

ENERGY SAFETY NETS

INDONESIA CASE STUDY

POLICY BRIEF

KEY FINDINGS

- Indonesia's subsidy reforms have improved energy access for many poor groups, but the key driver for reform has been reducing the fiscal burden.
- Successful reform requires an influential champion (decision- or policymaker) and effective inter-ministerial coordination. Without high-level political support, it is unlikely that the reforms would have had as much impact.
- The existence of a unified database system (*Basis Data Terpadu* (BDT)) was critical to implementing targeted energy subsidies and reducing transaction costs. The experience has revealed the potential for integrating energy subsidies within a wider social protection program.
- Increases in electricity access do not necessarily result in increased consumption by poor groups, nor reduce inequalities in consumption across income groups. Similarly, lower rates of access to clean cooking fuels among lower-income groups are persistent. This suggests that *one size fits all* programs will not yield universal access.
- Changing household energy consumption patterns requires beneficiaries that are well informed about the programs and the benefits of using modern energy services.

RECOMMENDATIONS FOR POLICYMAKERS

- Make energy access (and/or energy consumption) for poor and vulnerable groups an explicit policy aim. This will increase the effectiveness of energy safety nets (ESNs), by, for instance, focusing attention on addressing subnational inequalities during the design and implementation of ESNs.
- Regularly update the BDT to minimize exclusion and inclusion errors and consider additional eligibility criteria to account for inequalities in access levels due to geography (topography or remoteness).
- Develop additional measures to increase consumption of electricity and affordability of liquefied petroleum gas (LPG) for poor and vulnerable households. For example, expanding energy access for remote and off-grid households may be better accomplished by alternative infrastructure choices, such as distributed renewable energy sources.
- Continue to invest in awareness-raising campaigns to build the broader energy literacy of beneficiaries and their specific understanding of ESNs to ensure sustained adoption of modern energy services.

INTRODUCTION

Indonesia has a long history of providing universal energy subsidies. These have generally been found to be regressive and expensive, reducing fiscal space for other public investment, including social protection (Agustina et al. 2012; Dartanto 2013; Savatic 2016). Reducing the fiscal burden has been the main driver for the reform of energy subsidies in Indonesia, with expanding energy access for poor and vulnerable groups an important, but secondary, consideration.

The Government of Indonesia has conducted several energy reforms, including the recent shift from commodity-based energy subsidies to targeted subsidies for electricity, and for LPG for cooking. As a share of total government spending, the amount allocated to energy subsidies shrank from 18 percent in 2014 to 6 percent in 2015.

This policy brief summarizes the experience and insights from using social assistance to promote access to modern energy sources for poor and vulnerable people in Indonesia. While ESN is a new term, Indo-

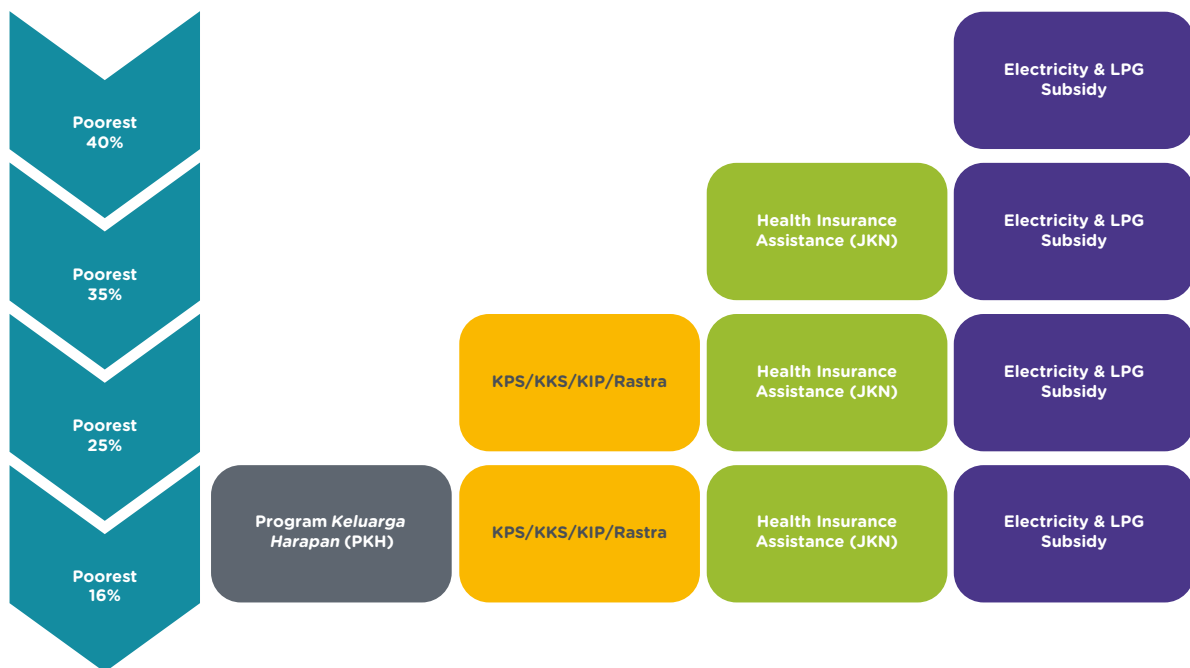
nesians are familiar with the use of social assistance programs, as well as with the provision of energy subsidies for electricity and LPG.

