private and public sector players in driving economic growth.

Issue 3: Mobile Money and Digital Payments

GSMA, 2019. The Mobile Money Regulatory Index. GSMA used this index to score 80 countries' regulations

for enabling mobile money. The index has 27 indicators that apply across 6 dimensions: (1) authorization, (2) consumer protection, (3) transaction limits, (4) know your customer, (5) agent networks, and (6) investment and infrastructure environment.

GSMA, 2020. Tracking the Journey towards Mobile Money Interoperability Emerging Evidence from Six Markets: Tanzania, Pakistan, Madagascar, Ghana, Jordan and Uganda. This publication highlights the importance of having an enabling regulatory environment that allows mobile money providers to make commercially viable business decisions about interoperability that facilitates financial inclusion.

Cook, William, Dylan Lennox, and Souraya Sbeih, 2021. Building Faster Better: A Guide to Inclusive Instant Payment Systems. This guide defines foundational concepts, delineates the key roles in an instant payment system, and offers actionable insights on planning, designing, launching, and scaling an effective system for policymakers, financial service providers, and other actors involved in driving interoperability in digital payments.

Issue 4: Fiscal Policies for OGS Products, Services, and Mobile Money

GOGLA, Hystra Hybrid Strategy Consulting, 2017. Pricing Quality Cost Drivers And Value Add in The Off-Grid Solar Sector. This report examines the cost drivers of OGS products including the role of taxation and informs policymakers on how to lower the costs incurred by companies upstream as well as downstream costs.

GSMA, 2020. The Causes and Consequences of Mobile Money Taxation, an Examination of Mobile Money Taxes in Sub-Saharan Africa. This report looks at the causes and consequences of mobile money taxation.

Lighting Global, ESMAP, IFC, GOGLA, 2020 Off-Grid Solar Market Trends Report 2020. Section 4.1.2 of this report delves into the tax and import duty regimes faced by the off-grid solar sector and notes that taxes act as a very real barrier to OGS market growth, as many consumers are highly price-sensitive. It also discusses the benefits that governments gain from stimulating the OGS sector through fiscal incentives.

USEA, KERIA and UNREEEA, 2020. East African Regional Handbook on Solar Taxation. This handbook offers a look at the taxation regime for solar products in East Africa, and specifically Kenya, Rwanda, Tanzania, and Uganda. It provides a reference customs handbook on OGS products and components that can be used to build capacity and

consistency in custom offices across the East African Community to facilitate the flow of OGS products.

Africa Clean Energy (ACE) Technical Assistance Facility (TAF), 2021. *Impact of Tax Incentives on Access to Stand Alone Solar Recommendations from analysis in Malawi, Rwanda, and Sierra Leone.* This report includes a tool to analyze the impact of VAT and duties on consumer purchase of SHS.

Issue 5: Availability and Cost of Capital

GOGLA, Open Capital Advisors, 2018. *Increasing Local Financial Institution Investment in the Off-Grid Solar Sector, Lessons from East Africa.* This report outlines the information gaps and other barriers to investment and financing by local financial institutions for the OGS sector, and outlines recommendations to catalyze local currency investment in the sector.

CGAP, CLASP, 2020. *Electric Bankers: Utility Enabled Financing in Sub-Saharan Africa.* This report looks at the recent phenomenon of utility enabled finance that uses data on consumers' utility re-payment history to extend financing for appliances.

Issue 6: Access to Data for Credit Scoring

The World Bank Group, 2018. *Developing a Strong Credit Reporting System: A Toolkit for Practitioners.* This toolkit provides step-by-step guidelines policymakers can use to assess their country's credit reporting infrastructure, identify areas for improvement, or create an action plan to create the credit reporting infrastructure where none exists.

GSMA, 2019. *Data Protection in Mobile Money.* This paper reviews data protection practices in mobile money services. It outlines four key areas that mobile money providers need to address: data processing, data security, data sharing, and data localization.

CGAP, 2017. *Consumer Protection in Digital Credit.* This paper explores new approaches to address risks and problems associated with consumer protection in digital credit. The publication also recommends well-designed and enforced consumer protection rules based on emerging provider good practices to complement existing industry initiatives.

Issue 7: Financial Regulation

CGAP, 2018. *A Digital Credit Revolution: Insights from Borrowers in Kenya and Tanzania.* This publication highlights the role of monitoring mechanisms by regulators

for transparency and consumer protection through the digital credit process. It suggests areas of consideration for digital credit providers and policymakers to ensure responsible market development which maximizes consumer benefits and minimizes consumer risks.

Issue 8: Pre-Sale Product Quality Standards

GOGLA. *The Consumer Protection Code & Principles of Consumer Protection.* The Consumer Protection Code consists of a set of six principles or minimum standards of practice consumers should expect from an off-grid company, and an assessment framework to help companies measure, demonstrate, and improve their practices.

Africa Clean Energy Technical Assistance Facility, 2020. *Standards for Stand-Alone Solar: Guidance for Governments.* This guide provides a holistic overview of the status of standards adoption in Sub-Saharan Africa, and issues regulatory bodies must consider in the adoption process of harmonized standards.

Issue 9: Transparency: At Sale: Disclosure of Fees, Terms of Services and Warranties

Lighting Global, 2020. *Summary of Requirements in IEC TS 62257-9-8:2020.* The IEC summarizes the requirements in the standard IEC TS 62257-9-8:2020 for stand-alone renewable energy products with power ratings less than or equal to 350W that include a truth-in-advertising component and minimum standards for warranties.

GOGLA. *Principles of Consumer Protection.* GOGLA led the effort to develop consumer protection principles for the OGS sector. The principles include a principle on transparency and minimum standards of practice that consumers should expect from an off-grid solar company. The transparency standard stipulates that an OGS company shares clear and sufficient information on a product, services, payment plan, and personal data privacy practices to help consumers make informed decisions.

Center for Financial Inclusion, 2019. *Handbook on Consumer Protection for Inclusive Finance.* The handbook is designed to be a practical resource for policymakers and regulators seeking to develop or revise legal frameworks as a whole or on consumer financial protection.

Issue 10: Data Protection

GSMA, 2019. *Data Protection in Mobile Money.* This paper provides an overview of data protection practices that will have a significant impact on the provision of mobile money services.

Rafe Mazer, 2018. Data Sharing Models to Promote Financial Service Innovation. This report provides insights around key considerations for developing data-sharing models, including insights on key features and design elements public and private actors should consider in developing data sharing models.

Central Bank of Kenya, 2019. Guideline on Cybersecurity for Payment Service Providers. The guidelines mandate that payment service providers appoint personnel responsible for managing cybersecurity and data breaches, among other things.

Issue 11: Managing Customer Service Complaints

60 Decibels, 2020. Why Off-Grid Energy Matters. This consumer insights reports includes data customer satisfaction with OGS products and services and resolution of complaints by OGS providers.

Issue 12: E-Waste

GOGLA, 2019. GOGLA e-Waste Toolkit. This toolkit is presented in six modules covering a range of topics, including policy and regulation (Module 4).

The Africa Clean Energy Technical Assistance Facility, 2019. E-Waste Policy Handbook. This handbook provides guidance and policy options for policymakers and the industry to analyze ways to manage e-waste produced by OGS products. It draws on country examples and discusses the elements of designing and implementing sustainable solutions for e-waste management.

