

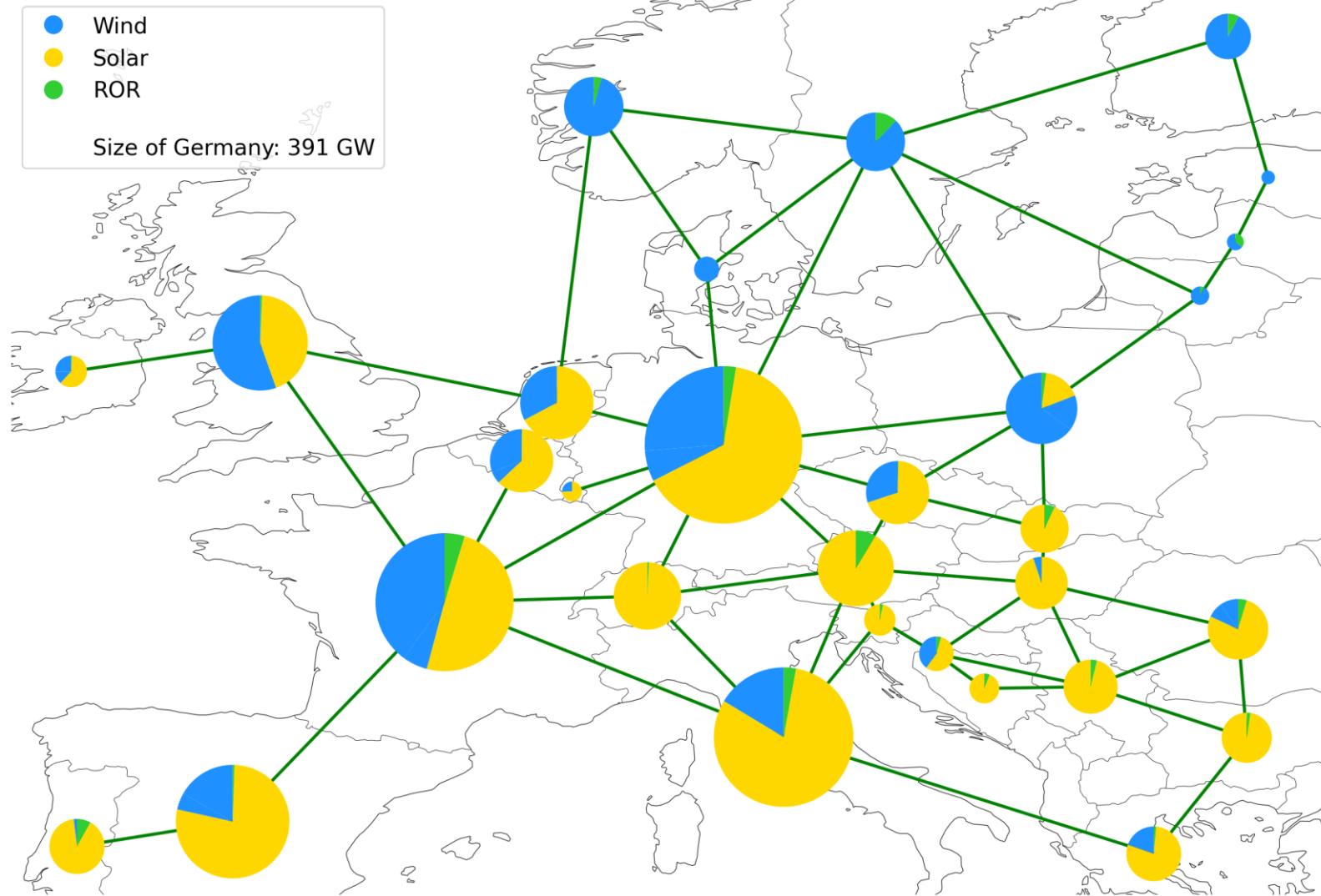
Electricity Coupled with the Transport Sector

Electricity Mismatch Analysis

Installed capacity

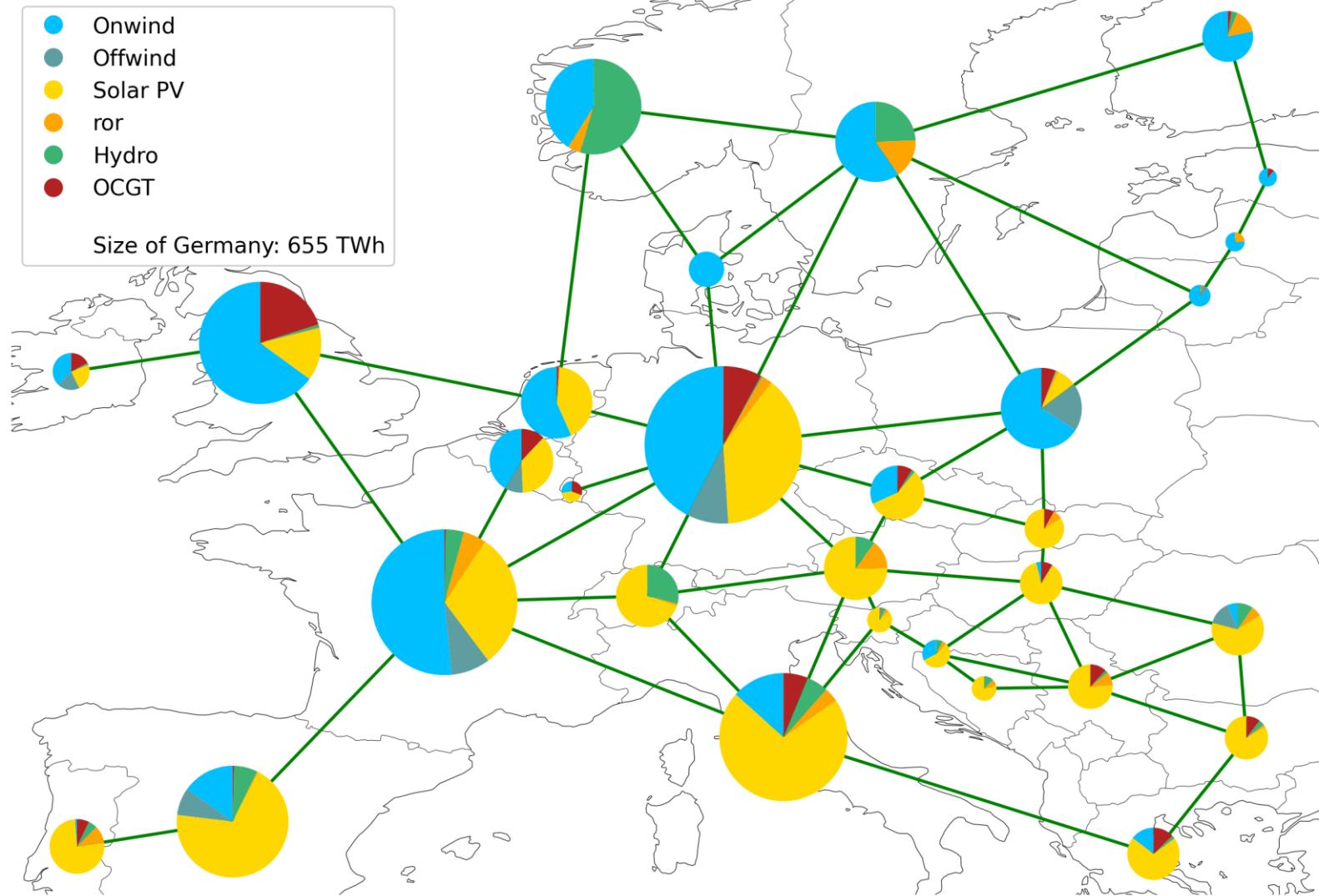
postnetwork-elec_v2g50_0.125_0.05.h5

Installed generator capacity [MW]



Electricity Supplied by Different Technologies

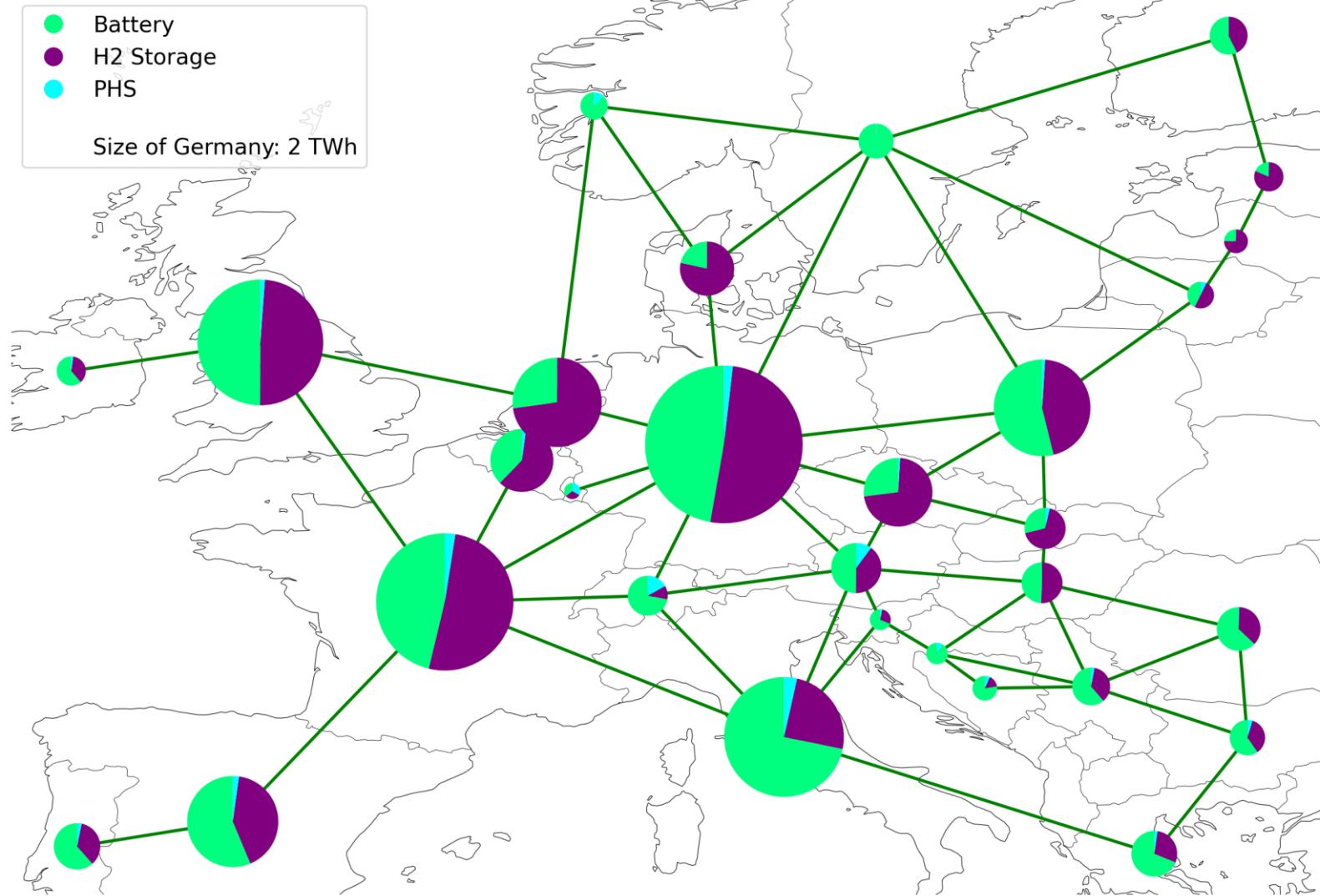
postnetwork-elec_v2g50_0.125_0.05.h5
Electrical energy from different technologies [MWh]



Installed storage (energy capacity)

postnetwork-elec_v2g50_0.125_0.05.h5

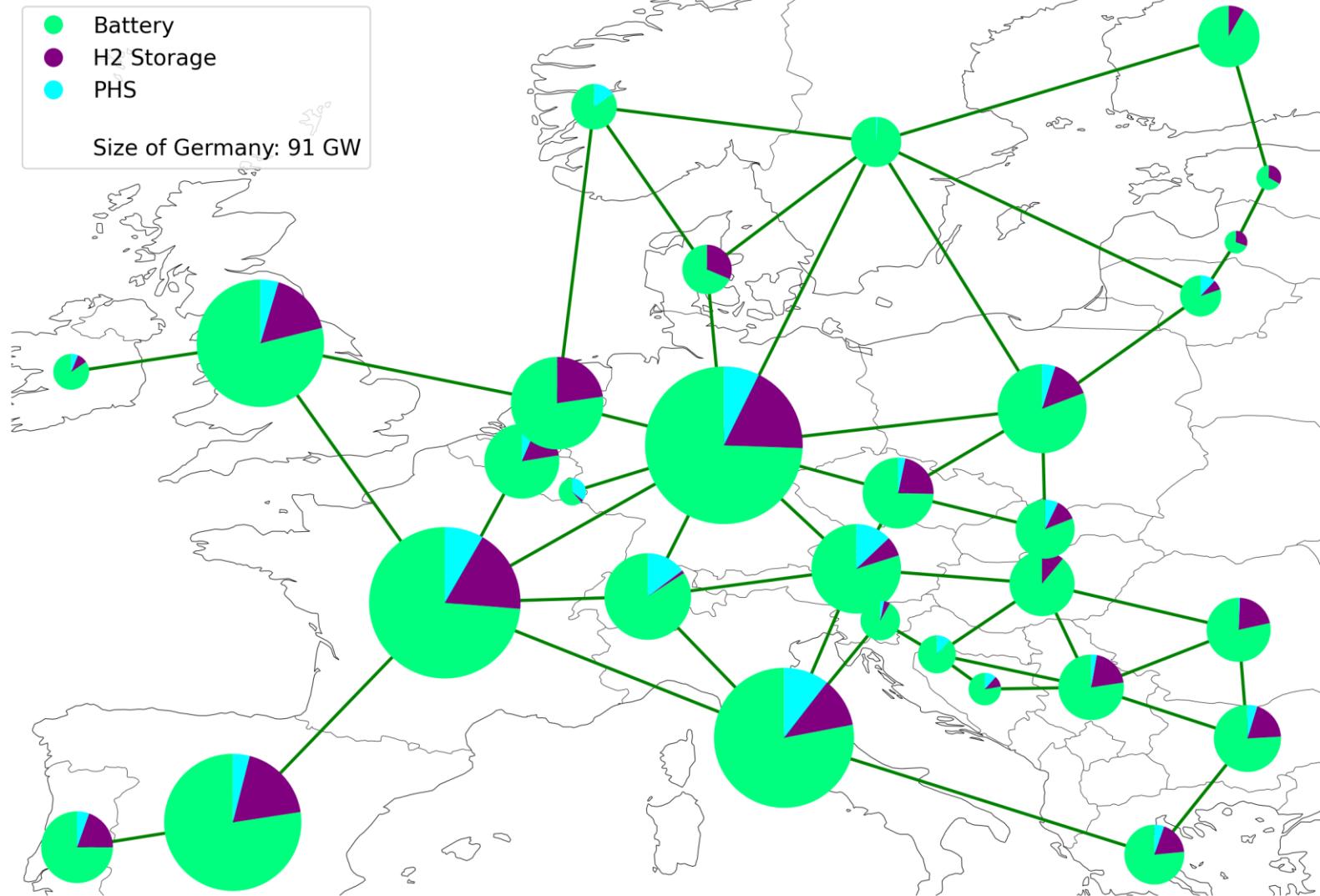
Installed storage energy capacity [MWh]



Installed storage (power capacity)

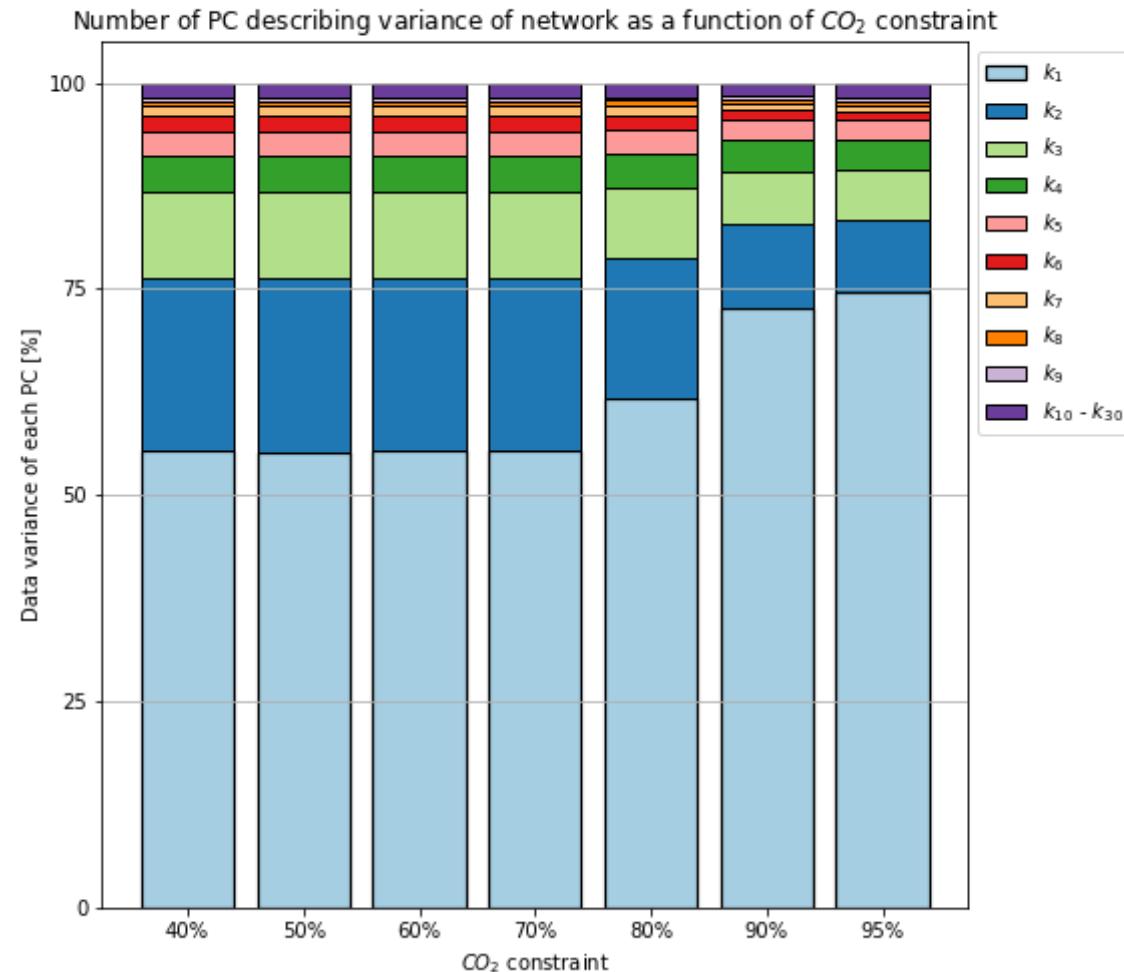
postnetwork-elec_v2g50_0.125_0.05.h5

Installed storage power capacity [MW]

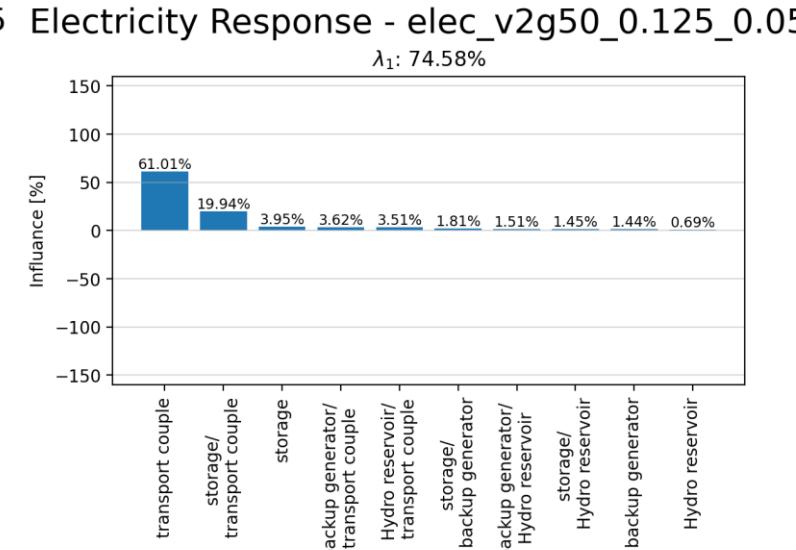
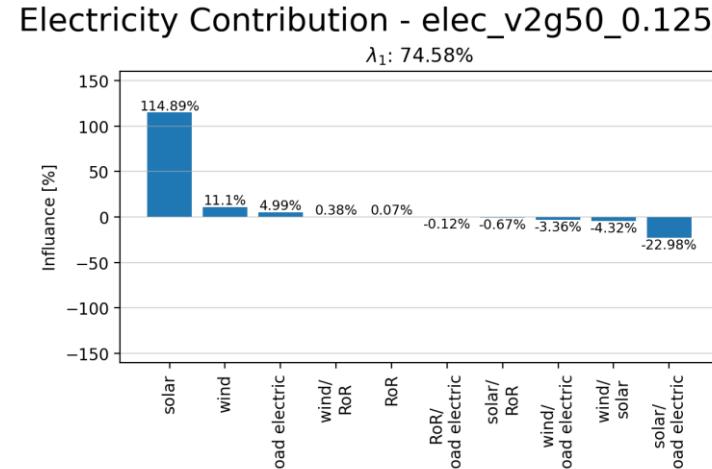
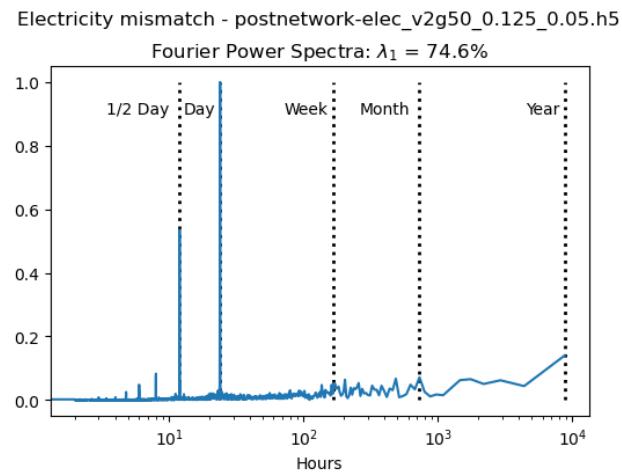
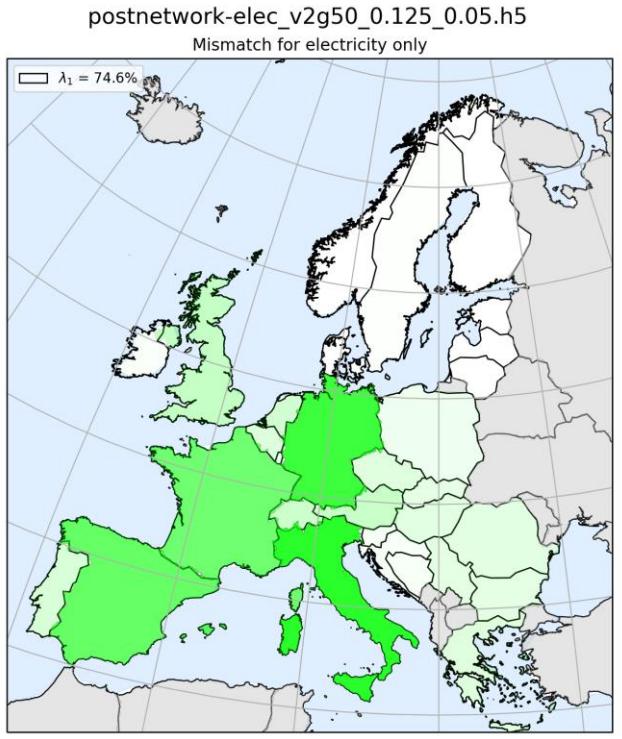