MODALITIES OF ENERGY SUBSIDY REFORM

Three factors enabled Indonesia to successfully transition from commodity-based subsidies to targeted ESNs: the availability of high-quality beneficiary data (through a unified database system for beneficiaries of several social assistance programs, the *Basis Data Terpadu* or BDT, see Figure 1); a mechanism to deliver the subsidy; and a system to monitor it. In addition, the subsidy process was driven by high-level political support and benefited from effective across different line ministries.

In the case of electricity, the aim was to ensure that households that were not eligible for social assistance stopped receiving the previously universal subsidy, i.e., they were moved to a higher tariff. The existing consumer database of the state-owned electricity company, PLN, was cross-referenced with the BDT da-

Figure 1
BDT Database Utilization for Social Assistance Programs



Source: TNP2K 2018a

tabase to identify ineligible consumers. To date, the subsidy removal has only been applied to households with 900 VA connections, as these are considered to have a higher welfare status than consumers with lower-power 450 VA connections. By January 2017, the subsidy had been removed from 18.25 million 900 VA households, reducing the number of beneficiaries to 4.1 million households.

Targeted-subsidy reform of LPG began in 2018 with several regional pilots. The reformed subsidy consists of a conditional cash transfer equivalent to the cost of three 3 kg LPG cylinders per month (currently IDR 45,000 or USD 3.20). The benefit is transferred to beneficiaries' bank accounts as an e-voucher to be used to buy LPG only. The most recent pilots in 2019 include the use of biometric systems to identify recipients at registered LPG suppliers.

PROGRESS ON ACCESS TO ELECTRICITY

The number of households without an electricity connection in Indonesia has declined, and the consumption of electricity provided by PLN (via the national grid) and by non-PLN off-grid suppliers increased. At the national level, the electrification rate increased from 81 percent in 2007 to 95 percent in 2017. Over this decade, the electricity access gap was almost closed, with large improvements in provinces located outside Java island, the wealthiest and most populated region.

However, there are also significant subnational variations in rates of electricity access. Household connectivity varies by topography, remoteness and income level, reflecting challenges related both to the availability and the affordability of electricity connections. This is illustrated by the fact that provinces such as Maluku and Papua and remote regions (small islands) have slowest rates of progress on electricity access. The access rate is lowest in Papua, with coverage of only around 50 percent, due to its landlocked, mountainous topography and low population density (Innah et al. 2017). Evidence also suggests that the reliability and quality of electricity varies in different locations, in part due to the source of supply (i.e. PLN or non-PLN). Blackouts are of significant concern, especially outside Java (Sambodo 2016; Burke and Kurniawati 2018).

PROGRESS ON ACCESS TO MODERN COOKING ENERGY

Access to modern cooking technologies¹ and fuels also improved between 2007 and 2017 with the percentage of households using LPG increasing dramatically. In 2007, kerosene and wood were the two most popular fuels for cooking used by Indonesian households across all income groups. The shift to LPG for most income groups was driven by the 2007 kerosene-to-LPG conversion (Zero-Kero) program, followed by an increase in kerosene prices in 2008. Despite this progress, the use of biomass (briquettes, charcoal and wood) as a primary source of cooking persists, particularly among lower-income groups, highlighting inequality of access to modern cooking fuels due to issues of affordability. This points to the need for further targeted social assistance.

