



NORDCRAWL

The Nordic framework for collection, analysis and surveillance of market data based on automated and frequent crawling of retail web shops

(Extended abstract)

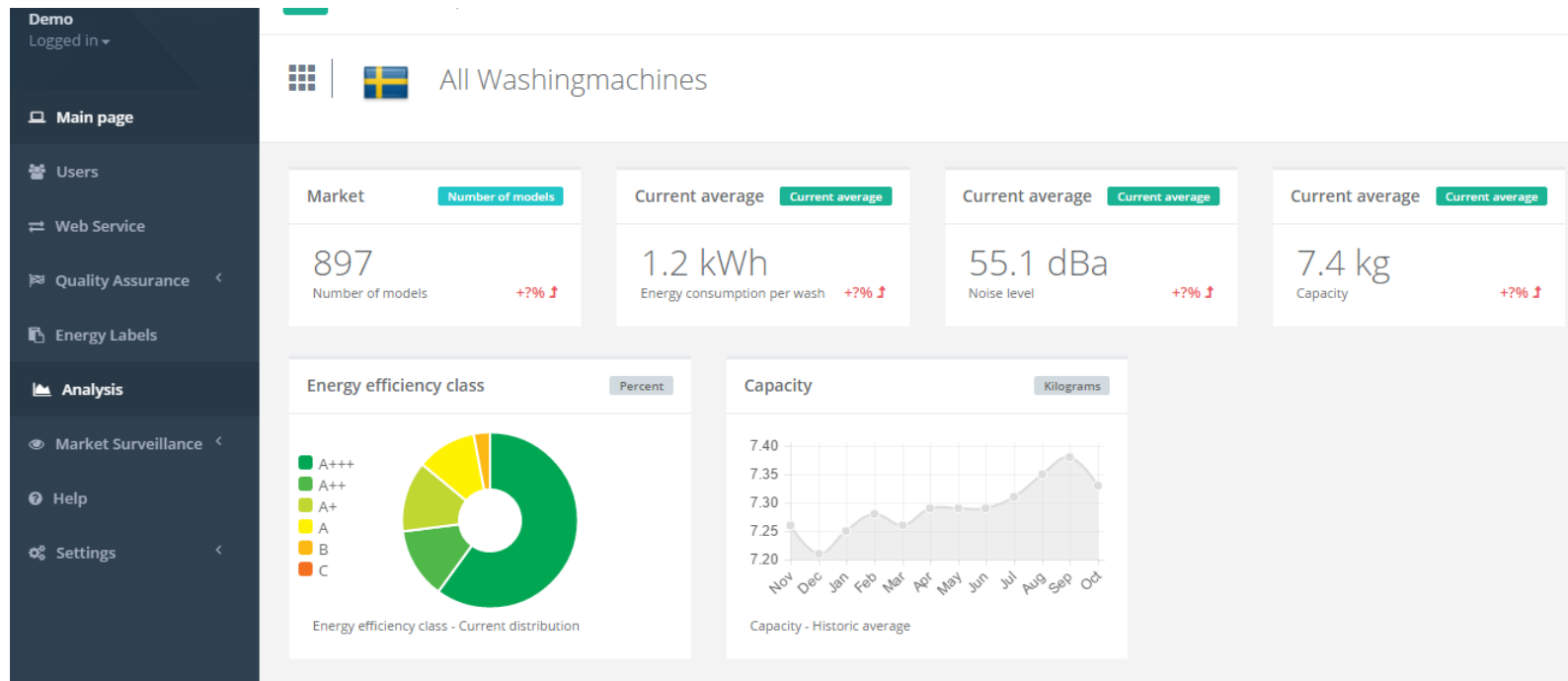
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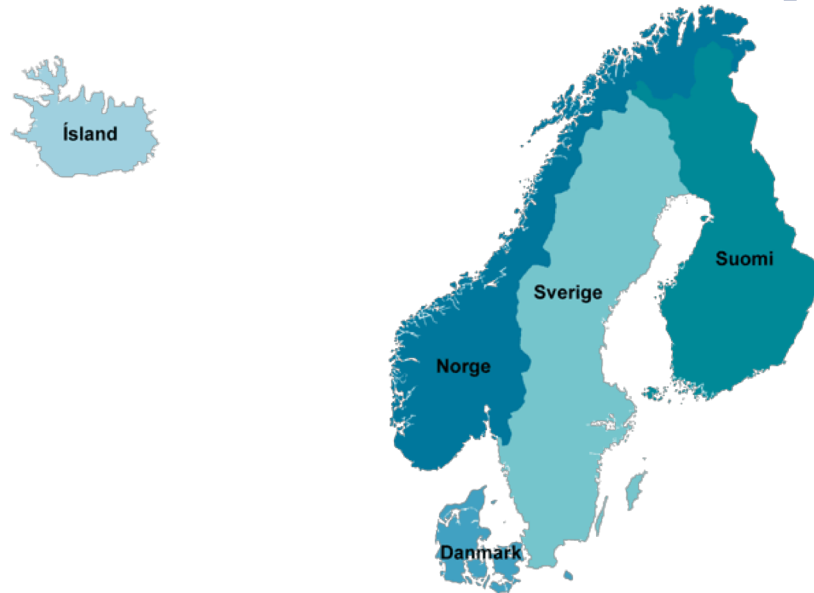
Agenda

- Nordcrawl project:
 - Background
 - The tool
- Market surveillance
 - Two case examples of market surveillance
- Policy evaluation – market trends
- Future activities

What if... you could *watch* the market at *any instant*?



