

Nordic Energy Efficiency Conference Oslo 2025

How have energy consumption
patterns developed post the energy
crisis of 2021-2023?

Roberta Moschetti
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Summary and key takeaways

How have energy consumption patterns developed post the energy crisis of 2021-2023?

Roberta Moschetti, SINTEF.

The research from SINTEF included a survey of the household energy behaviour in relation to the energy crisis of 2021-2023. Moschetti commented initially that household energy use is central to sustainability efforts and that they assessed how consumer behaviour reacted to the price shocks of 2021-2023.

The target group was 3,350 respondents aged 18+ from six Nordic countries (Iceland, Faroe Islands, Denmark, Finland, Norway, and Sweden). Their study found increased awareness across most Nordic countries, except in the Faroe Islands and Iceland, where energy habits changed little.

Norway, Denmark, Finland, and Sweden showed a significant rise in energy-saving behaviours among consumers. However, many consumers adopted short-term measures, such as lowering indoor temperatures during price spikes. The study also found that vulnerable groups struggled more with adjusting their energy use during high-cost periods.

According to Moschetti, many respondents plan to continue energy-saving efforts despite scepticism about impact. She also noted that there is a high reluctance to apply for energy efficiency subsidies; this could partially be because many are unaware of available support programs.

She further demonstrated that investment support was most significant in Norway and Sweden, while the cost of energy efficiency measures remained a major barrier in Iceland, Denmark, Finland, and Sweden. Age mattered for behaviour in the sense that the younger groups (aged 18-29) focused on costs and energy savings, the middle groups (aged 30-69) considered a mix of attributes, and in the oldest groups (aged 70+) the decisions were driven by existing preferences.

Further education made a difference in the sense that middle and high education groups consider all factors more systematically. The earlier habits affected the decision of the low-education respondents in a more substantial way.

At the end of her presentation, Moschetti indicated that subsidies may have a limited effect.

Key takeaways:

- Energy price spikes triggered quick behavioural shifts, but some groups need extra support.
- There is no one-size-fits-all solution. Energy behaviour varies by age and education.
- Subsidies may have limited impact. Investment costs and energy savings are stronger motivators than financial incentives.



Price peaks trigger acute measures—good habits persist, but there’s no one-size-fits-all approach.

Roberta Moschetti,
SINTEF.

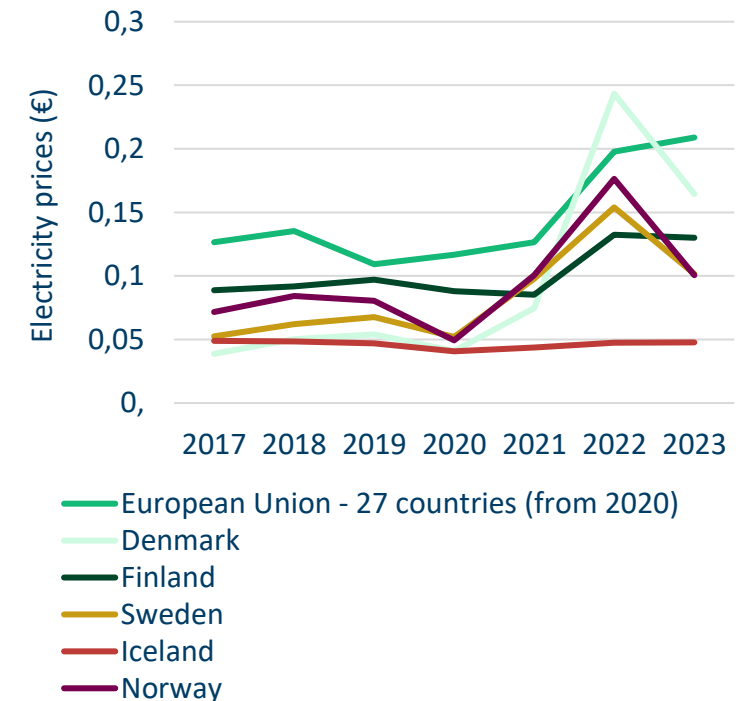


Agenda

- Background
- Survey on changes in households' energy behaviour in relation to the 2021–2023 energy crisis
 - Framing and structure
 - Some findings
- Conclusions

