

Nordic Energy Efficiency Conference Oslo 2025

Energy saving from Ecodesign and
Energy labeling in the Nordics

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Summary and key takeaways

Energy saving from Ecodesign and Energy labeling in the Nordics Kasper Mogensen, Big2Great.

Mogensen opened with a remark that ecodesign and energy labelling policies in the EU play a major role in reducing energy consumption.

The Nordic project has aimed to measure these policies in Denmark, Finland, Iceland, Norway, and Sweden. However, he commented that policies are not enough. We also need to reinforce consumer behaviour.

Mogensen noted that the EU directive on ecodesign sets minimum energy efficiency standards for products. The products that don't meet these standards can't be sold in the EU. He also underscored the importance of energy labelling, rating products from A/A+++ to G. These policies, Mogensen commented, can encourage consumers to choose more energy-efficient products and push manufacturers to develop energy-saving designs.

He noted substantial savings in energy consumption across the Nordics from ecodesign and energy labelling with even larger potential savings towards 2030. However, Mogensen was concerned with some notable challenges, including adverse effects of the policies. These included non-compliance from the producers and lack of surveillance and the rebound effect (that increased use can reduce savings). To counter these challenges, Mogensen suggested behavioural change together with systemic policies, emphasising the need to embrace the concept of mindful consumption.

Mogensen also provided a glance into the future of ecodesign. New products, such as smartphones and tablets, will soon be subject to ecodesign rules. Even more, repairability standards will soon apply to products like dryers. He also mentioned the ecodesign for sustainable products (ESPR) policy from the EU, embracing the principles of circular economy, introducing EU digital product passports, and the ban on the destruction of unsold products.

Key takeaways:

- Ecodesign and energy labelling contribute significantly to energy savings in the Nordic region.
- Challenges such as non-compliance and rebound effects must be addressed through market surveillance and behavioural changes.
- The future of ecodesign will emphasise sustainability, repairability, and circular economy principles.
- Policy enforcement and consumer awareness are key to maximising energy savings and achieving long-term sustainability.

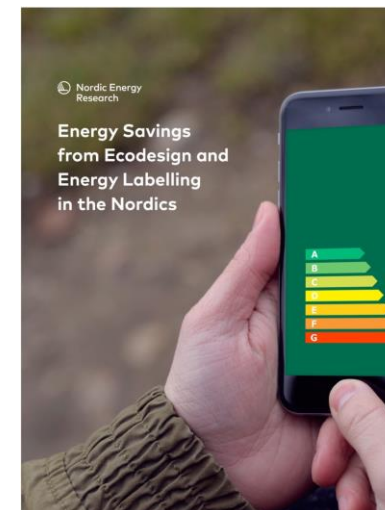


” *The cleanest energy is the energy not used.*

Kasper Mogensen,
Big2Great.

Intro

- Kasper Mogensen, CEO Big2Great, Denmark
 - Working with ecodesign and energy labelling for 10+ years
 - Related areas like online market surveillance
- Presenting results from a Nordic project
- Adverse effects – policies alone are not enough
- Future sustainable policies