Change in PC due to CO₂ Constrain

Electricity Mismatch - elec_v2g50

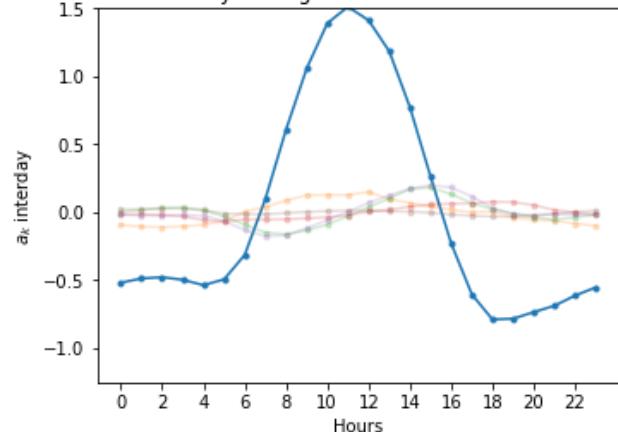


Principle Component 1

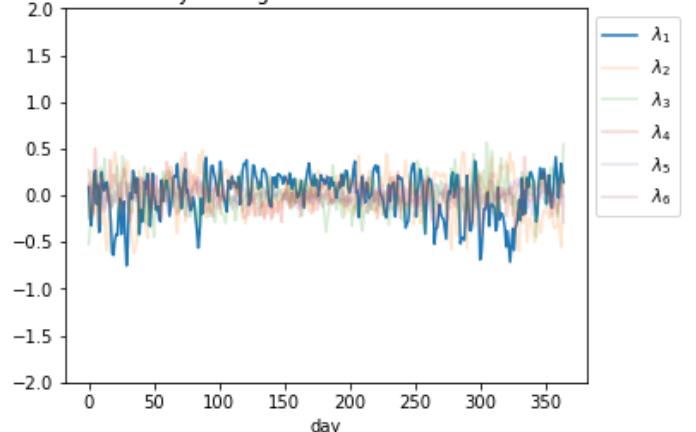


Electricity mismatch - postnetwork-elec_v2g50_0.125_0.05.h5

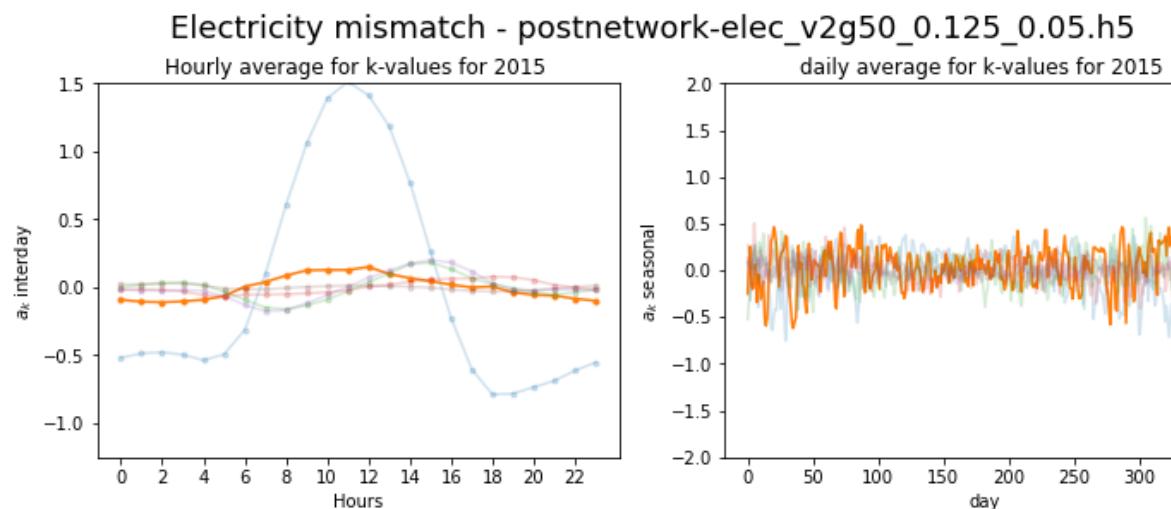
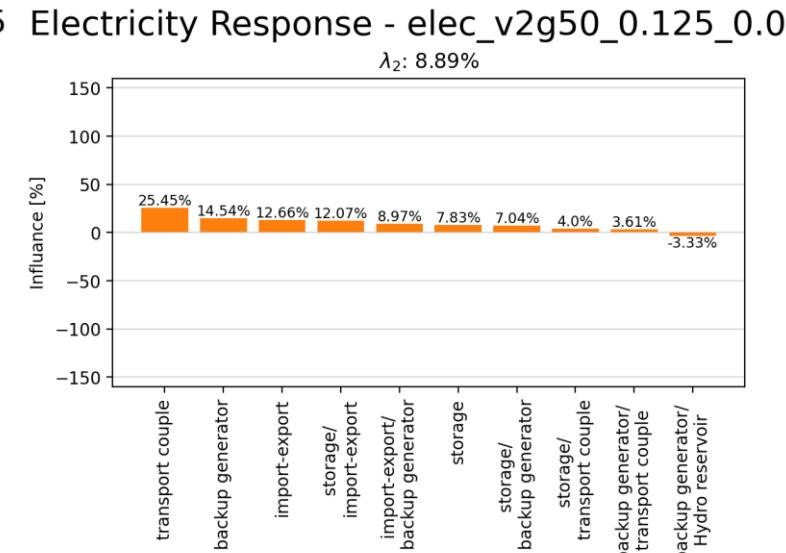
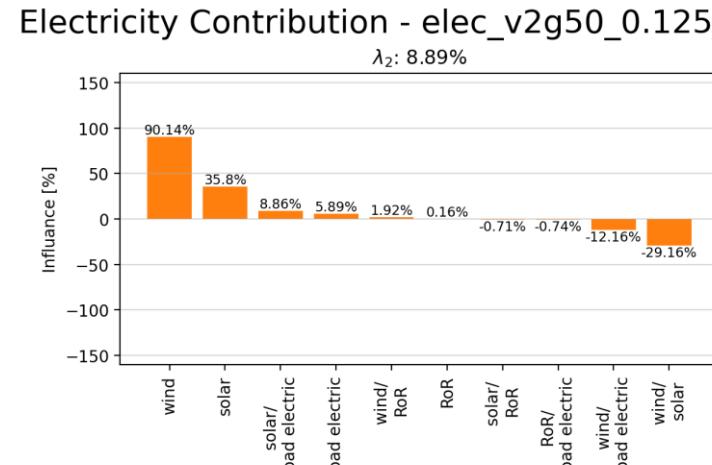
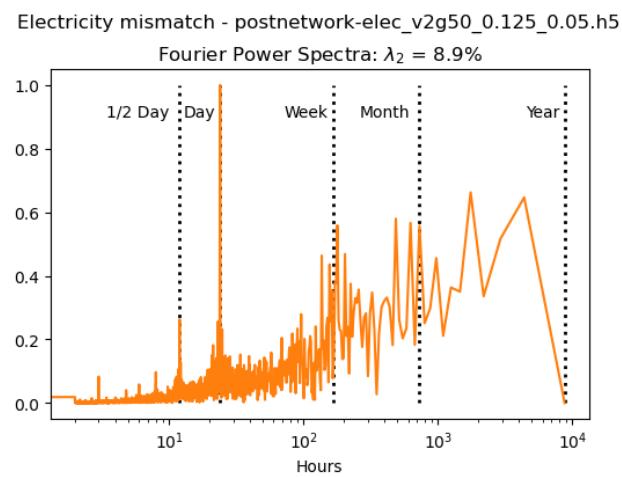
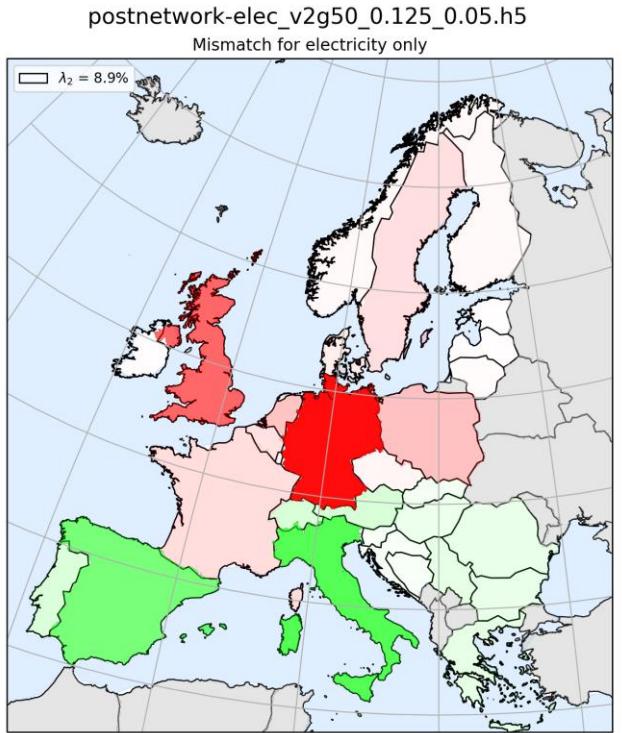
Hourly average for k-values for 2015



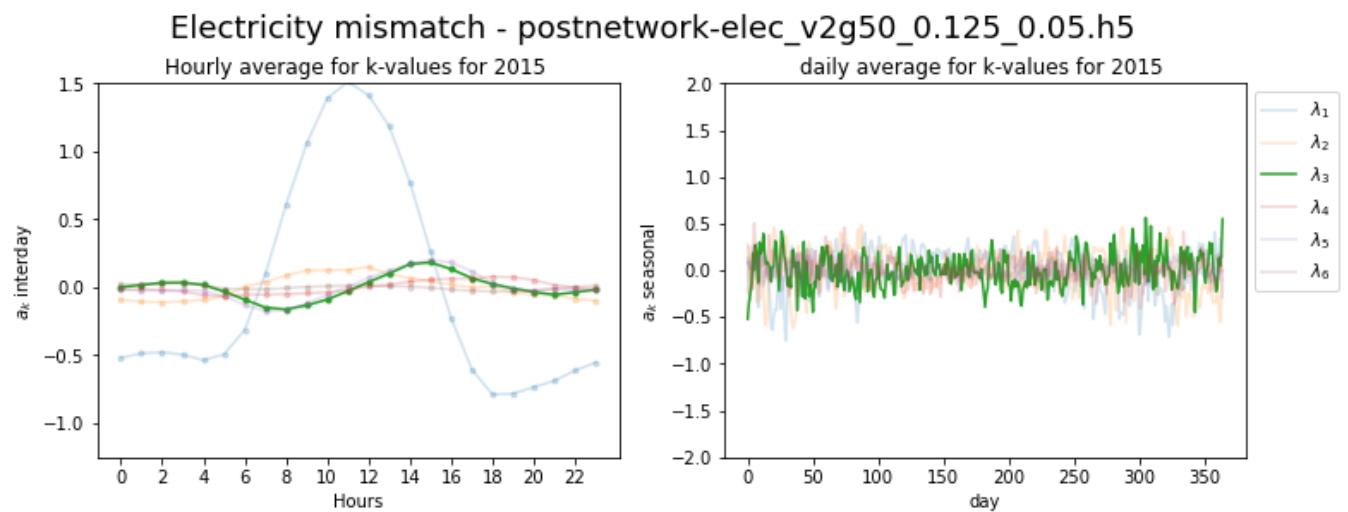
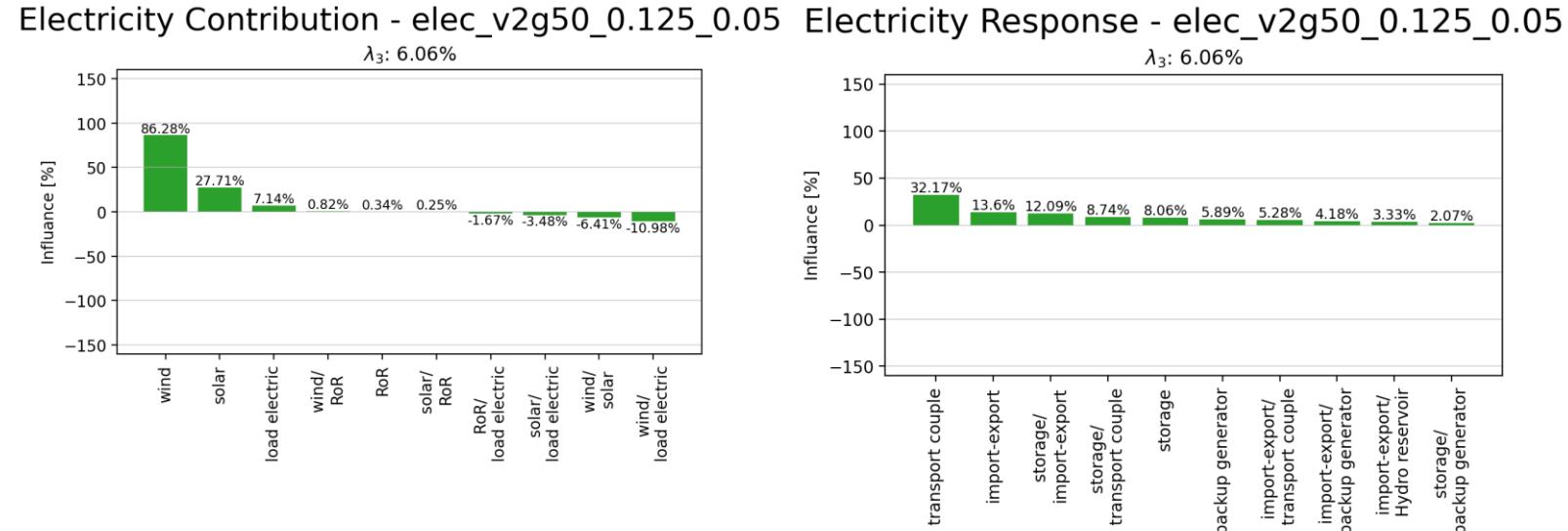
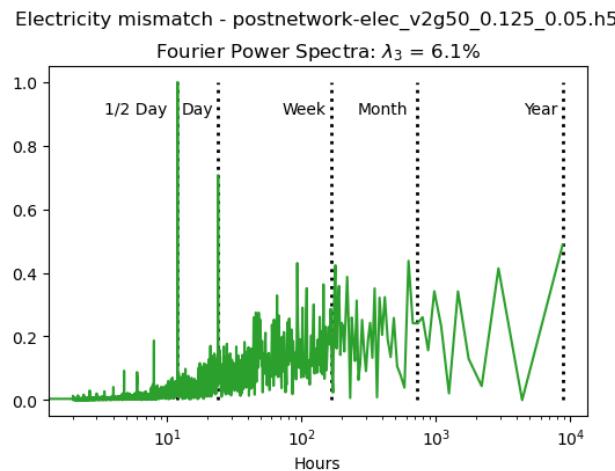
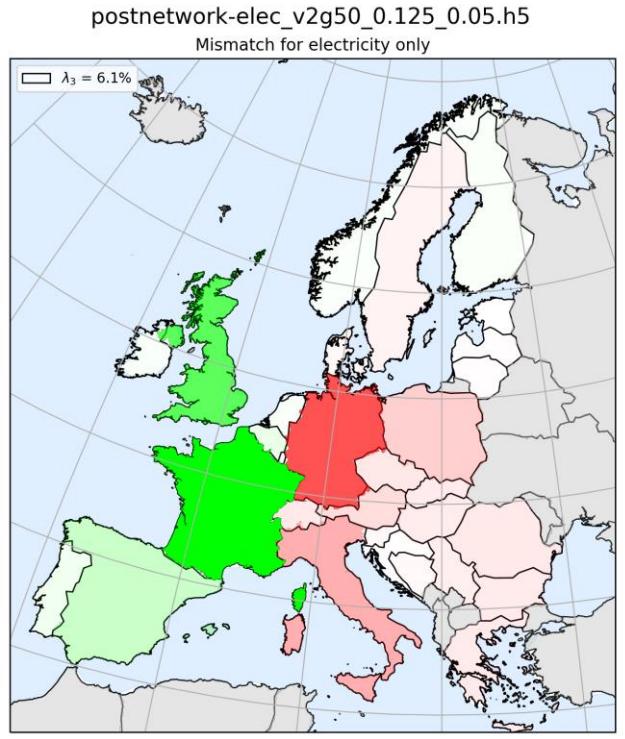
daily average for k-values for 2015



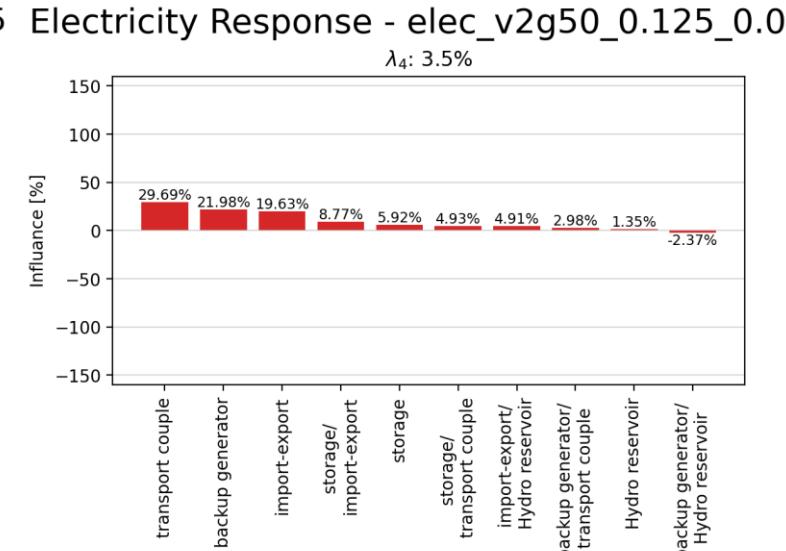
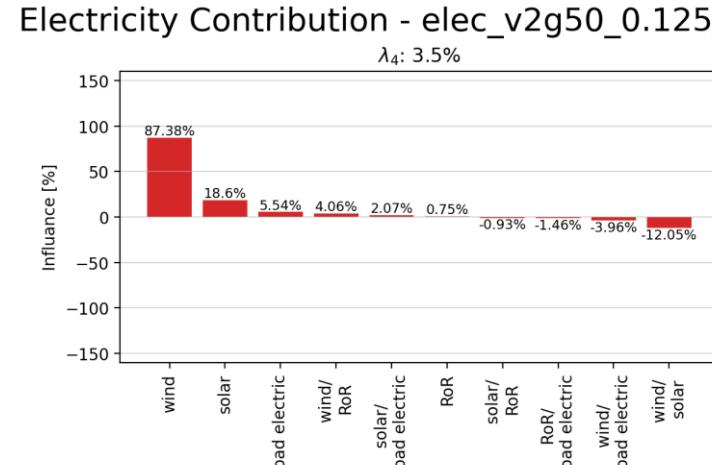
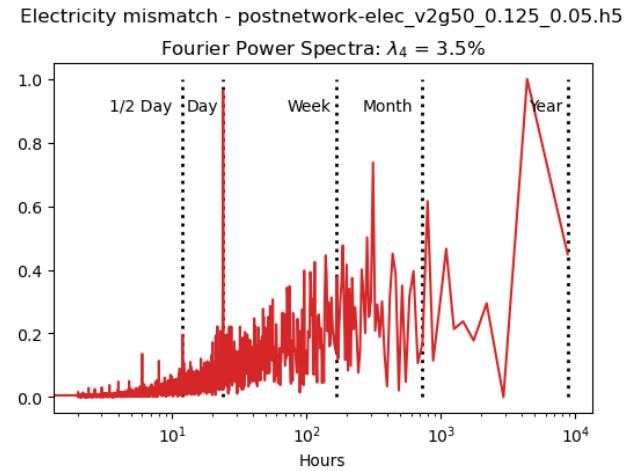
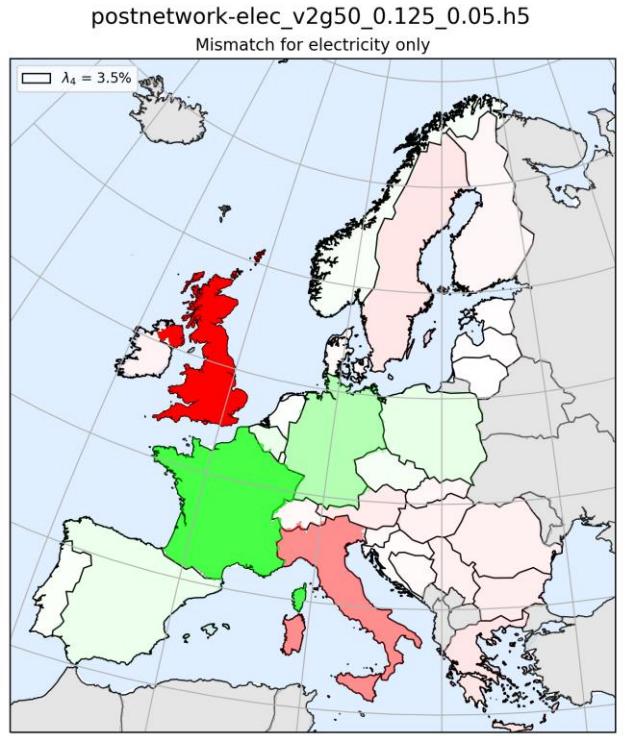
Principle Component 2



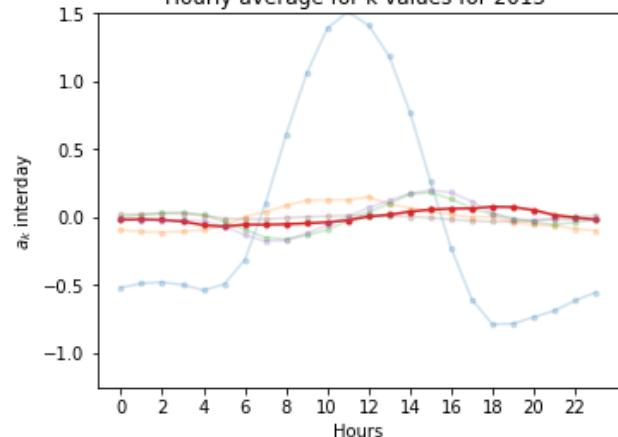
Principle Component 3



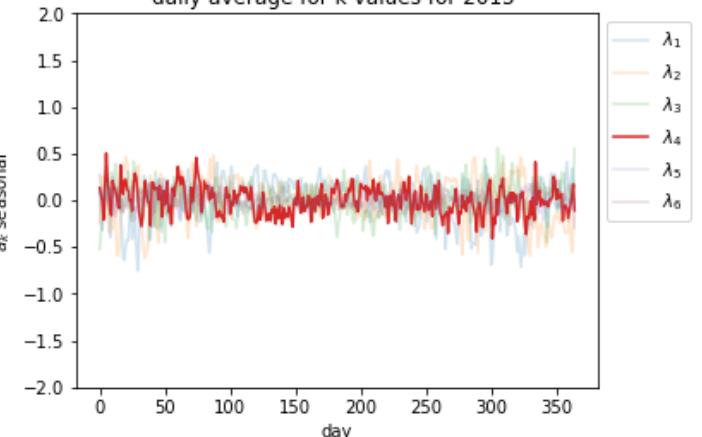
Principle Component 4



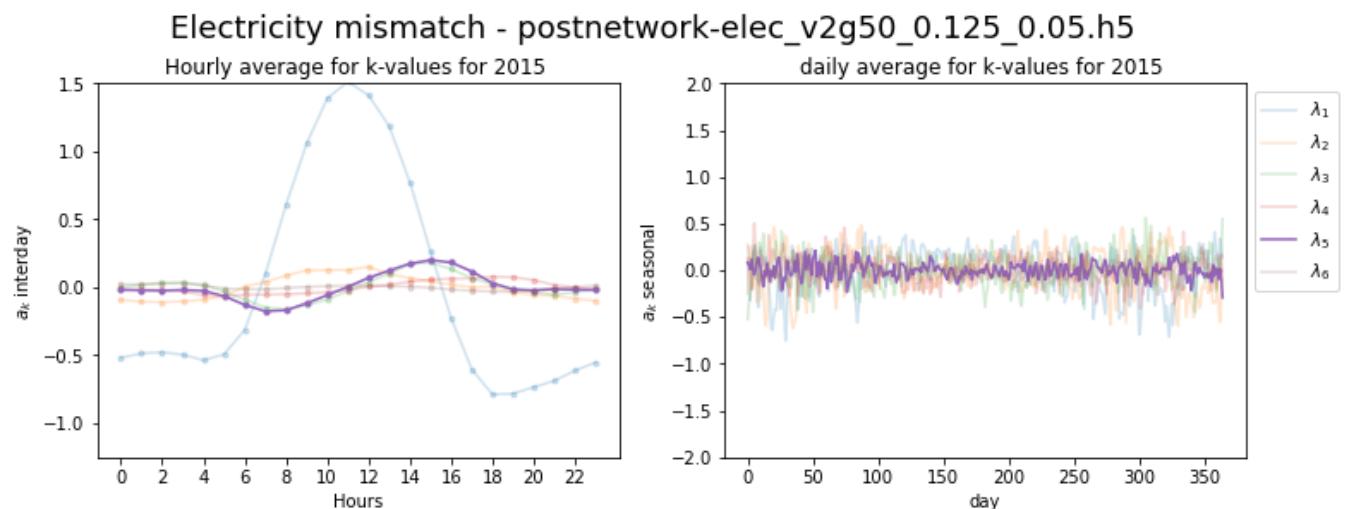
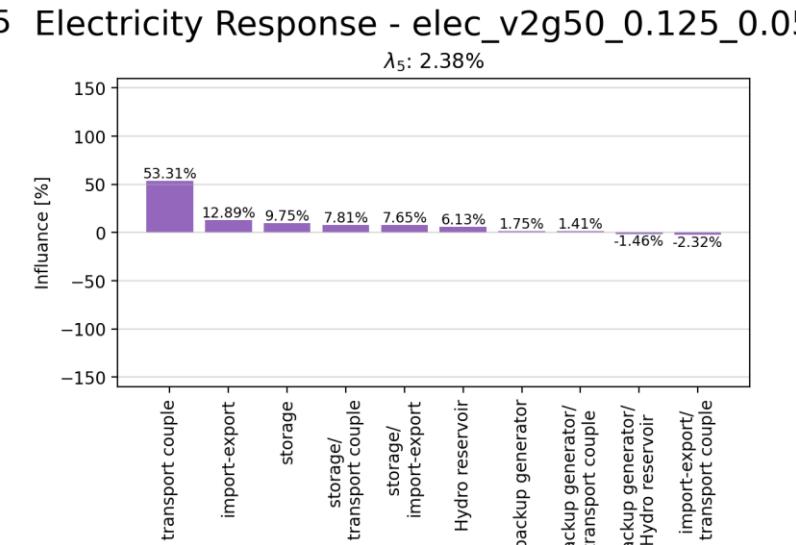
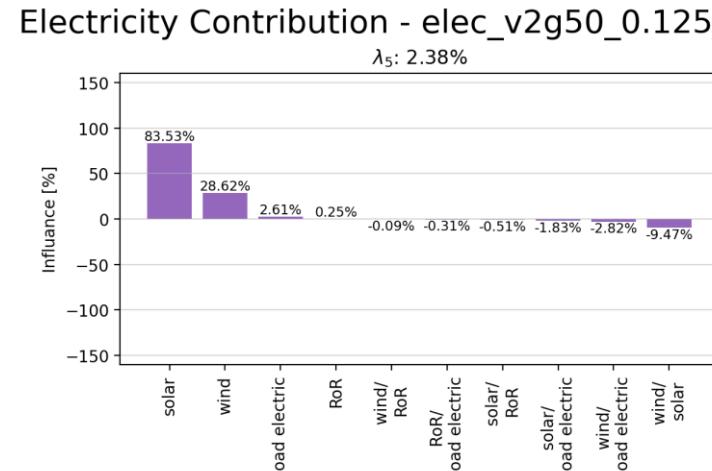
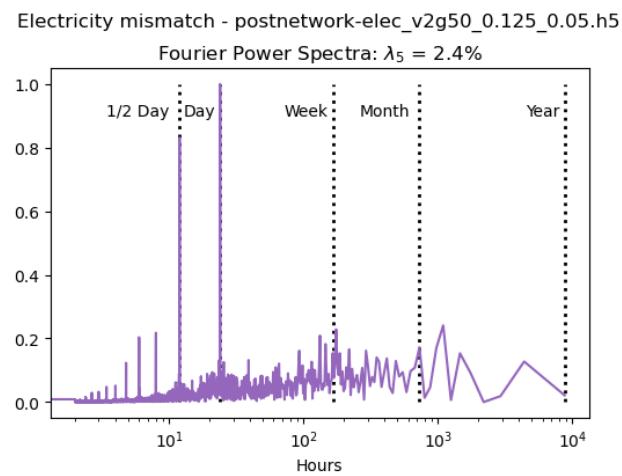
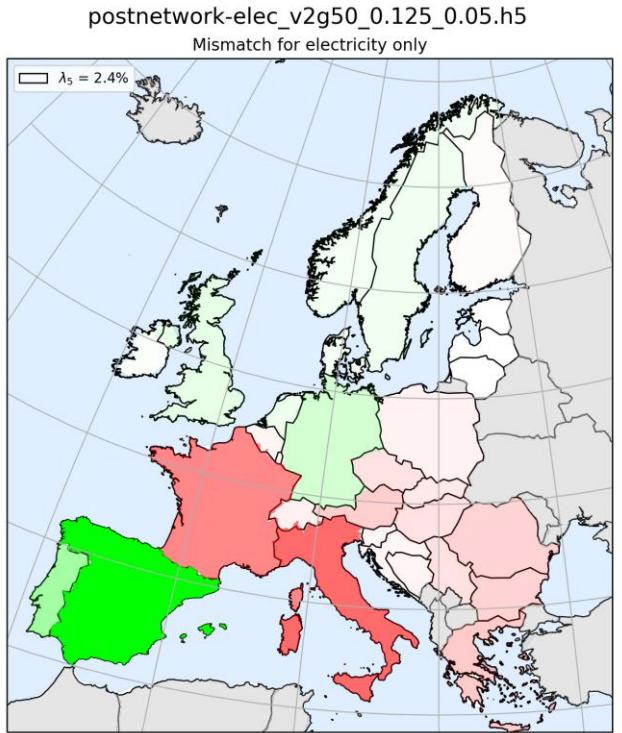
Electricity mismatch - postnetwork-elec_v2g50_0.125_0.05.h5
Hourly average for k-values for 2015



