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Is electricity affordable and reliable for all in Vietnam?

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http://minh.haduong.com/#Paper

Clean Energy and Sustainable Development Lab

Founded in 2014, building a world-class interdisciplinary research team with the mission to contribute to the green growth of the energy sector in Vietnam and other South East Asian countries.

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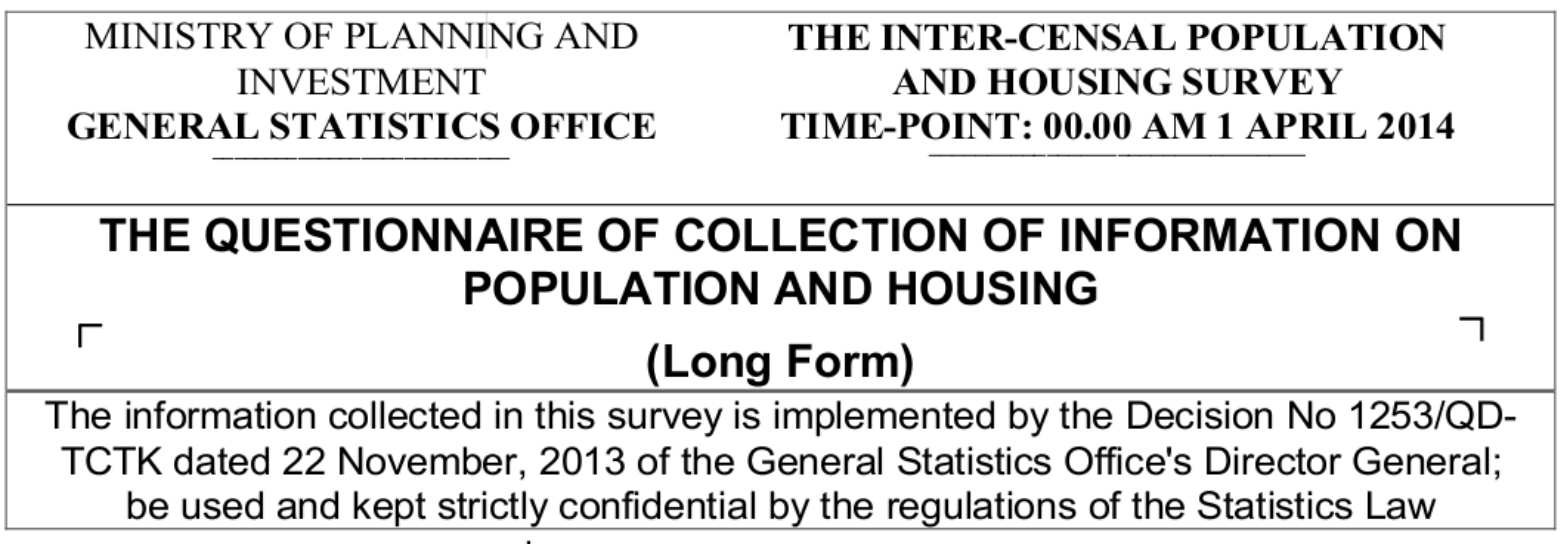
Outline

1. Introduction
2. Access to grid and electricity use
3. Affordability and satisfaction
4. Electricity tariff reform
5. Conclusion

1. Introduction : Data used



MINISTRY OF PLANNING AND INVESTMENT
GENERAL STATISTICS OFFICE

THE INTER-CENSAL POPULATION AND HOUSING SURVEY
TIME-POINT: 00.00 AM 1 APRIL 2014

THE QUESTIONNAIRE OF COLLECTION OF INFORMATION ON POPULATION AND HOUSING

(Long Form)

The information collected in this survey is implemented by the Decision No 1253/QD-TCTK dated 22 November, 2013 of the General Statistics Office's Director General; be used and kept strictly confidential by the regulations of the Statistics Law

Reference : General statistical office (2015) *The 1/4/2014 Viet Nam Intercensal Population and Housing Survey: Major Findings.* Vietnam: Ministry of Planning and Investment.

Descriptive data analysis using Python, Pandas, NumPy and Matplotlib.

VN households survey variables

- Annual income
- Poverty status

  ...
- Electricity amount used last month,
- Electricity bill last month
- Did you use grid electricity for lighting ?
- Did your electricity use meet your needs ?

2. Access and usage

2.1 Access : mostly everyone

2.2 Usage : less than 50kWh/month for 25 % of households (in 2014)

2.1 Access : mostly universal

« From the early days [...], when the power system had just been unified,through to today, when more than 95 percent of all households have access to electricity, there is a compelling story.

It is not only a story of policies and institutions, or of financing and tariffs. It is also a story of Vietnam's growth as a nation and as a society built on the unifying force of electrification. »

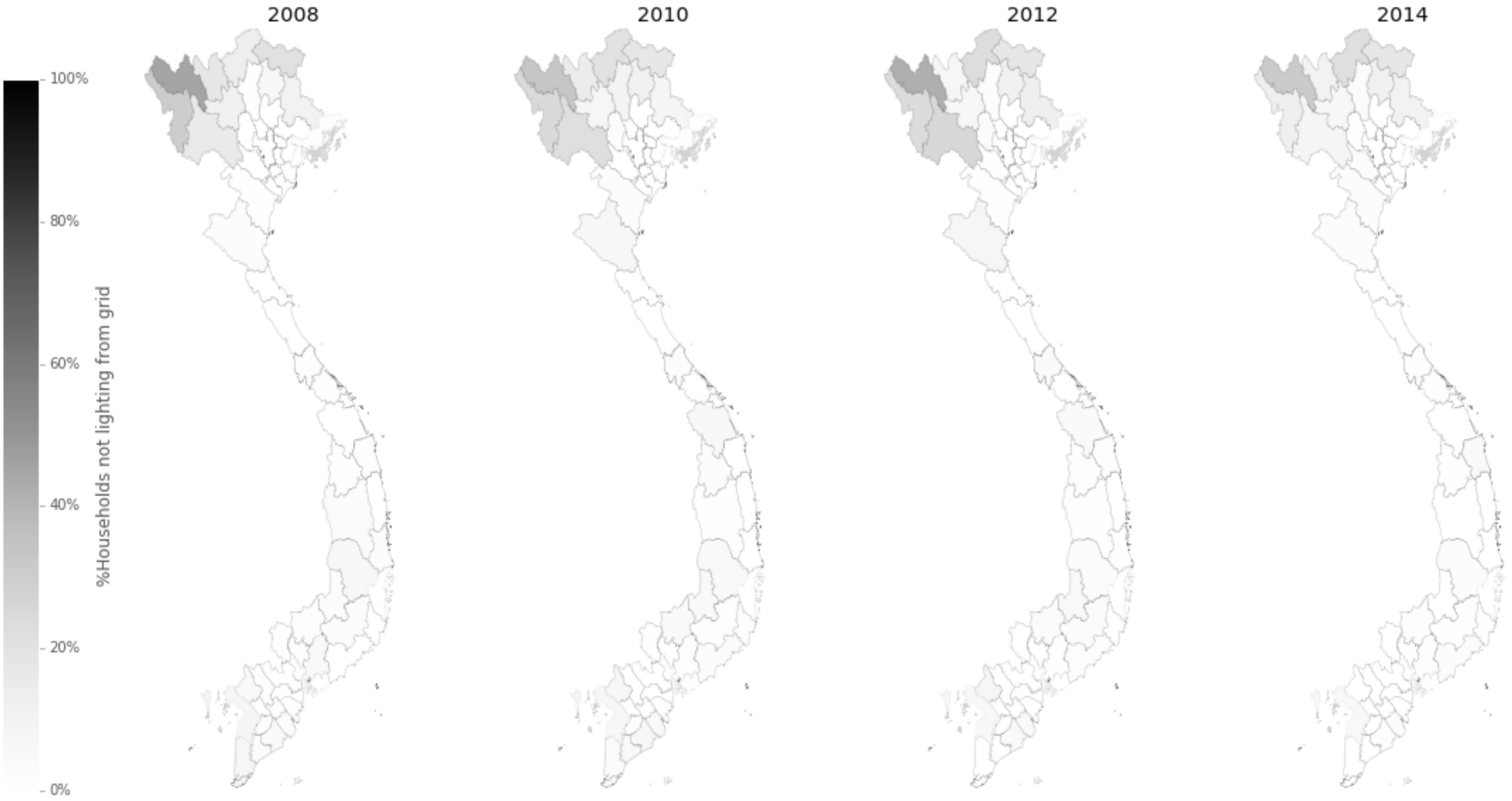
Hoang Trunh Hai (2011)