Background

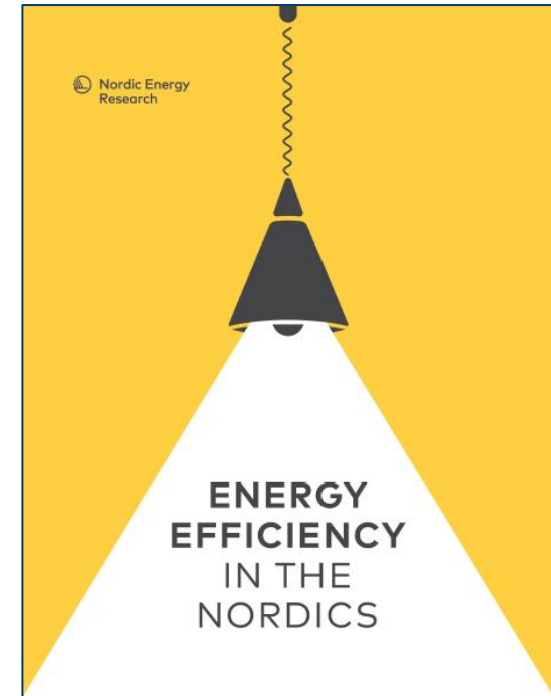
- **Energy use in households:** Central to individual lifestyles and sustainability efforts. Influenced by a combination of internal and external factors
- **Energy crisis in 2021-2023:** Households facing significantly high energy prices, prompting increased awareness of energy consumption
- **Impact on consumer behaviour:** Growing interest in energy efficiency measures as a response to rising costs.





The survey

- **Web-panel survey:** Part of the project on energy efficiency in the Nordics
- **Goal:** *Understand respondents' energy consumption patterns, perspectives on energy efficiency, and willingness to adopt energy-saving practices amid the global energy crisis*
- **Target:** 3,350 respondents aged 18+ from six Nordic countries (Iceland, Faroe Islands, Denmark, Finland, Norway, Sweden)
- **When:** September/October 2024, conducted by Norstat



Survey sections

- **Section 1 – Background:** Sociodemographic factors and housing characteristics
- **Section 2 – Attitudes/Motivations:** Attitudes towards energy use and willingness to adopt energy-efficient solutions
- **Section 3 – Behaviour:** Changes in household energy behavior during the 2021–2023 energy crisis
- **Section 4 – Energy efficiency measures:** Medium- to long-term measures adopted or planned









Survey sections

➤ Section 5 – Future Intentions:

Stated preference methodology: To explore preferences for future energy efficiency measures, based on random utility maximization and D-efficient design (software NGENE)

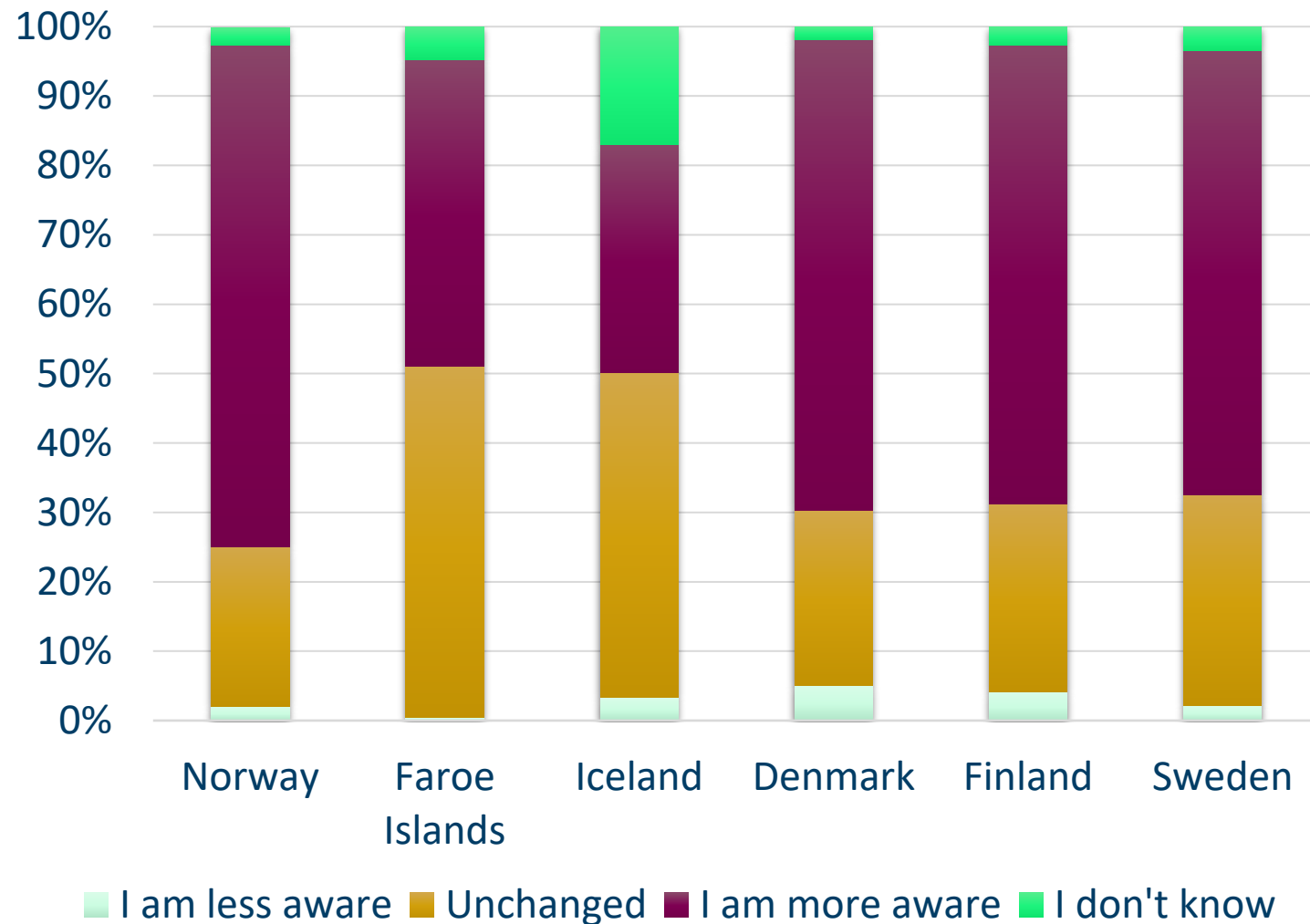
- ✓ **Energy efficiency measures:** Installing triple-glazed windows; adding insulation; using energy monitoring systems; implementing night temperature-lowering systems; installing balanced ventilation system with heat recovery
- ✓ **Attributes:** Investment costs, energy savings, and available support

