



ENERGIZING FINANCE
REPORT SERIES



ENERGIZING FINANCE: UNDERSTANDING THE LANDSCAPE

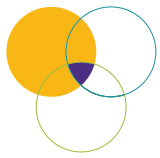
2019

EXECUTIVE SUMMARY



CLIMATE
POLICY
INITIATIVE





FOREWORD

Sustainable Development Goal 7 (SDG7) requires a massive, concerted financial commitment. Billions of dollars need to start flowing, fast, towards electricity and clean cooking solutions each year if we are to achieve access to affordable, reliable, sustainable and modern energy for all by 2030.

The amount of finance needed is not astronomical considering the amount of capital circulating the globe each day. Yet, there is a clear trend showing that, year after year, investment for electricity and clean cooking is falling short of that required for universal access.

Sustainable Energy for All (SEforALL) and Climate Policy Initiative have illuminated this trend with the *Energizing Finance* research series. Now in its third year of publication, *Energizing Finance: Understanding the Landscape 2019* identifies public and private finance commitments in 20 developing countries – known as the high-impact countries (HICs) – that together are home to nearly 80 percent of those living without access to sustainable energy.

This year's report offers a picture of sustainable energy finance from 2013 to 2017, digging deep into finance commitments for different energy solutions and the access levels they can provide. New data are also introduced this year on domestic finance and government expenditures in four countries – Uganda, the Philippines, Nigeria and Nepal – to build a clearer picture of how finance for energy access is being addressed at a national level. Combining the long-term trend analysis with country deep-dives provides policy-makers and financiers with a rich body of evidence that will help them prioritize their resource allocation.

An important lesson gleaned from the report is that overall finance commitments to energy access cannot be taken at face value. While there appeared to be an overall increase in finance commitments for electricity access, a closer look shows that funds were not directed towards supporting people most in need.

Sub-Saharan Africa suffers from continued under-investment, with four countries experiencing declines in investment in 2017. Although investment in grid-connected fossil fuel plants in the tracked countries decreased by 19 percent in 2017, there was only a 10 percent increase in funding for decentralized solutions, half of which went to just three East African countries.

Of the USD 36 billion in total finance for electricity access in 2017, only USD 12.6 billion was estimated to support new access for households. Power for industrial or commercial purposes is important to a country's economic development, but household electricity access is key to building healthy, equitable communities. Sustainable energy *for all* means ensuring no one is left behind in the energy transition. We therefore have paid special attention to the energy needs of vulnerable groups – women and displaced people – in this report, assessing whether international finance is supporting their development and social equality.

We know that women and children are disproportionately affected by a reliance on unsustainable biomass for cooking. The time spent collecting fuel and exposure to indoor fumes are just two major burdens they face. This makes the 2017 data on clean

cooking finance particularly troublesome. Finance for clean cooking dropped 73 percent in 2017 compared to the 2015-2016 period. This underinvestment comes at the expense of people's health and stifles gender equality as women continue to suffer the burdens of dirty cooking.

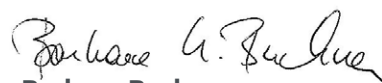
Notwithstanding the worrisome trends, the analysis contained in this report also reveals promising signs for the coming decade. There are new financing mechanisms emerging to address specific barriers to investment in electricity and clean cooking access by domestic and international institutions. Pay-per-service models, results-based financing and crowdfunding can all help unlock vital capital, but these need to be scaled and deployed more quickly.

The bottom-line is that without adequate finance we cannot achieve SDG7 by 2030. The capital exists, but there is a clear need for innovation in how it is mobilized and allocated at scale. *Energizing Finance: Understanding the Landscape 2019* shows where, and for whom, energy access finance is needed most. The evidence presented here should catalyze governments, businesses and development organizations to produce new policies and investment frameworks that will deliver sustainable energy for all.



Glenn Pearce Oroz

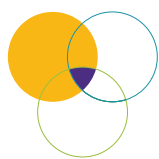
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EXECUTIVE SUMMARY

Finance is key to achieving Sustainable Development Goal 7 (SDG7), which aims to ensure access to affordable, reliable, sustainable, and modern energy for all. However, less than one-fourth of the investment required for universal electricity access is taking place. The situation for clean cooking is even more concerning, where investment continues to lag even further behind. As progress towards each of these objectives remains underfunded, achieving SDG7 by 2030 becomes increasingly unlikely.

Without a concerted effort to increase the targeted flow of finance, it is likely that many governments' energy access goals will not be met. This is particularly true in Sub-Saharan Africa where greater investment in off-grid solutions and clean cooking is required.

This shortfall could have severe consequences for global development, as energy access is an impetus for fulfilling several of the Sustainable Development Goals (SDGs) – including those for health, education, food security, gender equality, poverty reduction, employment, and climate action. With only ten years left until 2030, the target date to meet all of the SDGs, we must act quickly.

The *Energizing Finance* series, developed by Sustainable Energy for All in partnership with Climate Policy Initiative, is the first and only in-depth attempt to capture multiple years of data on finance for the two key areas of energy access: electrification and clean cooking. This report focuses on public and private finance commitments in 20 developing countries – known as the HICs – that together are home to nearly 80 percent of those

living without access to sustainable and modern energy.¹

Now in its third iteration, this report updates previous findings from 2013-14 and 2015-16 with energy access finance commitments from 2017.² For the first time, policymakers and SDG financing leaders working to achieve universal energy access can view a five-year trend analysis of where finance is flowing for energy access and where it is not. This year, the report provides a deep-dive analysis of additional data on domestic finance and government expenditures in four countries: Uganda, the Philippines, Nigeria, and Nepal.