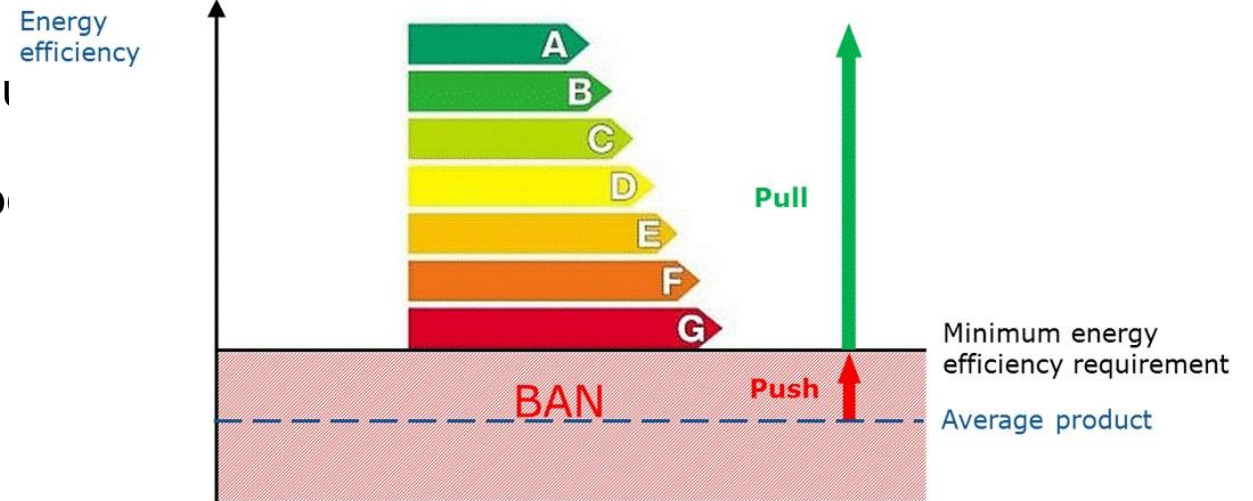


Why is it important

- Large savings from EU policies – but how much in the Nordic countries?
- But policies alone are not enough – enforcement and behaviour
- The cleanest energy is the energy not used
 - *And we need a lot of energy for electrification!*

