

Heterogeneity in the effects of green energy defaults

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Effect of Green Energy Default on Household and Business

Heterogeneity in the effects of green energy defaults

Problem:

Since most households and businesses stay at their place of residence for a long time, often a lifetime, the question arises how households and businesses with non-renewable energy packages can be motivated to switch to renewable options.

Previous Research:

Previous research shows the potential of green default options for the uptake of renewable energy for (new) customers in the household sector (yearly utility usage <8,000 kWh).

Research Gap:

But there is no evidence that green defaults would work for business consumers (yearly utility usage 8,000 – 22,421,560 kWh).

Our Research Question:

Do green energy defaults work for business customers like they work for household customers?

Describing the Sample

Heterogeneity in the effects of green energy defaults

N altogether = 241,994 customers of the same Swiss electricity supplier

N households = 234,105 (96.74%)

N businesses regulated market = 7,889 (3.26%)

Setting similar to a natural experiment:

2013-2015 = Conventional default option (mix of nuclear power, fossil and undetectable energy sources)

2016 = Green default option (renewable hydropower produced locally in Switzerland)

Annual data (2013-2016) for every customer:

- Contract choice of energy package
- Electricity consumption
- Type of customer (household, business)
- Indication of moving houses (drop-out criterion)
- Postal code and city

Choice Architecture of the Green Default Introduction

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	Conventional Default Option (2015)		Green Default Option (2016)	
Package	Prices per kWh		Prices per kWh	
	Day	Night	Day	Night
Conventional	H: 0.26 CHF B: 0.12 CHF	H: 0.17 CHF B: 0.08 CHF	H: 0.28 CHF B: 0.11 CHF	H: 0.18 CHF B: 0.07 CHF
Renewable	H: 0.29 CHF B: 0.15 CHF	H: 0.20 CHF B: 0.11 CHF	H: 0.29 CHF B: 0.12 CHF	H: 0.19 CHF B: 0.08 CHF
Renewable Plus	H: 0.33 CHF B: 0.19 CHF	H: 0.24 CHF B: 0.15 CHF	H: 0.32 CHF B: 0.15 CHF	H: 0.21 CHF B: 0.11 CHF

+ 0.01 CHF

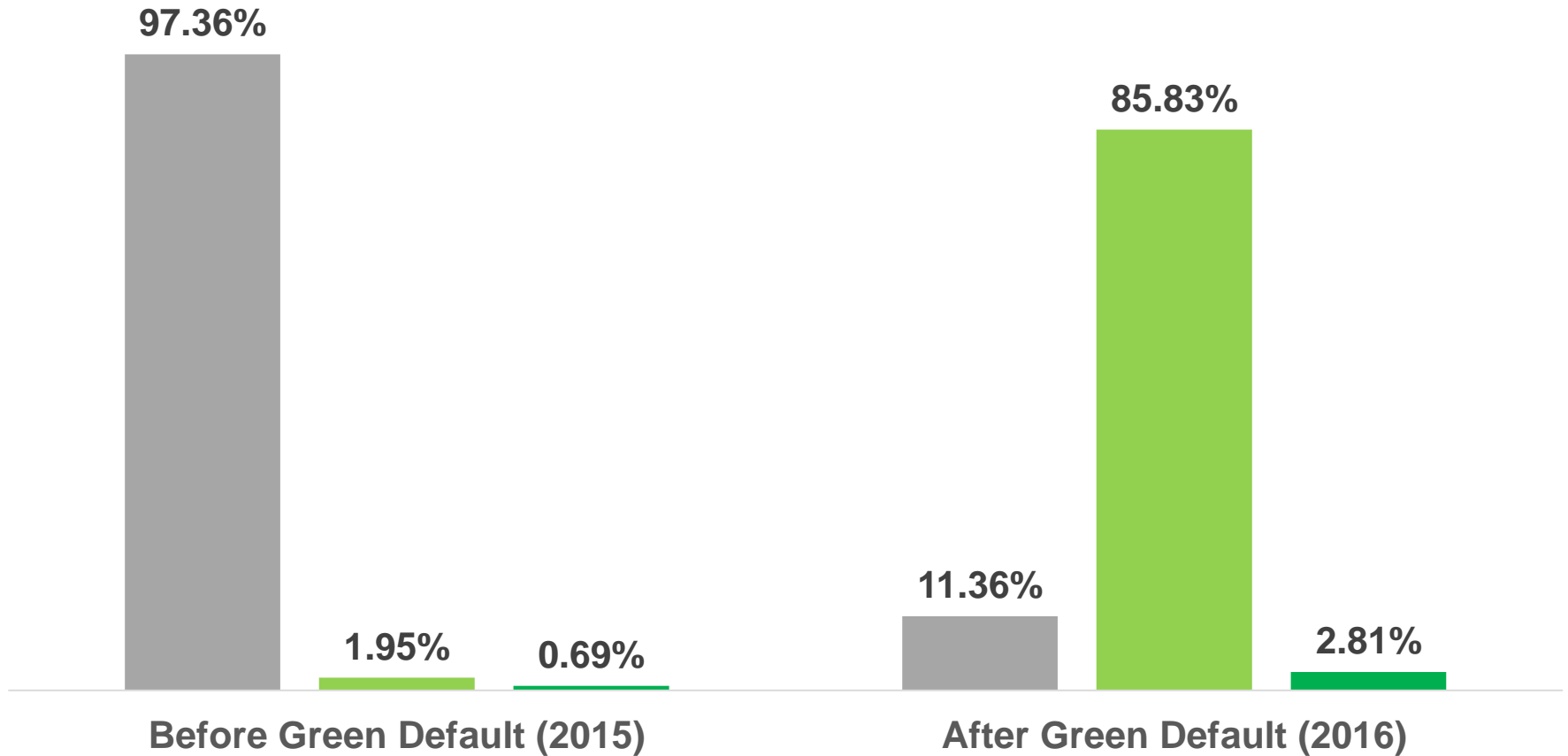
Energy packages and average prices per kWh for 234,105 (96.74%) households (H) and 7,889 (3.26%) businesses (B) before (2015) and after the introduction of a renewable default option (2016)