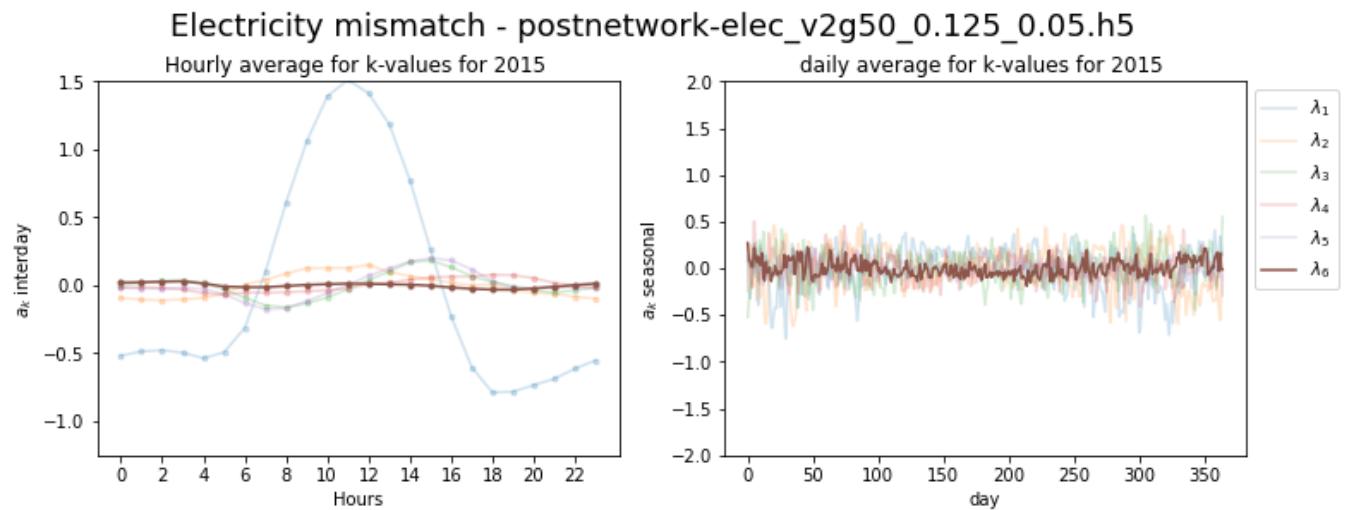
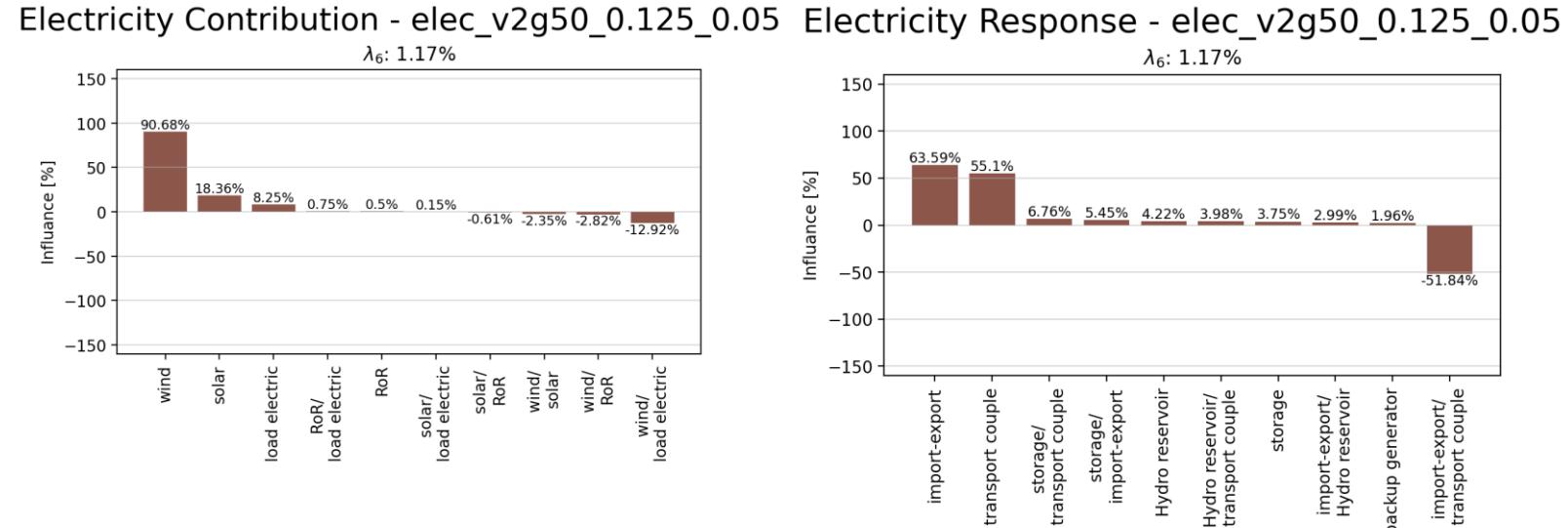
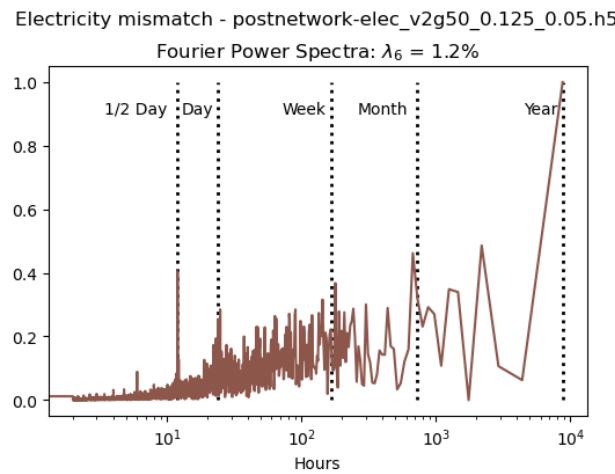
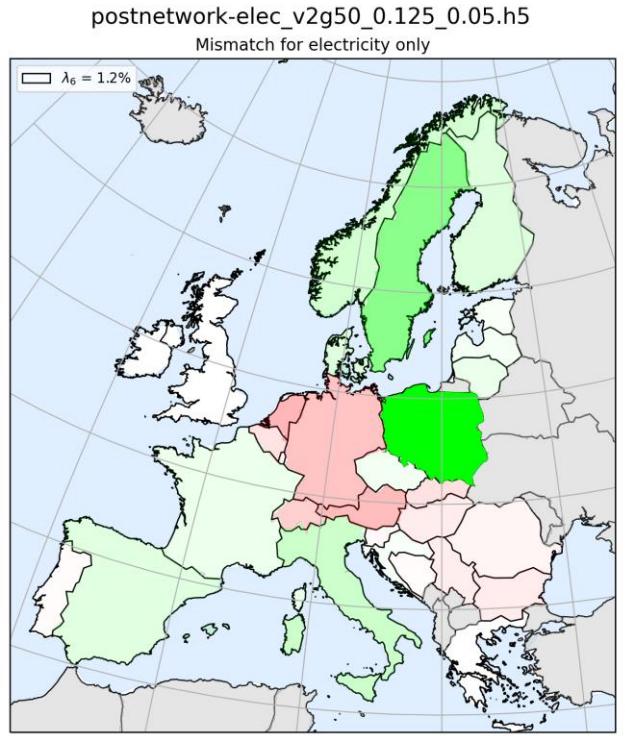
daily average for k-values for 2015



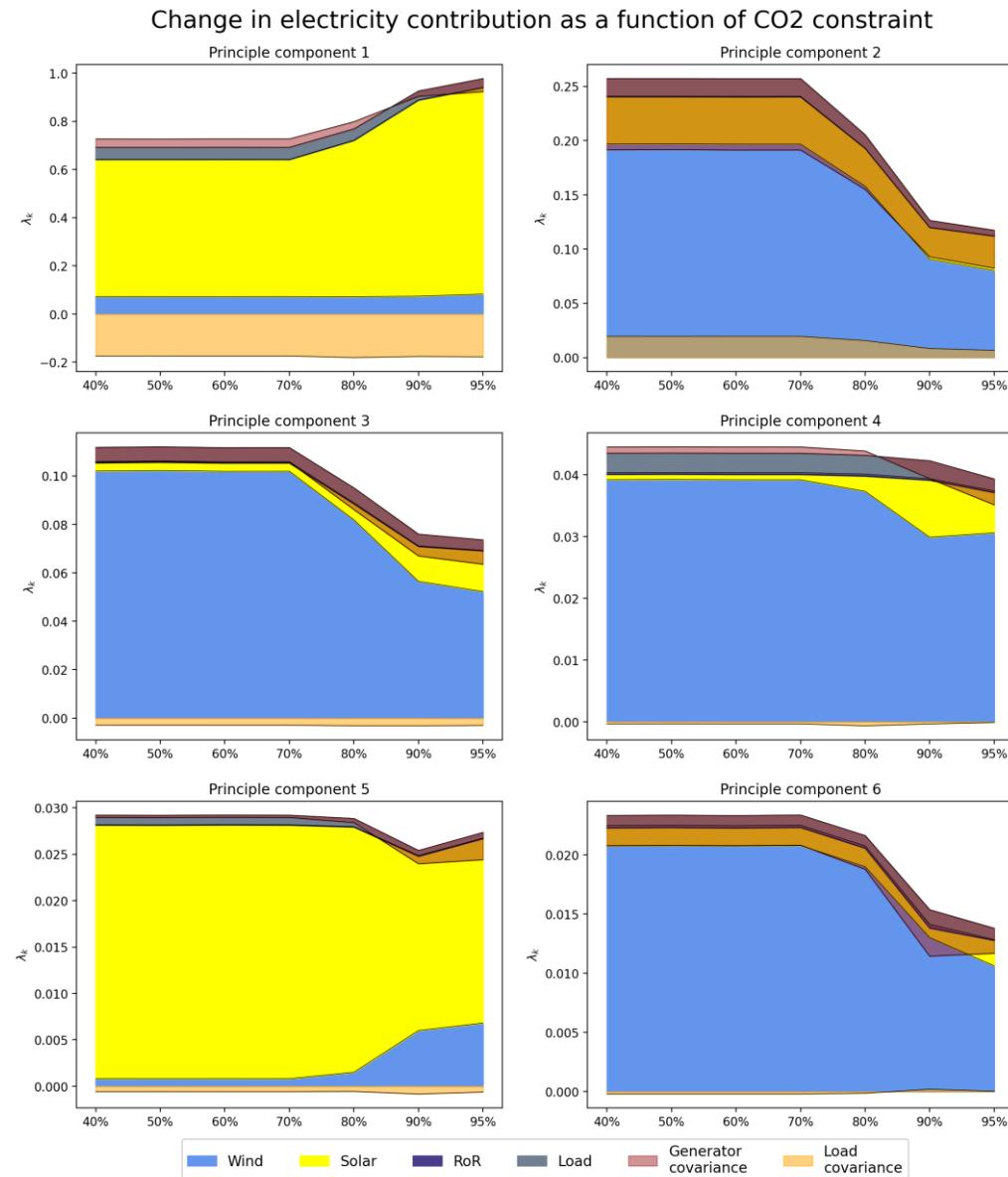
Principle Component 5



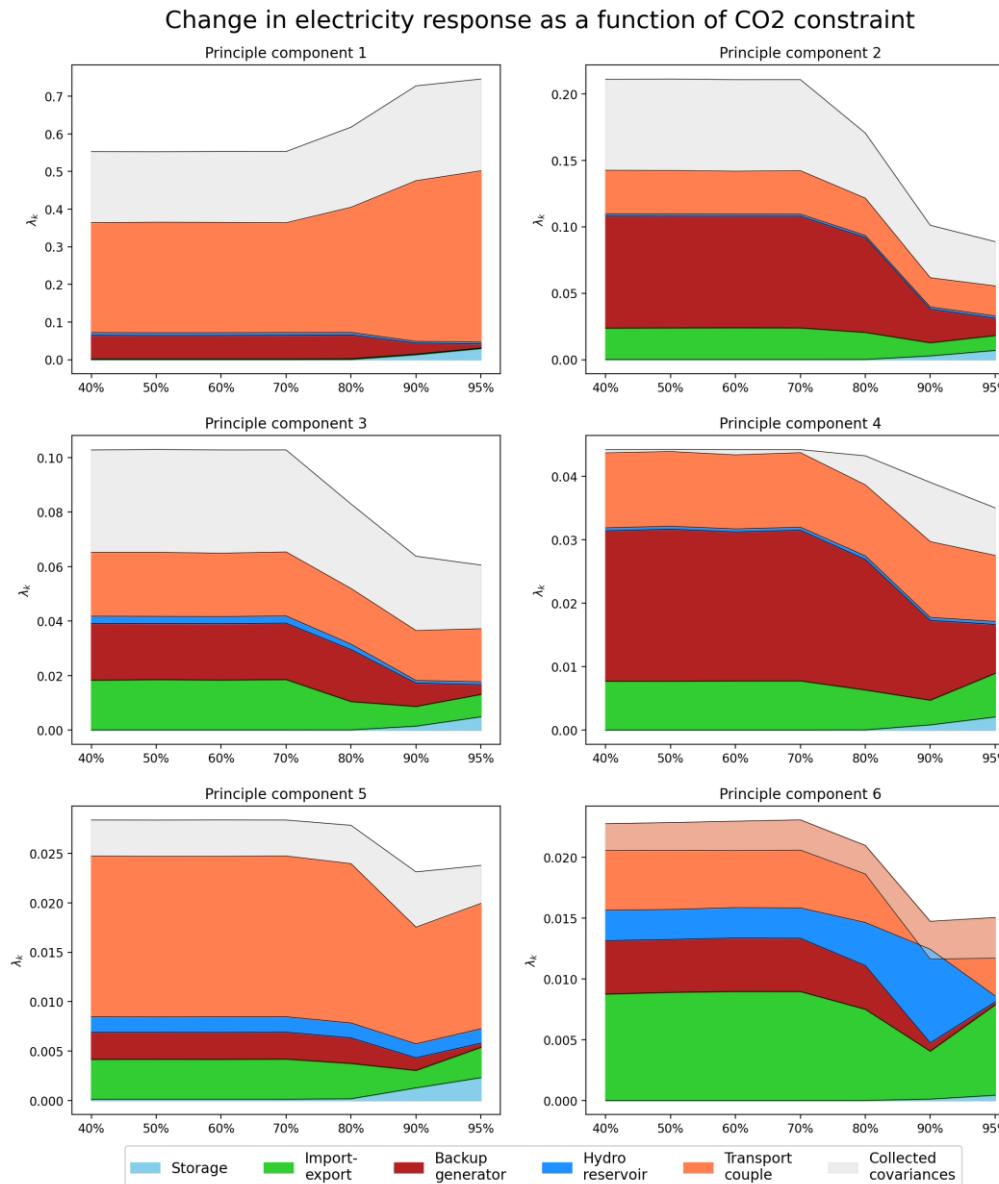
Principle Component 6



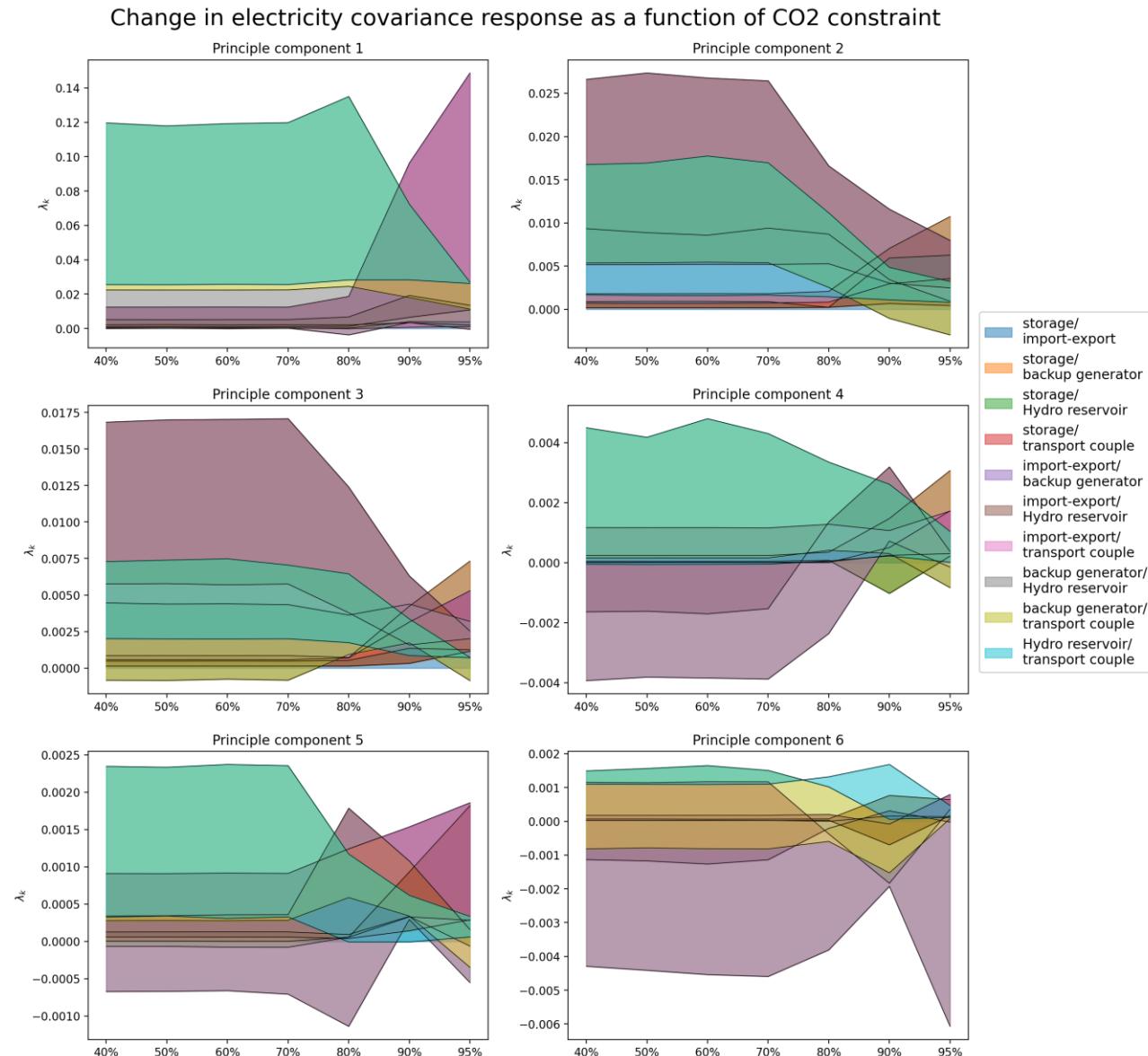
Change in Contribution due to CO2 Constraint



Change in Reponse due to CO2 Constraint



Change in Cov Reponse due to CO2 Constraint

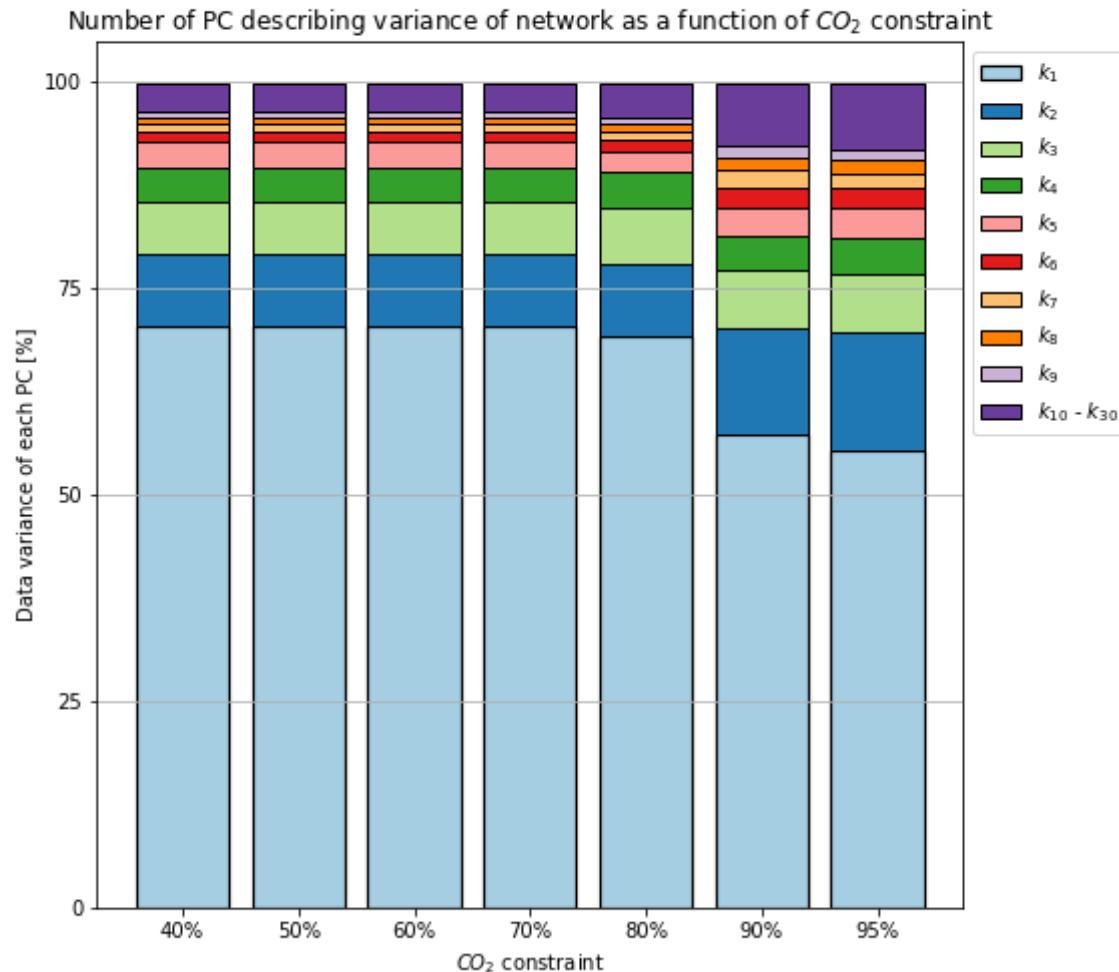


Electricity Coupled with the Transport Sector

Electricity NP Analysis

Change in PC due to CO₂ Constrain

Electricity Nodal Price - elec_v2g50

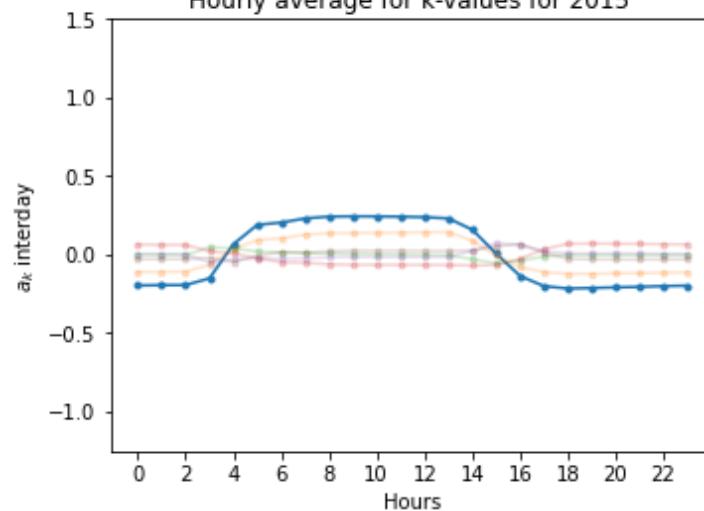


Principle Component 1

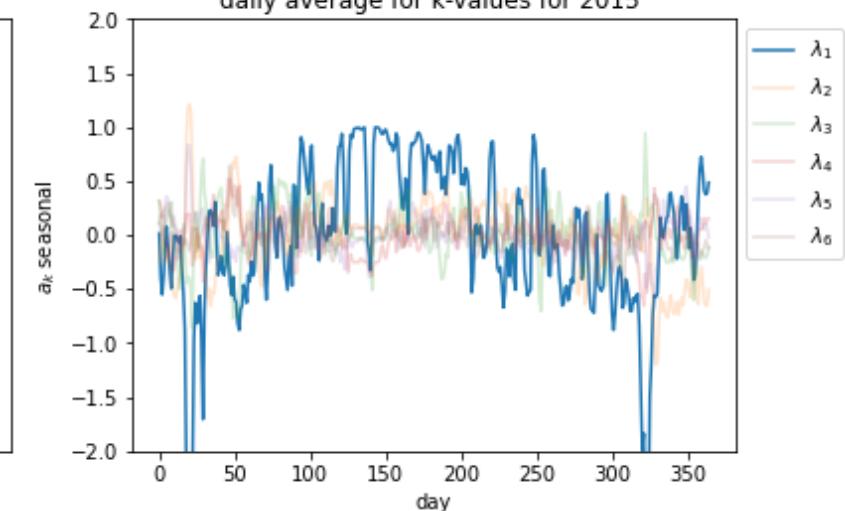
postnetwork-elec_v2g50_0.125_0.05.h5
Nodal price for electricity only



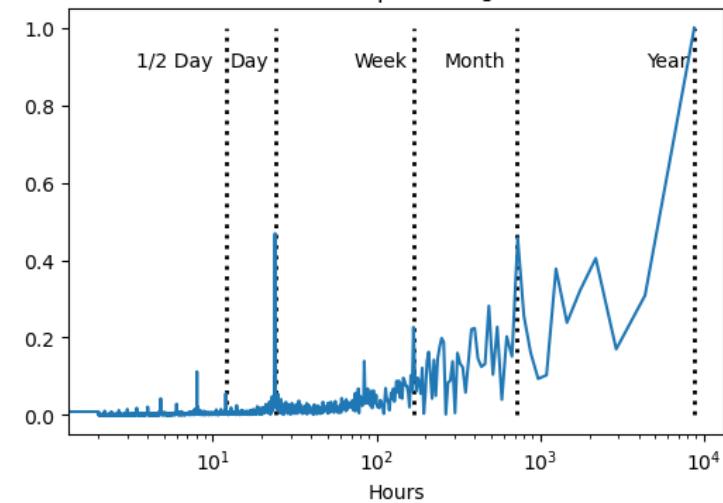
Electricity Nodal Price - postnetwork-elec_v2g50_0.125_0.05.h5
Hourly average for k-values for 2015



