



2050

Heat Roadmap Europe

A low-carbon heating and cooling strategy

Map of the heat synergy regions and the cost to expand district heating and cooling in all 14 MS

Accessing the outputs of D2.2



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 695989.



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1. Introduction

In Europe, there is a clear long-term objective to decarbonise the energy system, but it is currently unclear how this will be achieved in the heating and cooling sector. The Heat Roadmap Europe (HRE) project will enable new policies and prepare the ground for new investments by creating more certainty in relation to the changes that are required.

The overall objective in the HRE projects is to provide new capacity and skills for lead-users in the heating and cooling sector, including policymakers, industry, and researchers at local, national, and EU level, by developing the data, tools, methodologies, and results necessary to quantify the impact of implementing more energy efficiency measures on both the demand and supply side of the sector.

The aim of WP2 is to map the scale and location of the heating and cooling demands for each of the 14 MSs in the EU28, along with the potential sources of surplus and renewable heating and cooling that could be used to supply these demands. The objective of the maps of the heat synergy regions is to identify regions with a high synergy between excess heat and heat demand as well as identifying regional heat balances and pinpointing regions with a high excess heat ratio in the 14 MS that are addressed in HRE¹. Further, the objective of the maps of the cost of expanding district heating and cooling provides an insight into the capital cost of implementing district heating and cooling in the 14 MS.

The excess heat ratio is calculated for each NUTS3 region. It is a ratio of the theoretical excess heat volume per facility/activity summarized for all facilities/activities and the total residential and service sector heat demand for space heating and domestic hot water in a given NUTS3 region.

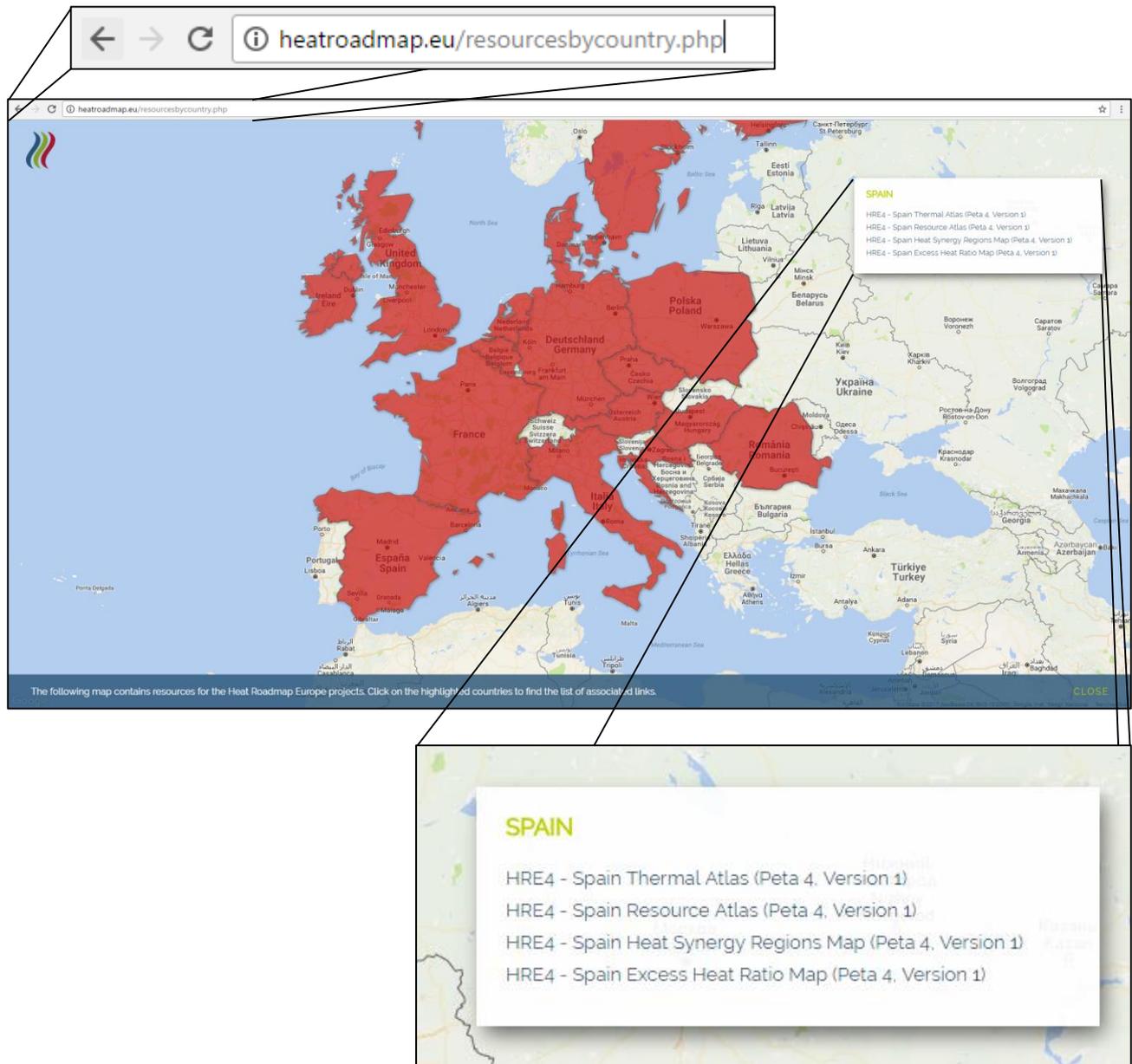
The maps produced in D2.2. the second step in the work in WP2 and is a continuation of the work done in D2.1. This work is a prerequisite for the work in later tasks and WPs, most notably WP5 and WP6. As the project progresses, the .pdf maps will be integrated and elaborated on as the project will provide feedback loops. The methodologies and assumptions underpinning the maps of the heat synergy regions will be described in full in D2.3.

The maps developed in this study will be maintained on the HRE website until at least 2021, although from autumn 2017 onwards the data and maps will be displayed on a different (integrated and interactive) interface than the one currently described in this document.

¹ The 14 countries in HRE are Austria (AT), Belgium (BE), Czech Republic (CZ), Germany (DE), Spain (ES), Finland (FI), France (FR), Hungary (HU), Italy (IT), Netherlands (NL), Poland (PL), Romania (RO), Sweden (SE), and the United Kingdom (UK).

2. Accessing Peta4α

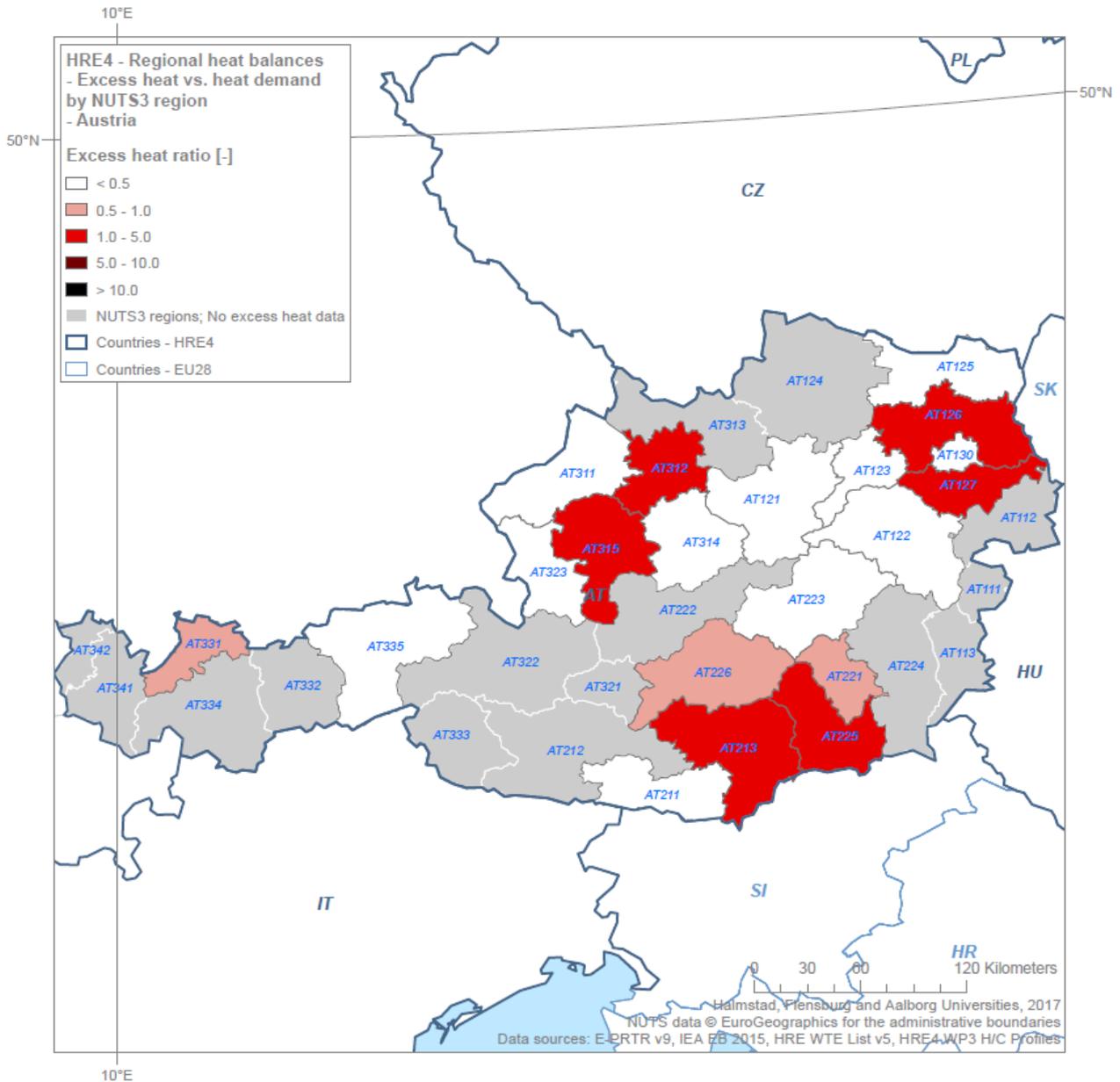
Due to the limit on resolution of the maps in this document files containing the maps are currently hosted by the HRE website, where they are available for download in .pdf form. To access these go to <http://heatroadmap.eu/resourcesbycountry.php> and select the country of the desired map. Select "HRE4 – *country* Excess Heat Ratio Map (Peta 4, Version 1)" or "HRE - *country* Heat Synergy Regions Map (Peta 4, Version 1)" to download the .pdf file (see figure 1).



3. Excess heat ratio maps

3.1. Austria (AT)

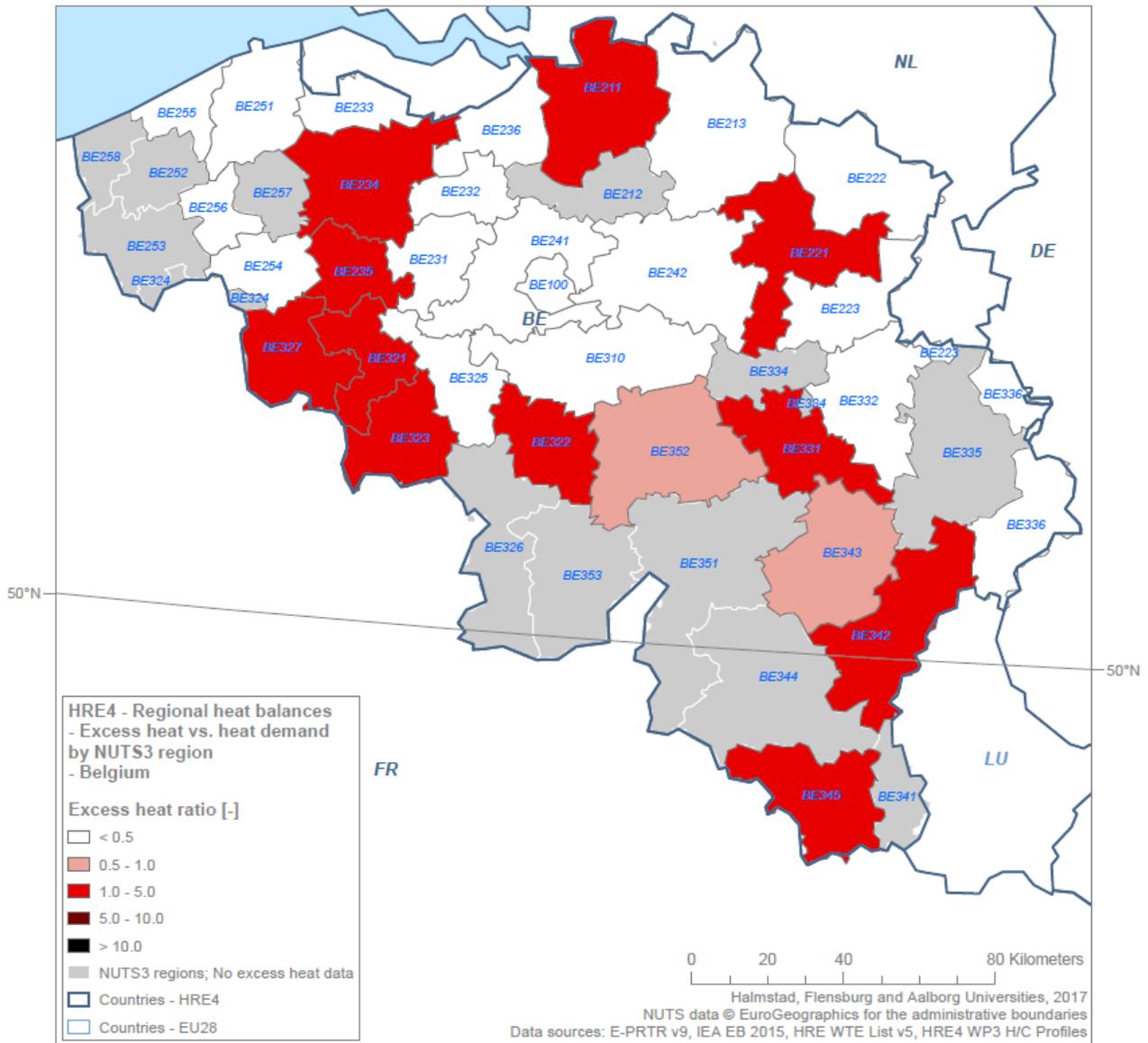
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3.2. Belgium (BE)



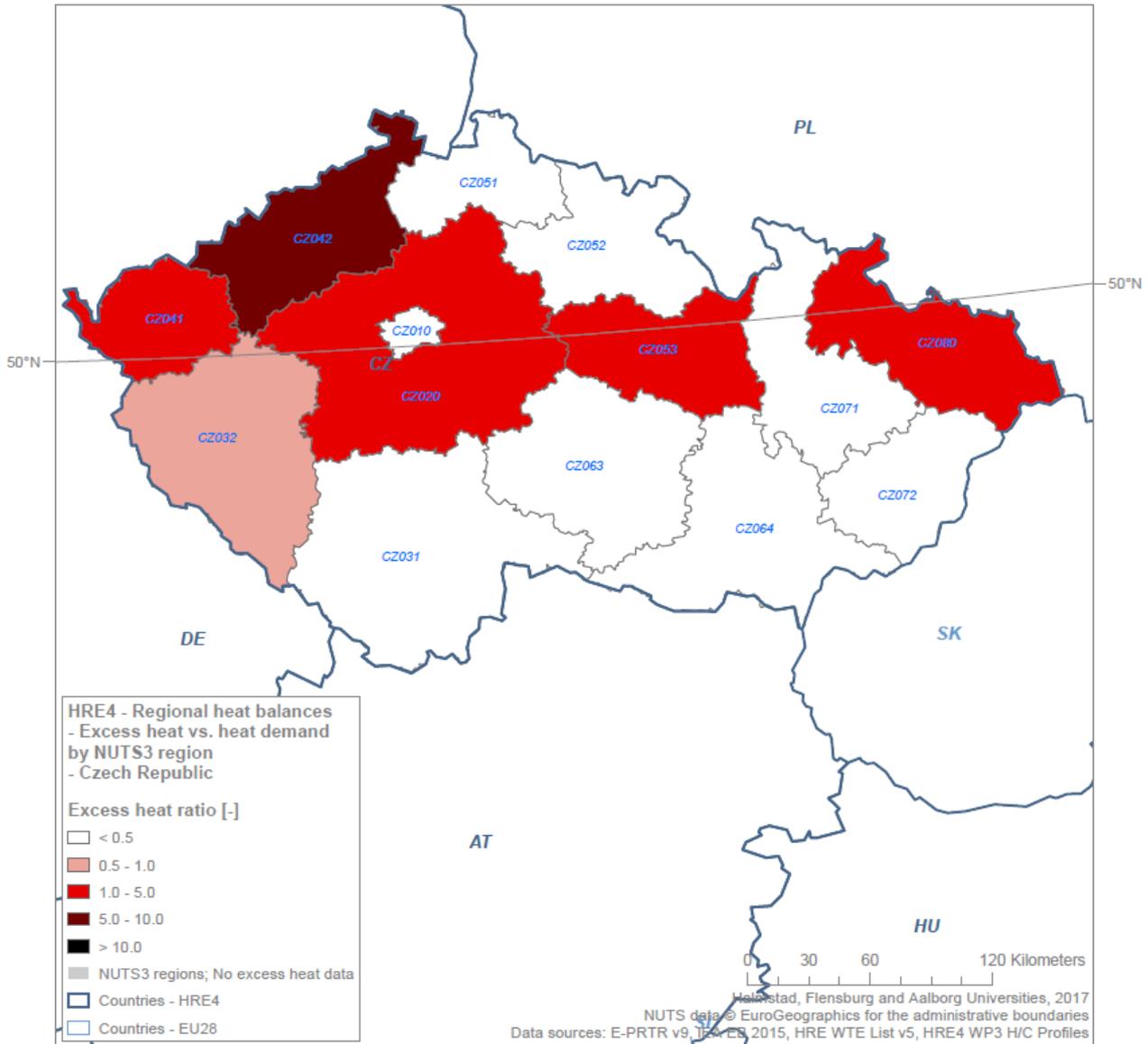
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3.3. Czech Republic



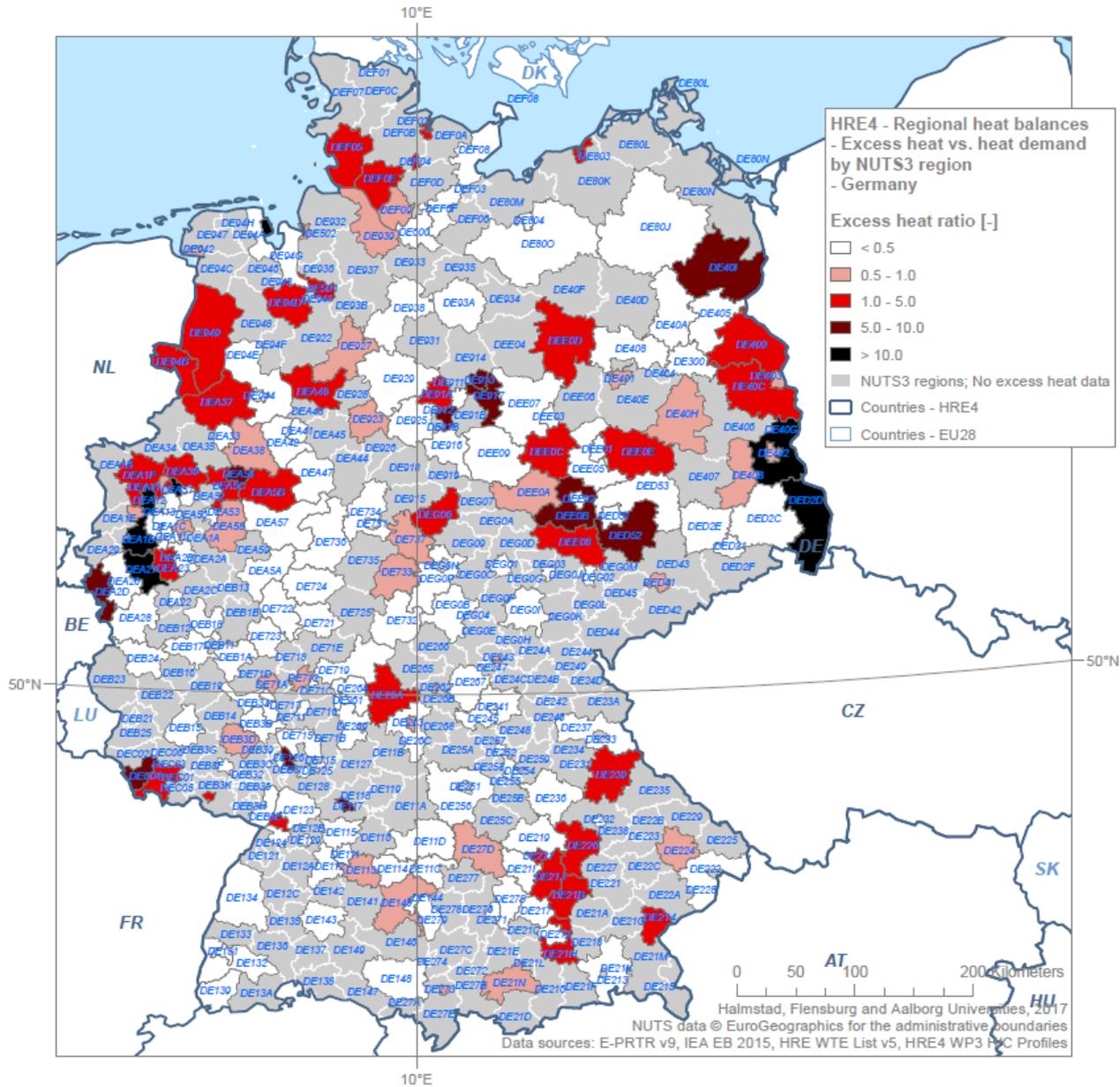
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3.4. Germany (DE)



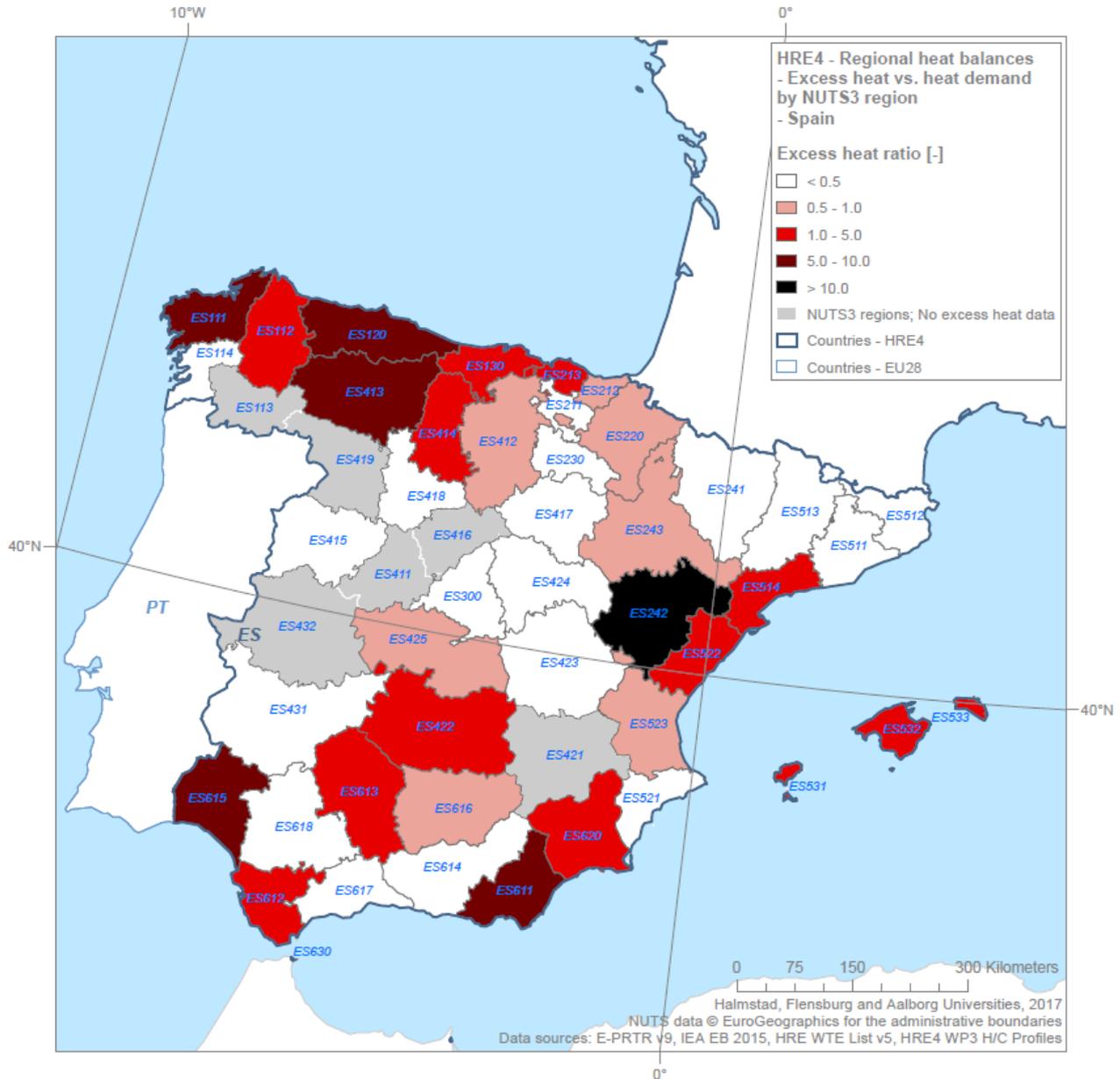
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3.5. Spain (ES)