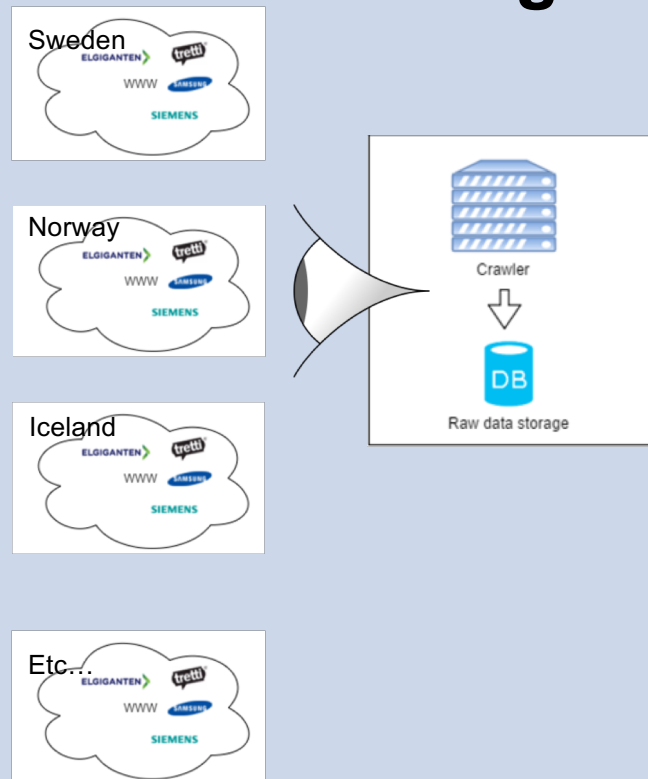
Nordcrawl – a Nordic project to explore webcrawler as a tool for MV&E and policy evaluation



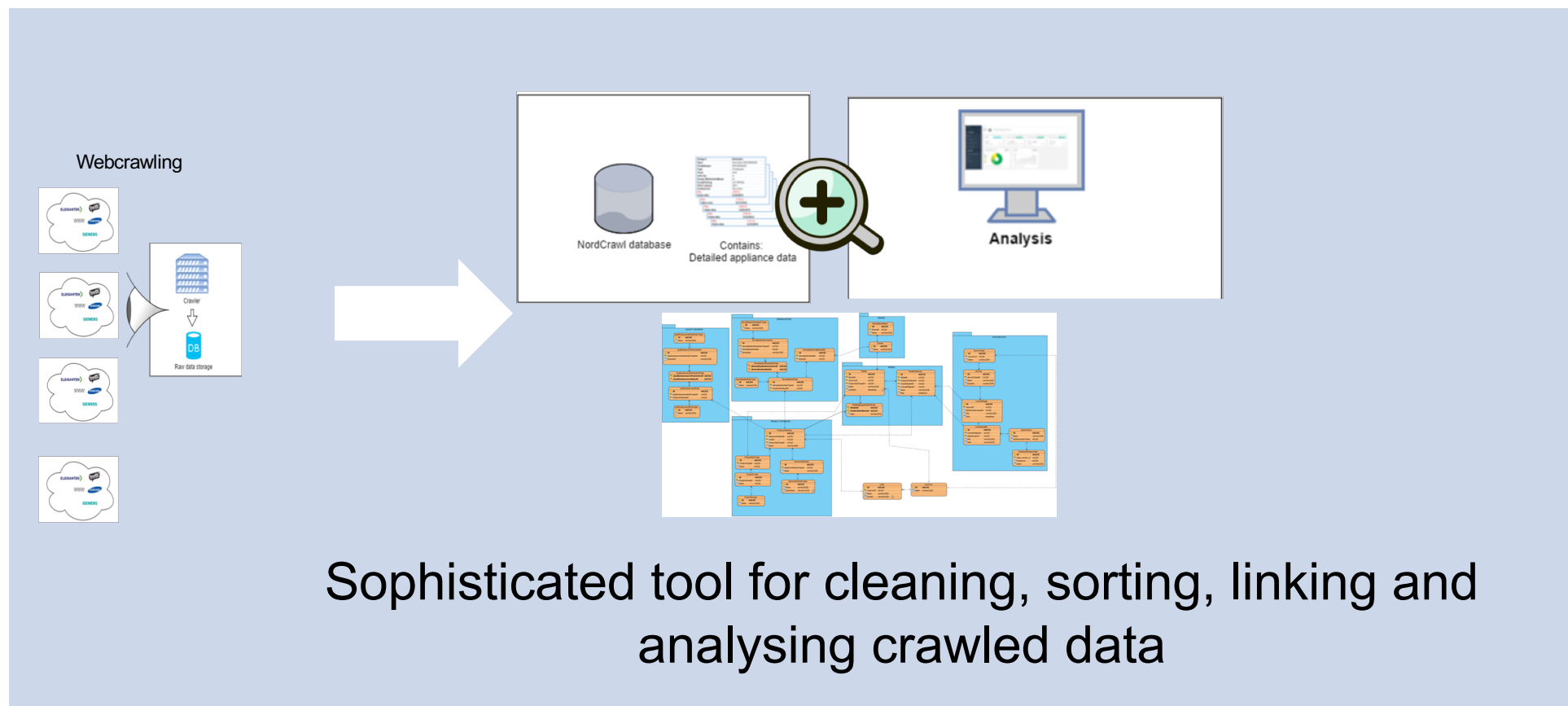
- Financed by the Nordic Council of Ministers
- Nordic *energy agencies* joint project
 - Started autumn 2015
- **Goal:** Develop a *software platform* for MV&E and policy evaluation using web crawler data

What it *isn't*...