in World Bank (2011) State and People, Central and Local, Working Together: The Vietnam Rural Electrification Experience

Rural electrification in the northern provinces.

Hà Giang, 2016-11
© Ha-Duong

The share of households not relying on the national grid for lightning decreased from 2010 to 2014 in most provinces.



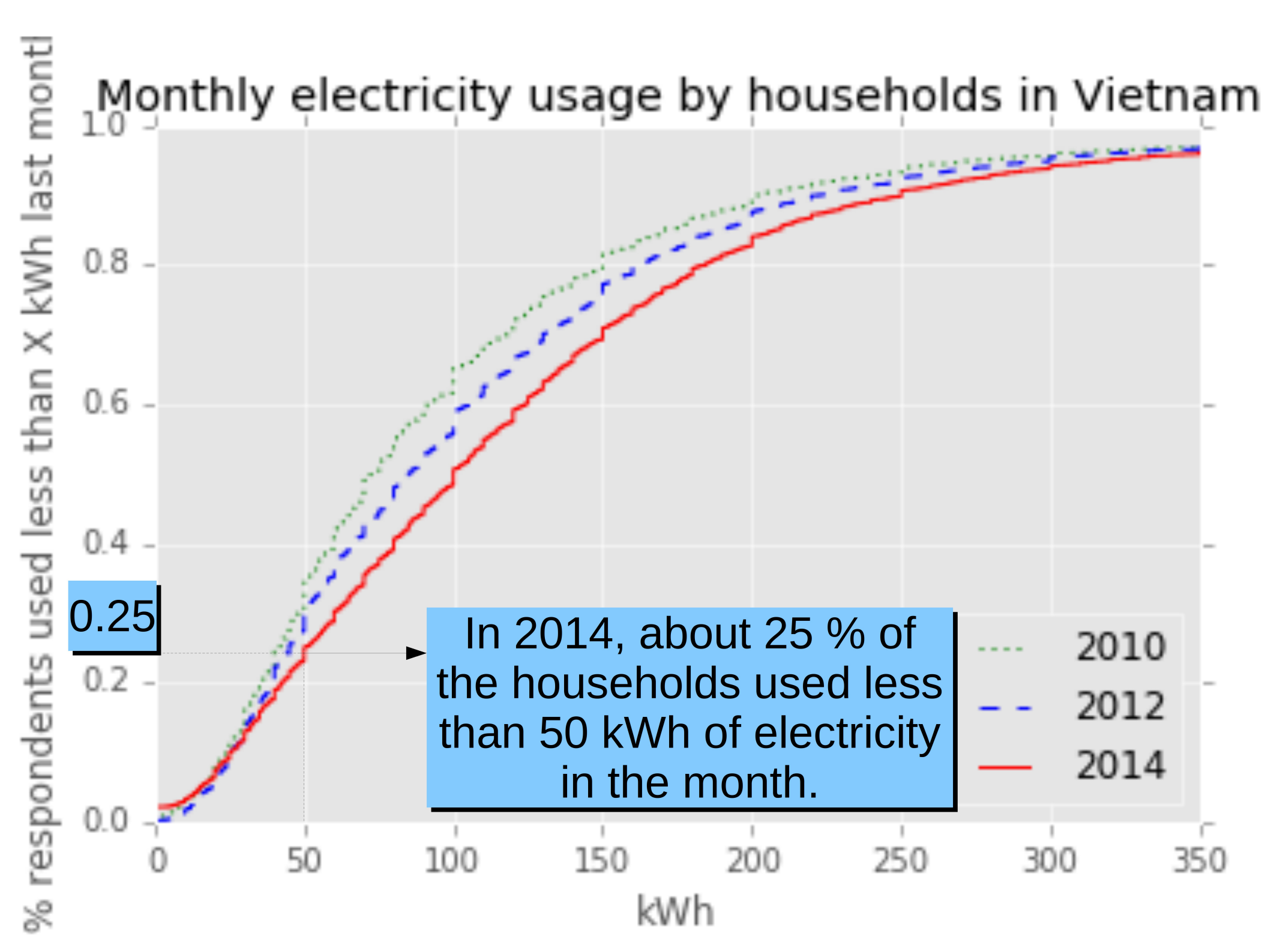
Summary on access

- In 2014, **97.7 %** of households in Vietnam used grid electricity for lighting.

- « One million people primarily in the northern mountainous regions of Vietnam are currently without access to electricity. » *Doan Van Binh, IES (2010)*

2.2 Usage

In 2014, **one out of four** Vietnamese households used **less than 50 kWh** per month.