From all angles, investment in both electricity and clean cooking continues to remain firmly below the estimated need to close the energy access gap. Investment flowing to Sub-Saharan Africa – a region home to more than half a billion people without electricity – is alarmingly low. We can no longer afford to continue current incremental increases in investment if universal access to energy by 2030 is to be achieved. We must commit to implementing all necessary actions including, but not limited to, mobilizing private finance, stronger domestic policy commitments and action, supporting innovative business models and market development activities, and scaling and replicating best practices.

¹ For electricity access findings, the countries are: Afghanistan, Angola, Bangladesh, Burkina Faso, Congo (DR), Ethiopia, India, Kenya, Korea (DPR), Madagascar, Malawi, Mozambique, Myanmar, Niger, Nigeria, Philippines, Sudan, Tanzania, Uganda, and Yemen. For clean cooking access findings, the countries are: Afghanistan, Bangladesh, China, Congo (DR), Ethiopia, India, Indonesia, Kenya, Korea (DPR), Madagascar, Mozambique, Myanmar, Nepal, Nigeria, Pakistan, Philippines, Sudan, Tanzania, Uganda, and Vietnam.

² All findings in the report are compared with results from the previous two reports, expressed as average annual figures for 2013-14 and 2015-16.

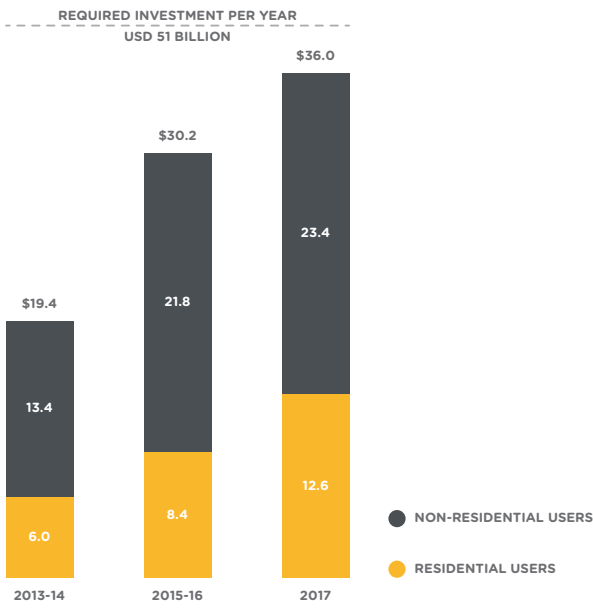
ELECTRICITY ACCESS FINDINGS

FINANCE FOR ELECTRICITY IN THE 20 HICS REACHED AN ALL-TIME HIGH OF USD 36 BILLION IN 2017, DRIVEN PRIMARILY BY INCREASED INTERNATIONAL PUBLIC FINANCE. HOWEVER, WITH ONLY ONE-THIRD OF THIS FINANCE, OR USD 12.6 BILLION, BENEFITING RESIDENTIAL CONSUMERS, FINANCE IS FALLING FAR BELOW NEEDS.

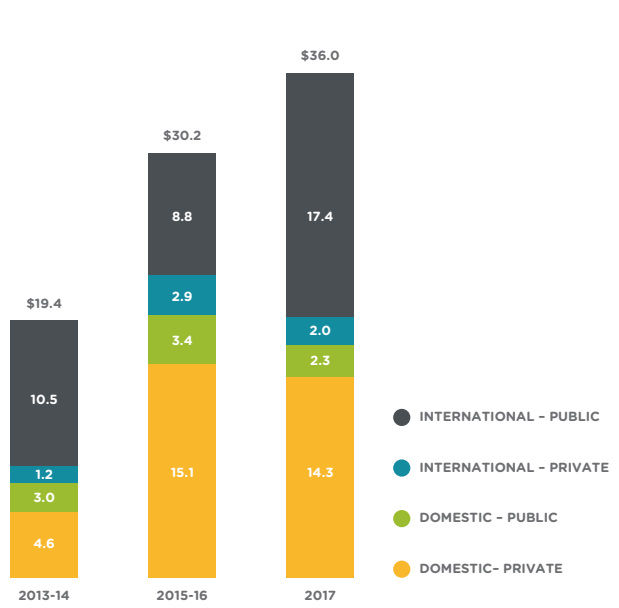
Figure ES 1

Snapshot of Finance for Electricity in the 20 HICs (USD Billion)

