CLEEN
Cluster for Energy and Environment

sgem
Smart Grids and Energy Markets

Consumers & Small Scale Energy Production

Customer Interview Results

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Consumers' viewpoint on the small scale electricity production

What would be required in order to make the consumers willing to invest in their own small scale electricity production?

- The focus purely on the household customers
- No emphasis on the technical issues, business models, roles of different market players, regulation etc.
- Methods: Literature review, expert interviews, consumer interviews & questionnaires
- The work is being done within Task 7.2 by the University of Vaasa

Key research questions

Identifying…

- What is the level of the consumers' awareness and interest towards small scale production? What kinds of consumers might be interested (customer segments)?
- What would the consumers expect to gain (motivating factors)?
- What would stop the consumers' interest (barriers)?
- What are the pre-requisites of the consumers (investment options, repayment period, price level etc.)?

Customer interviews

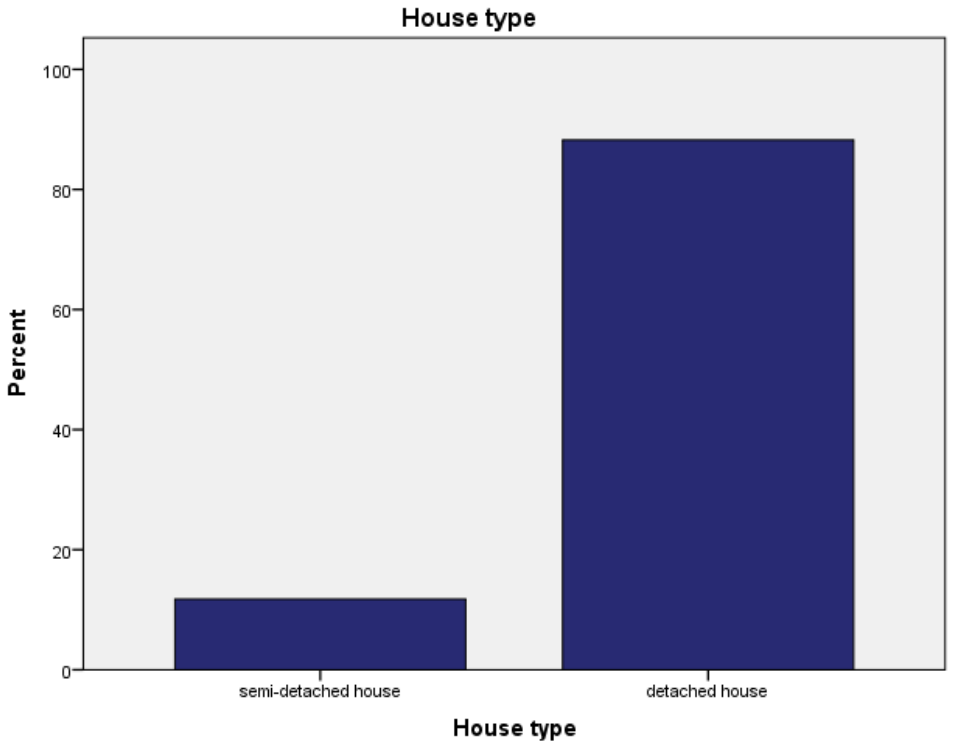
- This presentation focuses on the customer interviews. The interviewees were selected among household customers that have purchased solar panels (Fortum's Aurinkopaketti –service).
- In total **17 customers** were interviewed by phone in December 2013.
- The main idea of the customer interviews was to understand the consumers' **motives** for purchasing solar panels, their main **concerns** as well as their **experiences** in practice. Also, their **satisfaction level** and their willingness to recommend the turnkey delivery was also discussed.
- *The outcomes of previous expert interviews helped to understand the concept and to ask the right questions in the consumer study. Based on these, we made some preliminary remarks.*
- *All the results in this presentation are based purely on the customer interviews*

House type

Most of the customers live in detached house.