Monthly electricity usage by households in Vietnam
% respondents used less than X kWh last montl
1.0
0.8
0.6
0.4
0.25
0.2
0.0
0
50
100
150
200
250
300
350
kWh
In 2014, about 25 % of the households used less than 50 kWh of electricity in the month.
2010
2012
2014

50 kWh/month electricity budget

1 kWh	Charge phone everyday
2 kWh	Boil 5 teapots everyday
7 kWh	Lighting, 4 lamps 4 hour per day
17 kWh	Fan, 8 hours per day
23 kWh	Rice cooker OR Television

Basics, add up to 27 kWh

---

50 kWh	Fridge
60 kWh	A/C, 2 hours per day

Do not fit into 50 kWh budget

3. Affordability & satisfaction

3.1 Block tariff : big consumers subsidize small

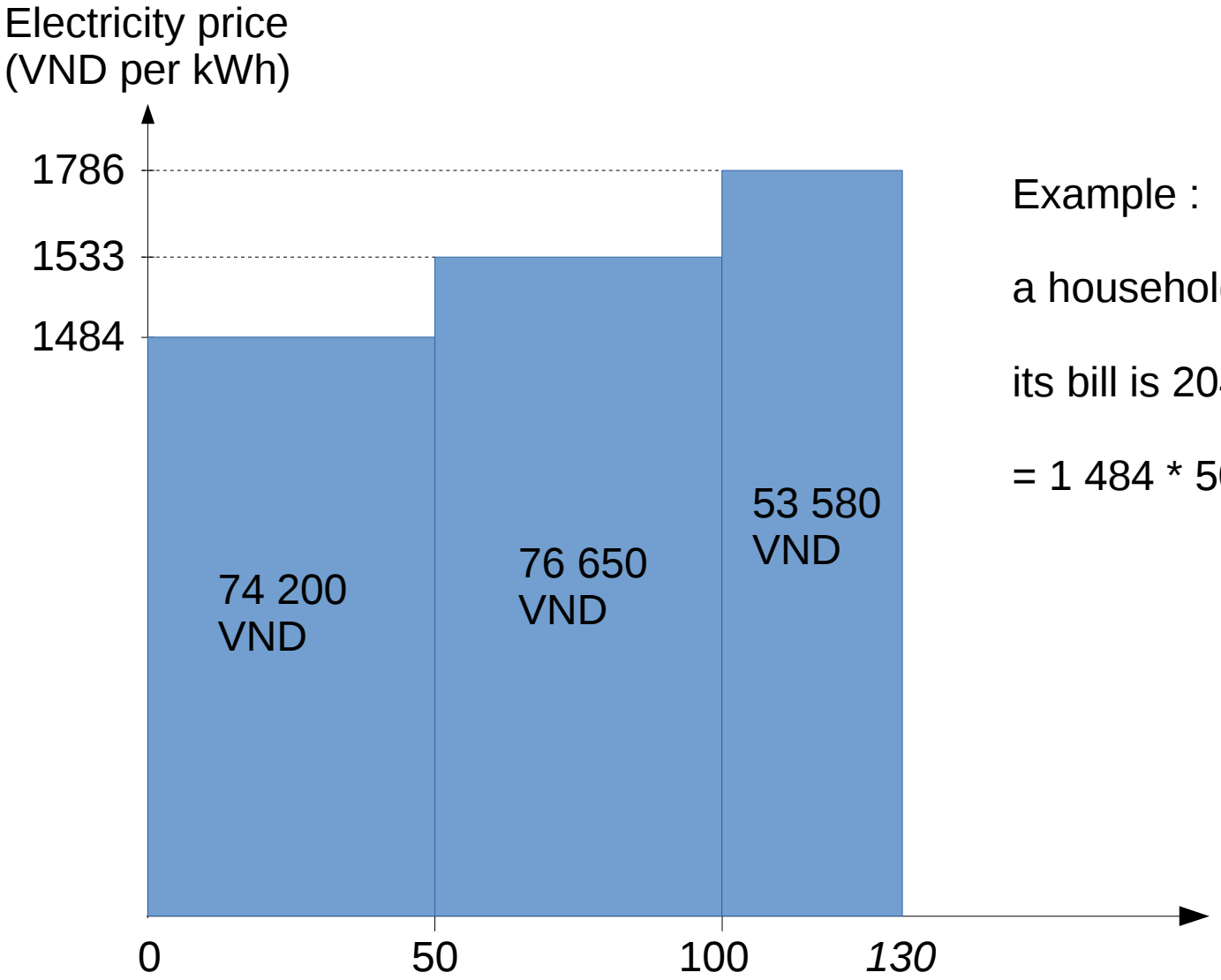
3.2 Tarif catch up after inflation control

3.3 Households pay <6% of income for power.

… but that level is increasing

3.4 Satisfaction has increased a lot

3.1 « Blocks tariff » → redistribution



Example :