The Africa Clean Energy Technical Assistance Facility, 2020. Policy Brief: Solar e-waste in Sub-Saharan Africa. This report provides a snapshot into the e-waste policy and regulatory landscape in selected African countries. It also includes approaches to e-waste regulation development and enforcement.

Annex C: Tools

Step 1: Champion Identification

Tool 1: Champion Checklist

Tool 2: Policy Diagnostic

Tool 3: 3 As Checklist

Tool 4: Charting Internal Stakeholder Engagement

Tool 5: Sample TOR

Step 2: Stakeholder Identification and Influence

Tool 6: Stakeholder Map

Tool 7: Assessment of Existing Initiatives

Tool 8: Stakeholder Interest and Influence Grid

Tool 9: Stakeholder Concerns

Tool 10: Priority Mapping

Step 3: Stakeholder Capacity Building

Tool 11: Meeting Invite

Tool 12: Briefing Memo/Meeting Agenda

Step 4: Policy Analysis

Tool 13: Meeting Planning Form

Tool 14: Stakeholder Engagement Plan

Tool 15: Workshop Agenda

Tool 2 (Revisited): Policy Diagnostic

Tool 16: Policy Options Worksheet

Tool 17: Policy Cost/Effectiveness Evaluation

Tool 18: Risk Analysis

Tool 19: Feedback Form

Step 5: Roadmap Development

Tool 20: Roadmap Development Template

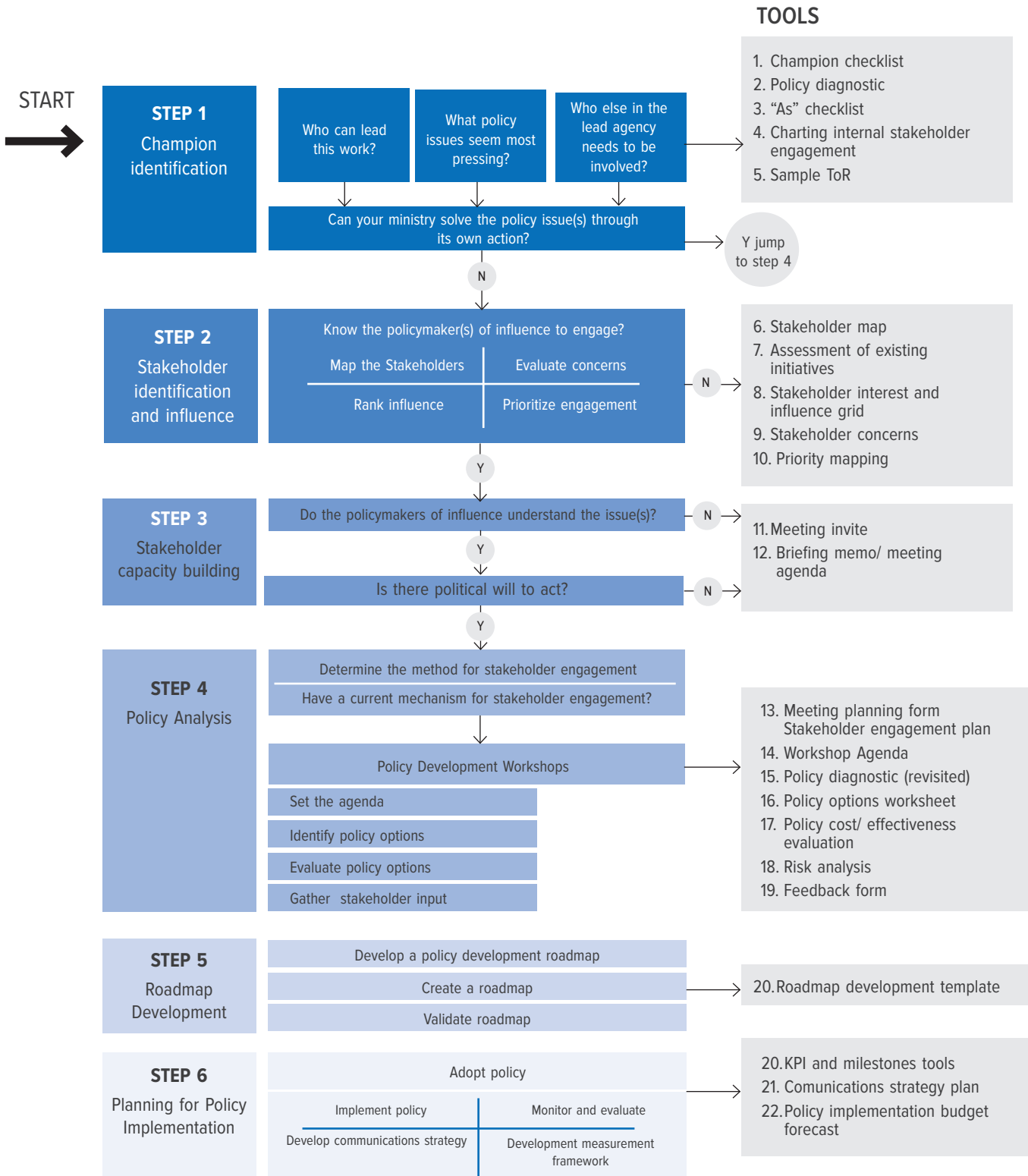
Step 6: Planning for Policy Implementation

Tool 21: KPI and Milestone Tool

Tool 22: Communications Strategy Plan

Tool 23: Policy Implementation Budget Forecast

POLICY DEVELOPMENT DECISION TREE



STEP 1: CHAMPION IDENTIFICATION

Suggested Time Allocation: To complete Step 1, one month of participation by the lead energy authority.

Expected Outcomes:

- Select a leader to serve as the champion that can shepherd the work, connect with stakeholders across ministries and lead the tool application process.
- Generate and secure buy-in across the champion agency for the importance of the toolkit process and its role in generating policy options to advance the OGS sector.
- Tentatively identify key policy issues that will be finalized and discussed in later steps.

TOOL 1: CHAMPION CHECKLIST

Use this tool's checklist to identify who in the lead agency can lead this work. The champion can be identified through interviews that address the checklist. The champion should meet at least five of the criteria listed below.

Champion Selection Criteria	Level of Importance
Policy issues directly affect the accomplishment of champion's goals/objectives e.g., national development goals	High
Is interested in the subject; motivated, reliable, and enthusiastic	High
Has dedicated and motivated internal staff and resources that can be assigned to the activity	High
Is a government ministry, department, agency or recognized industry association with clear goals and objectives. Has sufficient authority/mandate to invite key stakeholders from other ministries.	High
The champion has sufficient influence within the ministry to help secure buy-in from senior members and move policy reform forward within the ministry.	High
The champion will select an individual who will act as the project owner/coordinator and the selected coordinator will own and manage all project activities.	High
Ability to identify and select a competent person/firm to work alongside the champion to provide technical expertise. Technical support may be in-house if the champion has the capacity. Technical input may be derived from discussions within an existing working group. The technical expert will support the champion's coordinator to guide technical discussions, execute/implement workshops/dialogues and prepare technical documents to be used in the project activities.	High
Has a track record working on the subject or similar activity	Medium
Has funding, established structures, working groups and other resources to feed into or implement the activity (or can mobilize funds)	Low

TOOL 2: POLICY DIAGNOSTIC

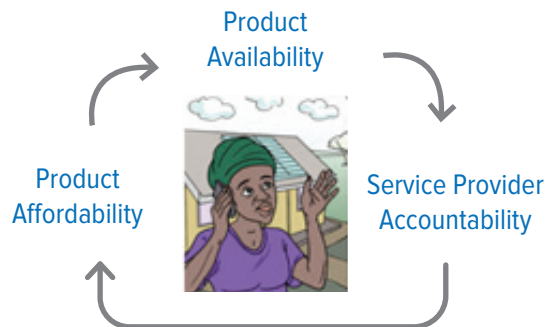
Use this chart to identify issues across the enabling environment components of the 3 As. This analysis should be preceded with a review of Toolkit Chapters 1-4 for policymakers less familiar with the OGS sector and PAYG model.