Contract Choice Household Sector

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Household Sector (N=234,105)

■ Conventional ■ Renewable ■ Renewable Plus

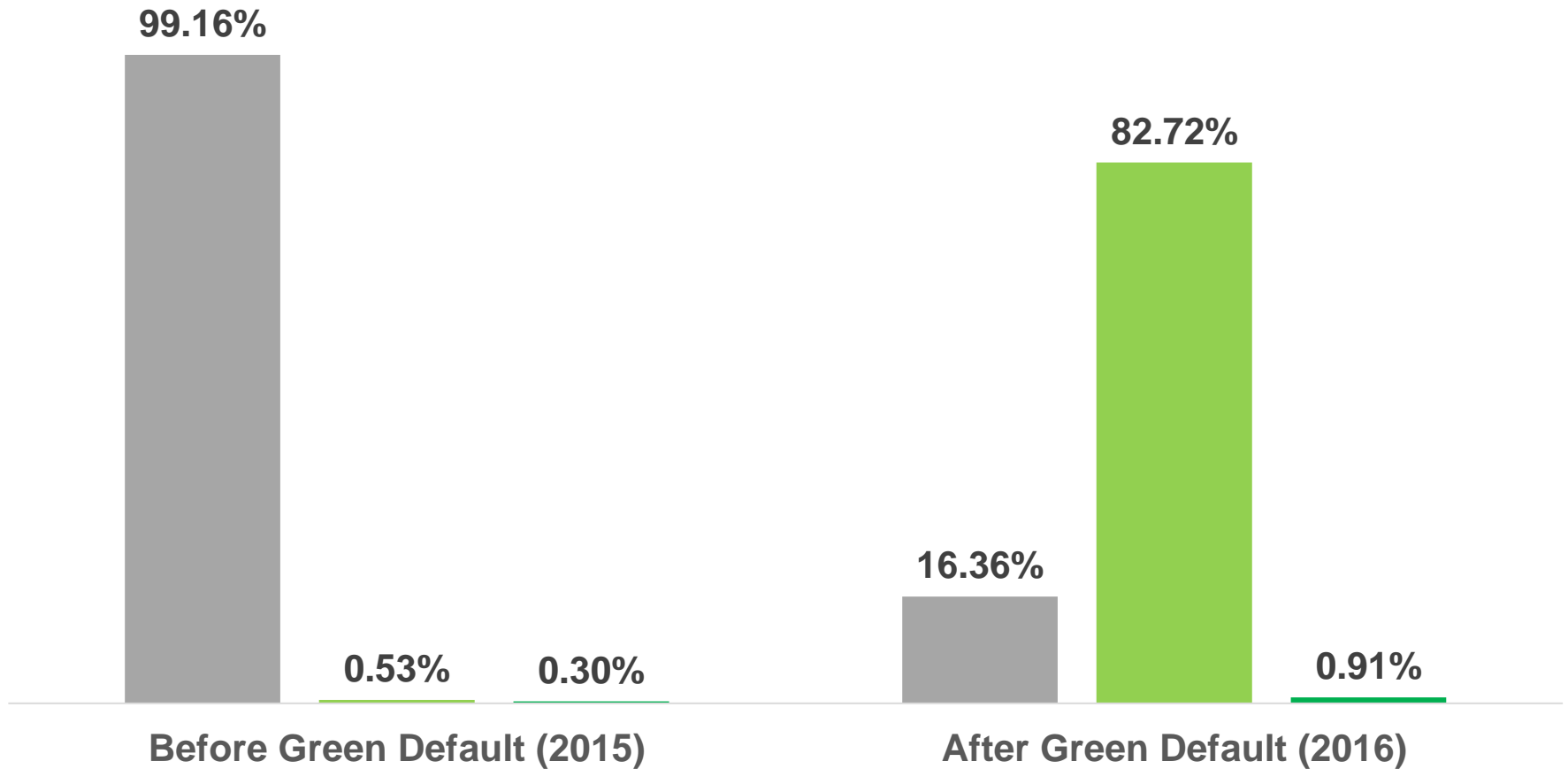


Contract Choice Business Sector

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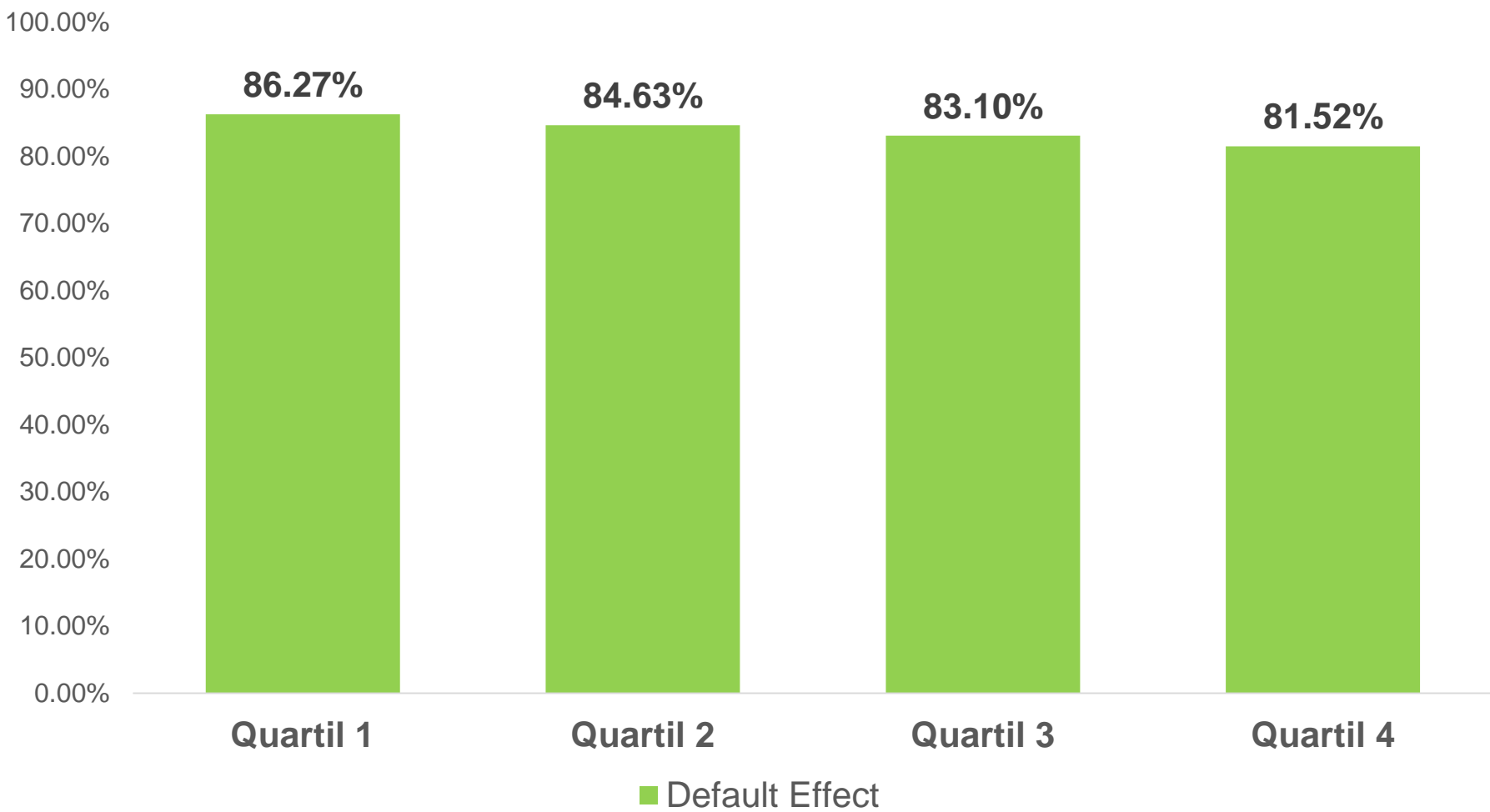
Business Sector (N=7,889)