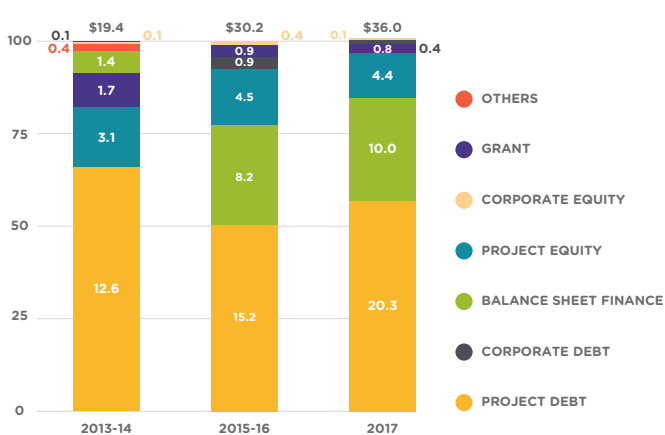
TOTAL FINANCE BETWEEN 2013-2017



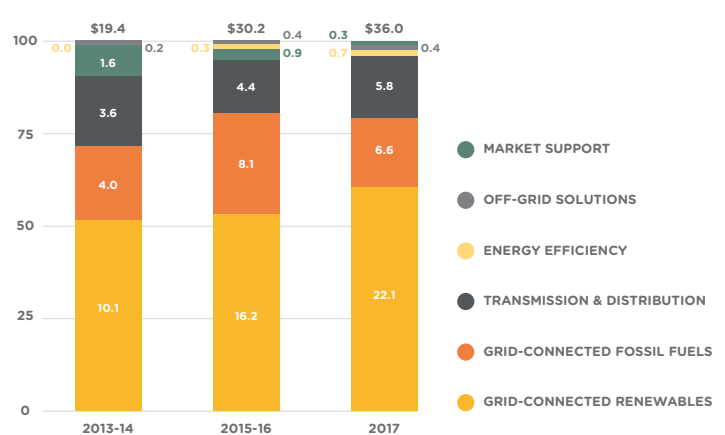
DISTRIBUTION BY SOURCE



DISTRIBUTION BY INSTRUMENT



DISTRIBUTION BY TECHNOLOGY



Finance for electricity in the 20 HICs increased to USD 36 billion in 2017, after stagnating at USD 30 billion in 2015-16. However, only one-third of this finance, or USD 12.6 billion, is estimated to have provided residential access. As we near the previously estimated investment requirement of USD 51 billion to bring universal electricity access to households by 2030 (IEA, 2018), it is clear that greater investment is urgently needed, especially in the off-grid sector and throughout Sub-Saharan Africa.

Finance for electricity access from international sources increased substantially to USD 19.4 billion in 2017 after stalling from 2013 to 2016 at USD 11.7 billion per year. This includes export credit agencies and multilateral development finance institutions (DFIs) that increased their annual expenditures for electricity projects in Sub-Saharan Africa and Asia.

However, bilateral aid flows from most developed country donor governments declined sharply, particularly from Japan and the US, falling from USD 4.1 billion in 2015-16 to USD 2.3 billion in 2017. For the first time since 2013, the report tracked electricity projects funded by Indian public entities in other HICs: Afghanistan, Myanmar and Bangladesh.

After a steady increase in 2015-16 due to the booming Indian renewable energy sector, domestic finance decreased by almost USD 2 billion to USD 16.6 billion in 2017. This is largely attributable to a decline in financing from national public banks in India, from USD 2.5 billion in 2015-16 to USD 500 million in 2017. On the domestic private sector side, lending from commercial banks decreased tangibly, while financing from project developers and corporations increased only marginally to USD 13.5 billion in 2017, compared with USD 12.7 billion in 2015-16.

In terms of technologies, grid-connected renewable energy plants accounted for 61 percent of all finance tracked, increasing by almost USD 6 billion compared to 2015-16. India accounted for most of the increase in solar PV investments.

Investment in grid-connected fossil fuel plants – mostly coal powered – decreased to USD 6.6 billion in 2017 compared to USD 8.1 billion in 2015-16. In 2017, four coal plants were financed in two HICs, Bangladesh and the Philippines, down from 17 plants in 2015-16. 60 percent of all coal financing (USD 5.6 billion) was sourced from the Export-Import Banks of India (USD 1.6 billion) and China (USD 1.7 billion) for projects in Bangladesh. Private sector developers and banks contributed more than 30 percent of total financing for coal plants in 2017 (USD 1.5 billion), split almost equally between domestic and international sources.

Investment in off-grid solutions and mini-grids (OGS) continues to remain a small proportion (1.2 percent) of the total finance for electricity tracked. Standing at USD 430 million in 2017, investments in the sector only marginally increased compared to 2015-16. Kenya, Tanzania, and Uganda together accounted for 56 percent of the total.

Investment in India and Bangladesh accounted for almost two-thirds (USD 24 billion) of the total financing tracked in 2017. This is an increase of USD 4 billion compared to 2015-16, when the region already saw a staggering increase of USD 12.4 billion from 2013-14, mainly led by renewable energy financing in India. This investment is helping India rapidly progress towards achievement of its energy goals.

Other than Nigeria, which attracted over USD 6 billion in 2017, investment in other Sub-Saharan African countries remained insufficient to address access needs. Cumulatively, finance for electricity in the 13 African countries analyzed in this report increased to USD 9.6 billion in 2017 from USD 5 billion in 2015-16, but largely because of a single large hydropower plant in Nigeria worth almost USD 5 billion. Investment in four Sub-Saharan countries declined in 2017, and ten countries each received less than USD 300 million.

As seen in previous years, most of the electricity produced by the finance tracked favors industrial and commercial customers over households. An estimated 36 percent of all electricity finance



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ES BOX 1

Access to Electricity in Uganda

HIGH AMBITIONS BACKED BY INCREASING GOVERNMENT-LED INITIATIVES

As of December 2018, only 38 percent of households in Uganda had access to a minimum level of electricity per the Multi-Tier Framework (MTF).³ Uganda has ambitious goals to improve electricity access, including to achieve near universal access by 2030. There are a variety of national, publicly led efforts underway to achieve this goal, including finance facilities through the Rural Electrification Agency and Uganda Energy Credit and Capitalization Company to drive investment in electricity access projects.

Despite these efforts, finance for electricity access decreased significantly from an annual average of

USD 657 million between 2013 and 2016, to USD 269 million in 2017. While overall finance has not increased over the past half-decade, there are some positive indicators related to domestic private investment, which reached a five-year high in 2017 of USD 145 million. Similarly, investment in “last-mile” solutions, including mini grids and off-grid technologies, also reached a five-year high of USD 36 million in 2017.

Barriers remain to increasing investment in electricity access, including insufficient capital to scale up energy value chain businesses, low consumer awareness of electricity access solutions, high rates of poverty in rural communities and among displaced persons, relatively low willingness to pay for those solutions, and mistrust of both grid and off-grid solutions. Solutions discussed in the case study include application of risk pooling guarantees to drive investment, increased investment in mobile payment strategies, and commitment to product standards enforcement.

in the HICs supports new or improved access for residential electricity consumers. While investments in residential electricity have more than doubled in the last five years, following the overall growth of electricity finance, it needs to scale up even more rapidly. This is particularly the case in Sub-Saharan Africa, where achieving electrification for all would require at least USD 27 billion per year by 2030 (OECD, 2019). Considering that approximately USD 5.1 billion was estimated as committed towards access for household consumers in 2017, current financing is substantially below what is needed.