MICRO-LEVEL ISSUES — ACROSS THE ENABLING ENVIRONMENT COMPONENTS						
Enabling Environment Component	Policy and Regulatory Zones of Influence					Other Issues
AVAILABILITY	Ease of market entry and competition	Quality and reach of digital broadband infrastructure		Mobile money and digital inclusion		
AFFORDABILITY	Taxation	Consumer Financing				
		OGS provider cost of capital	Access to data for credit scoring	Financial regulation		
ACCOUNTABILITY	Sales Cycle					
	Pre-Sale	At-Sale		Post-Sale		
	Product standards	Transparency of terms and warranties	Data protection	Customer service and complaint resolution	e-Waste	

TOOL 3: 3 As CHECKLIST

Context matters as you seek to create an enabling environment across the 3 consumer requirements of product availability, affordability, and service provider accountability.

Use this checklist and the issue matrix to look at issues that affect all three of these enabling market conditions that impact consumer adoption of OGS products.



Product Availability= a market state in which consumers can conveniently purchase OGS products, including PAYG products with consumer financing, from competitive OGS providers.

- Ease of Market Entry:** Do current policies encourage or restrict OGS companies, including those using the PAYG model, from operating in the market?
 YES NO
- Quality and reach of digital broadband infrastructure:** Do digital broadband networks provide coverage in areas where consumers will use OGS products for energy access?
 YES NO
- Mobile Money and Digital Inclusion:** Do licensed mobile money and digital payment providers offer services and access points in rural areas where consumers rely on OGS products for energy access?
 YES NO
- Financial Regulation:** Do government regulations of financial services apply to PAYG financing offered to help consumers purchase OGS products?
 YES NO

Product Affordability = a market state in which consumers can afford to purchase OGS products either with cash or financing at a price that is suitable for their income levels.

1. **Taxation:** Does the government have the tools to evaluate the impact of their fiscal policies on the consumers purchasing OGS products and PAYG financing?

YES

NO

2. **OGS provider cost of capital:** Are there government policies or initiatives that support the availability of capital (including local capital) to OGS companies to lower financing costs and help them manage FOREX risk?

YES

NO

3. **Access to data for credit scoring:** Are there national data sharing regulations and a credit reporting system that OGS providers can access to assess OGS customers credit worthiness?

YES

NO

Service Provider Accountability: a market state in which OGS companies are responsible for providing consumers with quality products, clearly communicating about their products' features, performance, and financing terms, protecting consumer data and managing and ensuring proper disposal of products.

1. **Product Standards:** Has the government set standards (voluntary or mandatory) that OGS products must meet to be sold in the market?

YES

NO

2. **Transparency of terms and warranties:** Are the terms and conditions of PAYG financing and OGS warranties readily available and easy for consumers to understand?

YES

NO

3. **Data Protection:** Are there government policies that regulate how OGS and PAYG companies manage and protect data on their customers?

YES

NO

4. **Customer service and complaint resolution:** Are there existing consumer protection policies that apply to OGS providers that include minimum customer service standards and that apply to licensed mobile money and payment providers?

YES

NO

5. **E-Waste:** Is there a government agency that has jurisdiction and a framework to address e-waste management that applies, or could apply, to e-waste generated from OGS products?

YES

NO

TOOL 4: CHARTING INTERNAL STAKEHOLDER ENGAGEMENT

Use this tool to identify the high-level goals related to electrification and OGS and to identify the stakeholders that should be included in policy dialogues.

What are the national electrification goals and strategy?	[Describe, i.e., 90% of the population with Tier 1 energy access by 2030?]				
What are the off-grid solar targets for electrification?	[Specify - i.e., % of population use OGS products for energy access (standalone systems)]				
Hierarchical structure of champion organization	Pull organizational chart for government organization				
Using the organizational chart as a reference, select the stakeholders that will be impacted by or could impact the work					
Relevant Stakeholders [Department]	Name and Title	Level of Importance (High, Medium, Low)	Support for OGS (Supporter, Aware, No Interest)	Desired Project Role (Ongoing Participant, Shared Vision, Observer)	Engagement Strategy (Kick-off meeting, ongoing updates, staff designation for working group)

TOOL 5: SAMPLE TOR

Using the OGS Policy Toolkit to Build an Enabling Environment For PAYG Solar Use To Scale | [SEE ANNEX D](#)

STEP 2: STAKEHOLDER IDENTIFICATION AND INFLUENCE

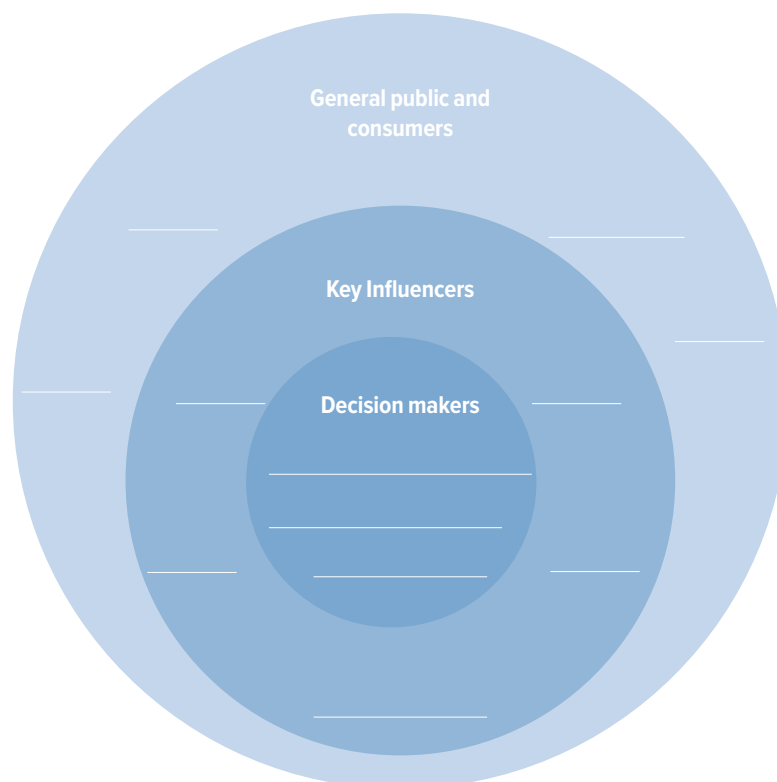
Suggested Time Allocation: To complete Step 2, one month to identify the relevant stakeholders and create an inter-ministerial dialogue to reach agreement to participate in inter-ministerial policy development.

