



ODYSSEE-MURE

ODYSSEE-MURE fit4-55 (2022-2025)

Policy options for efficient domestic water heating in southern Europe

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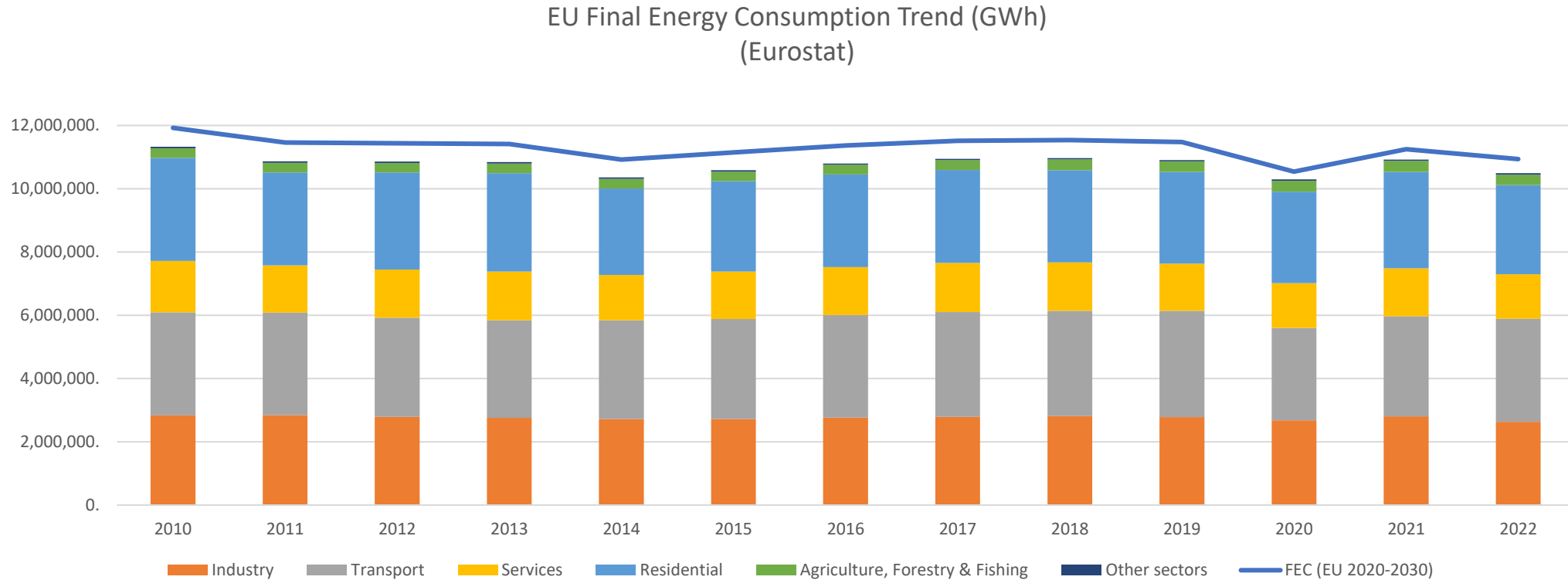


