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EVALUATING THE NET EFFECT OF THE ISDE SUBSIDY SCHEME IN THE NETHERLANDS

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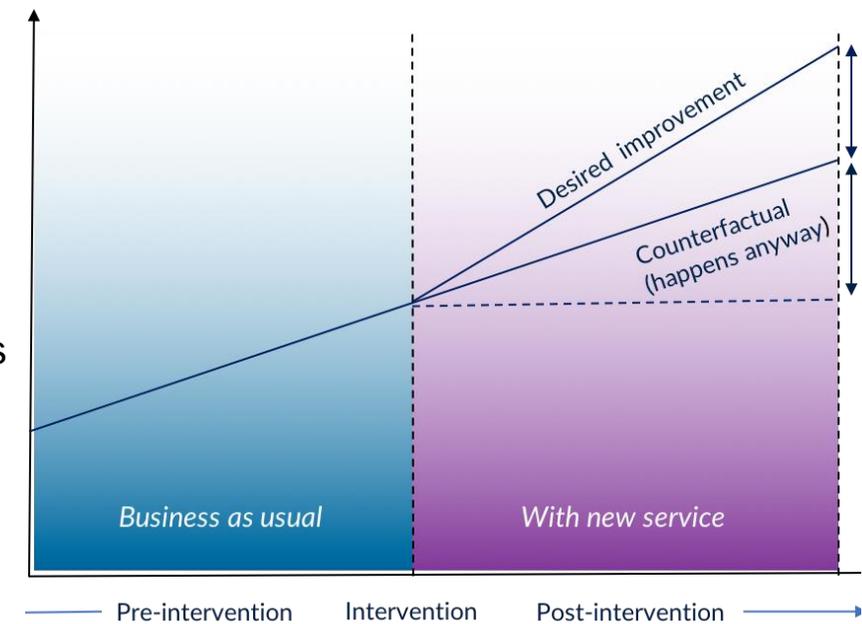
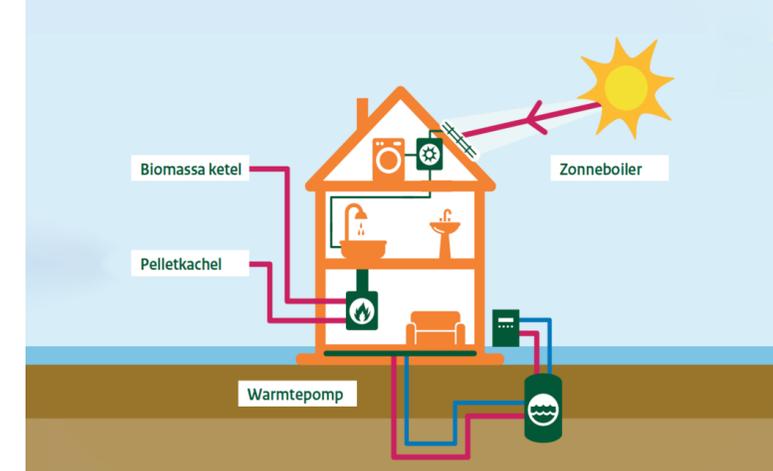
GOAL

Compare 'additionality' evaluations of the ISDE scheme

- Evaluated by SEO Economic Research in 2019
- Evaluated by TNO in 2018

Definitions of additionality:

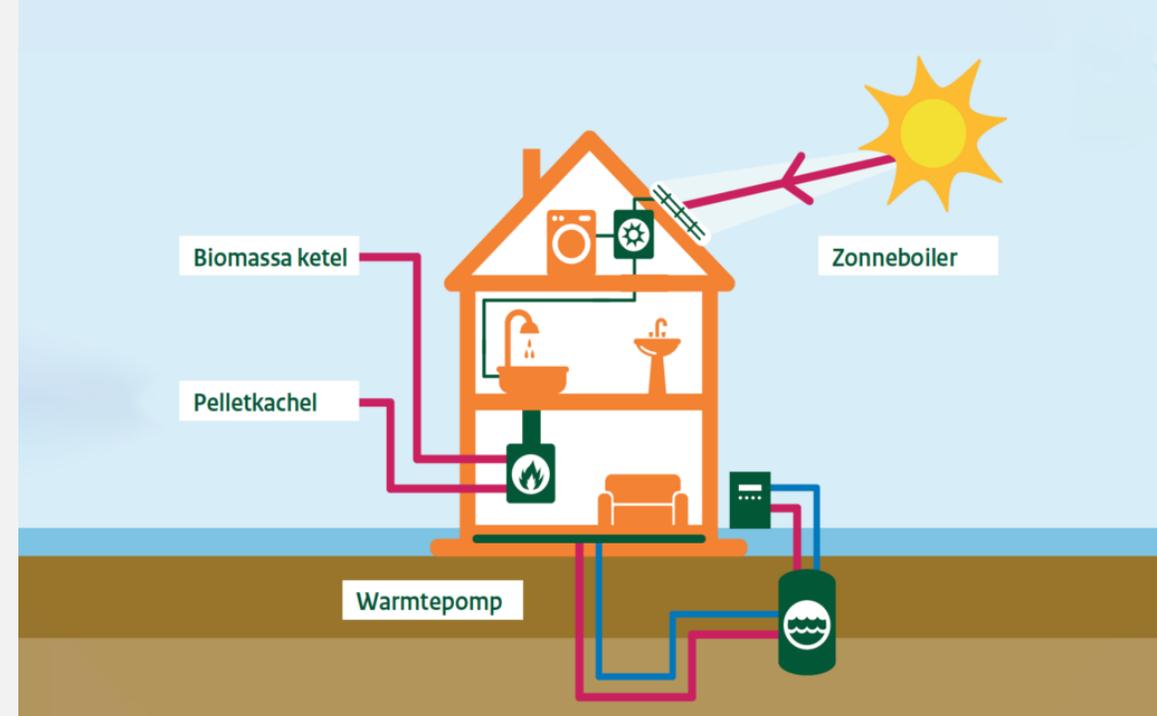
- SEO: The percentage of cases a purchase is caused by the subsidy amount
- TNO: The expected petajoules renewable energy production or petajoules savings of the scheme. Compared to the baseline