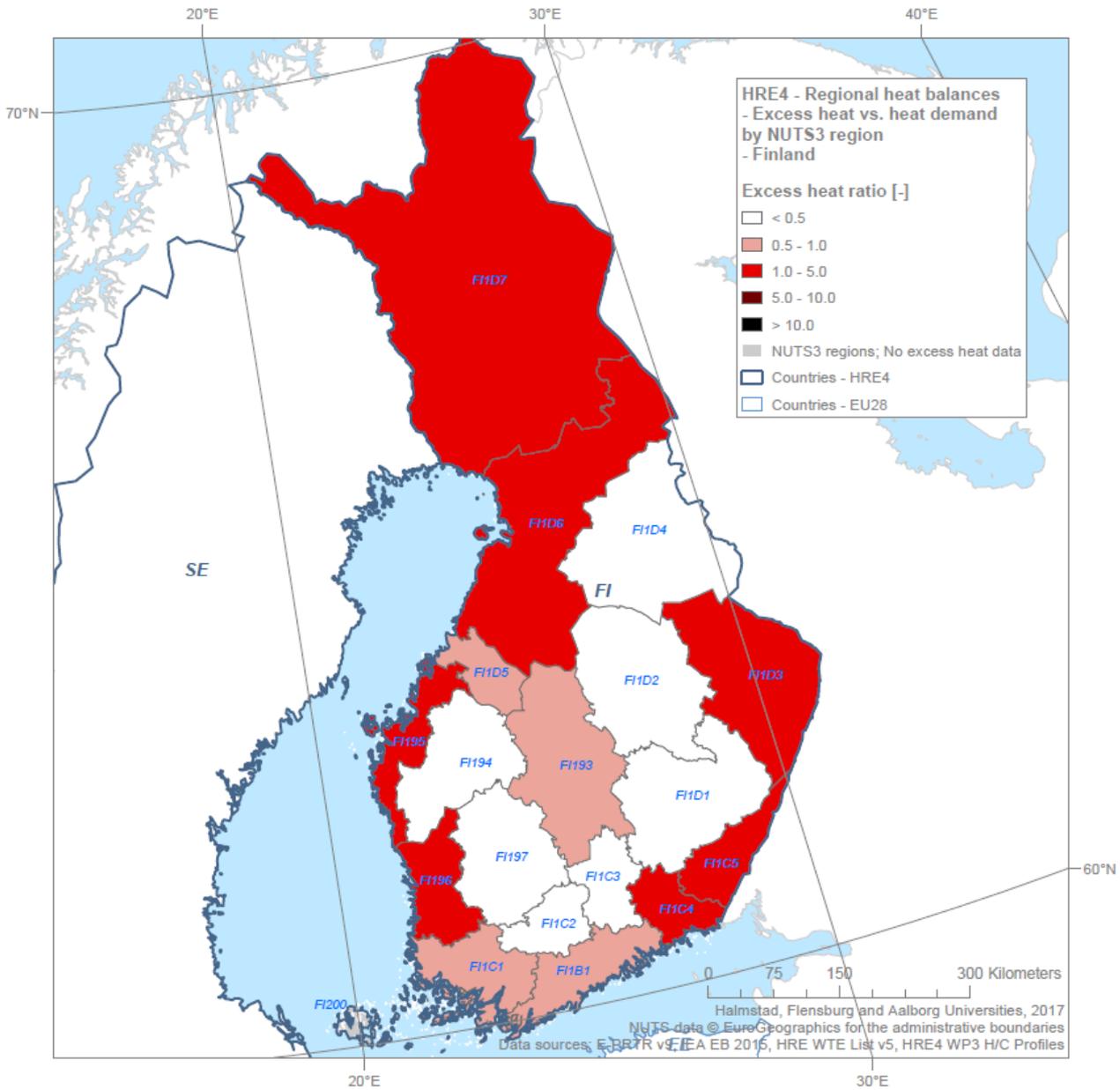


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3.6. Finland (FI)

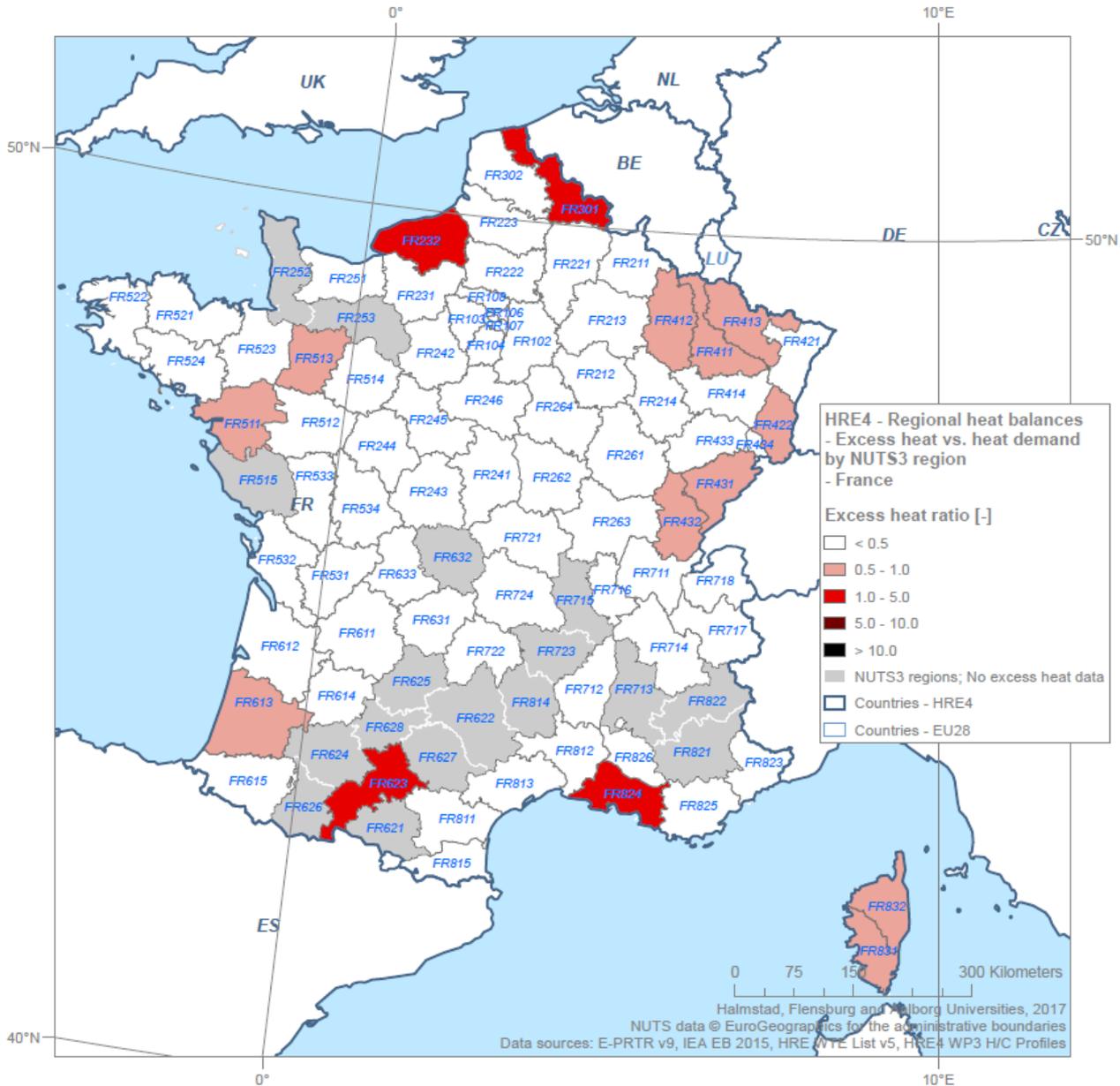
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3.7. France (FR)

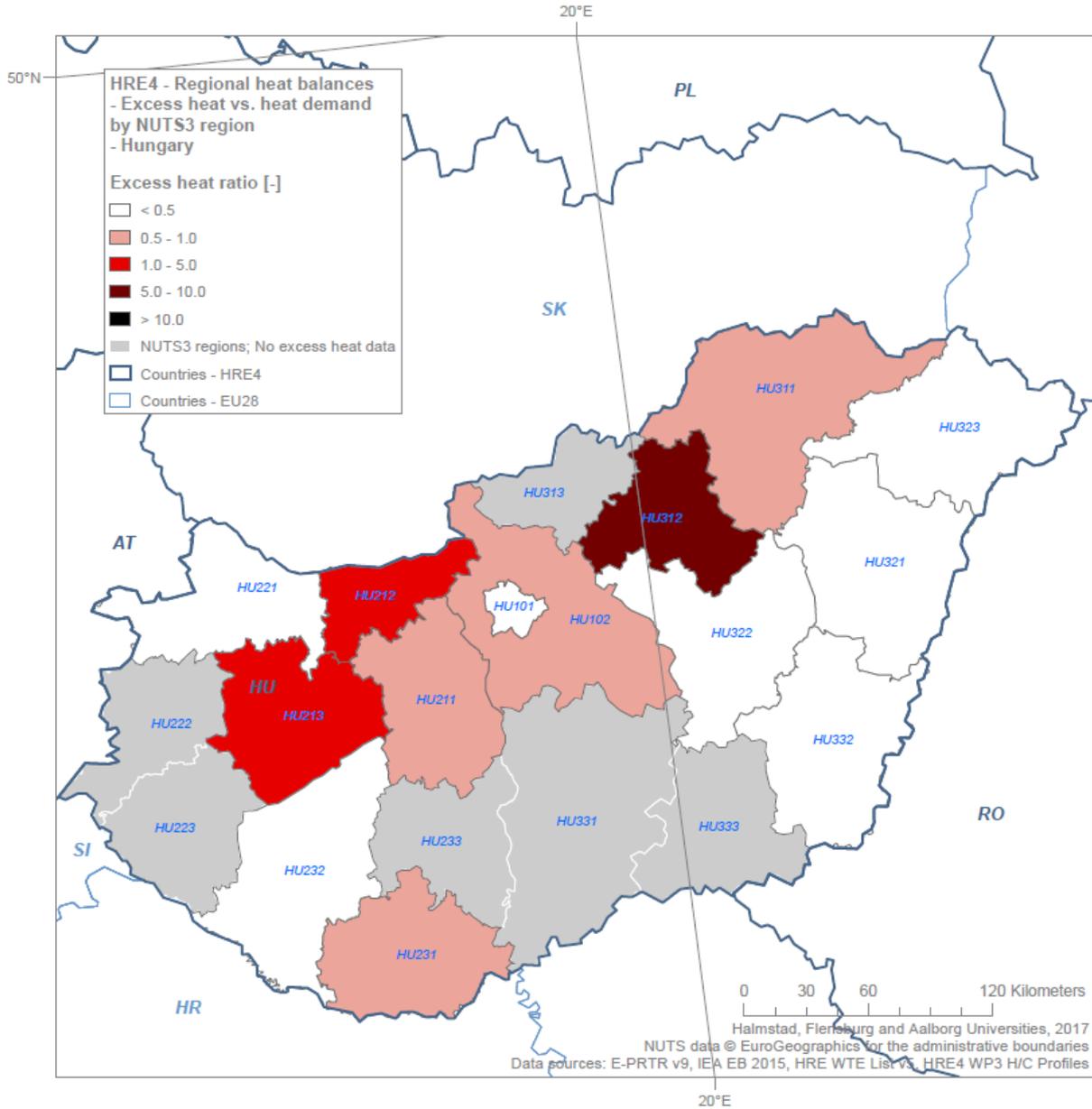


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3.8. Hungary (HU)

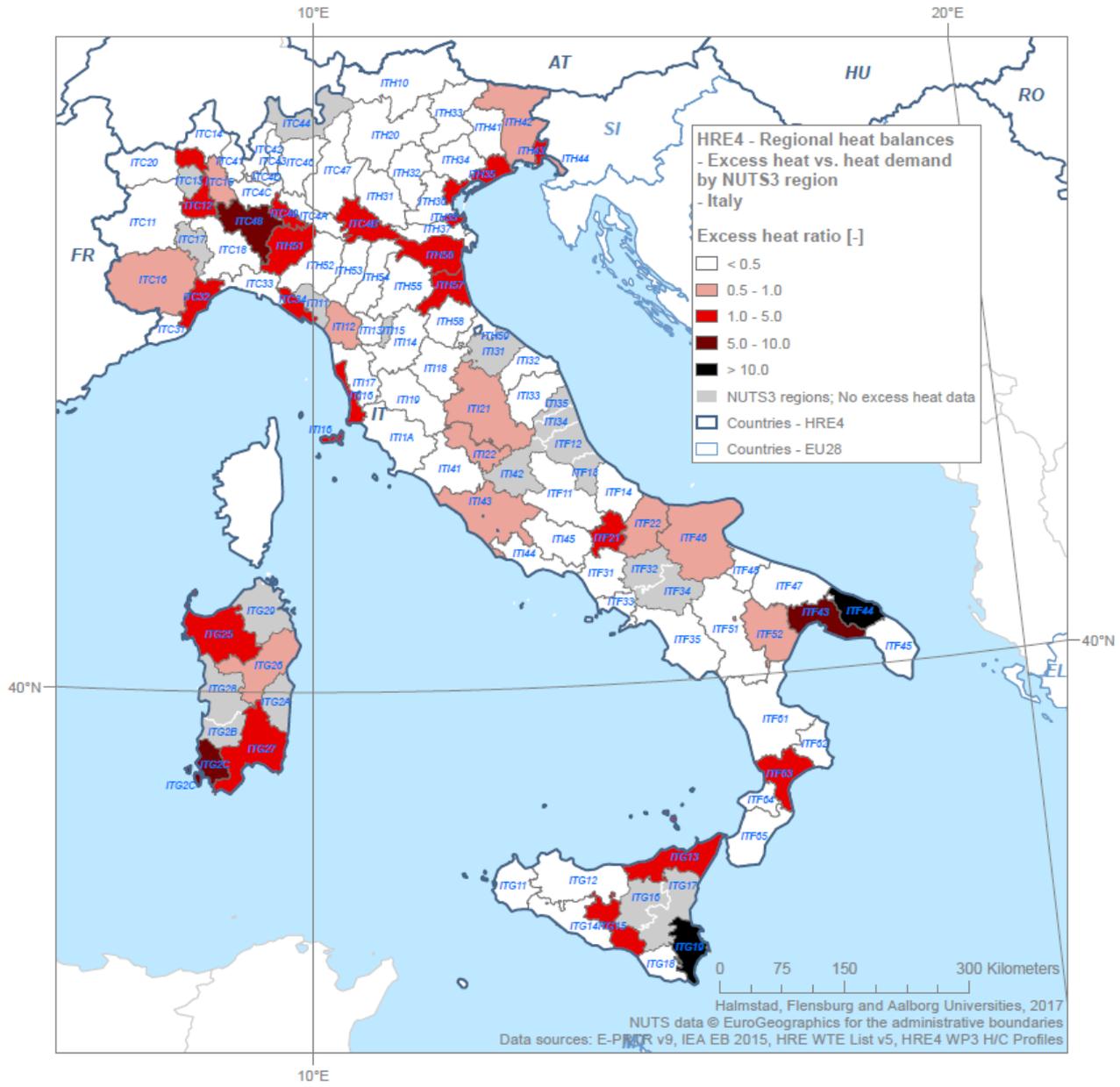
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3.9. Italy (IT)

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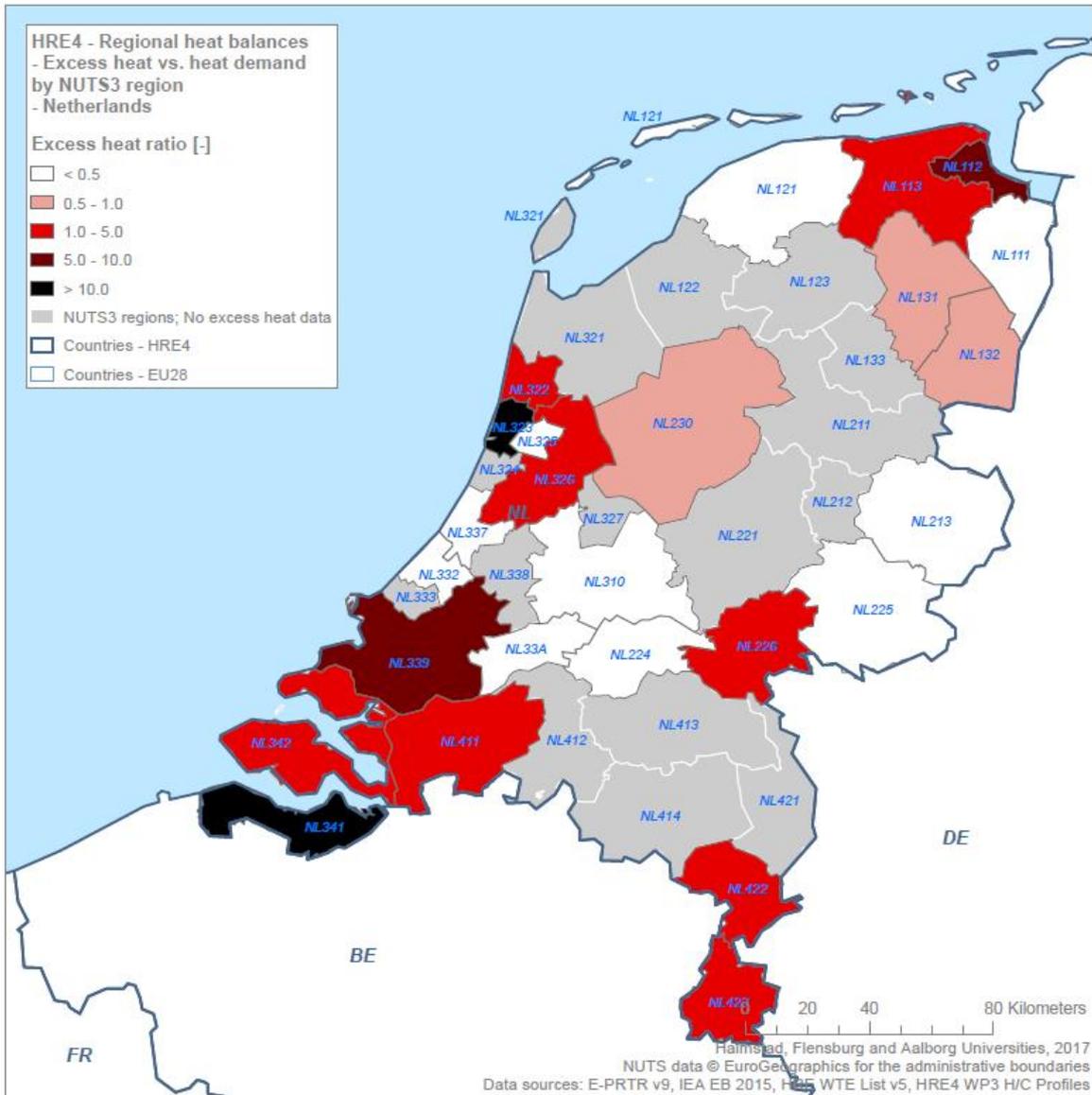
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A low-carbon heating and cooling strategy



3.10. Netherlands (NL)



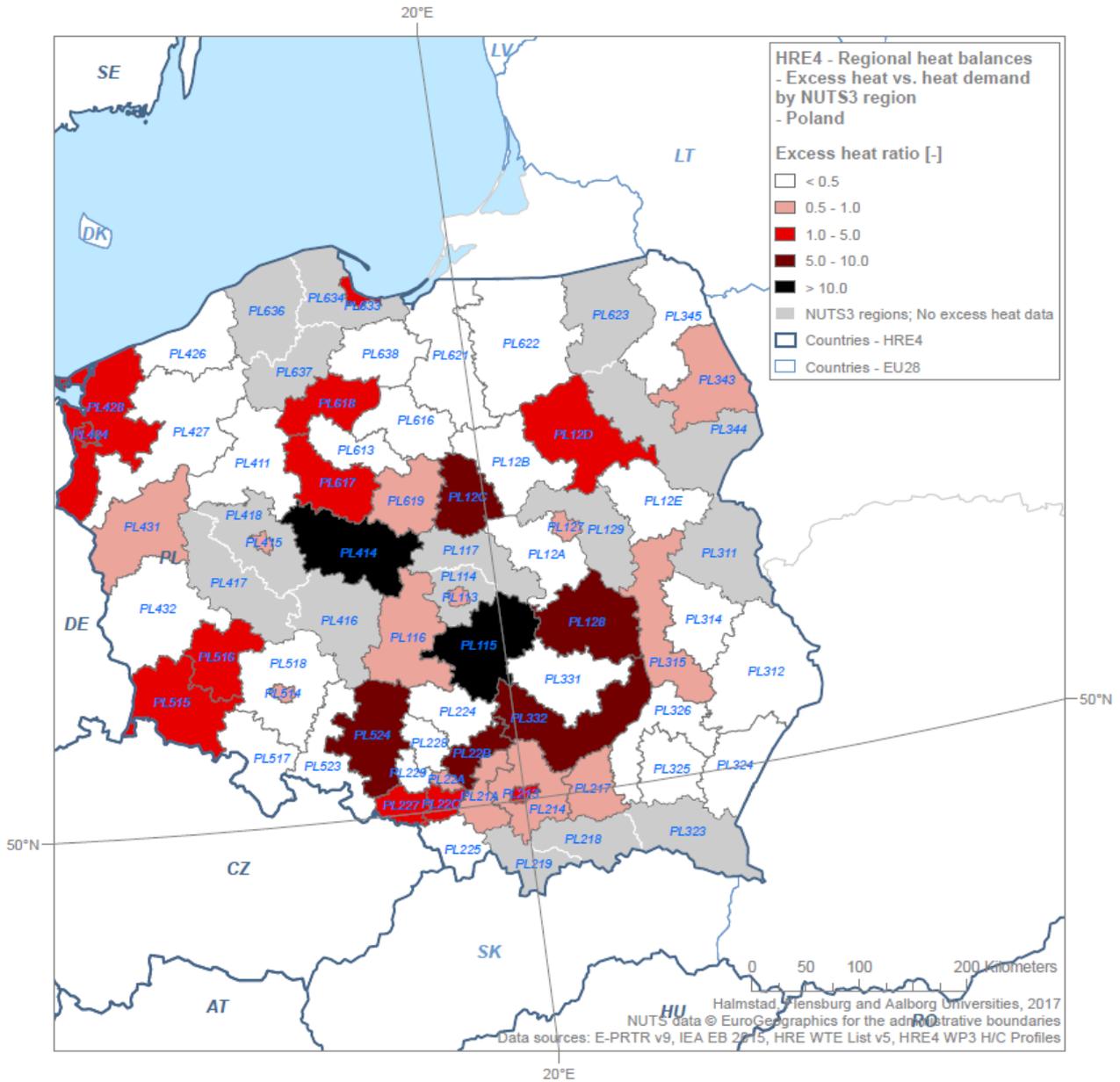
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3.11. Poland (PL)



