Power Sector Reforms and the Poor in Vietnam

Kozel, Valerie and Nguyen, Cuong

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POWER SECTOR REFORMS AND THE POOR IN VIETNAM

Valerie Kozel

Cuong Viet Nguyen

Abstract

The high level of electricity access across Vietnam means that large numbers of the poor have connections and therefore have the potential to be impacted by changes to tariffs and service levels. An estimated 98 percent of households were electrified by 2008, including 99 percent in urban and 97 percent in rural areas. Access to electricity is high even among Vietnam's poorest households: in 1998, less than half of the poorest ten percent of households (bottom decile) used electricity, compared with 88 percent in 2008. While most of the poor in Vietnam are low consumers of electricity, so are many of the non-poor. In 2008, 65 percent of all households consumed less than 100 kWh/month, including 91 percent of poor urban households and 99 percent of poor rural households. Thus most of the electricity consumed by the poor was subsidized under the pre-2009 IBT lifeline. But so was the consumption of many of the non-poor: in 2008, only 14 percent of households in Vietnam lived below the poverty line. Moving to a lower lifeline threshold reduces leakages albeit at some cost to the poor: 30 percent of households consume less than 50 kWh/month, including 60 percent of poor urban households and 78 percent poor rural households. Despite the tariff increases, electricity remains remarkably affordable to residential consumers in Vietnam. In 2008, households in poorest 10% of the population paid on average 2.9 percent of total cash expenditures for electricity. In contrast, the wealthiest 10 percent of households paid 3.6 percent. And the share of total household spending taken by electricity has been falling in recent years despite rising consumption; the real price of electricity (adjusted for inflation) has been falling.

Keywords: Electricity, power reform, household survey, Vietnam.

1. INTRODUCTION

1. Vietnam has achieved high economic growth and successful poverty reduction over recent decade. The poor also have better access to social services and infrastructure.[1]

2. Vietnam is implementing a long run reform agenda for the power sector, with the aim of restructuring the sector to improve internal operations, efficiency, and the quality of services. The World Bank has an ongoing engagement in the sector which started in 1995. The design and implementation of the power sector reform strategy has been supported through technical assistance and lending operations, as well as preparation of a proposed series of Power Sector Reform Development Policy Loans (DPLs).

3. A number of Poverty and Social Impact Assessment (PSIA) activities will be carried out in support of Vietnam's power sector reforms and as part of the World Bank's due diligence work for the power sector DPLs. PSIA has done *ex ante* analysis to identify potential adverse distributional impacts of specific reform measures. It will (a) support *ex post* monitoring and special studies (led by Electricity Regulatory Authority of Vietnam – ERAV) to identify adverse consequences for poor and marginal households that may emerge over time; and (b) identify specific measures to mitigate anticipated or actual adverse impacts.

4. This is the first in a series of PSIA notes for power sector reforms. It is based on early access to a preliminary version of the Vietnam Household Living Standards Survey (VHLSS) 2008; all analyses based on these data are preliminary World Bank estimates. This PSIA underpins reforms supported under the First Power Sector Reform DPL. It builds on a number of earlier studies on welfare impacts of rural electrification[2,3] and on power tariffs, including subsidy and fund mechanisms[4,5,6].

[1] See World Bank (2004), Nguyen (2008), and Nguyen et al. (2010).
[2] Institute of Sociology of the Vietnam Academy of Social Sciences: Impacts of Rural Electrification in Vietnam, 2009
[3] World Bank: Welfare Impacts of Rural Electrification: Evidence from Vietnam (Khandker, Barnes, Samad, Huu Minh) September 2009
[4] Economic Consulting Associates: Bulk Power, Distribution Margin, Retail Consumer Tariff Design and Development of an Independent Creditors' Model, July 2005.
[5] Pedro Antmann: Review of International Experiences on Retail Tariff Setting Methodologies and Recommendations for Vietnam, July 2007
[6] Vietnam Electricity: Power Tariffs, 2007

5. This PSIA focuses on assessing the distributional impacts of recent tariff reforms introduced in March, 2009 which changed Vietnam's incremental block tariff (IBT) structure for residential consumers. Over time, tariff subsidies will gradually be phased out and tariffs will ultimately cover the full economic cost of supply. Complementary explicit subsidies targeted at low income households are under consideration. Recent reforms both narrowed the band of consumption which receive a preferential rate (known as the "lifeline tariff") from 100 KWh to 50 kWh per month and increased the retail price of electricity to all users. Of particular relevance for PSIA, retail prices were increased for users falling within the new lifeline band (first 50 kWh) as well as users in the upper half of the old lifeline band (51-100 kWh). In addition to changes in lifeline tariffs and coverage, all on-grid rural consumers were brought under a unified tariff structure.[7]

Questions Addressed

6. This first PSIA addresses three questions:

- What are the distributional impacts of the new power tariffs introduced in March, 2009? In particular:
  - How are poor and near-poor households likely to be affected by the reduction in lifeline tariff band from 100kWh to 50 kWh and accompanying increase in the retail price of electricity? Does the lifeline band provide sufficient coverage of the poor?
  - How are households likely to be affected by the move to a unified tariff structure in rural areas? Before the 2009 tariff reforms, some 6.2 million rural customers were supplied by Local Distribution Utilities (LDUs) that purchased electricity at wholesale rates from EVN and sold it to rural consumers at a higher official ceiling price (700 VND/kWh) than the retail prices paid by customers supplied directly by EVN's power distribution companies (known as Power Companies, or PCs).
- Are some groups of poor and vulnerable households not well covered under the residential tariff lifeline band? In particular, are Vietnam's migrant

[7] New tariffs are described in PM Decision 21/2009/QD-TTg of February 12, 2009 "Electricity Retail Tariff of 2009 and years 2010 – 2012 Following the Market Mechanism" and MOIT Circular No. 05/2009/TT-BCT of February 26, 2009 "Prescribing 2009 Electricity Sale Prices and Guiding the Application Thereof".

workers who live temporarily in urban and peri-urban areas supplied from the formal system and how much do they pay for electricity? Are additional measures needed to ensure that (poor) migrants receive subsidy entitlements?

- A high proportion of poor and vulnerable households currently have access to a reliable supply of electricity at a reasonable price. This situation may change in the future as reforms progress. Hence what additional information should be collected by ERAV as reforms are implemented to identify any emerging adverse distribution impacts and help in developing effective policy responses? What special studies are needed?

2. VIETNAM'S POWER SECTOR: THE IBT STRUCTURE

7. Residential and rural wholesale consumption accounted for about 41 percent of EVN PC's total sales in 2009. Vietnam put in place an incremental residential block structure beginning in 1999, which initially had five blocks. An additional block was added at the top end in 2007, and a division in the lowest 100 kWh block (0-50, 51-100 kWh) added in March, 2009 (Table 1).