› BACKGROUND

WHAT IS THE ISDE SCHEME?

- › Investment Grant
- › Since 2016
- › 4 technologies
 - › Biomass boilers, pellet stoves, heat pumps, solar boilers
- › Paid out by the Netherlands Enterprise Agency (RVO.nl)
- › Target: Private individuals and business users.
- › Approximate investment covered: 20%

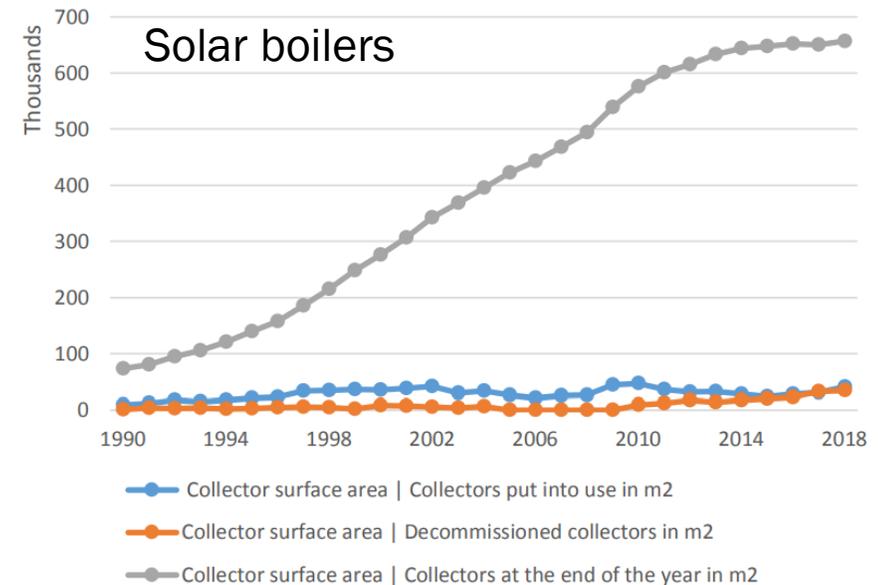
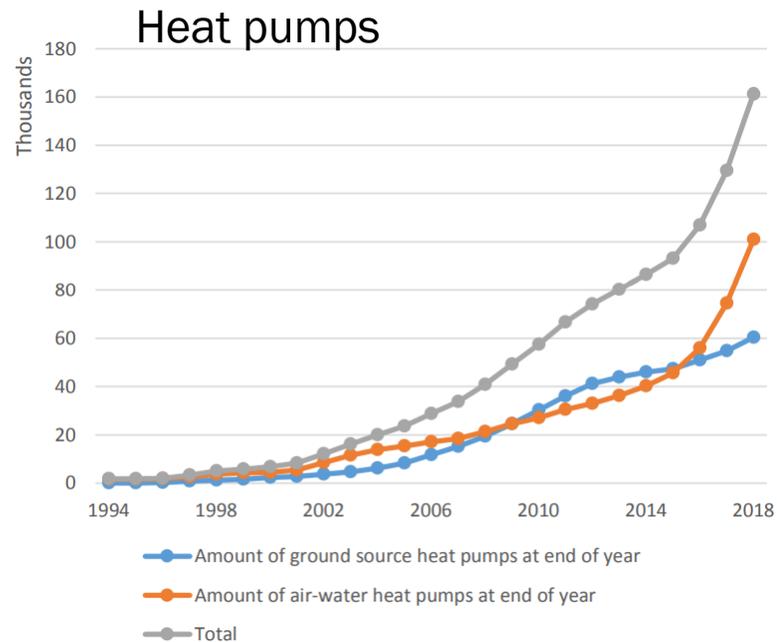
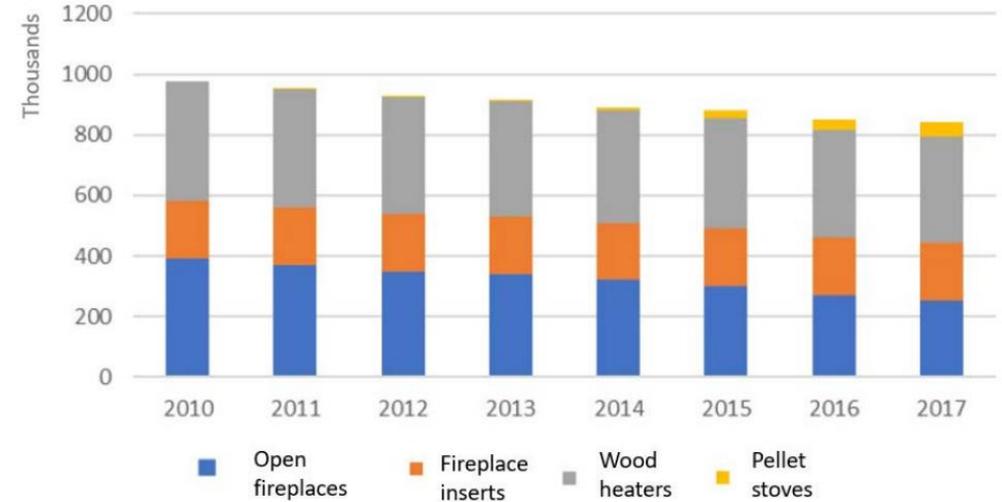