Electricity Nodal Price - postnetwork-elec_v2g50_0.125_0.05.h5
daily average for k-values for 2015

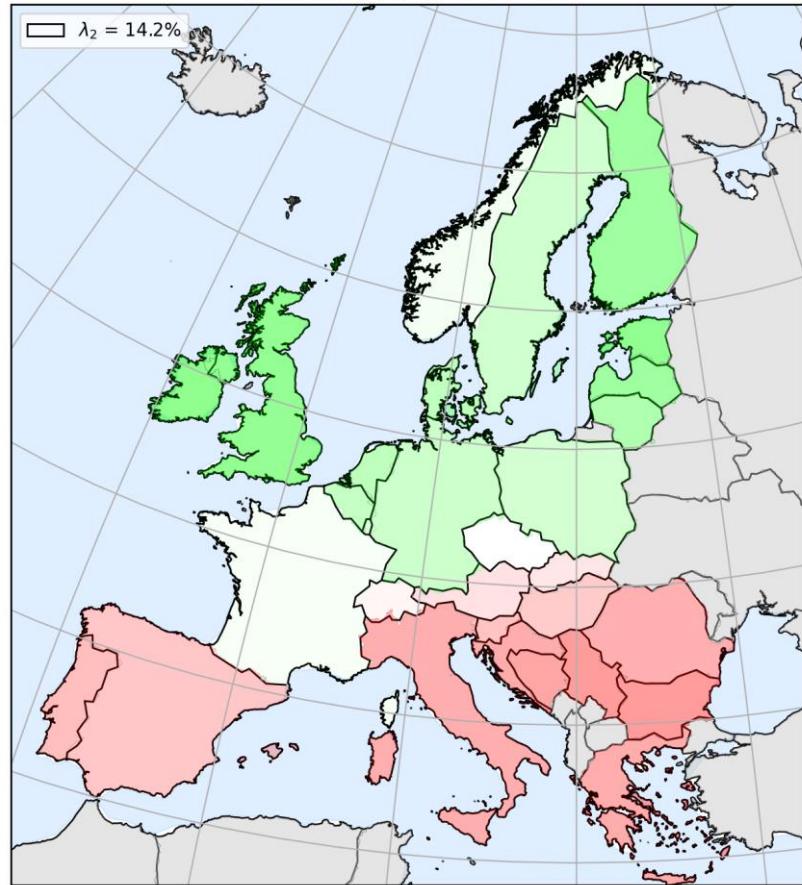


Electricity Nodal Price - postnetwork-elec_v2g50_0.125_0.05.h5
Fourier Power Spectra: $\lambda_1 = 55.4\%$

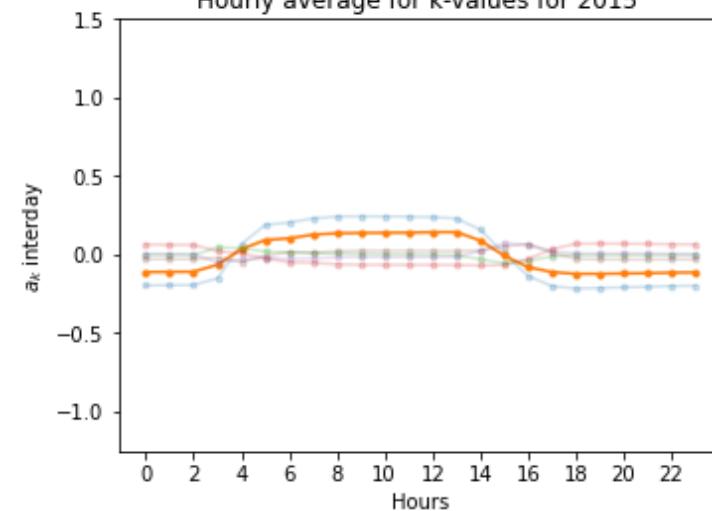


Principle Component 2

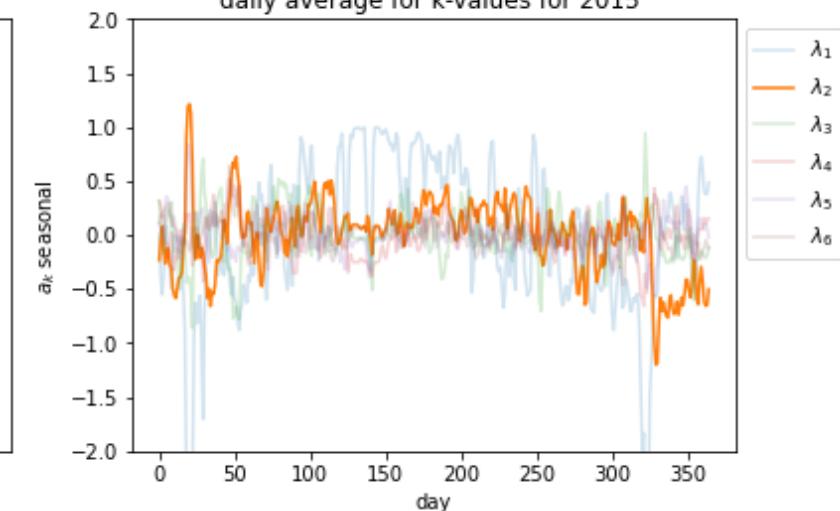
postnetwork-elec_v2g50_0.125_0.05.h5
Nodal price for electricity only



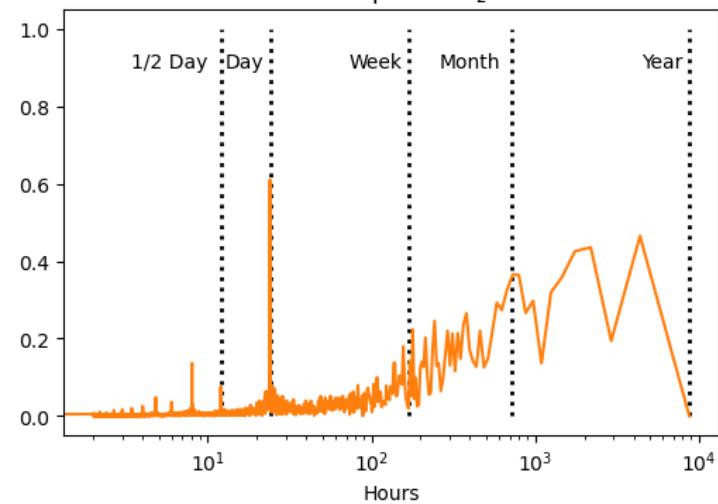
Electricity Nodal Price - postnetwork-elec_v2g50_0.125_0.05.h5
Hourly average for k-values for 2015



daily average for k-values for 2015

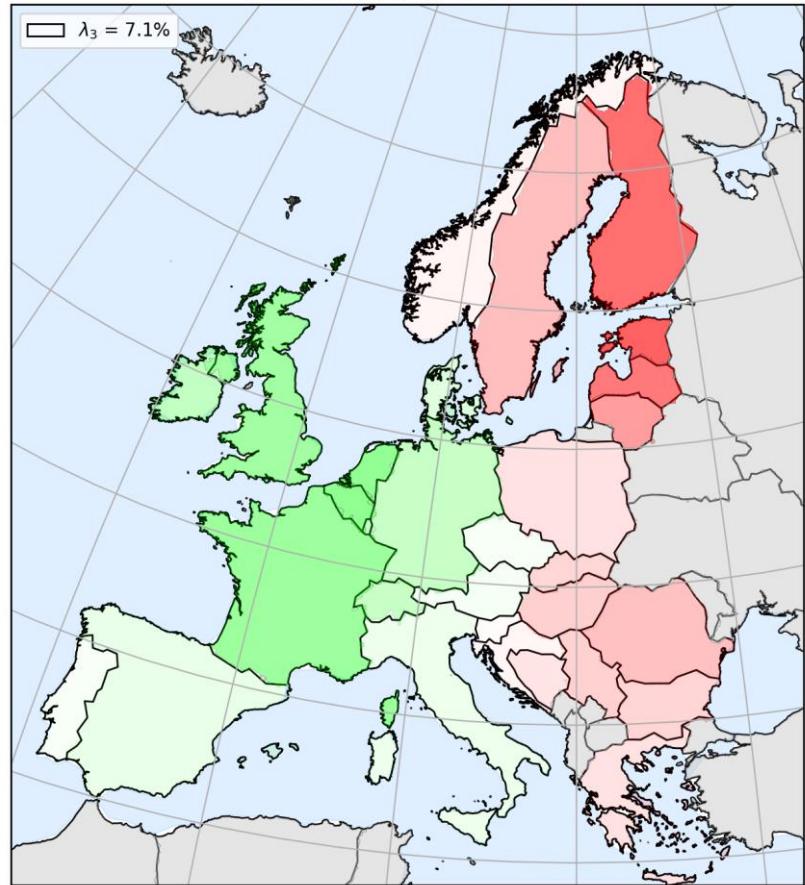


Electricity Nodal Price - postnetwork-elec_v2g50_0.125_0.05.h5
Fourier Power Spectra: $\lambda_2 = 14.2\%$

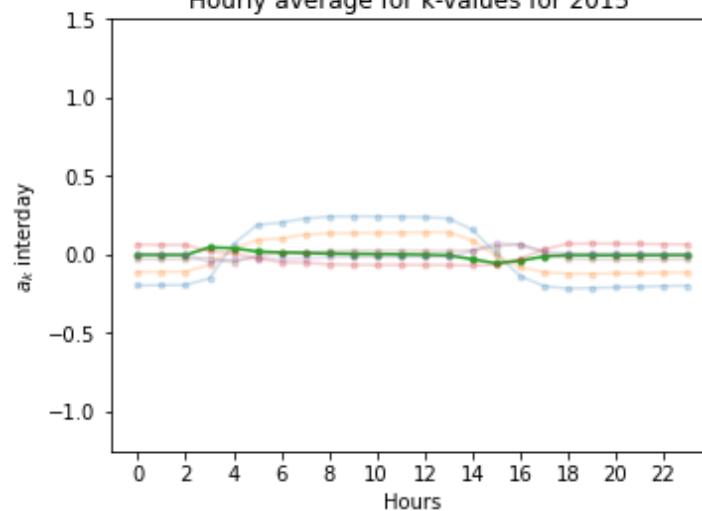


Principle Component 3

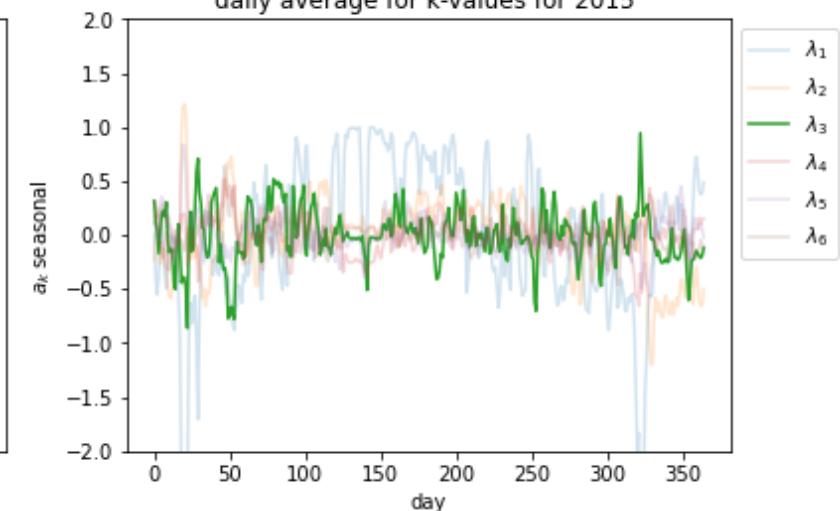
postnetwork-elec_v2g50_0.125_0.05.h5
Nodal price for electricity only



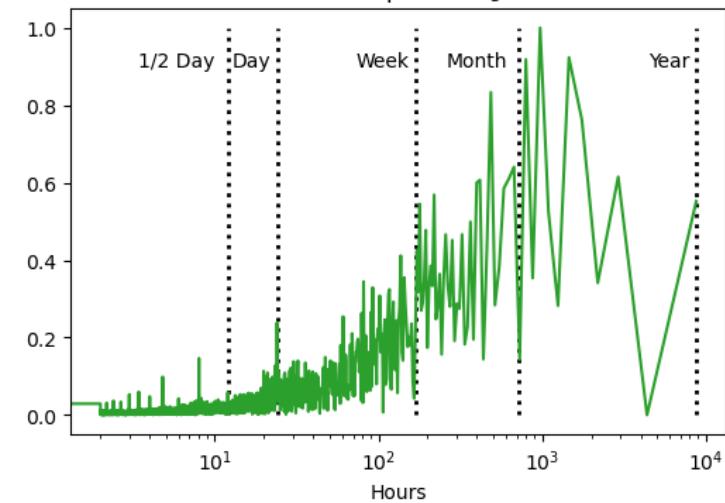
Electricity Nodal Price - postnetwork-elec_v2g50_0.125_0.05.h5
Hourly average for k-values for 2015



Electricity Nodal Price - postnetwork-elec_v2g50_0.125_0.05.h5
daily average for k-values for 2015

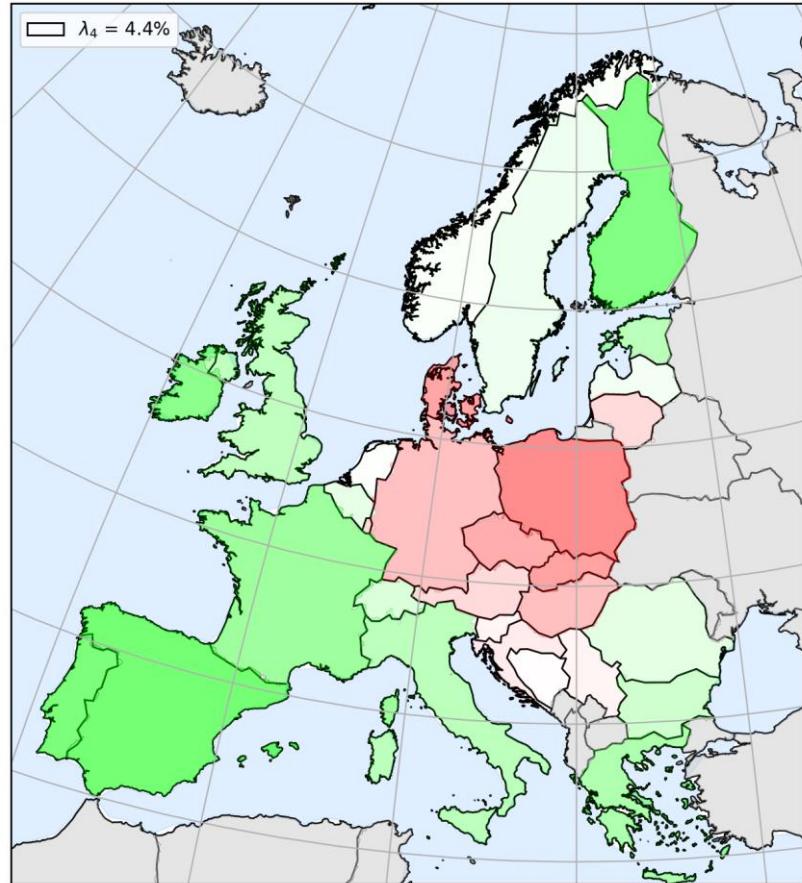


Electricity Nodal Price - postnetwork-elec_v2g50_0.125_0.05.h5
Fourier Power Spectra: $\lambda_3 = 7.1\%$

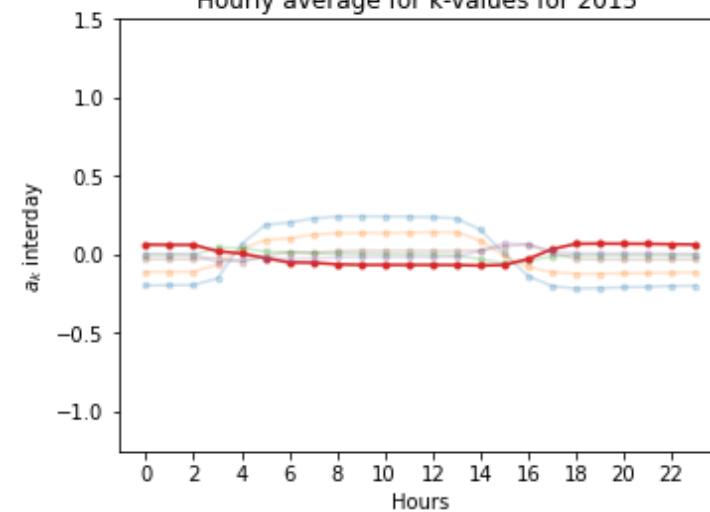


Principle Component 4

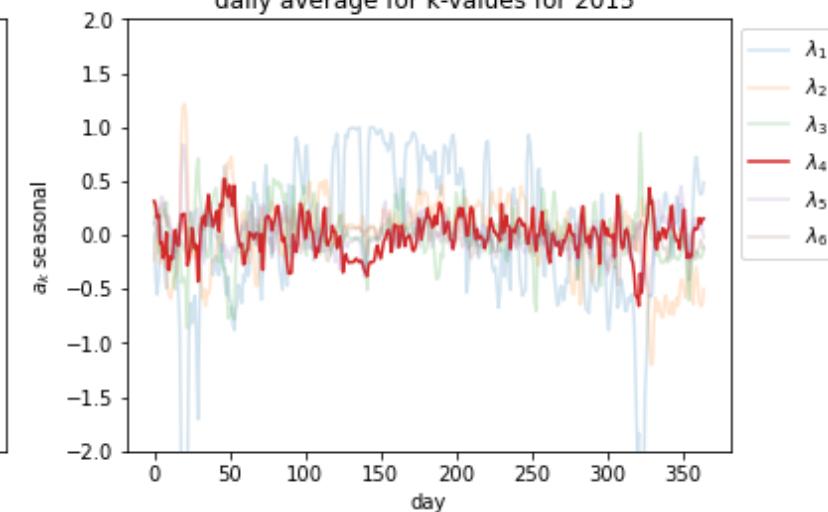
postnetwork-elec_v2g50_0.125_0.05.h5
Nodal price for electricity only



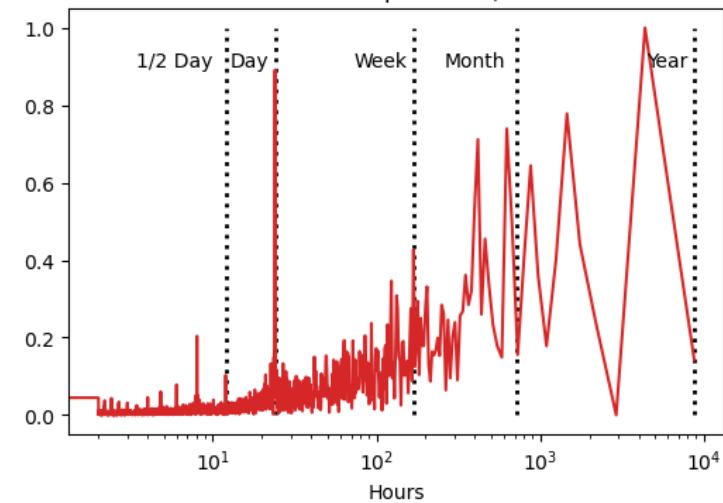
Electricity Nodal Price - postnetwork-elec_v2g50_0.125_0.05.h5
Hourly average for k-values for 2015



daily average for k-values for 2015

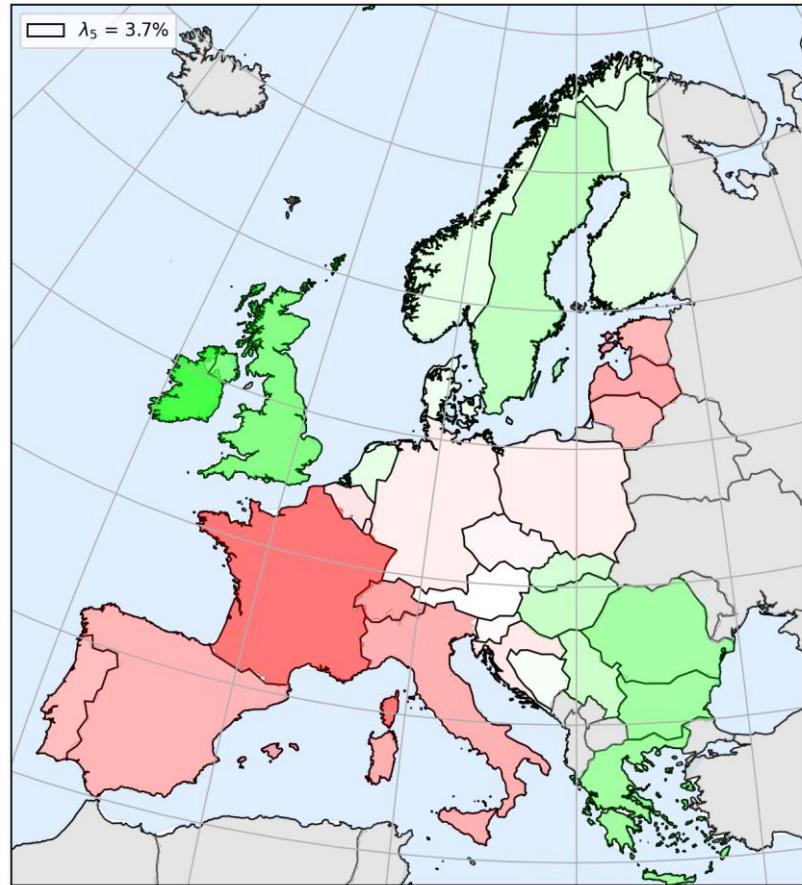


Electricity Nodal Price - postnetwork-elec_v2g50_0.125_0.05.h5
Fourier Power Spectra: $\lambda_4 = 4.4\%$

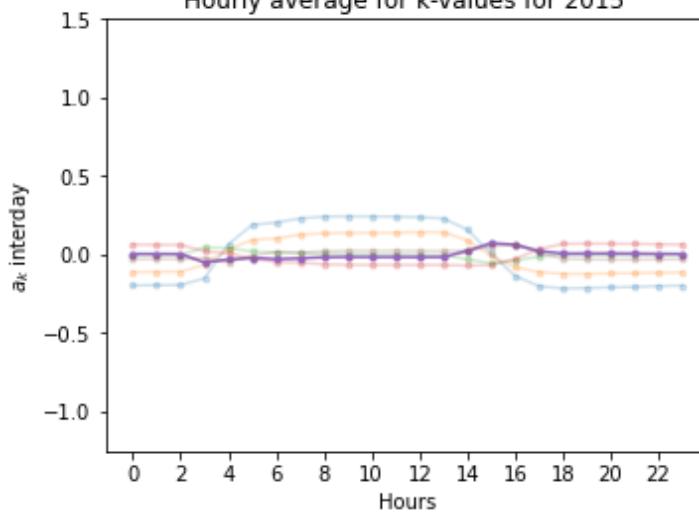


Principle Component 5

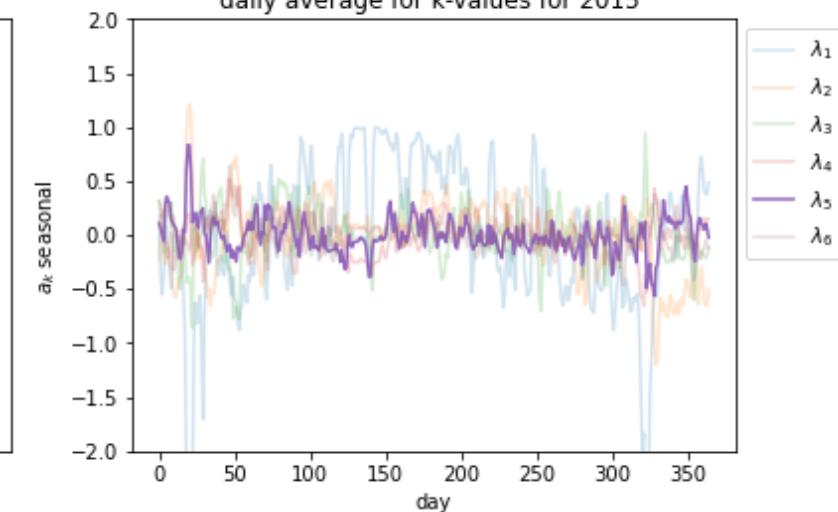
postnetwork-elec_v2g50_0.125_0.05.h5
Nodal price for electricity only



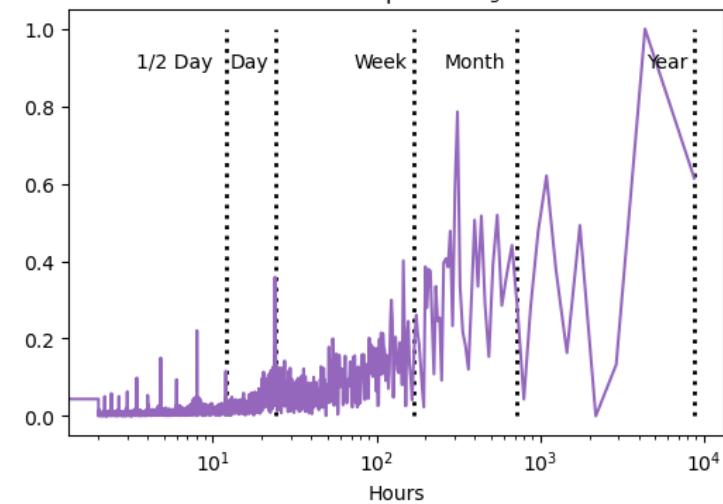
Electricity Nodal Price - postnetwork-elec_v2g50_0.125_0.05.h5
Hourly average for k-values for 2015



daily average for k-values for 2015

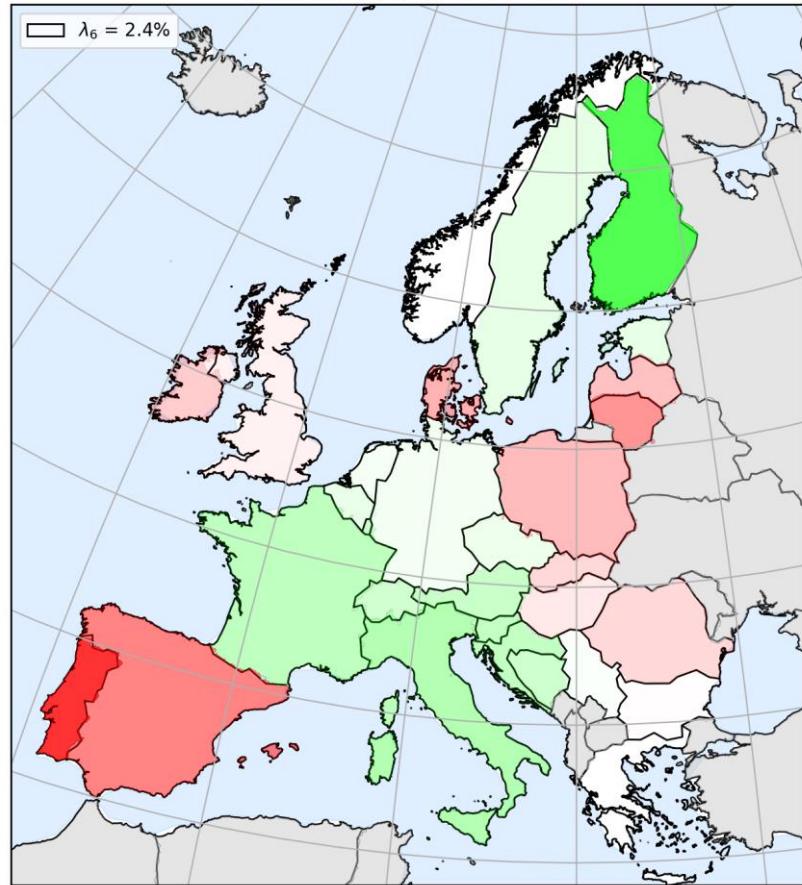


Electricity Nodal Price - postnetwork-elec_v2g50_0.125_0.05.h5
Fourier Power Spectra: $\lambda_5 = 3.7\%$