Table 1: IBTs for Vietnam's Power Sector: 1999 – Present (VND/kWh)

kWh	10/1999 – 10/2002	11/2002 – 1/2005	2/2005 – 1/2007		2/2007 – 3/2009	3/2009 – date
	PM Decision 193/1999/QĐ-TTg dated 22/09/1999	PM Decision 124/2002/QĐ-TTg dated 20/09/2002	PM Decision 215/2004/QĐ-TTg dated 29/12/2004		PM Decision 276/2006/QĐ-TTg dated 04/12/2006	PM Decision 21/2009/QĐ-TTg dated 12/02/2009
			<300 kWh/month	>300 kWh/month		
0-50	500	550	550	1100	550	600
51-100						845
101-150	704	900	900	1100	1110	1135
151-200	957	1210	1210	1100	1470	1495
201-300	1166	1340	1340	1340	1600	1620
301-400	1397	1400	1400	1400	1720	1740
>400				1500	1780	1790

Lifeline Tariffs

8. IBTs are often used by electricity retailers to provide cross subsidies to users who consume less than a subsistence threshold considered adequate for meeting basic needs; hence the use of the term "lifeline" rate. The benefits of tariff subsidies for low-income consumers are well understood and visible, although their costs often are not. Lifeline subsidies entail low administrative costs, and they often enjoy widespread political support, particularly when the subsistence threshold is set sufficiently high that subsidies also benefit the less poor.

9. One of the major drawbacks of lifeline tariffs is that they may not be well-targeted – a household's level of electricity consumption may not be a good indicator of poverty – and leakages to the non-poor are often high. In lieu of lifelines, many countries compensate poorer households for high electricity tariffs through income transfer and related social protection measures. No compensation method clearly dominates another: a number of practical considerations and design features determine which works best in a specific country context, including a judicious combination of lifelines and income transfers.

10. The lowest 100 kWh block was designated as Vietnam's lifeline band and priced at less than half the economic cost of supply in 2005. Despite inflation and rising costs, the lifeline tariff was kept constant in nominal terms until the adjustments approved by the Prime Minister in February, 2009, which meant the level of subsidy in the lifeline band increased. There is substantial leakage to the non-poor: according to a study in 2005 (ECA, 2005), 46 percent of all EVN retail customers consumed less than 100 kWh each month representing 51 percent of sales. Vietnam's official poverty rate in 2004 was 19.5 percent: rural households consumed on average 53 kWh of electricity each month, while households below the poverty line consumed on average 29 kWh of electricity each month[8]. Moreover, all residential consumers received the subsidized rate for their first 100 kWh each month, which further spread benefits to higher income consumers.

11. The Prime Minister's Decision of February 2009 reduced the first block from 100 kWh to 50 kWh and set the new lifeline tariff (tariff for first block) at around 40 percent of the economic cost of supply (without profits). The next block (51-100 kWh) is priced at the economic cost of supply, also without profits for the power companies. Profits are covered by residential tariffs in higher blocks as well as cross subsidies from other tariff categories, mainly industrial and commercial users. With the aim of ensuring fair treatment of all households in Vietnam, the PM's Decision also put all residential consumers under a single, unified tariff structure, regardless of whether they were supplied by LDUs or EVN. The new tariffs went into effect in March, 2009 for all EVN customers. The LDUs were grandfathered under the old tariff structure through September, 2009, with the aim of giving them time to transition to the new cost structure.

[8] Based on WB analysis of the 2004 VHLSS

12. The February Decision increased tariffs for consumption of up to 100 kWh for the first time since 2002. Tariffs for the 0-50 kWh block were increased from VND 550 to 600/kWh, and tariffs for the 51-100 kWh were increased from VND 550 to 865/kWh. Although an increase in nominal terms, after adjustments for inflation the first block tariff is still lower in real terms than tariffs set in 2002. The government does not provide any financing for subsidies so the system is entirely dependent on charges from other classes of consumer making up any shortfall from the lifeline revenues. Not increasing the lifeline tariff would have resulted in an erosion of the revenues of the PCs. Making larger adjustments to the tariffs paid by better off consumers or non-residential customers in order to increase cross-subsidizes to low income households would have introduced additional distortions and reduced overall efficiency.

Unified Tariffs in Rural Areas

13. More than 5,600 LDUs were operating in rural communes as of June, 2008. Many LDUs are very small and operate on a narrow profit margin. Studies[9] suggest that several LDUs struggle with issues of capacity, quality of supply, and safety: an estimated 200 electricity-related deaths were reported in one province last year. The government requires LDUs to operate according to a new set of performance criteria in the future, including obtaining an electricity distribution and retail supply license, developing a reliable and transparent system of accounts, entering into a supply contract with each customer, issuing monthly bills and ensuring all customers have a certified power meter. They must also adhere to the unified tariff. EVN estimates that less than 700 existing LDUs will be able to meet the standards and operate profitably under the unified IBT system. The assets of those that cannot will be transferred to the PCs: by June, 2009, 8.8 million rural households were supplied by EVN (6,364 communes out of around 9,310 in total). An estimated 3,300 LDUs were transferred to the EVN PCs between June, 2008 and June, 2009.

14. Rural customers are expected to benefit in several ways from the unified tariffs and accompanying expansion of services by PCs: poor households will pay lower prices for their first 50 kWh of consumption. In addition, there should be substantial improvements in the quality and reliability of supply, as well as improved safety standards over the medium term.

[9] Reference studies from ERAV

3. TARIFF ADJUSTMENTS AND THE POOR

15. There is a widely shared view – buttressed by experience from many countries – that aligning power tariffs with the economic cost of supply is often regressive and will invariably have an adverse impact on the poor. However impacts depend critically on country specific conditions prevailing at the time reforms are introduced. Vietnam has three factors working in its favor: very high coverage by the electricity system, low levels of electricity consumption (particularly for lower income households), and fairly low economic costs of supply (in comparison to a number of other countries).

16. The remainder of this Section 3 describes the current coverage of the power sector, supply costs, levels of demand and minimum needs consumption for the poor, and assesses the impact of the March 2009 tariff adjustments, including further narrowing of the lifeline tariff band and limited subsidies to rural consumers. Section 4 reports key findings of the ongoing study of the impact of power sector reforms on migrant workers. A list of core monitoring indicators and additional studies/analyses are included in the fifth section.

