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Electricity: An Effective, Efficient Method to Target Cash Transfers

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Electricity: An Effective, Efficient Method to Target Cash Transfers

By Prof. Dileni Gunewardena and Sumini Siyambalapitiya under the guidance of the Verité Research Sri Lanka Economic Policy Group

Abstract:

This note recommends household electricity use as a determinant of eligibility for welfare benefits. As Sri Lanka's crisis continues, up to 50% or more of the population is likely to need state support, however current targeting through Samurdhi reaches just about a quarter of all households and only 40% of the poorest individuals. Household electricity usage is a good proxy for poverty and a quick, efficient, and effective targeting mechanism. A threshold of 60kwh per month is proposed as a preliminary eligibility criteria which will reach approximately 50% of the population and over 80% of the poorest among them.

Introduction

As Sri Lanka's economic crisis continues, with inflation hitting 55% and food inflation topping 80% in June, citizens continue to grapple with an exorbitant cost of living, compounded in many cases with a loss of wages and livelihoods.[1] In 2019, 14% of the population had consumption below the poverty line, and, even above the poverty line, incomes were relatively low: the average monthly income of the middle 60% of households was just 56,000 rupees.[2] Both these statistics are based on the 2019 Household Income and Expenditure Survey, which surveyed the population before the onset of the Covid-19 pandemic and the economic crisis. It is estimated that as a direct result of the current economic crisis, 66% of households have reduced the number of meals eaten daily (World Food Programme) and up to 50% of children in the country will require some form of emergency assistance (UNICEF).[3] [4]

These figures highlight that a large proportion of Sri Lankans are struggling to make ends meet. It is likely that half or more of the population is in need of state support. This includes the 14% of the population estimated to be living in poverty as well as a significant segment of the "middle class" that have been disproportionately affected by the pandemic as well as the current economic crisis.[5] A broadly targeted social protection scheme that reaches all vulnerable populations needs to be implemented without delay. The government recently announced an intention to make monthly payments of Rs 7,500 to the households worst affected by the current economic crisis. Its current plan of action is to disburse these payments to the most vulnerable through Samurdhi, the main existing social protection programme.

[1] Central Bank of Sri Lanka (June 2022), "CCPI based headline inflation recorded at 54.6% on year-on-year basis in June 2022", accessed via https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/press/pr/press_20220630_inflation_in_june_2022_ccpi_e.pdf.

[2] Department of Census and Statistics Sri Lanka (2022), "Household Income and Expenditure Survey – 2019", accessed via http://www.statistics.gov.lk/Resource/en/IncomeAndExpenditure/HouseholdIncomeandExpenditureSurvey2019FinalResults.pdf.

[3] World Food Programme (June 2022), "WFP says 66 % Sri Lankans reduced number of meals eaten daily", accessed via https://colombogazette.com/2022/06/15/wfp-says-66-sri-lankans-reduced-number-of-meals-eaten-daily/#:~:text=The%20World%20Food%20Programme%20(WFP,food%20security%20assessment%20in%20April.

[4] UNICEF (June 2022), "UNICEF appeals for US$25 million to meet the urgent needs of 1.7 million children affected by the economic crisis in Sri Lanka", accessed via https://www.unicef.org/rosa/press-releases/unicef-appeals-us25-million-meet-urgent-needs-17-million-children-affected-economic.

[5] Department of Census and Statistics Sri Lanka (2022), "Poverty Indicators – 2019", accessed via http://www.statistics.gov.lk/Poverty/StaticalInformation/PovertyIndicators-2019.

Can Samurdhi be geared up to meet this challenge? The answer is a clear 'no'. The programme has been well researched and found to be woefully inadequate even before the pandemic and the economic crisis.[6][7][8][9][10] It covers just 27% of households in Sri Lanka and systematically excludes over 58% of eligible recipients.[11] Criticisms of Samurdhi include (1) its high administrative cost (22% of the Samurdhi budget is spent on administrative expenses, primarily the wage bill for the Samurdhi Niyamakas/Officers)[12] and (2) significant errors in targeting, especially exclusion of vulnerable households. The latter is attributed mainly to the prevalence of political patronage and bureaucratic malpractice because the criteria for selecting eligible households are subjective.[13][14] It is time to look for a better targeting mechanism.