³ Bhatia, M. and Angelou, N., 2015. “Beyond Connections: Energy Access Redefined”. ESMAP Technical Report. Washington, DC: World Bank. Available at: <https://openknowledge.worldbank.org/handle/10986/24368>

Only 3 percent of total finance commitments for residential electricity supported lower tiers of electricity access (Tiers 1 and 2) associated with basic energy connections. It is these basic connections, often off-grid or other decentralized solutions, that can represent an important step forward for increased electricity access to people in remote areas.

CLEAN COOKING FINDINGS

Finance for residential clean cooking decreased to USD 32 million in 2017 – down 73 percent from the 2015-16 estimated annual average of USD 117 million⁴. The limited finance tracked for clean cooking

⁴ This report uses updated values for the 2013-14 and 2015-16 totals published in the previous reports.

demonstrates a continued and serious underachievement when compared to the estimated annual investment requirement of USD 4.4 billion (*Tracking SDG7: The Energy Progress Report 2019*). Such shortfalls increase annual investment levels required between now and 2030, and intensify the urgency to expand finance for clean cooking as soon as possible.

There was a marked decrease in international public finance in 2017, in terms of both quantum and proportion, reaching a new low of USD 10.6 million. International public finance decreased from annual averages of USD 36.3 million in 2013-14 and USD 108 million in 2015-16, respectively. From providing 92 percent of all finance tracked in 2015-2016, international public finance accounted for only 33 percent of finance tracked in 2017.

Private finance⁵ for clean cooking increased in quantum and proportion in 2017, accounting for 66 percent of all finance tracked, up from 14 percent in 2013-14 and 8 percent in 2015-16. While an annual average of USD 6 million of private finance was tracked in 2013-14, 2017 saw approximately USD 21 million. This was largely driven by an uptick in corporate equity investments, from levels of USD 2 million observed in 2013-14 and USD 6 million in 2015-16, to almost USD 14 million in 2017.

Sub-Saharan Africa received the majority of clean cooking finance in 2017, with Kenya receiving 63 percent of total commitments tracked. Kenya's

⁵ The Clean Cooking Alliance (CCA) tracked USD 40 million of investments into clean cooking companies in 2017 (Clean Cooking Alliance, 2019). This report only incorporates transactions benefiting companies operating in the 20 HICs, resulting in USD 22.5 million that was included in the analysis.

ES BOX 2

Access to Electricity in the Philippines

DISTRIBUTED RENEWABLES NEEDED FOR PERSISTENT POCKETS OF LOW ELECTRICITY ACCESS

The Philippines is one of the fastest growing economies in Southeast Asia and has set an ambitious target to achieve 100 percent electrification by 2020. But despite this being less than a year away, in some regions an average of 26 percent of the population still does not have access to electricity, indicating that there is much progress to be made.

Because of the country's archipelagic nature, existing grid infrastructures fail to reach the smaller and more remote islands and populations in the

Philippines. However, off-grid investments averaged only USD 2 million per year between 2013 and 2017, as overall investment declined sharply from USD 4.1 billion in 2015-16 to USD 1.4 billion in 2017. Complicating matters further, affordability of electricity is an issue, as 21.6 percent of the population lives below the national poverty line, while the average cost of electricity is amongst the highest in Asia.

Bringing solar power to the more remote areas of the Philippines has the potential to provide reliable, sustainable, and affordable electricity to those areas. This will require newer, innovative financing products and associated capacity building, while spreading and refining previously piloted mechanisms on a wider scale. Tailored debt products with longer tenors and lower interest rates may help to cover upfront costs and sustain the wider adoption of distributed solar.

reputation as a destination for energy access impact investment in the region was upheld, as the country attracted over USD 20 million of 2017's USD 32 million of clean cooking finance. Other countries with more significant needs (i.e. with more than 90 percent of the population lacking access to clean fuels and technologies) received disproportionately limited financing. It is important to note that data limitations hinder the report's ability to track domestic public financing programs, and thus the analysis underrepresents the depth of financing in HICs that have prioritized clean cooking, such as India and Indonesia.

Improved biomass stoves continued to receive the greatest amount of finance in 2017, followed by alcohol-based cooking solutions. While improved biomass stoves and biogas solutions have each been the leading recipients of clean cooking finance commitments for alcohol-based solutions overtook those

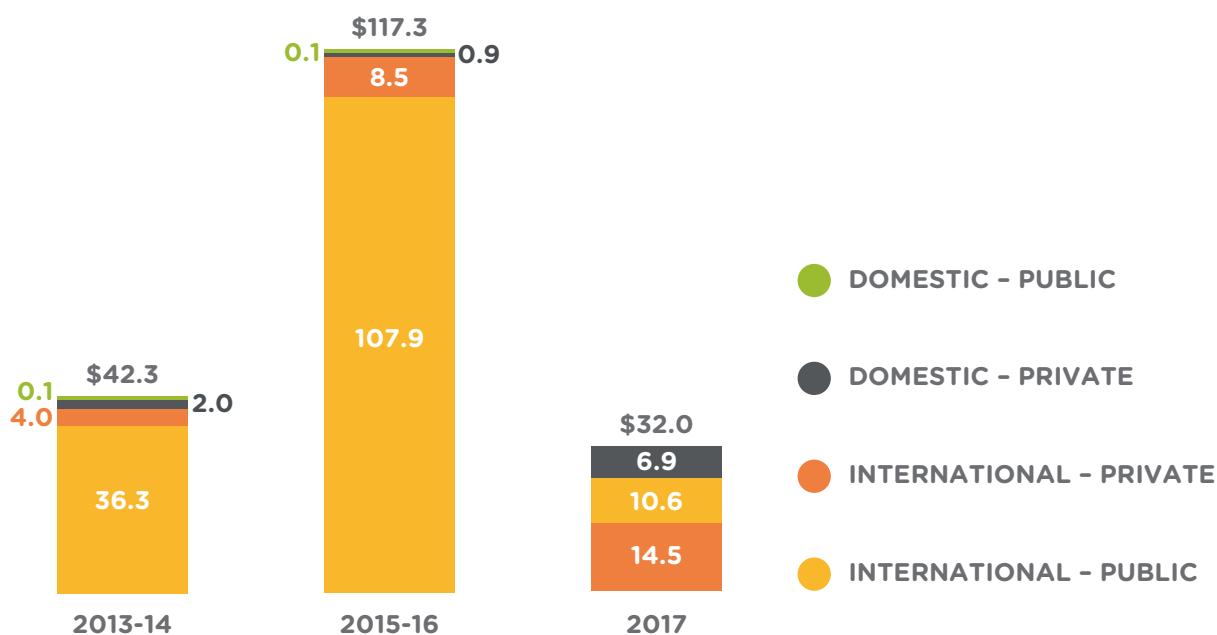
for biogas digesters in 2017, receiving over USD 6 million, with more than USD 14 million of finance allocated to improved biomass stoves.