Defining the Poor

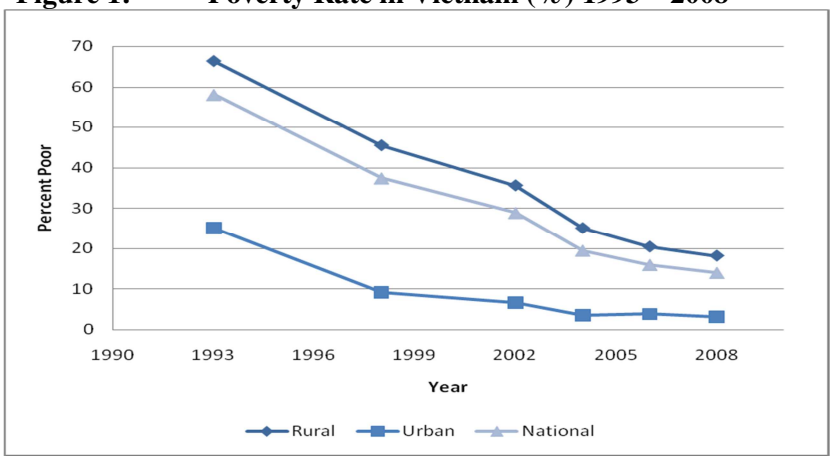
17. The PSIA draws heavily on recent rounds of the Vietnam Household Living Standards Surveys (VHLSS), a series of nationally representative household surveys conducted by the Government Statistics Office (GSO) for the first time in 1993, then in 1997/98, 2002, 2004, 2006, and 2008. The World Bank was given advance permission to use the newest VHLSS (2008) for the PSIA, which covered more than 9,000 household located in all provinces of the country. The VHLSS includes detailed information on household incomes and expenditures, poverty status, ownership of durables including electrical appliances, and access to electricity including monthly electricity payments.

18. The "poor" are defined as all persons living in households whose per-capita consumption falls below some agreed cut-off level or poverty line. Two poverty lines are frequently used for Vietnam: The first (referred to as the WB/GSO poverty line) is produced by the Government Statistics Office (GSO) and defined as the cost of a food consumption basket allowing a daily intake of 2,100 calories per person per day, plus the cost of a related non-food consumption that allows for a healthy life. The WB/GSO poverty line has been held roughly constant in real purchasing power since the early

1990s, to facilitate comparisons over time. According to this line, poverty levels have fallen from 58 percent of the population in 1993 to 14 percent in 2008 (Figure 1).

19. Over the years, the Ministry of Labor, Invalids, and Social Assistance (MOLISA) has produced several different poverty lines, initially based on the income required to purchase an adequate amount of rice for daily consumption. The most recent MOLISA poverty line is based on a similar 2,100 calorie benchmark used in the WB/GSO poverty line, applied to per-capita incomes rather than per-capita expenditures. Using the MOLISA approach in 2006, the Government of Vietnam set its official poverty lines at VND 260,000 per person per month for urban areas and VND 200,000 for rural areas. Joint work is underway (MOLISA with support from GSO) to revise the official lines to reflect better current living conditions in Vietnam. The official lines are used to draw up MOLISA's poor household list at the commune level. The two lines currently yield very similar estimates of the national poverty headcount, although there are sometimes differences at provincial and regional levels.

Figure 1: Poverty Rate in Vietnam (%) 1993 – 2008



Source: VHLSS 1993, 1997, 2002, 2004, 2006, 2008 VHLSS; 2008 poverty rates are preliminary World Bank estimates, all others from GSO

20. The PSIA uses the WB/GSO poverty line applied to household per-capita consumption measured through various rounds of the VHLSS. Key findings were cross-checked using an alternative definition based on the MOLISA poor list. Results were in all cases broadly consistent.

System Coverage

21. System coverage is high in Vietnam compared with other countries at similar levels of development. As of June, 2009, EVN estimated that 96 percent of households

were connected to the grid, including 94.7 percent of households in rural areas. Only 224 communes (in mountainous or other difficult terrain) were not electrified.

22. The VHLSS surveys show similar high rates of coverage. By 2008, 97.7 percent of households were electrified[10], including households on the grid as well as a small number using other sources such as pico-hydro sets (Table 2).

Table 2: Household Access To Electricity By Location and Income Group (Percentage of Households using Electricity)

	1998	2002	2004	2006	2008
Non-poor	86.3	93.0	96.3	97.6	98.8
Poor	62.2	72.9	82.3	87.6	89.7
Urban			95.2	97.3	99.8
Rural	72.3	84.5	81.5	89.5	96.9
Expenditure Quintile					
Poorest 10%	49.6	62.2	78.4	85.3	88.4
Decile 2	63.1	77.5	88.9	93.2	96.1
Decile 3	70.8	84.4	91.4	95.0	97.9
Decile 4	74.0	88.7	95.3	96.4	98.5
Decile 5	78.1	90.3	95.0	97.4	98.8
Decile 6	83.2	91.0	96.7	98.3	99.0
Decile 7	83.3	93.4	96.9	98.8	99.7
Decile 8	88.6	94.8	98.5	99.0	99.5
Decile 9	95.8	97.3	98.6	99.2	99.6
Wealthiest 10%	98.5	99.2	99.4	99.6	99.9
All Vietnam	**78.5**	**87.9**	**93.9**	**96.2**	**97.7**

Source: VHLSS 1997, 2002, 2004, 2006, 2008, staff calculations (preliminary 2008 VHLSS estimates)

23. Rates are highest for better-off households (98.9 percent) but still respectable (89.7 percent) for the 14 percent of households below the poverty line in 2008. There has been substantial progress in providing access to electricity for the poorest households in Vietnam: in 1998, less than half the households in the poorest decile had access to electricity. By 2008, over 88 percent of the poorest 10 percent of households used electricity. Regional coverage also improved dramatically: in 1998, electricity coverage hovered at 50-60 percent in North East, North West, Central Highlands and the Mekong Delta. By 2008 coverage had increased to over 95 percent in all regions except the North West, where coverage still lags at 84 percent (Table 3).

Table 3: Household Access to Electricity by Region: 1998 – 2008

	Percent of Households with Electricity				
	1998	**2002**	**2004**	**2006**	**2008**
Region					
Red River Delta	97.9	99.3	99.8	99.7	99.9

[10] Survey results are based on a response to the question "what is your main source of lighting?".

	Percent of Households with Electricity				
	1998	**2002**	**2004**	**2006**	**2008**
North East	59.8	80.3	91.5	93.7	94.5
North West	90.5	50.9	73.3	78.2	84.1
North Central Coast	82.4	95.2	96.9	97.9	98.9
South Central Coast	81.8	92.9	98.4	98.6	99.1
Central Highlands	50.1	73.1	87.4	93.2	96.1
North East South	89.8	93.0	96.5	97.9	98.8
Mekong River Delta	54.5	76.1	86.8	93.4	97.1
All Vietnam	78.5	87.9	93.9	96.2	97.7

Source: VHLSS 1997, 2002, 2004, 2006, 2008, staff calculations (preliminary 2008 VHLSS estimates)

Electricity Demand

Measuring Household Consumption

24. There are different sources of information on how much electricity is consumed by households in Vietnam. EVN has good measures for the customers it serves directly; however, half of rural consumers are still served by LDUs and not included in EVN's calculations. VHLSSs surveys are used for PSIA estimates because they have broader coverage.

