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Minh Ha-Duong, Hoai-Son Nguyen

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CleanED and IES scientific seminar - winter 2016 session

Affordable and reliable power for all in Vietnam progress report

Nguyen Hoai Son Ha-Duong Minh

2016-10-20

CIRED
Centre International de Recherche sur l'Environnement et le Développement

Our goal is to report how Vietnam is achieving

SDG 7

Ensure access to affordable, reliable, sustainable and modern energy for all

Outline

- Energy poverty indicators
- Access to grid and electricity use statistics
- Affordability statistics
- Satisfaction statistics
- Summary and conclusion

1. Measuring progress to SDG7

- ✖ Share of the population with access to modern cooking solutions (%)
- ✔ Share of the population with access to reliable electricity, by urban and rural (%)

Reference : SDSN (2015) Key Performance Indicators, KPI 50 and KPI 51

Energy poverty is

- Not having access to enough energy to meet basic needs
- Spending more than 10 % of income on energy bill
- Fuel costs above median, and the bill sinks you below the poverty line

Ferme du moyen âge à Saint Julien aux Bois, France. © la Mairie

Subjectively defined indicator

- Did you suffer from cold last winter?
- In the last month, did your consumption of electricity met the needs of your household?

Data, method and tools

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.

The households survey details

- Population : Socio-demographics of all household members
- Housing : characteristics, equipments, ownership...

2. Access and usage

« 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

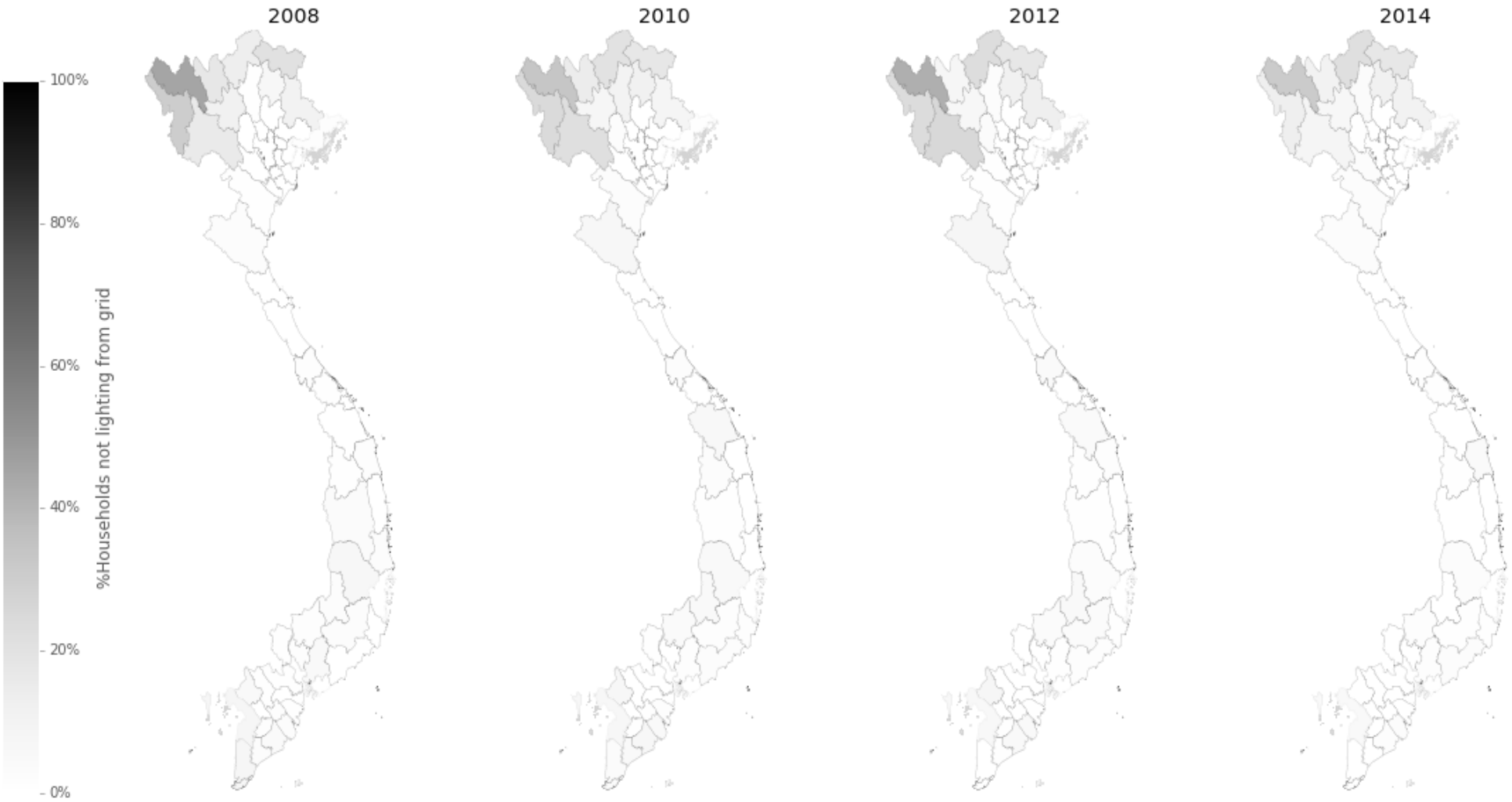
« Vietnam has gone through a rapid increase in electrification since 1990 where electrification levels jumped from a pre-policy reform rate of less than 50% in the late 1980s–early 1990s to 77% by 2001 and 96% by 2009.