Methodological improvements introduced this year have improved the reliability of the analysis, historically impacted by large data gaps in the clean cooking sectors. A welcome addition of clean cooking finance data provided by the World Bank Group allowed for the opportunity to identify nearly USD 200 million worth of additional transactions in the 2013 to 2016 period, and update the annual averages that were published in the previous editions of this report.

However, transaction data for clean cooking finance remains challenging to consolidate. A multi-stakeholder research effort is required to enhance the understanding of this important financing landscape.

Figure ES 2

Sources of Finance for Residential Clean Cooking (USD Million)



ES BOX 3

Access to Clean Cooking in Nigeria

A LARGE CLEAN COOKING MARKET WAITING TO BE TAPPED

Nigeria is the largest and most populous economy in Africa. 95 percent of households, or approximately 190 million people, do not have access to clean cooking fuels and technologies, leading to 23,000 child deaths per year due to lower respiratory infections caused by the use of solid cooking fuels. The country's size presents a residential clean cooking market opportunity of about 40 million households.

Nigeria tested the subsidization of kerosene as a cooking fuel. Costing the government approximately USD 1 billion in 2015, this program was found to be ineffective in ensuring access to affordable cooking fuels. Despite the subsidy having been lifted in

2016, kerosene remains a preferred fuel among urban households.

Although Nigeria is one of the world's largest producers and exporters of LPG, its households consume far less than those in neighboring oil-producing countries, and indeed, less than the average seen across all Sub-Saharan African households. This shortfall in per capita LPG consumption has been attributed to the country's underdeveloped regulatory environment for LPG cooking gas, which has precluded the commercial investment in the sector that is needed to enable greater adoption.

With limited investments tracked in Nigeria's clean cooking sector over the years, dramatically strengthening the investment environment is crucial. This will require: 1) the development of catalytic smart subsidy programs, such as those drawing on the experience of results-based financing schemes (RBF) in other markets; 2) the exploration and preparation of modern clean cooking fuels investment opportunities; and 3) the adoption of international best practices in LPG market transformation.

REACHING THE MOST VULNERABLE

For the first time in the *Energizing Finance* series this iteration highlights the challenges faced by highly vulnerable groups in accessing energy. It focuses specifically on women and girls, who are disproportionately responsible for fuel collection and biomass-fueled cooking. As a result, they are at risk of both violence during collection and of negative health outcomes associated with indoor biomass burning. This report also draws attention to the risks facing displaced persons, who are likewise highly reliant on biomass fuels

and among whom fuel collection can drive political conflict over limited resources (SAFE, 2015).

In 2017, only 7 percent of the USD 14 billion annual official development assistance (ODA) for energy activities in developing countries was specifically targeted to benefit women. Flows of ODA to the energy sector with gender equality as an explicit policy objective have increased ten-fold since 2002, but the proportion of total energy flows has remained almost unchanged. Energy access projects aimed at women and the dis-

ES BOX 4

Access to Clean Cooking in Nepal

A TRADITIONAL CLEAN COOKING MARKET PRIMED FOR BOLD APPROACHES

Nepal has prioritized the dissemination of artisanal mud and metallic cookstoves, rocket stoves, and gradual concentric chambers (GCC) biogas digesters for decades. Yet, despite these actions and the country's small size and population of 30 million, only 28 percent of households have access to clean cooking fuels and technologies. Rural households predominantly rely on traditional, solid biomass fuels, while urban households increasingly favor the use of imported LPG cooking gas.

The Government of Nepal has set a target of achieving clean cooking for all by 2022. Through a series

of policies, programs, and strategies coordinated by the Alternative Energy Promotion Centre, clean cooking investors and enterprises can enjoy a welcoming investment environment that is bolstered by capital subsidies available for certain technologies and communities.

Unfortunately, public and private investment in clean cooking remains limited, with less than USD 1 million of transactions tracked over the past five years. In order to transform clean cooking in Nepal, it is recommended that the government consider: 1) expanding the range of clean cooking fuels and technologies supported by the Renewable Energy Subsidy Policy; 2) building on Nepal's history of public-private partnerships in energy, i.e. to access new sources of climate finance; 3) expanding national storage capacity for LPG, to reduce seasonal supply chain limitations; and 4) exploring new and modern clean cooking opportunities.

placed include "pay-as-you-go" (PAYG) financing, support for entrepreneurship in the energy sector, and specialized finance programs aimed at supporting access for the most vulnerable. There has been progress in implementing energy access projects to benefit women and displaced persons, but additional scale and acceleration of investment is needed to achieve energy access goals.