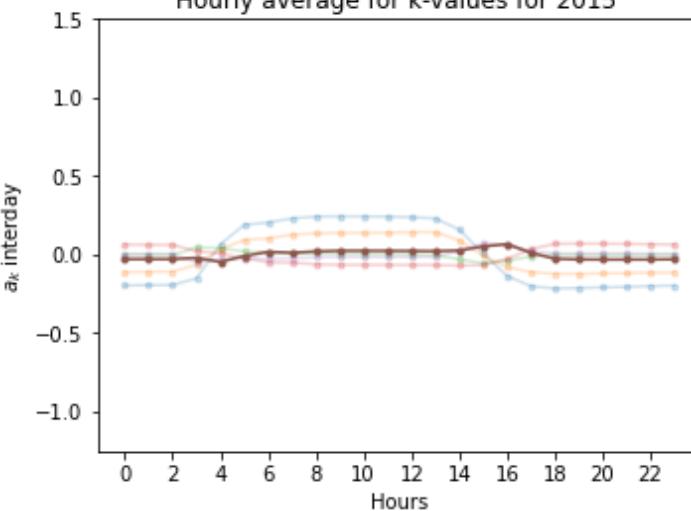


Principle Component 6

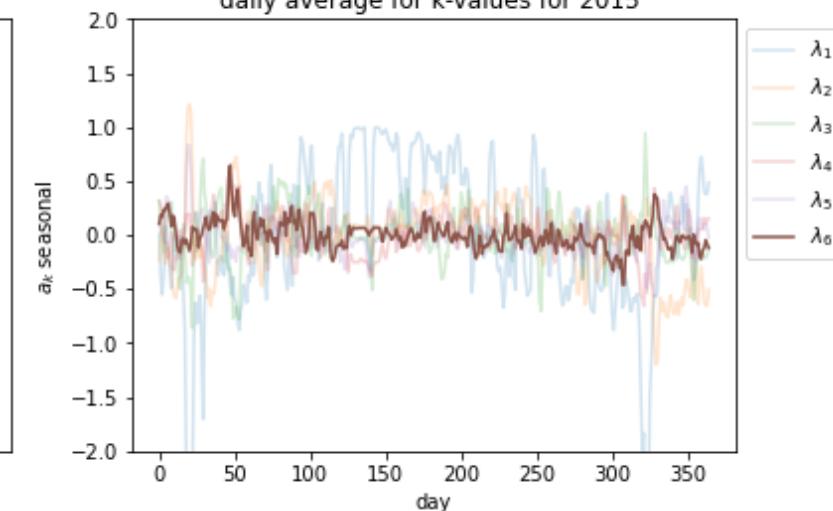
postnetwork-elec_v2g50_0.125_0.05.h5
Nodal price for electricity only



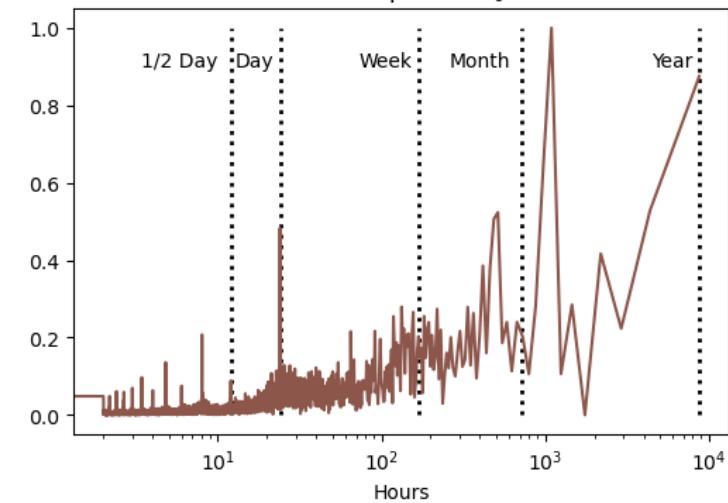
Electricity Nodal Price - postnetwork-elec_v2g50_0.125_0.05.h5
Hourly average for k-values for 2015



daily average for k-values for 2015



Electricity Nodal Price - postnetwork-elec_v2g50_0.125_0.05.h5
Fourier Power Spectra: $\lambda_6 = 2.4\%$