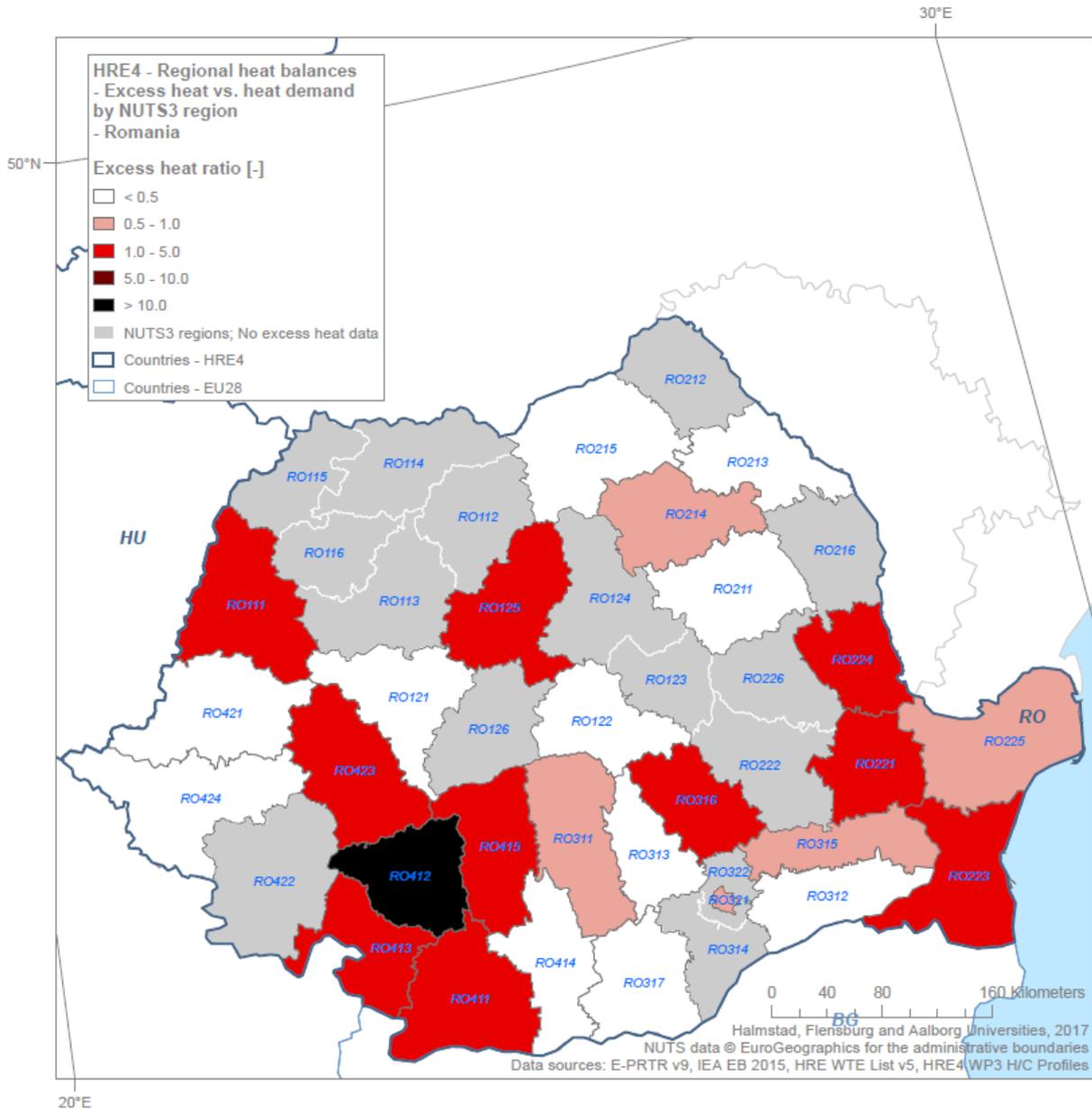
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3.12. Romania (RO)



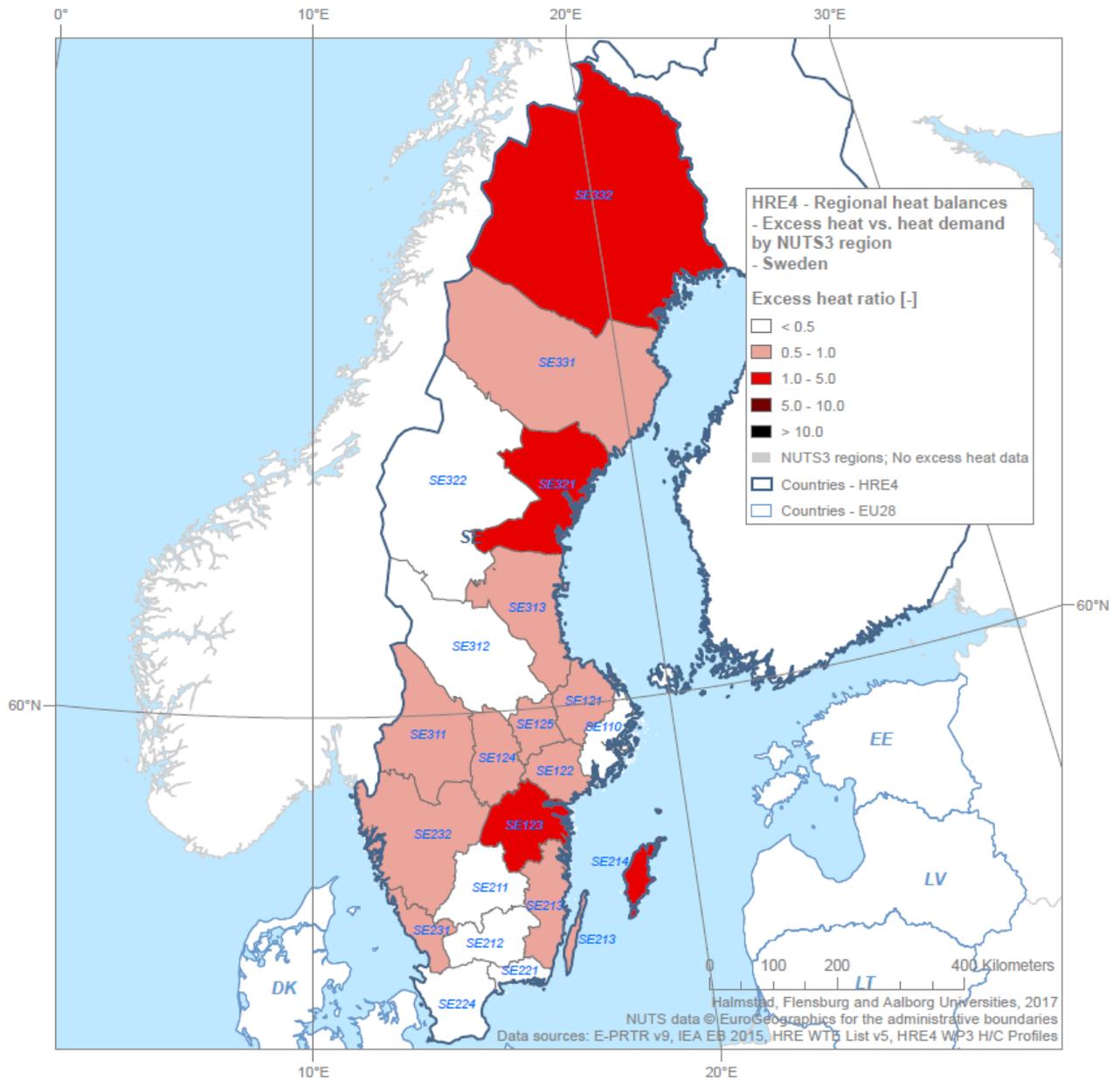
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3.13. Sweden (SE)

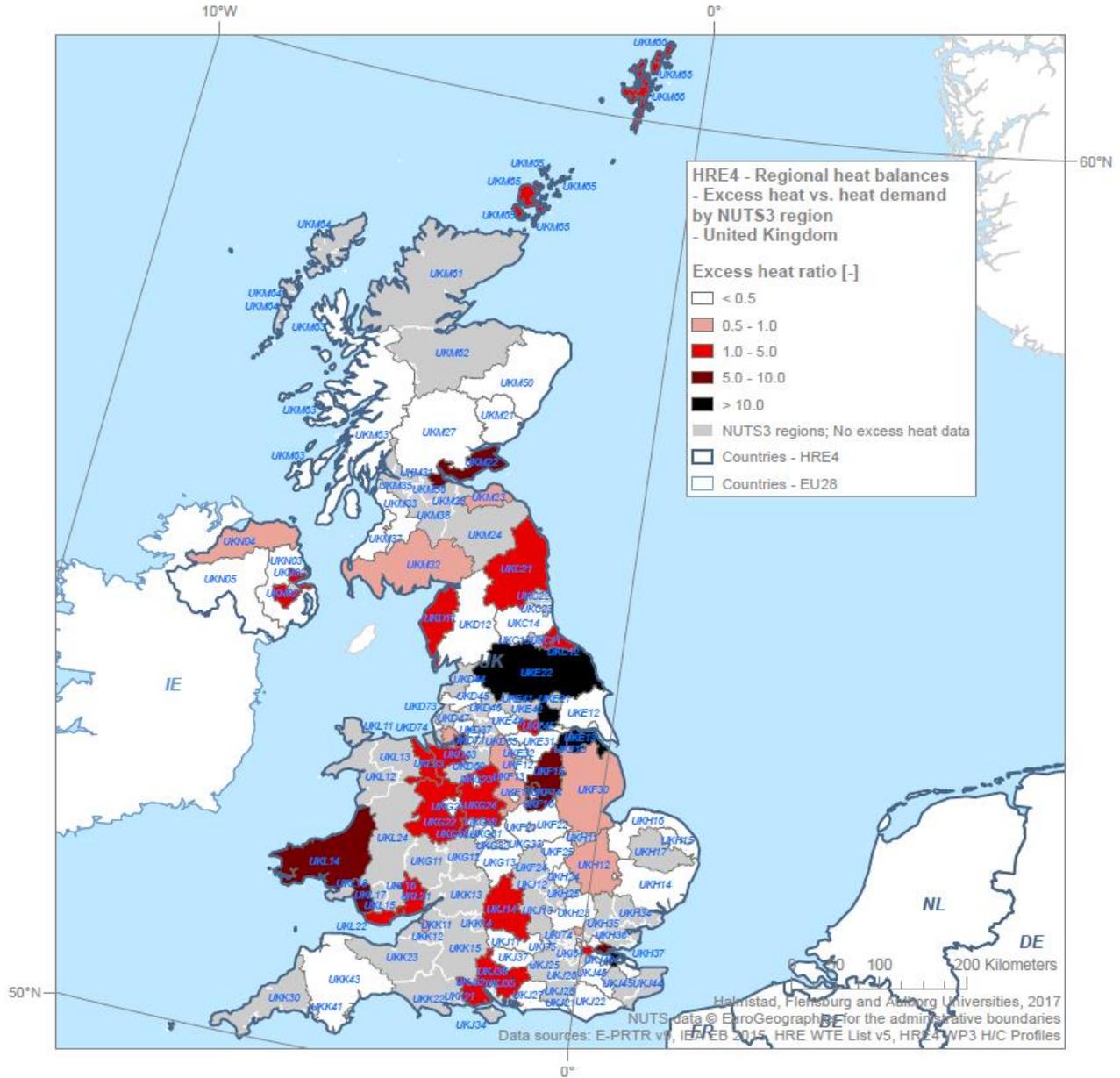


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3.14. United Kingdom (UK)

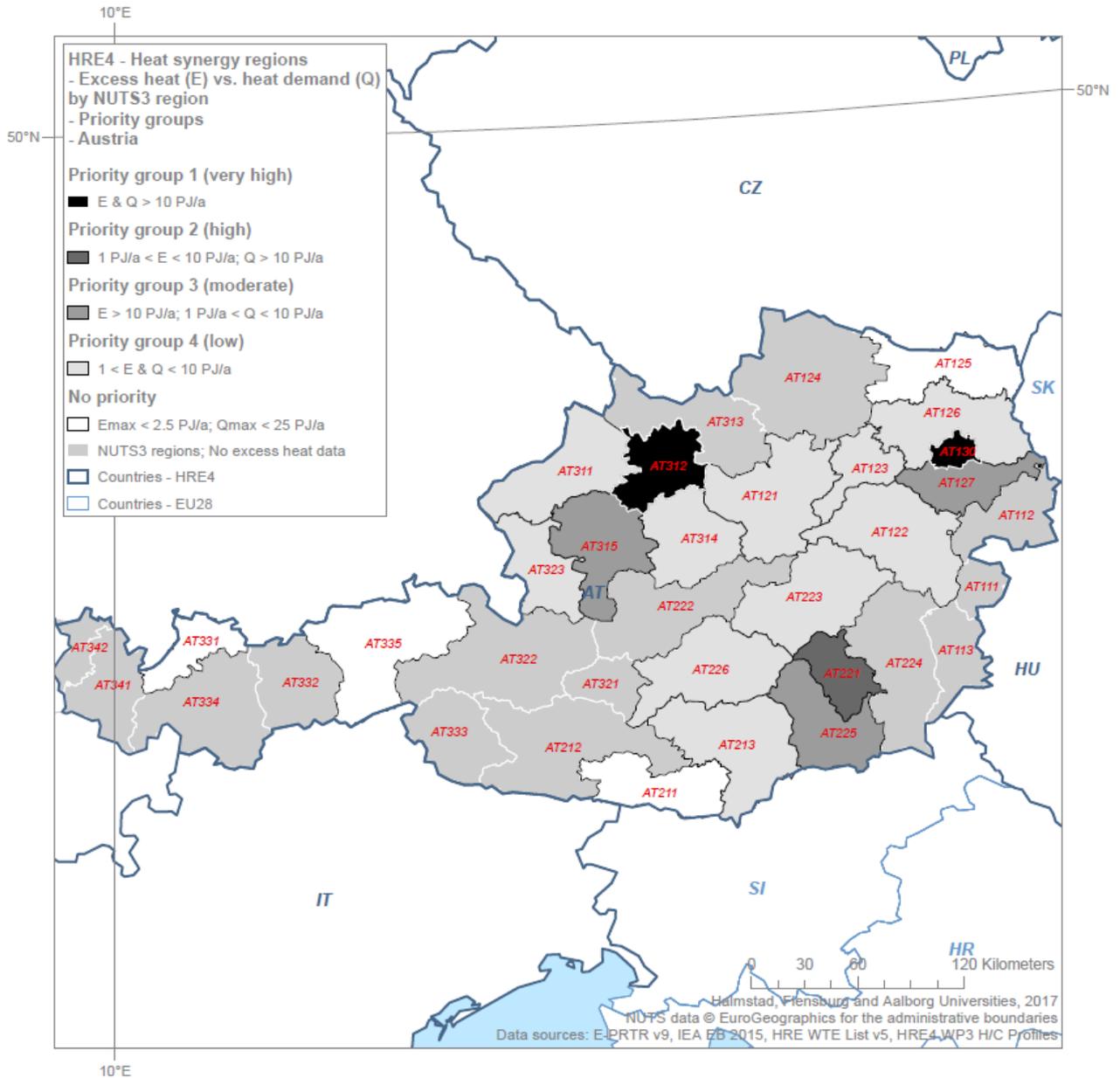
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4. Heat synergy regions maps

4.1. Austria (AT)

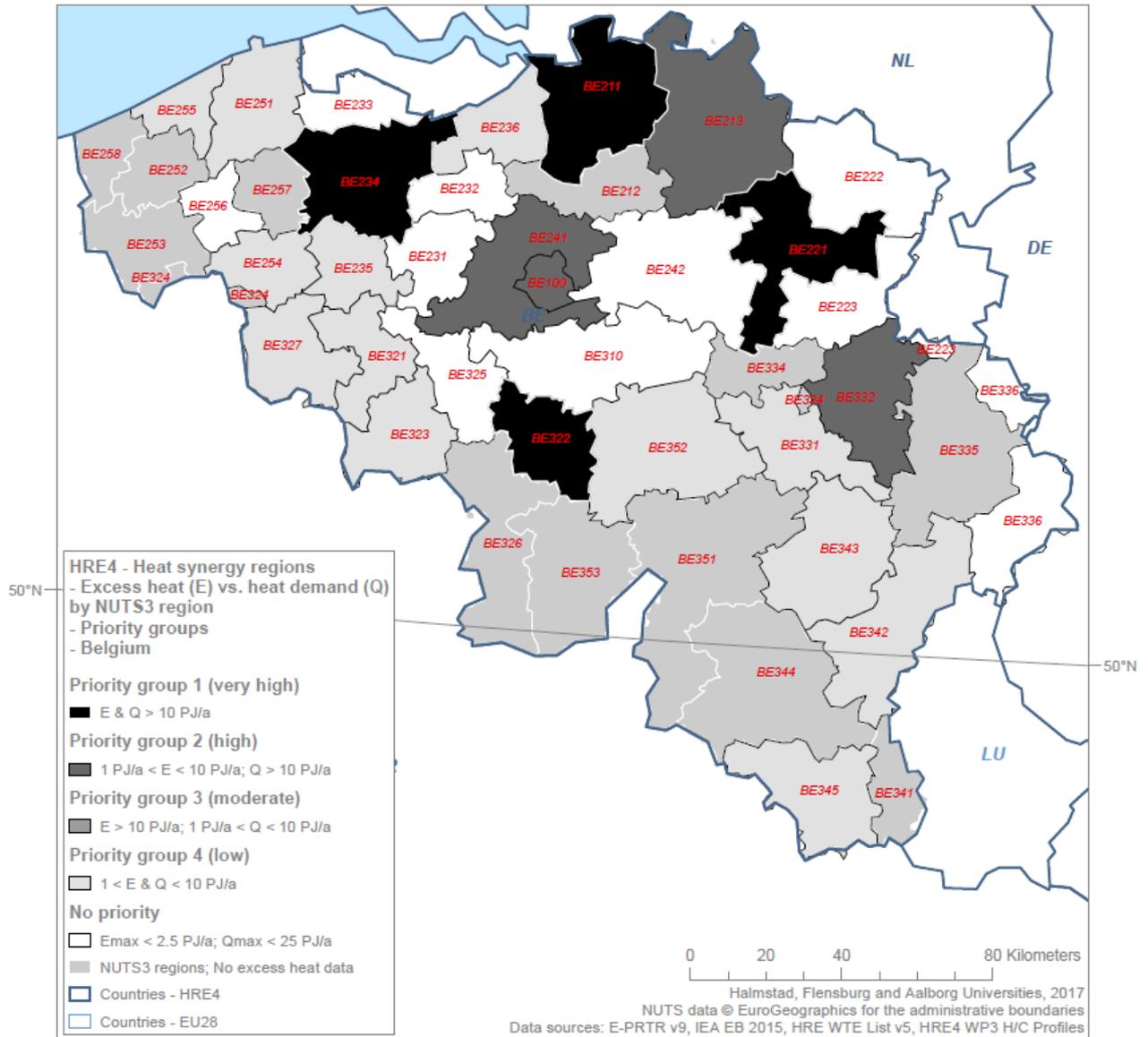
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4.2. Belgium (BE)



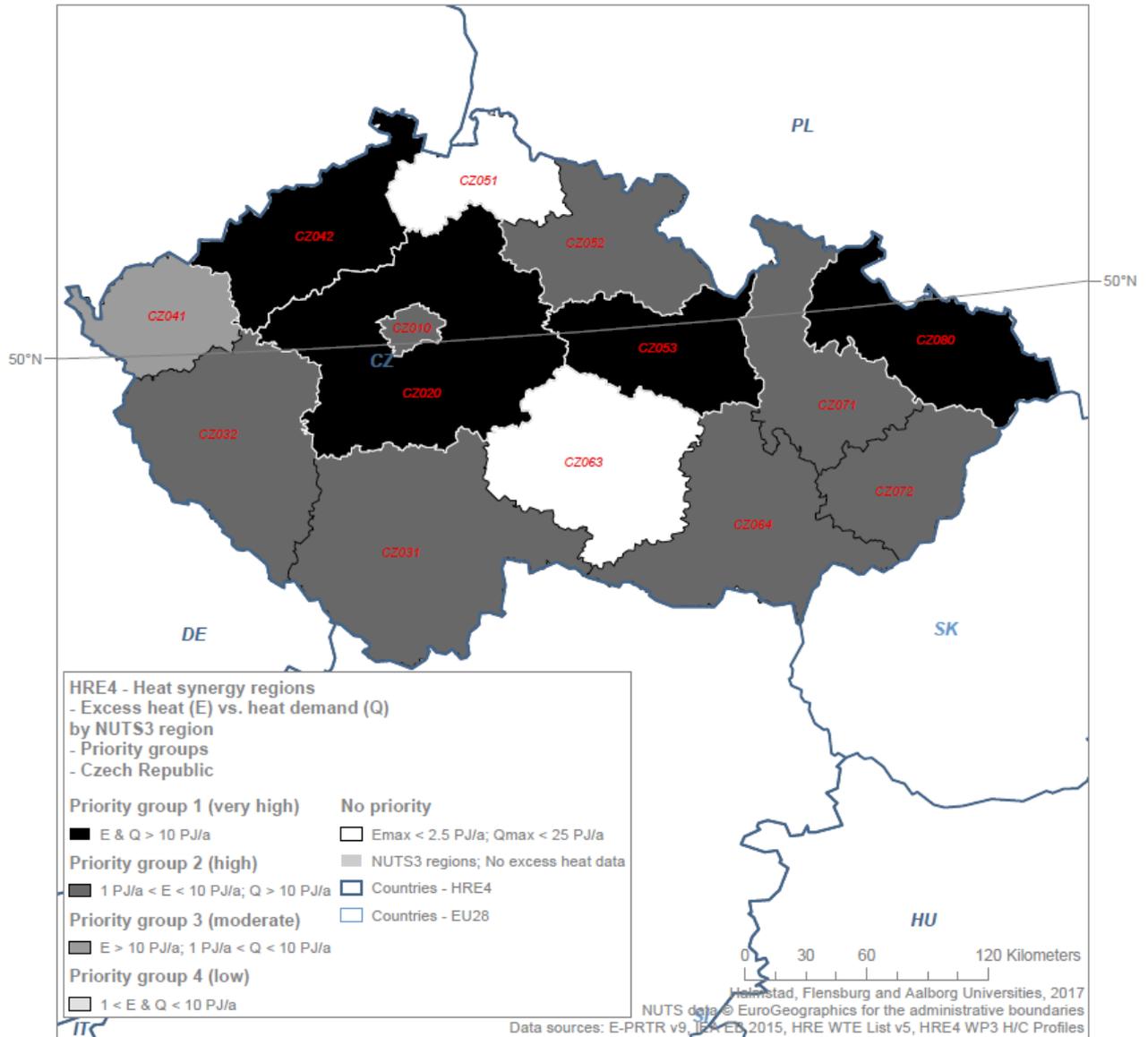
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4.3. Czech Republic