NUMBER OF HEAT INSTALLATIONS

Biomass boilers

The number of smaller biomass boilers (<500 kW) for heating in households and small companies has **grown rapidly** (increase 2016-2018 is 7,000) to (an estimated) 8,900 installations in total.

Pellet stoves



› THE GROSS EFFECT

- › A strong increase is seen for all ISDE appliances since 2016, except solar boilers
- › Viewing this as ‘additionality’ % is wrong. Free-riders!

Technology	% number installations installed with ISDE 2016-2018
Biomass boilers	75%*
Pellet stoves	90%
Heat pumps	90%
Solar boilers	55%

*all time

› METHODOLOGY OVERVIEW

Technology	Method TNO	Method SEO
Biomass boilers	Survey aimed to identify free-riders	Vignette questions + regression + simulation model
Pellet stoves	Survey aimed to identify free-riders	Vignette questions + regression + simulation model
Heat pumps	Statistical/stock analysis based on type of requests	Vignette questions + regression + simulation model
Solar boilers	Statistical/stock analysis based on type of requests	Vignette questions + regression + simulation model

› METHOD TNO

PELLET STOVES

- › Survey by KANTAR (N=1728): what would you have done ‘without ISDE’?
- › “I would have bought the same installation in absence of the scheme” = free-rider = non-additional
- › Correction for 30% replacement of old wood-fired installation (otherwise 48% additionality)

	I intended to buy a wood-burning stove, but as a result of the ISDE subsidy I have bought a pellet stove	I planned to buy a stove other than a wood stove, but I bought a pellet stove as a result of the ISDE subsidy	I was already planning to buy a pellet stove and had done so without an ISDE subsidy	Total
N total	237	591	900	1728
N pellet stove replaces a wood stove	47	248	198	494
N had bought a wood-burning stove anyway	190	6	702	898
N that leads to extra renewable	0	337	0	337
Percentage additional				19.5%

› METHOD SEO

- › Vignette questions (two options)
- › Response: N=1109
- › Height of the subsidy amount varied
- › Explain influence of 3 financial variables on purchase
- › Logit regression model: $f(y)$ decision to purchase ISDE device (1=yes or 0=no)

$$f(y_{ISDE}) = \beta_0 + \beta_1 * \text{add. invest} + \beta_2 * \text{subsidy} + \beta_3 * \text{annual savings} + \varepsilon$$

- › Beta values close to zero
- › Simulation of reference case compared to a simulation without ISDE

Would you opt for an high efficiency condensing boiler or a biomass boiler in the following situation?