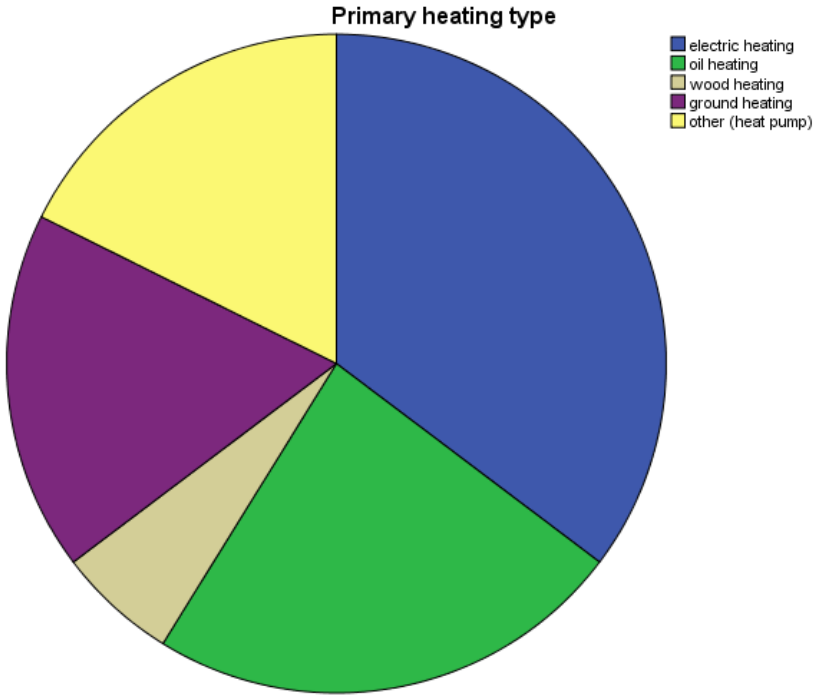
House type

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	semi-detached house	2	11,8	11,8	11,8
	detached house	15	88,2	88,2	100,0
	Total	17	100,0	100,0	



Primary heating type

The most common heating type among the customers is electric heating. Also oil heating is quite common.

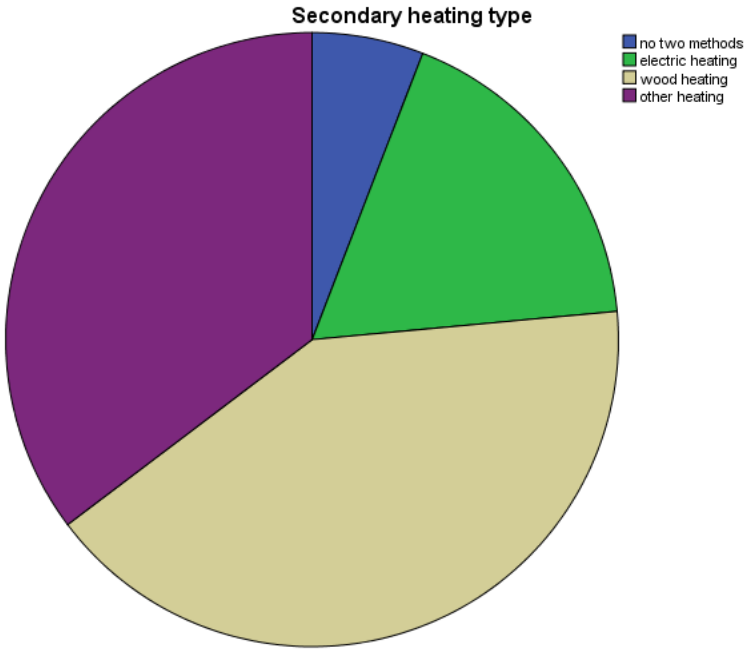


Primary heating type

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	electric heating	6	35,3	35,3	35,3
	oil heating	4	23,5	23,5	58,8
	wood heating	1	5,9	5,9	64,7
	ground heating	3	17,6	17,6	82,4
	other (heat pump)	3	17,6	17,6	100,0
	Total	17	100,0	100,0	

Secondary heating type

Most of the interviewed customers also have a secondary heating system. Typically this was wood heating.
"Other" usually means heat pump.