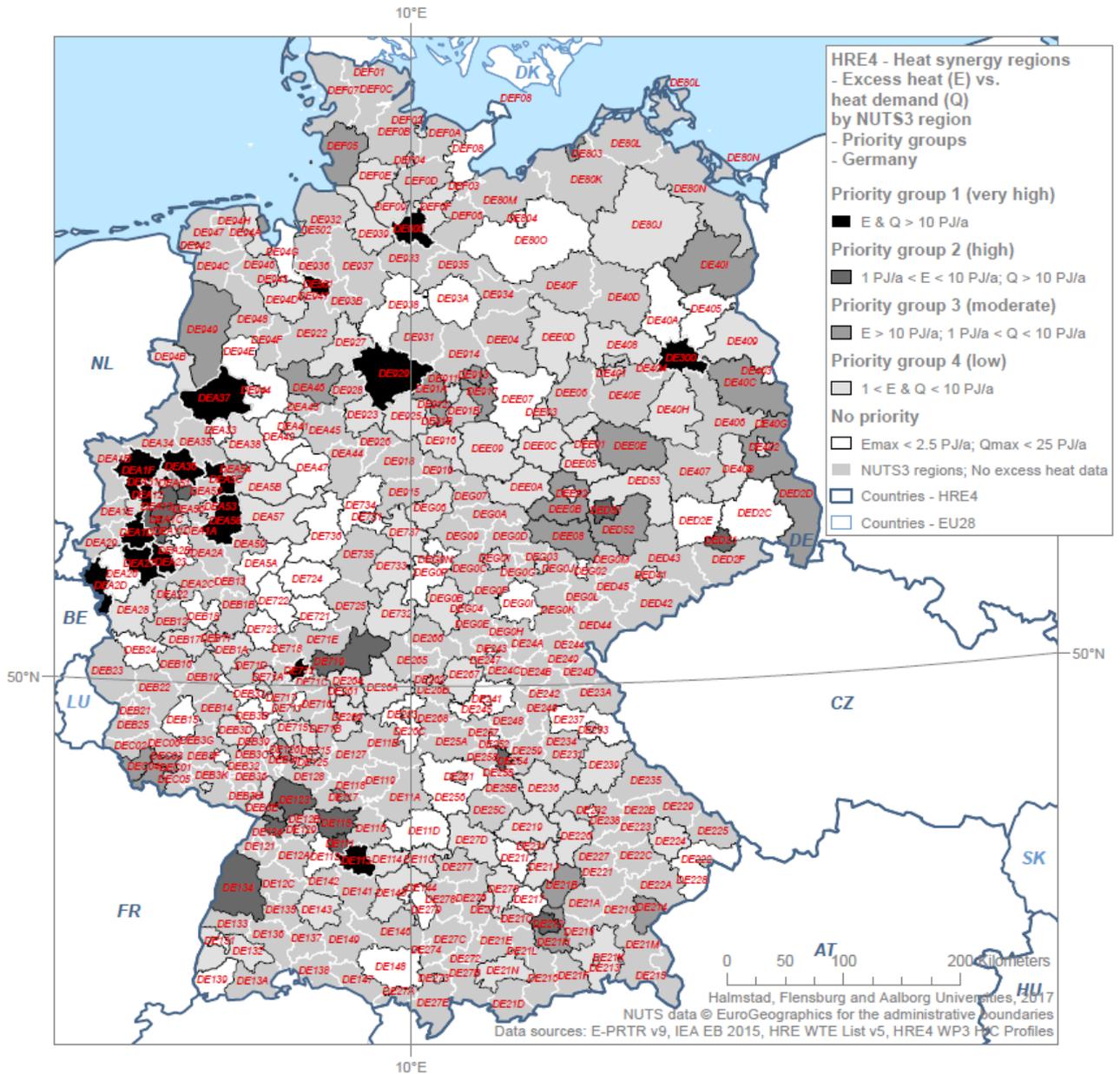
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4.4. Germany (DE)

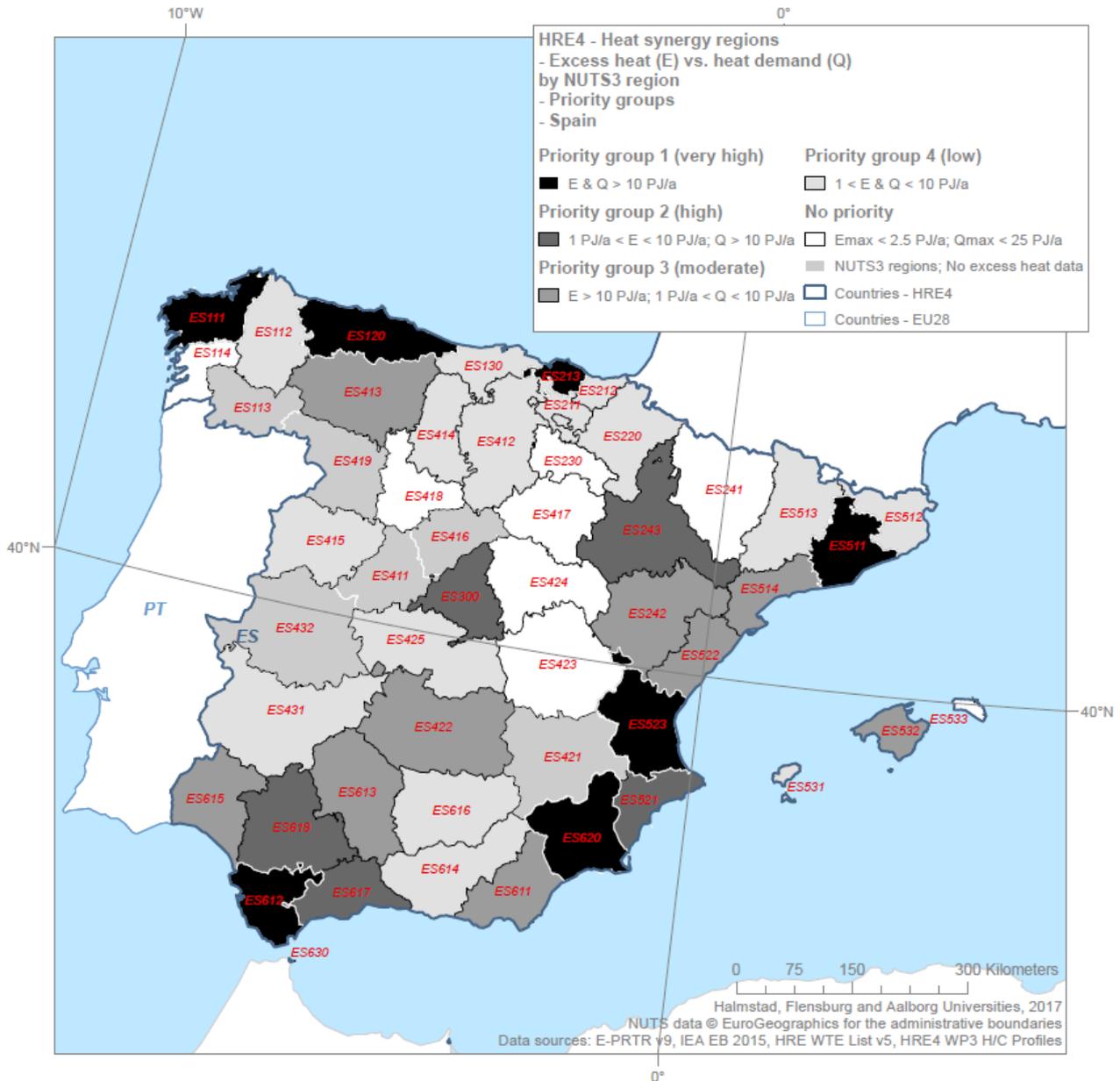


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4.5. Spain (ES)

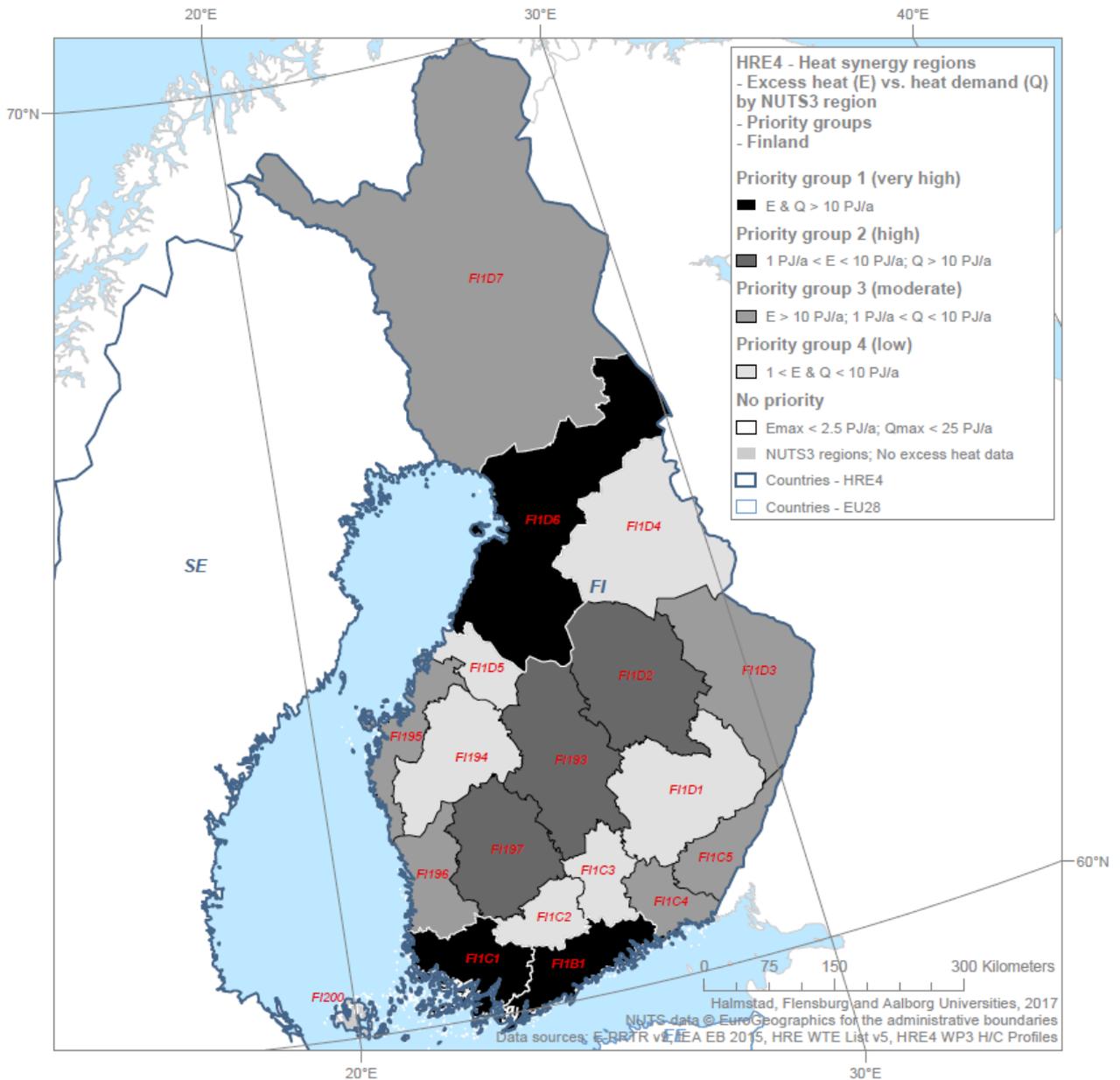
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4.6. Finland (FI)



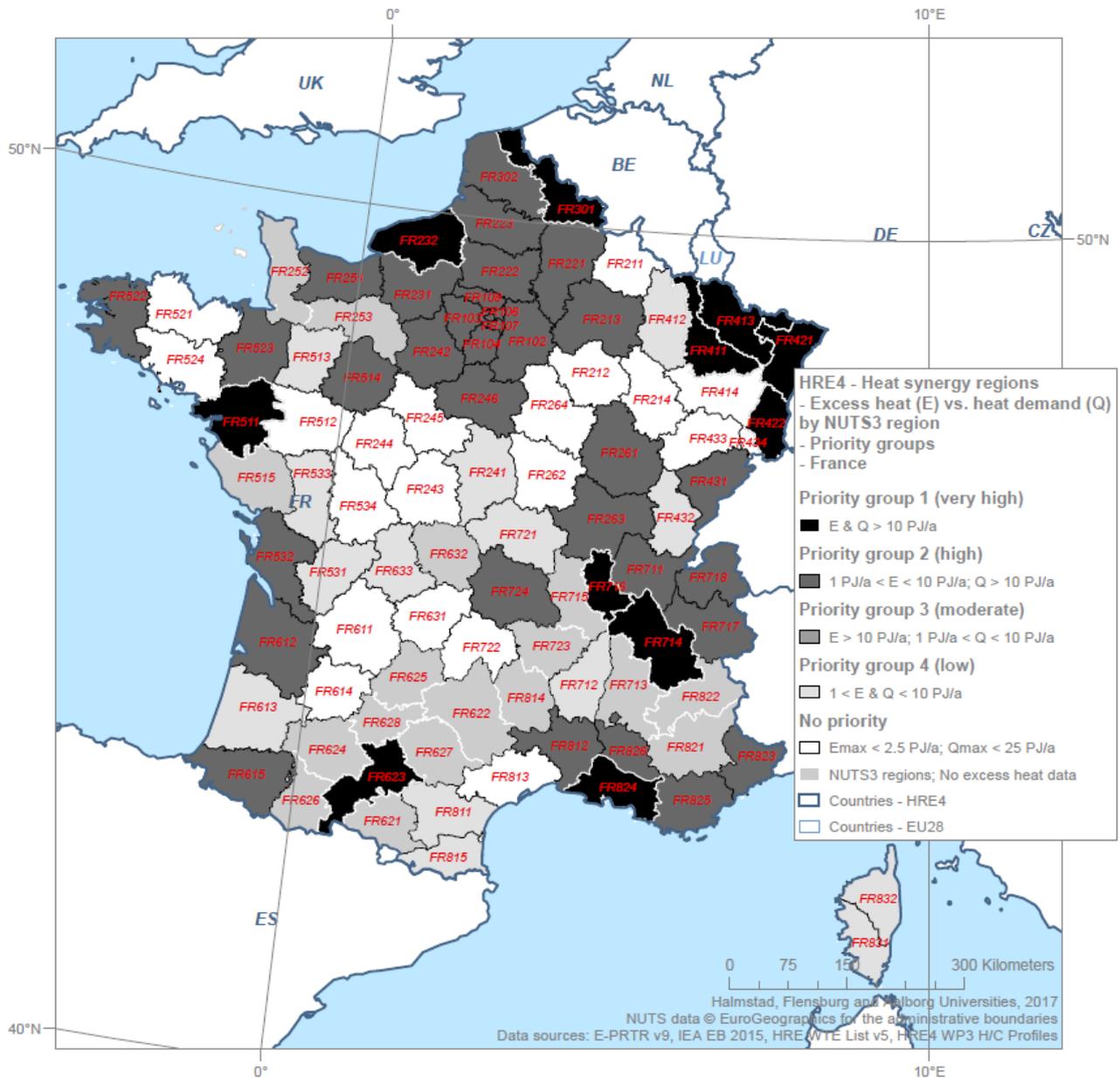
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4.7. France (FR)



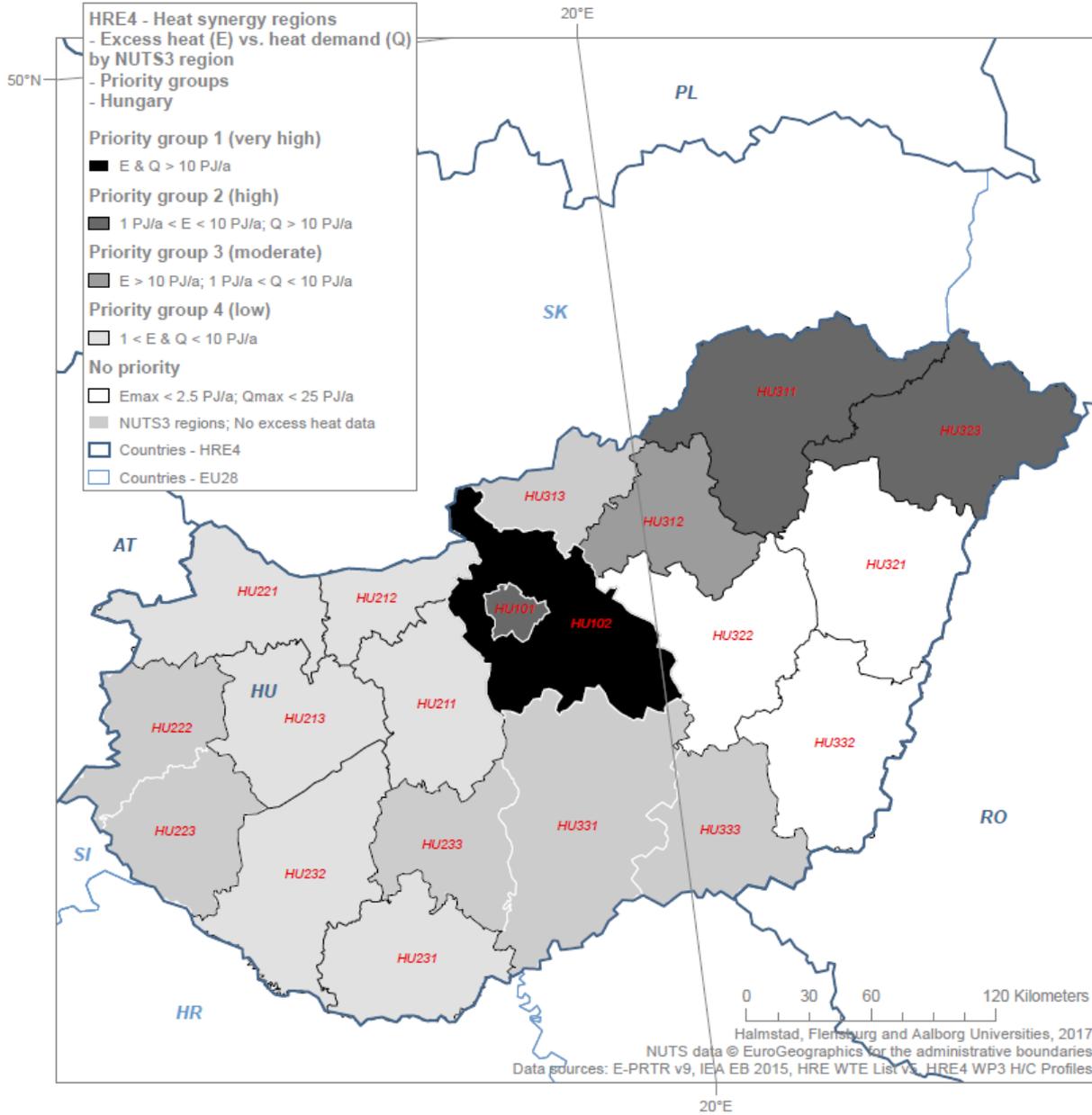
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4.8. Hungary (HU)



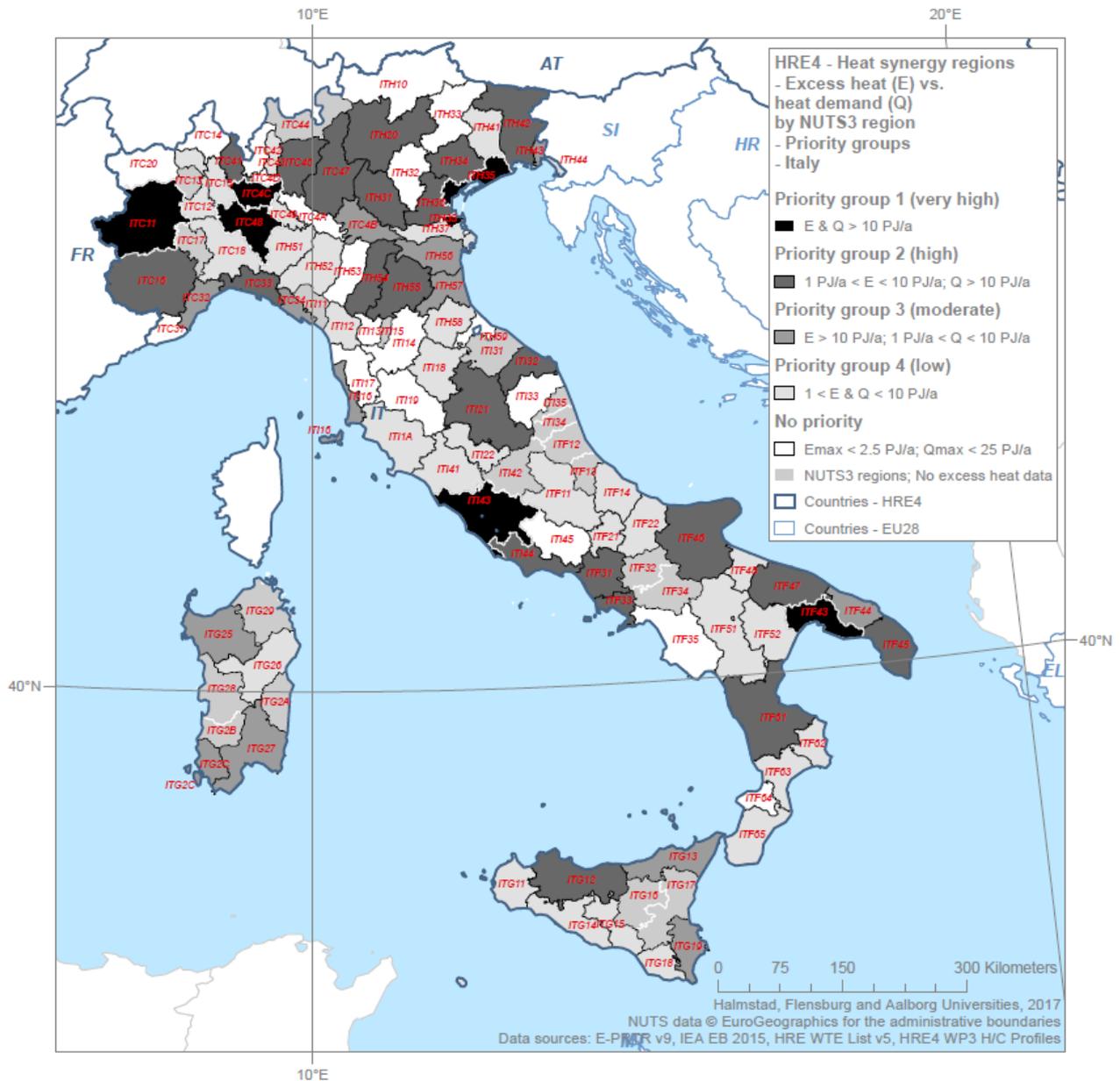
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4.9. Italy (IT)



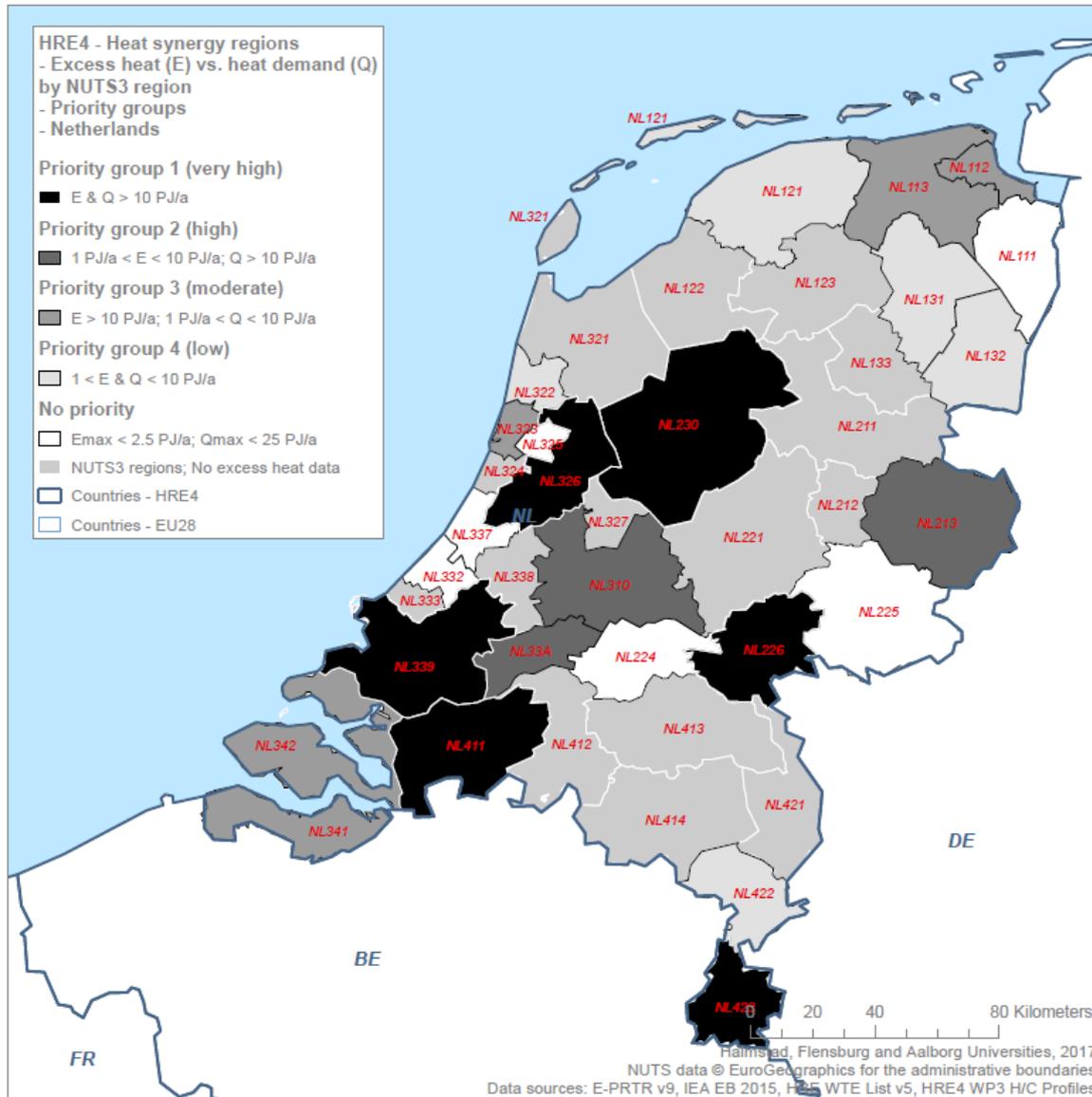
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4.10. Netherlands (NL)