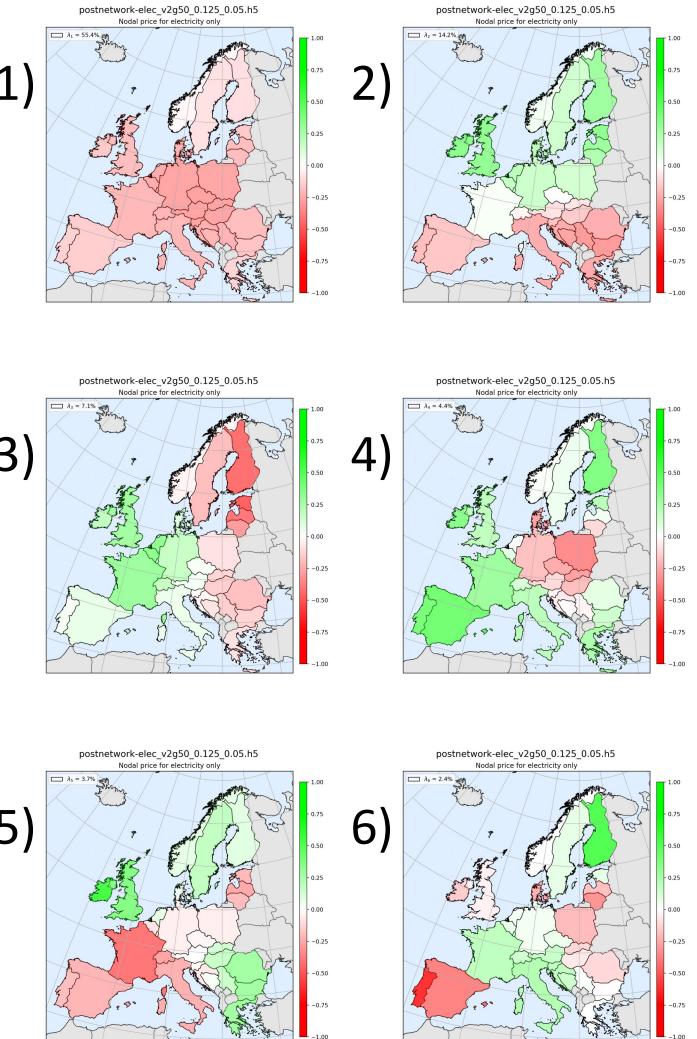


Electricity Coupled with the Transport Sector

Electricity Mismatch and NP Coherence

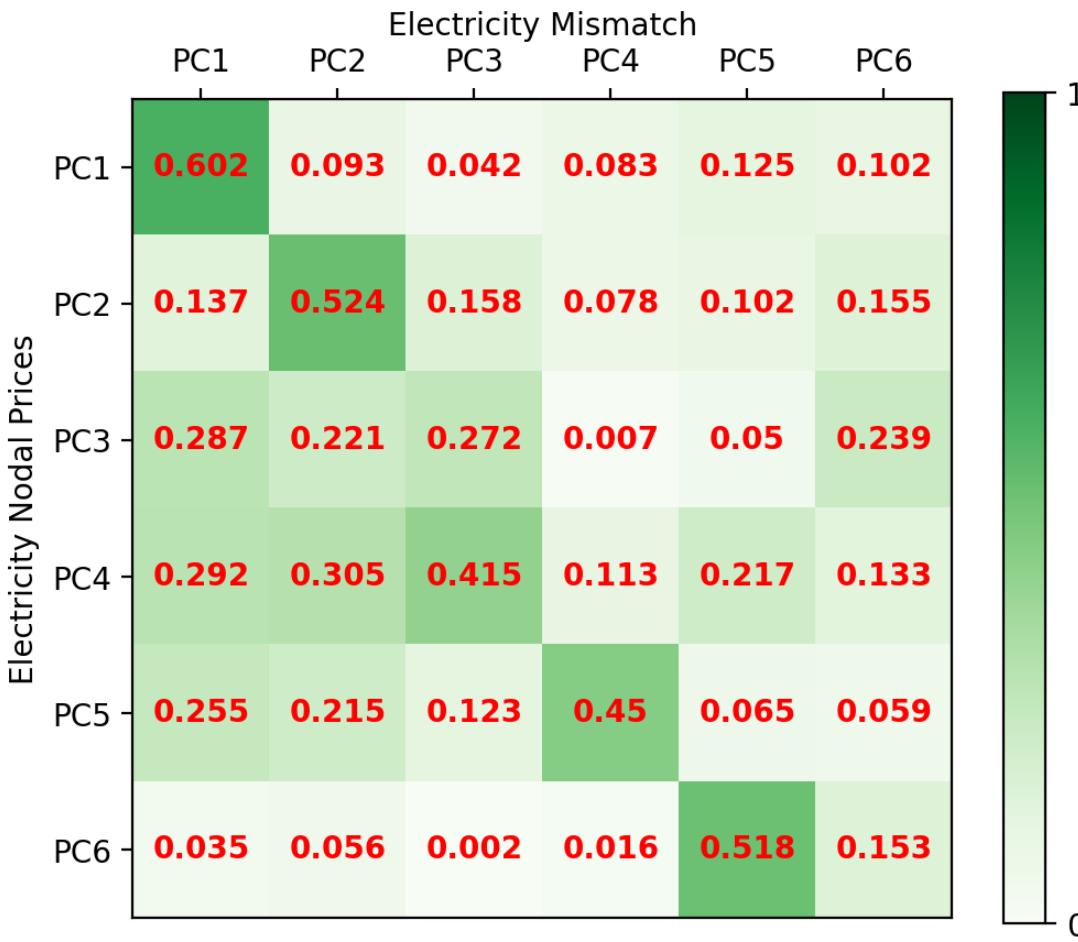
Coherence Method 1

Nodal Price

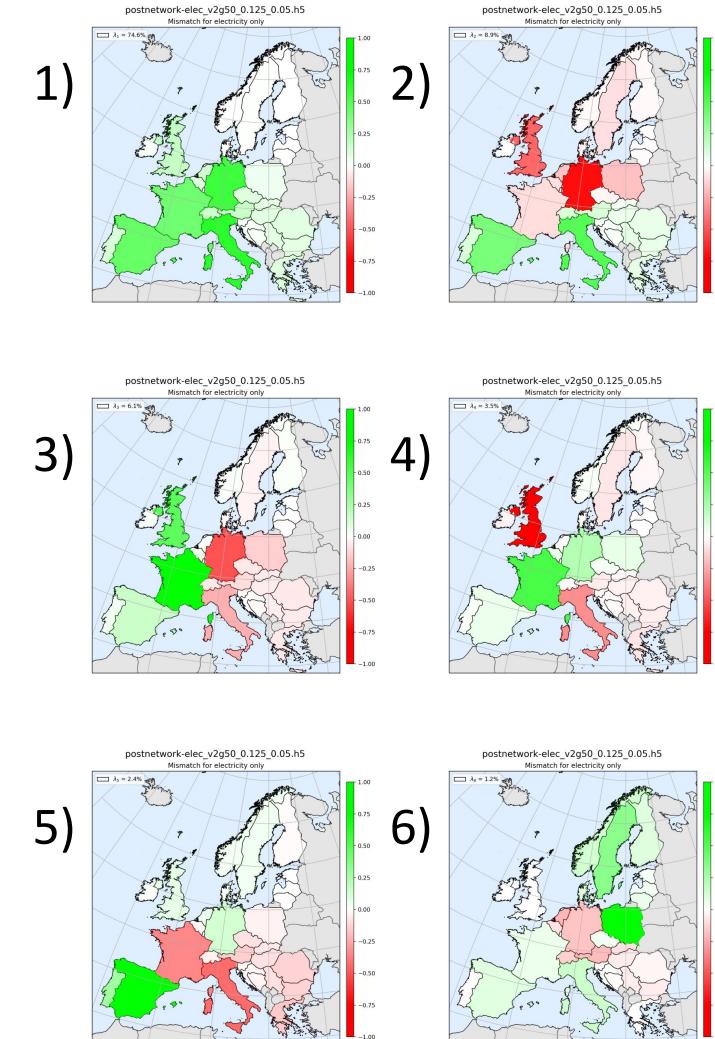


postnetwork-elec_v2g50_0.125_0.05.h5

Coherence 1: Electricity mismatch and nodal price

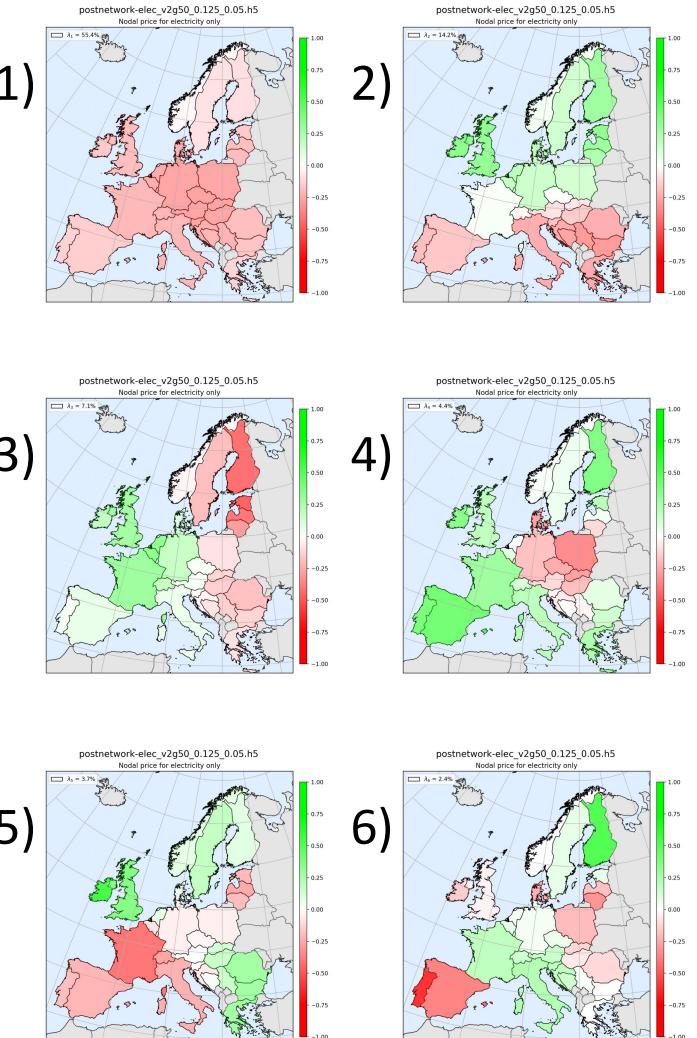


Mismatch



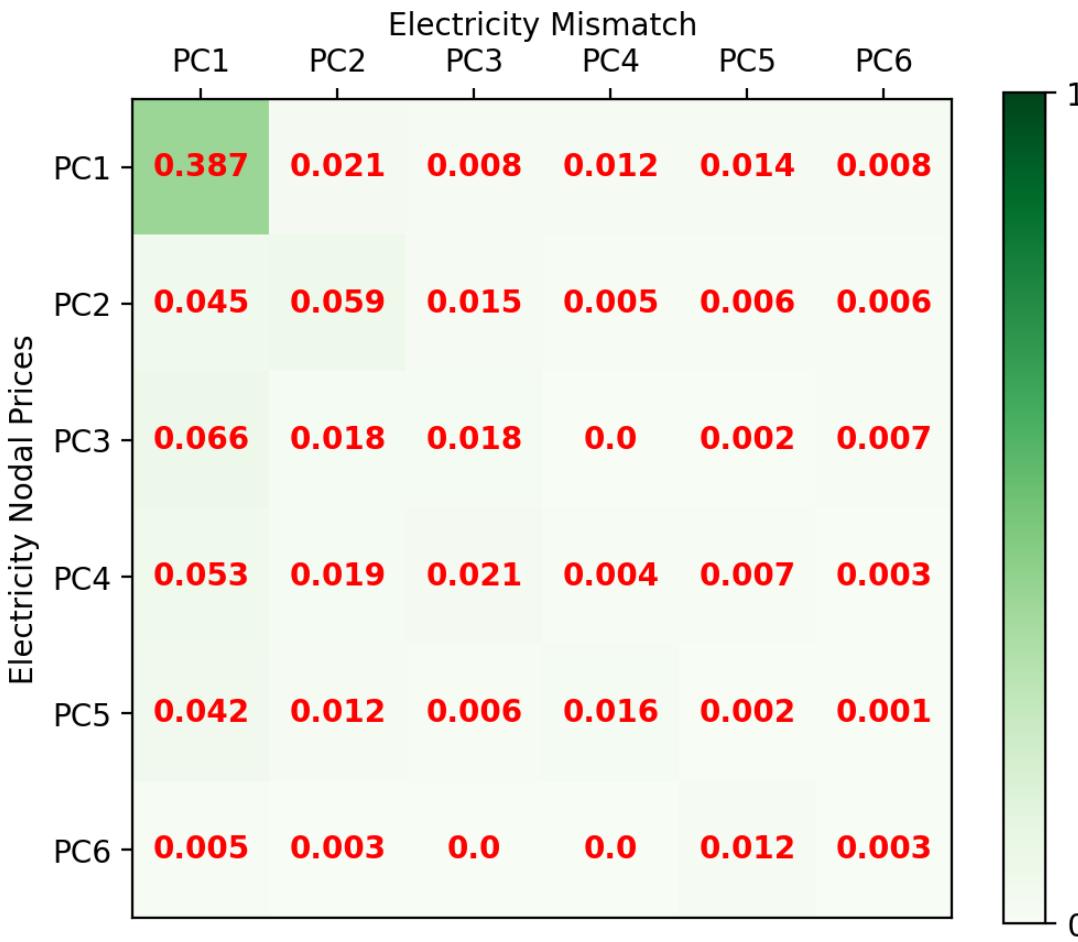
Coherence Method 2

Nodal Price

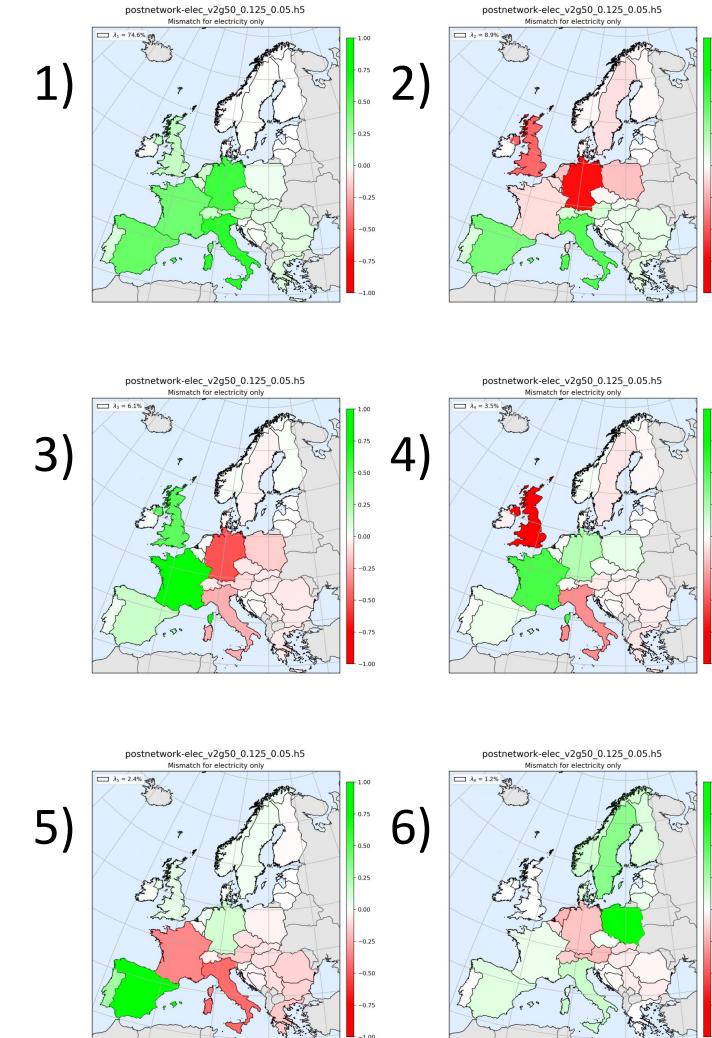


postnetwork-elec_v2g50_0.125_0.05.h5

Coherence 2: Electricity mismatch and nodal price

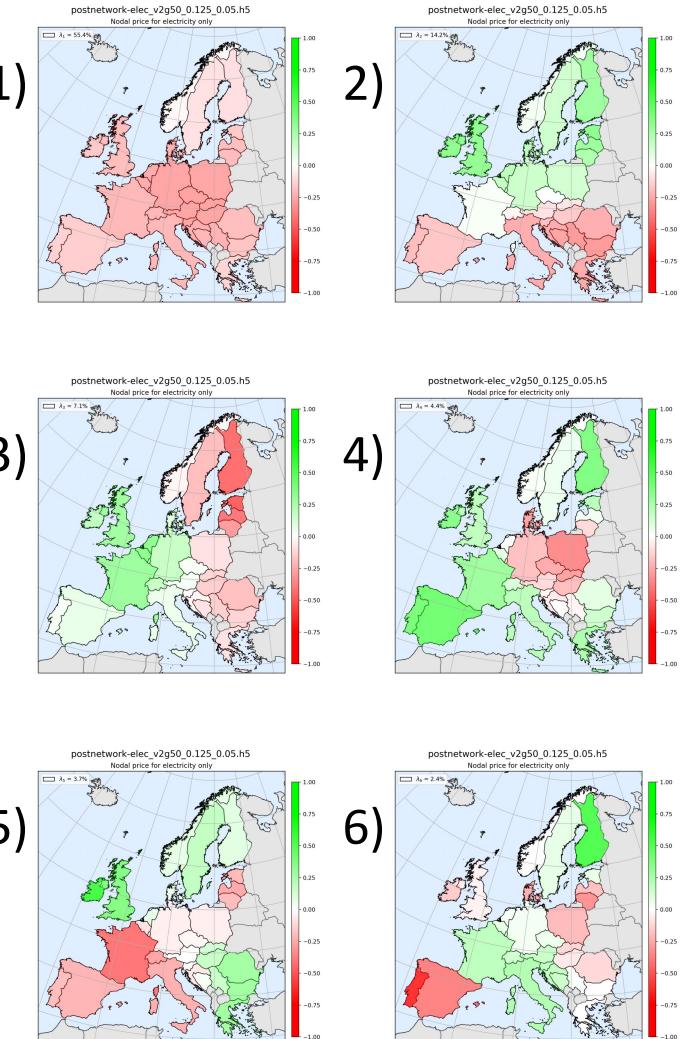


Mismatch



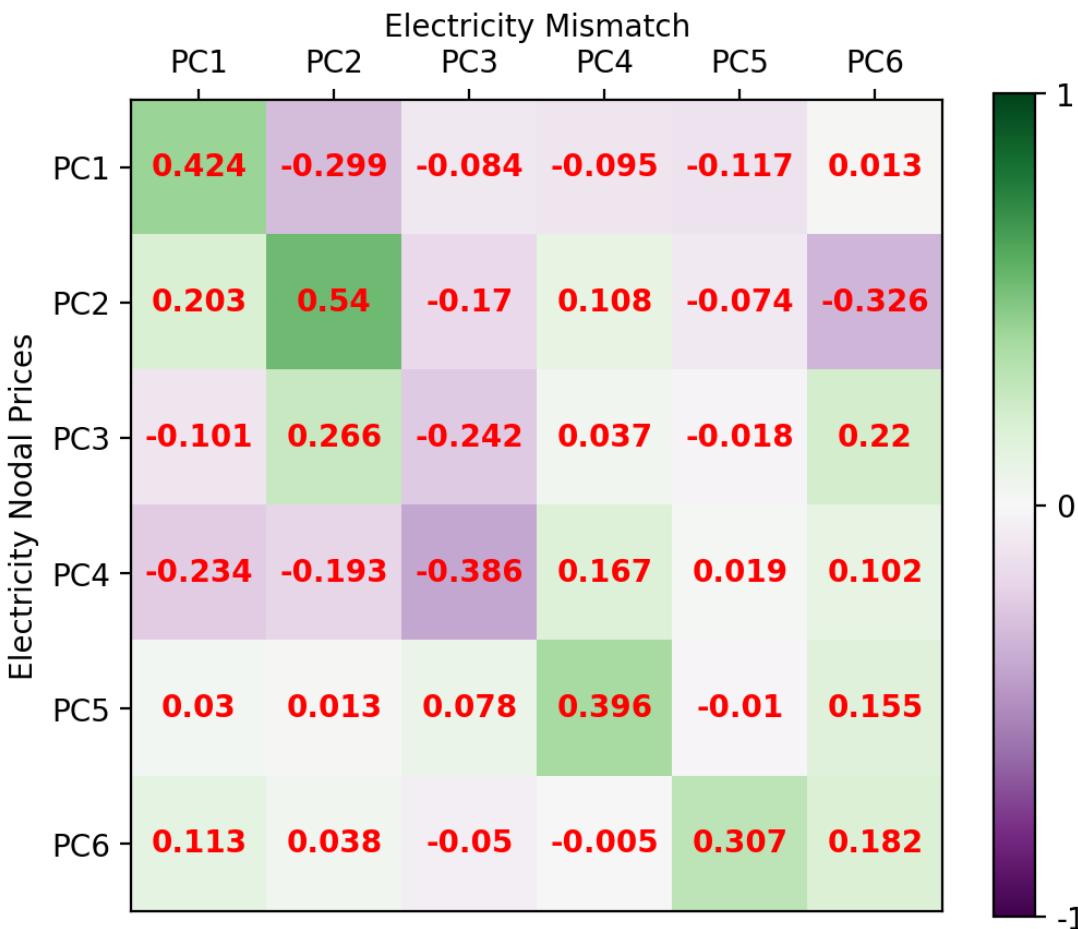
Coherence Method 3

Nodal Price

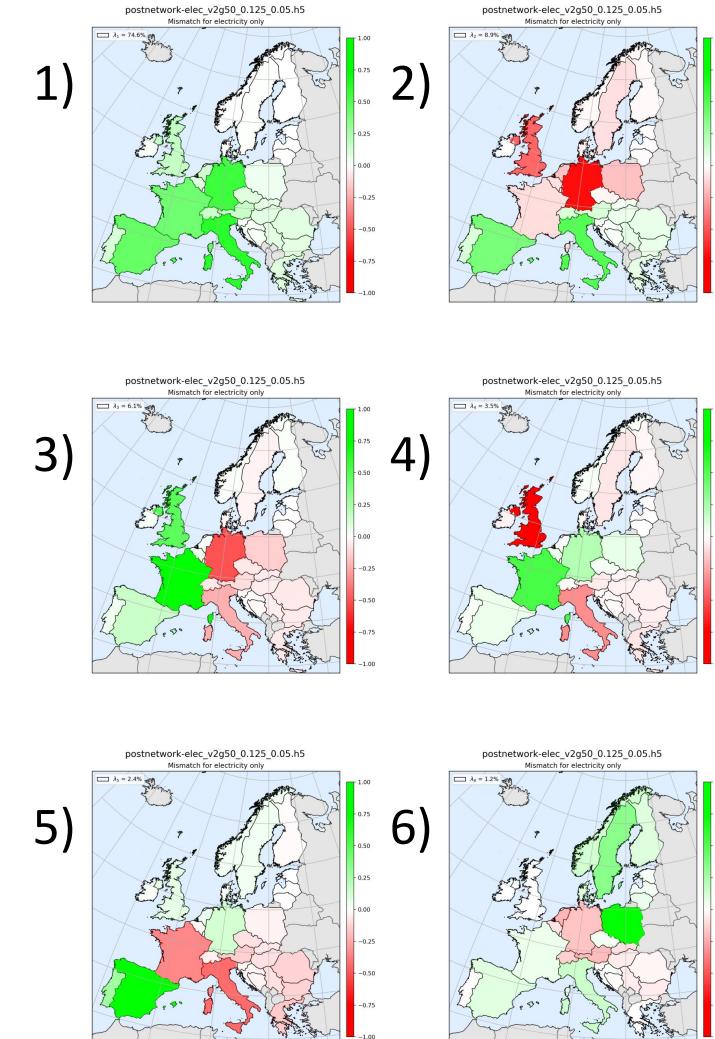


postnetwork-elec_v2g50_0.125_0.05.h5

Coherence 3: Electricity mismatch and nodal price



Mismatch



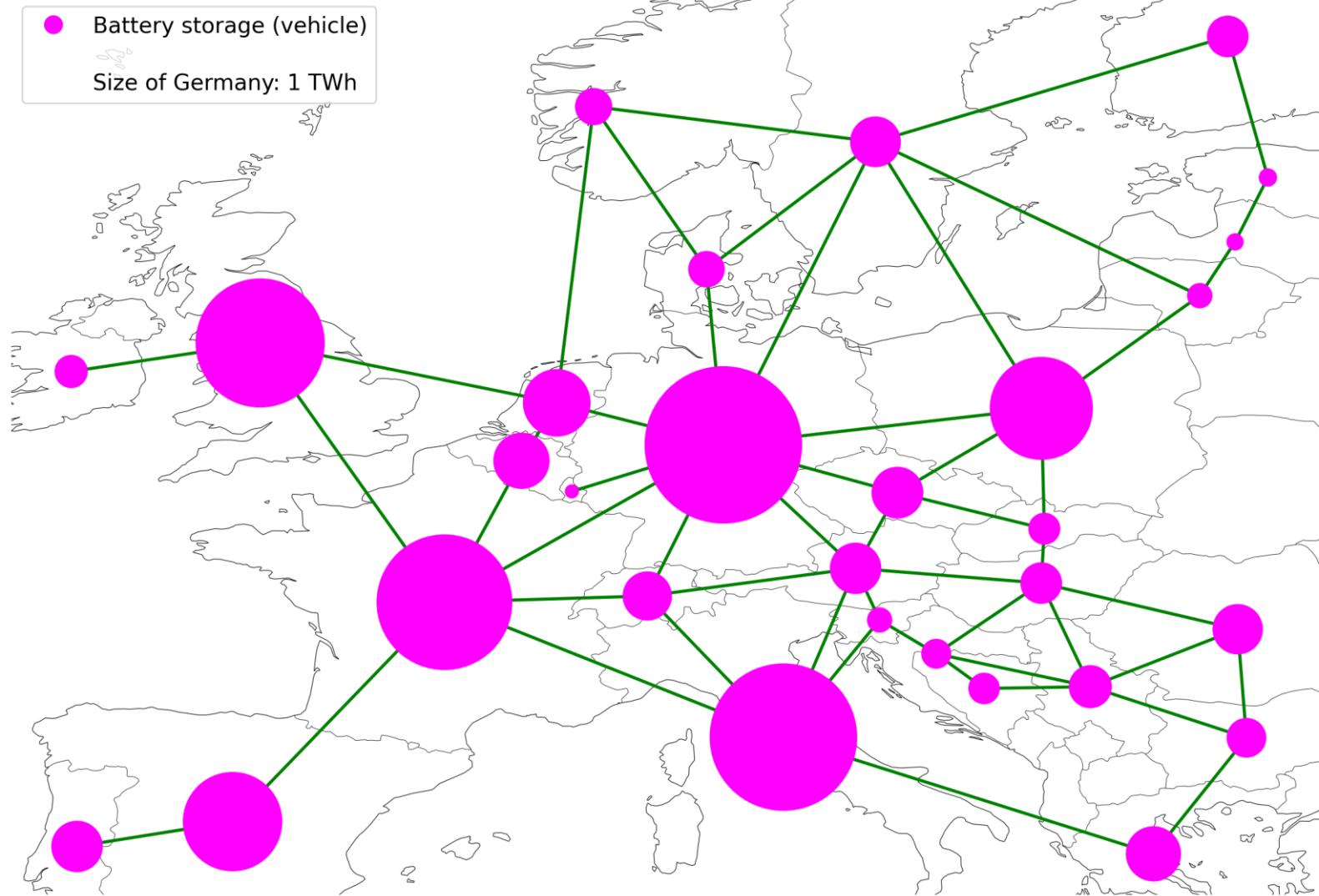
Electricity Coupled with the Transport Sector

Transport Mismatch Analysis

Installed storage (energy capacity)

postnetwork-elec_v2g50_0.125_0.05.h5

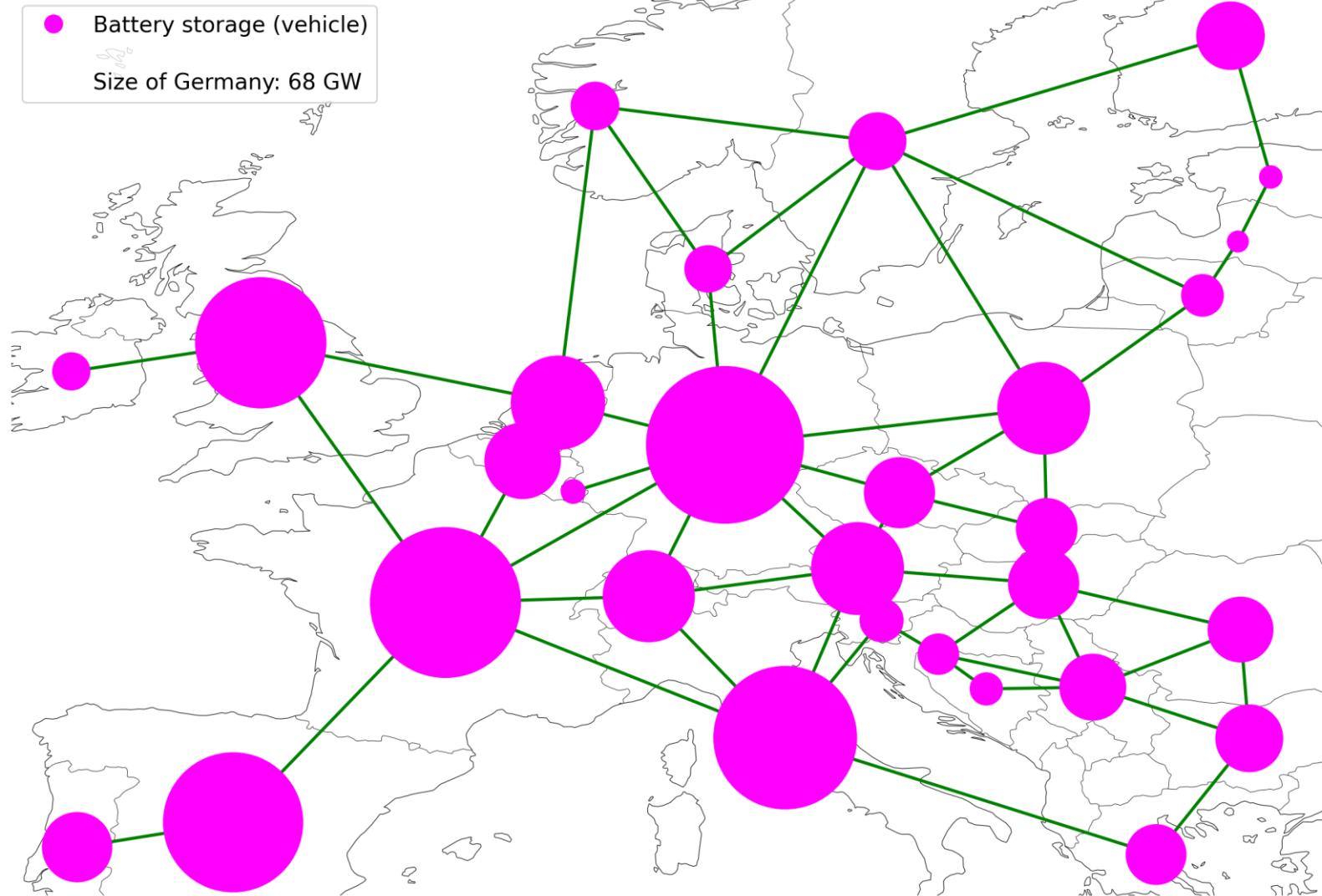
Installed storage energy capacity [MWh]



Installed storage (power capacity)

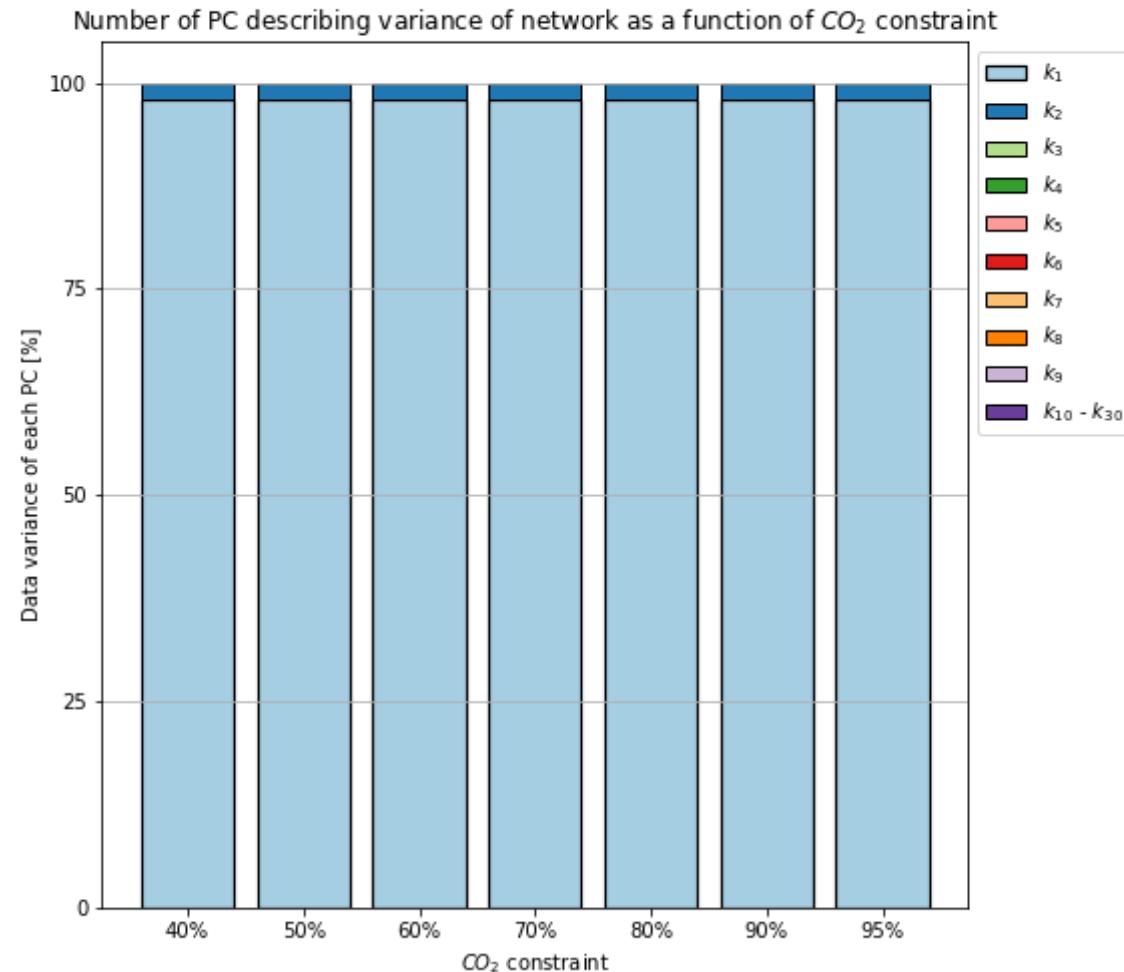
postnetwork-elec_v2g50_0.125_0.05.h5

Installed storage power capacity [MW]



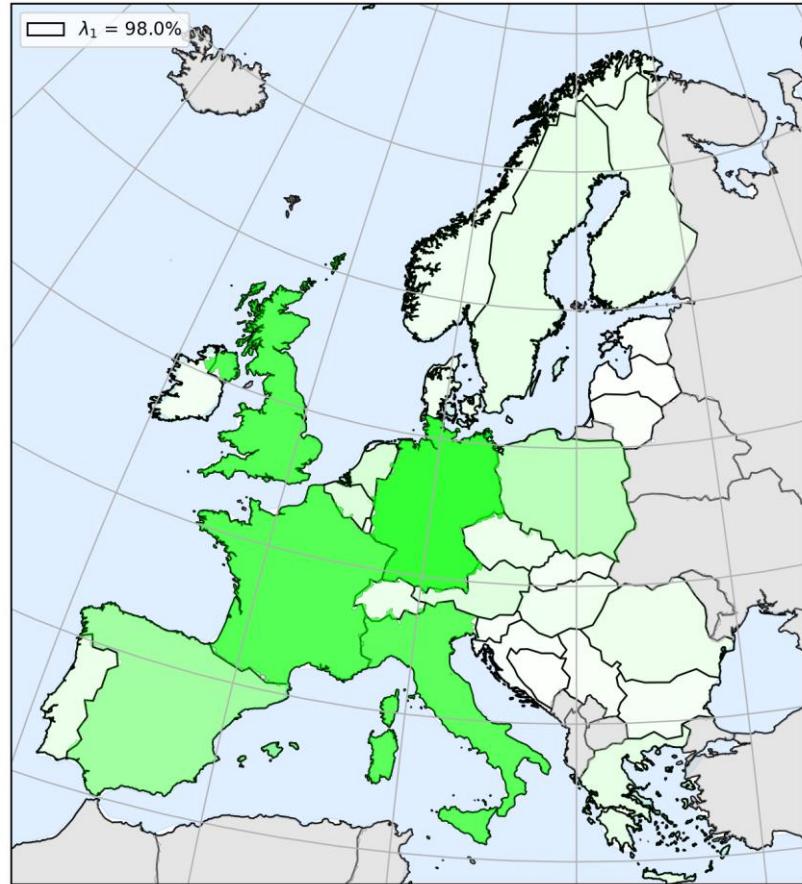
Change in PC due to CO₂ Constraint

Transport Mismatch - elec_v2g50

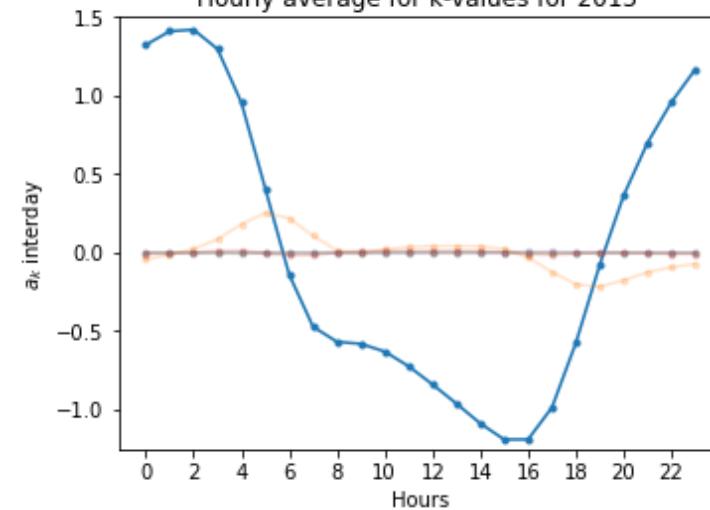


Principle Component 1

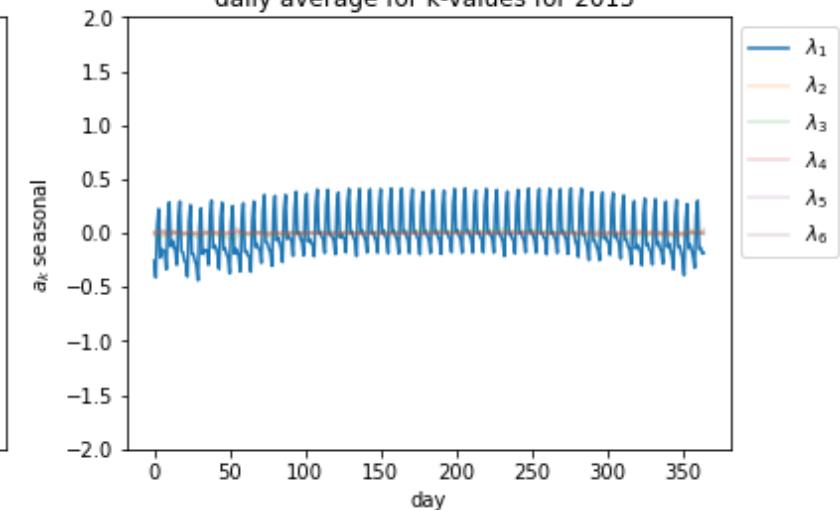
postnetwork-elec_v2g50_0.125_0.05.h5
Mismatch for transport only



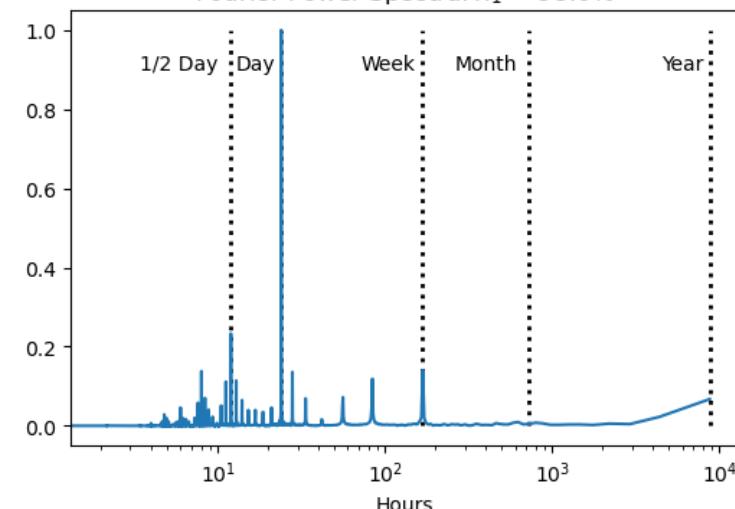
Transport mismatch - postnetwork-elec_v2g50_0.125_0.05.h5
Hourly average for k-values for 2015



daily average for k-values for 2015

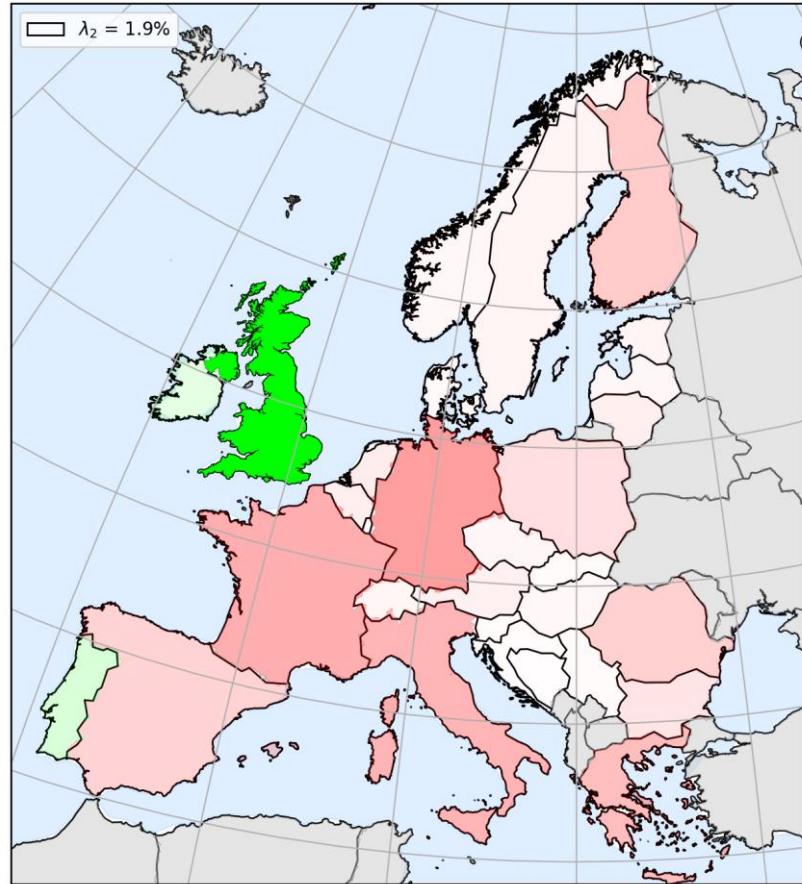


Transport mismatch - postnetwork-elec_v2g50_0.125_0.05.h5
Fourier Power Spectra: $\lambda_1 = 98.0\%$

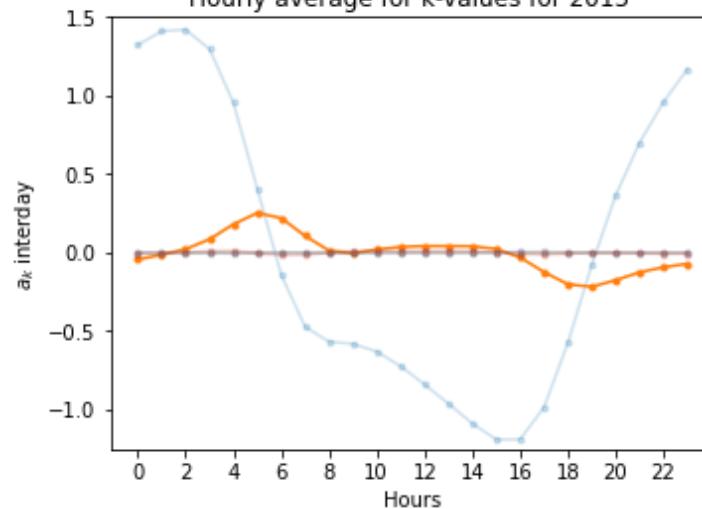


Principle Component 2

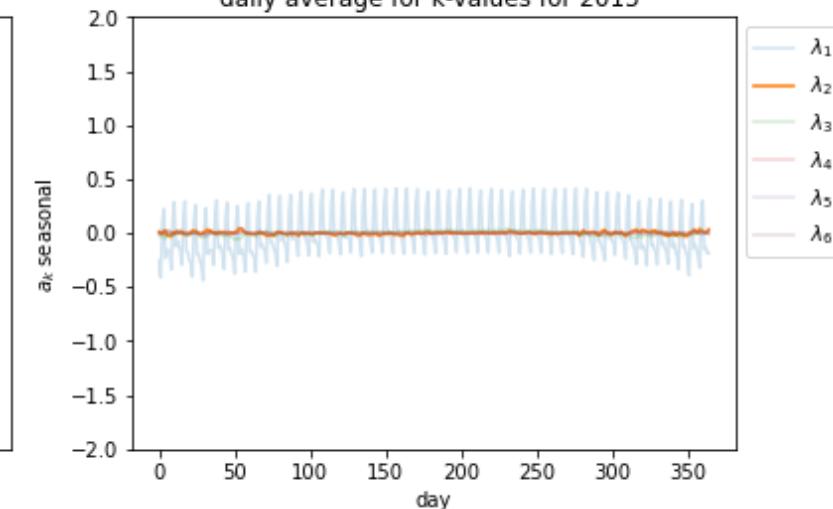
postnetwork-elec_v2g50_0.125_0.05.h5
Mismatch for transport only