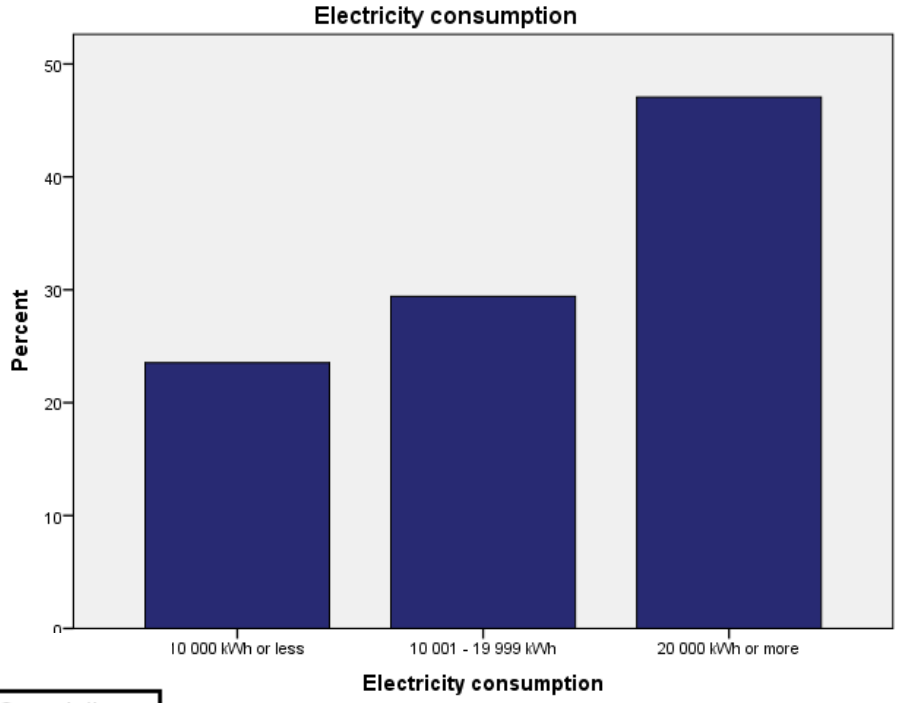


Secondary heating type

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no two methods	1	5,9	5,9	5,9
	electric heating	3	17,6	17,6	23,5
	wood heating	7	41,2	41,2	64,7
	other heating	6	35,3	35,3	100,0
	Total	17	100,0	100,0	

Electricity consumption

Electricity consumption of the households is on average 18 400 kWh per year.
For almost half of the households the annual consumption is 20 000 kWh or more.



Electricity consumption

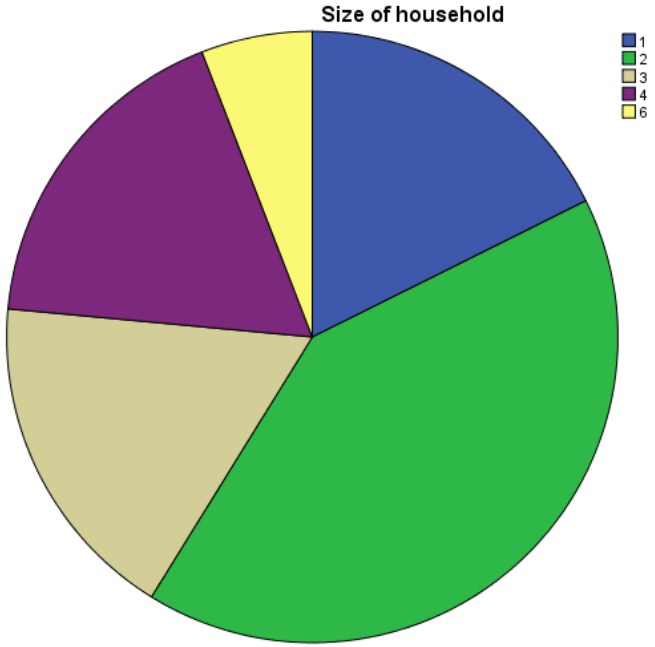
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	10 000 kWh or less	4	23,5	23,5	23,5
	10 001 - 19 999 kWh	5	29,4	29,4	52,9
	20 000 kWh or more	8	47,1	47,1	100,0
	Total	17	100,0	100,0	

Size of household

Two persons was the most common household size. Six of the families had children and two families had more than two adults.