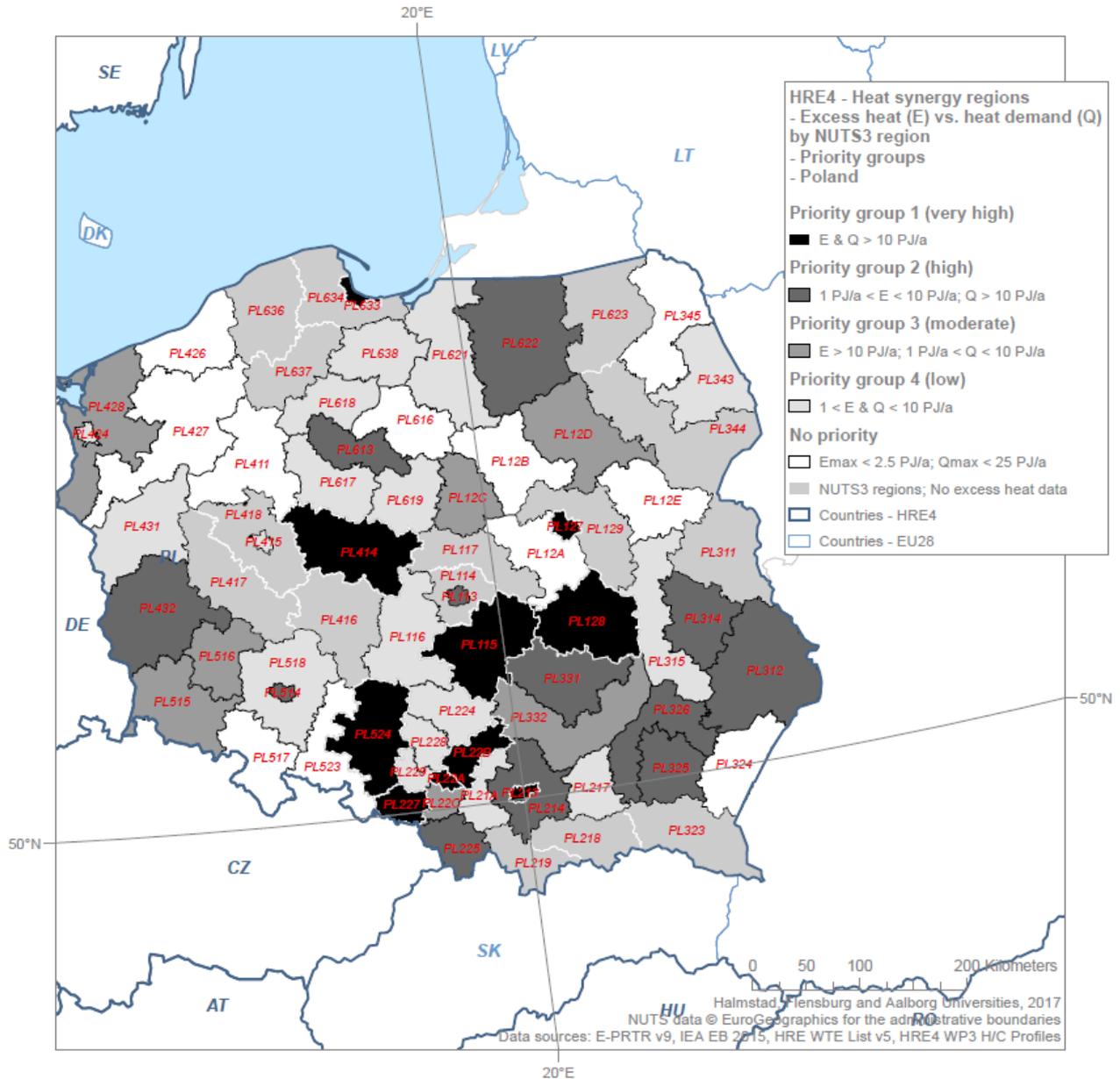
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4.11. Poland (PL)



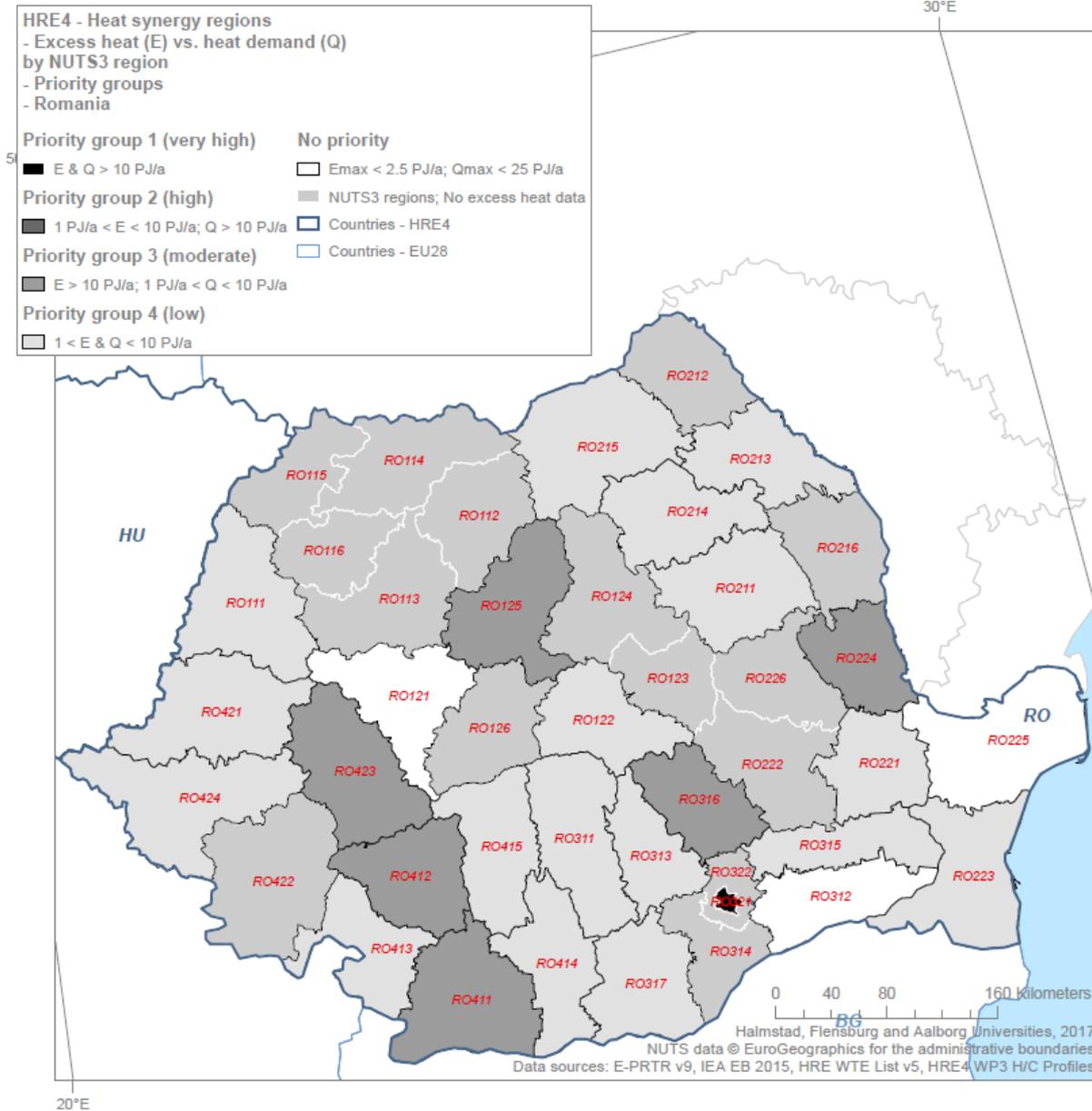
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4.12. Romania (RO)



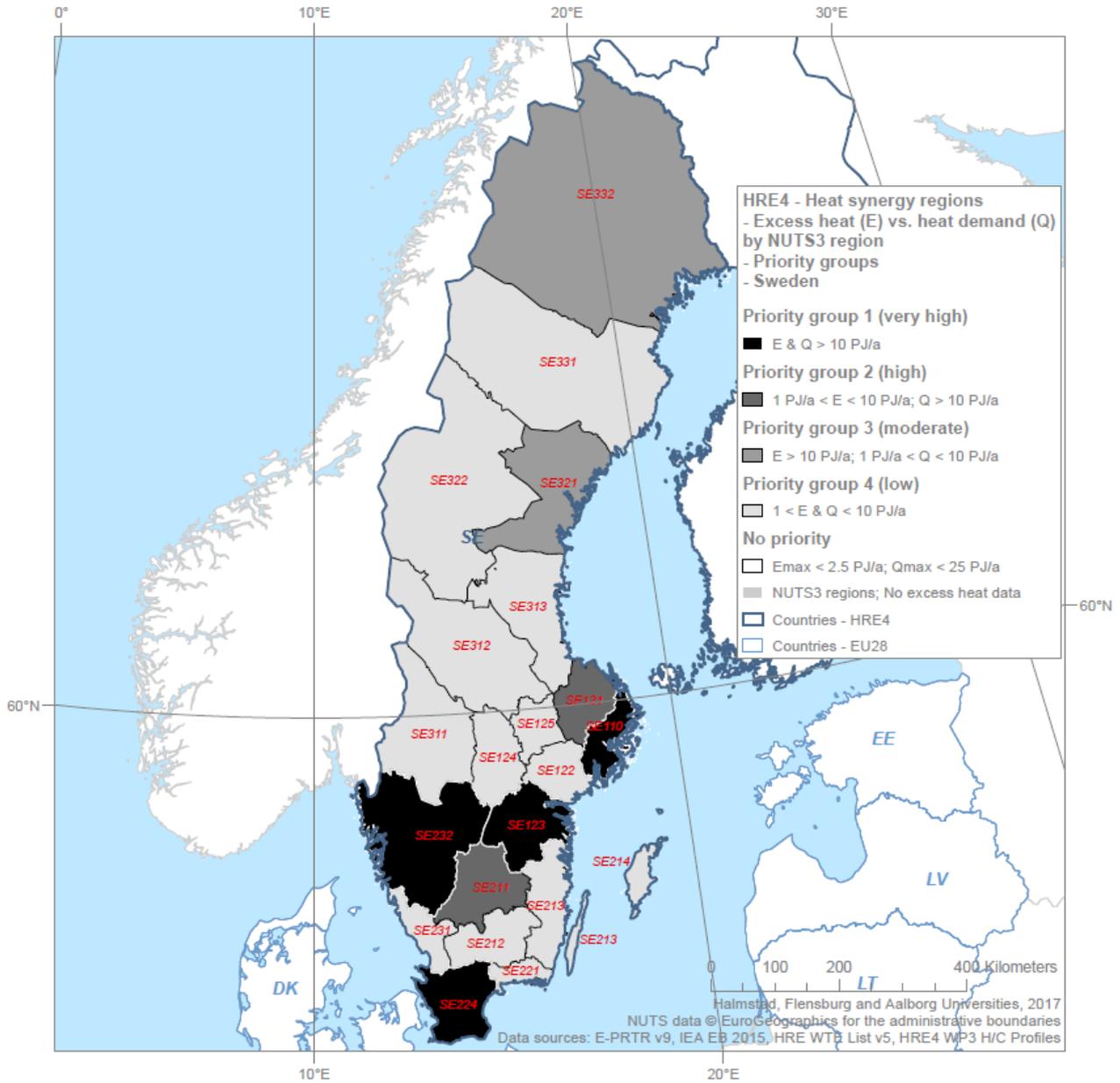
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4.13. Sweden (SE)



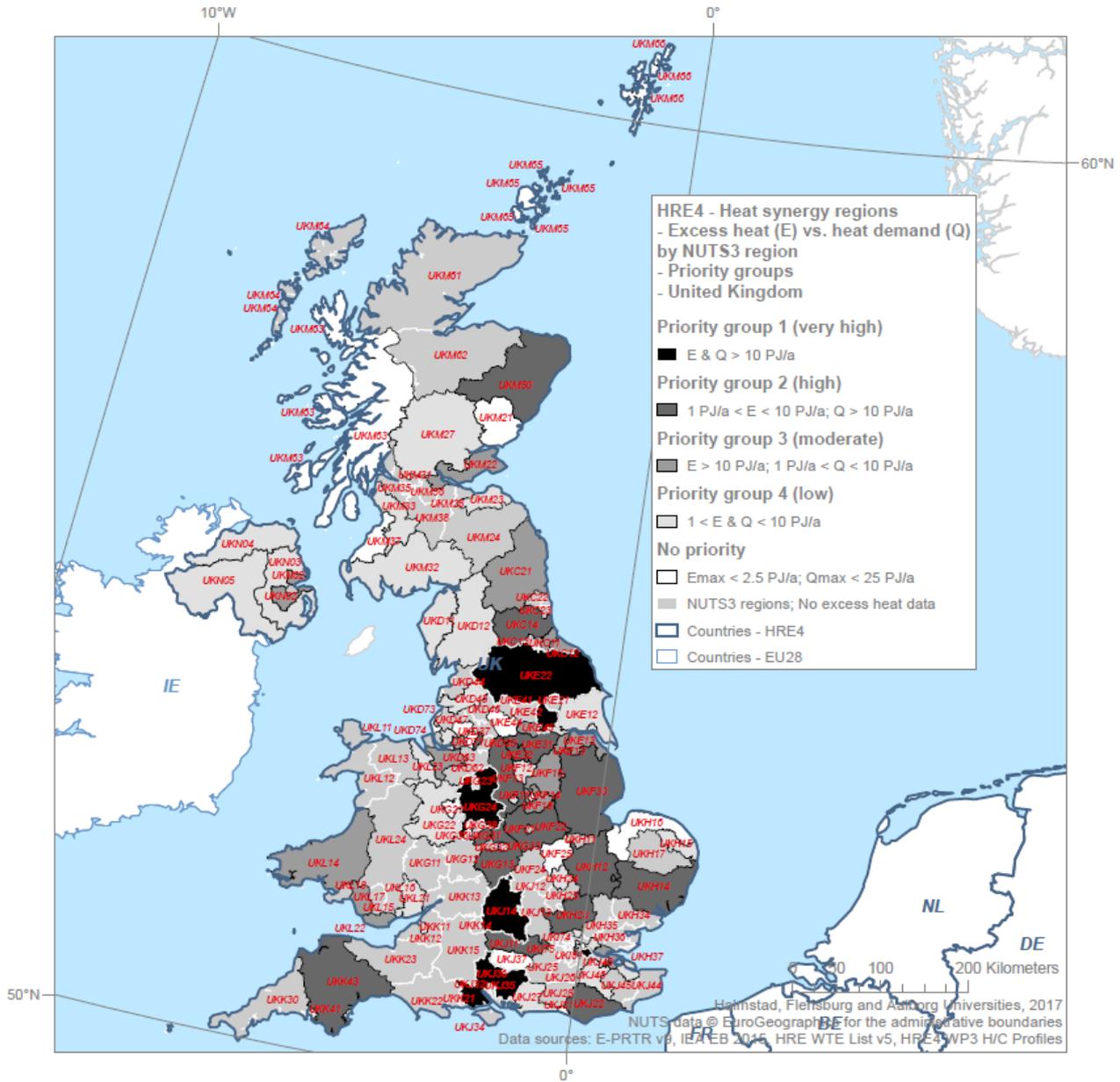
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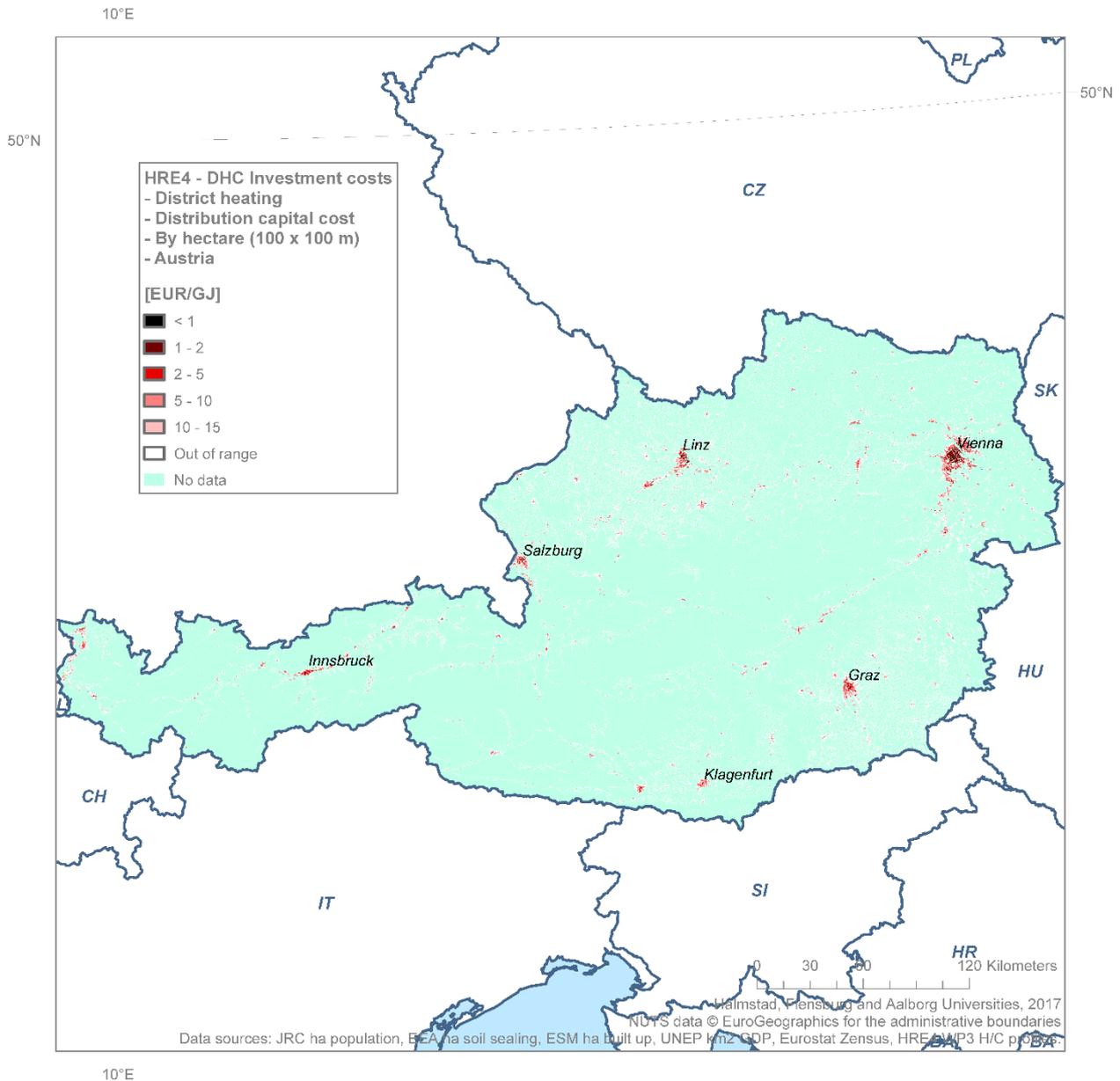


5. District heating investment costs

5.1. Austria (AT)



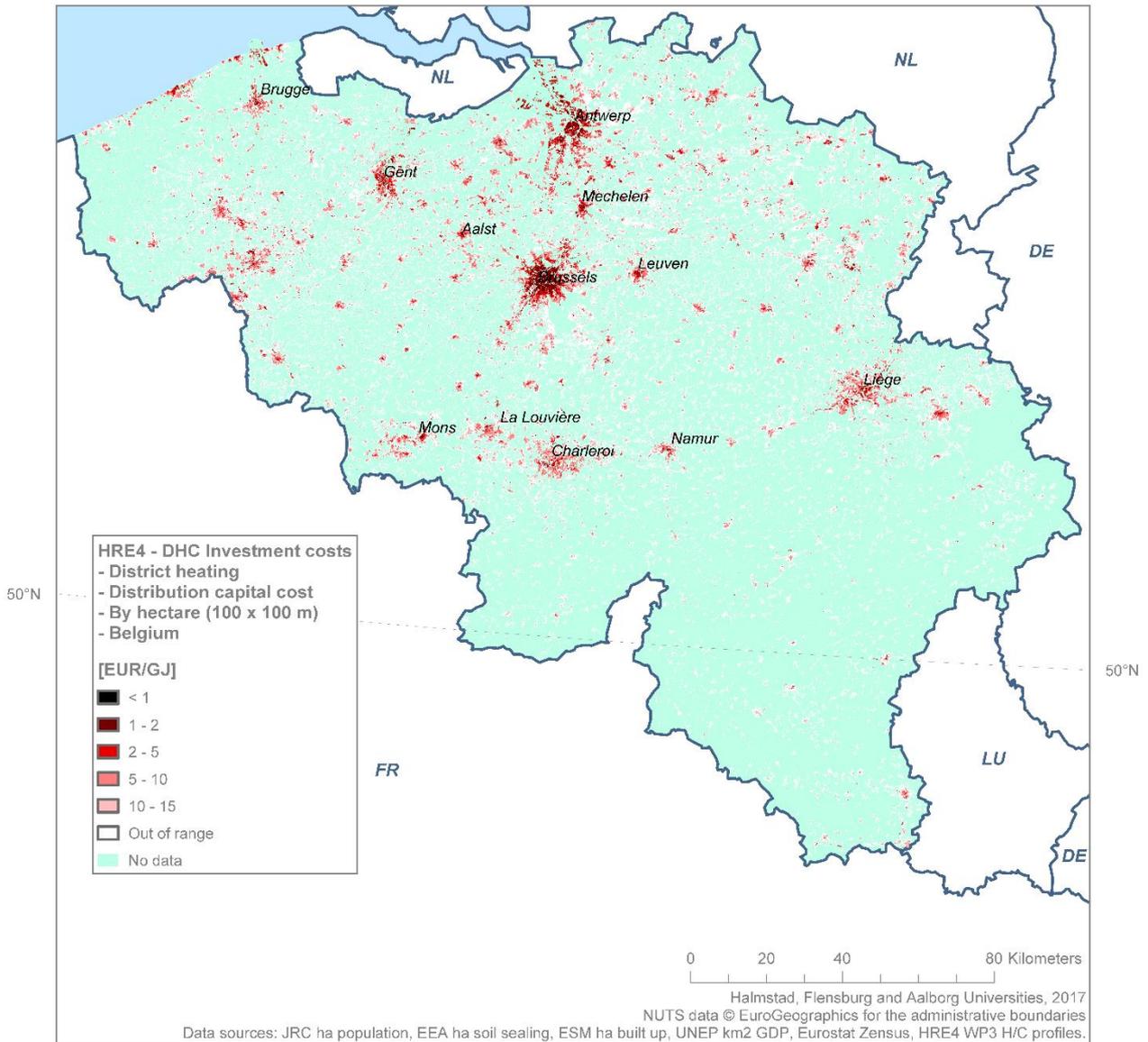
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5.2. Belgium (BE)