Expected Outcomes:

- Identify key stakeholders of influence, levels of knowledge, understanding of policy issues, capacities, skills, and potential concerns.
- Secure buy-in from ministry leadership and senior civil servants to address issues that affect the OGS sector and PAYG.
- Evaluate willingness to participate in the policymaking process.
- Anticipate likely stakeholder concerns.

TOOL 6: STAKEHOLDER MAP

Fill in this chart with stakeholders with varied levels of decision-making authority, influence, and input. The tables that follow provide suggested stakeholders that may be relevant to policy action in your country.



Possible Stakeholders:

Policymaker – Decision maker	Policy Area
Ministry of Energy	Energy Access
Rural Energy Authorities	Rural Electrification and Energy Access
Ministry of Industry, Trade & Cooperatives	Business Licensing, Importation
Bureau of Standards	Quality Standards
Revenue Authority	Taxation
Financial Services Regulator/Central Bank	Digital Payments, Financial Services, Credit
Competition Authority	Consumer Protection, Marketing and Distribution (Market Competition)
Telecommunications Regulator	Mobile Network Coverage, Broadband Policy
Commission on Data Protection	Data Protection & Privacy

Key Influencers	Role
OGS Value Chain Participants (See Figure 5)	Industry
Industry Associations	Industry representatives
Investors	Equity funders
Banks	Creditors

Donors	Advisors and Government Co-Funders
Mobile Network Operators	Broadband service providers
Digital Payment Providers (including mobile money)	Payment processors and retail distribution participants

General Public and Consumer Groups	Role
Civil Society Organizations	Consumer Advocates
Development programs promoting energy access and renewable energy	Consumer Advocates
Consumers	Buyers

TOOL 7: ASSESSMENT OF EXISTING INITIATIVES

Use this tool to identify the existing initiatives underway across ministries or government agencies related to the policy issues identified. This tool will help ensure that the policy design process is complementary, not duplicative, to existing efforts.

Policy Issue Area	Current Initiatives Underway <small>(Please indicate current initiatives that are under way related to specific areas identified under each policy issue)</small>	Status of Initiative <small>(Please indicate the current state/progress of the initiative)</small>	Organizations + Contact <small>(Please add organizations engaged, this can be development organization or ministries, and indicate specific contact from the organizations)</small>	Key Contact at Champion Ministry <small>(Please indicate the main contact responsible at the champion ministry)</small>
Issue 1: Ease of Market Entry & Competition				
Issue 2: Quality and Reach of Digital Broadband Infrastructure				
Issue 3: Mobile Money and Digital Payments				
Issue 4: Fiscal Policies for OGS Products, Services, and Mobile Money				
Issue 5: Availability and Cost of Capital				
Issue 6: Access to Data for Credit Scoring				

Issue 7: Financial Regulation				
Issue 8: Product Standards				
Issue 9: Transparency at Sale: Disclosure of Fees, Terms of Services, and Warranties				
Issue 10: Data Protection				
Issue 11: Customer Service & Grievance Redress				
Issue 12: E-Waste				

TOOL 8: STAKEHOLDER INTEREST AND INFLUENCE GRID

Use this grid to map out the most influential and interested stakeholders. Plot the names/roles of stakeholders in the appropriate quadrants according to their influence and interest.

A	B
C	D

TOOL 9: STAKEHOLDER CONCERNS

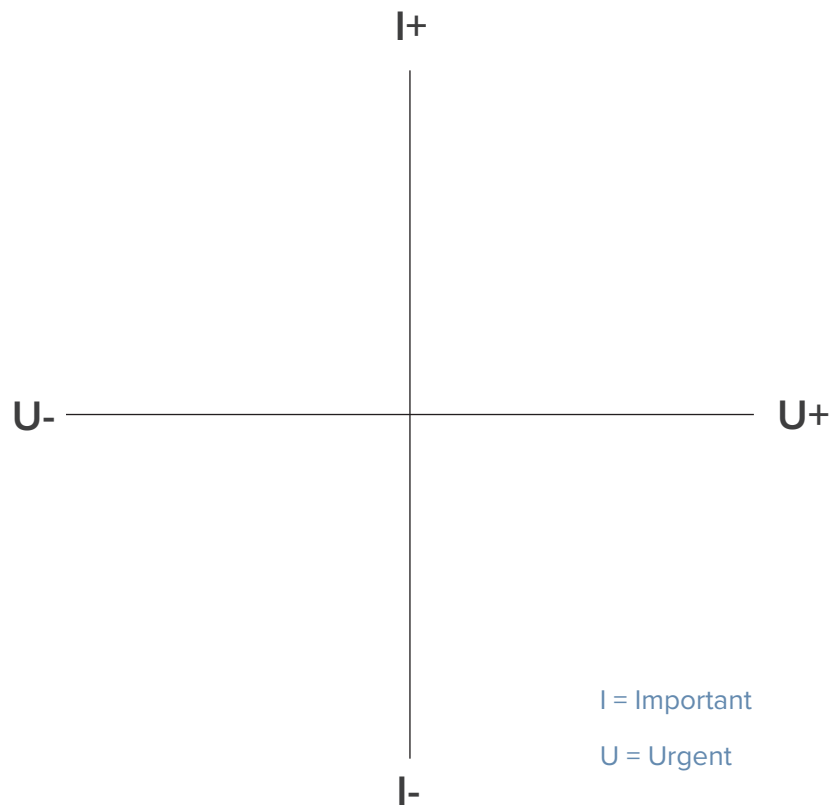
Use this chart to identify each stakeholder’s possible concern on the policy issue you seek to address. Rank the level of their concern and formulate responses to those concerns.

Policy Issue			
Stakeholder	Possible Concerns	Priority (Low-Medium-High)	Response to Concerns
			Point 1
			Point 2

			Point 1
			Point 2
			Point 1
			Point 2
			Point 1
			Point 2

TOOL 10: PRIORITY MAPPING

Use this grid to plot the urgency and importance of policy issues to determine priority issues to address. Place cards for each policy issue in the quadrant of the grid where you think it belongs.



STEP 3: STAKEHOLDER CAPACITY BUILDING

Suggested Time Allocation: To complete Step 3, one month of participation by the lead energy authority.

Expected Outcomes:

- Build capacity on OGS and PAYG.
- Initiate stakeholder engagement.

TOOL 11: MEETING INVITE

Consider holding an introductory meeting with policymakers less familiar with the OGS sector and PAYG products to lay the foundation and gauge the policymakers' level of interest and the need for persuasion to engage in dialogue about policy reform. To assure the meeting request gets attention, consider who should request the first point of engagement; should it be requested by the minister to build political will, or is staff-level communication more likely to generate a response? In your initial meeting request point out the importance of policy coordination among sectors and refer to the agenda of tool 12.

TOOL 12: BRIEFING MEMO/MEETING AGENDA

Policymakers outside the energy authority may have limited knowledge of the off-grid sector and its importance to achieving universal energy access goals. You will need to build the case that the sector is important to create political will to engage in a policymaking process. We suggest that you build a briefing book with data on the issues that can be used in the initial meeting.