Electricity use as an eligibility determinant for social protection

Given the poor performance of the Samurdhi programme and the large number of citizens made vulnerable by the crisis, ensuring efficient targeting must be a key priority for any new social protection measures. The Sri Lanka Economic Policy Group (SLEPG) recommends that a **household electricity use threshold of 60kwh per month is utilized as a determinant of eligibility for welfare benefits**. This is one of several indicators previously identified by the Sri Lankan government, through a gazette notification in 2019, as potential components of a proxy means test to identify low-income families for welfare benefit payments.[15]

In the case of Sri Lanka, 99% of households are connected to the national grid, and 48% of the population lives in households that consume 60kWh or less of electricity in a month.[16] Using this threshold to determine eligibility for cash transfers or other welfare benefits would ensure coverage of approximately **50%** of the population.

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[6] Madduma Bandara, N. D. (2016), Causes and consequences of poverty targeting failures: The case of the Samurdhi Program in Sri Lanka. *Asian Politics & Policy*, *8*(2), 281-303.

[7] Ramos, S., Melissa, K. and Karimi, A.M. (2020), "SOCIAL PROTECTION IN SRI LANKA: An analysis of the social, economic and political effectiveness of the Samurdhi program". *MPRA Paper No. 102558*, accessed via https://mpra.ub.uni-muenchen.de/102558/1/MPRA_paper_102558.pdf.

[8] World Bank (2016), *Social Safety nets,* Project Appraisal Document. Washington, D.C.: World Bank, accessed via https://documents1.worldbank.org/curated/en/285991480906853560/pdf/Project-Appraisal-Document-Final-submitted-to-SECPO-11112016.pdf.

[9] Kidd, S. et al. (2020), *Tackling the COVID-19 economic crisis in Sri Lanka: Providing universal, lifecycle social protection transfers to protect lives and bolster economic recovery*. Colombo, United Nations, accessed via https://www.unicef.org/srilanka/media/1366/file/UN%20Brief%20Social%20Protection%20Response%20Sri%20Lanka%20Summary.pdf.

[10] World Bank (2015), *Poverty and Welfare in Sri Lanka: Recent Progress and Remaining Challenges.* Washington, D.C.: World Bank, accessed via https://openknowledge.worldbank.org/handle/10986/23794.

[11] Ramos, S., Melissa, K. and Karimi, A.M. (2020), "SOCIAL PROTECTION IN SRI LANKA: An analysis of the social, economic and political effectiveness of the Samurdhi program.

[12] Department of Samurdhi Development (2018), Performance Report, accessed via https://www.parliament.lk/uploads/documents/paperspresented/performance-report-department-of-samurdhi-development-2018.pdf.

[13] Madduma Bandara, N. D. (2016), Causes and consequences of poverty targeting failures: The case of the Samurdhi Program in Sri Lanka. *Asian Politics & Policy*, *8*(2), 281-303.

[14] World Bank (2016), *Social Safety nets,* Project Appraisal Document. Washington, D.C.: World Bank, accessed via https://documents1.worldbank.org/curated/en/285991480906853560/pdf/Project-Appraisal-Document-Final-submitted-to-SECPO-11112016.pdf.

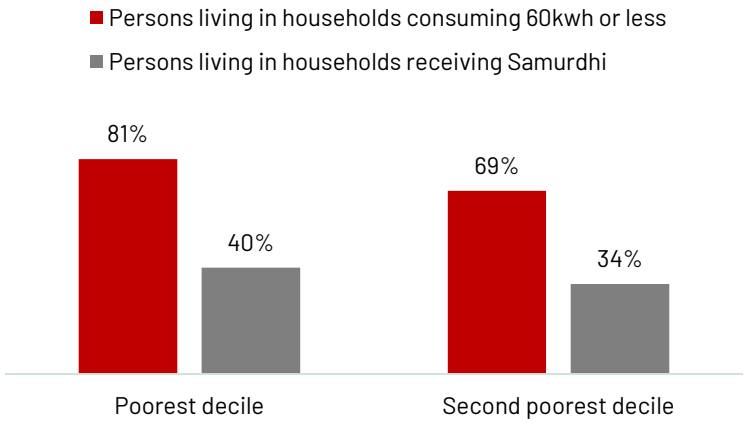
[15] Gazette Extraordinary of the Democratic Socialist Republic of Sri Lanka. No. 2128/24 of 20 June 2019.

[16] Authors' calculations using unit data from the Household Income and Expenditure 2016.