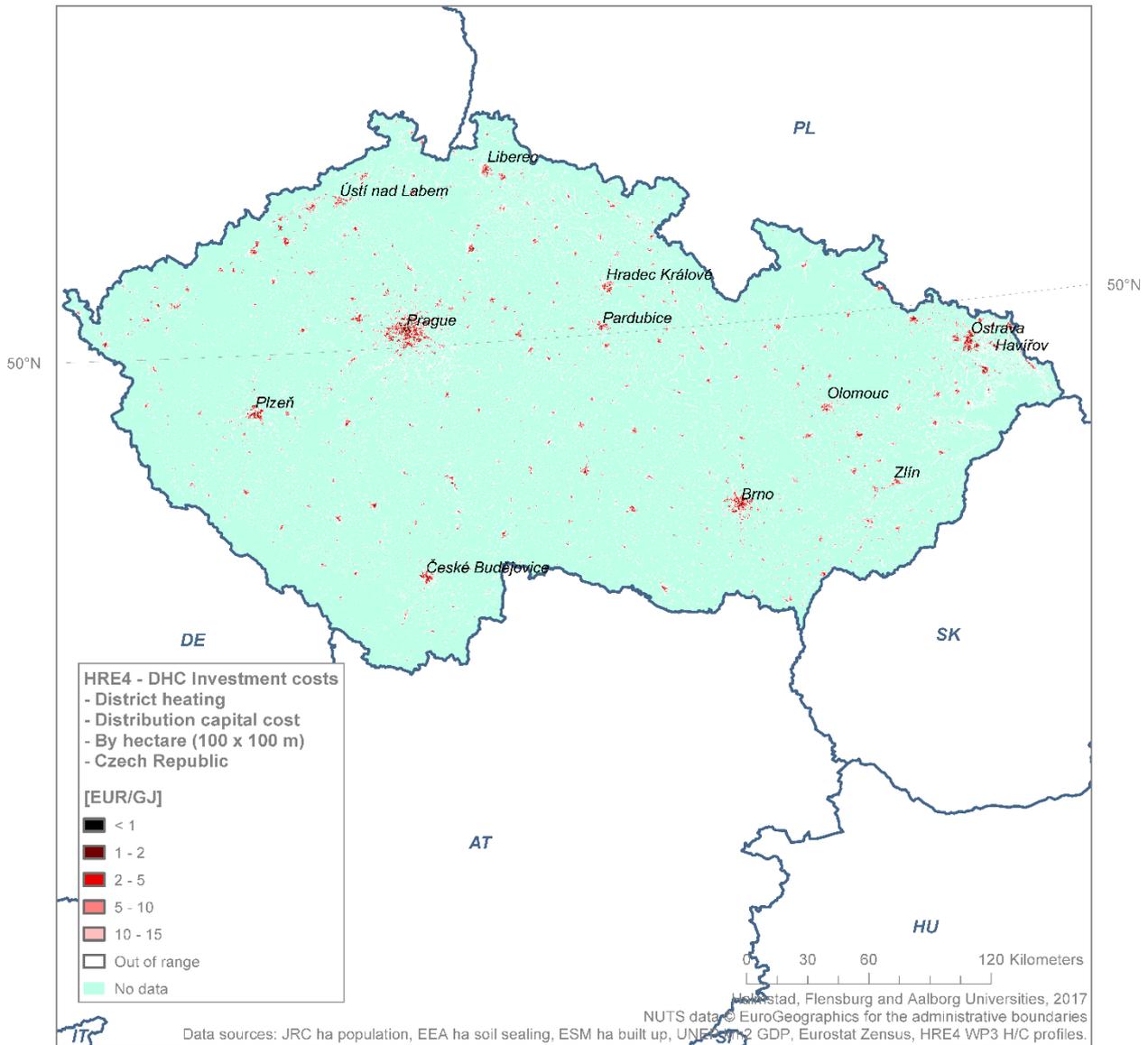
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5.3. Czech Republic (CZ)



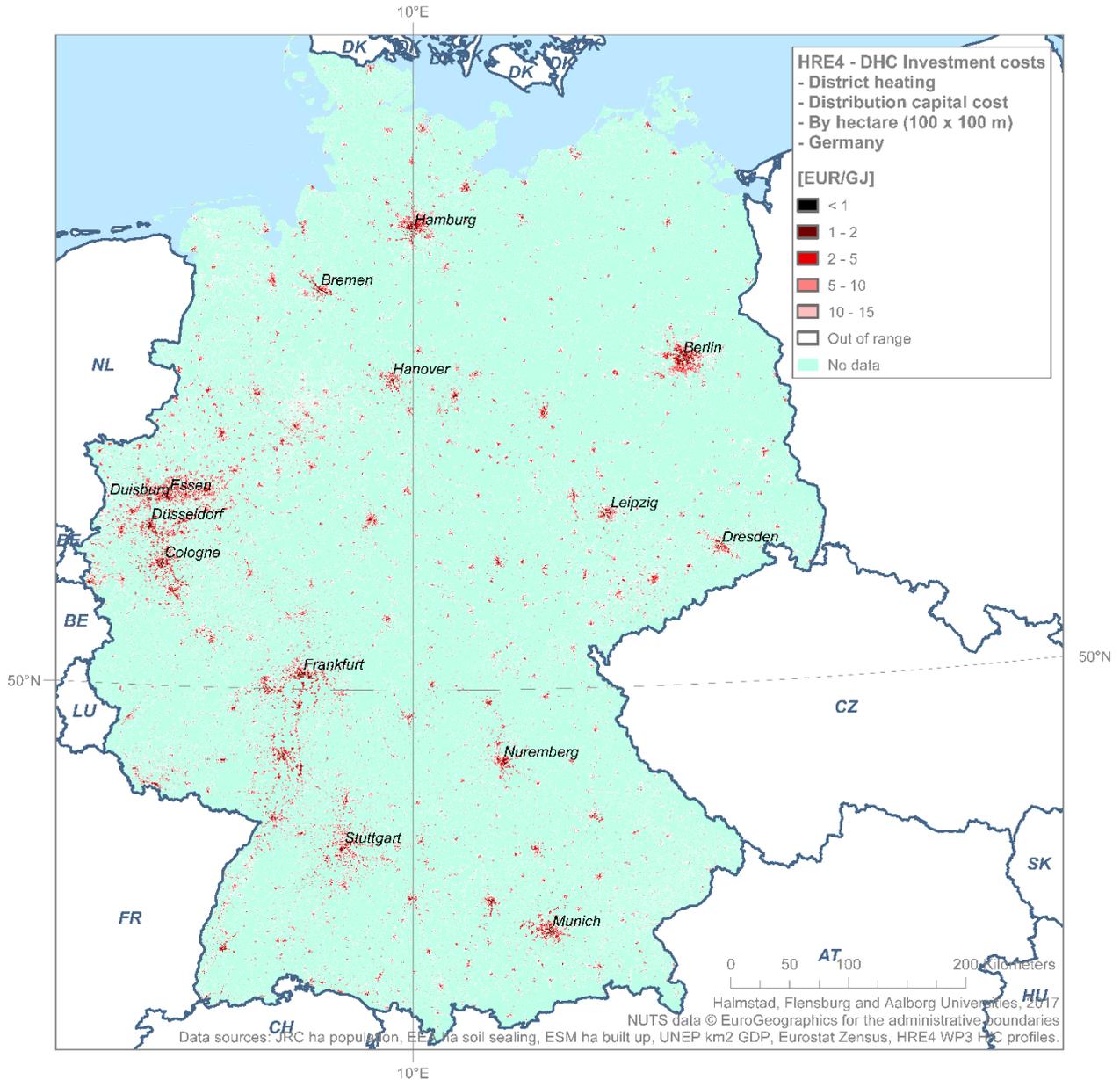
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5.4. Germany (DE)



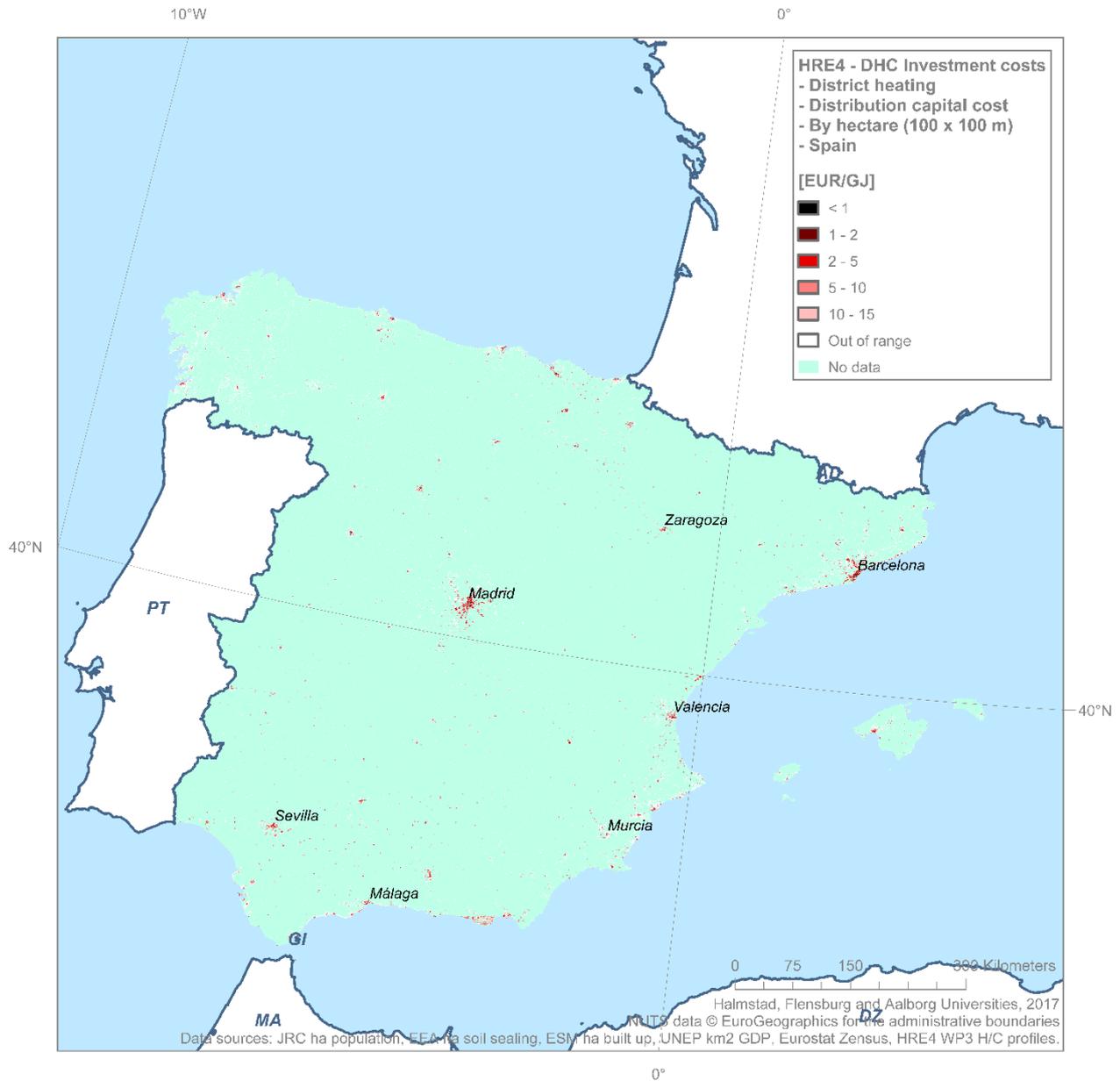
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5.5. Spain (ES)



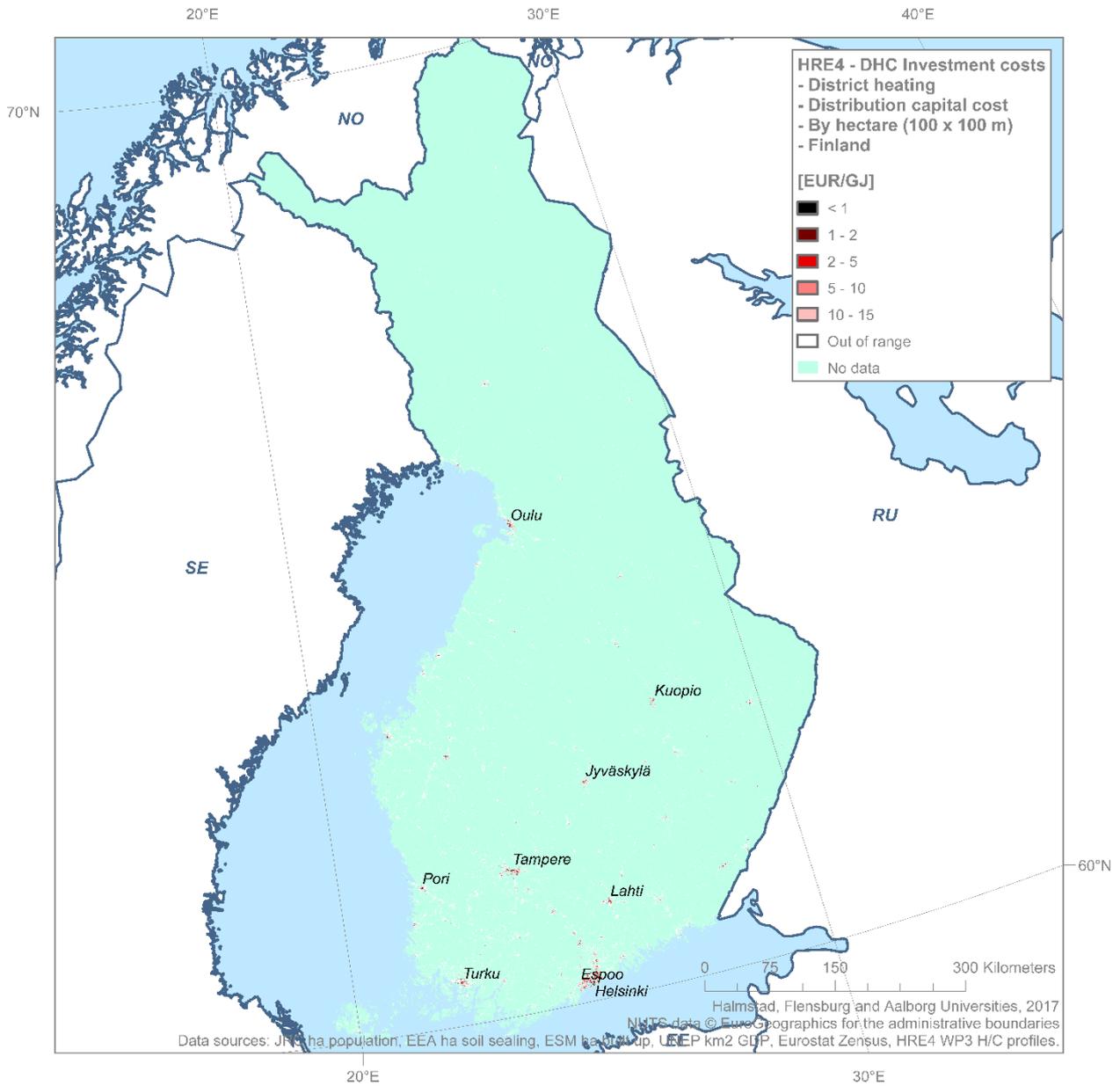
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5.6. Finland (FI)



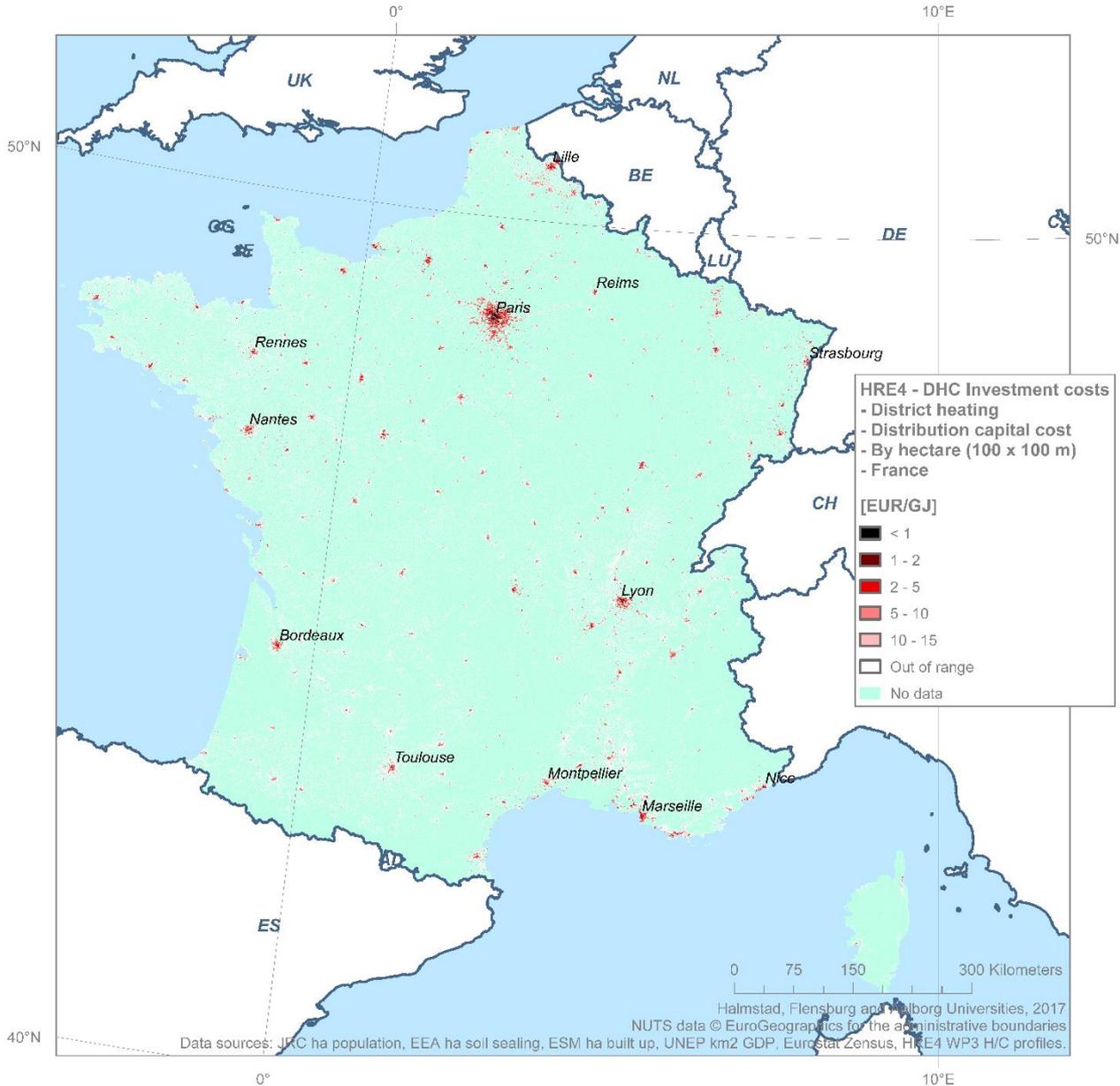
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5.7. France (FR)



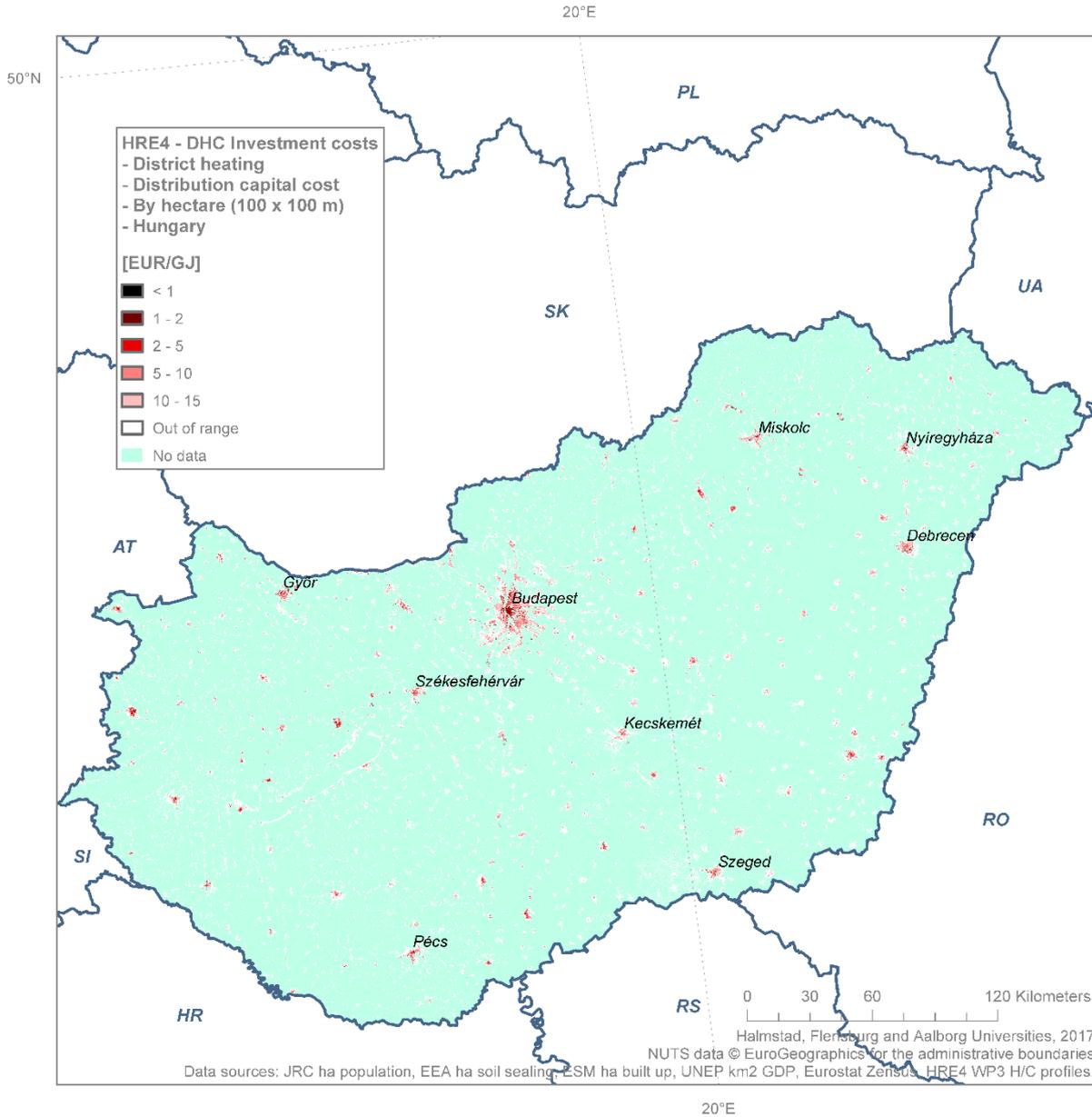
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5.8. Hungary (HU)



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5.9. Italy (IT)