25. Unfortunately, electricity consumption is not measured directly in the VHLSS (experience suggests that most respondents would not be able to answer accurately if asked to gauge their consumption). Instead, households are asked for information on the amount paid for electricity each month, consistent with the objective of VHLSS which is to assess household expenditures. For purposes of the PSIA, electricity expenditures were converted into kWh quantities using the relevant prices in place at the time each household was interviewed and as reported in Table 1. The VHLSS does not identify whether rural households are EVN PC customers or purchase from an LDU (at the time of the 2008 VHLSS survey about 75 percent of rural consumers were served by LDUs). For lack of better information, the PSIA uses the IBT tariff structure to estimate consumption for all rural households. This will lead to an over-estimate of average rural consumption because LDUs generally charge higher prices than PCs but ensure the PSIA makes a conservative assessment of the coverage of the reduced lifeline tariff band.[11]

[11] Information on the relative share of EVN and LDU customers in each province has been requested from EVN; if available, this will improve VHLSS estimates of electricity consumption and more importantly, provide a better basis for assessing the welfare impacts of moving to a unified tariff system in rural areas.

Durables and Rising Demand

26. The demand for electricity is a derived demand, determined by demand for the services provided by electrical appliances and durables. Low income households own fewer appliances (Table 4) and use them less intensively than better off households. According to the panel study of rural energy use (Institute of Sociology, 2009), electricity consumption increases sharply for the first six years after a household is connected and starts to purchase electrical appliances and then begins to level off. All other things held equal, at the second year of having electricity a rural household consumes about 36 kWh a month, and by the ninth year consumption increases to around 60 kWh a month.

Table 4: Proportion Of Households Owning Electrical Appliances, by Poverty Status 2002 – 2008 (Poverty by WB/GSO Poverty Line)

	TV	Stereo	Computer	Fan	Fridge	Electric Cooker	Water Heater	Washer	Pump
2002 VHLSS									
Non-poor	78.3	8.0	3.4	75.0	16.6	47.2	4.6	5.3	32.7
Poor	37.5	0.9	0.0	48.4	0.3	7.9	0.3	0.1	11.8
Areas									
Urban	87.5	15.3	8.9	82.0	37.9	69.5	12.0	14.4	29.0
Rural	61.6	3.4	0.5	64.0	4.4	27.0	0.8	0.6	27.0
2004 VHLSS									
Non-poor	85.2	11.8	7.4	84.6	21.6	60.5	6.4	7.9	39.6
Poor	45.1	0.8	0.0	54.3	0.2	13.0	0.0	0.1	13.8
Areas									
Urban	91.6	20.2	18.7	89.2	47.8	79.8	17.1	21.6	35.3
Rural	73.6	6.2	1.6	75.9	7.1	42.5	1.1	1.2	35.2
2006 VHLSS									
Non-poor	89.3	14.9	9.4	85.5	27.1	67.8	8.3	10.7	40.2
Poor	53.2	1.6	0.0	57.4	0.3	17.8	0.1	0.1	13.3
Areas									
Urban	94.1	20.5	22.0	88.6	54.1	83.1	21.4	28.0	34.1
Rural	80.8	10.2	2.9	79.0	11.9	52.6	1.7	2.1	37.4
2008 VHLSS									
Non-poor	93.1	17.7	13.1	88.7	37.3	77.0	11.4	15.2	47.0
Poor	65.4	3.7	0.0	61.8	1.2	31.3	0.1	0.2	18.6
Areas									
Urban	95.2	21.5	28.5	89.9	64.3	85.5	25.3	36.9	36.5
Rural	87.6	14.0	4.9	83.9	20.9	66.1	4.2	4.4	46.4

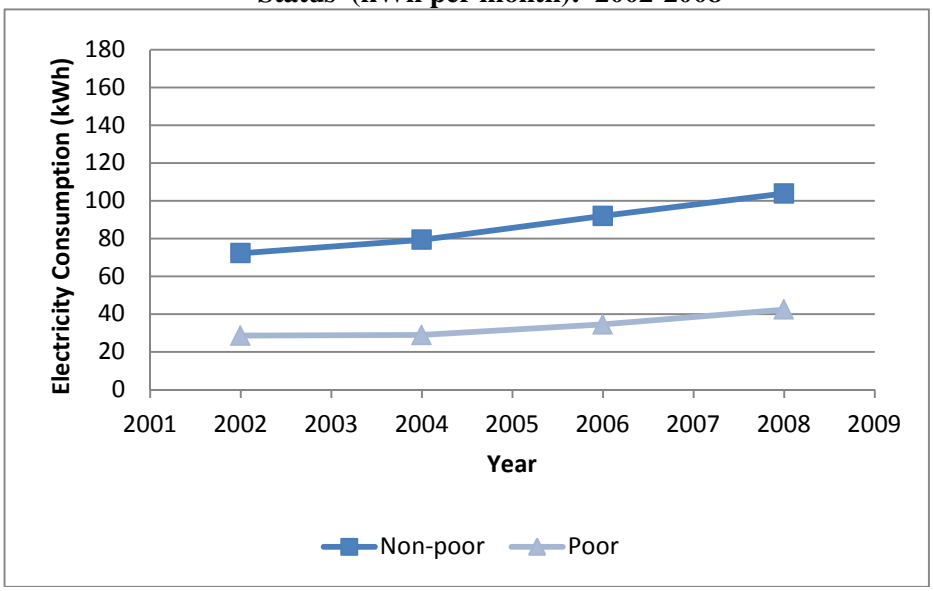
Source: VHLSS 2002, 2004, 2006, 2008, staff calculations (preliminary 2008 VHLSS estimates)

27. Durable ownership has increased dramatically over time in Vietnam, not only among better off and urban households but also among poor households. The non-poor own a wide range of electrical appliances – by 2008, 93 percent of households reported

owning a television, 89 percent owned fans, 77 percent used electric rice cookers, and 47 percent used electric water pumps, and a smaller but substantial number of households owned stereos, refrigerators, and household computers. Even among the poor, two-thirds of households owned a television by 2008, 61 percent had at least one fan, and 31 percent owned an electric rice cooker. Ownership of heavier appliances has risen sharply in urban areas: in 2002 only 38 percent of households owned a refrigerator and 9 percent owned computers. Six years later, in 2008 the proportion of families using refrigerators had nearly doubled to 64 percent) and the proportion with computers had more than tripled to 28 percent. The lifestyles and consumption patterns of Vietnamese families are changing rapidly.