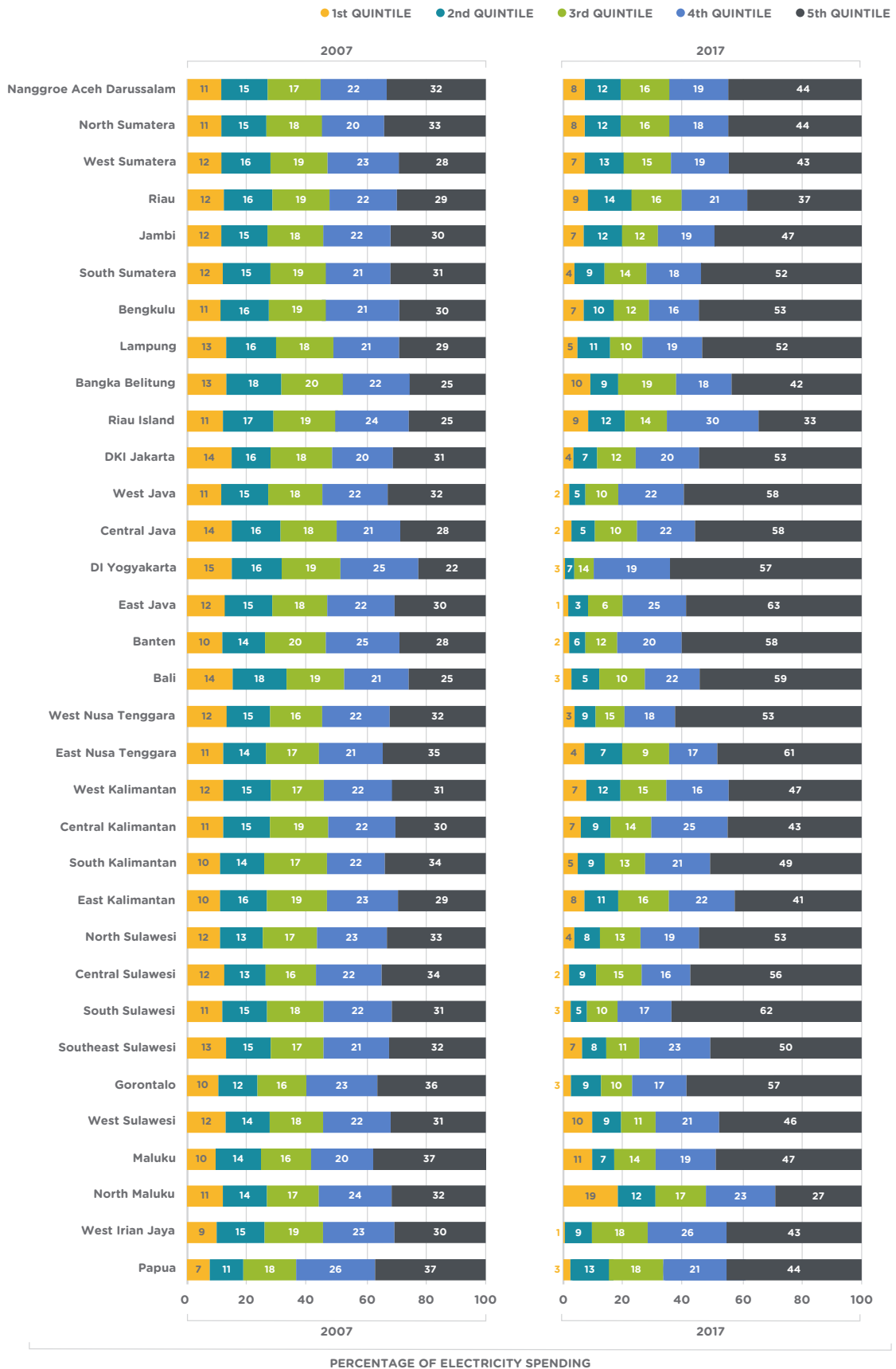
In terms of subnational variations in modern cooking energy access rates, unlike with electricity access, the data show a uniformly low rate of access across all provinces in 2007. This was especially the case for the poor, but even for the wealthiest quintile access rates did not exceed 25 percent. Within a decade, impressive progress led to access to modern cooking energy reaching 62 percent nationally. However, there are significant subnational variations, with the extremely low access rates in provinces in the Maluku and Papua unchanged, at around only 1 percent. According to Pertamina, the state-owned oil and gas company and main supplier of LPG, the main impediment to LPG uptake in these provinces is the lack of seaport infrastructure. This can lead to distribution delays, a higher retail price, or prevent the availability of LPG altogether.