A targeting mechanism that minimizes errors of exclusion

Will a criterion based on electricity use of 60kWh or less reach the most vulnerable segment of the population? And how does it compare with Samurdhi in terms of efficient targeting?

Exhibit 1: Percentage of population in the poorest two per capita consumption deciles (i.e., the poorest 20%) eligible to receive cash transfers according to (I) the electricity use criterion and (II) the Samurdhi programme.



Source: Authors' calculation from unit data of Sri Lanka Household and Expenditures Survey (HIES) 2016, a nationally representative sample survey conducted every three years. It covers over 20,000 households and is anonymized.

Focusing on the poorest 20% of the population, Exhibit 1 indicates that the electricity use criterion *includes* a far greater proportion of the vulnerable population than the existing Samurdhi programme. For the poorest 10% of the population, i.e., the most vulnerable group, targeting via the electricity use criterion captures 81% of households whereas the Samurdhi system only captures 40%. More than twice as many households are captured through this improved targeting mechanism. This pattern is repeated at the second poorest decile as well.

We reach the same conclusion by examining the poorest districts in the Island, as measured by the number of people in poverty.[17] Four of the five districts with the largest number of poor people are among the five districts with the most people living in households with low electricity use. The overlap between districts with the highest numbers of people in poverty and the highest numbers of households receiving Samurdhi benefits is much lower (Exhibit 2). Household electricity use is a much better indicator of poverty than is being a Samurdhi recipient.

Exhibit 2: District rankings according to the number of people classified as poor – correspondence with electricity use criterion and Samurdhi beneficiary criterion.

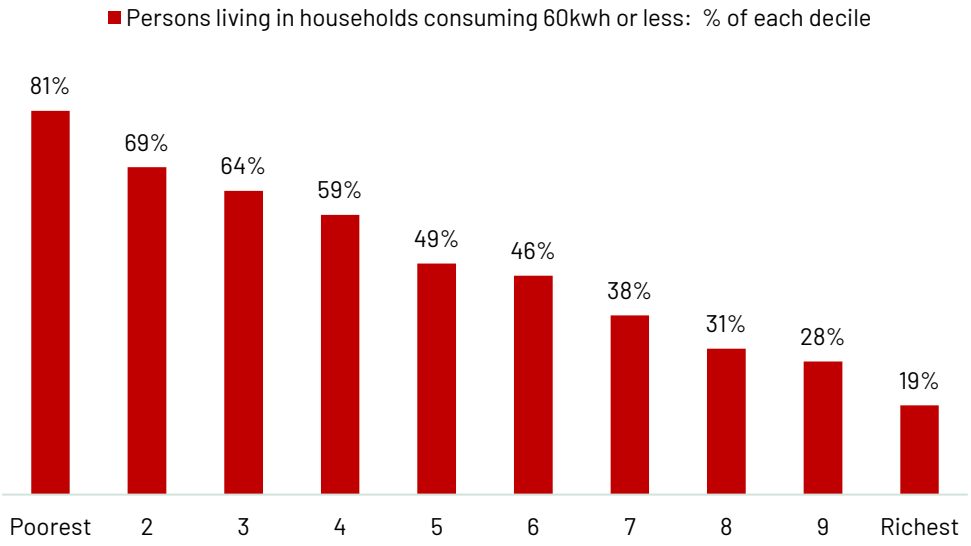
Districts with the greatest number of poor people	Ranking by		
	Consumption poverty[1]	Electricity use criterion[2]	Samurdhi beneficiary criterion[3]
Ratnapura	1	3	3
Badulla	2	5	9
Kurunegala	3	1	1
Kandy	4	2	5
Nuwara Eliya	5	6	18

Notes: 1. Department of Census and Statistics, 2022. Poverty Indicators – 2019. *Colombo: DCS. 2. Authors' calculation from unit data of Sri Lanka Household and Expenditures Survey 2016. 3. Department of Samurdhi Development, 2022,* Number of beneficiaries, April 2022.

[17] These are people who fall below the national poverty line, measured as spatially adjusted consumption poverty.