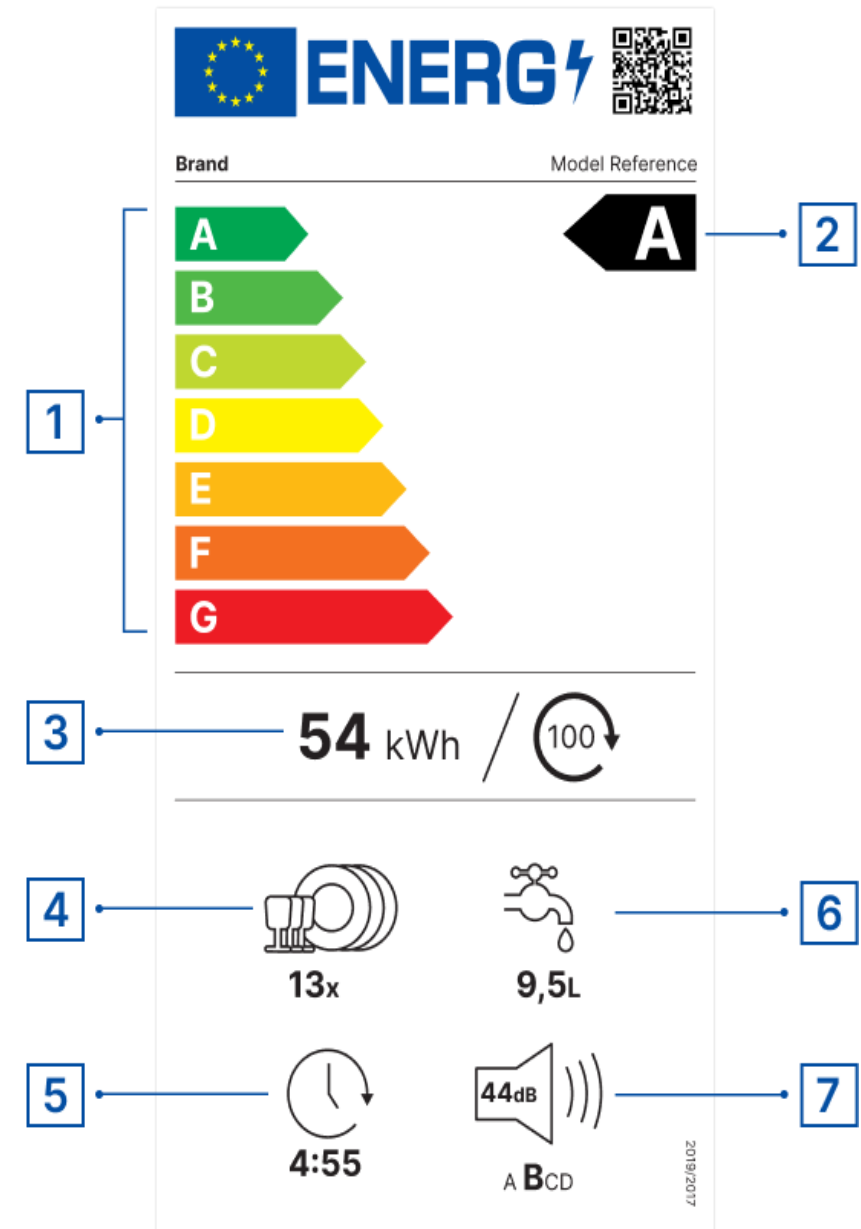
Ecodesign

- EU Directive ensuring energy-related product meet eco-friendly design standards
- Sets minimum energy efficiency standards for product
- If a product doesn't meet these standards, it can't be sold in the EU market.



Energy labelling

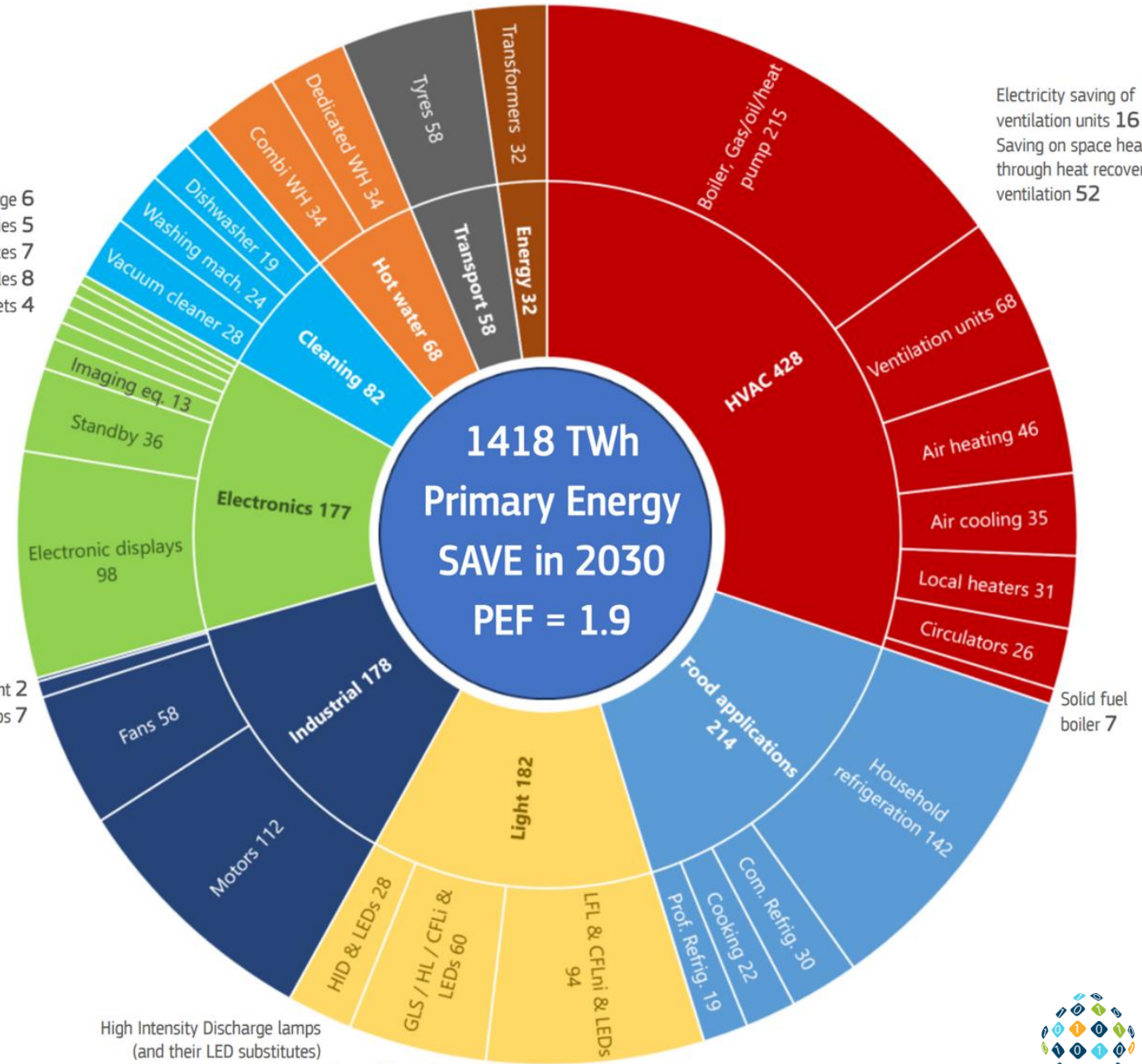
- Provides clear energy efficiency ratings (from A /A+++ to G) on product labels.
- This encourages consumers to choose more efficient products
- Motivates manufacturers to develop even more energy-efficient designs.