Webcrawling

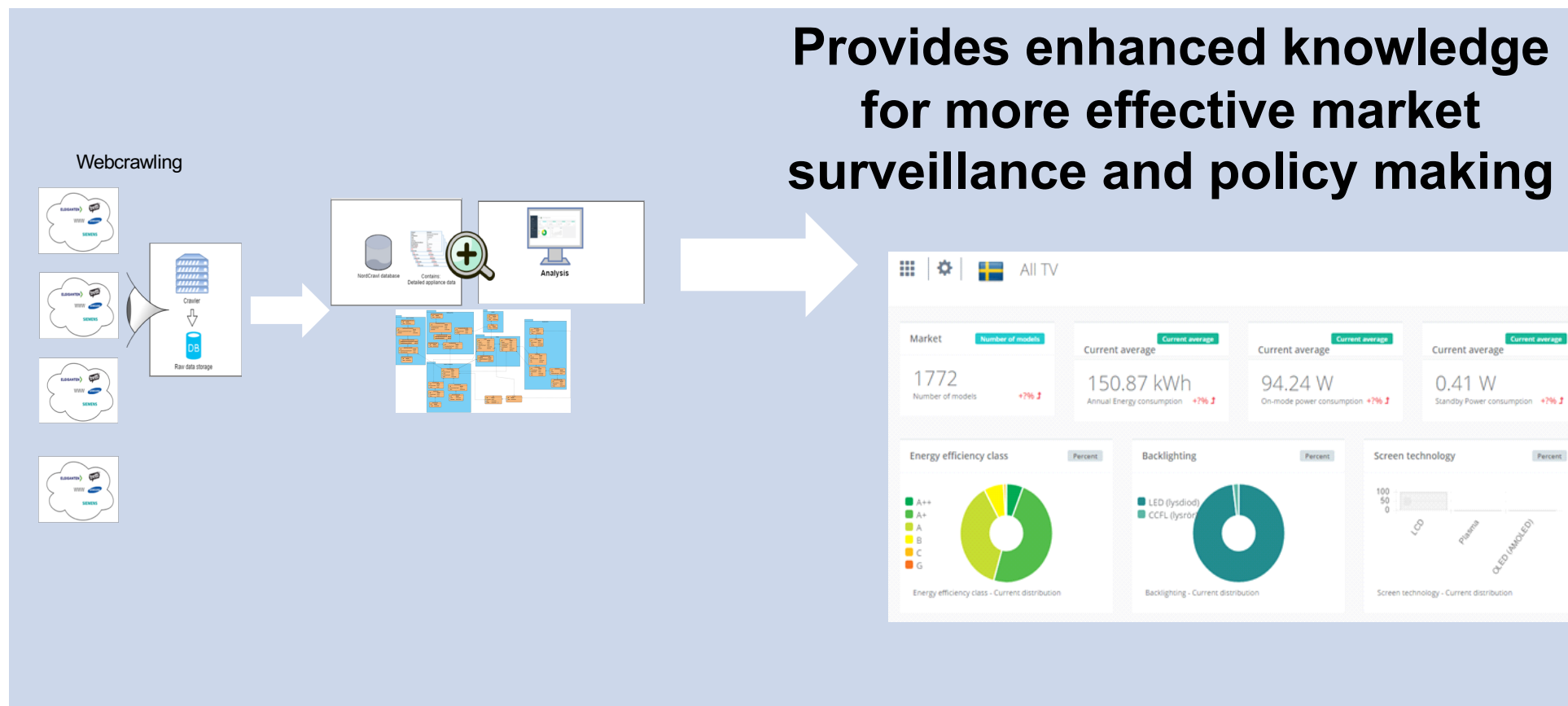


What it *is*



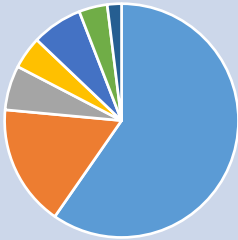
What it *does*

**Provides enhanced knowledge
for more effective market
surveillance and policy making**



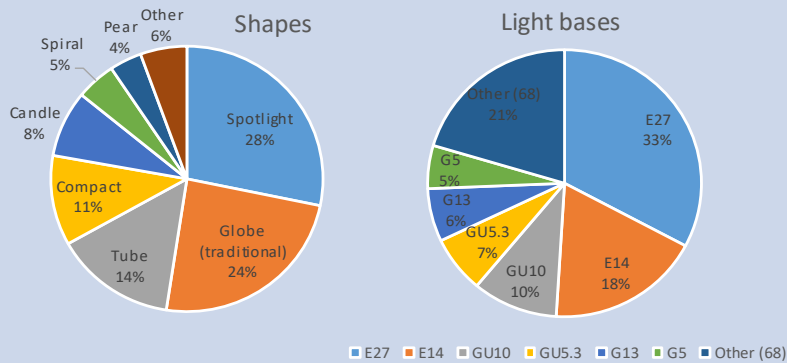
Facilitates accurate and effective sampling

Information on the whole market



Whole market compliance rates

or sub-sectors/product characteristics...



Allowing focusing on risk

Sampling example

Filtered Sampling

Home / MarketSurveillance / **Filtered Sampling**

Export to Excel

Sample Size:

Search:

Brands

☐ AEG (0)
☐ ASKO (1)
☐ BAUKNECHT (0)
☐ BEKO (0)
More

Capacity

-1
13

Noise level Spin-drying

-1
86

Energy consumption per year

-1
9900

Wash performance class

☐ - (7)
☐ A (3)