AGENDA

1. National goals for electrification (including goals and rural electrification strategies)
2. Importance of OGS in meeting our energy goals (include and targets)
3. How OGS enables consumers participation in the digital economy and financial inclusion
4. Current market data on the use of OGS
5. Role of PAYG in increasing access to OGS
6. Country comparison rankings as measured by the regulatory indicators for sustainable energy (RISE) and, if, if available, PAYG Market Attractiveness Index
7. Enabling environment components (3As)
8. Overlap of issues (policy issues matrix)
9. Brief on priority policy issues- 2 pagers drawing on the discussion of the policy issue in Chapter 4 and the possible policy options for that issue explored

STEP 4: POLICY ANALYSIS

Suggested Time Allocation: To complete Step 4, four months with a series of workshops or working group meetings and to allow time to collect input from stakeholders including the OGS industry.

Expected Outcomes:

- Build a shared understanding of key policy issues in the market.
- Identify the policy options.
- Evaluate policy options with input from stakeholders.

TOOL 13: MEETING PLANNING FORM

You can shape the approach to the exploratory meeting using this planning form.

Exploratory Meeting Planning Form					
Location:					
Policy Topics:					
Policy Issue	Key Questions	Stakeholders	Potential Tools	Materials Required	Facilitator
1.					
2.					
3.					
4.					

POTENTIAL SOURCES OF DATA FOR BRIEFING BOOK AND WORKSHOPS

Energy Policy Inventory:

Name of Policy	Key Data: OGS Relevant Goals/Targets
National Energy Policy	
Integrated Electrification Plan	
Rural Electrification Plan	
Others	

Market Intelligence:

Data: Energy access		
Source	Type of Data	Link
Government energy authorities	Energy access, unserved areas, OGS use	Country specific
World Bank	Global and country data	https://data.worldbank.org/
ESMAP Regulatory Indicators for Sustainable Energy	Country level data applied and scored across indicators	RISE (esmap.org)
PAYG Market Attractiveness Index	Indicators and tool that can be applied to sort data and score market attractiveness for PAYG	https://www.lightingglobal.org/resource/paygo-market-attractiveness-index-2019/
Sustainable Energy for All (SE4ALL)	Data tracking for SDG7	https://www.seforall.org/data-and-evidence/understanding-sdg7
USAID-Power Africa	Country fact sheets and assessments	https://www.usaid.gov/
GOGLA	OGS sales data and trends	https://www.gogla.org/publications
Lighting Global	OGS sales data and trends	www.lightingglobal.org

Data: Broadband/mobile network coverage		
Source	Type of Data	Link
Government telecommunications Regulator	Licensed mobile network providers, network coverage, mobile subscribers	Country specific
GSMA	Market intelligence on mobile network providers	https://www.gsma.com/newsroom/gsmal/
ITU	Market intelligence on broadband coverage	https://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx
World Bank Digital Development	Analysis of digital ecosystems	https://www.worldbank.org/en/topic/digitaldevelopment/brief/digital-economy-country-diagnostics-for-africa

Data: Financial inclusion and mobile money use		
Source	Type of Data	Link
Financial Services Regulator/Central Bank	Mobile money and digital payment providers	Country specific
GSMA	Mobile money usage and trends	https://www.gsma.com/mobilemoneymetrics/#global?y=2019?v=overview?g=global
World Bank Global Findex	Country level financial and mobile money account data	https://globalfindex.worldbank.org/
Alliance for Financial Inclusion	Financial inclusion regulatory initiatives and targets	https://www.afi-global.org/publications/


TOOL 14: STAKEHOLDER ENGAGEMENT PLAN

Use this chart to identify your plan of engagement for the stakeholders you want to engage on the policy issue. Use tools from Step 2 to help populate some of the data points. Consider creating a working group with the relevant stakeholders as the forum for working through this process. A series of workshops with different stakeholders and sub-working groups that analyze issues or options could be helpful.

WHO	WHAT				HOW		WHO	WHEN	NOTES
Name	Role in Project	Influence	Interest	Outlook	Strategy	Actions	Owner	Date	Notes

TOOL 15: WORKSHOP AGENDA

Use this sample agenda as a guide for the initial policy dialogue.



AGENDA

1. OGS Sector Overview
 - Energy Authority presentation on importance of OGS and links to other policy goals
 - PAYG model overview
 - Industry Presentations
2. Policy Diagnostic Findings or Exercise
3. Policy Prioritization- Set the policy reforms agenda
4. Stakeholder mapping- Who should be engaged for input? (Use the tools from Steps 2 and 3)
5. Policy Options- Identification and evaluation
 - Policy Options Worksheet
 - Cost Effectiveness
 - Risk Analysis
 - Policy Option Scoring
6. Next Steps

TOOL 16: POLICY OPTIONS WORKSHEET

Enabling Environment Component: []	ISSUE: []		
	Wait-and-See	Light-Touch	Prescriptive
Policymakers with Influence			
POLICY OPTIONS			
ADVANTAGES	Government:	Government:	Government:
	OGS Sector:	OGS Sector:	OGS Sector:
	Consumer:	Consumer:	Consumer:

TOOL 19: FEEDBACK FORM

Use this questionnaire to collect and track feedback from participants after each policy dialogue.

Name: _____

Title: _____

Organization: _____

WORKSHOP FEEDBACK:

1. Did you find this workshop valuable?

YES

NO

2. Do you think that your Ministry will continue to engage in the policy dialog started by this workshop?

YES

NO

UNSURE

3. What did you feel was missing from this workshop?

4. Do you agree that for PAYG to scale in [insert name of country] there must be cross-ministerial policy coordination?

YES

NO

UNSURE

TOOL X: [INSERT NAME OF TOOL]

1. Did you find the [insert name of tool] valuable?

Yes because...

No because....

2. What could be improved about [insert name of tool]?

3. Can [insert name of tool] make a difference / support your policy objectives?

YES

NO

MAYBE

STEP 5: ROADMAP DEVELOPMENT

Suggested Time Allocation: The champion should lead the drafting of the roadmap and take time to validate it with individual stakeholders, likely taking 2-3 months of time.

Expected Outcomes:

- Document results from stakeholder consultations.
- Create roadmap to take specific action on policy issues.
- Develop stakeholder ownership over policy actions.

TOOL 20: ROADMAP DEVELOPMENT TEMPLATE

Use this tool to develop a roadmap for taking action on policy issues that emerged as priorities through the consultations. Make sure to assign owners and stakeholders for each step of the process on an issue in the roadmap.

