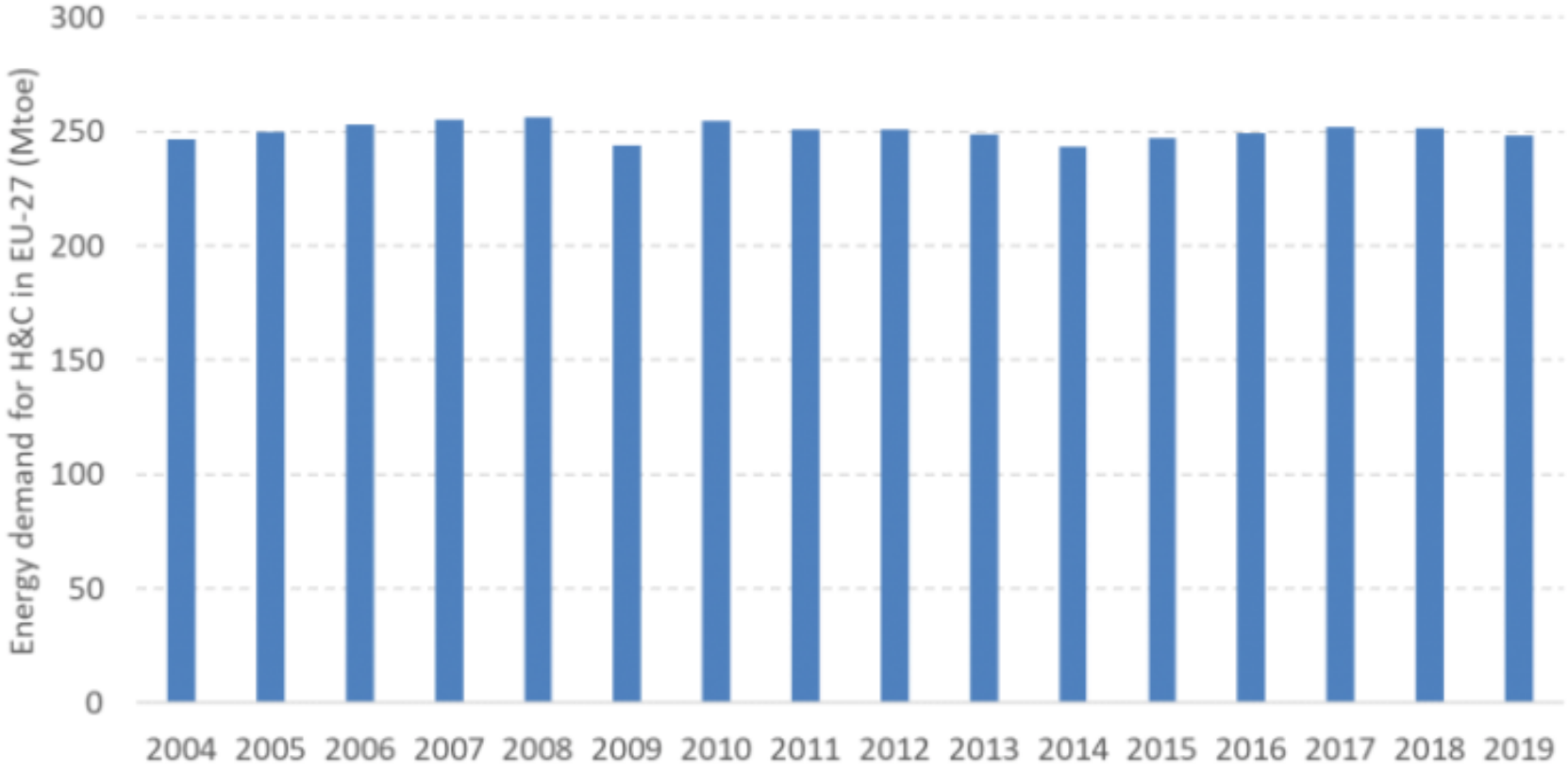
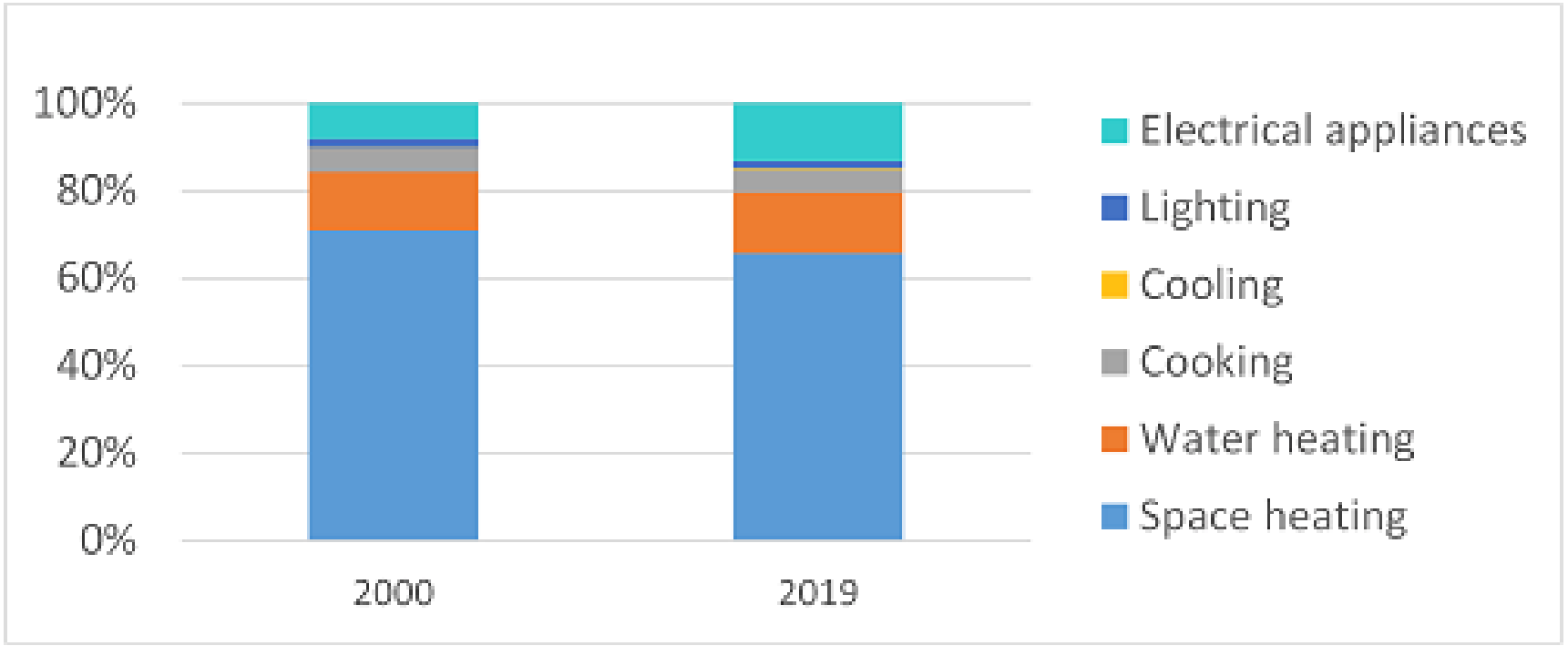
RES demand H&C