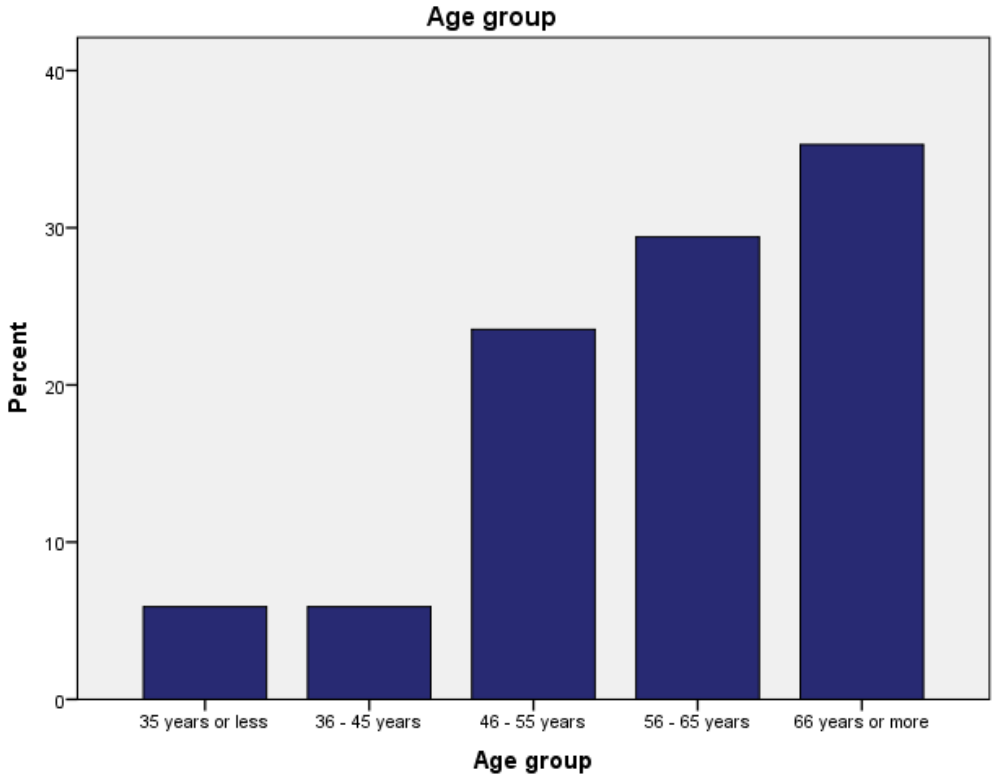
Size of household

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	3	17,6	17,6	17,6
	2	7	41,2	41,2	58,8
	3	3	17,6	17,6	76,5
	4	3	17,6	17,6	94,1
	6	1	5,9	5,9	100,0
	Total	17	100,0	100,0	



Age

The average age of the interviewed customers is 59 years.
2/3 of the customers are more than 55 years old.



Age group

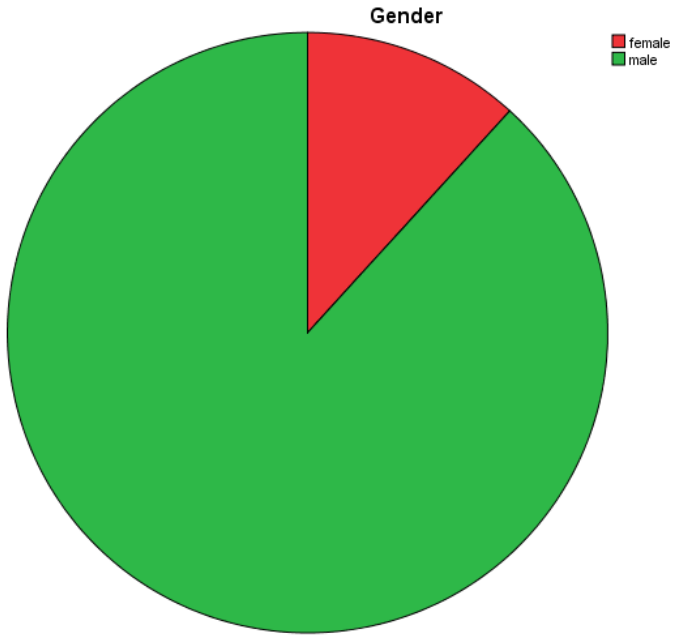
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	35 years or less	1	5,9	5,9	5,9
	36 - 45 years	1	5,9	5,9	11,8
	46 - 55 years	4	23,5	23,5	35,3
	56 - 65 years	5	29,4	29,4	64,7
	66 years or more	6	35,3	35,3	100,0
	Total	17	100,0	100,0	

Gender

Most interviewees were men.