INNOVATIVE FINANCING MECHANISMS TO INCREASE ENERGY ACCESS

New to this year's report is an analysis of how innovative financing mechanisms can increase energy access. Factors such as credit risk, liquidity and currency risk, small investment ticket size, and political instability that, especially when applied to challeng-

ing, underdeveloped energy markets, prevent investors from entering those markets at scale. However, a number of existing business models and financing mechanisms, when applied to different sectors, technologies and geographies, can unlock additional private capital for energy access projects using structuring to meet the specific needs of different investors.

It is encouraging that a number of such financing mechanisms are being developed and implemented in the distributed renewable energy and clean cooking space. These include: guarantees, RBF, pay-per-service models, securitization, currency risk management instruments, crowdfunding, and project preparation facilities. Such models now need to be replicated at scale to fill the investment gap.

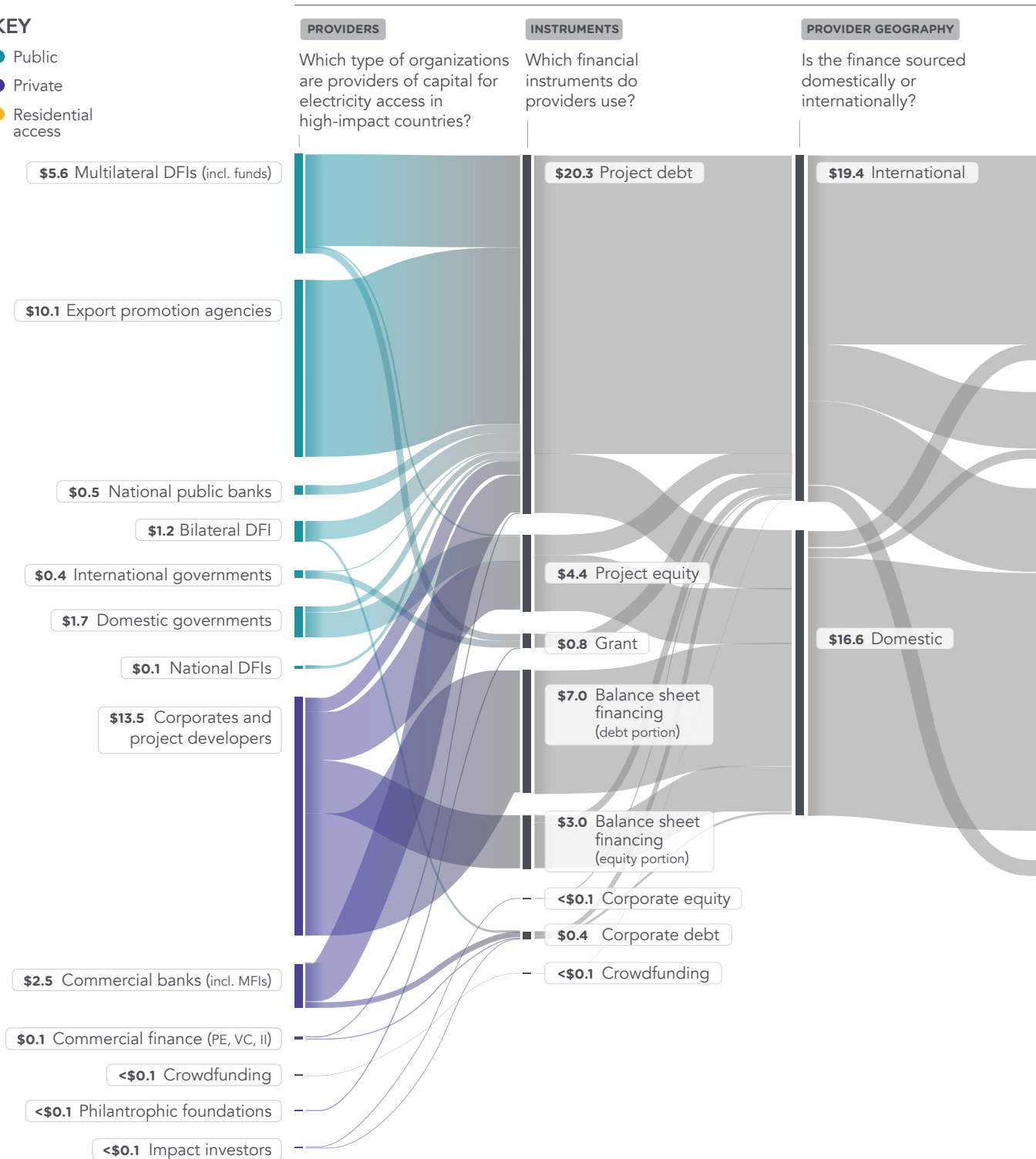


Annex A1

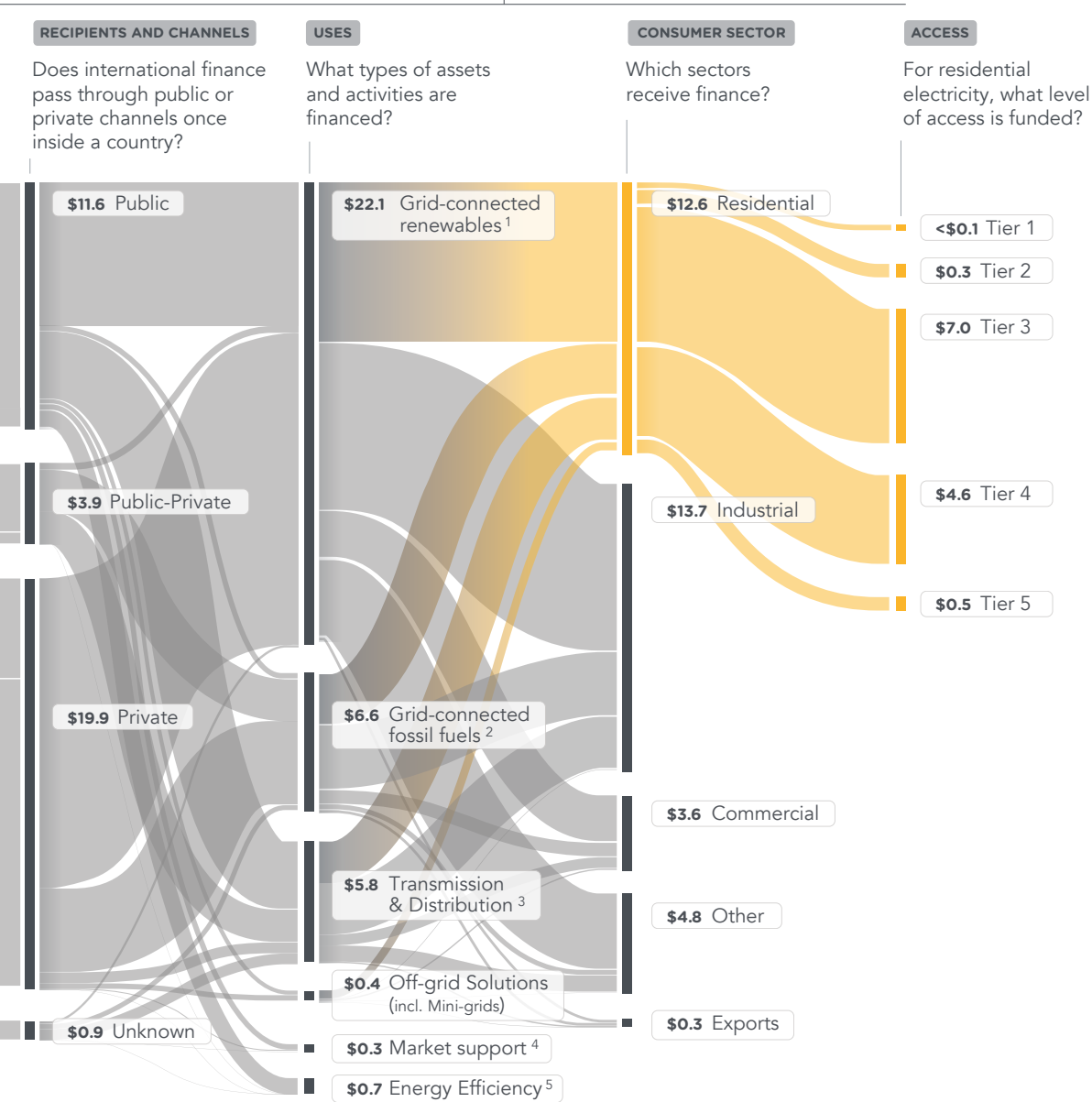
Finance for Electricity Access in 2017 Committed in 2017 in High-Impact Countries (USD Billion)

KEY

- Public
- Private
- Residential access



\$36BN
Total committed per year



NB: Values may not add up due to rounding specific tier

¹ Grid-connected renewables includes: Wind, Solar PV, Large hydro, Geothermal, Biomass and waste, Small hydro, Other / unidentified, Biofuels.

² Grid-connected fossil fuels includes: Coal, Gas, Oil, Unspecified.

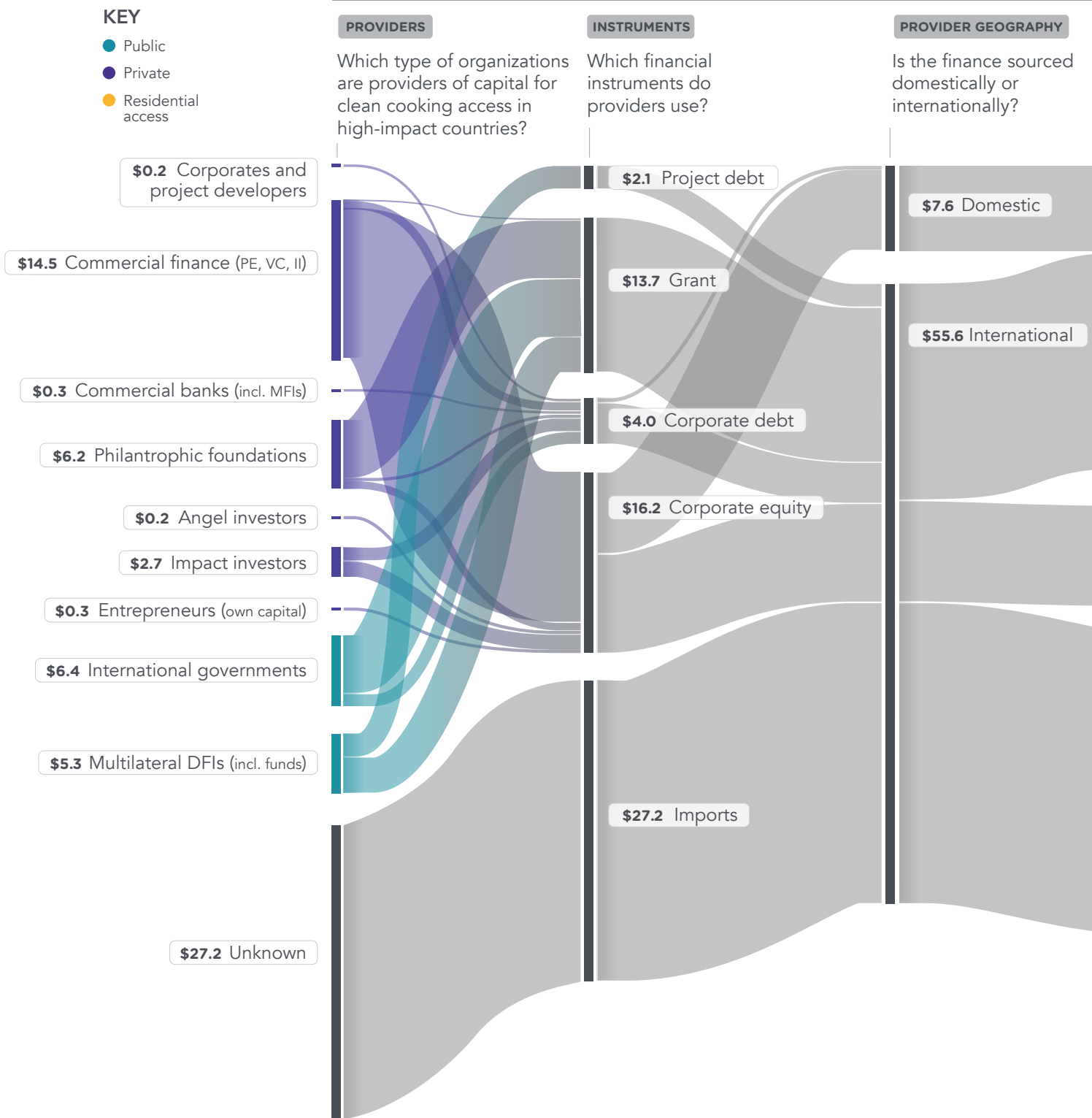
³ Transmission and distribution includes: Transmission, Distribution, Unspecified T&D.