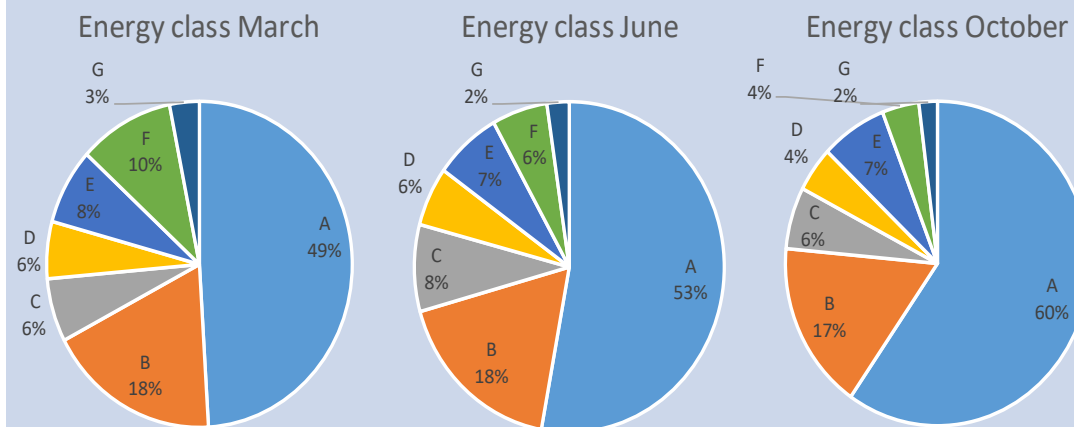
Brands	Model	Capacity	Noise level Spin-drying	Energy consumption per year	Wash performance class	Spin-drying efficiency class	Energy efficiency class	More
ASKO	W8844XLW	11	72	260	A	A	A+++	More
		8	73	176	-	-	A+++	More
		7	76	175	-	-	A+++	More
SIEMENS	WM14N0L7DN	7	75	157	A	B	A+++	More
SIEMENS	WM16T4E8DN	8	74	137	-	-	A+++	More
SAMSUNG	WF70F5E5P4W	7	74	122	-	-	A+++	More
SIEMENS	WS12T440BY	6.5	76	119	A	B	A+++	More
WHIRLPOOL	WWDE7512	-1	-1	-1	-	-	B	More
HOOVER	HL1492D3	8	80	-1	-	-	A+++	More
GRAM	WMD3271460	7	79	-1	-	-	A++	More

Take random sample

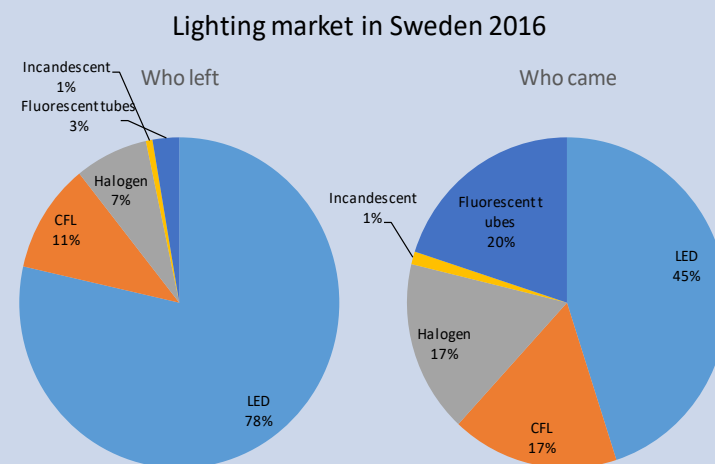
Reduces the number of rows in the table to the size of the sample

...and identify market trends

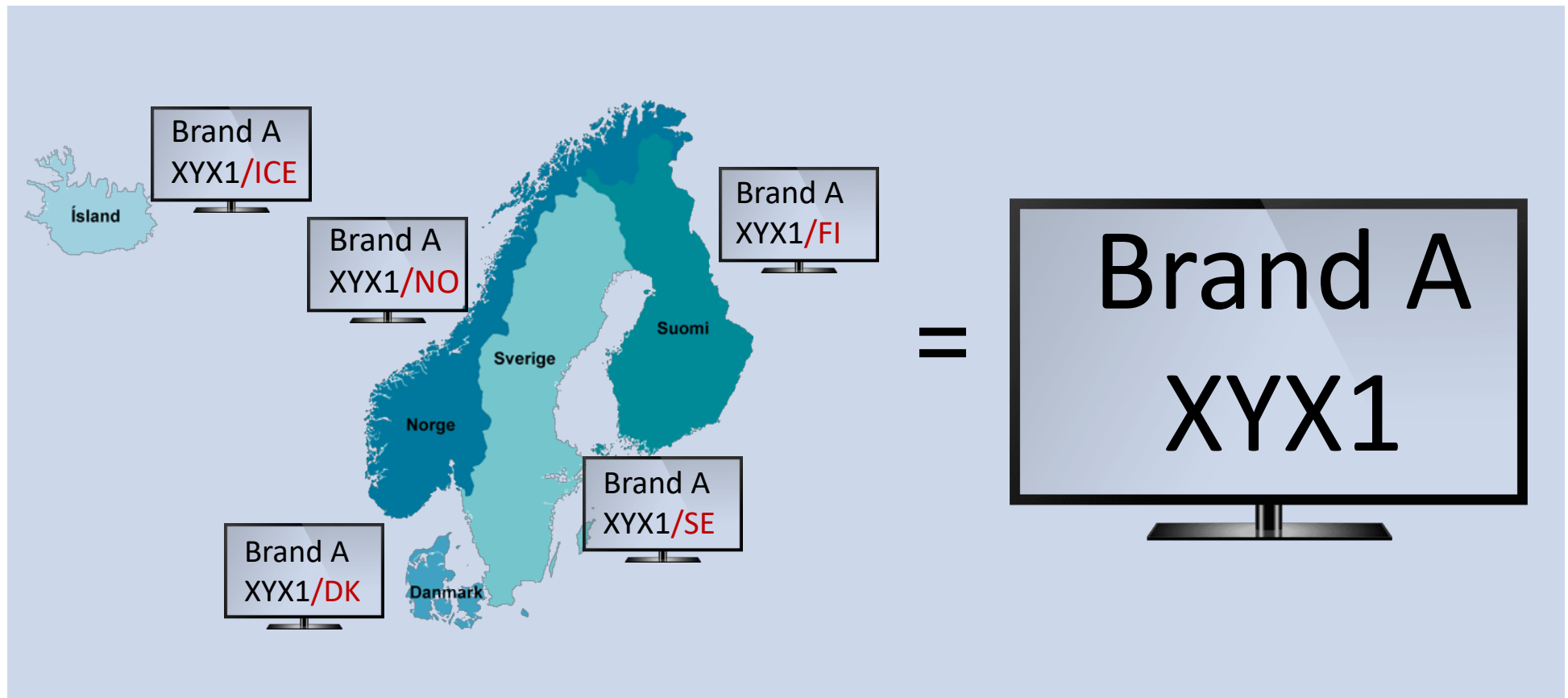
Focus surveillance on growing sectors



...or new market entrants



Enables collaboration = better resource use



Offers surveillance authorities...