Exhibit 3 presents the percentage of population in each of all ten (real per capita) consumption deciles that would be eligible to receive cash transfers according to the 60kwh electricity use criterion. The electricity use criterion overlaps to a high degree with per capita consumption, especially in the poorer deciles. Calculations from household survey data indicate that 74% of the poorest 60% of the population will receive benefits according to the electricity use criterion (with an exclusion error of only 26%), whereas only 32% of the same group receive Samurdhi benefits - with an exclusion error of 68%.[18]

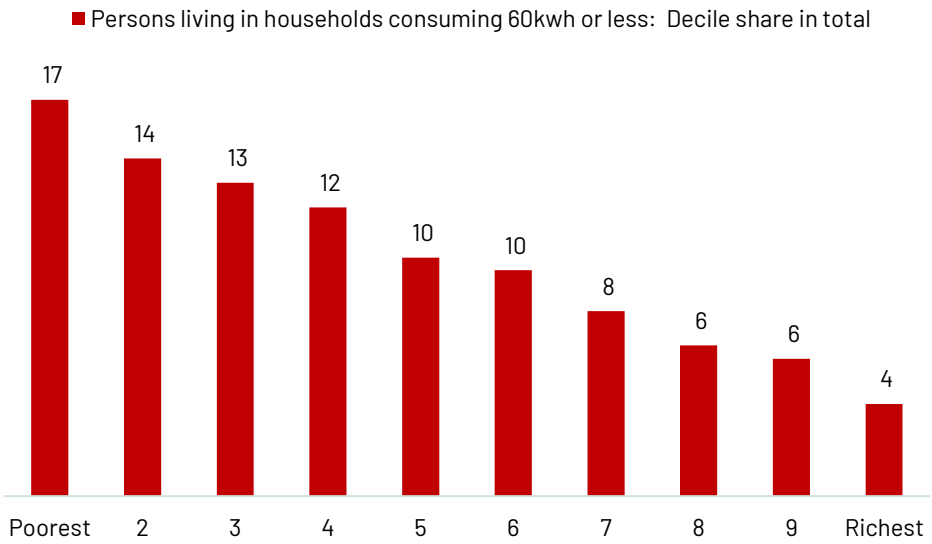
Exhibit 3: Percentage of each decile that would receive cash transfers by using criterion of electricity use of 60kWh or less.



Source: Authors' calculation from unit data of Sri Lanka Household and Expenditures Survey 2016

How much of the cash transfer budget would be spent on the most vulnerable populations if the electricity use criterion is employed? We define the 'most vulnerable' as the poorest 60% of households (or lowest six deciles). They would receive 76% of the cash transfer budget (Exhibit 4).

Exhibit 4: Decile distribution of cash transfers budget using criterion of electricity use of 60kWh or less.



Source: Authors' calculation from unit data of Sri Lanka Household and Expenditures Survey 2016

[18] Authors' calculations based on unit data from HIES 2016.

So, household electricity use is a good indicator of poverty. There are three other reasons for the Government of Sri Lanka to adopt it:

(1) It can be implemented quickly, easily and cheaply

99% of households are connected to the Ceylon Electricity Board (CEB) grid and their monthly electricity use is already tracked and available in digital form. No additional information burden is imposed. (Households not connected to the grid would also be relatively easy to identify as they are small in number and likely to be geographically clustered).

(2) Eligibility can be continuously adjusted to reflect changes in household circumstances.

Data for eligibility is based on real-time administrative data. Households could be moved in or out of the programme as their levels of electricity use change.

(3) Politicisation and corruption can be largely eliminated.

Eligibility is measured by an objective criterion; by eliminating subjective assessment, it reduces the possibility of political patronage and institutional. corruption