⁴ Market support flows were not assigned to any specific consumer sector.

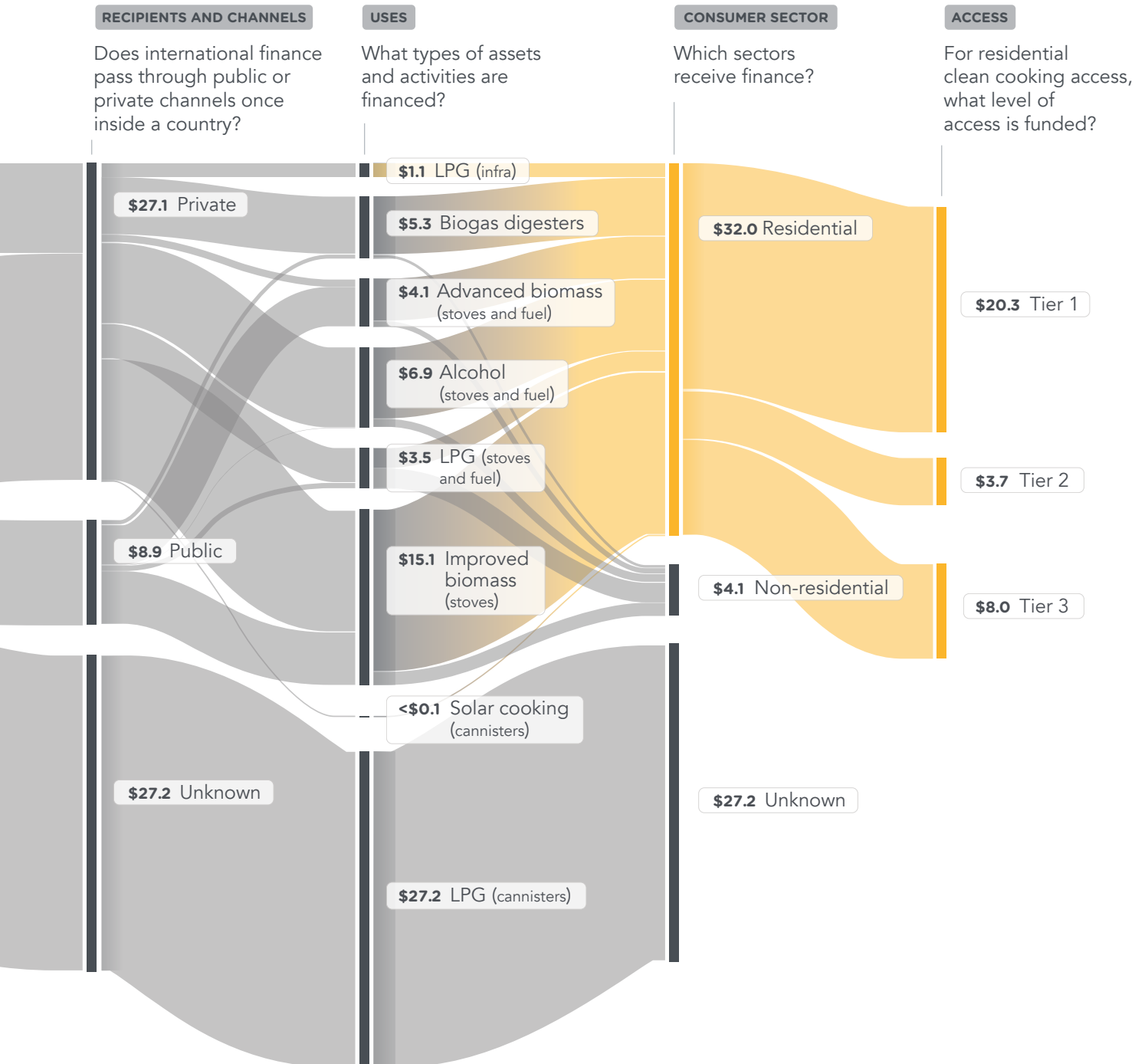
⁵ Energy efficiency flows were not assigned to any specific consumer sector.

Annex A2

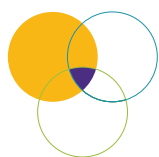
Finance for Clean Cooking Access in 2017 Committed in 2017 in High-Impact Countries (USD Million)



\$63.2MN
Total committed per year



NB: Values may not add up due to rounding



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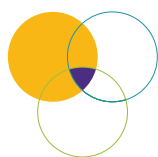
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