a household uses 130 kWh in month

its bill is 204 430 VND

= 1 484 * 50 + 1 533 * 50 + 1 786 * 30

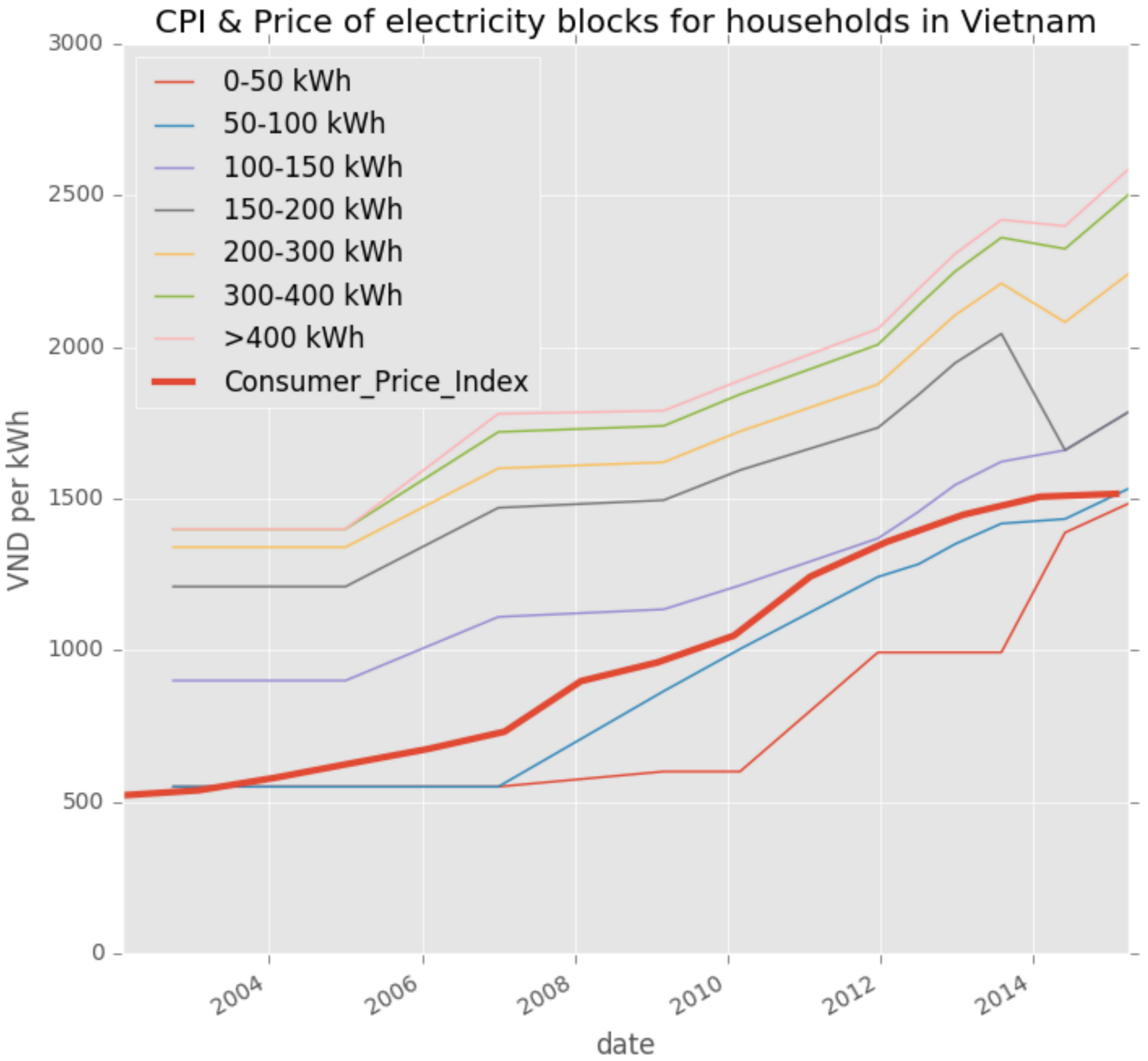
3.2 Tariff used to control inflation

Kinh tế Sài Gòn Online
Thời báo
CƠ QUAN CHỦ QUẢN: SỞ CÔNG THƯƠNG TPHCM

Preventing Power Tariffs From Stoking Inflation
Dr. Nguyen Minh Phong, *The Saigon Times*, Feb 25, 2010

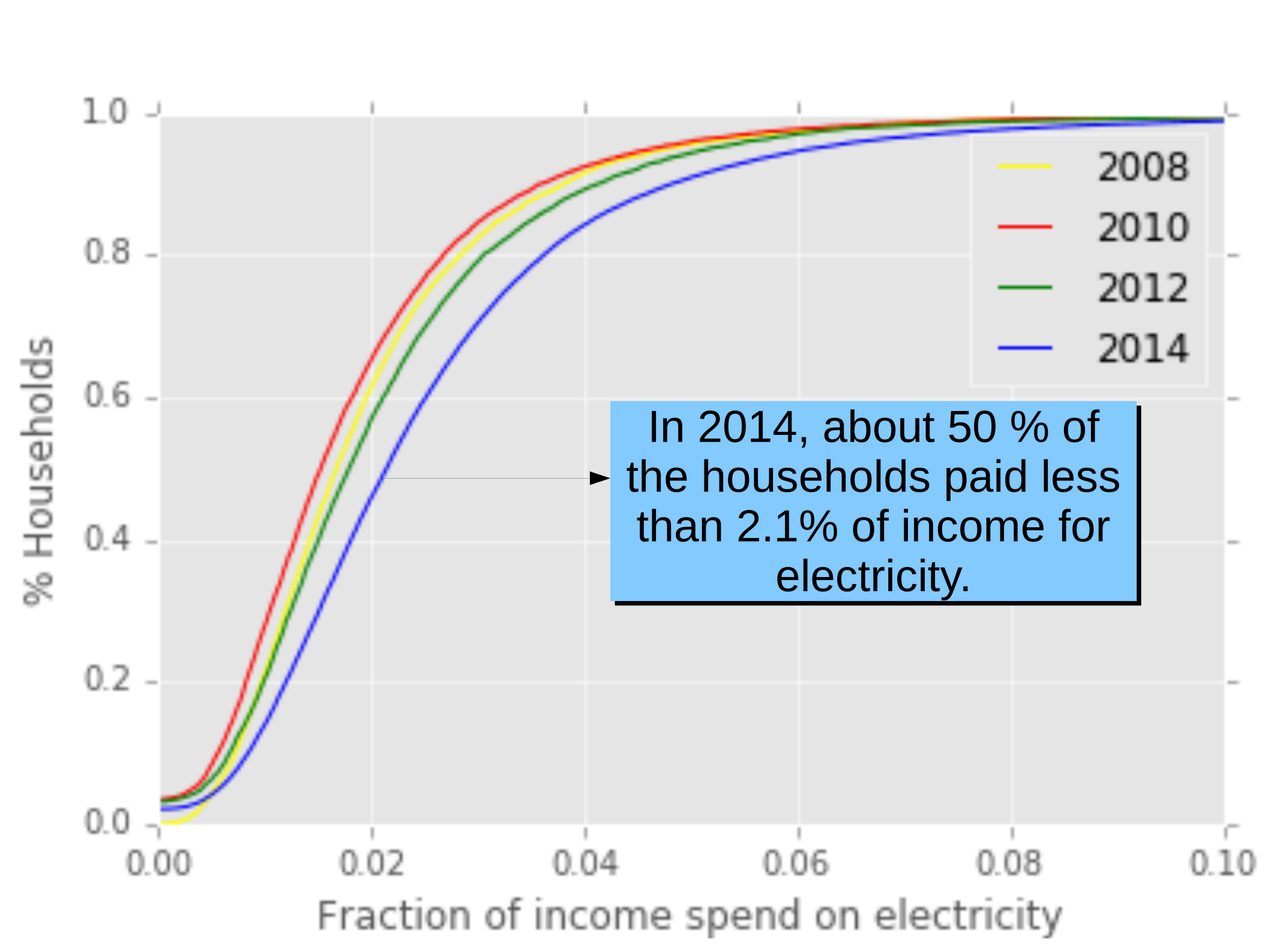
THANH NIEN
NEWS

Vietnam to raise power prices from July 1 after inflation slows.
Thanh Nien News. June 30, 2012