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Introduction

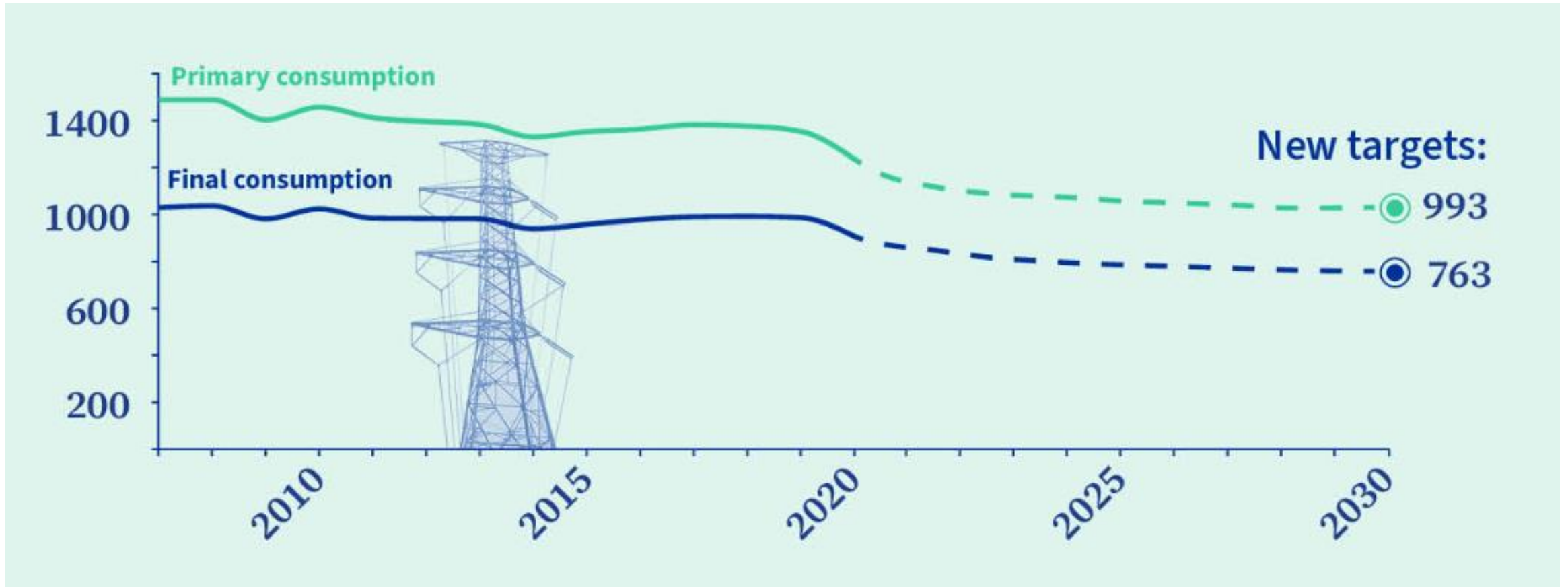
- Since the first publication of the Energy Efficiency Directive (EED), the CION has been pushing for a Greener EU
- The EED recast is no different, with the setting of the ambitious target to reduce the EU's FEC by around 11.7% by 2030.
- To help reach this target CION through EED also set a cumulative end-use energy savings target which Member States shall achieve.
- This can be achieved by implementing measures in different sectors with the Residential Sector being one such Sector.

Historic Final Energy Consumption



- Historic trend shows a net reduction in FEC in 2022 compared to 2010
- 2010 EU FEC was 11,923 TWh, whereas 2022 FEC was of 10,933 TWh