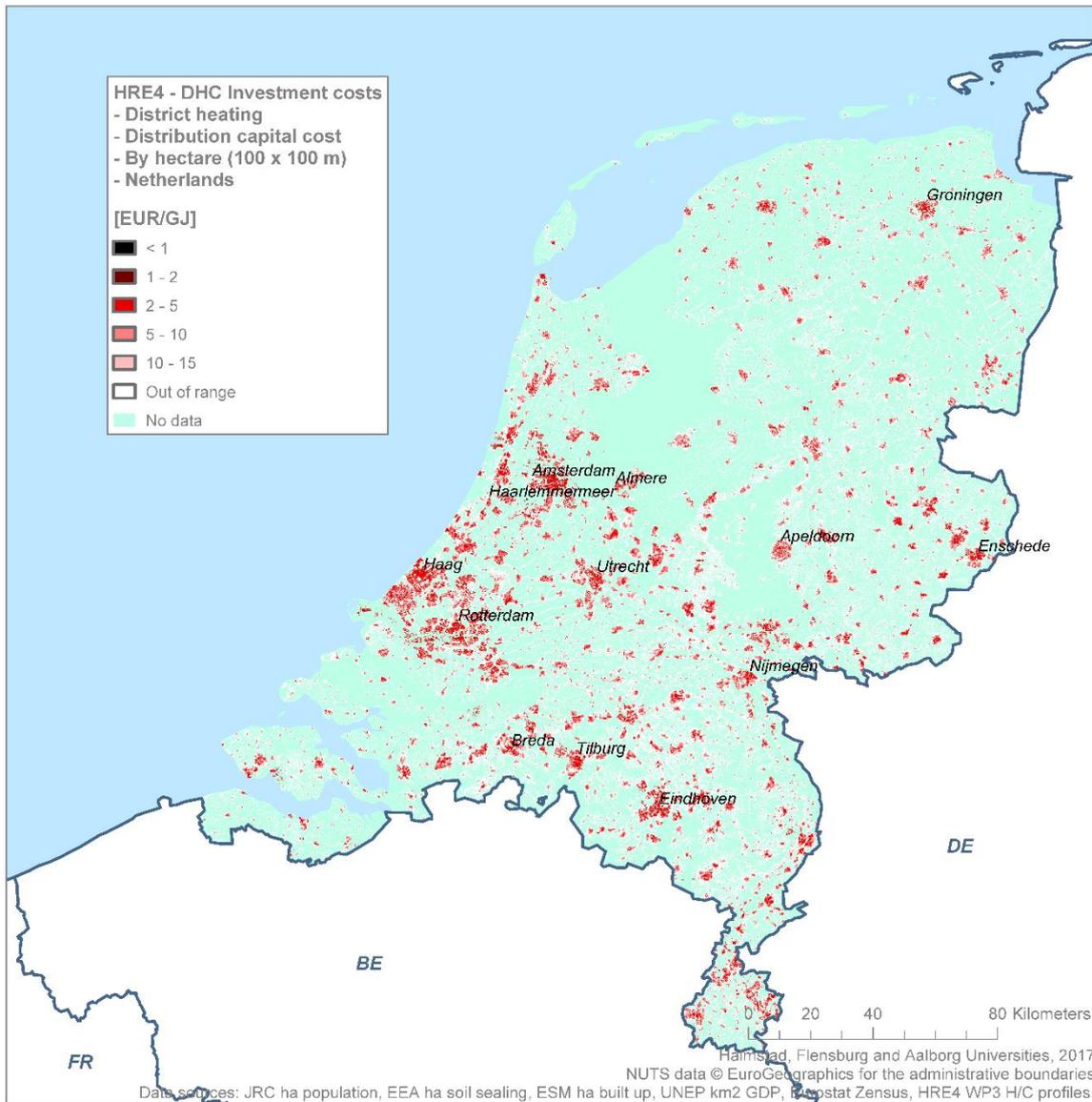
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5.10. Netherlands (NL)



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5.11. Poland (PL)



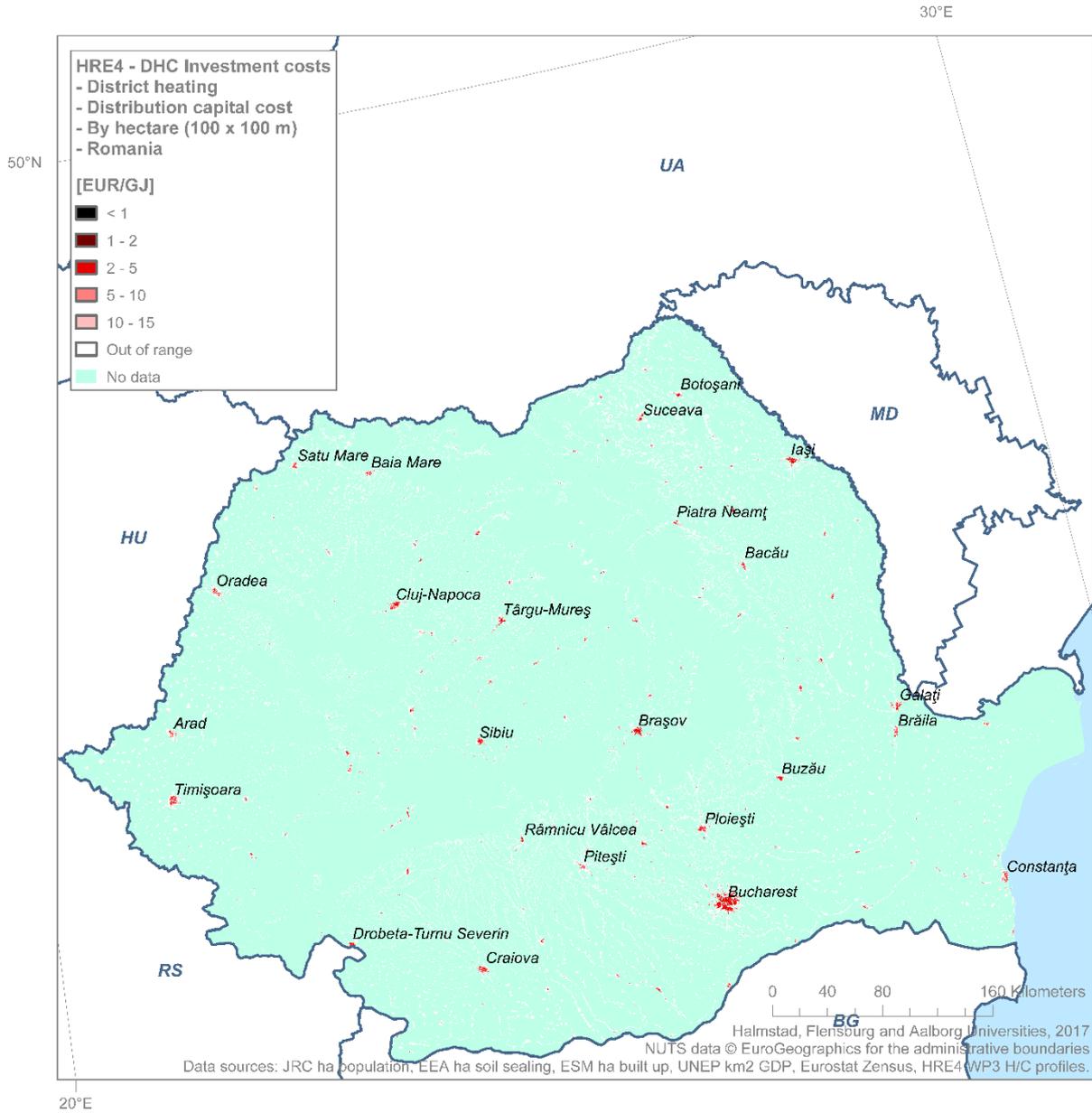
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5.13. Sweden (SE)



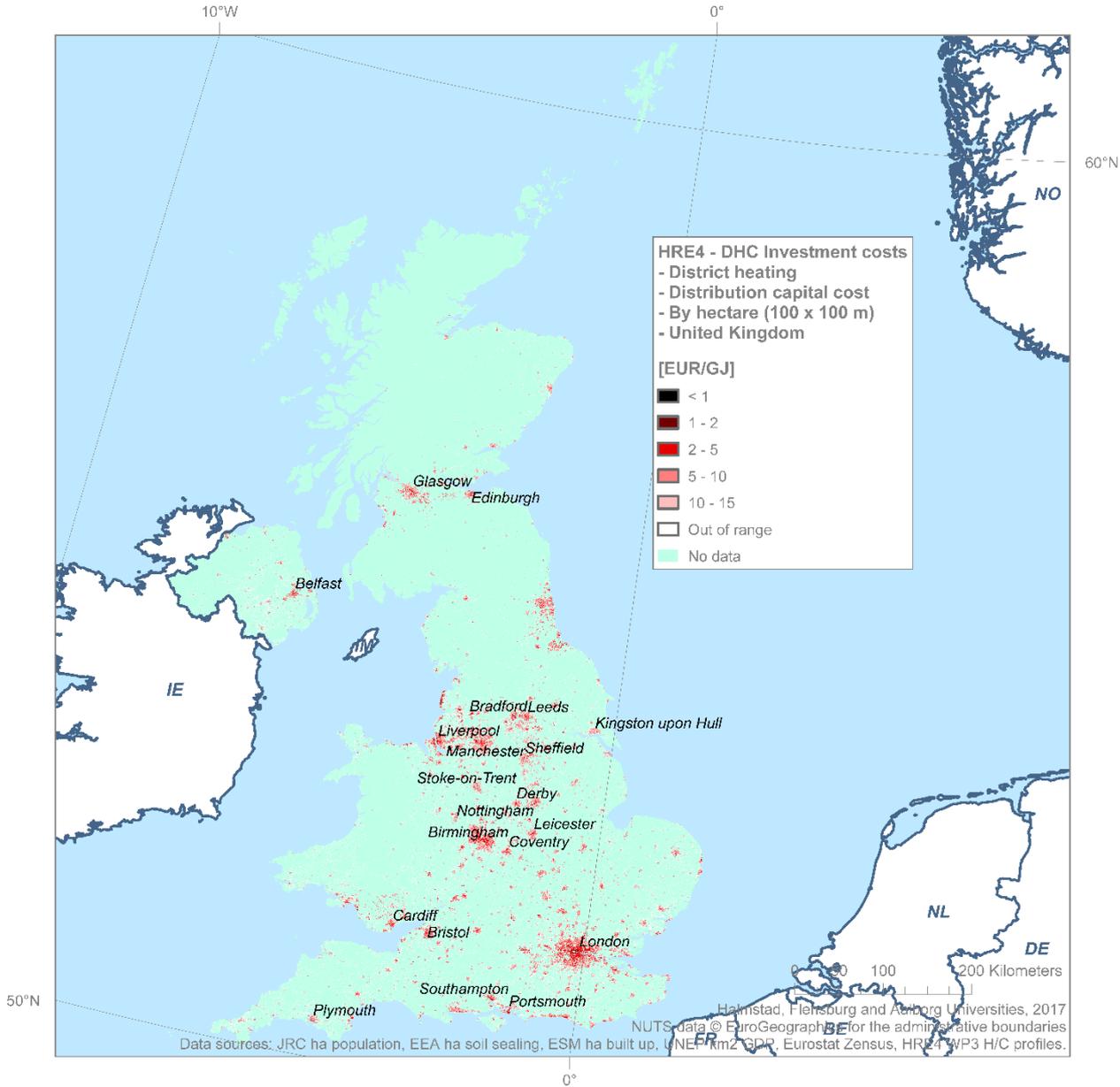
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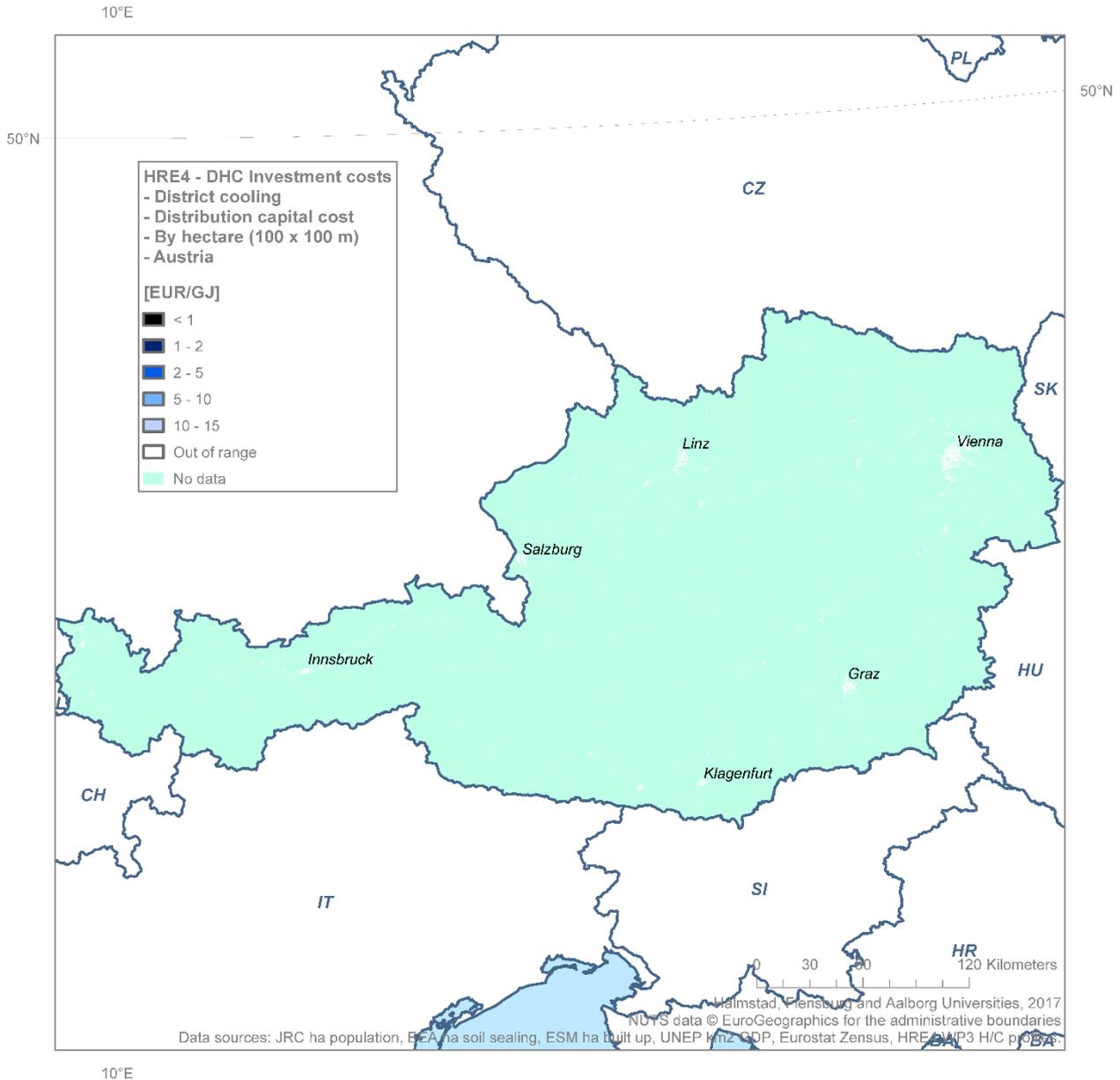


6. District cooling investment costs

6.1. Austria (AT)



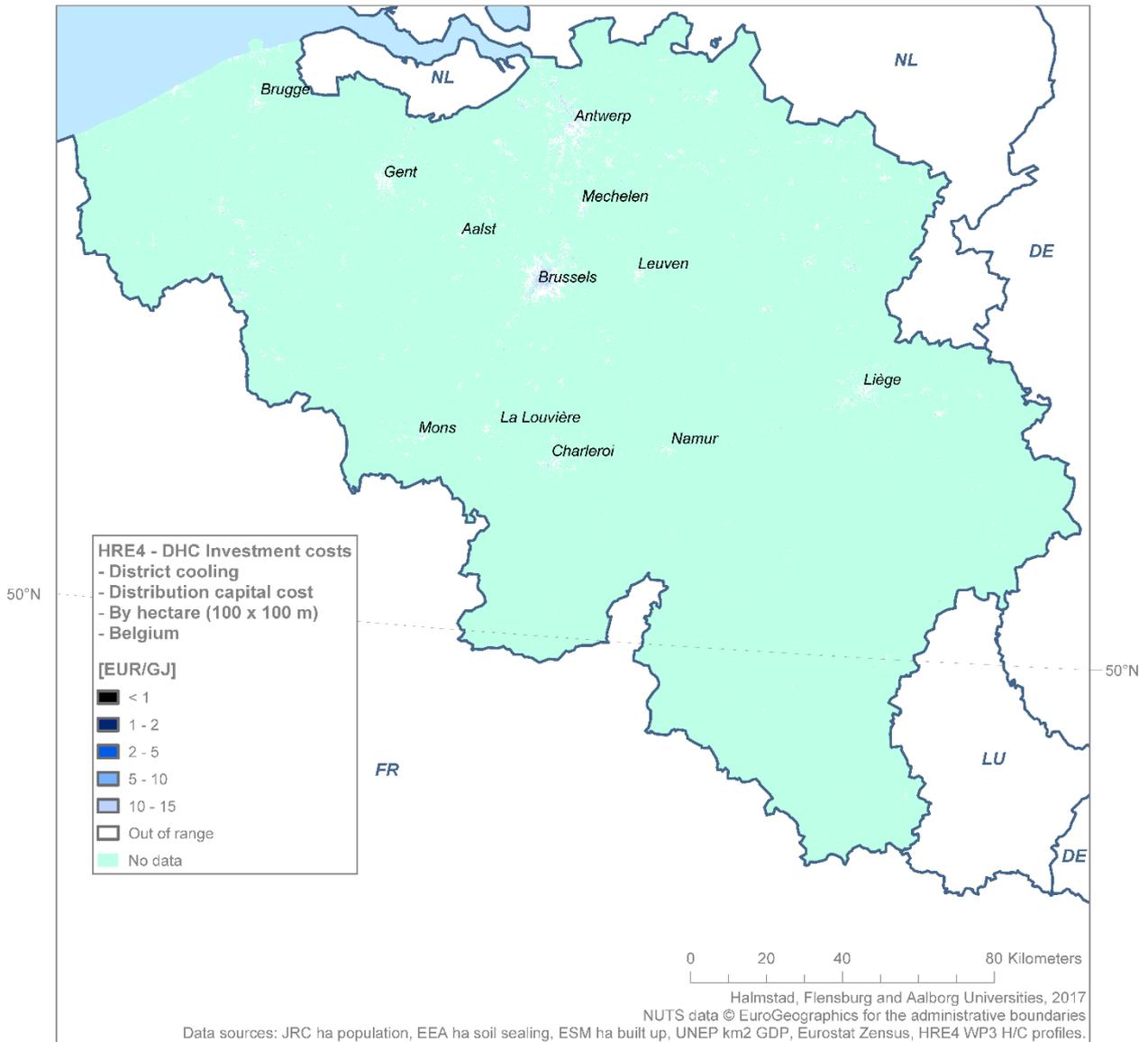
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6.2. Belgium (BE)



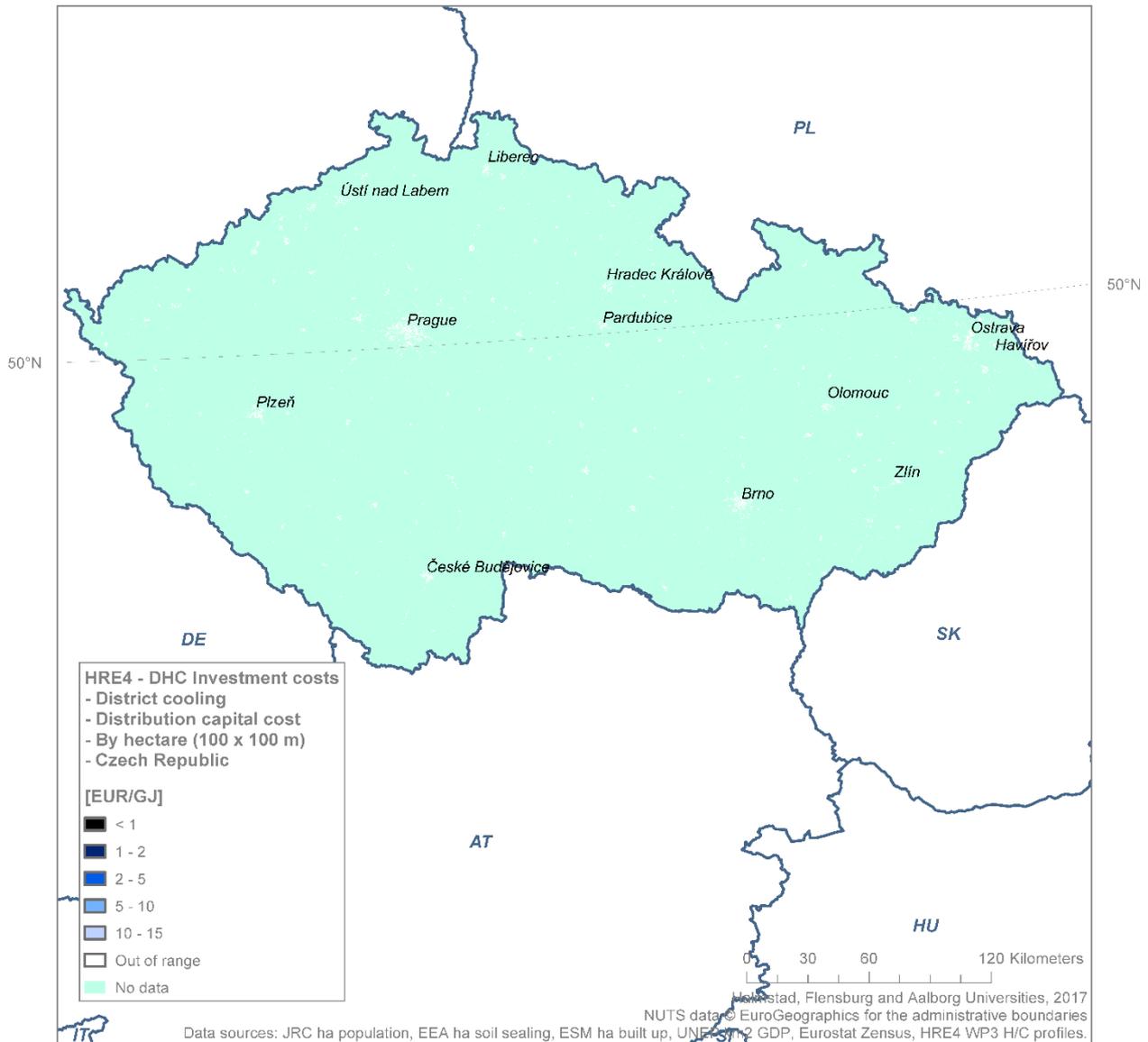
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6.3. Czech Republic (CZ)



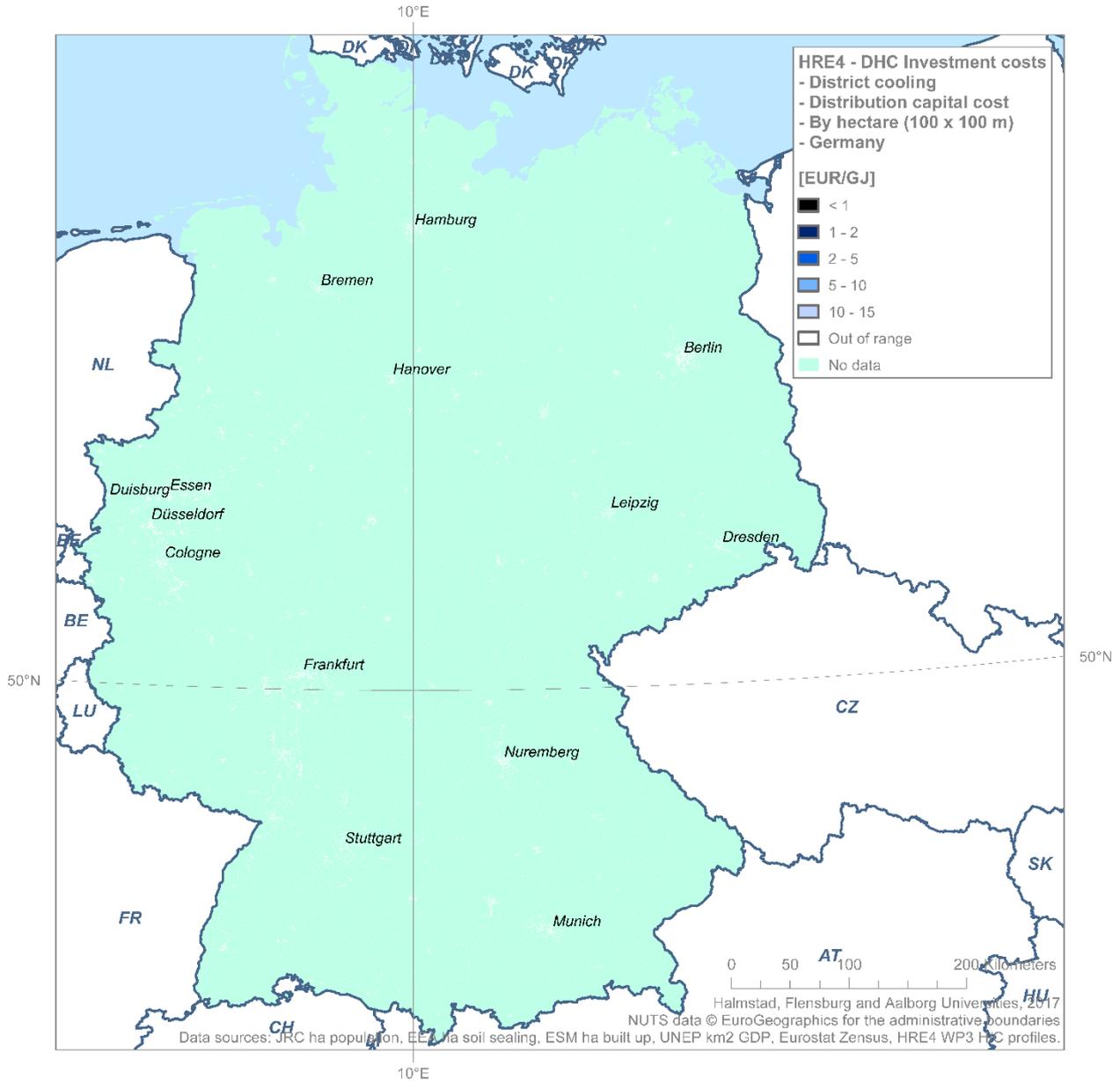
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6.4. Germany (DE)