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	female	2	11,8	11,8	11,8
	male	15	88,2	88,2	100,0
	Total	17	100,0	100,0	



Time of purchase

- Most customers had approximately **half a year experience** of their solar panels at the time of the interviews in December 2013, as most of the panels were installed in previous summer.
- Only four customers had experience for a full year.
- Three interviewees had purchased and received the panels very recently, so they couldn’t tell much about their experiences yet.

Source of information

Where did the customers originally get information about purchasing solar panels for household use?

- The **Fortum campaign** made these people act
  - Internet, Habitare, customer magazine, direct mail…
- **Internet** / Fortum webpage was the most important source of information
- Almost all customers had been interested in solar energy for longer period and followed discussions and articles in the media → idea was already on the background
- Customers were usually Fortum's customers already

Why to purchase the panels **now**?

Most customers could not specify the reason for purchasing the panels exactly when they did, but some of them could:

- **The campaign** and offers made them interested; turnkey delivery made it possible
- **Building or renovating** the house and/or additional buildings
- Receiving some **extra money**

Construction year of the house

The customers' houses were of all ages, from 1950 to 2013.

Most typically, they were built around 1980.

Comparing solar panel offerings

It seems that most of the customers did not really compare the offerings of different solar panel sellers. If they did, the comparison was rather superficial and quick.

The main reasons for choosing the particular panels were:

- Possibility to **sell the excess electricity**
- A **trustworthy** & already **familiar** company
- Easiness of the **turnkey delivery**
- **No other offerings** received or campaigns noticed
- In some cases: Finnish/European product/sub-contractor

Purchasing / What was easy?

- **Easiness of turnkey delivery**
  - It is not necessary for the customers to find all the information, make comparisons or decide the best options; turnkey delivery includes all of that
  - It was presented as a whole in a sense-making way
- **Helpful and friendly personnel**
  - Well explained facts
  - Consultant's visit, phone sales/support, web page
- With technical background the technical functioning was easy to understand

Purchasing / What was difficult?

- Finding **neutral information** and **understanding** the technical measures was difficult, especially without technical background
  - Should have non-commercial, concrete measurement results
  - Comparing offerings is difficult without expertise
- **Some problems/delays**
  - The subcontractor(s) didn’t always know what had been agreed on and there were in some cases problems or delays with the installation

Concerns

- **Price and profitability**
  - Price is rather high compared to the electricity production
  - Technology is improving fast, will there be better panels soon; when is the right time to buy?
- **Safety issues / The roof of the house**
  - Are holes necessary? Will they cause damages/leaks?
  - Snow load and maintenance?
  - Storms?