EU: Savings from Ecodesign - *impact accounting*

- Servers and Data storage 6
- External power supplies 5
- Set top boxes 7
- Game consoles 8
- Phones & Tablets 4

- Welding equipment 2
- Water pumps 7



Electricity saving of ventilation units 16
 Saving on space heating through heat recovery in ventilation 52

High Intensity Discharge lamps (and their LED substitutes)

General incandescent bulbs, Halogen bulbs, and Compact fluorescents with integrated ballast (and their LED substitutes)

Linear Fluorescent and Compact Fluorescent without ballast (and their LED substitutes)



BIG 2 GREAT
 From big data to great value

Nordic project: Effect of policies - intro

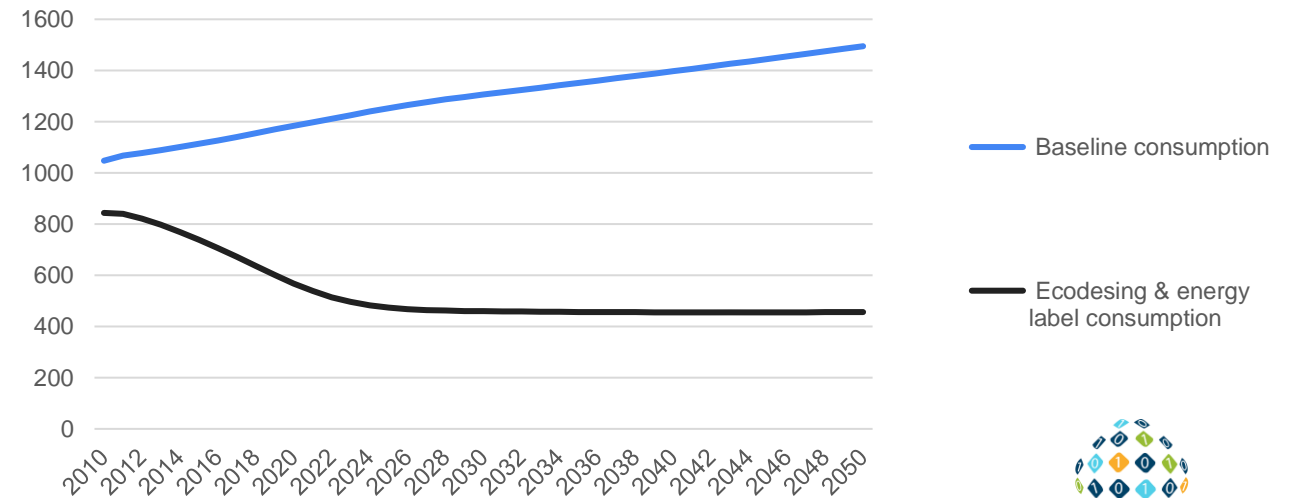
- Ecodesign & energy labelling policies are driving significant reductions in energy consumption.
- How much of the EU savings does each Nordic country account for?
- Some products are used more than the EU average – the need for sophisticated calculation