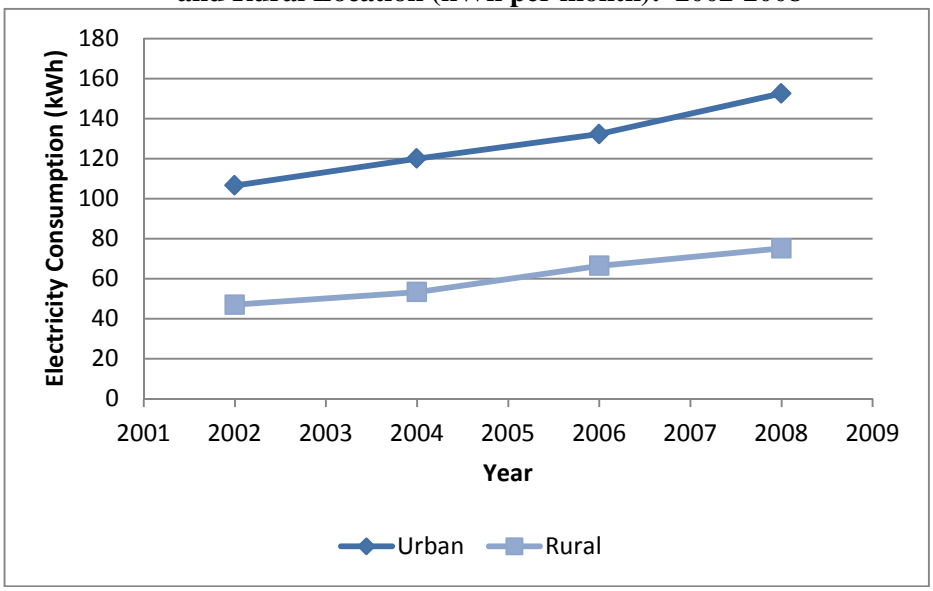
28. Electricity consumption has risen in parallel with durable ownership, for rural and urban households and across all income groups (Figures 2 and 3). The rate of increase has been slightly faster in urban areas and among better off households, reflecting a more rapid rise in relative incomes. In line with changing life styles and rising ownership of durables, the poor also are consuming more electricity: average consumption for poor households rose from 28.6 kWh per month in 2002 to 42.4 kWh in 2008.

Figure 2: Average Electricity Consumption for Residential Consumers, by Poverty Status (kWh per month): 2002-2008



Source: VHLSS 2002, 2004, 2006, 2008 and staff calculations

Figure 3: Average Electricity Consumption for Residential Consumers, by Urban and Rural Location (kWh per month): 2002-2008



Source: VHLSS 2002, 2004, 2006, 2008 and staff calculations

Implications of Narrowing the Lifeline Band

29. At 50kWh/month, the size of the lifeline block is low by comparison with other countries where it generally ranges from 25 to 300 kWh per month, with an average value of 90 kWh per month. The subsistence consumption threshold in a particular country typically depends on patterns in appliance ownership and use: for example, in the mid-1990s, the subsistence threshold for rural households in Latin America was deemed to be around 40 kWh a month – sufficient to support a few light bulbs and a radio. The equivalent subsistence threshold for urban households was 120 kWh a month – which supported a few lights, a small refrigerator, and a television (Antmann, 2007). Thresholds are higher on average in Europe and Central Asia (reflecting higher incomes as well as higher energy demands because winters are cold) and less in some lower income countries in East Asia.

Subsistence Threshold for Poor Households

30. Based on current patterns of durable ownership and use, a reasonable subsistence threshold for Vietnam would be 40-45 kWh a month – still within the 50 kWh threshold of the new lifeline block. The PSIA subsistence threshold is estimated based on a daily average of:

- 10 hours use of a light bulb
- 2 hours use of an electric fan (higher in warm months, lower in cool months)
- 2 hours use of color television

- 1 hour use of a rice cooker

Assessing Targeting and Leakages

31. Providing power subsidies through an IBT lifeline can be attractive in terms of administrative costs and ease of delivery; but they may not be a good way to target them to poor households. The extent to which they serve the needs for the poor depends on the characteristics of the country and the design of the system. In the case of Vietnam, the IBT lifeline provides relatively good coverage of the poor, albeit at the cost of moderate to high leakages to the non-poor.

32. The cumulative distribution of monthly electricity consumption for poor and non-poor households living in urban areas is shown in Figure 4 and for rural areas in Figure 5, based on the 2008 VHLSS. They provide a frame of reference for examining lifeline coverage and leakages linked to different lifeline cut-off levels.

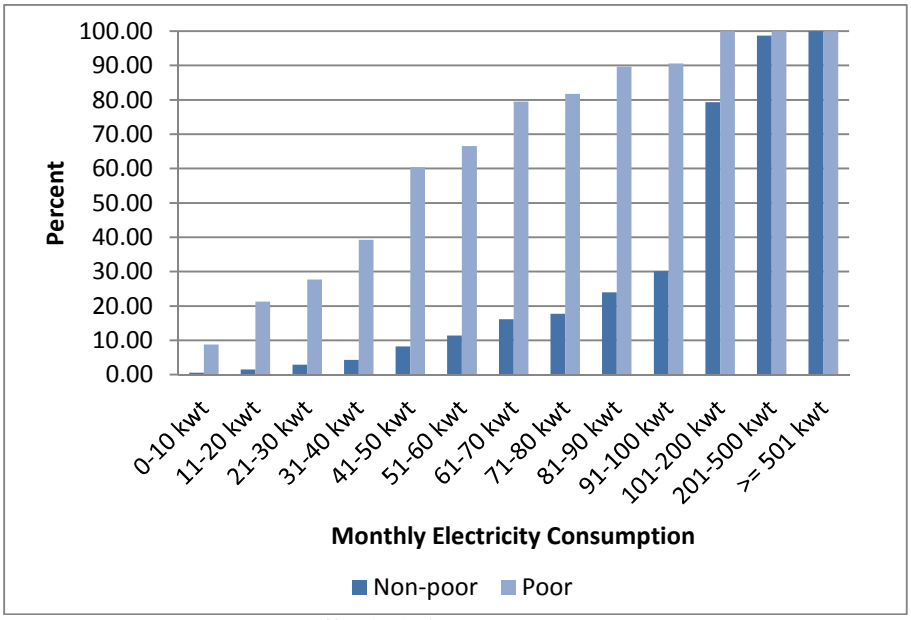
33. Before March 2009, the IBT lifeline applied to the first 100 kWh of monthly electricity consumption. In 2008, 65 percent of households in Vietnam consumed less than 100 kWh per month and thus all their consumption was subsidized. Although coverage was high – over 95 percent of the poor consumed less than 100 kWh – leakages were also high: only 14 percent of households fell below the poverty line in 2008 but 65 percent received all their electricity at subsidized rates.

34. Reducing the IBT lifeline from 100 kWh to 50 kWh will have different impacts on urban and rural households. According to Figure 4, 91 percent of the poor in urban areas consumed less than 100 kWh/month as compared to 30 percent of the urban non-poor. However the poverty rate in urban areas is only 3 percent, which implies very high leakages to 97 percent of the non-poor urban population. And all households, regardless of total electricity consumed, receive subsidies on the first 100 kWh, which further contributes to leakages. Reducing the IBT lifeline to 50 kWh will reduce coverage of the urban poor (60 percent of the poor consume less than 50 kWh, Figure 4) but also sharply reduces leakages (only 8 percent of the non-poor consume less than 50 kWh).