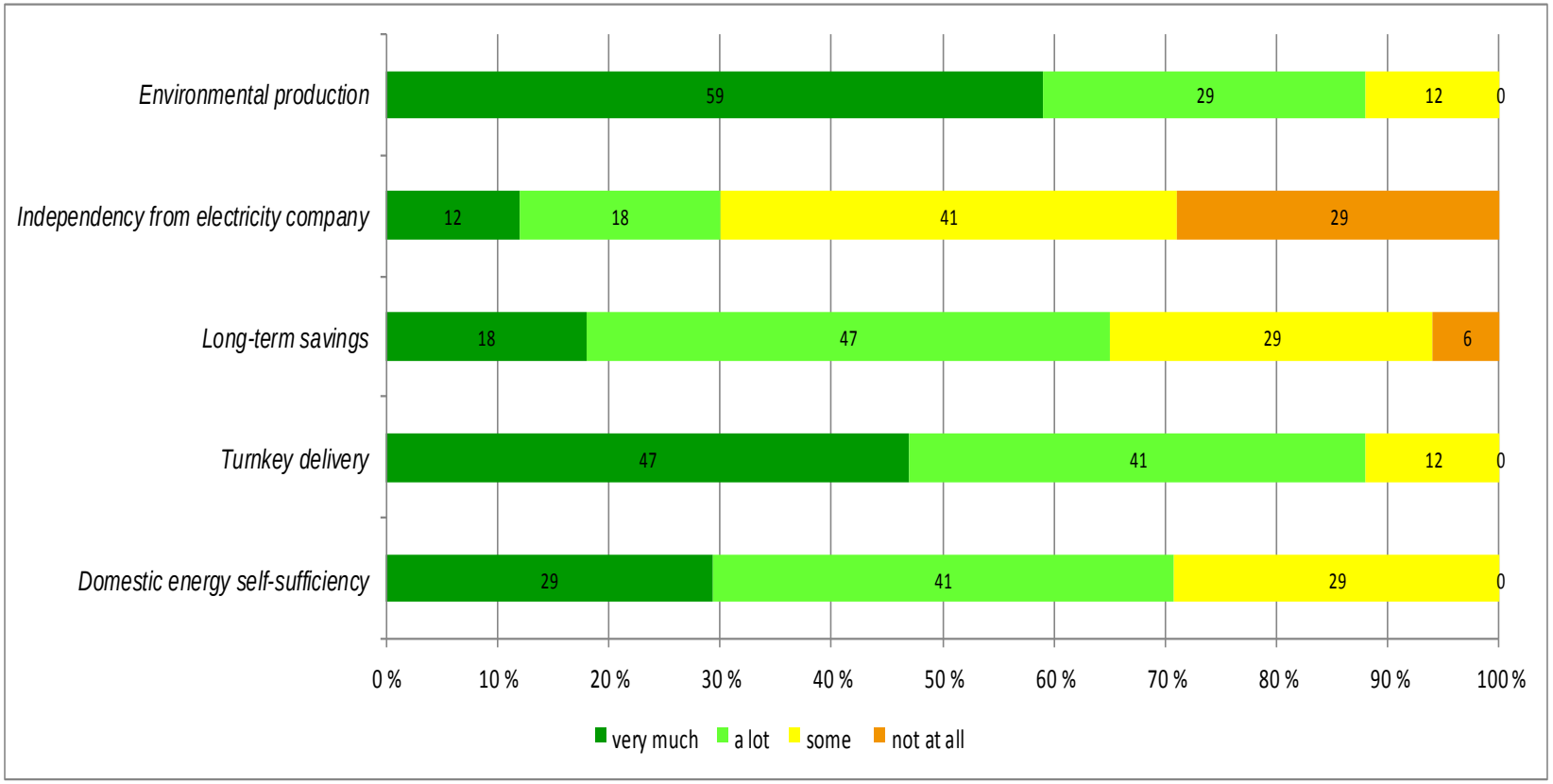
Main reason for purchase *(spontaneous)*

- **Long term monetary savings**
  - Making the electricity bills smaller
  - “Free electricity”
- Renewable energy & **Environmental benefits**
- Technical interest, willingness to see how it works in practice

Purchasing motives

- **Environmental production** and **possibility to have turnkey delivery** were the most important purchasing motives. Almost 90 % valued these.
- Domestic energy self-sufficiency (71 %) and Long-term monetary savings (65 %) were important motives as well.
  - *Maybe these forerunners appreciate these things differently than big masses?*
- Perhaps surprisingly, Independency from electricity company was least important (29 % considered it to influence at least quite a lot).

How much did following things have influence in your household's decision to purchase the solar panels?



Other things that were mentioned:
***Technical interest**, new product/ novelty value, heat pump.*