- Reduced cost for data collection
- High coverage and a good representation of the market
- Data analysis in near real time leading to faster responses to potentially non-compliant products
- Snap shot and time based information on whole markets or specific segments improving sampling strategies, be it random or targeted
- Automated checks for potential non-compliance increasing human and financial resources availability to focus on areas of highest risk
- Opportunities for enhanced cross-border cooperation

....Overall improved effectiveness of market surveillance

Current market situation

- 5 nordic countries
- 12 product groups
- Weekly crawls

Market surveillance

- Examples
 - Missing energy labels
 - Ecodesign "banned" energy class detection

MS – Missing energy labels

Purpose

- Retailers have to comply with the Energy Labelling directives
- Find retailer product pages where the energy label is missing
- Get an overview of how it look at a product type level for each country


MS – Missing energy labels

Method

- Webcrawler extract energy label image-link/image-element
- Extracted like any other attribute
- Analyse => Have or missing label

Example of energy label links

WHAT THE CUSTOMER SEES



WHAT THE CRAWLER SEES






```
<div class="Pricebox-energyInfo u-nofc">
  <a href="/api/ProductAsset/EnergyLabel/code/92558103" target="_blank" class="u-pullleft u-margintm u-marginbse">
    
  </a>
  <a href="/api/ProductAsset/EnergyLabel/code/92558103" target="_blank" class="Pricebox-energyFolder u-linkBorder u-marginxse">Produktblad</a>
</div>
```







MS – Missing energy labels






Results

- Average non-compliance rate = $\frac{\text{number of pages missing energy label}}{\text{Total number of page}}$
- Best retailer = retailer with the lowest non-compliance rate
- Worst retailer = retailer with the highest non-compliance rate
 - Some of the retailers with high non-compliance rate are also missing other attributes/ have other problems






MS – Missing energy labels






Refrigerator-Freezer			
	Avg non-compliance	Best retailer	Worst retailer*
 Denmark	3,66%	Shop1 0%	Shop5 18,5%
 Sweden	7,68%	Shop8 0%	Shop14 27,4%
 Norway	2,22%	Shop19 0%	Shop22 3,0%
 Finland	34,8%	Shop25 0%	Shop27 100%
 Iceland	-	-	-






Refrigerator			
	Avg non-compliance	Best retailer	Worst retailer*
 Denmark	9,50%	Shop1 0%	Shop6 28,9%
 Sweden	11,64%	Shop11 0%	Shop14 29,0%
 Norway	5,44%	Shop19 0%	Shop23 7,3%
 Finland	18,6%	Shop26 0%	Shop27 100%
 Iceland	-	-	-

Freezers			
	Avg non-compliance	Best retailer	Worst retailer*
 Denmark	5,98%	Shop2 0%	Shop6 21,6%
 Sweden	13,70%	Shop11 0%	Shop14 43,5%
 Norway	1,36%	Shop19 0%	Shop21 1,7%
 Finland	21,3%	Shop26 0%	Shop27 100%
 Iceland	-	-	-

MS – Missing energy labels

Dishwasher			
	Avg non-compliance	Best retailer	Worst retailer*
 Denmark	4,48%	Shop1 0%	Shop5 28,6%
 Sweden	4,28%	Shop9 0%	Shop15 71,4%
 Norway	2,41%	Shop19 0%	Shop22 3,7%
 Finland	16,0%	Shop26 0,7%	Shop27 100%
 Iceland	-	-	-

Vacuum cleaners			
	Avg non-compliance	Best retailer	Worst retailer*
 Denmark	9,85%	Shop1 0%	Shop6 25,5%
 Sweden	13,58%	Shop13 0%	Shop10 16,2%
 Norway	40,72%	Shop21 16,9%	Shop23 56%
 Finland	0,4%	Shop26 0%	Shop29 12,5%
 Iceland	-	-	-

TV			
	Avg non-compliance	Best retailer	Worst retailer*
 Denmark	7,51%	Shop1 0%	Shop7 18,8%
 Sweden	15,05%	Shop13 0%	Shop18 30,9%
 Norway	12,84%	Shop19 0%	Shop24 27,1%
 Finland	8,1%	Shop26 0%	Shop28 100%
 Iceland	-	-	-

MS – Banned energy classes






Purpose

- The Ecodesign directives sets minimum performance standards for energy consumption
- Identify product below the minimum standard

Method

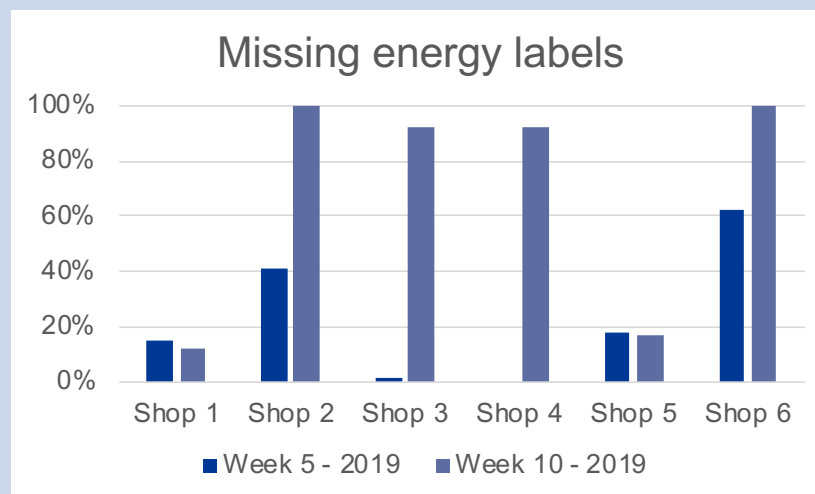
- Minimum Energy Efficiency Index (EEL) or minimum consumption per year in kWh => minimum energy class
- Search database for recently seen model below minimum energy class
- Remove “false positive” products that is not under the regulation
- Some might be on market before regulation