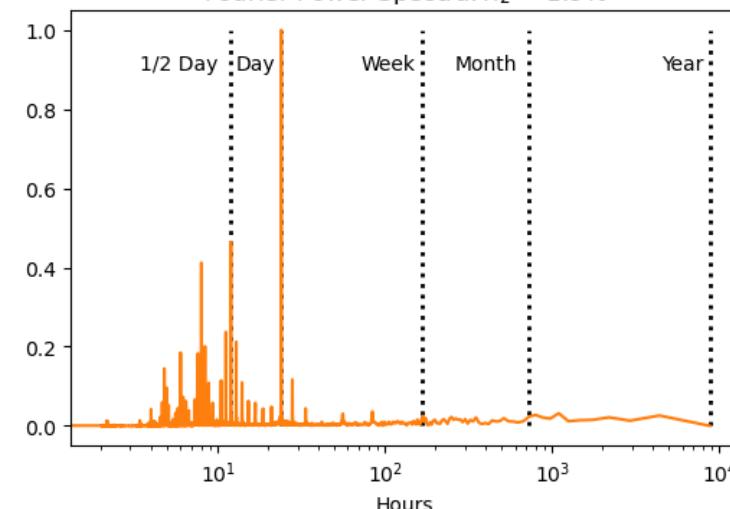
Transport mismatch - postnetwork-elec_v2g50_0.125_0.05.h5
Hourly average for k-values for 2015



daily average for k-values for 2015

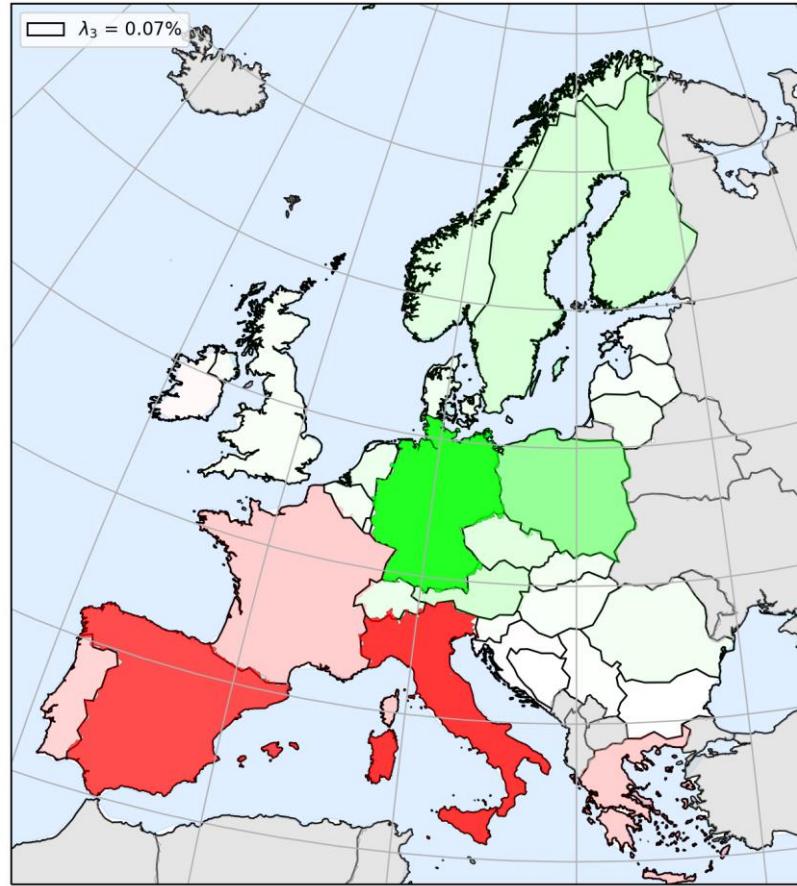


Transport mismatch - postnetwork-elec_v2g50_0.125_0.05.h5
Fourier Power Spectra: $\lambda_2 = 1.9\%$

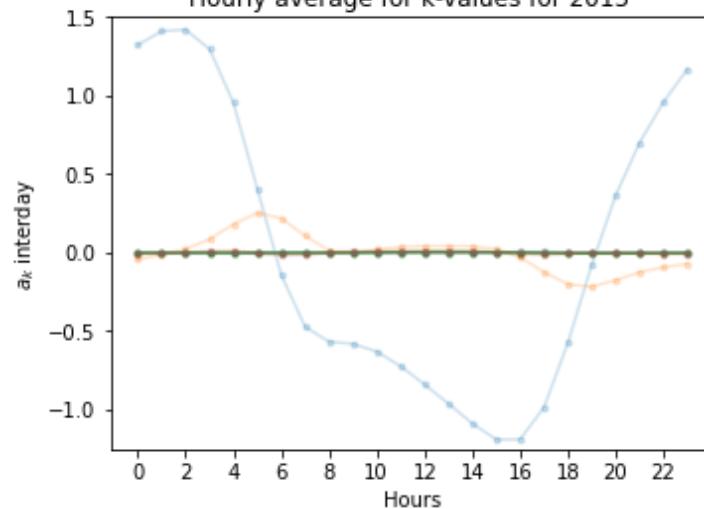


Principle Component 3

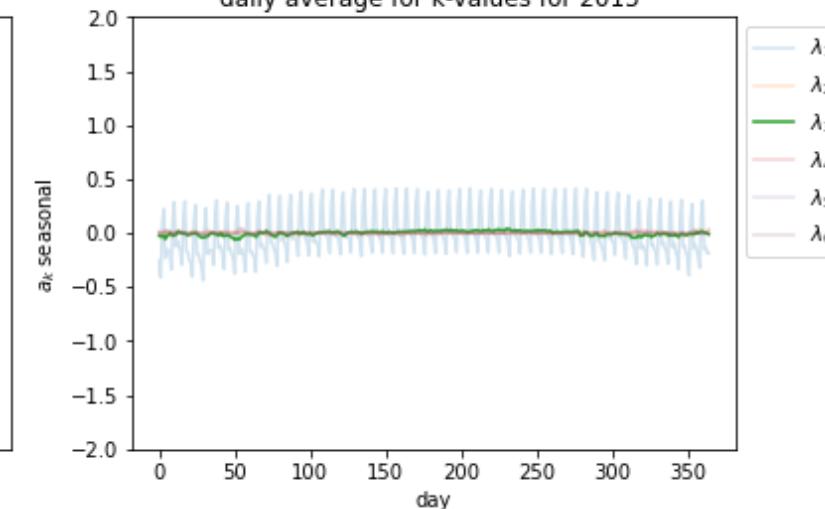
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Mismatch for transport only



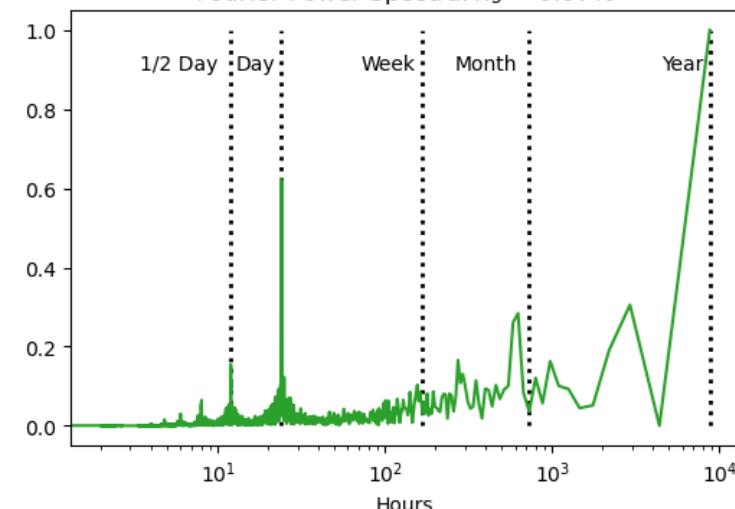
Transport mismatch - postnetwork-elec_v2g50_0.125_0.05.h5
Hourly average for k-values for 2015



daily average for k-values for 2015

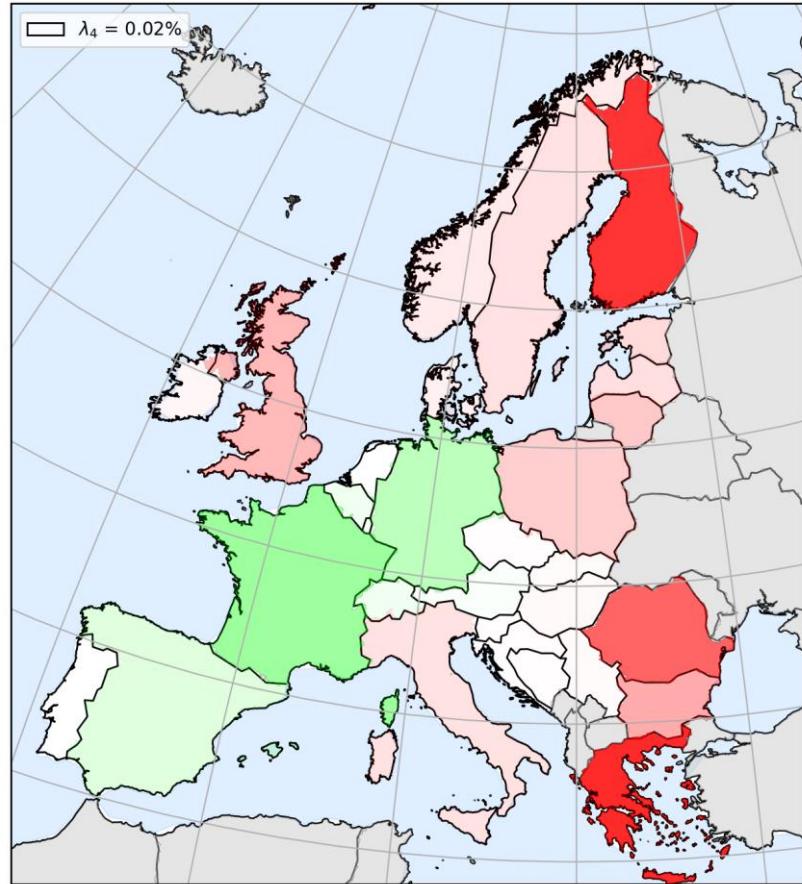


Transport mismatch - postnetwork-elec_v2g50_0.125_0.05.h5
Fourier Power Spectra: $\lambda_3 = 0.07\%$

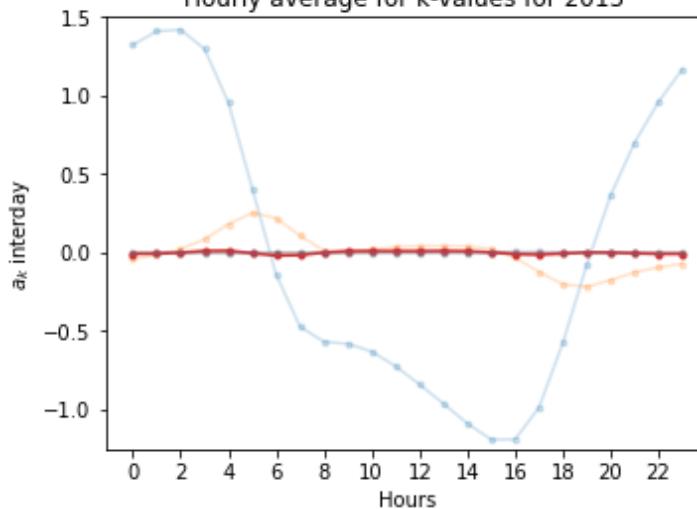


Principle Component 4

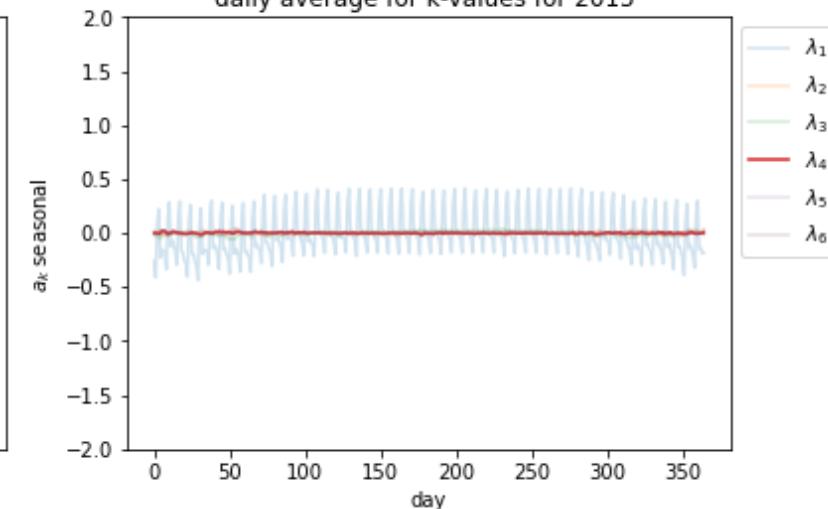
postnetwork-elec_v2g50_0.125_0.05.h5
Mismatch for transport only



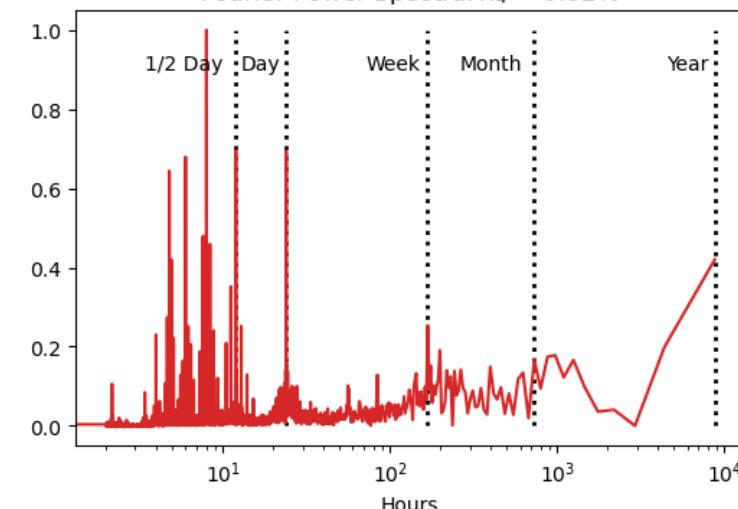
Transport mismatch - postnetwork-elec_v2g50_0.125_0.05.h5
Hourly average for k-values for 2015



daily average for k-values for 2015

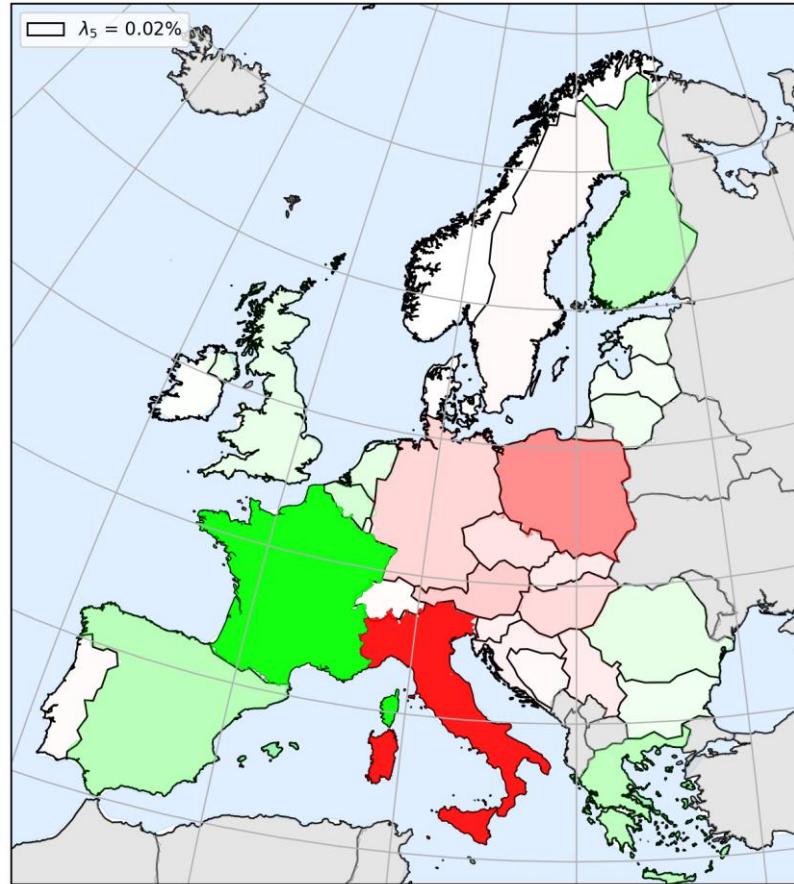


Transport mismatch - postnetwork-elec_v2g50_0.125_0.05.h5
Fourier Power Spectra: $\lambda_4 = 0.02\%$

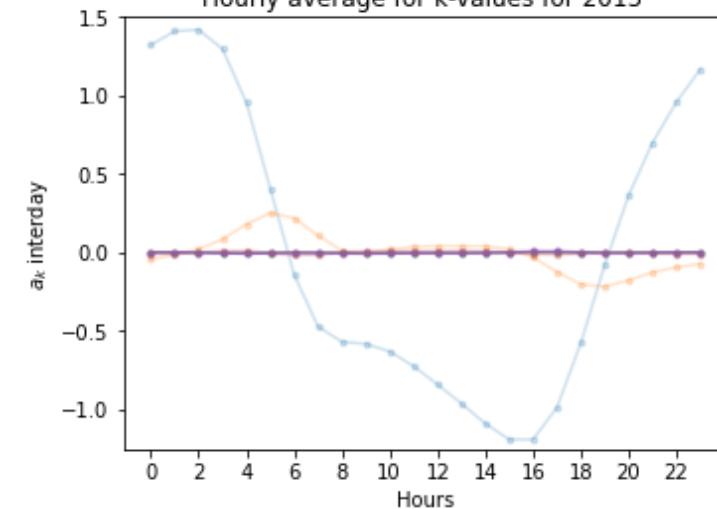


Principle Component 5

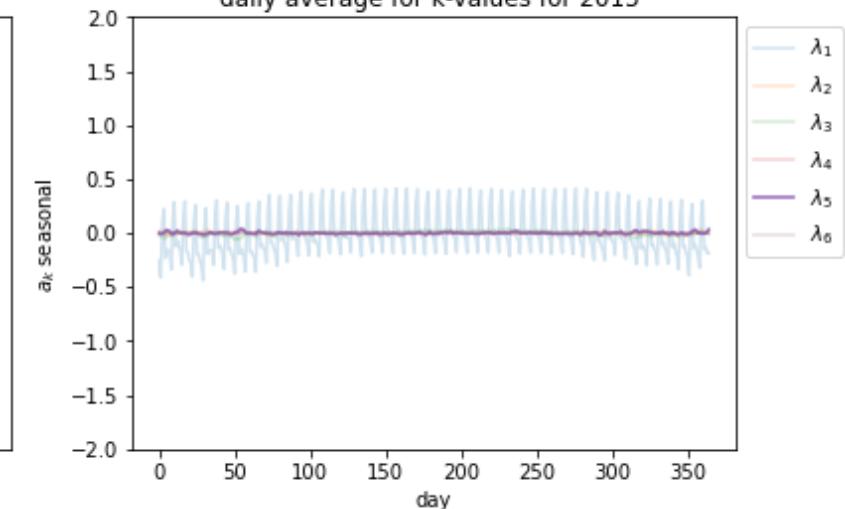
postnetwork-elec_v2g50_0.125_0.05.h5
Mismatch for transport only



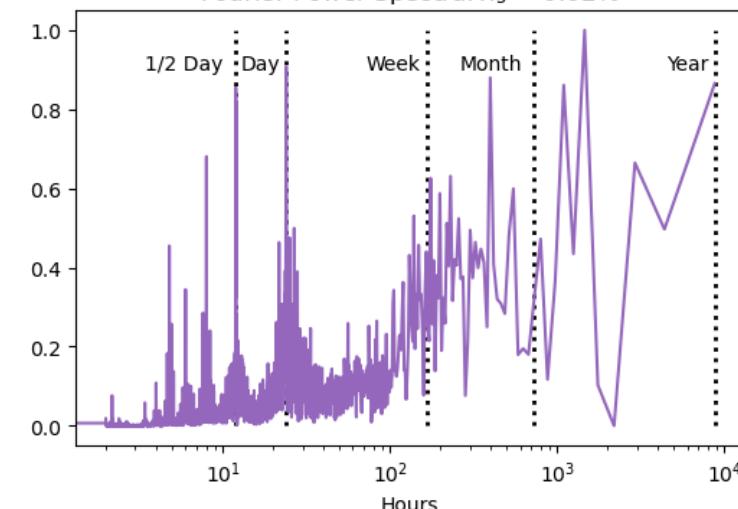
Transport mismatch - postnetwork-elec_v2g50_0.125_0.05.h5
Hourly average for k-values for 2015



daily average for k-values for 2015

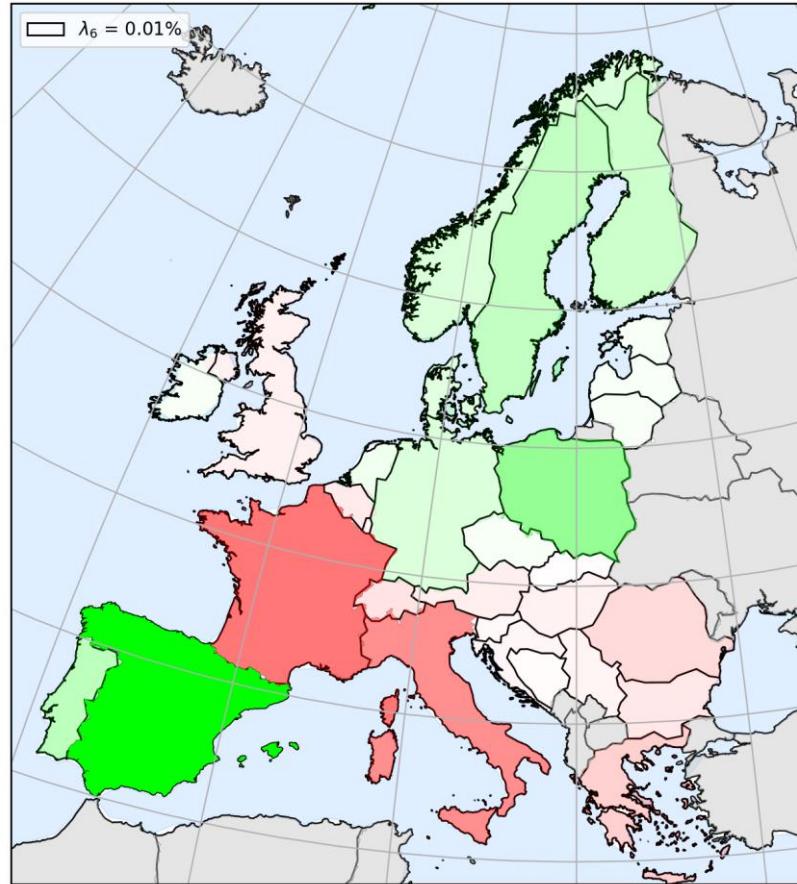


Transport mismatch - postnetwork-elec_v2g50_0.125_0.05.h5
Fourier Power Spectra: $\lambda_5 = 0.02\%$

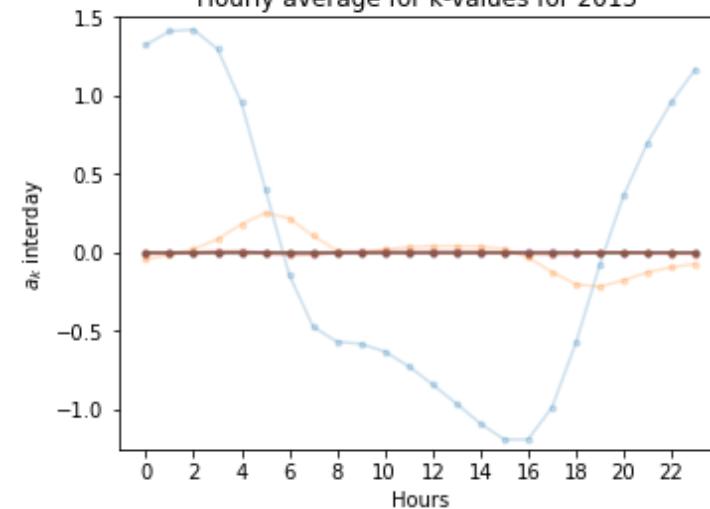


Principle Component 6

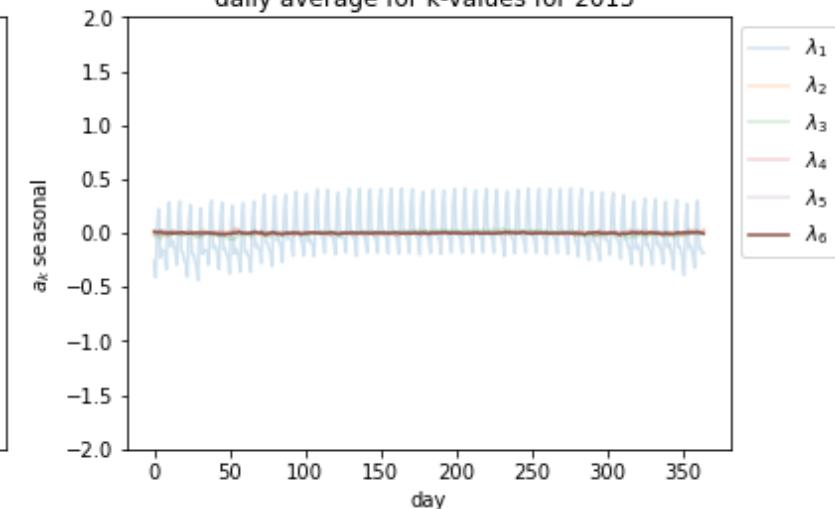
postnetwork-elec_v2g50_0.125_0.05.h5
Mismatch for transport only