The Electrification Programme driven by the Vietnamese government has resulted in increased access for 82 million people between 1976 and 2009.

One million people primarily in the northern mountainous regions of Vietnam are currently without access to electricity. »

Doan Van Binh, IES (2010)

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



50 kWh monthly 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

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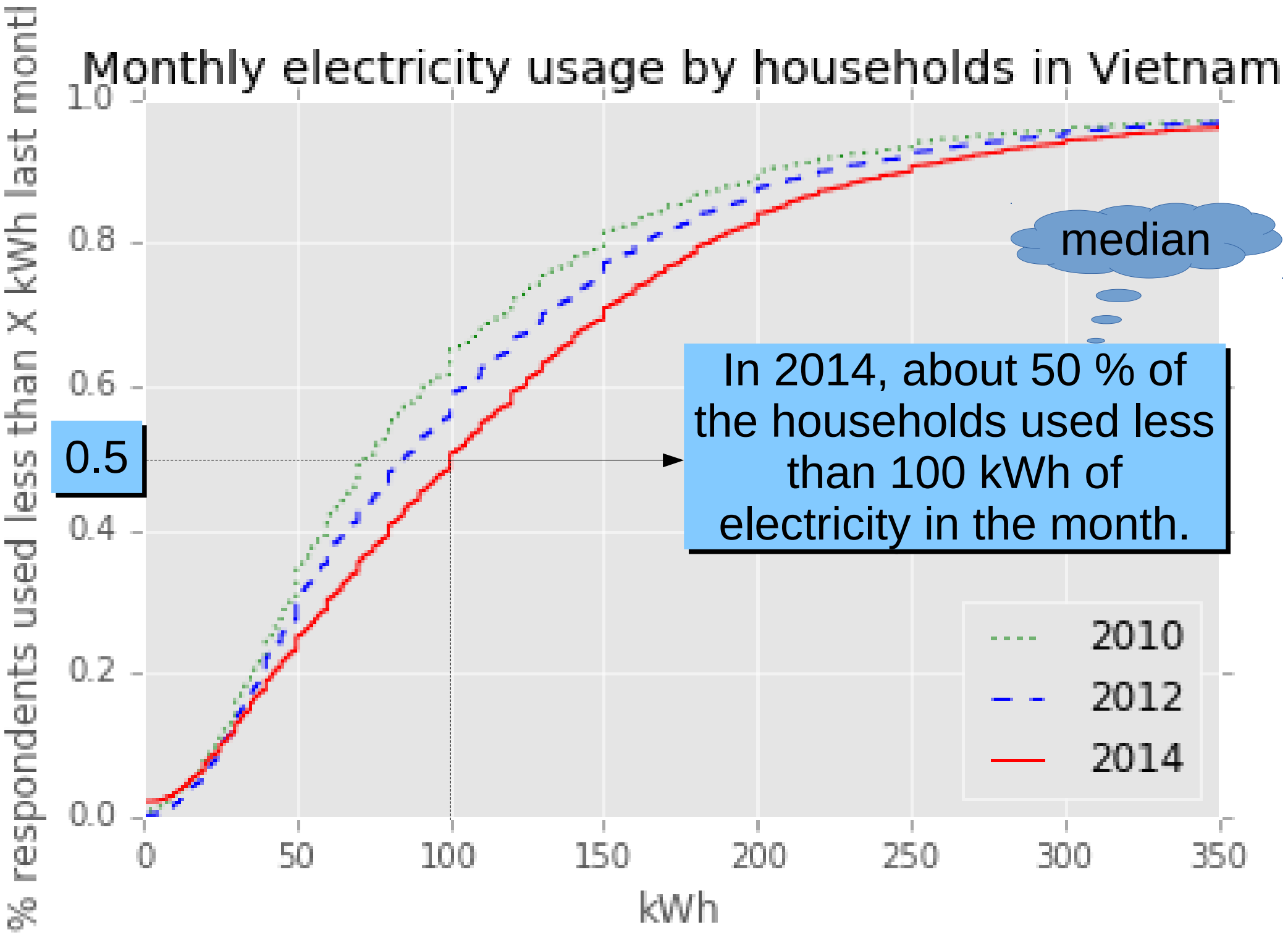
50 kWh	Fridge
60 kWh	A/C, 2 hours per day