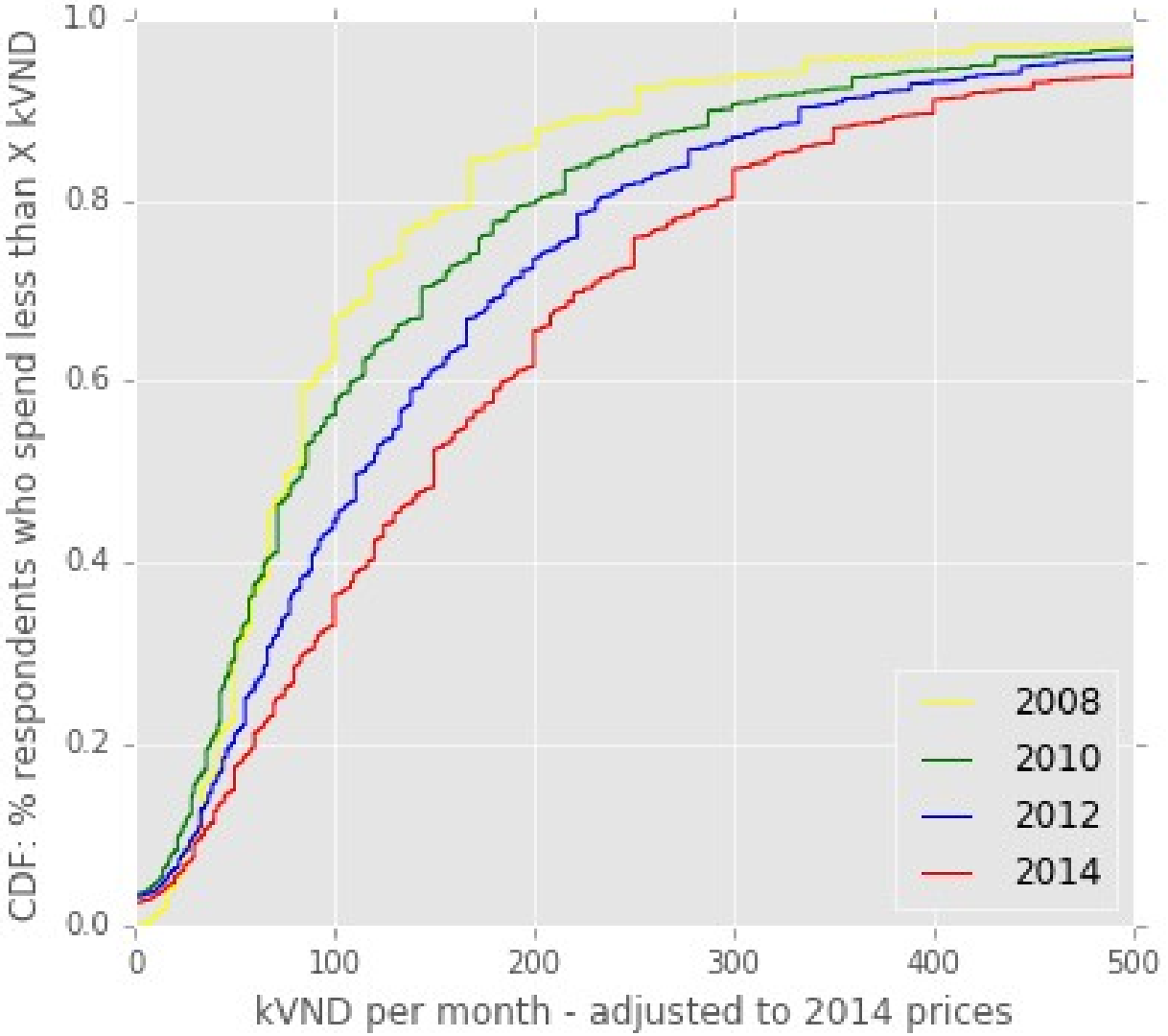

CPI & Price of electricity blocks for households in Vietnam
0-50 kWh
50-100 kWh
100-150 kWh
150-200 kWh
200-300 kWh
300-400 kWh
>400 kWh
Consumer_Price_Index
VND per kWh
3000
2500
2000
1500
1000
500
0
2004
2006
2008
2010
2012
2014
date

3.3 Bill as a fraction of income

Year	2008	2010	2012	2014
Households not paying anything	0.023 % of household	3.4 % of households	3.2 % of households	2.2 % of households
Households paying more than 10 % of their income for electricity bill	0.5 % of households	0.4 % of households	0.5 % of households	1.1 % of households
Half of the households pay less than	1.7 % of income	1.5 % of income	1.8 % of income	2.1 % of income
95 % of the households pay less than	4,8 % of income	4.6 % of income	5.2 % of income	**6.2 % of income**


1.0
0.8
0.6
0.4
0.2
0.0
% Households
0.00
0.02
0.04
0.06
0.08
0.10
Fraction of income spend on electricity
2008
2010
2012
2014
In 2014, about 50 % of the households paid less than 2.1% of income for electricity.