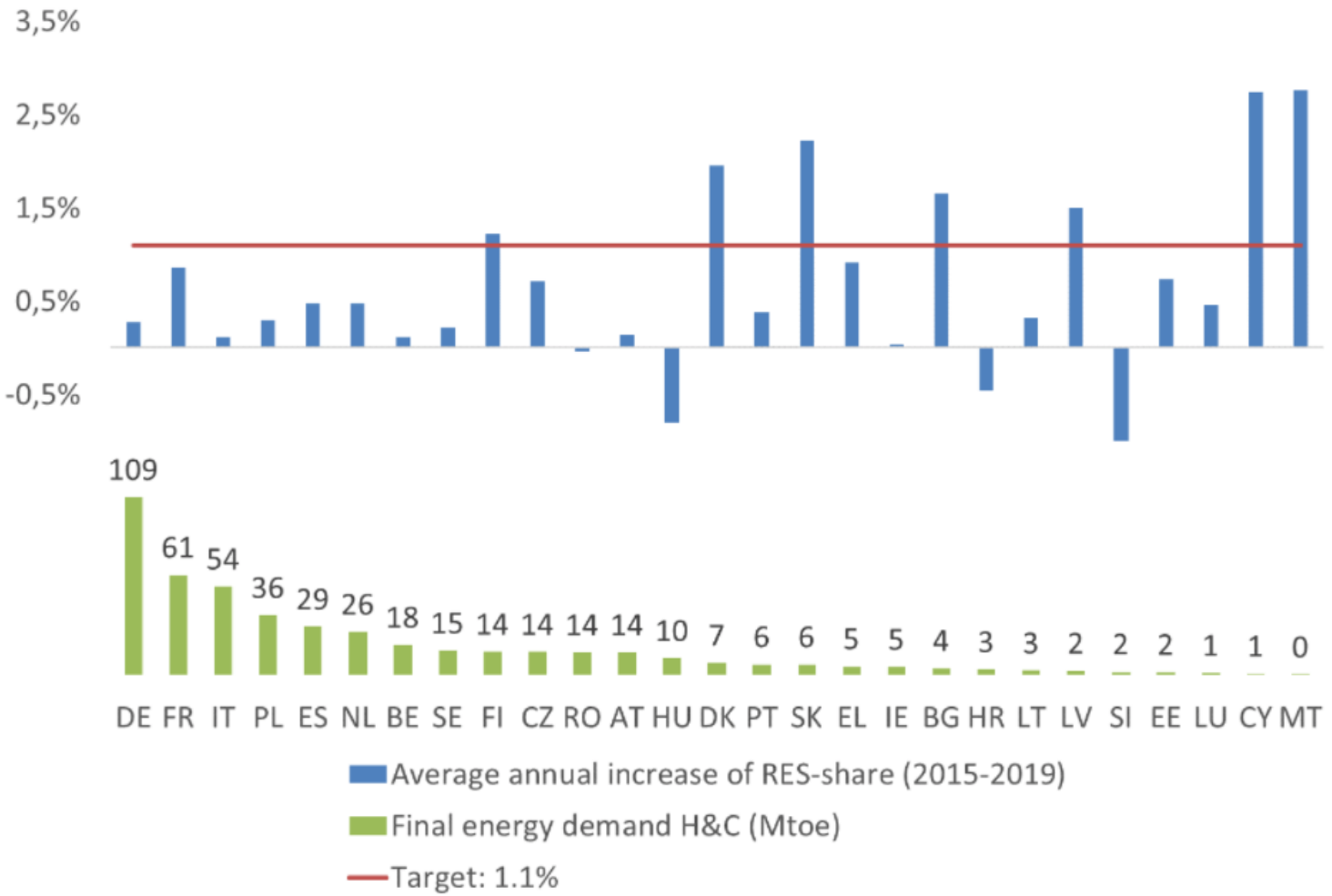
Source: Sibylle Braungardt, Oko Institut, https://blog.oeko.de/is-the-eu-heating-sector-fit-for-55-ist-der-waermesektor-der-eu-fit-for-55-eng-deu/