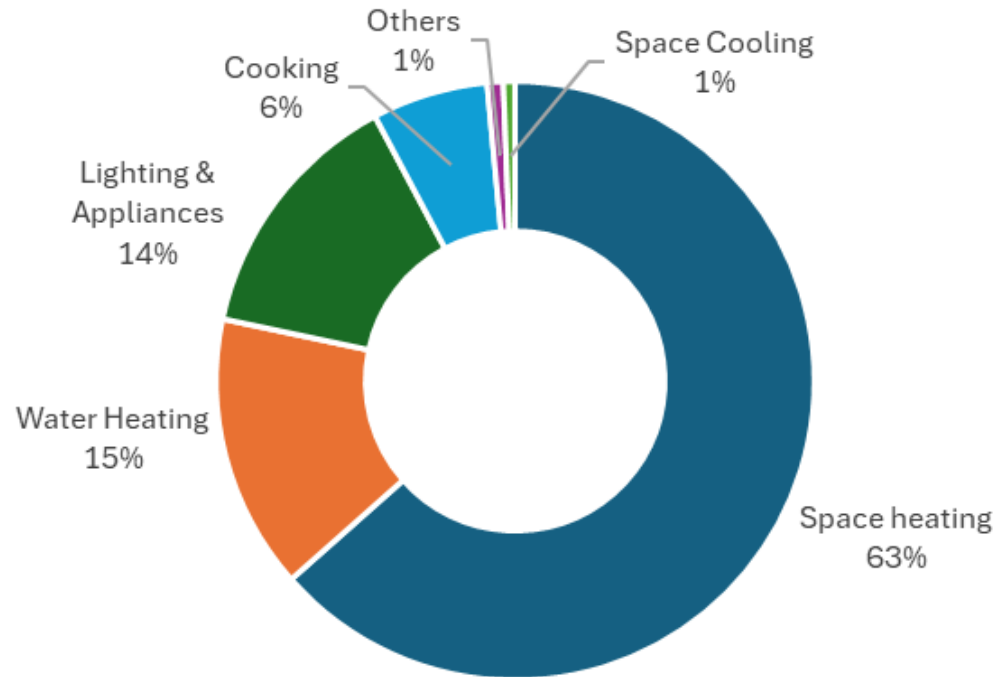
Introduction



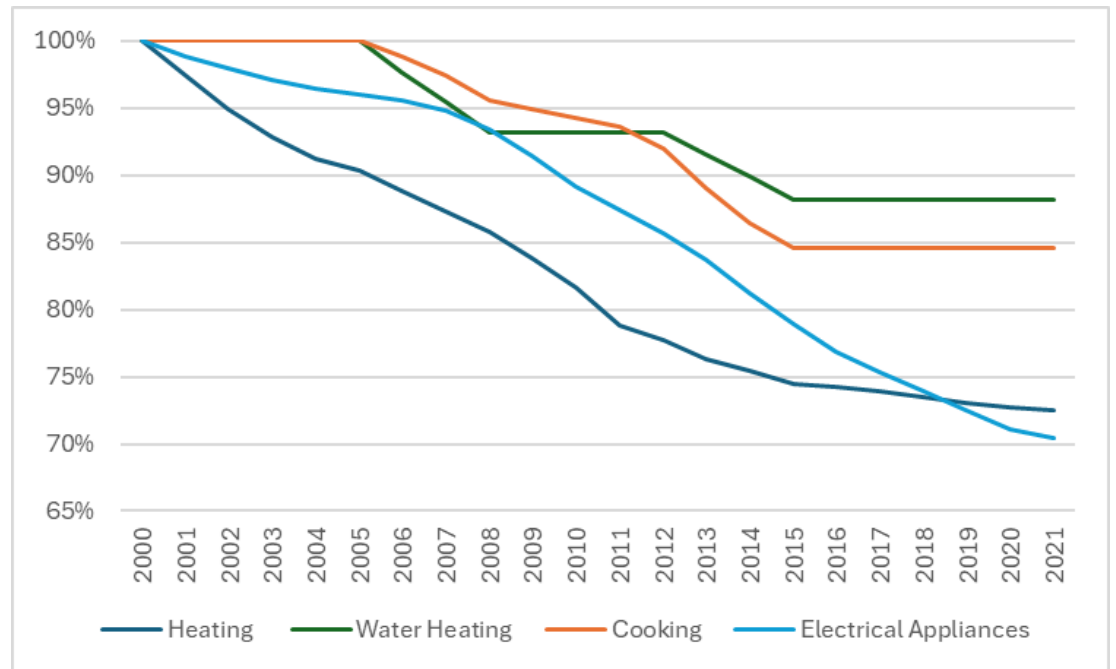
- 2010 EU FEC was of 1,025 Mtoe
- 2022 EU FEC was of 940 Mtoe