MS – Banned energy classes

	Minimum	 DK	 SE	 NO	 FI	 ICE
Washing machines	A+	0,75% (4)	1,36% (7)	0,44% (2)	0,67% (1)	0% (0)
Vacuum cleaners	D	1,86% (6)	0,6% (1)	0% (0)	5,22% (7)	0% (0)
Range hoods	F	0% (0)	0% (0)	0% (0)	0% (0)	-
Ovens	C	0% (0)	0% (0)	0% (0)	0% (0)	-
Refrigerator-Freezer	A+	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)
Refrigerator	A+	1,19% (9)	0% (0)	0,83% (4)	0,36% (1)	0% (0)
Freezers	A+	0,22% (1)	0% (0)	0% (0)	0% (0)	0% (0)
Chest Freezers	A+	0% (0)	0% (0)	0% (0)	0% (0)	0% (0)

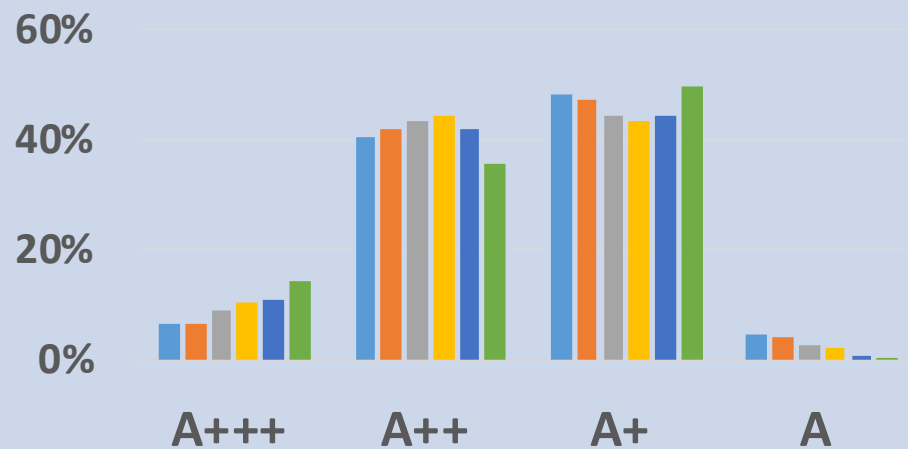
MS – Market enforcement Vacuum cleaners

- Dyson wins EU vacuum appeal: energy label annulled
- DK MS authorities informs retailers
- Shortly after we observed vacuum cleaner energy labels disappear from major retail sites

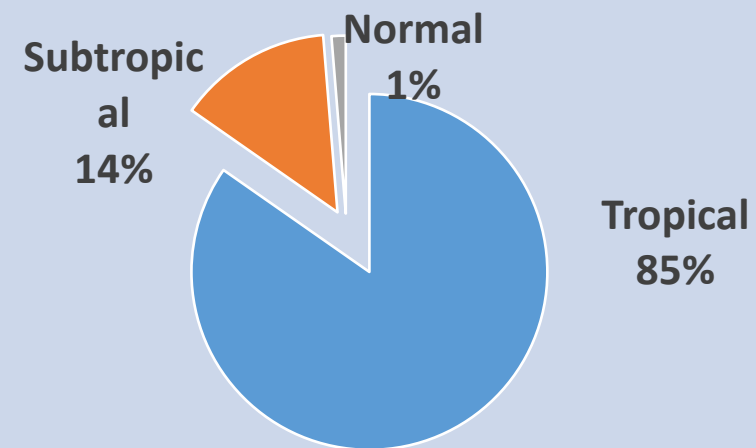


But the same data also powerful for policy makers

Refrigerators becoming more “efficient”