Electricity bills
2x between 2008 and 2014

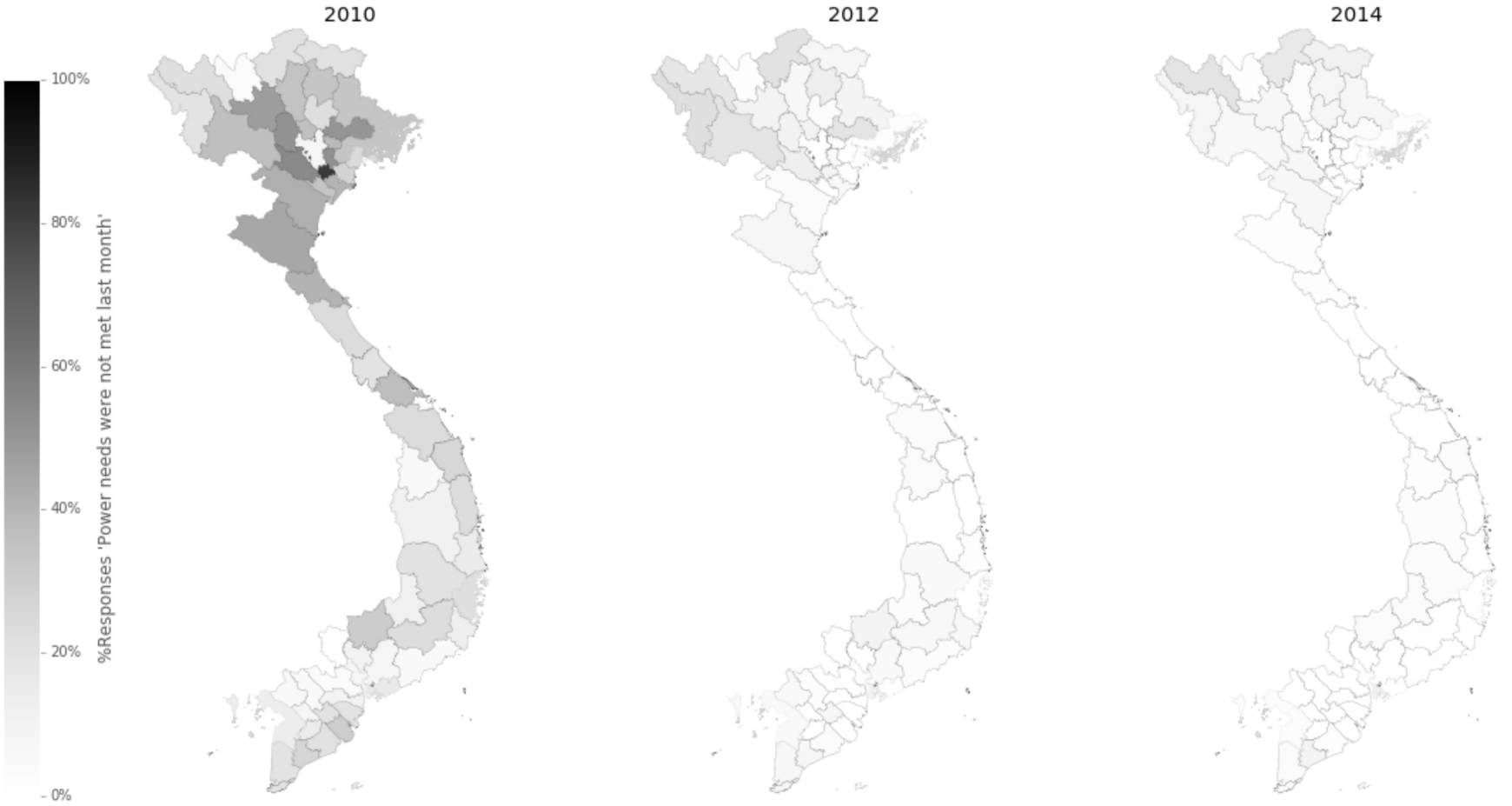


3.4. Needs are met now

In the last month, did your consumption of electricity met the needs of your household?

Survey year	**2010**	**2012**	**2014**
	N = 9 261	*n* = 9 242	*n* = 22 695
Not sufficient	24.4 %	4.8 %	2.7 %
Sufficient	72.6 %	89.6 %	91.7 %
More than sufficient	3.0 %	5.6 %	5.6 %

Satisfaction levels progress



Summary on needs satisfaction

- In 2010, one out of four households in Vietnam declared that their electricity use was insufficient to meet their needs.
- That insatisfaction ratio dropped **under 3 %** in 2014.
- The subjective indicator reveals what access and affordability did not show.

4. Electricity tariff reform

4.1 Limits of existing subsidy

4.2 A more progressive tariff

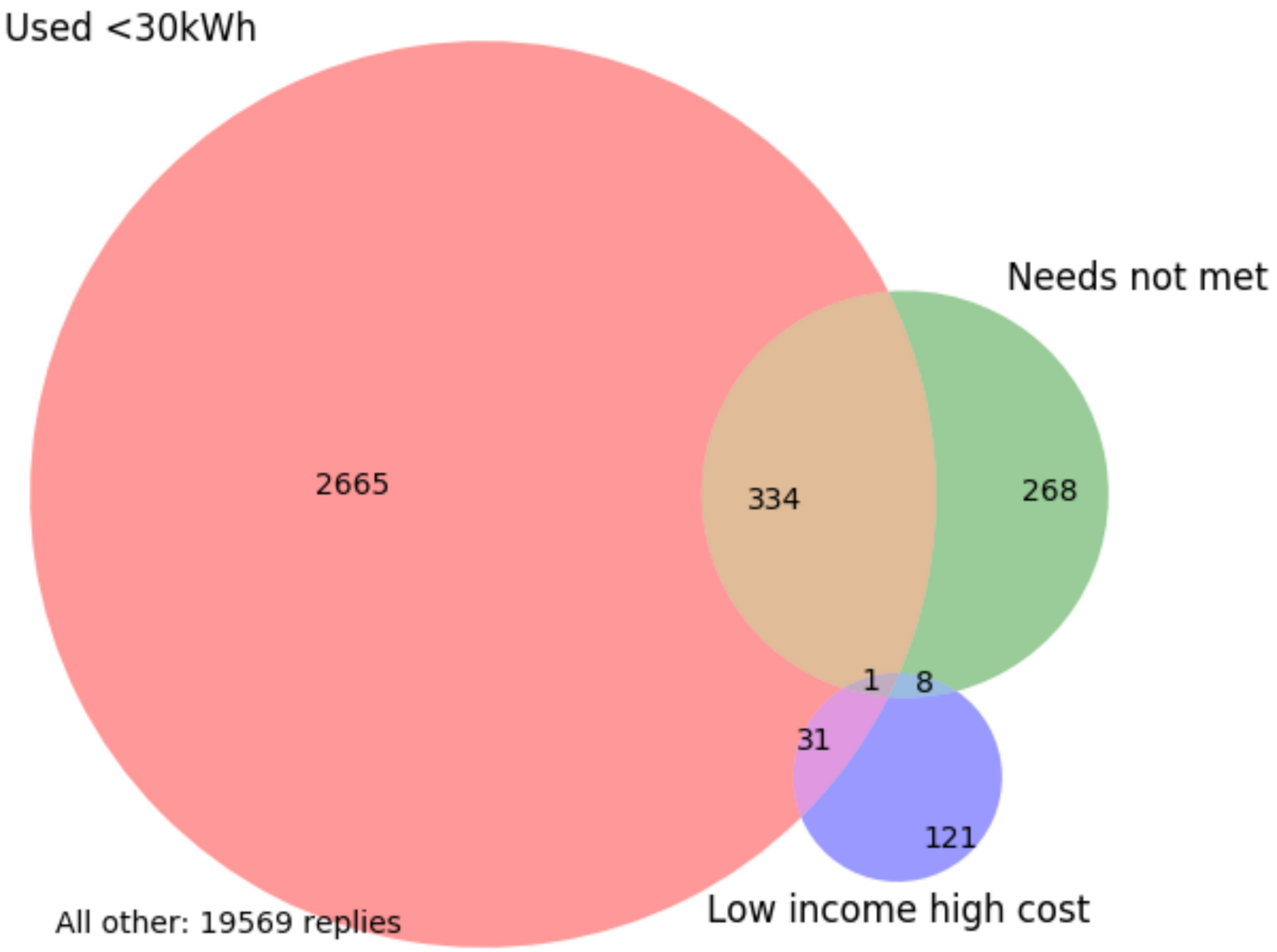
4.3 EVN revenue increase

4.1 Limits of energy subsidies

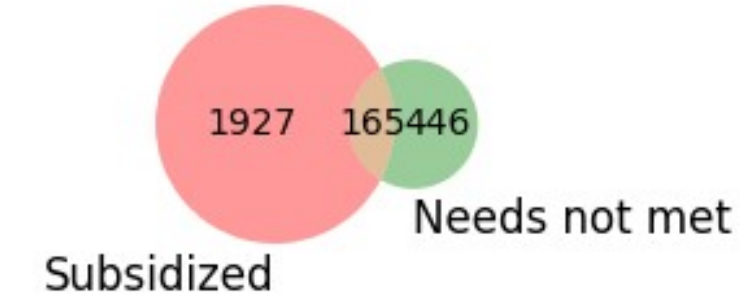
- Theory : Low correlation between criteria, who is energy poor ?
  - Electricity use below basic needs (30kWh/month)
  - Pay over 6% of income for electricity
  - … and is income poor
  - Needs not met

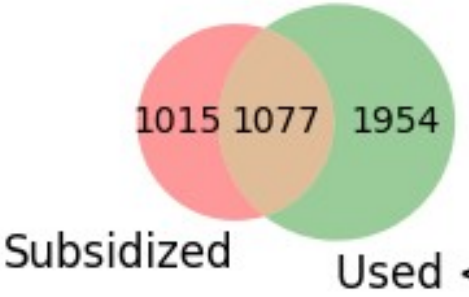
- Practice : Subsidy does not reach most energy poors, in any case.