Residential Sector Consumption

2022 Share of energy Consumption in EU households by end-use (Eurostat)

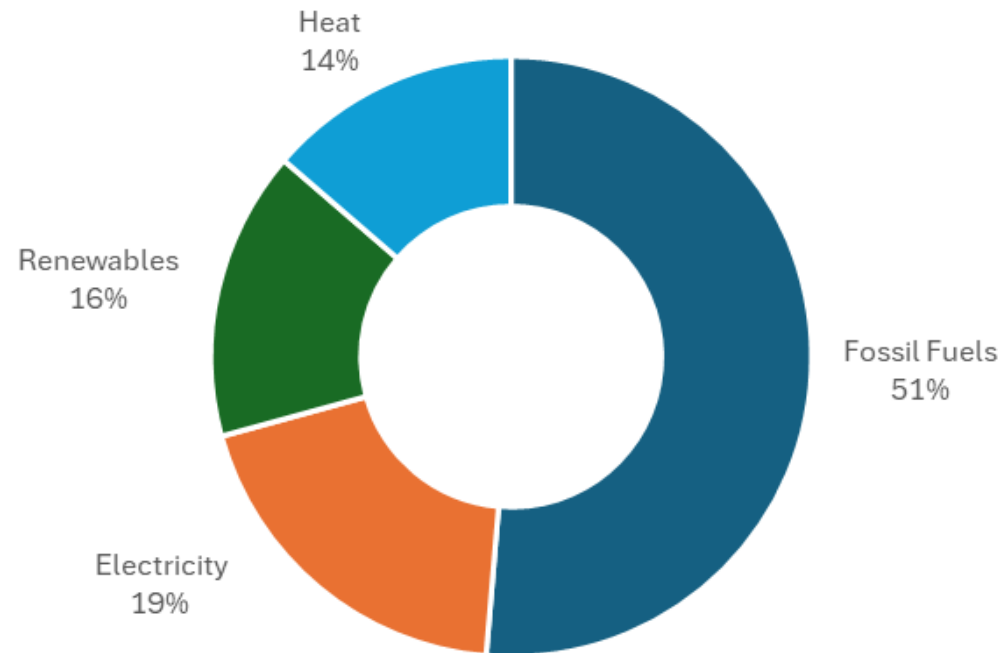


Residential energy efficiency progress in the EU by end-use (ODYSSEE-MURE)

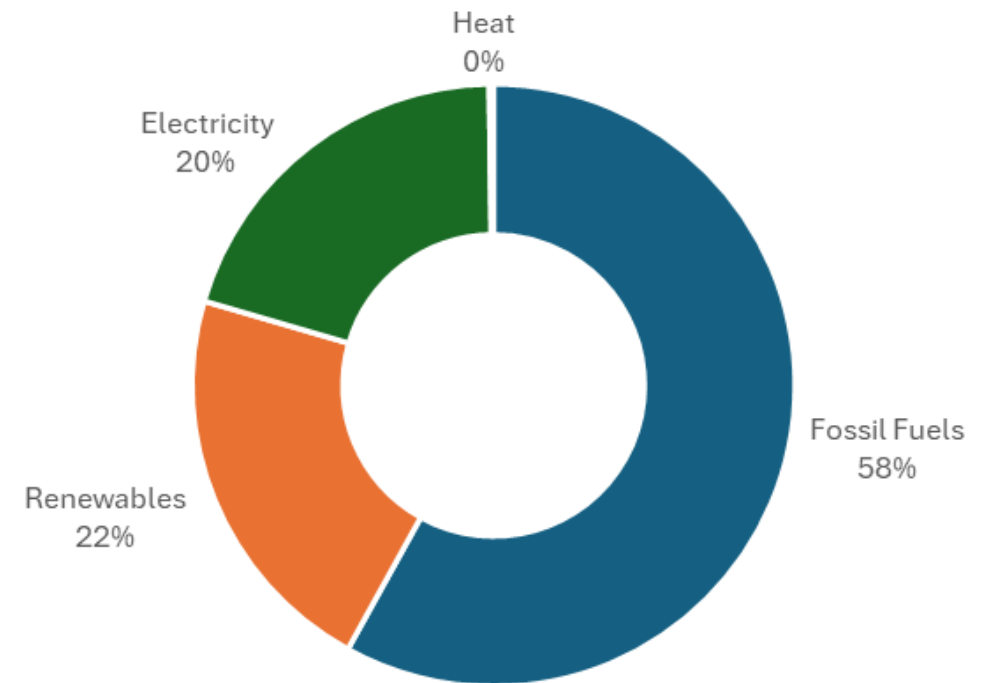


Water Heating by Energy Source

Energy consumption by source for domestic water heating in Europe (Yr 2022, Eurostat)



Energy consumption by source for domestic water heating in southern European countries (Yr 2022, Eurostat)



Questionnaire (Targeted at Southern EU MS)

Key Questions:

- What alternative domestic water heating technologies are suitable for water heating in southern European countries?
- What policies and measures were adopted to further encourage the adoption of more efficient and renewable domestic water heating technologies?
- Participating Member States: Portugal, Spain, Malta, Croatia, Greece and Cyprus

Key Question No. 1

- What alternative domestic water heating technologies are suitable for water heating in southern European countries?