80% of energy demand in buildings is for space and water heating



Source: Odyssee

1.1% annual increase in RES in buildings



Source: Sibylle Braungardt, Oko Institut, https://blog.oeko.de/is-the-eu-heating-sector-fit-for-55-ist-der-waermesektor-der-eu-fit-for-55-eng-deu/

Risk of increase of use of unsustainable biomass

RAP®

JUNE 2021

REGULATORY ASSISTANCE PROJECT

Making renewable heating 'Fit for 55'

Samuel Thomas, Dominic Scott and Jan Rosenow[1]

Summary

In this paper, we propose four design features for a mandatory renewable heating and cooling (RES-H) target:[2]

1. Caps on the use of unsustainable bioenergy, potentially set at zero.
2. Allowing renewable electricity to count towards the target.
3. A multiplier for ambient heat (including heat pumps — ground, air, water — geothermal and solar thermal).
4. Reporting requirements to ensure the Efficiency First principle is applied.

The European Union has committed to reduce its carbon emissions by 55% net by 2030 compared with 1990 levels. The European Commission (EC) expects the 2020s to be the decade of rapid buildings sector decarbonisation. Building fabric renovation and heating system replacements are both projected to increase the share of renewable heating and cooling in all heating and cooling energy. The EC expects a major driver of change will be the replacement of coal, fossil gas and oil heating systems with heat pumps, which use electricity to transfer ambient heat to buildings. Revisions to the Renewable Energy Directive (RED) need to aim to help achieve this goal. A more ambitious and mandatory RES-H target would support this effort, but only if it does not lead to increases in the consumption of unsustainable bioenergy that warms the climate in the next decades and if it is aligned with the rest of the Fit for 55 package.

Affordability of different options

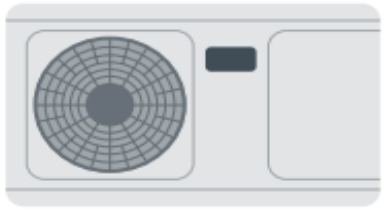
In 2050, it will be 55% cheaper for a single family home in the EU to use renewable electricity in heat pumps vs. renewable electrolysis hydrogen in a boiler.

December, 2050

Single-family household
XXXXXX XXX
XXXXX EU Member State

Annual Energy Cost: Heat Pump

Heat Pump Installation (Annuitized)	€225
Maintenance	€12
Cost of Renewable Electricity (Wind and Solar Energy)	€342
Total	**€579**



December, 2050

Single-family household
XXXXXXX XXX
XXXXX EU Member State

Annual Energy Cost: Hydrogen Boiler

Boiler Installation (Annuitized)	€49
Maintenance	€98
Cost of Renewable Electrolysis Hydrogen (from Wind and Solar Energy)	€1124
Total	**€1271**

Source: C. Baldino et.al. (2021), Hydrogen for heating. Decarbonisation options for households in the EU in 2050. The ICCT.

Recommendations

- Target for renewable energy in new buildings (100%). Target for RES in existing buildings when boiler exchange / major renovation (80%) & cap on biomass *EPBD, REDII*
- Minimum Energy Performance standards for existing building to bring down energy demand *EPBD*
- Immediate ban on fossil fuel heating subsidies (except for temporary compensation for low income end users), a taxation system that does not disincentive clean heating *Energy Taxation directive, national legislation*
- An end date for the sale of new fossil fuel heating boilers *Ecodesign and Energy Labelling*