35. Reducing the IBT lifeline also reduces leakages in rural areas. 98 percent of poor rural households consumed less than 100 kWh in 2008 and those who purchased electricity from the PCs were fully covered by price subsidies. Reducing the IBT lifeline to 50 kWh reduced full coverage to 78 percent of rural households. This

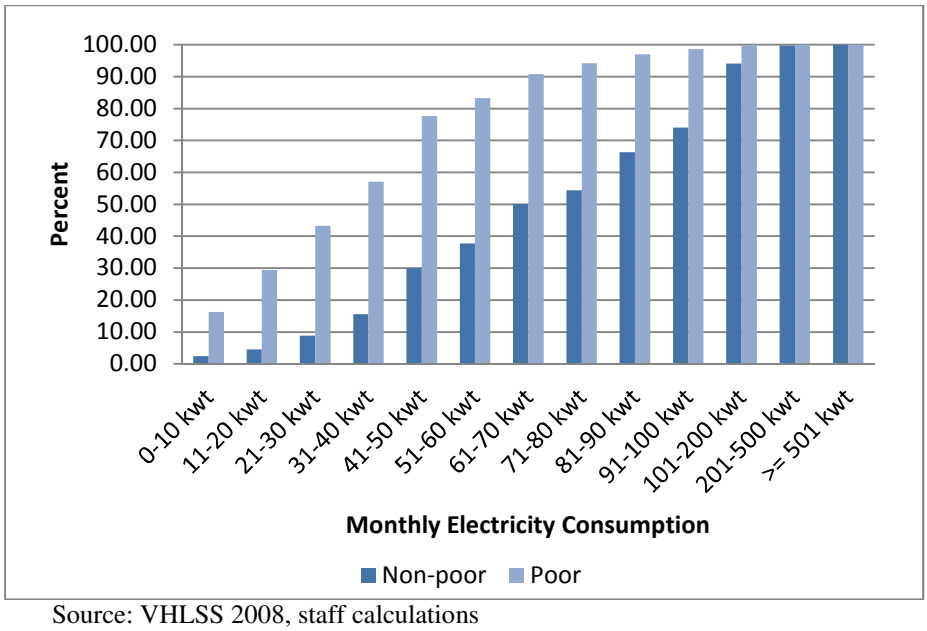
moderate reduction in coverage was accompanied by a more substantial reduction in leakages; full coverage for the non-poor fell from 74 percent (100 kWh) to 30 percent (50 kWh). Although poverty levels are higher in rural areas (18.1 percent poor in 2008) compared to urban areas, leakages to the rural non-poor under the new IBT lifeline are still substantial. Although difficult to quantify given existing information, integration of LDUs into the PCs and full implementation of the unified tariff structure is likely to further improve targeting of subsidies to rural poor households.

Figure 4: Distribution of Electricity Consumption for Urban Households, by Poverty Status: 2008



Source: VHLSS 2008, staff calculations

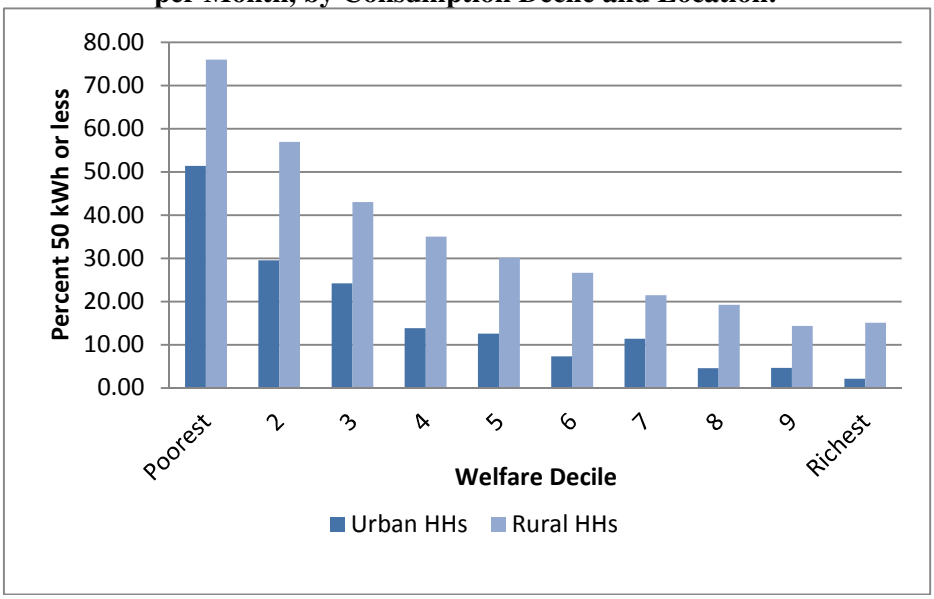
Figure 5: Distribution of Electricity Consumption for Rural Households, by Poverty Status: 2008



Source: VHLSS 2008, staff calculations

36. Another way to assess how well the IBT tariff structure targets poorer households is to look at how households are distributed within the lifeline band (Figure 6). Although a high percentage of Vietnam's poorest households (bottom two per-capita expenditure deciles) consume less than 50 kWh, many better off households do as well, particularly in rural areas. For example, 30 percent of rural households in the 5th decile consume less than 50 kWh as do 27 percent of households in the 6th decile. Thus despite the reduction in the lifeline band, many households (poor, near-poor, and not so poor) still benefit from tariff subsidies.

Figure 6: Assessing Leakages: Percent of Households Consuming less than 50 kWh per Month, by Consumption Decile and Location:



Source: VHLSS 2008, staff calculations

Affordability

37. Households in Vietnam, both poor and better off, spend a relatively small and decreasing share of household (cash) expenditures on electricity, from of 3.6 percent of expenditures in 2004 to only 3.2 percent in 2008 (Table 5). Urban households spend a higher proportion than rural households and poorer households spend slightly less (as a share of total spending) than the better off. By 2008 electricity shares were remarkably stable across the income distribution (ranging from 2.9 percent in the poorest 10 percent to 3.6 percent for the wealthiest 10 percent of the population). Power is not only widely available in Vietnam but it is also affordable.