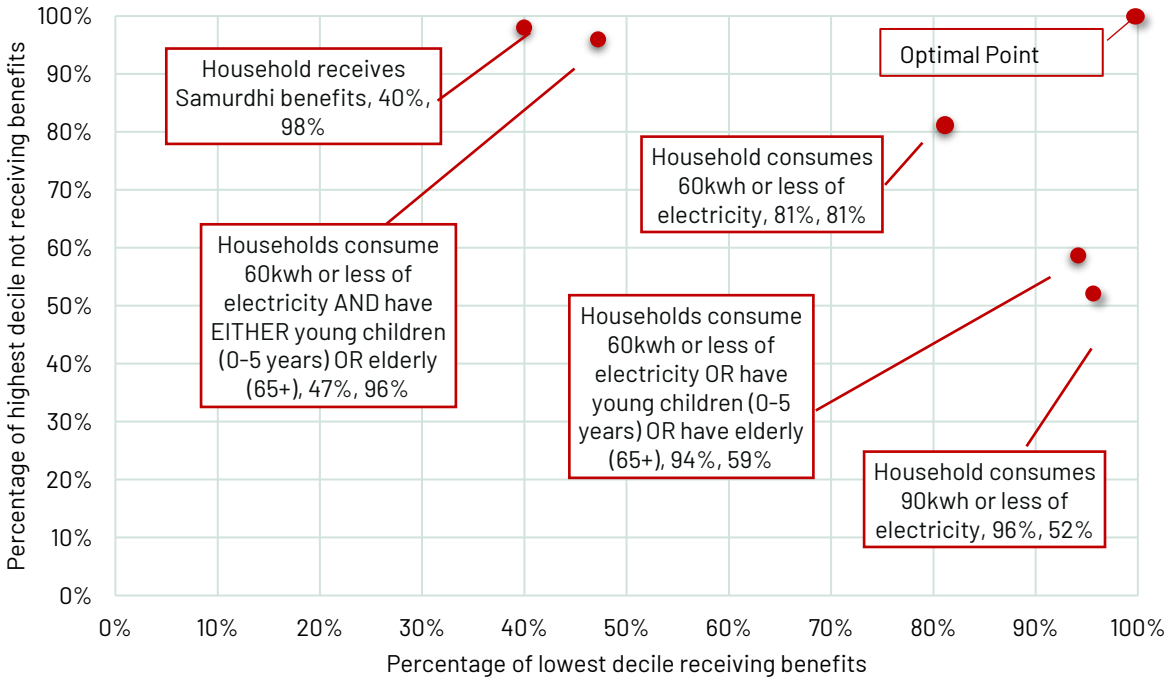
Reducing errors of inclusion

The efficiency of this mechanism could be further improved if implementing agencies were able to identify and exclude from the cash transfer programme households that rely on solar power generation for household use, and thereby consume less than 60kWh from the national grid. The same applies to households that have two or more electricity meters on different floors. These two corrective measures would reduce the number of households among the richest 20% of households who might otherwise wrongly receive cash transfers.

We recommend that the threshold for eligibility for cash transfers and other benefits be 60kWh of monthly electricity use. This would cover 48% of the population. However, this threshold can and should be amended to reflect the vulnerability of different sections of the population as the economic crisis evolves. Perhaps households that use between 60 kWh and 90 kWh could also receive a payment, but a smaller one. This will cover an additional 30% of the population. Alternatively, the electricity use criterion could be used in conjunction with other criteria such as the presence of young children (aged 0-5) or elderly dependent adults (65+) within the household. If any one of these two additional criteria were applied, an additional 22% of the population would become eligible for benefits. By contrast, if eligibility depended on meeting electricity use criteria *and* the presence of young children *or* the presence of an elderly dependent adult, then only 19% of the population would be eligible. The latter coverage is similar to that of Samurdhi, which covers 19% of the population.

Exhibit 5 shows how well each of five possible criteria performs in terms of reaching the poorest 10% of the population and excluding the richest 10%. If coverage of the poorest decile, and non-coverage of the richest decile are the only objectives, and are given equal weight, the targeting mechanism of household use of 60kWh or less is the best to use. On this mapping, targeting improves as you move to the right on the horizontal axis and upwards on the vertical axis.

Exhibit 5: How effective are the various eligibility criteria in including the poor and excluding the rich?



Note on calculation of households consuming 60 kWh or less

Exhibit 6, based on data from the Ceylon Electricity Board, presents tariffs that have applied since 2014 and indicates that the two lowest slabs for electricity use are 0-30 kWh and 31-60 kWh in monthly consumption. Consumers within these slabs are charged at a lower subsidized rate than those who consume higher than 60kWh. A household with 60 kwh of domestic electricity consumption in June 2016 incurred a kWh charge of Rs. 475.30 and a fixed charge of Rs. 90 and paid a total bill of Rs. 565.30 (ceb.lk). For the purpose of this note, households that were represented in the Household Income and Expenditure Survey 2016 with a monthly electricity expenditure of Rs. 565.30 or less are considered to be consuming 60 kWh or less of electricity.

Exhibit 6: CEB tariffs for electricity consumption

	Monthly consumption (1) kWh	Unit charge (Rs/kWh)	Fixed charge (Rs/month)
Consumption between 0-60kWh	0-30	2.50	30.00
	31-60	4.80	60.00
Consumption above 60kWh	0-60	7.85	N/A
	61-90	10.00	90.00
	91-120	27.75	480.00
	120-180	32.00	480.00
	>180	45.00	540.00