SET 1_2	Option 1	Option 2	None
Measure	Install energy-efficient triple-glazed windows for the entire home	Add extra insulation to the external walls	
Investment cost			
Energy savings			
Investment support	Financed 0% investment cost	Financed 15% investment cost	



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Awareness of energy use



➤ Overall trend:

Rising energy awareness in most countries, with varying levels of consumer action.

➤ Common patterns:

➤ **Norway, Denmark, Finland, Sweden:** Significant increases in awareness, with notable changes in energy-saving behaviors.

➤ **Faroe Islands & Iceland:** Minimal changes in energy consumption and awareness during the crisis.



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Energy saving behaviour in Faroe Islands

■ Before 2021 ■ During the energy crisis 2021-2023 ■ After 2023

None of these

Reduce the use of energy-intensive amenities, such as hot tubs, saunas, etc.

Shift to other fuels for heating (i.e. firewood) when the electricity prices are high

Reduce the use of electric devices (such as: computer, TV...)

Switch to use electric appliances to hours with lower electricity prices

Air dry clothes instead of using the tumble dryer

Use washing machine programmes with lower temperatures

Load full washing machine before turning it on

Lower the water temperature when hand washing the dishes

Load full dishwasher before turning it on

Pay more attention to cooking habits (i.e. put lids on boiling pans)