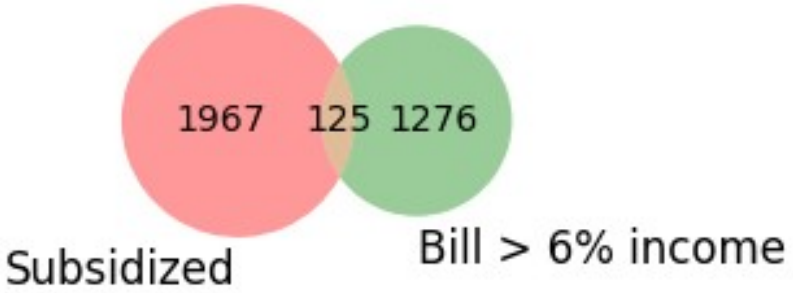
Energy poverty in Vietnam Households 2014 survey (n=22997)



Subsidy coverage

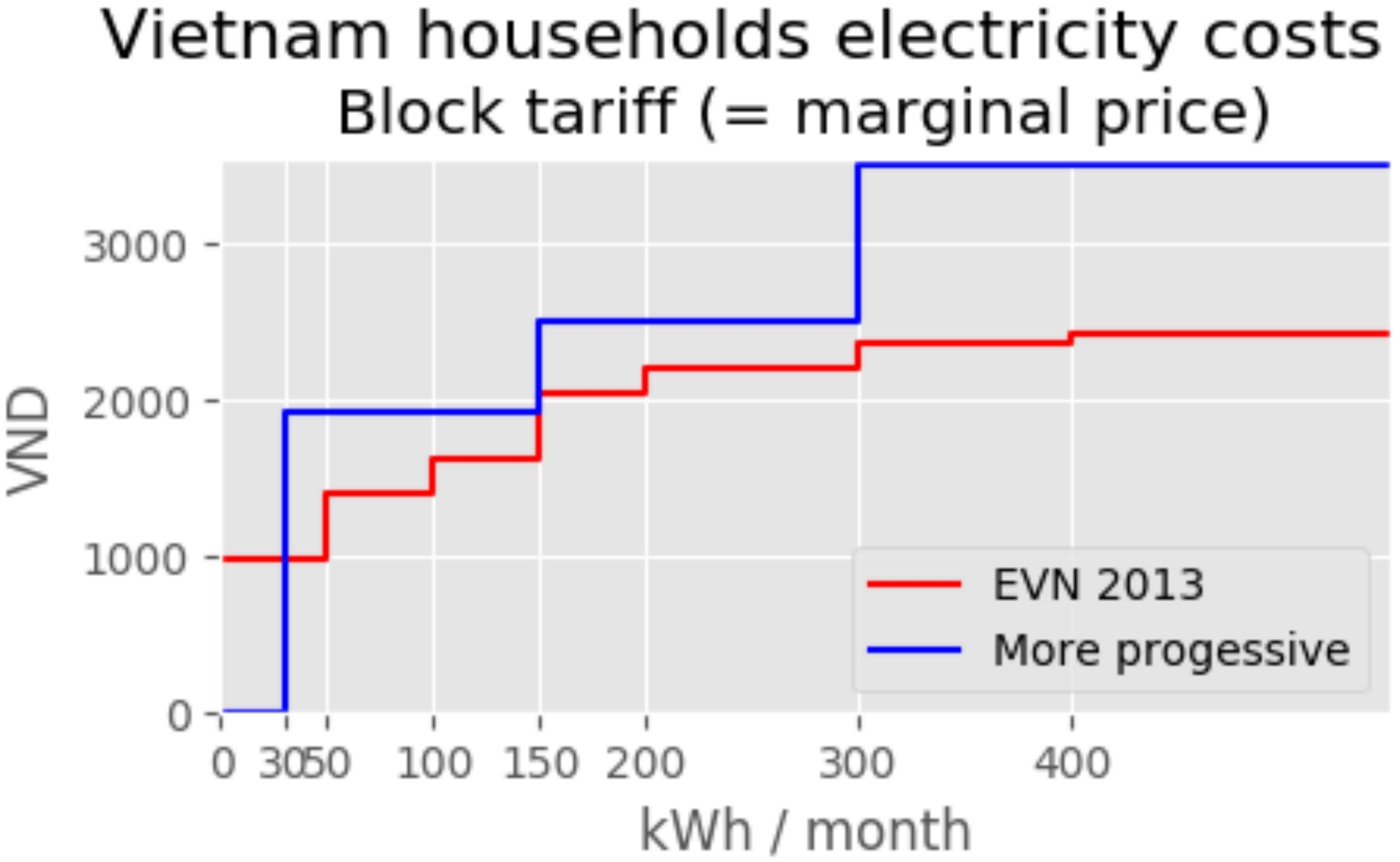


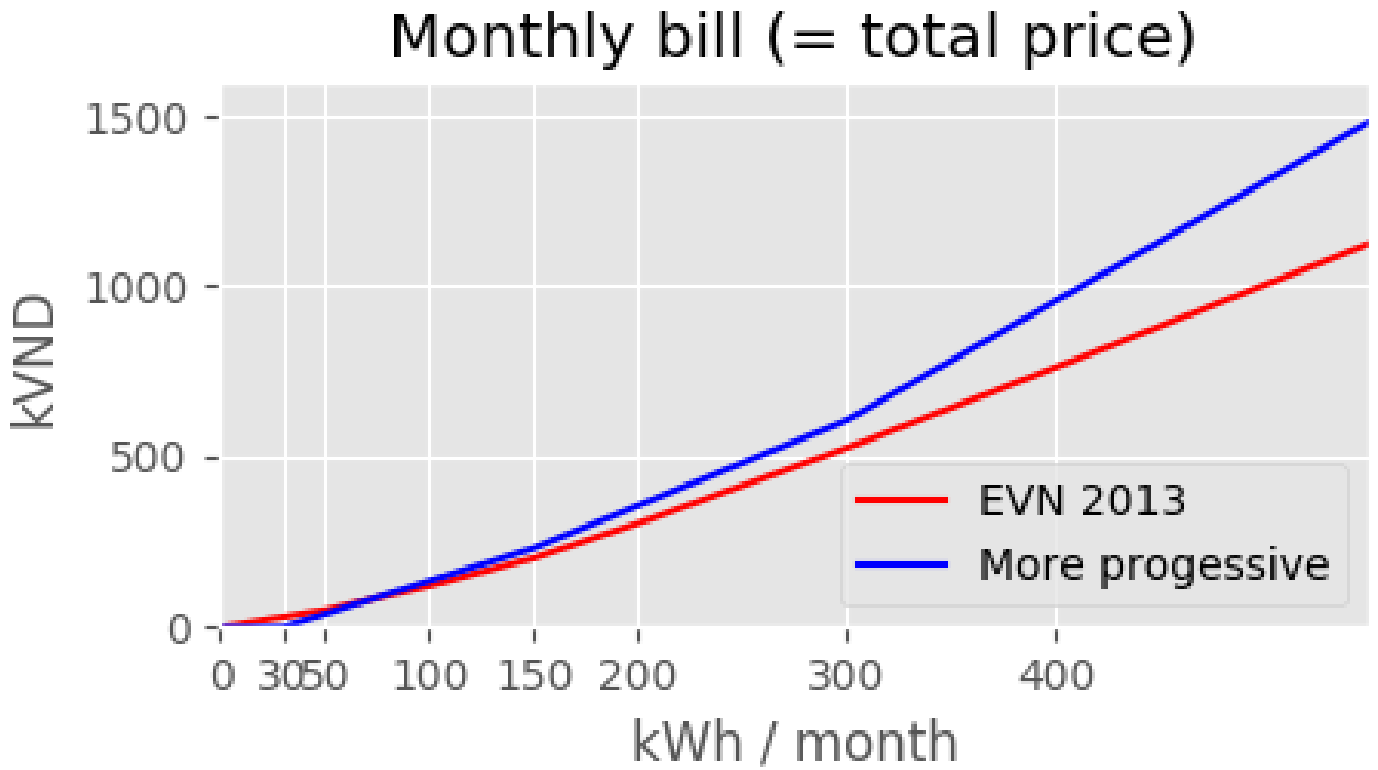


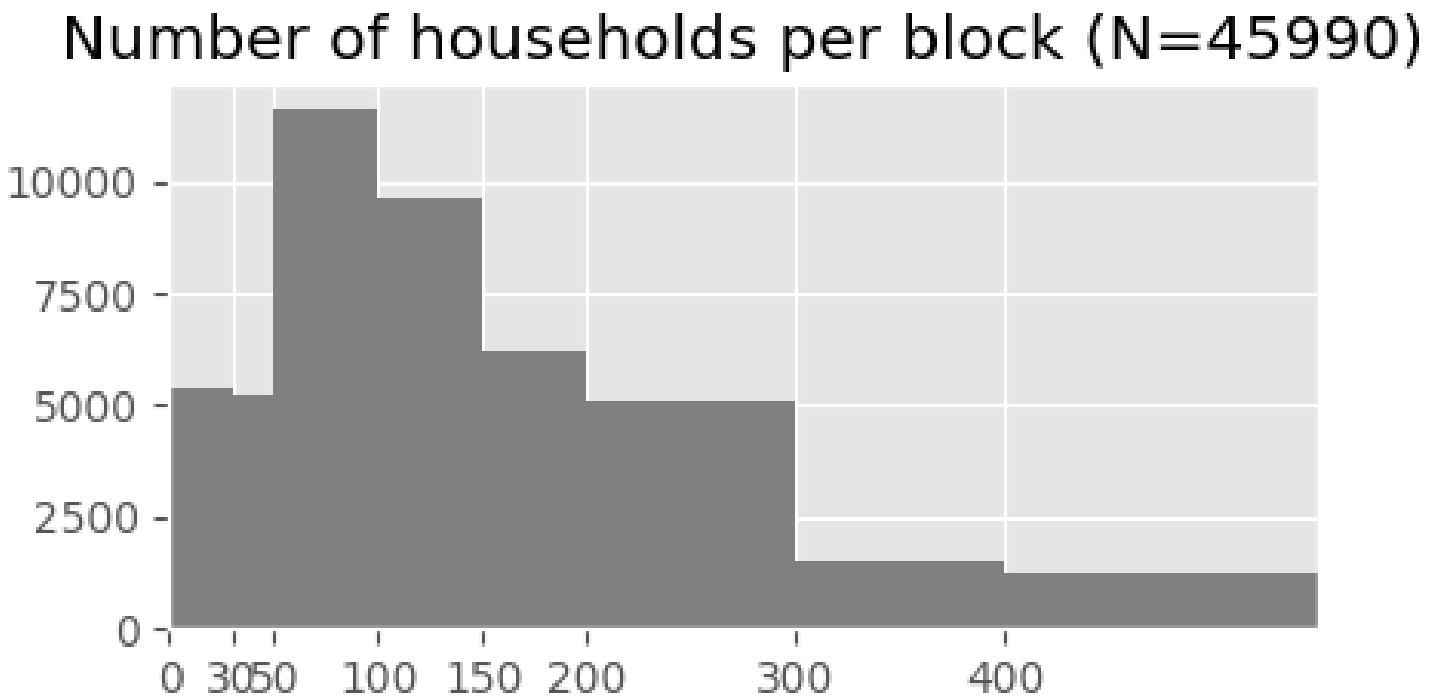


4.2 A more progressive tariff

- First block free, universal basic needs 30kWh
- Top block at high marginal cost
- Top 30% households subsidizes the other 70%


Vietnam households electricity costs
Block tariff (= marginal price)
VND
3000
2000
1000
0
0
30
50
100
150
200
300
400
kWh / month
EVN 2013
More progessive


Monthly bill (= total price)
1500
1000
500
0
kVND
EVN 2013
More progessive
0 30 50 100 150 200 300 400
kWh / month


Number of households per block (N=45990)
10000
7500
5000
2500
0
0 30 50 100 150 200 300 400

Lower bill for 28% of households

We re-estimated monthly bill of each household.
Under the more progressive tariff:

- The share of households with a zero electricity bill increases from 2.2% to 6.5%. The majority were not previously subsidized.
- Any household which were previously directly subsidized, do not loose their previous benefit, they access 30 kWh for free as every other household.
- The bill decreases for 28.3% of households, at most by -29.6 kVND.

4.3 EVN revenue increase by 15 %

Average bill increases 15% from 199.9 kVND to 229.1 kVND, that is 29.2 kVND.

- For 50% of households, the bill increases over 19.7 kVND
- For 5% of households, the bill increases over 83.6 kVND
- For 1% of households, the bill increases over 301.7 kVND, with a maximum increase of 1374.0 kVN

5. Conclusion

- Subjective indicators usefull
- Electricity costs increasing
- Possibility to increase both revenue and affordability