Do not fit into 50 kWh budget


Monthly electricity usage by households in Vietnam
% respondents used less than X kWh last montl
kWh
0.0
0.2
0.4
0.6
0.8
1.0
0
50
100
150
200
250
300
350
0.5
median
In 2014, about 50 % of the households used less than 100 kWh of electricity in the month.
2010
2012
2014

Key results on access and usage

- In 2014, 97.7 % of households in Vietnam used grid electricity for lighting.
- In 2014, out of four Vietnamese households, one used less than 50 kWh per month, and another between 50 kWh and 100 kWh.

3. Affordability

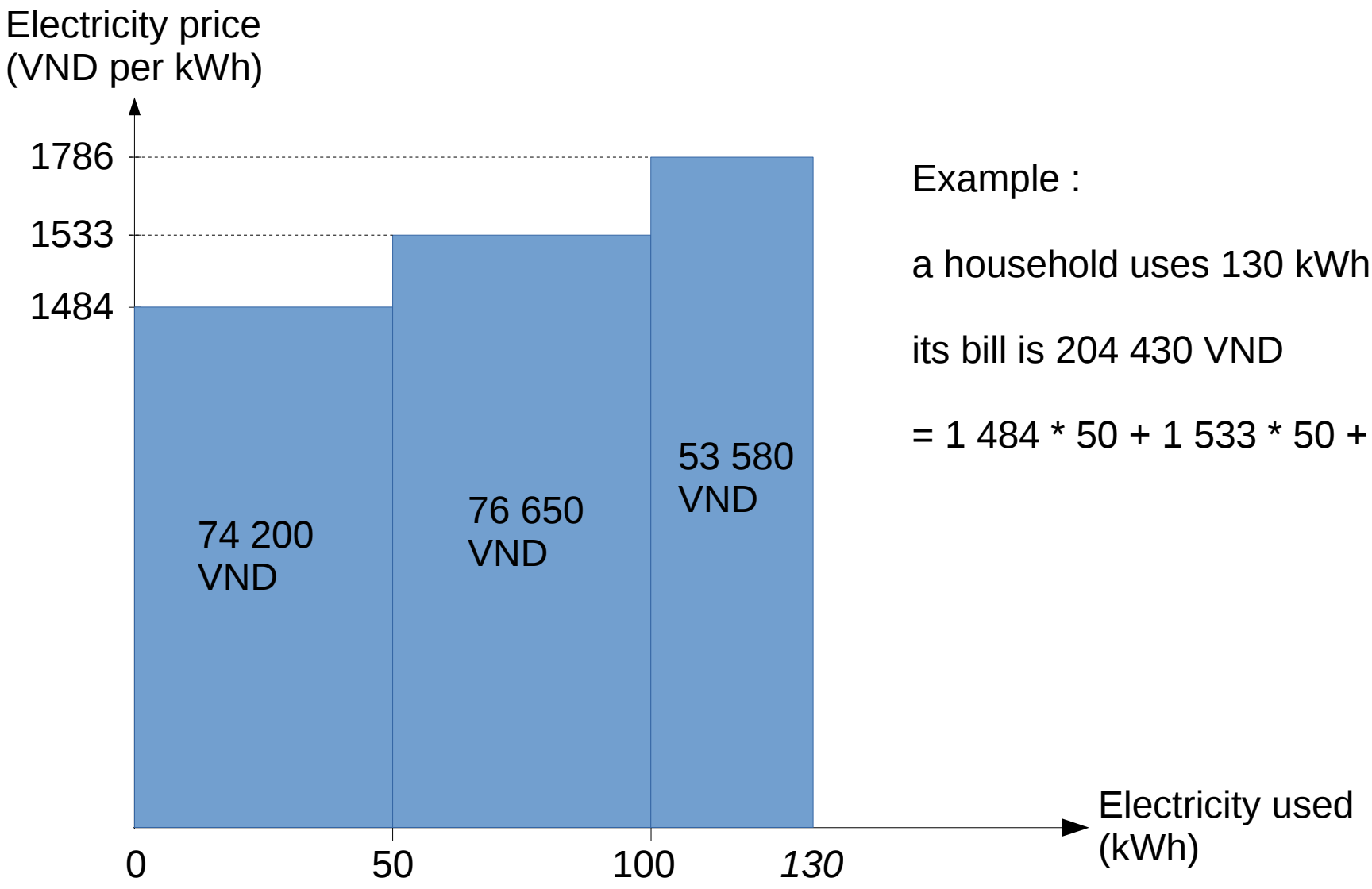
KinhtếSàigonOnline
Thời báo
CƠ QUAN CHỦ QUẢN: SỞ CÔNG THƯƠNG TPHCM