ENERGY ACCESS AND ENERGY CONSUMPTION

Research shows that there is no automatic correlation between households achieving electricity access and increased electricity consumption. Figure 2 presents electricity consumption (expenditure) by income quintile and by province in 2007 and 2017. In contrast to the narrowing gap between groups with different income levels for access to electricity, the gap between

Figure 2

Intra-Province Share of Electricity Spending, by Quintile in 2007 and 2017



Note: Figures may not sum to 100 due to rounding.
 Source: Susenas 2007 and 2017 (processed by authors)

the consumption of different income quintiles has widened. While consumption was shared relatively evenly across income quintiles in 2007, consumption by the wealthiest quintile represented more than half of total consumption in most of the provinces in 2017, reducing the share of the rest of the populations, especially that of the poorest quintile.

This pattern indicates that despite electricity tariff reforms enacted to make wealthier people pay more for electricity than poorer people, their share of consumption continues to grow. The pattern is observed all over Indonesia – from the most developed areas like Central Java to remote areas like Nusa Tenggara and Sumatra.

Given the significant role electricity usage can play in reducing poverty, these distinctly different patterns for access and consumption suggest the need for policies to narrow the consumption gap.

CONCLUSIONS

To date, reducing the fiscal burden, rather than energy access goals, has driven changes to energy subsidies in Indonesia. However, there is a complementary effect between social assistance programs and subsidies for LPG and electricity that are targeted towards poor and vulnerable households. Targeted policies have delivered electricity and clean cooking access to many poor and marginalized groups. However, while the gap in access to electricity between income groups has narrowed, the gap in electricity consumption has widened. Extensive progress has been made for LPG for

cooking, but parts of the country remain almost entirely without access. Overcoming the barriers to poverty alleviation that these challenges pose requires continual refinement of Indonesia's ongoing efforts and a shift away from one size fits all programs to better target support for modern energy services.

REFERENCES

- Agustina, C. D. R., Fengler, W., & Schulze, G. G. (2012). The regional effects of Indonesia's oil and gas policy: options for reform. *Bulletin of Indonesian Economic Studies*, 48(3), 369-397.
- Burke, P. J., & Kurniawati, S. (2018). Electricity subsidy reform in Indonesia: Demand-side effects on electricity use. *Energy Policy*, 116, 410–421. <https://doi.org/10.1016/j.enpol.2018.02.018>.
- Dartanto, T. (2013). Reducing fuel subsidies and the implication on fiscal balance and poverty in Indonesia: A simulation analysis. *Energy Policy*, 58, 117-134.
- Innah, H., Kariongan, J., & Liga, M. (2017). Electrification ratio and renewable energy in Papua Province. *AIP Conference Proceedings*. Vol. 1826. No. 1. AIP Publishing.
- Sambodo, M. T. (2016). *From Darkness to Light: Energy Security Assessment in Indonesia's Power Sector*. ISEAS-Yusof Ishak Institute. Singapore, Singapore.
- Savatic, F. (2016). *Fossil fuel subsidy reform: lessons from the Indonesian case*, *Studies N°06/16*. IDDRI. Paris, France.

This policy brief is based on research jointly implemented by a team of researchers at the Department of Economics, Faculty of Economics and Business, Universitas Indonesia, the Overseas Development Institute (ODI) and Catholic Agency for Overseas Development (CAFOD). The research in Indonesia is part of a broader program of energy safety nets research also carried out in Brazil, Ghana, India, Kenya and Mexico funded by Sustainable Energy for All (SEforALL) as part of its People-Centered Accelerator work program.