Option 1	Option 2
High efficiency condensing boiler	Biomass boiler
1.700 m ³ natural gas per year	3.900 kilogram wood pellets per year
Investment (purchase, installation and assembly): 3.000 euro	Investment (purchase, installation and assembly): 5.500 euro
No subsidy	Subsidy: 500 euro
Total annual user costs: 1350 euro per year	Total annual user costs: 1300 euro per year

› RESULTS

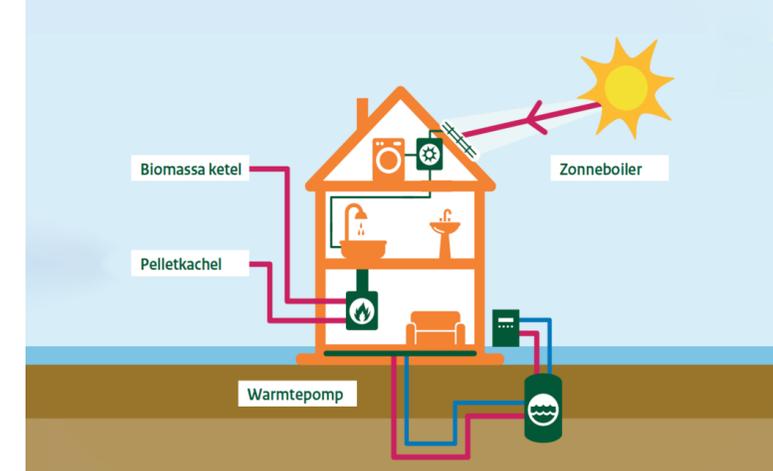
ADDITIONALITY AS PERCENTAGE

Method	Biomass boilers	Pellet stoves	Heat pumps	Solar boilers
SEO method	22%	3%	9%	0%
TNO method – w/ replacement correction	62%	19%	-	-
TNO method – w/o replacement correction	78%	48%	-	-
TNO method	-	-	67%	14%

DISCUSSION

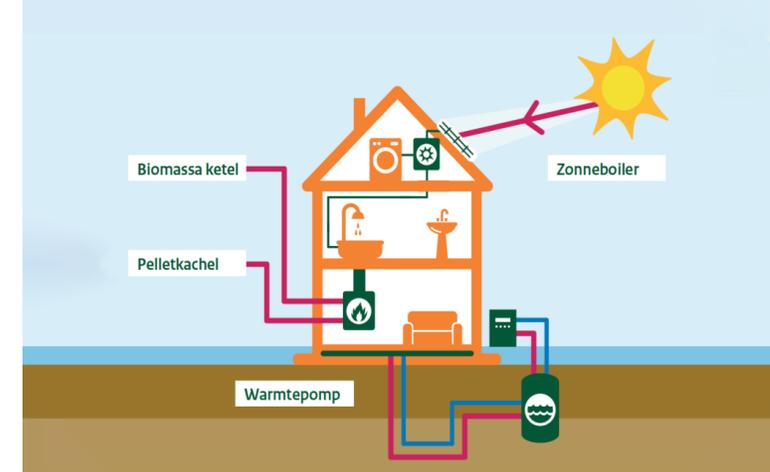
ADDITIONALITY

- › Limits of surveys (TNO) e.g. social desirability bias and hindsight bias → risk overestimate free-riders
- › Stated preferences vs. actual preferences (SEO)
- › Model based on only financial parameters (SEO) oversimplified. Other motives (sustainability) play a role.
- › In direct questions about counterfactual (TNO) other non-financial motives for purchase can play a role
- › End-of-lifetime replacement of old sustainable installation = free-ridership?
- › No control group (Both)
- › Spill-over effects not considered (Both)



› CONCLUSION

- › Strong “Gross effect” of the subsidy (in place since 2016)
- › Additionality result strongly depends on evaluation method used → No silver bullet
- › Other non-financial motives for purchase and replacement effects important in evaluating ISDE
- › Subsidy important for ‘awareness raising’ and spill-over (policy interaction)





› **THANK YOU FOR
YOUR TIME**

TNO innovation
for life

› TNO BIOMASS BOILERS

Table 2 Calculation of share of biomass boiler applications that leads to extra renewable energy (based on survey Heldoorn and Kaal, 2018).

	I did not intend to buy a biomass boiler, partly because of this subsidy I bought a biomass boiler	Without a subsidy I would not have bought a biomass boiler, but a gas-fired boiler	Without a subsidy I would not have bought a biomass boiler, but I would have left the old heating system	I was already planning to buy a biomass boiler; I had done this without a subsidy	none of these	Total
N Total	71	39	61	48	12	231
N do not know	2	0	1	2	1	6
N total excluding don't know	69	39	60	46	0 ¹	214
N already had a biomass boiler	12	7	16	15	0	50
N had also bought a biomass boiler without a subsidy	0	0	0	31	0	31
N that leads to extra renewable	57	32	44	0	0	133
Percentage additional						62%

1) "None of these" answers are not considered in the calculation (set to zero).