Turn off lightning and other electric devices when not in use

Lower the water temperature when showering

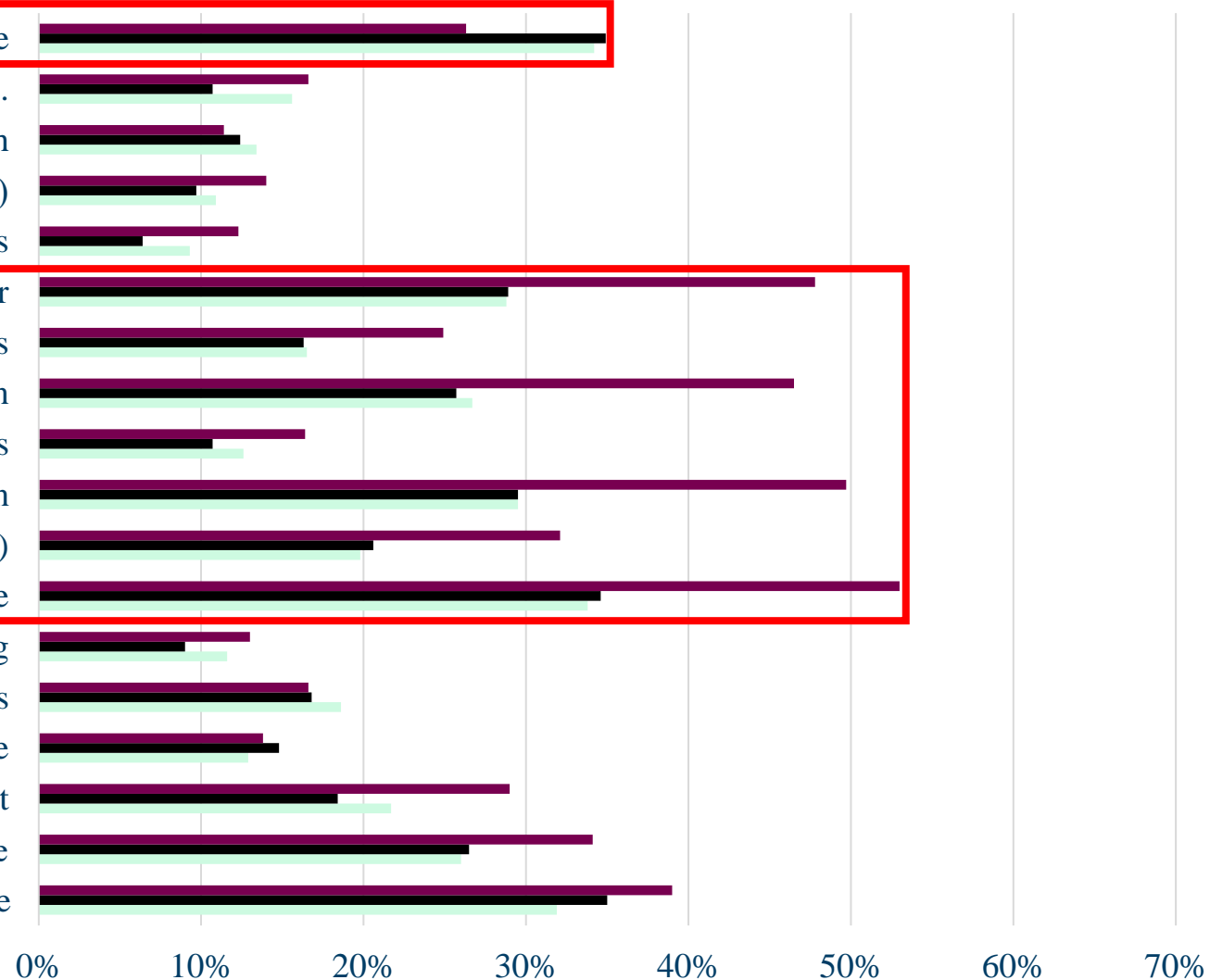
Shower less often/take shorter showers

Lower all rooms' temperature when you are at home

Lower rooms' temperature during night

Lower rooms' heating/air conditioning when you are not at home