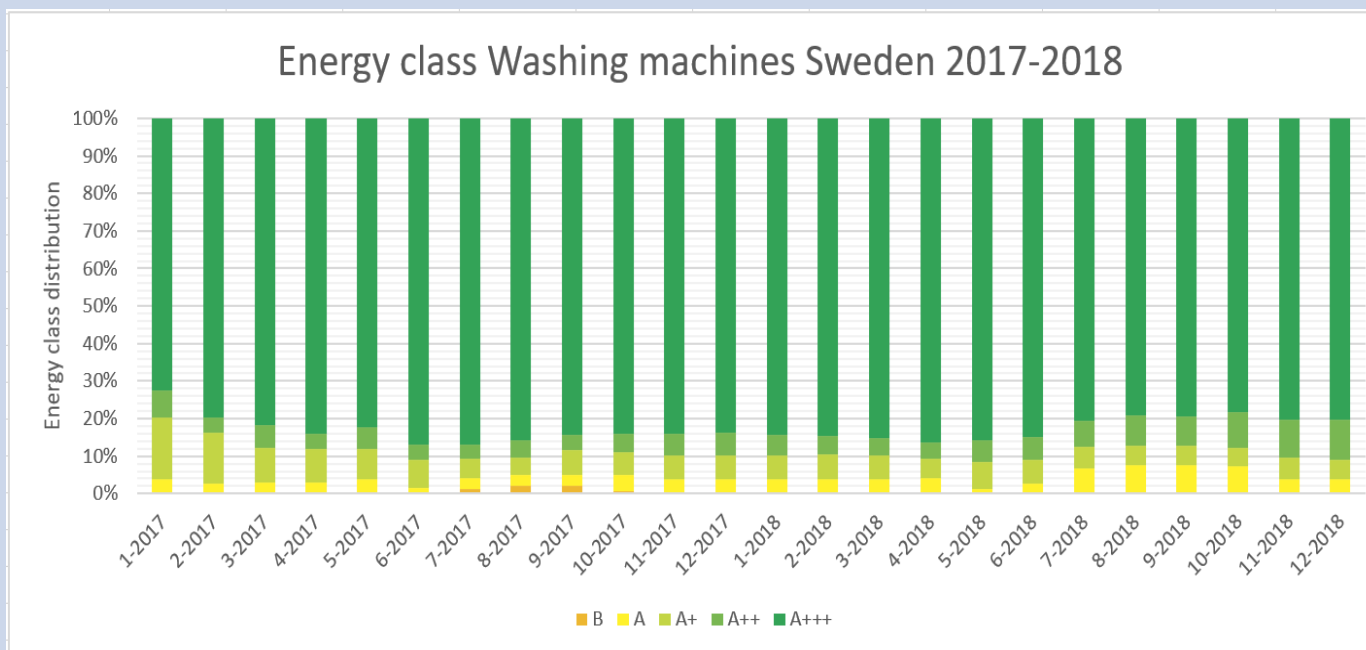


But for Nordics, wholly inappropriate

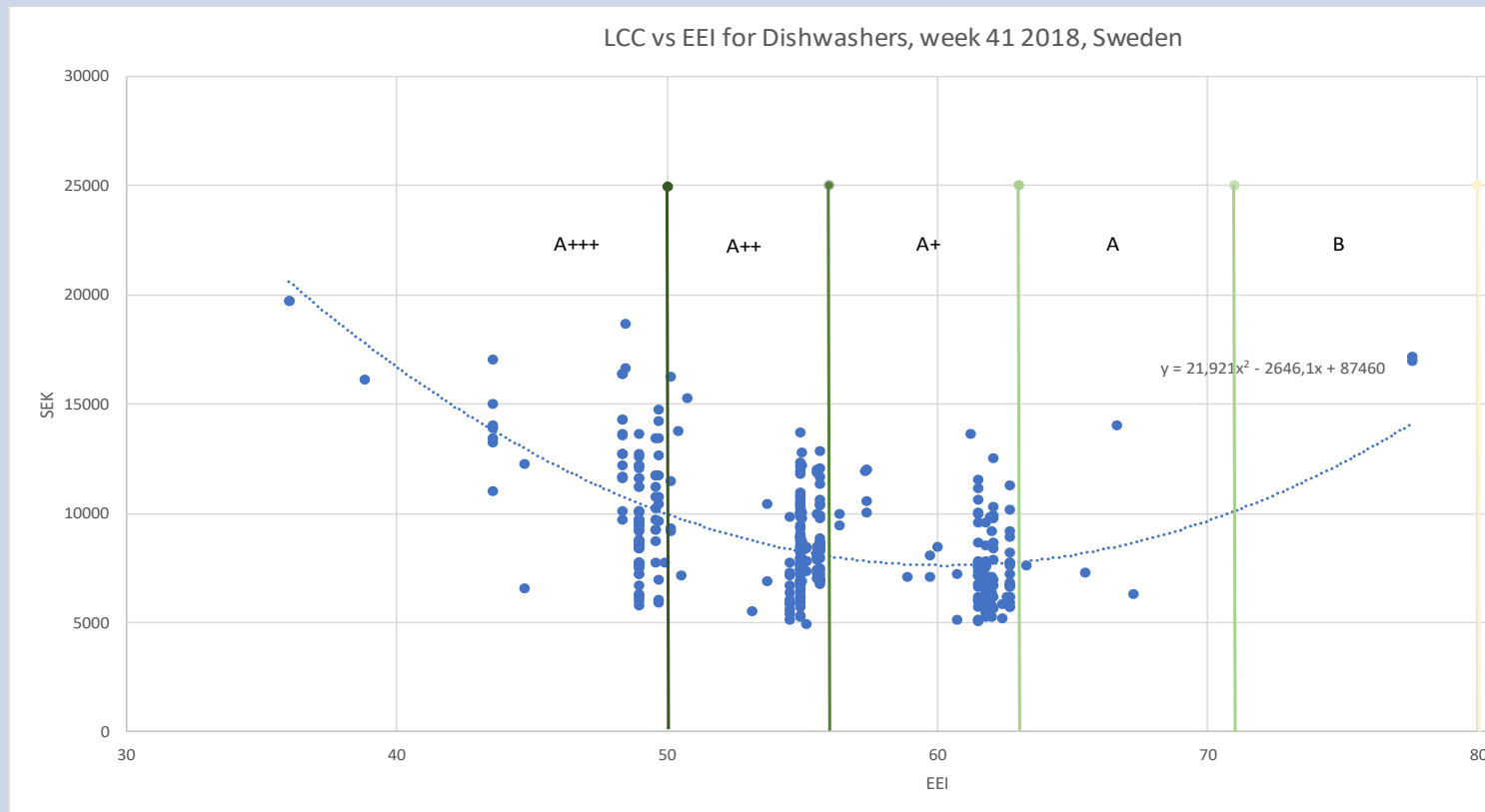


Policy evaluation - trends

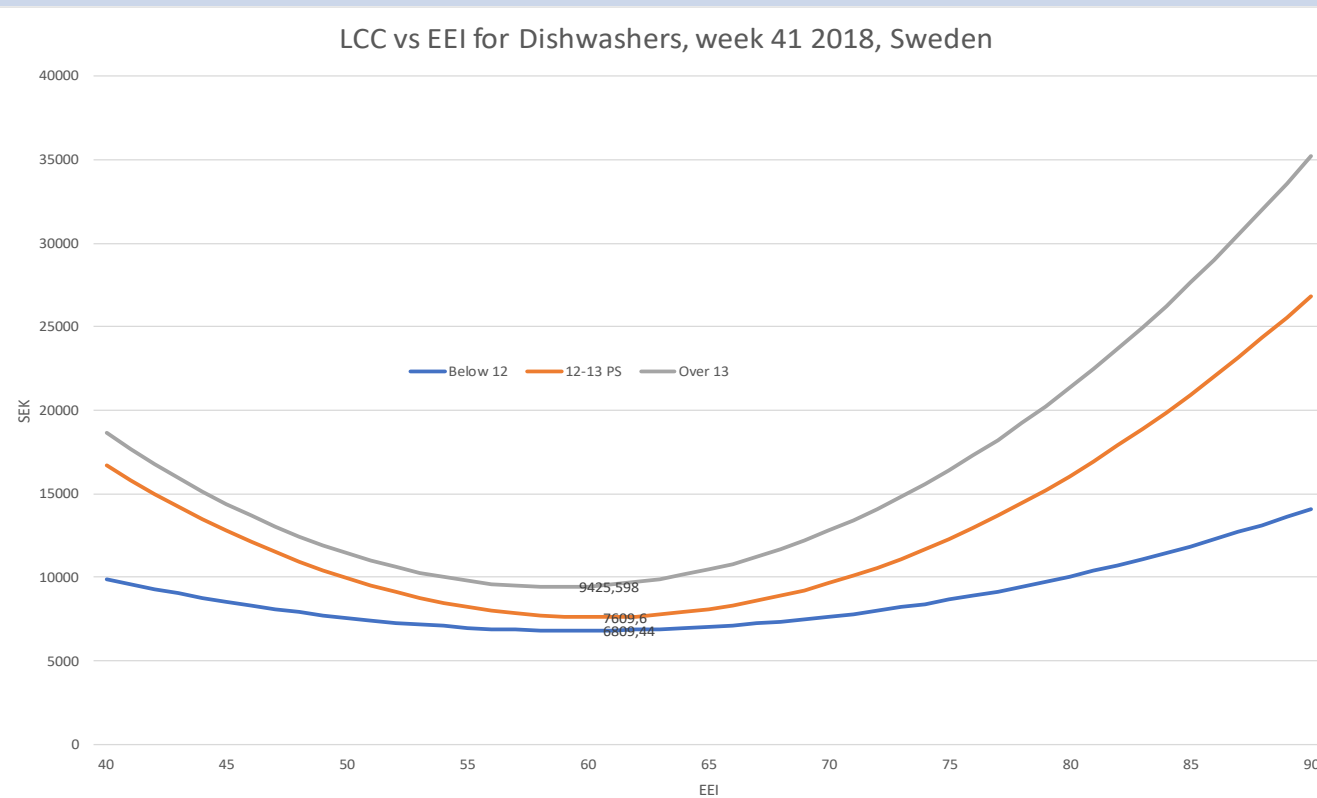
- Energy class development



Policy evaluation – trends LCC. Ex dishwashers



Policy evaluation – trends LCC. Ex dishwashers

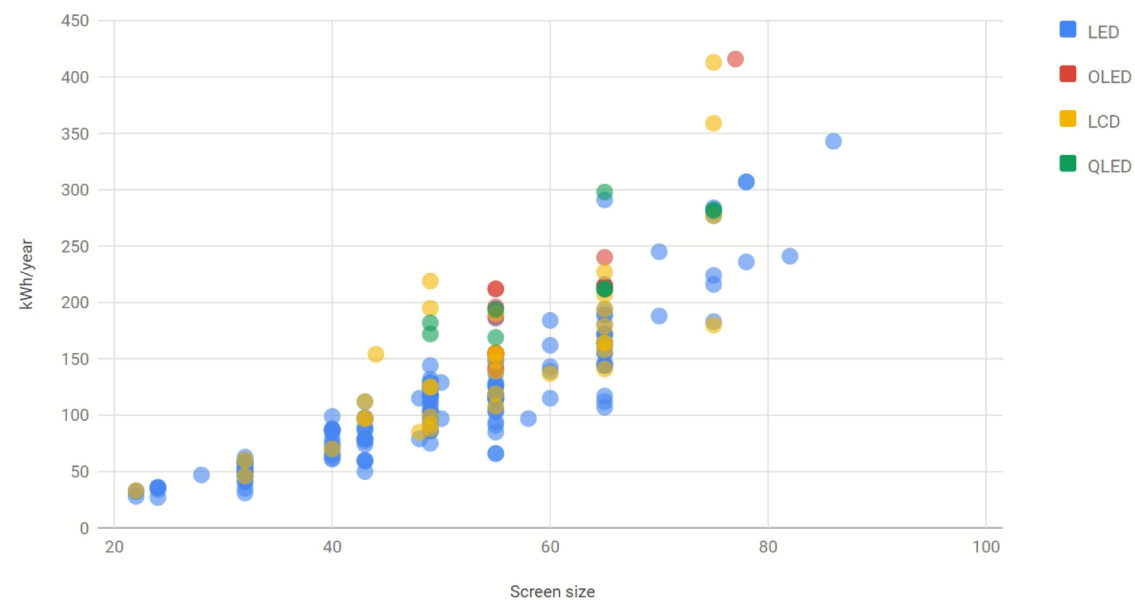


Policy evaluation – trends. Stop motion: market development example of TVs

Energy vs. capacity

5-2017

Various technologies



Click on point to go to model

Future analyses and work

- More market surveillance (on a daily basis)
 - Utilise links to EPREL
- Develop an Effect calculation module – real time assessments of energy savings due to ecodesign and energy labeling
- Explore how markets respond to sudden interventions of the market, such as campaigns, changes in the legislation etc
- Expand to other markets
 - Other MS in EU
 - East asia
 - Africa – in collaboration with UNIDO and IEA?

Questions

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