■ Conventional ■ Renewable ■ Renewable Plus



Default Effect by Utility Use 2015 in Household Sector

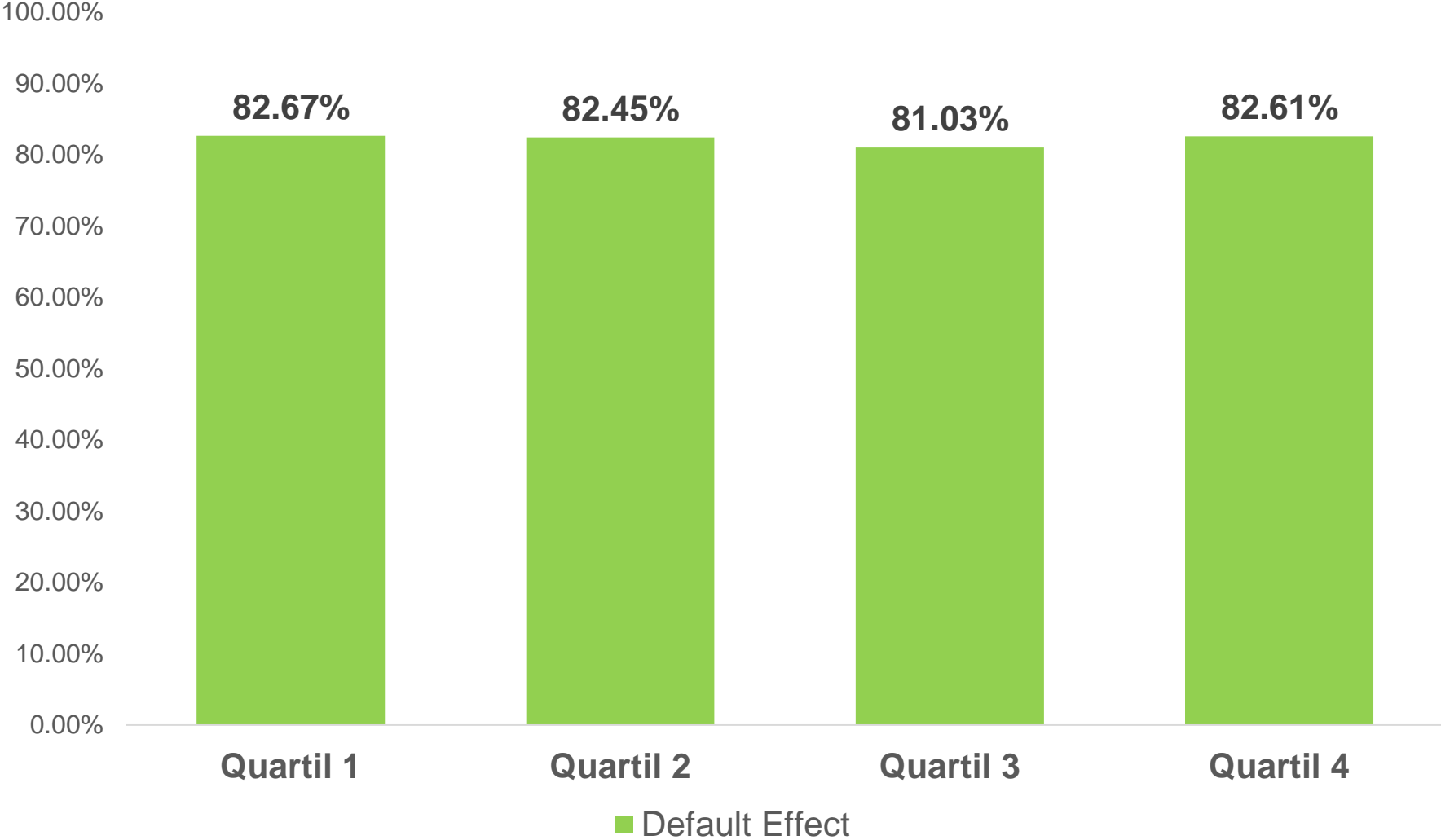
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Default Effect = % Renewable Energy 2016 - % Renewable Energy 2015