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

Blocks tariff : price rise with consumption

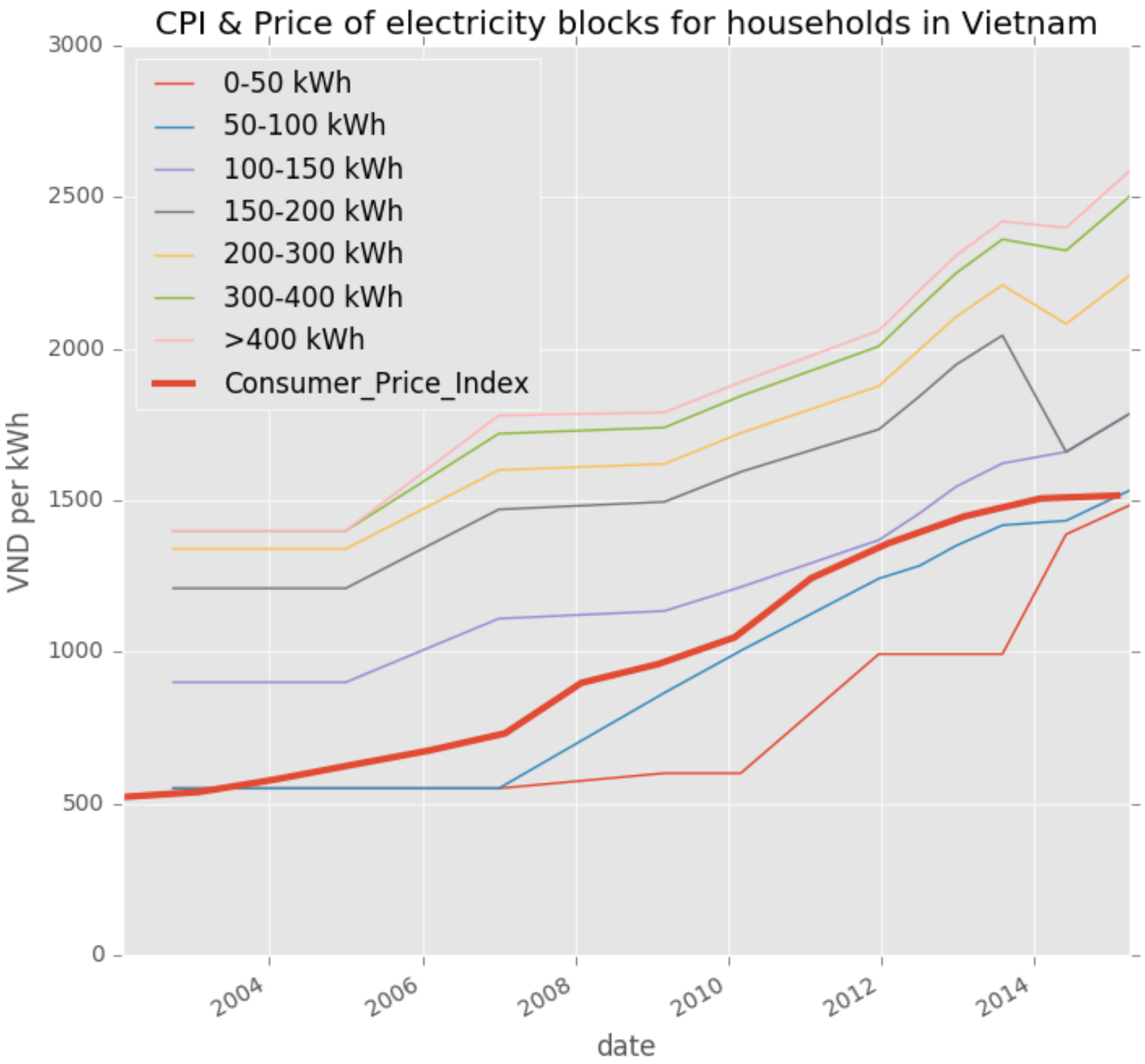


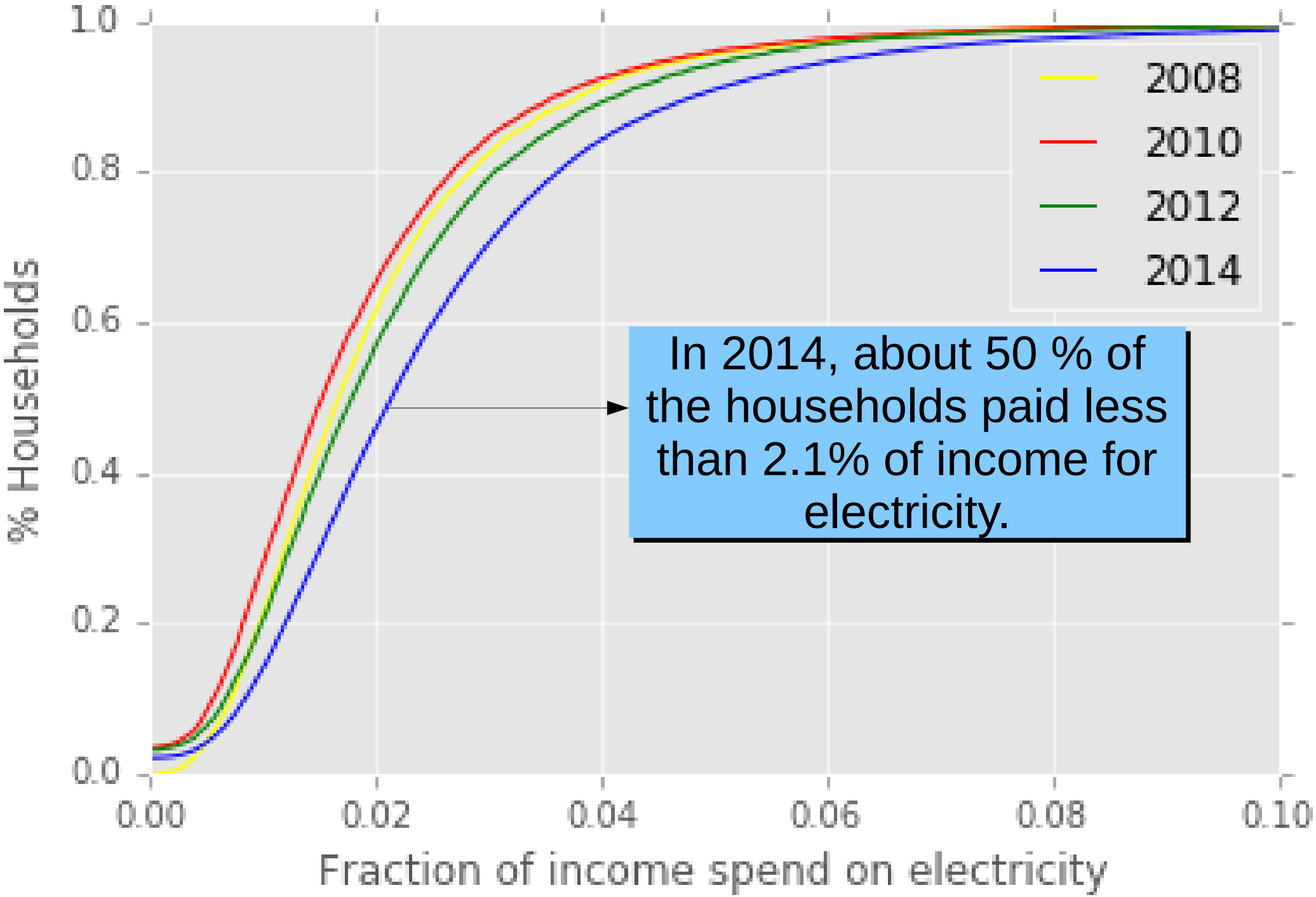
Example :