Market Context for PAYG

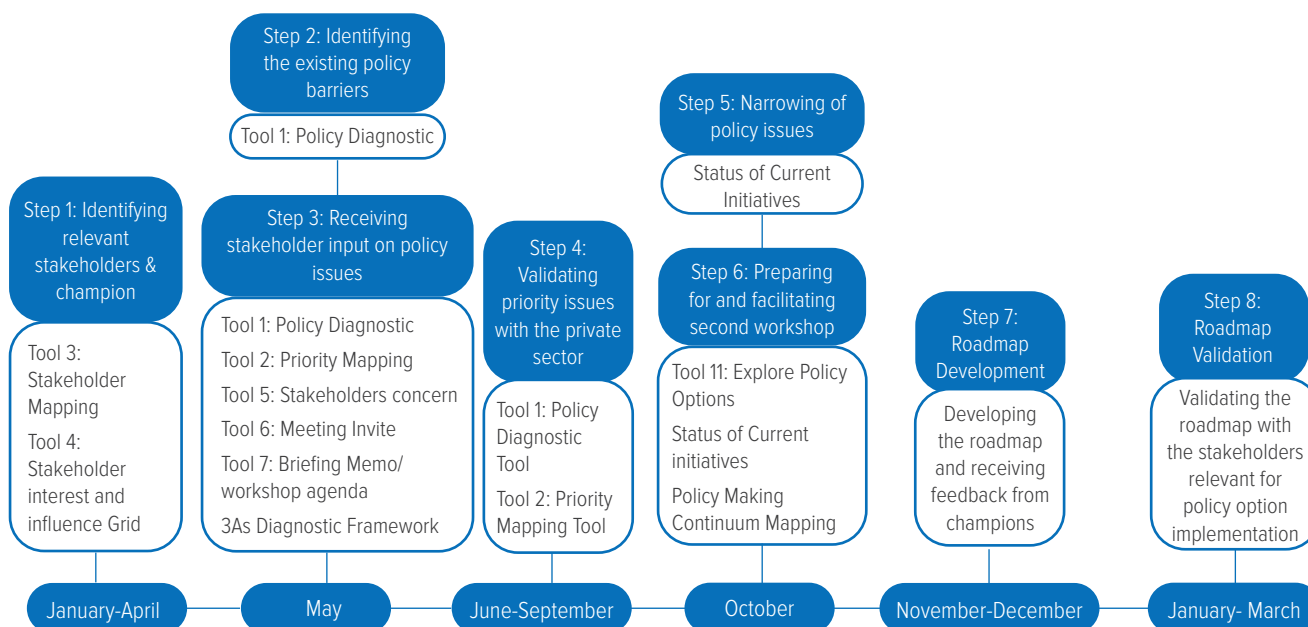
- Current consumer sales/product availability date: Consult national statistics, statistics from the energy ministry and GOGLA’s latest sales data, <https://www.gogla.org/off-grid-solar-market-trends-report-2022-0>
- Compare sales to trends in neighboring markets to see how your country compares
- Note recent market evolutions that could influence the opportunity for OGS but also expand digital financial literacy and access to financial services. For example,

growth in mobile money availability, shifts in the availability of forex, etc.

- Look at the role of international organizations such as the World Bank in supporting the government in achieving its goal of expanding energy access through OGS.
- Describe the why of the roadmap: This roadmap is designed to accelerate and facilitate this expansion by identifying the current barriers to scale and suggesting policy options that can mitigate those barriers. Within the policy options, the roadmap provides discrete steps to achieving the desired policy reform.

Applying/Testing the OGS Policy Toolkit

Sample steps and timeline to develop the roadmap.



Priority issue and policy option summary

No.	3As (Availability, Affordability, Accountability) TIP: The 3As are the consumer centric framework applied in the Toolkit that look at the Availability, Affordability and Accountability of OGS products.	Policy Approach (wait & see, light touch, prescriptive)	Policy Issue Description TIP: This category is drawn from the issues identified in the policy diagnostic.	Policy Option(s)	Timeline	Policy Outcome	Stakeholders
1. [Name the Issue Category]							
1.1 [Name the sub-issue]	Indicate which of the 3As is applicable	Indicate the applicable policy approach	Describe the policy issue	Describe the associated policy option	Indicate the timeline	Indicate the stakeholders required for implementation	Indicate the anticipated policy outcome
2.							
2.1							
2.2							
3.							
3.1							
3.2							

Issue X [NAME ISSUE]

Step 1:	Insert first step to achieving policy option
Owner:	Insert owner of first step
Stakeholders:	Insert stakeholders necessary for implementation of step
[Describe step]	

Step 2:	Insert first step to achieving policy option
Owner:	Insert owner of first step
Stakeholders:	Insert stakeholders necessary for implementation of step
[Describe step]	

Step 3:	Insert first step to achieving policy option
Owner:	Insert owner of first step
Stakeholders:	Insert stakeholders necessary for implementation of step
[Describe step]	

Step 4:	Insert first step to achieving policy option
Owner:	Insert owner of first step
Stakeholders:	Insert stakeholders necessary for implementation of step
[Describe step]	

Step 5:	Insert first step to achieving policy option
Owner:	Insert owner of first step
Stakeholders:	Insert stakeholders necessary for implementation of step
[Describe step]	

STEP 6: PLANNING FOR POLICY IMPLEMENTATION

Suggested Time Allocation: The time required to complete Step 6 will be determined by administrative rules and choice of policy instrument.

Expected Outcomes:

- Develop a communications strategy to accompany the rollout of the policy change to communicate its intent and raise awareness of the OGS industry and consumers.
- Create a budget forecast to identify and quantify the costs of policy implementation.
- Develop key performance indicators and an evaluation framework to measure policy influence on the OGS sector.

TOOL 21: KPI AND MILESTONES TOOL

Policymakers should set targets to measure the intended effect of policy approaches. This is best done at the time of policy development to assign ownership and responsibility for implementation and to create a process for data collection and analysis to measure policy impact. Use the KPI and Milestones Chart to establish targeted outcomes and assign stakeholder responsibilities.

KPIs and Milestones							
Policy:							
Desired Outcome	Indicators	Data Source (Who/ Frequency)	Data Analysis (Owner)	Publicly Available (Y/N)	Milestones ()		
					Year 1	Year 2	Year 5

TOOL 22: COMMUNICATIONS STRATEGY PLAN

Use this chart to develop a communications strategy for policy rollout. Consider partnerships to expand the reach of the messages and target specific audiences. For example, industry associations could be good communications channels to OGS suppliers, and civil society organizations might be positioned to lead or partner on consumer communication. The government might have channels of communication with other government agencies that can be used to increase awareness and support for the new policy. As part of your strategy, identify the costs and who will sponsor and provide funding to underwrite the communications strategy.

Why				
Purpose				
What				
Information				
Target Audience				
Target group				
Who	Lead		Partners	
How				
Type				
When				
Timeframe and frequency				
Evaluation				
COMMUNICATIONS BUDGET				
Type of Communication	Per Unit Cost	Quantity	Subtotal	Funder

TOOL 23: POLICY IMPLEMENTATION BUDGET FORECAST

Use this chart to create a budget forecast to capture the costs of policy implementation and identify funding sources.

POLICY IMPLEMENTATION BUDGET (TOTAL)				
Resource Need	Per Unit Cost	Quantity	Subtotal	Funding Source

Annex D: Sample Terms of Reference

Using the OGS Policy Toolkit to Build an Enabling Environment for PAYG Solar Use to Scale

1. Background

Around 733 million people around the world lack access to electricity, while an additional one billion people are connected to an unreliable grid. The off-grid solar (OGS) sector is a US\$2.8 billion annual market that served 490 million users in 2021. It is anticipated that 41 percent of consumers will access electricity through OGS products by 2030. From 2017 to 2019, revenues grew rapidly at 30 percent annually, while sales volumes grew at 10 percent annually. Revenue growth was driven by the emergence of pay-as-you-go (PAYG) off-grid solar. PAYG is a metering technology that enables customers to pay for solar lights and home systems over time, rather than paying the entire cost upfront, using mobile technology. Seventy percent of women who purchased solar home systems did so through PAYG financing. The growing reach of larger PAYG products means that over half of off-grid solar customers now enjoy Tier 1 energy access under the SEforALL Multi-Tier Framework.