Repayment period

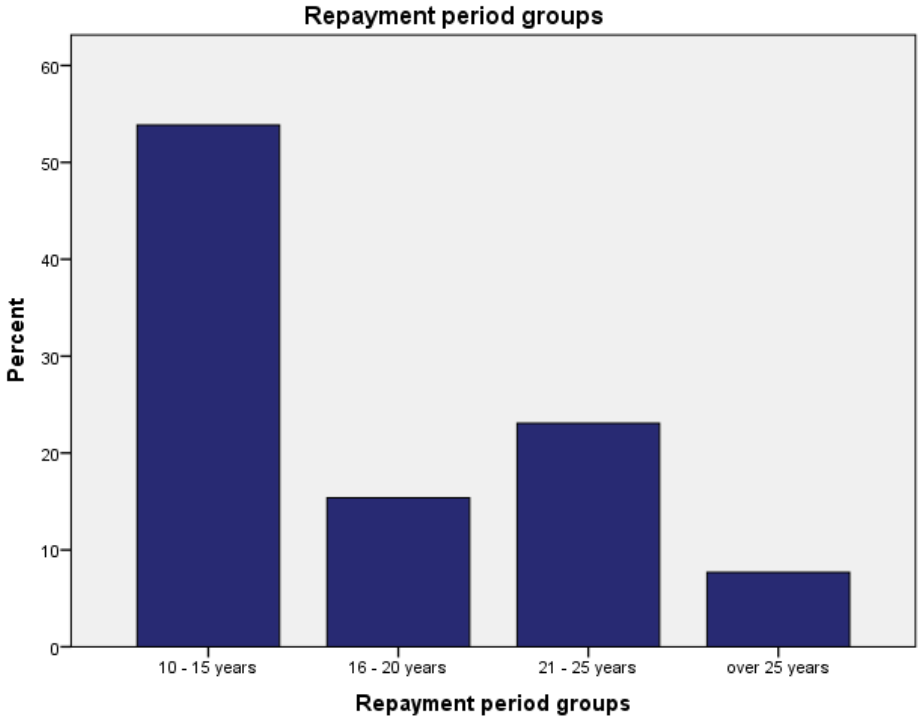
- Most customers did (roughly) figure out the probable repayment period but some did not
- Very general opinion was that the investment is not that profitable but the customers wanted to do it anyway
  --> however, they feel that the repayment period should be shorter

Length of the repayment period

- The estimated repayment period was on average 17,5 years
- It was evaluated as
  - 10 years at shortest
  - 30 years at longest

Repayment period groups

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	10 - 15 years	7	41,2	53,8	53,8
	16 - 20 years	2	11,8	15,4	69,2
	21 - 25 years	3	17,6	23,1	92,3
	over 25 years	1	5,9	7,7	100,0
	Total	13	76,5	100,0	
Missing	System	4	23,5		
Total		17	100,0		



Customers' experiences

e.g. functioning, production, problems, surprises…?

- **Overall very positive experiences**
- **Simple, easy to use**
- Reliable, harmless, unnoticeable
- Production level has been slightly higher than expected
- Interesting to see and follow production reports

But also:

- Monitoring problems, delays/problems in installation
- Selling the excess electricity; problems/delays (this concerned several electricity suppliers), and small benefits
- Didn't function three-phase as expected
- No electricity during power cut

Customers' satisfaction and value for money

- **Customers were mainly satisfied with their purchase**
  - Easy
  - Reliable, well-functioning
  - Met expectations
  - Profitability comes from other issues than money
  - Domestic
- **Most found it worth its costs**
- Possibly will add some panels later on?
- *A couple of customers:*
  Neutral, maybe wouldn't purchase again, didn't produce as much as expected

Selling the excess electricity

- **Customers sell their excess electricity, usually to Fortum**
- The value is very small and basically insignificant, but it is the thought that counts → possibility to sell is important
- Some have faced delays in agreements on the selling and having proper metering
  - This concerns several suppliers

Changed habits and timing?

- Many customers have tried to transfer their electricity use to times when the panels are producing a lot
  - Washing machines, storage / accumulating heating, charging
- Not all have changed their habits
  - Lack of interest?
  - Not at home on sunny summer days
  - Economical/environmental consumption already
- Awareness has increased

Discussions about solar panels

- Most have discussed about the panels with other people
  - *”This is so new, it’s fun to tell”*
  - *”People are very interested and ask a lot of questions”*
  - *”I’ve bragged about these, I’ve been proud to present that I produce electricity to network”*
- Neighbors’ or acquaintances’ comments varied, but they were overall positive and curious. Naturally, not all were interested.
  - *Profitability, technology, easiness, satisfaction, price, what does it mean, how does it work…*
  - *Planning permission required neighbors’ hearing*
- It was rare to know anyone or have a neighbor who has panels (except for some summer house systems).

Willingness to recommend the panels

- Most customers were **willing to recommend**
- Some would advice to **wait until prices become cheaper**
- Simplicity, easiness to use and maintain, reliability
- Environmentalism, future, well-being of the globe
- *“If everyone did this, there wouldn’t be a need for the 5th nuclear power plant!”*
- Could improve (Finnish) employment

Especially for:
- Country side
- Younger people
- Electric heating

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Thank you!