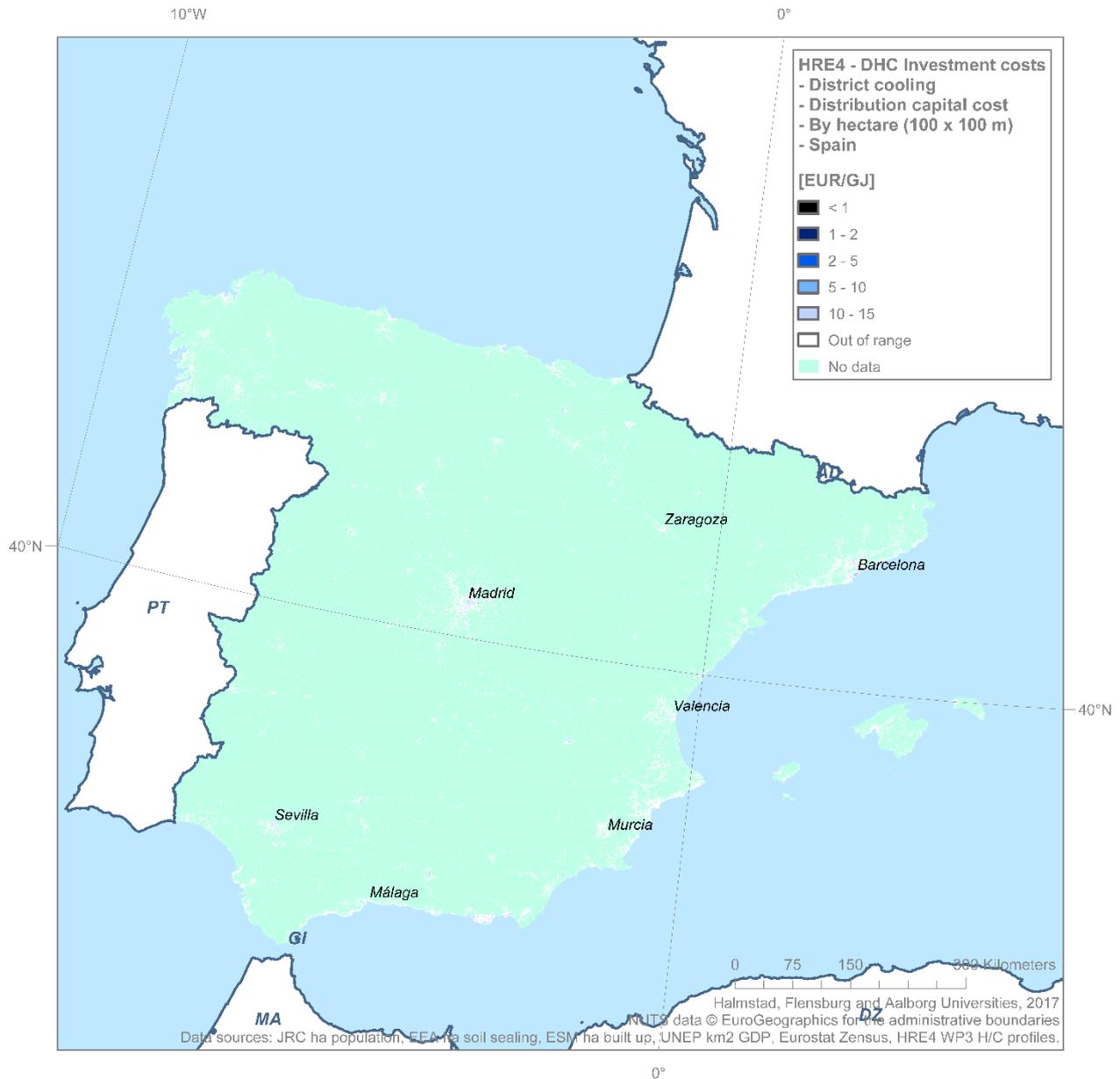
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6.5. Spain (ES)



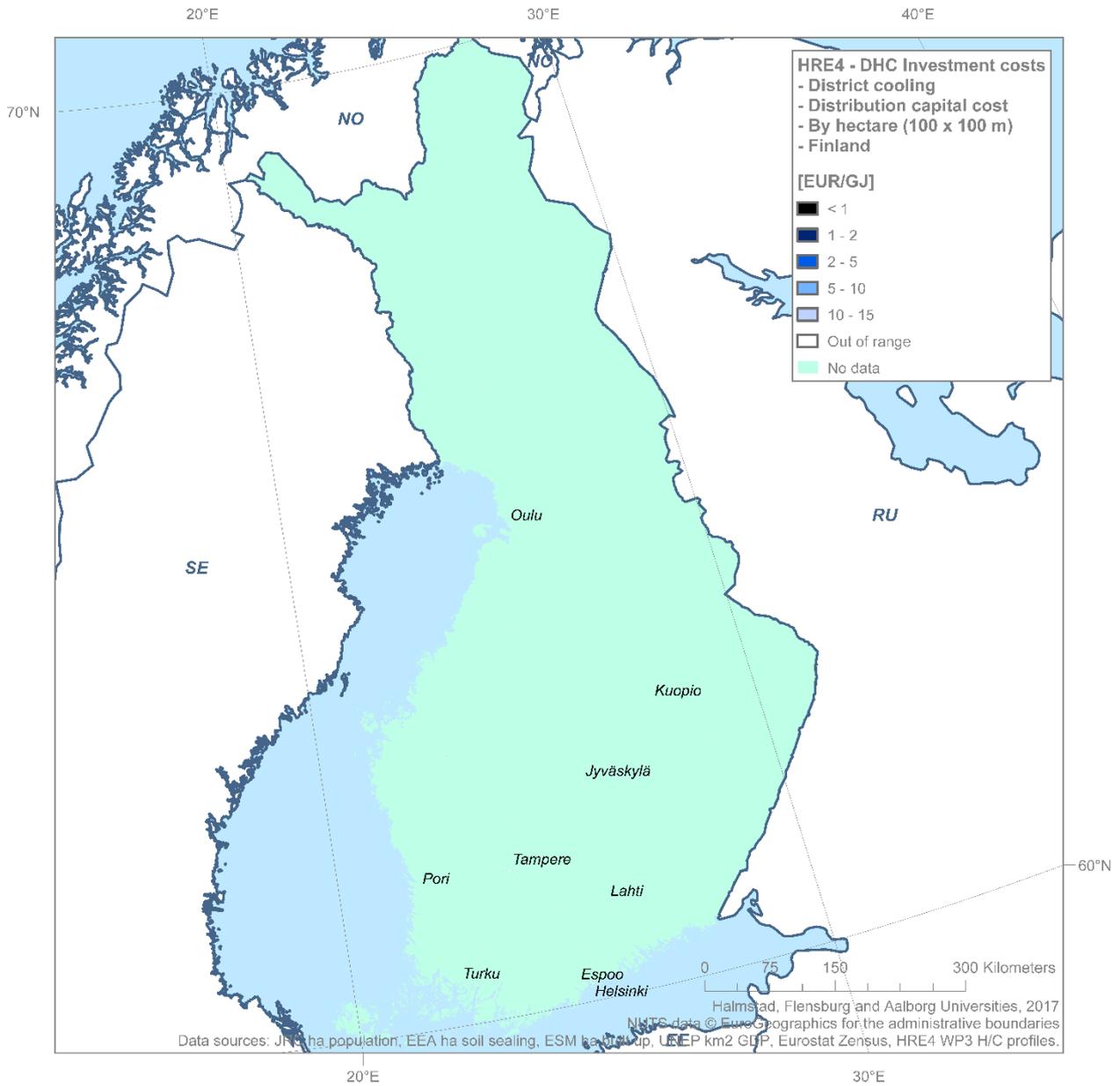
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6.6. Finland (FI)



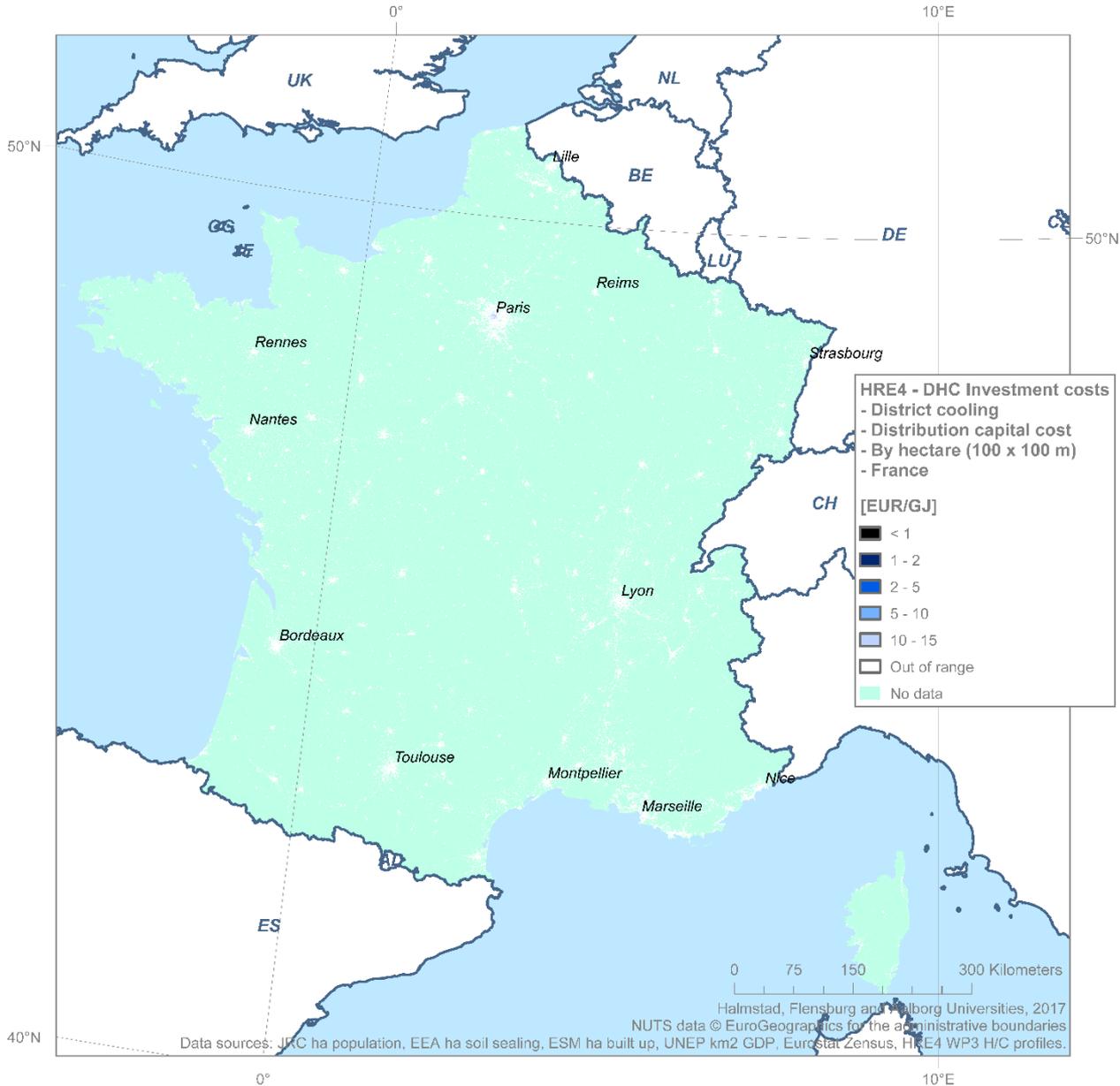
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6.7. France (FR)



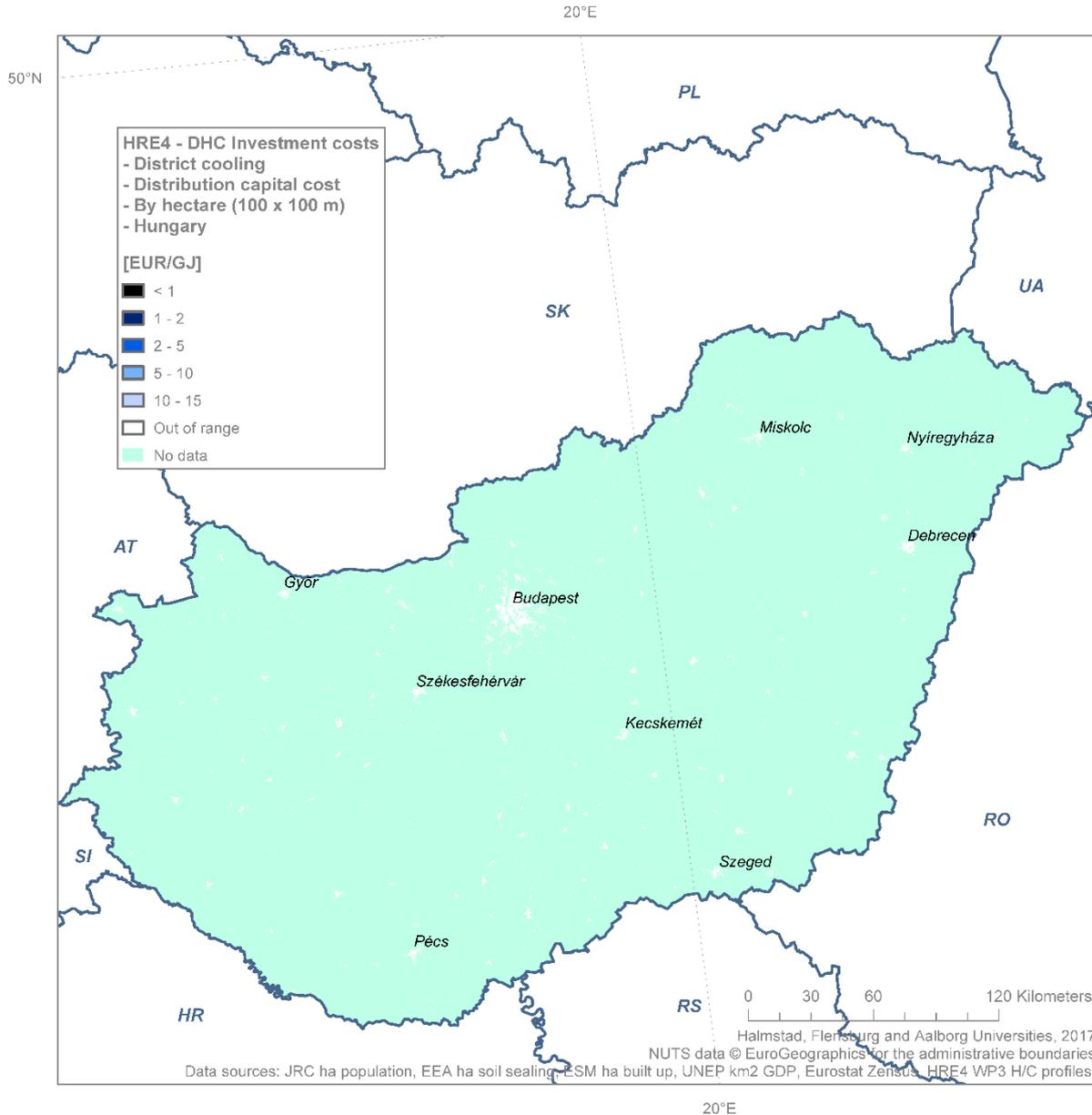
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6.9. Italy (IT)



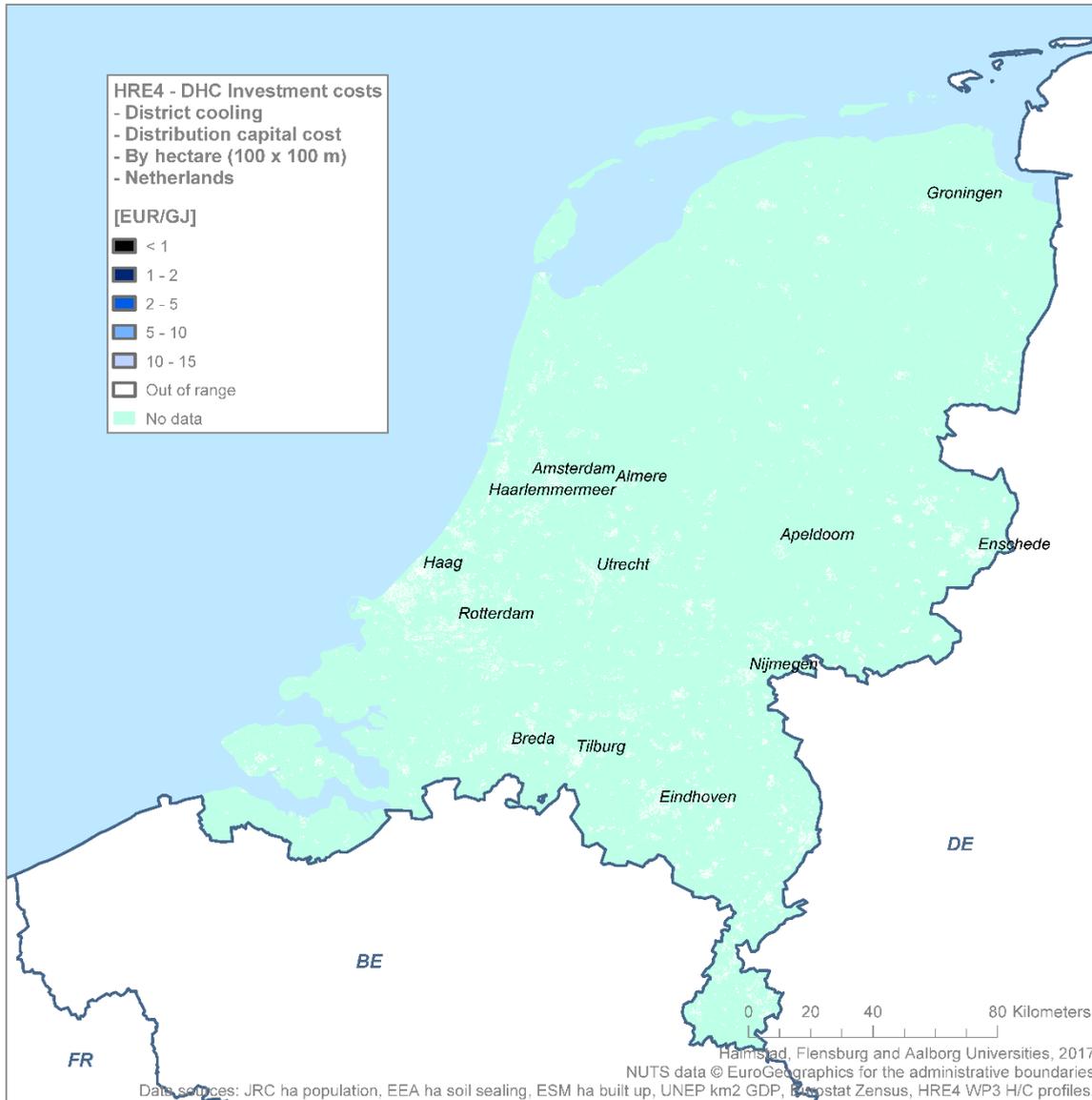
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6.10. Netherlands (NL)



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6.11. Poland (PL)



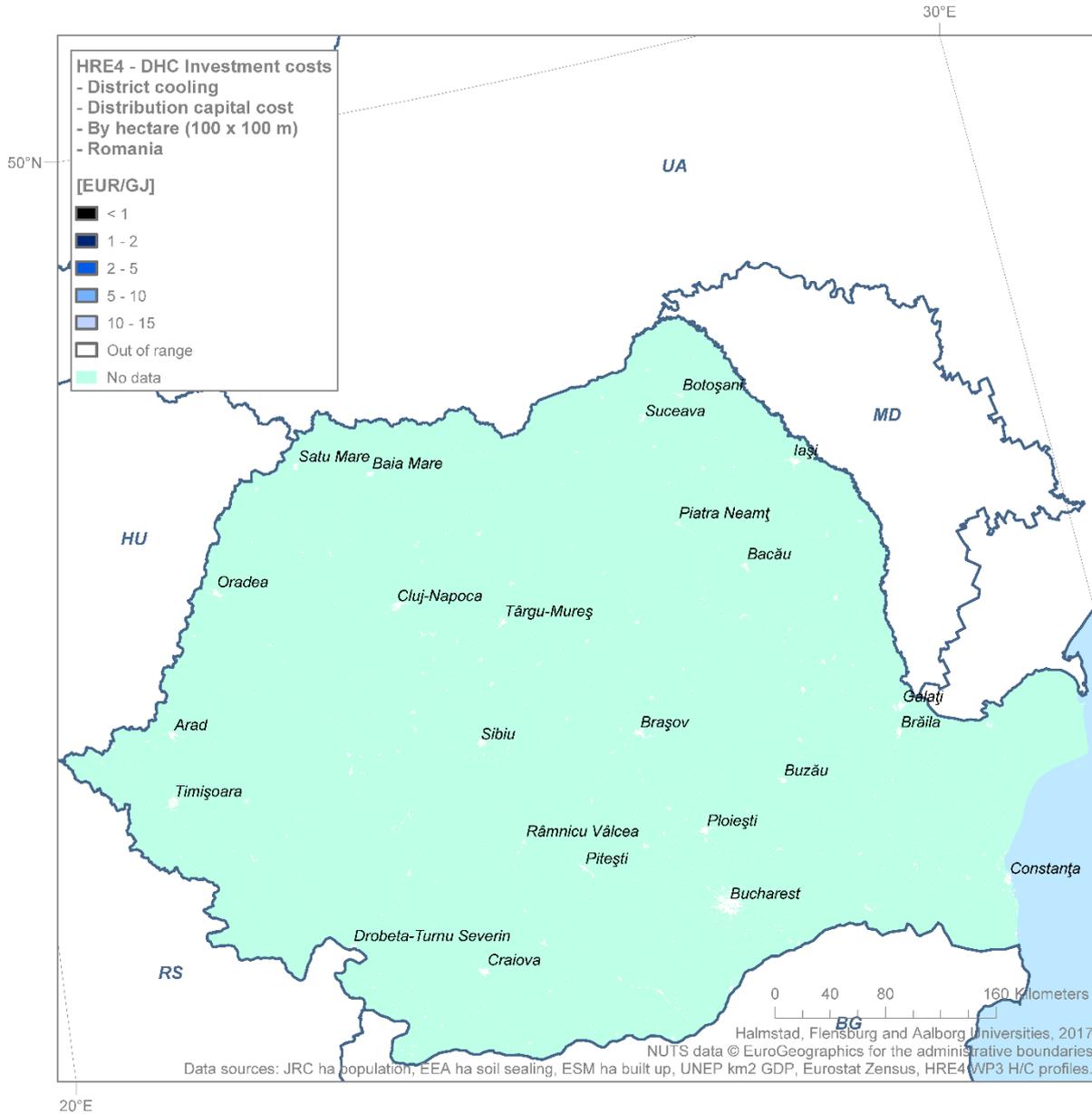
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6.12. Romania (RO)



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 695989.



6.13. Sweden (SE)



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 695989.



6.14. United Kingdom (UK)



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