Table 5: Electricity Expenditures as a Percent of Total Cash Expenditures: 2004-2008

	2004	2006	2008
Location			
- Urban	4.6	4.3	4.0
- Rural	3.2	3.1	2.8
Poverty Status			
- Poor	3.1	3.0	2.9
- Non-poor	3.7	3.5	3.2
Expenditure Decile			
- Poorest 10%	3.2	3.2	2.9
- Decile 2	3.3	3.1	3.1
- Decile 3	3.3	3.3	3.2
- Decile 4	3.3	3.3	3.1
- Decile 5	3.5	3.3	3.2
- Decile 6	3.4	3.3	3.1
- Decile 7	3.5	3.4	2.9
- Decile 8	3.6	3.3	3.2
- Decile 9	4.0	3.8	3.3
- Richest 10%	4.6	4.0	3.6
All Vietnam	3.6	3.4	**3.2**

Source: various rounds of VHLSS, staff calculations

Tariff Reform Scenarios

38. Three scenarios were developed to assess the impact of the new IBT structure on affordability for different groups of households (poor/non-poor and urban/rural). These were assessed against a baseline scenario defined as the actual patterns of consumption and related tariffs in place in 2008, but without discriminating which households are served by LDUs and which by PCs. For lack of better information, a unified tariff structure is assumed to apply to all rural consumers both pre and post-reform[12]. For all scenarios, electricity consumption is held fixed at 2008 levels[13] and monetary values are adjusted (using GSO's official CPIA) to March, 2009.

39. Scenario 1 looks at the impact of moving to the March 2009 IBT structure. As anticipated and despite the reduction in the lifeline, the overall impact of tariff adjustments are small – the increase in tariffs were to a large extent offset by inflation (particularly for the lower bands), distributional impacts were small, and the poor paid a still reasonable share of total expenditures for electricity, increasing from 2.8 percent to 2.9 percent of cash expenditures.

40. Scenarios 2 and 3 simulate additional adjustments to IBT lifeline subsidies, looking towards future tariff adjustments. Using the current IBT structure, Scenario 2

[12] This is a strong assumption. At present we do not have sufficient information to identify which households are EVN PC customers and which purchase from LDUs. In any case, the move towards integration and a unified system of rural tariffs will only improve supply and affordability for rural households.

[13] Price effects, i.e. reduced consumption due to higher electricity prices, were ignored.

simulates a policy to provide tariff subsidies only to rural consumers. This further restriction would have only a small impact on affordability for the poor because a significant majority of the poor currently reside in rural areas.

41. Scenario 3 assesses a telescoped variant of the current lifeline tariff band: only households who consume 50 kWh or less per month are given the subsidized VND 600/kWh lifeline tariff. Households consuming more than 50 kWh per month pay VND 865/kWh – the 'at cost' tariff for *all* of their first 100 kWh electricity consumption. As might be expected, spending on electricity as a share of household expenditures would increase under Scenario 3 – moderately for the poor and households living in rural areas, and more significantly for the non-poor and urban residents. But urban households would still only spend an average of 4.4 percent of household expenditures for electricity, which is modest in comparison to many other countries.

Table 6: Baseline and Tariff Adjustment Scenarios

	BASELINE (2008)		SCENARIO 1: 2009, MARCH IBT		SCENARIO 2: 2009, MARCH IBT TELESCOPED		REFORM SCENARIO 3: 2009, MARCH IBT RURAL ONLY	
	kWh Consumed	% Exp on Electricity	kWh Consumed	% Exp on Electricity	kWh Consumed	% Exp on Electricity	kWh Consumed	% Exp on Electricity
Location								
Urban	152.5	4.0	152.5	4.0	152.5	4.4	152.5	4.2
Rural	75.1	2.8	75.1	2.9	75.1	3.3	75.1	2.9
Poverty Status								
Poor	42.4	2.6	42.4	2.8	42.4	3.1	42.4	2.8
Non-poor	103.9	3.2	103.9	3.2	103.9	3.7	103.9	3.3
Quintile								
Poorest	49.8	3.0	49.8	3.0	49.8	3.4	49.8	3.1
Quintile 2	70.8	3.1	70.8	3.2	70.8	3.7	70.8	3.3
Quintile 3	88.0	3.2	88.0	3.3	88.0	3.8	88.0	3.4
Quintile 4	106.9	3.1	106.9	3.1	106.9	3.5	106.9	3.2
Wealthiest	170.6	3.5	170.6	3.4	170.6	3.7	170.6	3.4
Vietnam	97.2	3.2	97.2	3.2	97.2	3.6	97.2	3.3

4. REACHING THE MARGINAL CONSUMER: MIGRANTS AND OTHER SHORT-TERM RESIDENTS IN POOR NEIGHBORHOODS[14]

42. While Vietnam's tariff adjustments are not likely to have major adverse distributional impacts, there is always a possibility that specific groups will suffer unforeseen losses a result of reform measures. A qualitative study was launched to assess issues related to electricity access, quality of services and affordability for migrant workers and other temporary urban residents who typically live in apartment buildings or rooming houses in densely settled urban neighborhoods close to sources of

[14] Nguyen Tam Giang, A Quick Assessment of the Impacts of the Electricity Reforms on Migrant Groups in the Cities, January 2010.

employment. Only a small proportion of migrant workers and other temporary residents are captured in GSO's standard household surveys, including the VHLSS.

43. The study was conducted in HCMC (Go Vap and District 7), Hai Phong (Kien An and An Lao) and near the Dang Anh Industrial Zone in Hanoi[15]. The research team visited 15-20 residences in each city and interviewed landlords and a range of tenants living in the buildings. Most landlords in these neighborhoods kept detailed records of tenants and related charges (e.g. for electricity and water as well as the room itself). Electricity charges were based on metered consumption; most landlords installed electricity sub-meters in each rental room or apartment, and the sub-meters were connected to main (EVN) meters in the building. With only one exception, all contracts for power supply were between the landlords and EVN, and not with individual tenants or groups of tenants. The study team also met with local officials and other key informants.

Key Findings

44. Although the vast majority of urban respondents were indeed low income and consumed no more than 15-20 kWh of electricity (per room), none of them were covered by lifeline tariffs. In Hanoi, landlord-imposed electricity charges ranged between VND 1,000-2,500/kWh, with VND 1,500-2,000 /kWh being the most common charge. Rates were a little lower in Hai Phong and substantially higher in HCMC, where landlord-imposed electricity rates ranged from VND 2,500-3,500 VND/kWh. In addition to metered charges, tenants also paid for electricity used for pumping water.

45. Although per kWh prices are high, most respondents did not consume enough electricity for high prices to matter: 10-20 kWh per person per month was the norm. Most migrants work all day and use their few electrical appliances in the evenings: a few lights, a fan, and possibly (although rarely) a television.

46. Few landlords had registered their buildings to qualify for lower tariff bands which they said entail complicated procedures and are difficult with the rapidly turnover of tenant contracts. For example, the Go Vap District Electricity Division requires a "green booklet" (the equivalent of KT3 registration) to register 4 tenants as one

[15] In HCMC interviews were carried out in Go Vap (where many day laborers, students and factory workers reside) and District 7 (accommodating workers from nearby industrial parks); in Hanoi interviews were carried out in Kien An (day laborers, students, factory workers) and An Lao (near an industrial park); in Hai Phong interviews were carried in Dang Anh (near an industrial park).

household and formally to apply the IBT structure. Given the short duration of many rental arrangements, landlords were not willing to file the necessary paperwork and act as specific guarantors. Moreover landlords and tenants alike often said they preferred to keep their arrangements private and informal, rather than involving officials and dealing with many regulations that may not be designed with their circumstances and needs in mind – that is, to ensure affordable rental accommodations with flexible contract arrangements.