PAYG is enabling more and more OGS customers to access higher levels of energy service, including women and girls. Beyond lighting and phone charging, these customers use OGS to enjoy the benefits of radio, fans, televisions, and other appliances that can reduce the time it takes to complete household chores, a burden disproportionately carried by women, and can be used to generate income. Girls greatly benefit from electricity access as well. For instance, girls living in rural areas that have access to electricity are 59 percent more likely than those without electricity access to complete primary education by the time they turn 18.

2. Problem to be addressed

All countries with energy access deficits have formally committed to the goal of achieving Sustainable Development Goal 7, including the target of achieving universal electricity access, by or before 2030. An increasing number of countries have developed 'integrated' electrification plans that include grid, mini-grid, and standalone off-grid components. But there is still limited knowledge

and understanding of how PAYG contributes to national electrification, economic growth, and digital development, especially amongst government stakeholders outside of Rural Electrification Agencies or Ministries of Energy. Since a multitude of stakeholders have a role to play in creating an enabling policy/regulatory environment for PAYG and off-grid solar more broadly, a critical first step is to build knowledge and understanding of the sector and how it contributes to government objectives as well as development outcomes and provide tools to work to address any issues that are inhibiting the scale of PAYG offerings.

As a business model that provides electricity and access to finance leveraging mobile technology, PAYG is affected by policies and regulations in the electricity, finance, import, data protection, and telecommunication sectors.

Existing frameworks have not been designed to take PAYG technologies and business models into account because the evolution of technology and business models has outpaced regulation. In general politicians and civil servants are only beginning to understand the sector, and increasingly recognizing its potential.

Limited government awareness of and support for PAYG means there is a risk of new policy or regulation, or new interpretation of existing policies or regulations, causing harm to the PAYG market. Government policies can support or hinder the growth of OGS and PAYG. In the case of PAYG products, relevant policies reach beyond the energy sector to telecommunications and financial services as well as broader issues such as data privacy and consumer protection. An enhanced policy/regulatory environment for the PAYG market could accelerate growth by de-risking and attracting investment and scaling up responsible consumer financing.

The OGS Policy Toolkit was developed by the World Bank to provide resources and practical tools that can be used by government policymakers, development agencies, and development practitioners. It is designed to help these stakeholders in identifying policy approaches and solutions to support the scale of OGS solutions by fostering an enabling environment for OGS products sold using the PAYG model.

The OGS Policy Toolkit covers:

- > Foundational elements of the PAYG model and interdependencies with the state of the digital and financial services ecosystems.
- > How OGS contributes to national electrification and digital economy goals.
- > How to create a consumer centric approach to policy analysis.
- > An approach to a policy diagnostic.
- > Identification of 12 issues that impact the enabling environment for consumers to use OGS PAYG products.

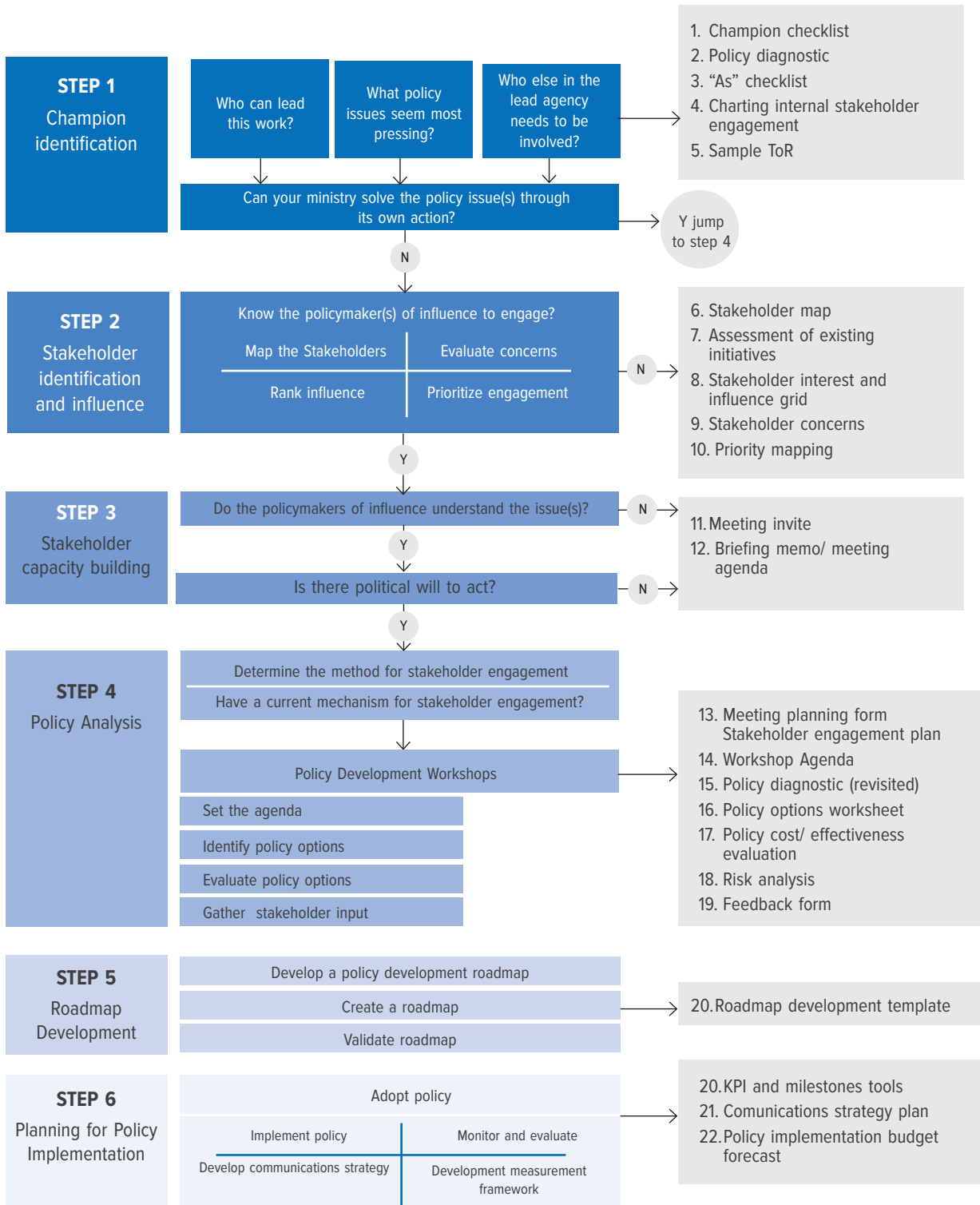
The OGS Policy Toolkit provides 23 tools including tools that can be used to:

- > Conduct a policy diagnostic.
- > Map existing initiatives and stakeholders.
- > Set priorities.
- > Evaluate policy adoptions with multiple stakeholders.
- > Develop a policy roadmap to support government 'champions' with stakeholders.