Nordic project: Effect of policies - Method

- Down-scale EU savings to local countries
 - $Country\ saving = EU\ saving * downscaling\ factor$
 - Product-specific downscaling fact that takes country-specific factors into account (like climate)
 - Data sources: survey, statistics
- Button-up model based on sales data
 - Two scenarios: business as usual and policy

Savings



Nordic project: Effect of policies – Results 2030

Country	Primary Energy Savings (TWh/year)	Final Energy Savings (TWh/year)
Denmark	27.5	16.3
Sweden	51	25.9
Norway	35.5	17.4
Finland	41.6	24
Iceland	1.9	1

Nordic project: Effect of policies - Results

Danish bottom-up results 2030

Appliance	Size	Lifetime (years)	Baseline (GWh/year)	Scenario (GWh/year)	Savings (GWh/year)
Refrigerator	230 l	14	309.2	136.6	172.6
Refrigerator/freezer	260/90 l	15	1,357	554.1	802.9
Freezer (chest)	230 l	18	126.2	43.7	82.5
Freezer (upright)	200 l	16	503.3	191.9	311.4
Washing machine	7 kg	9	757.6	243.8	513.8
Dishwasher	12 ps	10	1,082.8	495.8	587
Dryer	7 kg	13	1,167.8	405.8	762



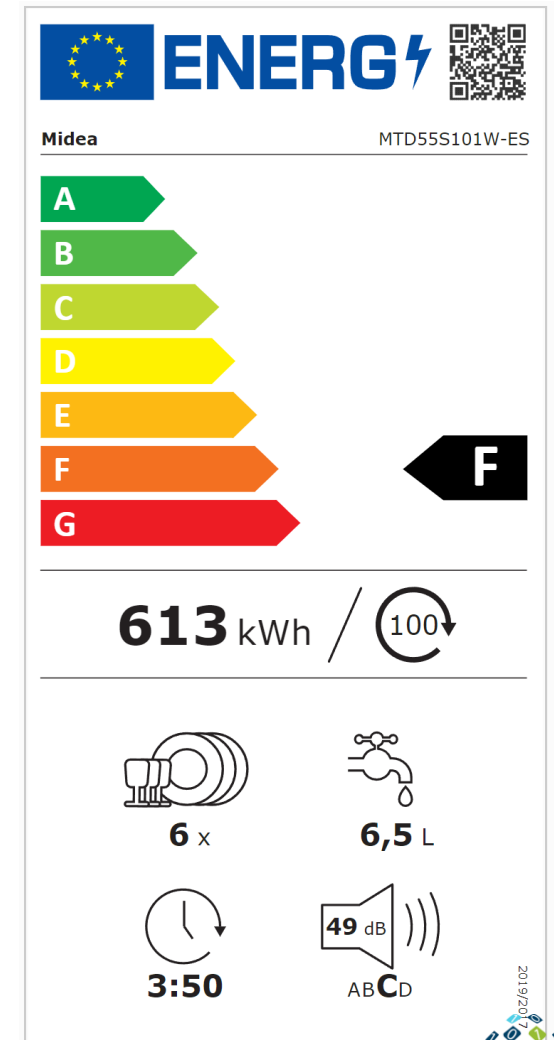
Adverse effects – undermines the goals of the policies

- Non-compliance – the rules are not followed → Missed savings
- **Answer:** Market surveillance ensures compliance

- Rebound effect – cheaper to use → use more → offset intended saving
- **Answer:** Encouraging behavioural changes

Market surveillance

- Inspection
 - Physical in-store check, document inspection
 - Tools like Nordic project Nordcrawl for automating online market surveillance, EU product database EPREL
- Laboratory testing
 - Verifies product meets the specified standards
 - Expensive