Lower temperature in unused rooms when you are at home

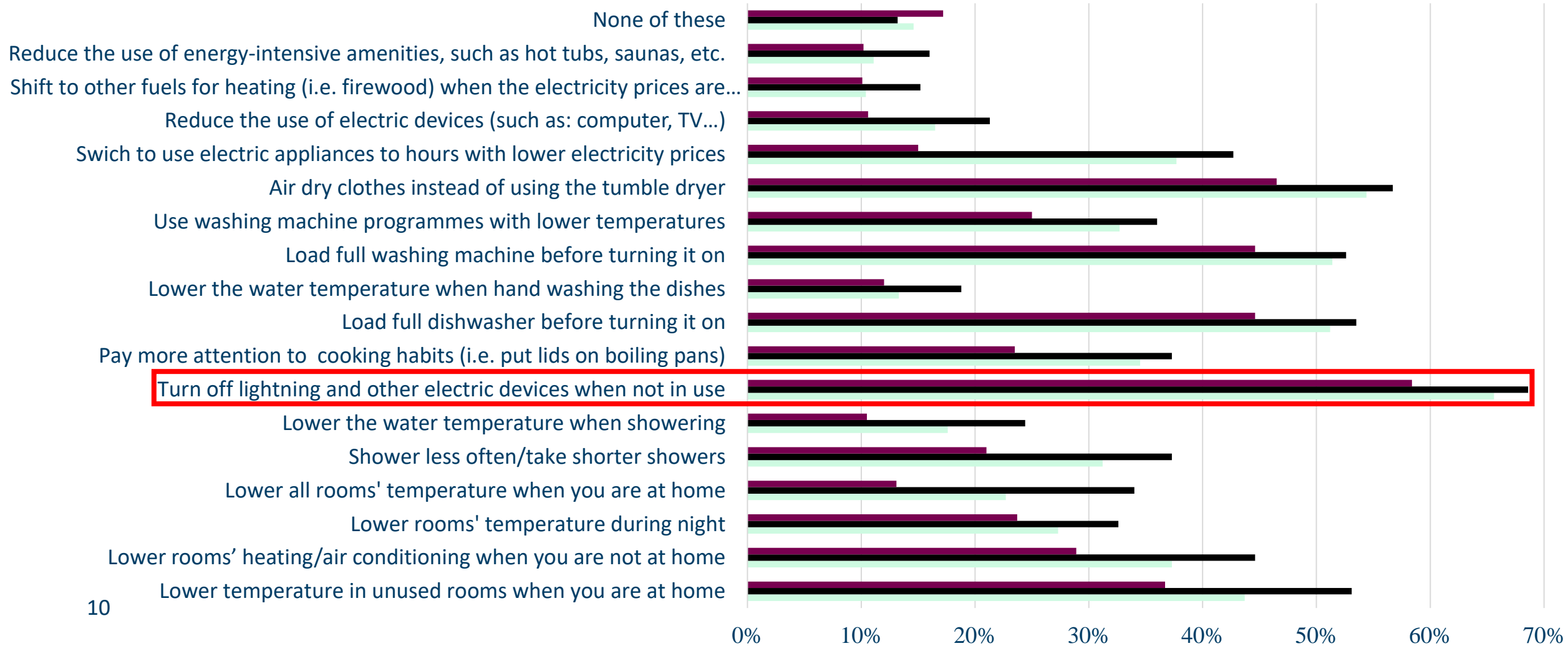




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Energy saving behaviour in Denmark

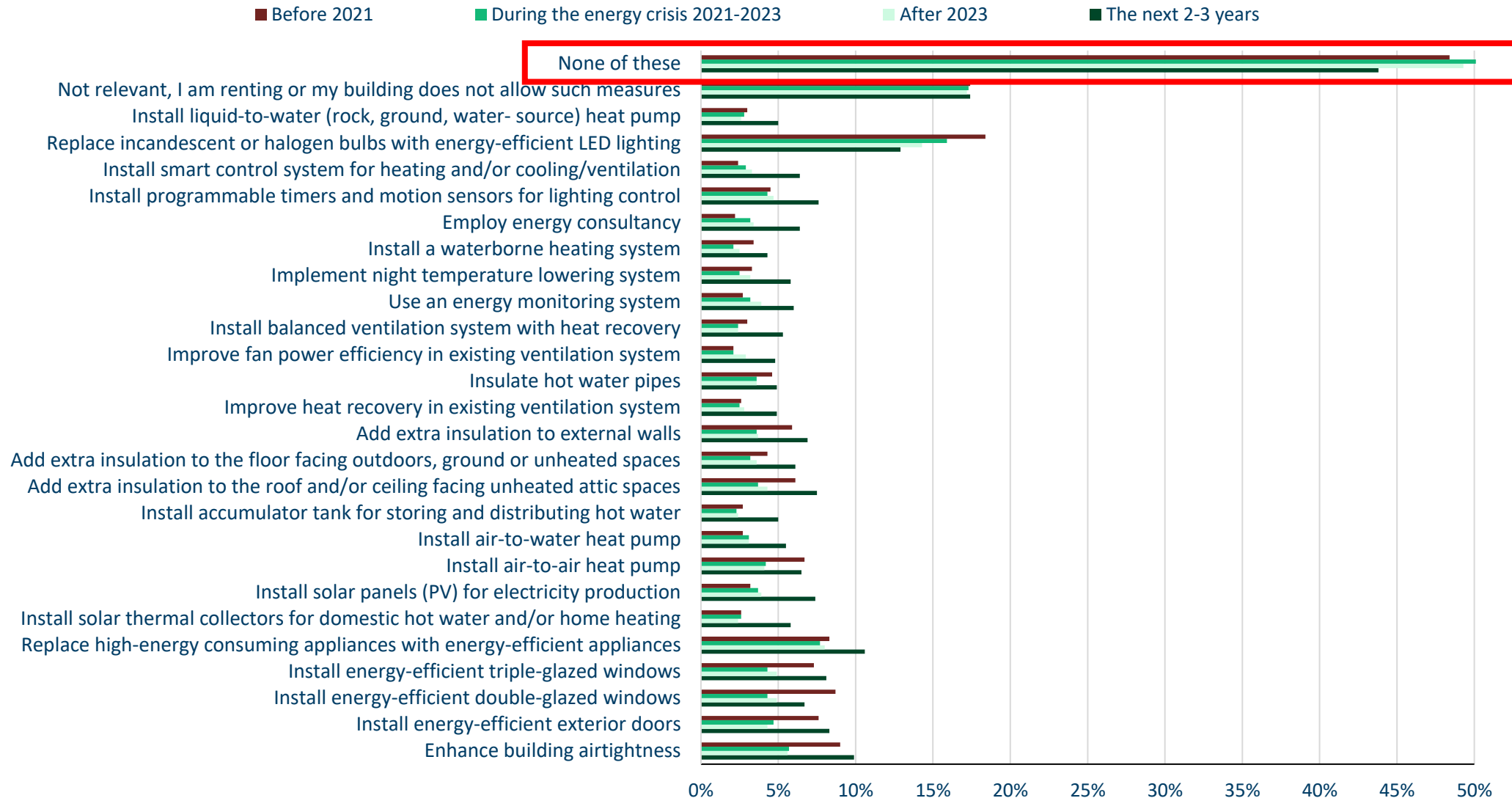
■ Before 2021 ■ During the energy crisis 2021-2023 ■ After 2023