Options available:

- Conventional Technologies
 - Electric water heaters
 - Fossil-fuel run boilers
- Alternative Technologies
 - Solar Water Heaters (SWH)
 - Heat Pump Water Heaters (HPWH)
- Novel Technologies?
 - System of photovoltaic (PV) panels and an electric water heater
- Other

Results

Country	Electric water heaters	Fossil-fuel run boilers	Solar Water Heaters	Heat Pump Water Heaters	System of photovoltaic (PV) panels and an electric water heater
Croatia	✓	✓	✓	✓	
Cyprus	✓	✓	✓	✓	✓
Greece	✓	✓	✓	✓	✓
Malta	✓	✓	✓	✓	
Portugal	✓	✓	✓	✓	
Spain	✓	✓	✓		

- Solar Water Heaters considered an adequate substitute by all participating countries.
- Heat Pump Water Heaters considered adequate substitutes by Portugal, Greece and Malta.

Alternative Technologies

Benefits and Challenges

- Solar Water Heaters

- Requires roof space (roughly 3m²)
- Ideal for Single-Family Dwellings
- Building height challenges
- Weather Dependency

- Heat Pump Water Heaters

- Ideal for Dwellings without roof access
- Requires bigger installation space than electric water heater
- Requires air circulation for optimal operation
- High Initial Capital Cost

Novel Technology

Benefits and Challenges

- System of photovoltaic (PV) panels and an electric water heater
 - Requires roof space
 - Ideal for Single-Family Dwellings and Multi-Family Dwellings
 - No Building height challenges
 - Weather Dependency

Key Question No. 2

- What policies and measures were adopted to further encourage the adoption of more efficient and renewable domestic water heating technologies?
- Different policy approaches have been adopted in southern European countries
 - Regulatory approach being taken by Portugal, Spain, Greece and Cyprus, with overarching policy measures
 - Non-regulatory approach taken by Malta and Croatia, using incentives to encourage households to choose more sustainable options

Policy Approaches Adopted

Greece

- Installation of both SWH and HPWH mandatory through Building Code Legislation
- New buildings and buildings undergoing major renovations

Spain

- Installation of SWH only mandatory through Building Code Legislation
- New buildings and buildings undergoing major renovations

Policy Approaches Adopted

Portugal

- Installation of SWH or another renewable energy technology that produces the same amount of renewable energy mandatory through Legislation
- New buildings and buildings undergoing major renovations or heating related renovations

Cyprus

- Installation of both SWH and HPWH was Mandatory until 2017
- New Building Code Regulation – introduction of renewable energy requirement based on primary energy consumption of new buildings

Policy Approaches Adopted

Malta & Croatia

- Incentives to encourage the voluntary installation of renewable or more energy efficient equipment
- Do not target specific niches within the Residential Sector

Policy Approaches Summary

Country	Regulatory Approach?	Mandatory?	Technology Targeted	Medium Used	Target Audience
Croatia	✗	✗	SWH + HPWH	Incentives	Residential Sector
Cyprus	✓	✗	SWH + HPWH	Building Code Regulation	New Buildings
Greece	✓	✓	SWH + HPWH	Building Code Regulation	New Buildings + Major Renovations
Malta	✗	✗	SWH + HPWH	Incentives	Residential Sector
Portugal	✓	✓	SWH or any other technology with equal renewable energy output	Legislation	New Buildings + Major Renovations + Heating Specific Renovations
Spain	✓	✓	SWH	Building Code Regulation	New Buildings + Major Renovations

Policy Approaches Adopted

- Expressed a positive experience with the policies adopted
- Different rules and requirements between participating countries
- Majority of countries quantifying and counting energy savings towards Energy Efficiency Directive Article 8 target
- Various metrics used by participating countries

Conclusion

- From Key Question 1:
 - Introduction of System of photovoltaic (PV) panels and an electric water heater as a suitable novel alternative technology
- From Key Question 2:
 - Varying approaches adopted with positive experiences
 - Despite advancements, more efforts are needed to decarbonize the domestic water heating sector.
 - Southern European countries potential to further leverage their favourable climatic conditions through regulatory or market-based incentives.



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Thank You



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