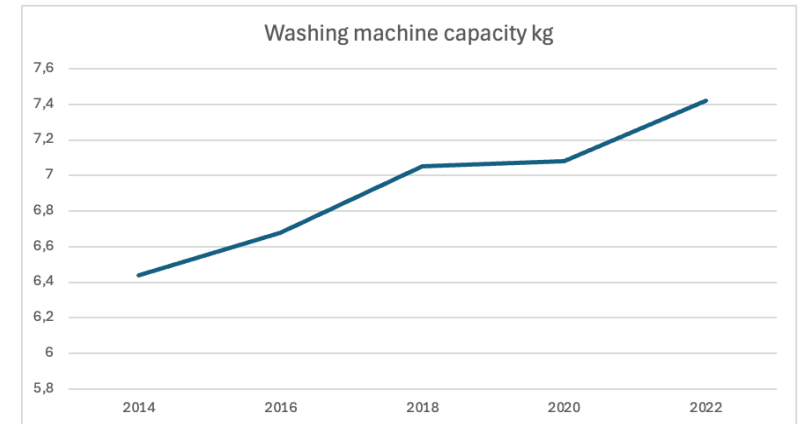
Rebound effect

Direct: An increase in consumption of a good is caused by the lower cost of use

- Efficient car → drive more
- Efficient washing machine → buy 15 % larger

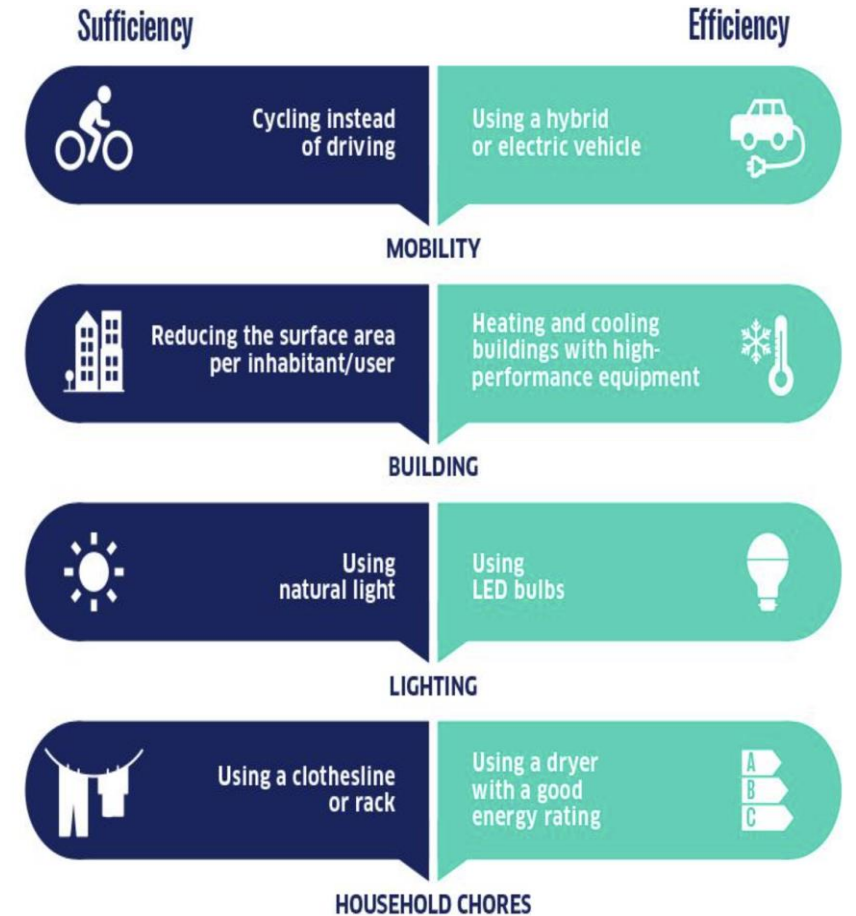
Indirect: savings from a more efficient buy other things