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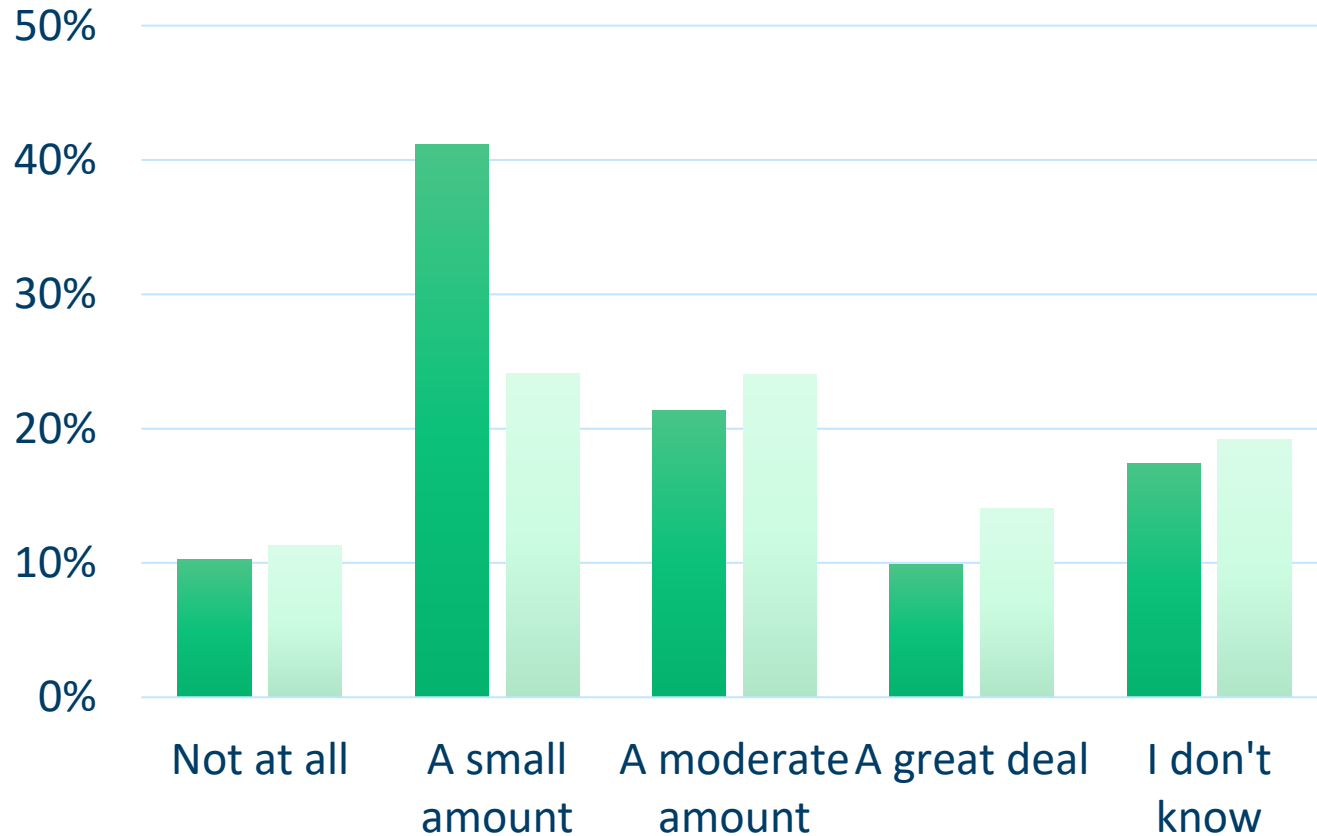
Energy saving measures across Nordic countries