47. When asked about recent tariff adjustments and their concerns, few tenants had heard of recent changes to electricity tariffs and none of the respondents noted an increase in electricity charges since March, 2009. Nor were they informed about new supporting policies, such as complaint and grievance mechanisms, although district and ward officials told the team that related information had been widely promulgated in the ward bulletin, mass media, and neighborhood meetings. Tenants who signed rental contracts before March 2009 had not experienced an increase in electricity prices. Respondents expressed general concerns that prices of many goods and services had risen in 2008, were still creeping up, and wages have not kept pace with the rising cost of living in urban areas (similar comments were reported in recent rapid assessment work on impacts of the global economic crisis).

48. Many landlords also claimed ignorance about March tariff adjustments, which is surprising. As a result of IBT reforms, landlords should have witnessed a reduction in electricity bills from EVN PCs because rooming houses and rental properties were moved from the industrial tariff to the residential schedule.

49. Landlords and tenants alike raised concerns about the quality of electricity supply, particularly in the dense Hanoi neighborhoods included in the study. Many cited damage to appliances caused by voltage spikes, and others said the flow of electricity was so weak during peak hours that it took 2 hours to cook rice. EVN PC recently increased the number of transformers in several of the sites visited, but supply still fails to meet the ever growing local demand, including from high numbers of migrants and temporary residents.

5. CONCLUSION AND NEXT STEPS

50. The PSIA suggests that poor households in Vietnam continue to have good access to affordable electricity despite recent tariff adjustments and the narrowing of the lifeline band from 100 kWh to 50 kWh. Due to the introduction of unified tariffs and

integration of LDUs into rural PCs, rural electricity customers are expected to benefit not only from lower prices but also improvements in the reliability and quality of the electricity supply.

51. However, this is an assessment of the situation today – based on the best available information and ex ante analysis. What happens on the ground may be different from ex ante predictions and unexpected impacts, both adverse and beneficial, may emerge as power sector reforms are further designed and implemented. In addition, the situation in Vietnam is changing: incomes will continue to rise, lifestyles will change and Vietnamese households will purchase more appliances, use them more intensively, and consume more electricity.

52. Looking forward, there is a need to:

- Monitor the overall implementation of reforms, including quality of service and key performance indicators, with particular focus on vulnerable and poor groups.
- Undertake special studies as needed to ensure all households benefit equally from future reforms (e.g. to IBT subsidies), also to help in designing mitigation measures if needed.

53. ERAV, in its role as regulator, has primary responsibility for monitoring performance and system quality, as well as the application of retail tariffs. EVN and other PCs are the regulated entities. ERAV also is responsible for monitoring distributional impacts and undertaking special studies to ensure the poor and other at-risk households are not adversely impacted by ongoing reforms.

Monitoring Quality of Service

54. The Distribution Code and Grid Code are a part of the new regulatory framework for the power sector; they are available in draft and awaiting final approval. Once approved, the Distribution Code will establish the quality of service and performance obligations of the PCs. The best way to monitor impacts on specific groups of households (e.g. poor, at-risk) is to ensure the system for overall performance monitoring is well-designed and has good spatial and socio-economic coverage. Also that ERAV develops a timely system of reporting from and feedback to the PCs so they respond in a timely manner to performance problems, including problems in delivering reliable and high quality services to more isolated regions. In additional to standard

reporting, additional formats should be designed to identify and highlight performance problems specific to low income areas, both in rural areas and urban neighborhoods.

Need for Further Special Studies

55. ERAV has requested TA support from the World Bank to undertake a series of special studies to ensure adequate protection for the poor, including the design of mitigation measures and more effective mechanisms to ensure electricity remains accessible and affordable to all households. The current system of IBT lifeline subsidies does a reasonable job of protecting the poor, albeit at the cost of substantial leakages to the non-poor. Over the longer term, ERAV is interested to move away from tariff based subsidies and instead deliver subsidies directly to poor households. This will require a careful assessment and piloting of good practice mechanisms (e.g. targeted social assistance) that are consistent with Vietnam's poverty reduction and social protection strategies and acceptable to the government.

56. The World Bank is keen to support ERAV's work in this area. Based on this first round PSIA, we recommend special studies on topics such as:

- International practices in targeting and delivering power subsidies through IBT tariffs versus broader SP mechanisms, with particular focus on costs and targeting efficiency. The findings will support more informed policy discussions in Vietnam on the design and implementation of future subsidies.
- In-depth study of progress in implementing unified tariffs for rural electricity consumers, including an assessment of progress in LDU improvements and integration. ERAV currently does not have a mandate to monitoring quality of service delivered by LDUs, as they are formally outside the power market. Information on LDU performance is limited. If LDUs continue to supply power to a substantial proportion of rural consumers (particularly lower income consumers) it is important to develop mechanisms to monitor and assess their performance, also ensure compliance with broader reform initiatives. The rural poor should not continue to pay higher prices for low service quality.
- More comprehensive data collection and analysis of service delivery and affordability in low income urban neighborhoods, with particular focus on

migrant workers and other temporary dwellers. The small study done for the PSIA indicates that migrants and other temporary residents currently consume very little electricity but pay high per-unit prices. They are poor but are not covered under the IBT lifeline. Extending coverage through the IBT lifeline would be difficult; however, migrants and others living in temporary dwelling units should be a part of the target group when considering alternative delivery mechanisms (non-tariff).

- Assessment of relative costs and affordability in the context of rising incomes and increasing demand for electricity in Vietnam. Electricity consumption is currently very low, particularly for poor and near-poor households. But demand is increasing across the income distribution and it is important that gains in access and affordability are maintained in the future. Policy makers in Vietnam are particularly concerned about rising inequality, in incomes as well as access to basic goods and services.

Reference

Khandker, Barnes, Samad, Huu Minh (2009), Welfare Impacts of Rural Electrification: Evidence from Vietnam.

Nguyen Viet Cuong & Tran Ngoc Truong & Roy Van Der Weide, 2010. "Poverty and Inequality Maps in Rural Vietnam: An Application of Small Area Estimation," *Asian Economic Journal*, East Asian Economic Association, vol. 24(4), pages 355-390, December.

Nguyen Viet Cuong, 2008. "Is A Governmental Micro-Credit Program For The Poor Really Pro-Poor? Evidence From Vietnam," *The Developing Economies*, Institute of Developing Economies, vol. 46(2), pages 151-187.

Pedro Antmann (2007), Review of International Experiences on Retail Tariff Setting Methodologies and Recommendations for Vietnam.

The World Bank (2004), "Vietnam Development Report: Poverty", Hanoi, Vietnam.