- Save on heating → fly to Spain (backfire effect)



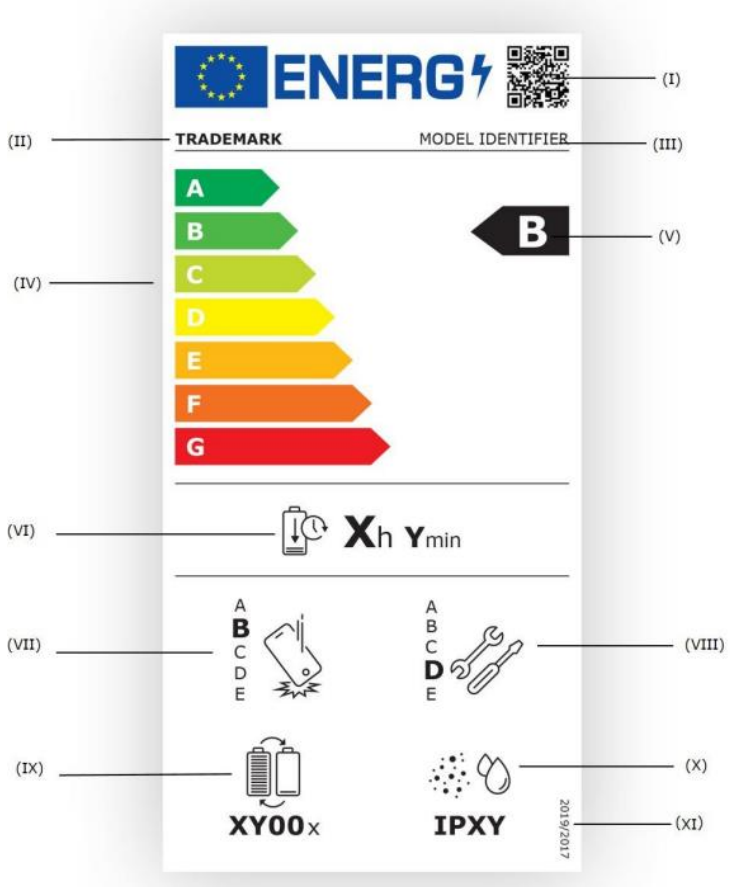
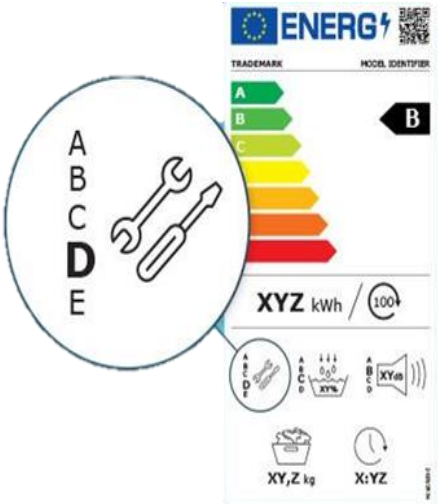
Sufficiency

- **Meeting Essential Needs:** Focus on just enough energy for heating, cooling, lighting, and mobility.
- **Behavior & Lifestyle:** Encourage mindful use and reduce unnecessary consumption.
- **Systemic Support:** Use urban planning and policies to enable efficient infrastructure.
- **Broader Benefits:** Lower environmental impact and improve social equity.



Future - Near future ecodesign and energy labelling

- New product groups (smartphones and tablets)
- Repairability (dryers)



ESPR - Ecodesign for Sustainable Products Regulation

- Broader approach
- Aims to significantly improve the sustainability of products placed on the EU market by improving their circularity, energy performance, recyclability and durability.
 - Expanded Scope
 - Sustainability Requirements
 - EU Digital Product Passport (DPP)
 - Ban on Unsold Product Destruction
 - Substances of Concern