Default Effect by Utility Use 2015 in Business Sector

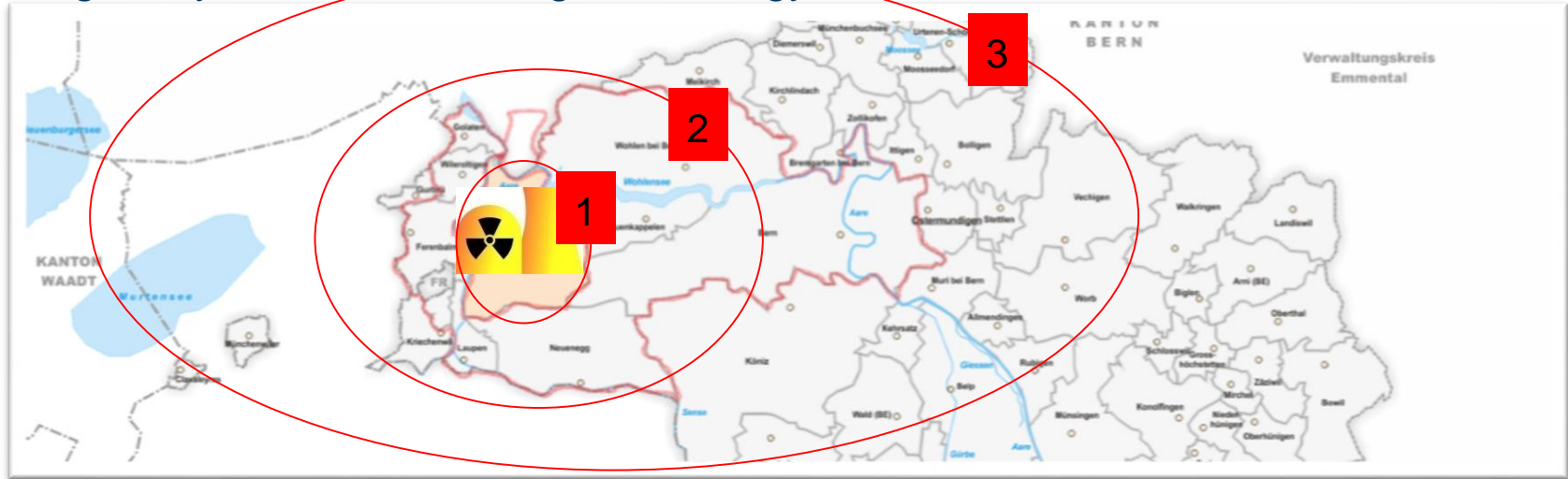
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Default Effect = % Renewable Energy 2016 - % Renewable Energy 2015

Contract Choice NPP Municipality vs. non-NPP Municipality

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Contract Choice	Tarif choice BEFORE Green Default Change (2015)				Tarif choice AFTER Green Default Change (2016)			
	N Zone 1,2,3	N Zone 1	N Zone 2	N Zone 3	N Zone 1,2,3	N Zone 1	N Zone 2	N Zone 3
Conventional	235,755 (97.42%)	1,469 (98.06%)	9,770 (96.47%)	224,516 (97.46%)	27,882 (11.52%)	408 (27.24%)	1,391 (13.73%)	26,083 (11.32%)
Renewable	4,608 (1.90%)	20 (1.34%)	248 (2.45%)	4,340 (1.88%)	207,463 (85.73%)	1,068 (70.30%)	8,335 (82.30%)	198,060 (85.98%)
Renewable Plus	1,631 (0.67%)	9 (0.60%)	110 (1.09%)	1,512 (0.66%)	6,649 (2.75%)	22 (1.47%)	402 (3.97%)	6,225 (2.70%)
TOTAL	241,994 (100 %)	1,498 (100%)	10,128 (100%)	230,368 (100%)	241,994 (100 %)	1,498 (100%)	10,128 (100%)	230,368 (100%)

Conclusions

- The data from the natural experiment show for the first time **massive green-default effects** in existing customer populations in the household and business sector.
- An important lesson from this research is that **green defaults also unfold their power in the business sector.**
- The large effects for the business sector are notable because business decision makers might have been expected to be more price sensitive than private households.
- A green default policy informed by behavioral science research can promote renewable energy uptake and, hence, contribute to the mitigation of climate change at large scale, intermediate term and low costs.

Further Research:

- Exploring regional variation including rural-urban difference.
- Connecting contract choice with community level voting behavior from 27.11.2016 concerning the nuclear power phase-out.

Thank you!



Managing Energy Consumption
National Research Programme

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