The particular application of the OGS Policy Toolkit and tools will depend on the market context. The OGS Policy Toolkit lays out six steps for a policy evaluation, adoption, and evaluation process. [Note: some or all of these steps might be relevant to your market context].

POLICY DEVELOPMENT DECISION TREE

TOOLS



3. Objectives and Scope of Work

The objective of this TOR is to engage a consulting firm (the Consultant) to support the government of [XXXX] in using the OGS Policy Toolkit to evaluate and improve the enabling environment for PAYG OGS to scale to meet its universal energy access goals.

4. Deliverables and Timeline

[Pick the description of the Steps you want completed and delete those that are not applicable]

The Consultant will work with the Ministry of [XX] on its use of the OGS Policy Toolkit to create an inter-ministerial dialog that can foster an enabling environment for PAYG OGS offerings. The OGS Policy Toolkit suggests a six step/phase process of which the following steps are of particular reference for this assignment [PICK FROM THE STEPS]

STEP 1:

Champion Identification and Policy Diagnostic

The project will begin with a three-month policy diagnostic and planning phase. Governments will assign a counterpart ‘champion’ to advise on the project and work closely with the Consultant. It is expected that these champions will be from the Ministries of Energy, Rural Electrification Agency, or a similar institution that is well-versed in universal electricity access efforts through scale-up of off-grid solar and PAYG markets. Using the tools from the OGS Policy Toolkit, the Consultant will work closely with the identified champion in the country to identify key policy or regulatory challenges and opportunities.

STEP 2:

Stakeholder Identification and Influence

Once key issues have been identified with the Champion, the Consultant will help the Champion use the tools in the OGS Policy Toolkit to conduct a mapping exercise to understand which stakeholders would need to be involved in the analysis of key issues and development of policy and regulatory options for each area included in the OGS Policy Toolkit to ensure that diverse views of key stakeholders are captured. Stakeholder mapping will explore current levels of knowledge, the existing policy landscape as well as understanding, awareness, capacity, and support for the envisioned policy and regulatory options and define key success factors and critical elements needed for each option. Policy diagnostic and stakeholder mapping will inform more detailed planning of the roadmap development process.

STEP 3:

Capacity Building

The Consultant will design and help the Champion design an approach to building the capacity of stakeholders responsible for energy policy as well as those with responsibility for the policies in the areas of broadband/mobile network access and skills and digital payments/financial inclusion. The Consultant will also be available to develop briefing notes and other short pieces of content drawing resources from the OGS Policy Toolkit as needed covering any issues that emerge of relevance to ensure a well-informed dialogue. This content will be developed with the intention of increasing knowledge of staff within the Champion’s ministry as well external key stakeholders with the goal of raising stakeholder awareness and building capacity before initial roadmap workshops.

STEP 4:

Policy Analysis – Inter-ministerial Workshops

Through the policy diagnostic and stakeholder mapping process, it is expected that key issues for discussion will be identified using the diagnostic tools included in the OGS Policy Toolkit. The Consultant will work with the Champion to organize a series of carefully planned workshops to confirm the priority policy issues, gain support for engagement on the policy issues across relevant ministries, and explore the policy options including the pros and cons of different options. Key issues to focus on will be selected based on potential impact and likelihood of success in the short to medium term. The workshops will include the use of tools from the OGS Policy Toolkit designed to facilitate in-depth discussion of pros and cons of policy and regulatory options. By applying the key tools and processes from the OGS Policy Toolkit, this will help the Champion and other ministries identify which options appear viable by the stakeholders.

The participation of Ministers or other high-level government representatives will be sought at initial workshops to showcase high-level political support for the roadmap process and help to ensure adequate awareness, buy-in, and support for the process from senior and mid-level civil servants. Some workshops will be ‘government only,’ bringing together Ministries, Regulators, and other stakeholders for frank discussion. Others will involve the private sector and potentially other stakeholders such as investors or civil society, to enable government stakeholders to hear directly from these stakeholders regarding challenges, opportunities, and potential solutions. Recognized industry associations such as GOGLA and the National Renewable Energy Associations will be actively involved.

A key ‘process’ outcome of the OGS Policy Toolkit application is expected to be enhanced dialogue between all stakeholders, including government and the private sector, possibly through a commitment to continue meeting periodically to discuss the market’s development, challenges being encountered, and potential solutions if ongoing mechanisms for public-private dialogue do not yet exist. Where relevant, external speakers from other ‘peer’ country governments may be invited to attend to share their experiences and perspectives on issues under discussion. The process should also build off any existing working groups already in place in the market where appropriate.

The meetings will provide an opportunity for in-depth discussion of pros and cons of policy and regulatory options, as identified in the OGS Policy Toolkit and through applying the key tools and processes, this will help identify which options appear viable by the stakeholders.

STEPS 5-6:

Roadmap Development and Policy Implementation

Following the workshops, the Consultant will help the Champion develop a policy roadmap that addresses the priority issues identified in the workshops. This will include specific actions to be taken, assignment of ownership over the issues and expected outcomes along the lines of the tools included in the OGS Policy Toolkit. The Consultant will then help the Champion vet the roadmap with the ministries assigned as owners of each action identified in the roadmap.

The Consultant will help the Champion organize a final workshop for adoption and public release of the roadmap. The roadmap will include assumption of responsibility and commitment to implementation by the ministry assigned as the owner of the policy issue. The Consultant will help the ministry develop a communications strategy for sharing progress against the roadmap and help them develop a monitoring and evaluation plan for the specific policy action.

The timeline for the activities proposed above is outlined below:

[INSERT TIMELINE CHART]

5. Budget and Payment Terms

The resulting contract will be a [lump sum contract] and the selected Offeror will be required to complete the work

for their proposal. Offerors are requested to present, in their technical proposal, the approach and methodology for carrying out this work, a detailed level of effort chart showing their expected chronogram, time allocation and cost for the development of each of the deliverables, and any assumptions (including travel and accommodation) made regarding the level of effort for each of the deliverables and the scope of work to be fully performed. However, it is expected that country nationals will play a key role in managing the ongoing relationship with the governments.

Payment will be linked to finalization and acceptance of key pieces of content.

[INSERT PAYMENT TABLE]

The assignment is expected to commence in [XXXXXX, XXXX] and take approximately [XX] months to complete.

6. Consultant Qualifications

The Consultant — a consulting firm or consortium of firms — should have at least 5+ years of experience in analyzing off-grid solar value chains, markets, policies, and regulations in [INSERT GEOGRAPHY]. The Consultant should demonstrate knowledge of the latest emerging technologies and business models in the PAYG sector. Policy and regulatory expertise from related sectors, such as on-grid energy, telecoms, digital finance in developing country markets is also highly valued. The Consultant should have deep experience of engaging with governments and other key stakeholders such as national and international private sector, civil society, investors, and donors on policy and regulatory issues in the off-grid solar sector.

The Consultant should demonstrate strong communication skills including a grasp of all key technical issues, the ability to convey complex ideas simply, and the capacity to draw upon statistical data, stakeholder interviews, focus group discussions, and other sources to present a balanced and well-reasoned analysis. The Consultant should also have strong visual communication skills including the ability to develop high-quality graphics and diagrams to help convey ideas briefly.

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