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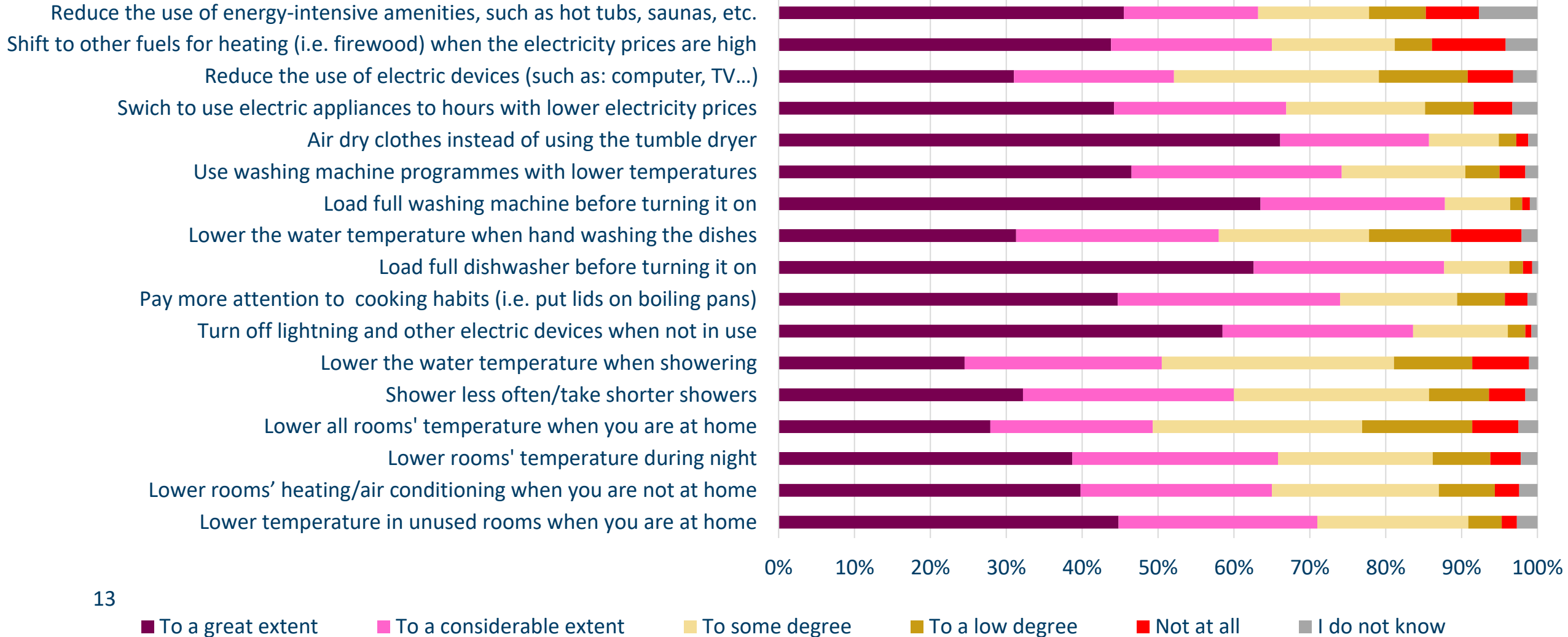
Perception of energy saving impact



- **Energy saving behaviour:** small perceived impact
- **Energy-saving measures:** small to moderate perceived impact
- **Many respondents uncertain on the impact!**