a household uses 130 kWh in month

its bill is 204 430 VND

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

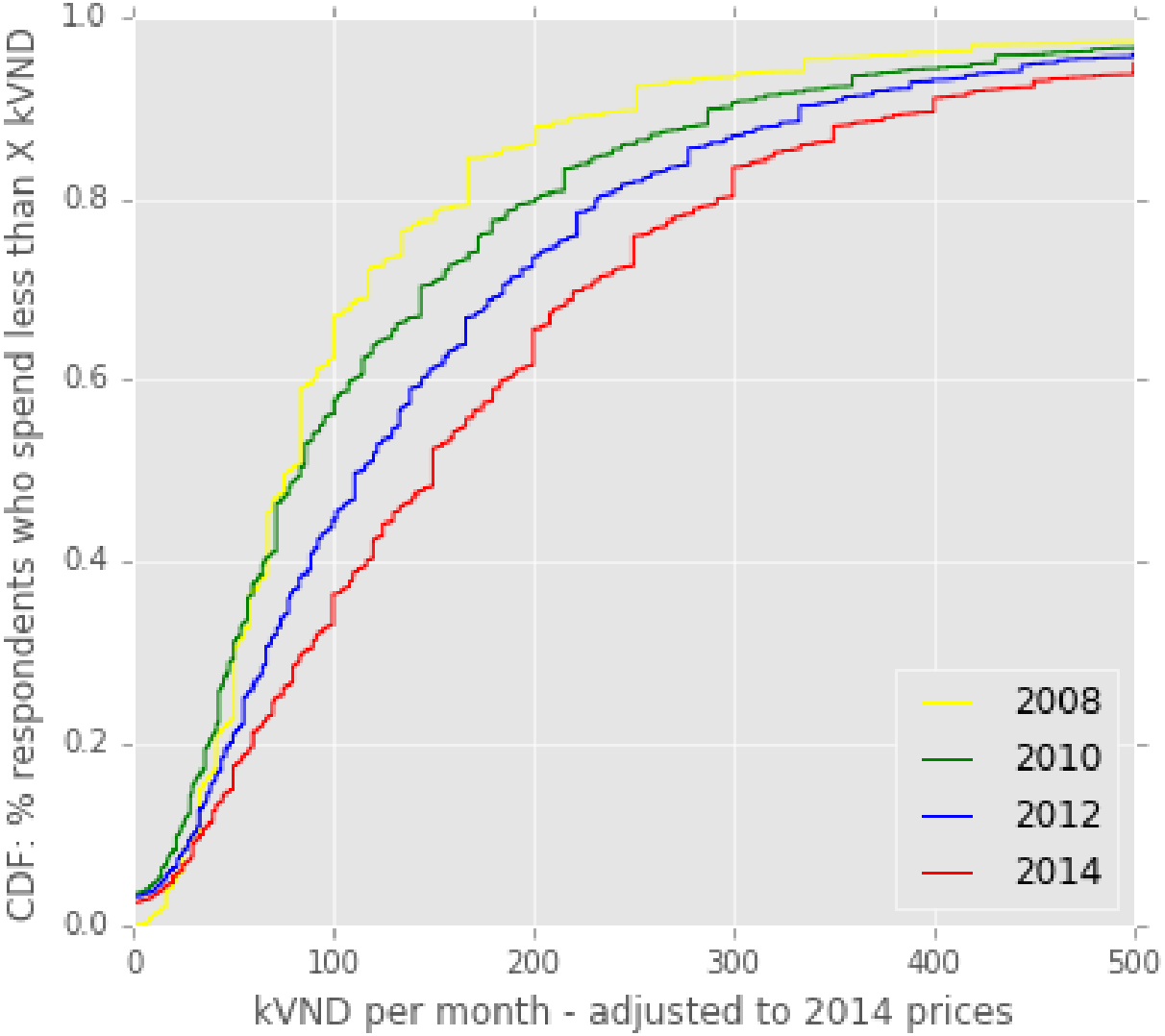

CPI & Price of electricity blocks for households in Vietnam
0-50 kWh
50-100 kWh
100-150 kWh
150-200 kWh
200-300 kWh
300-400 kWh
>400 kWh
Consumer_Price_Index
VND per kWh
3000
2500
2000
1500
1000
500
0
2004
2006
2008
2010
2012
2014
date


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 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