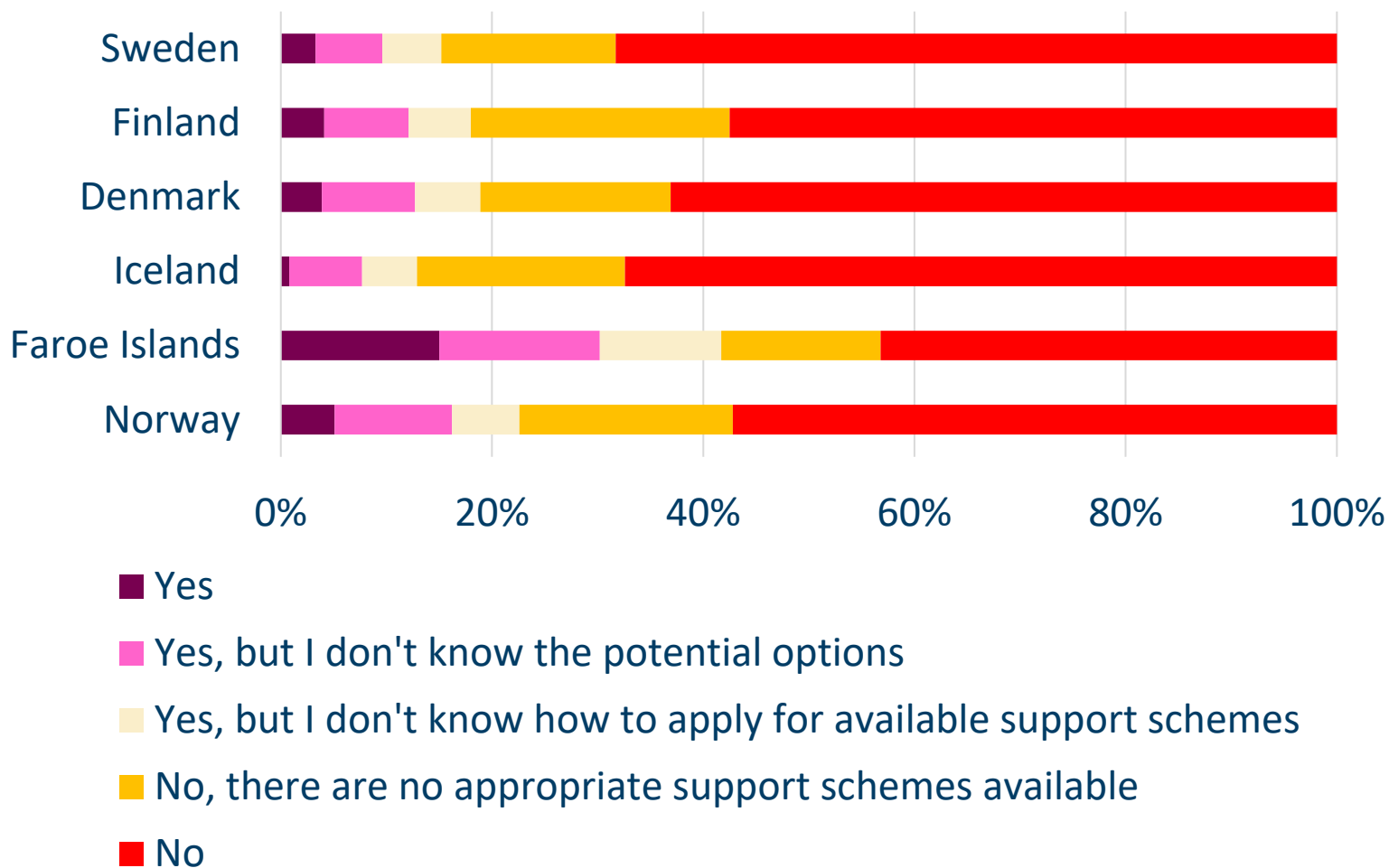
Willingness to sustain energy saving behaviours over time





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Intention to apply for support for energy efficiency measures



➤ Overall trend:

High % of respondents not willing to apply for any support scheme within energy efficiency.

➤ Common patterns:

Similar % of respondents either not knowing how to apply or lacking appropriate options.



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Key findings from the Stated Preference Method

- **Energy savings:** Key driver in all countries
- **Investment support:** Most influential in Norway and Sweden
- **Costs:** Statistically significant role in Iceland, Denmark, Finland, and Sweden
- **Bias:**
 - Finland: Preference for energy monitoring systems
 - Sweden: Preference for energy-efficient windows
- **Age Groups:**
 - **18–29:** Focus on costs and energy savings
 - **30–69:** Considers all attributes
 - **70+:** Decisions driven by pre-existing preferences
- **Education Levels:**
 - **Low:** Influenced by pre-existing preferences
 - **Middle & High:** Consider all attributes with statistical significance



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Conclusions

- **Price peaks trigger acute measures:** During the crisis, households adjusted quickly, like lowering indoor temperatures. Vulnerable groups in the Nordics need extra support during price spikes and cold weather.
- **Good habits persist:** Most respondents willing to continue energy-saving efforts, even when perceived with small or moderate impact.
- **No one-size-fits-all:** Responses vary by age/education. Growing interest in energy monitoring and expert advice for tailored solutions.
- **Subsidies may have limited impact:** Investment costs and energy savings outweigh subsidies. In Sweden/Finland, preferences for certain measures persist regardless of cost or subsidy.



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