Electricity bills doubling between 2008 and 2014

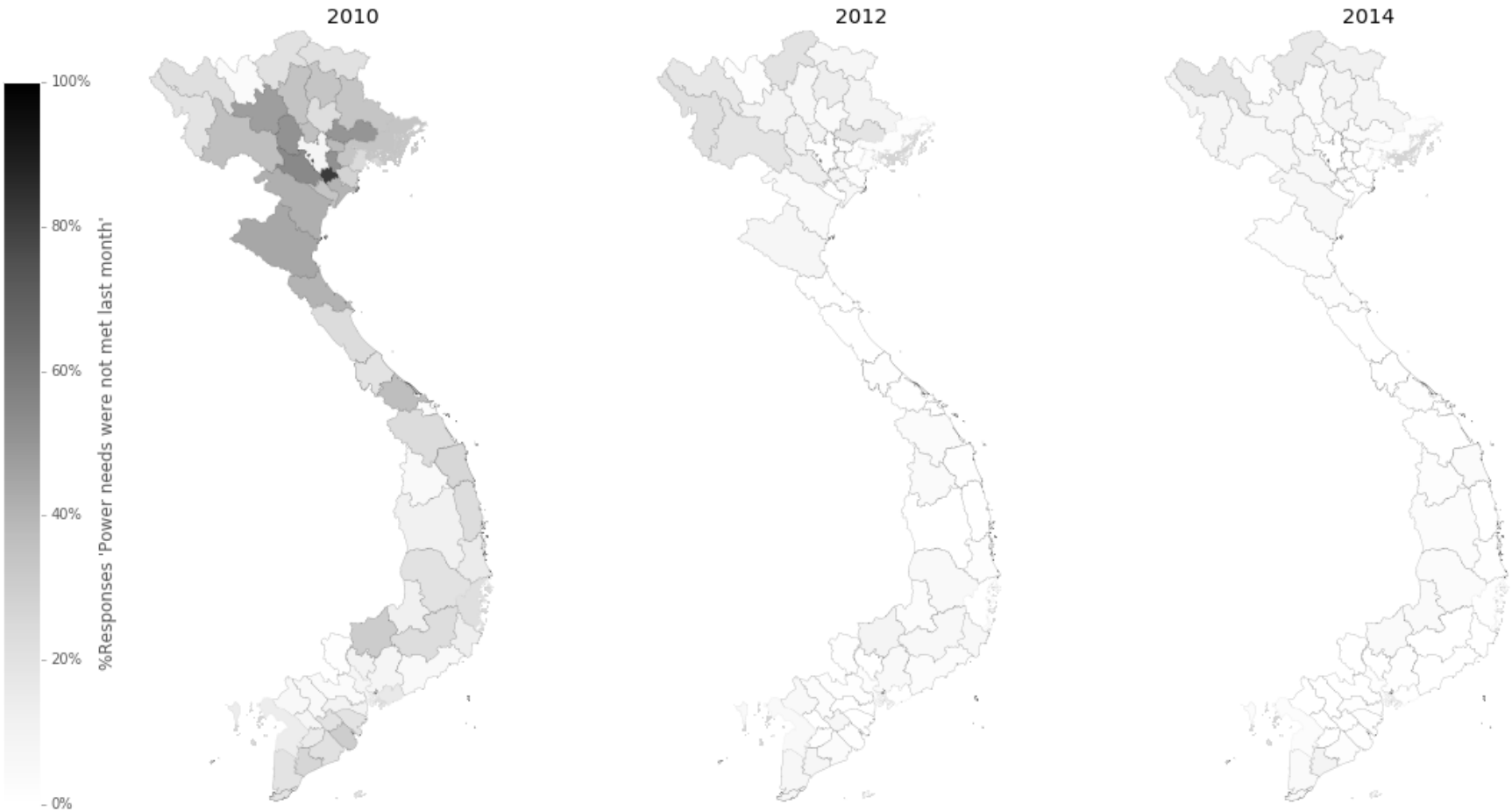


4. Needs satisfaction

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



Half of the unsatisfied used less than 22 kwh per month

Electricity used in the last month (March 2014)	All households	Households who declared Insufficient electricity use
	n = 22 695	*n* = 611
Median (half of the households used less than this)	100 kWh	22 kWh
50 % Interquartile range (one quarter of the households used less, one quarter used more)	50 – 166 kWh	0 – 80 kWh
90 % Interquartile range (5 % used less, 5 % used more)	17 – 318 kWh	0 – 214 kWh

Key results on needs satisfaction

- In 2010, one out of four households in Vietnam declared that their electricity use was insufficient to meet their needs. That ratio dropped under 3 % in 2014.
- In 2014, half of the households in Vietnam who declared insufficient electricity used less than 22 kWh per month.
- In 2014, among households using less than 22 kWh per month, only one out of six declared that their needs were not met.

5. Key Performance Indicators

Year	2008	2010	2012	2014
Share of households using grid electricity for lightning, rural / urban	95.7 % / 99.7 %	95.3 % / 99.7 %	95.6 % / 99.7 %	96.9 % / 99.8 %
Share of households declaring their electricity use within last 30 days did not meet their needs	NA	24.0 %	4.7 %	2.7 %
Share of households declaring less than 30 kWh of electricity use within the last 30 days	NA	16.4 %	14.0 %	13.1 %
Share of households paying less than 6 % of their income for electricity	97.4 %	97.6 %	96.9 %	94.5 %

Conclusion
SDG7 level 1 complete

- Rural electrification : poster success
- Power supply quality : recently improved

- Transition to clean electricity : who will pay ?