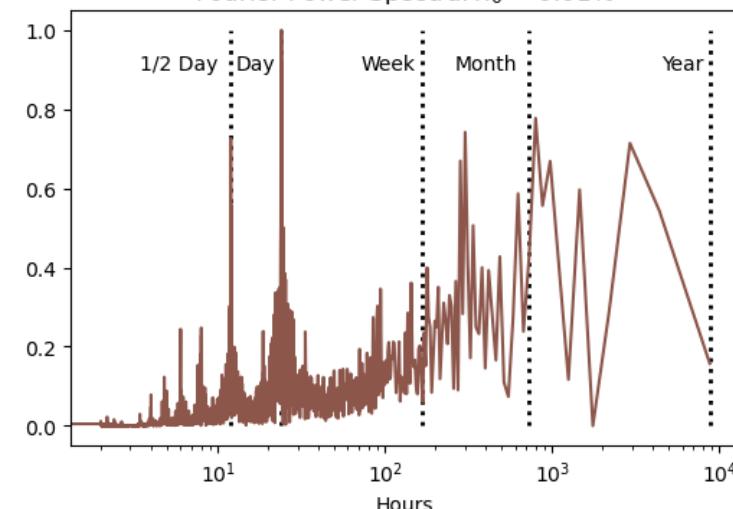
Transport mismatch - postnetwork-elec_v2g50_0.125_0.05.h5
Hourly average for k-values for 2015



daily average for k-values for 2015



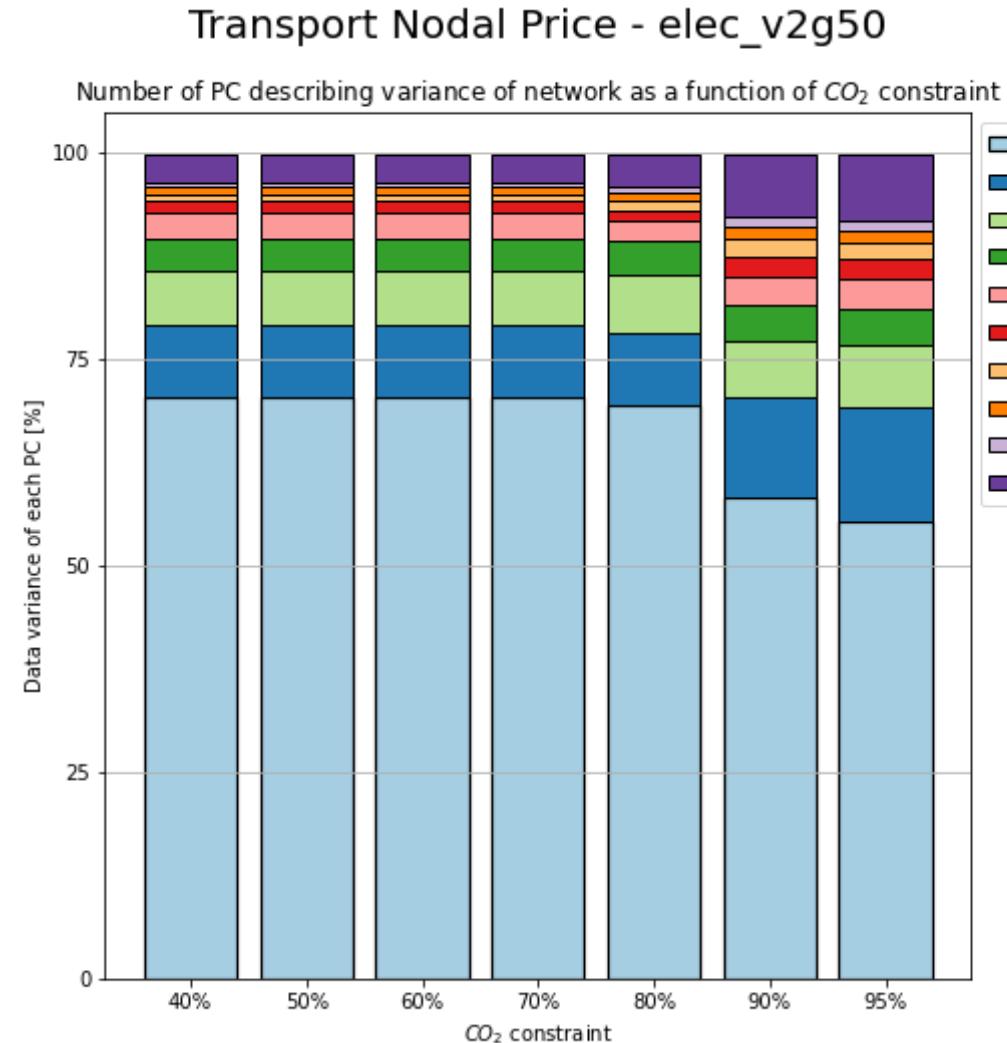
Transport mismatch - postnetwork-elec_v2g50_0.125_0.05.h5
Fourier Power Spectra: $\lambda_6 = 0.01\%$



Electricity Coupled with the Transport Sector

Transport NP Analysis

Change in PC due to CO₂ Constrain

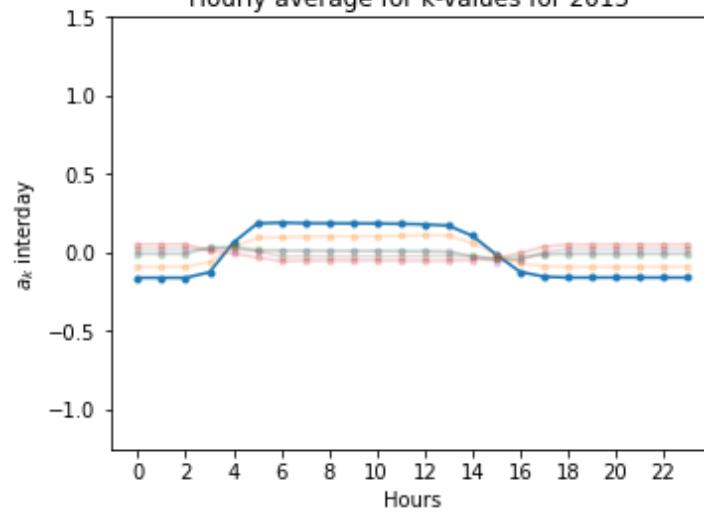


Principle Component 1

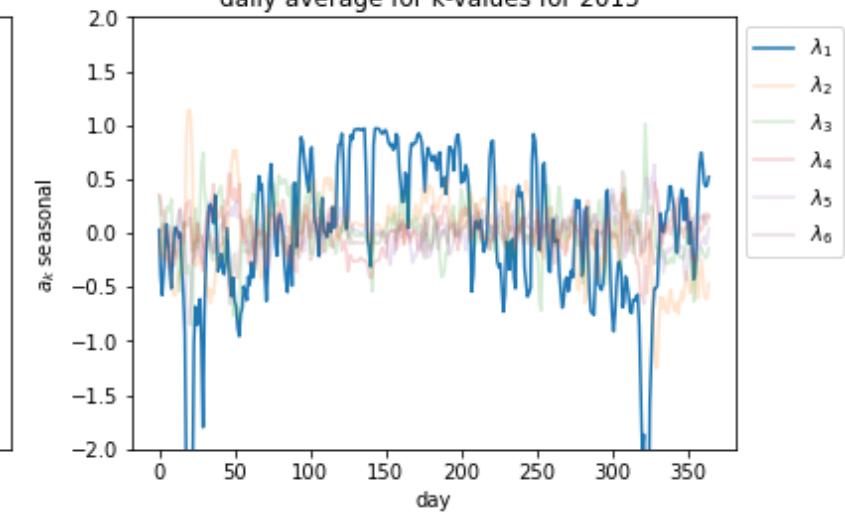
postnetwork-elec_v2g50_0.125_0.05.h5
Nodal price for transport only



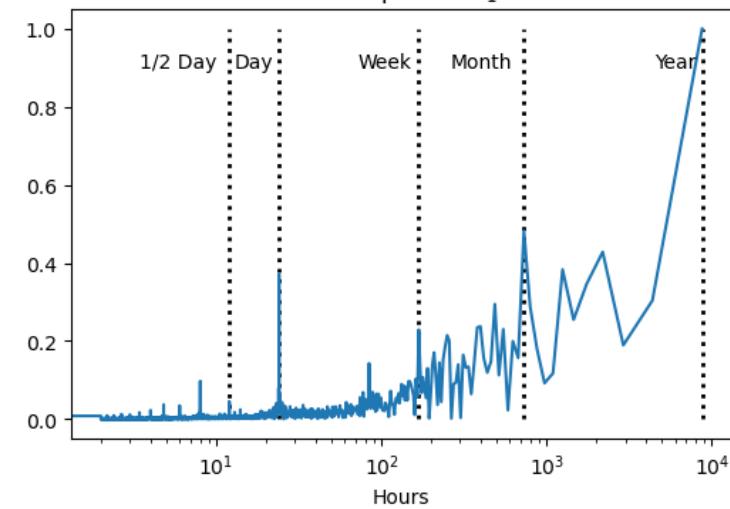
Transport Nodal Price - postnetwork-elec_v2g50_0.125_0.05.h5
Hourly average for k-values for 2015



daily average for k-values for 2015

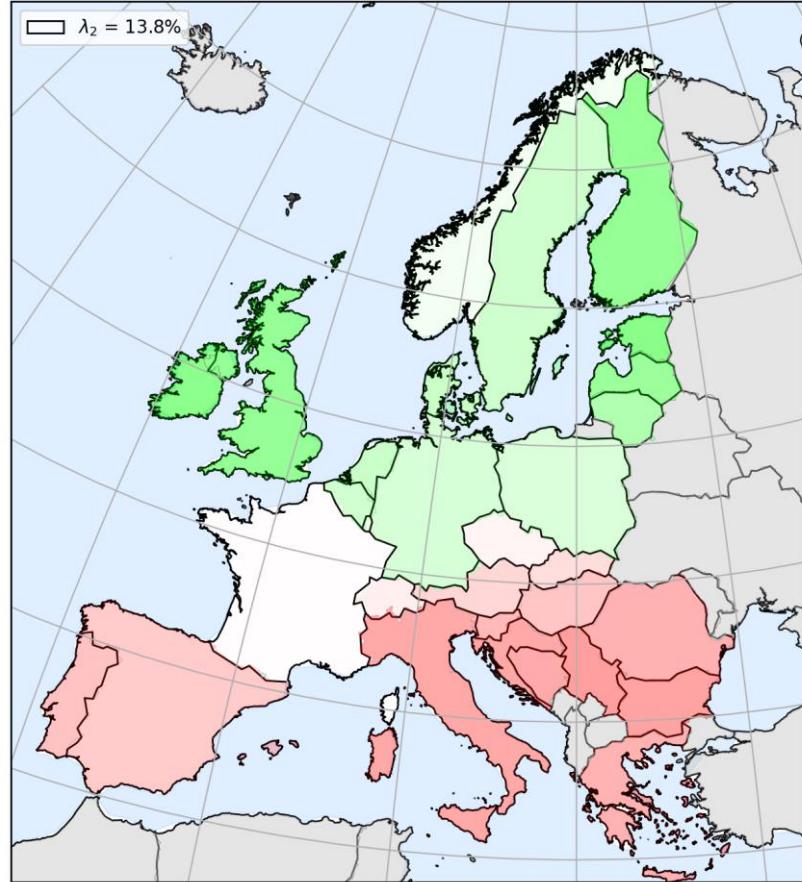


Transport Nodal Price - postnetwork-elec_v2g50_0.125_0.05.h5
Fourier Power Spectra: $\lambda_1 = 55.5\%$

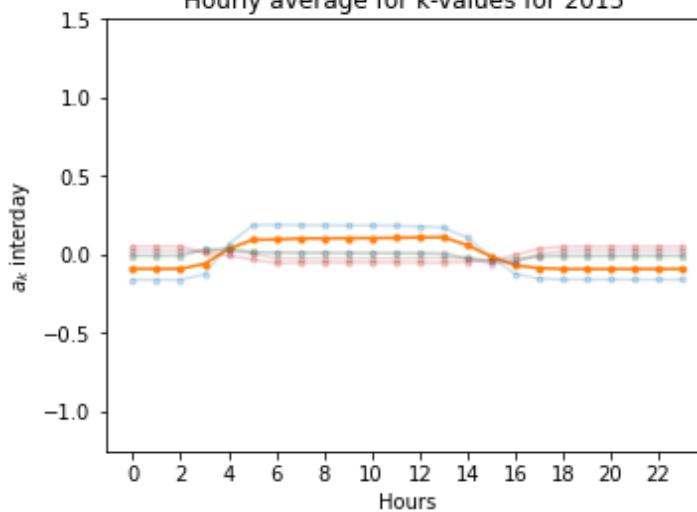


Principle Component 2

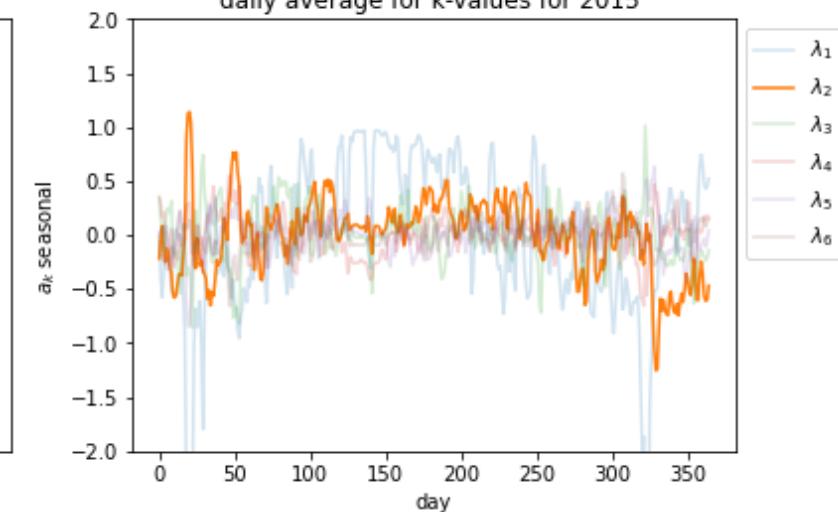
postnetwork-elec_v2g50_0.125_0.05.h5
Nodal price for transport only



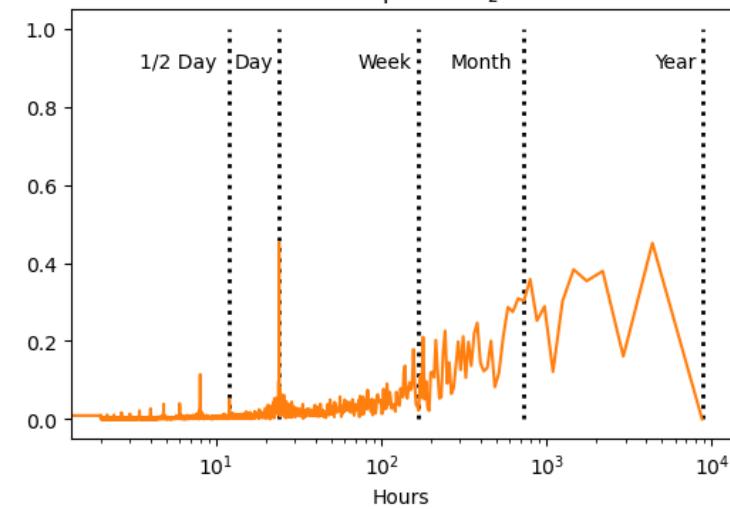
Transport Nodal Price - postnetwork-elec_v2g50_0.125_0.05.h5
Hourly average for k-values for 2015



daily average for k-values for 2015

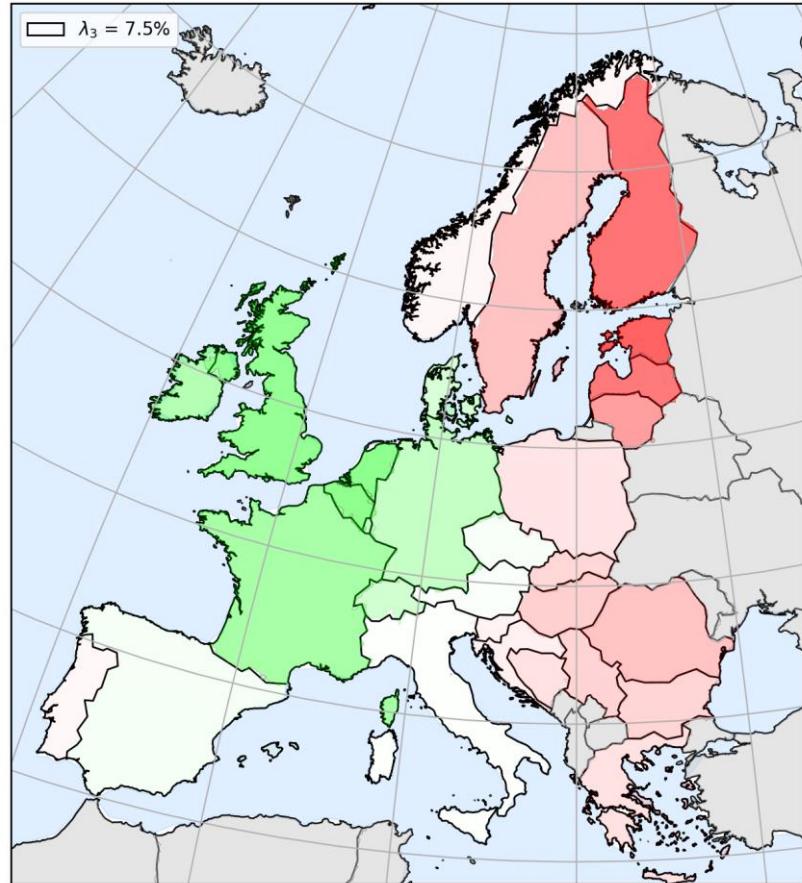


Transport Nodal Price - postnetwork-elec_v2g50_0.125_0.05.h5
Fourier Power Spectra: $\lambda_2 = 13.8\%$

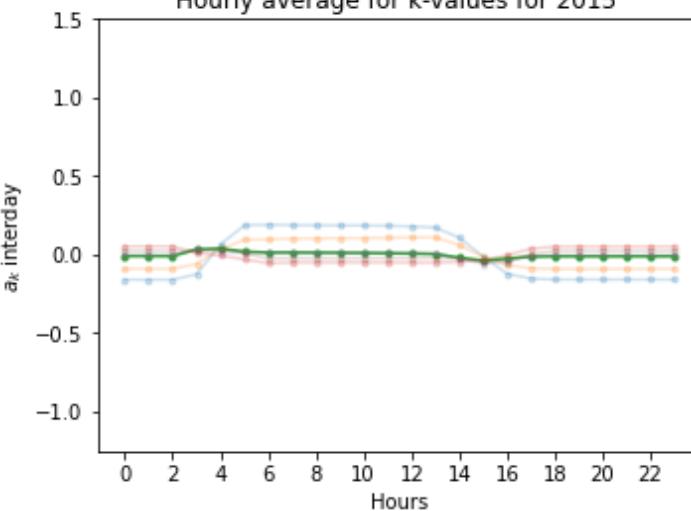


Principle Component 3

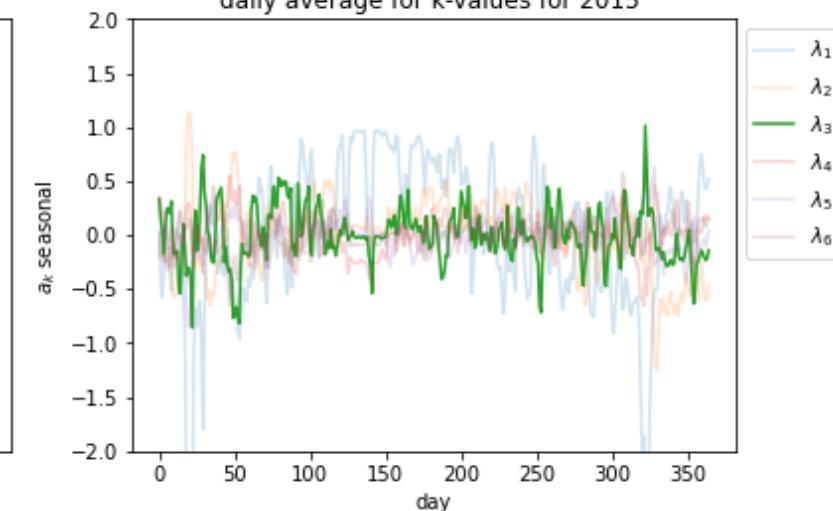
postnetwork-elec_v2g50_0.125_0.05.h5
Nodal price for transport only



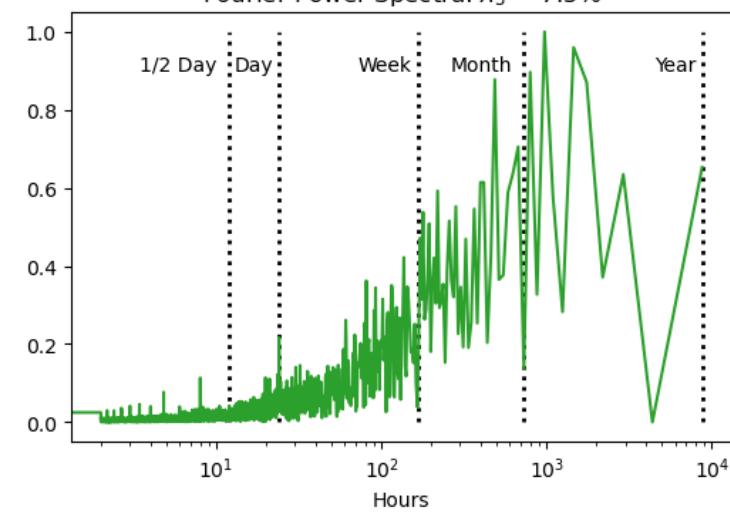
Transport Nodal Price - postnetwork-elec_v2g50_0.125_0.05.h5
Hourly average for k-values for 2015



daily average for k-values for 2015

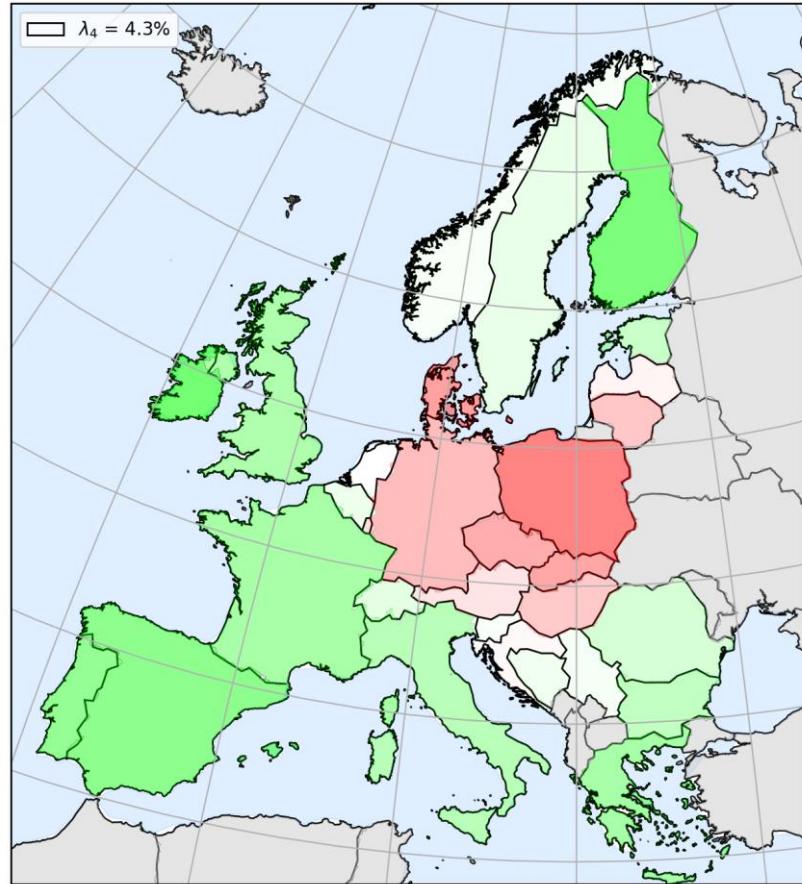


Transport Nodal Price - postnetwork-elec_v2g50_0.125_0.05.h5
Fourier Power Spectra: $\lambda_3 = 7.5\%$

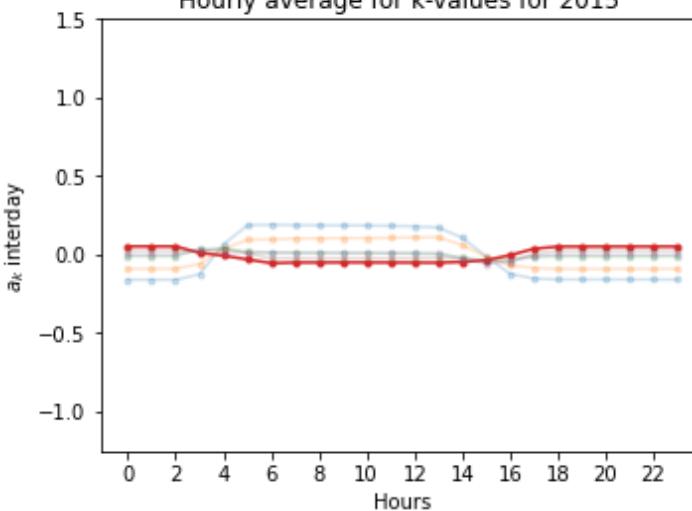


Principle Component 4

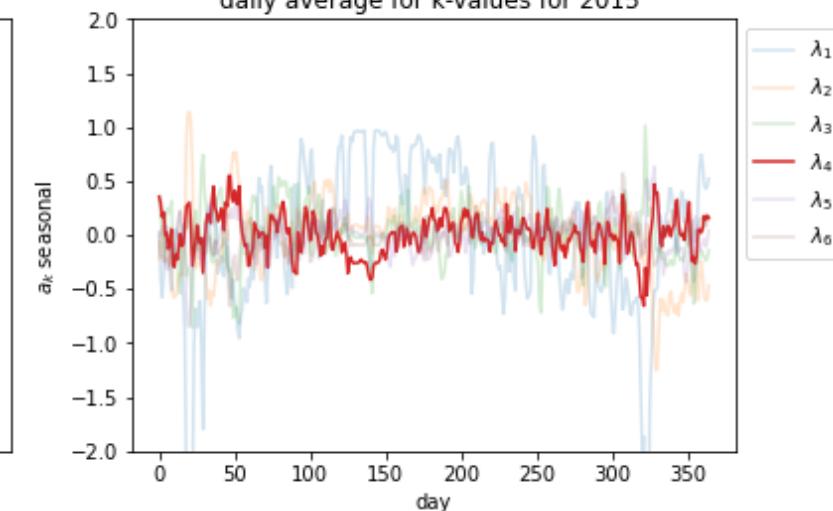
postnetwork-elec_v2g50_0.125_0.05.h5
Nodal price for transport only



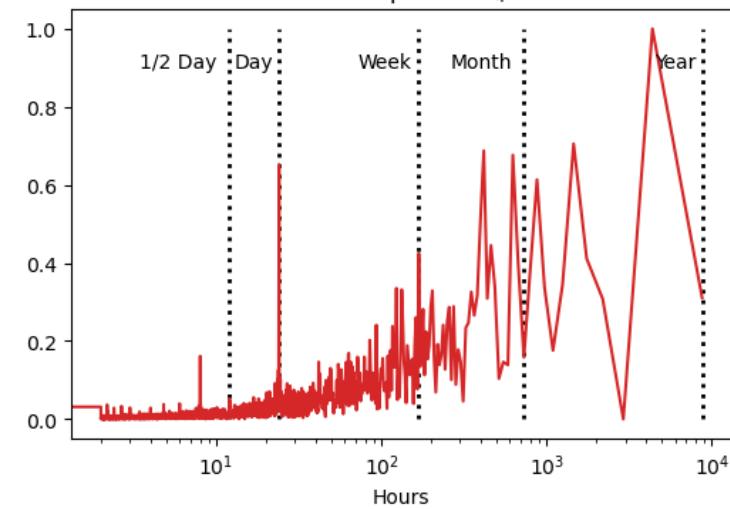
Transport Nodal Price - postnetwork-elec_v2g50_0.125_0.05.h5
Hourly average for k-values for 2015



daily average for k-values for 2015

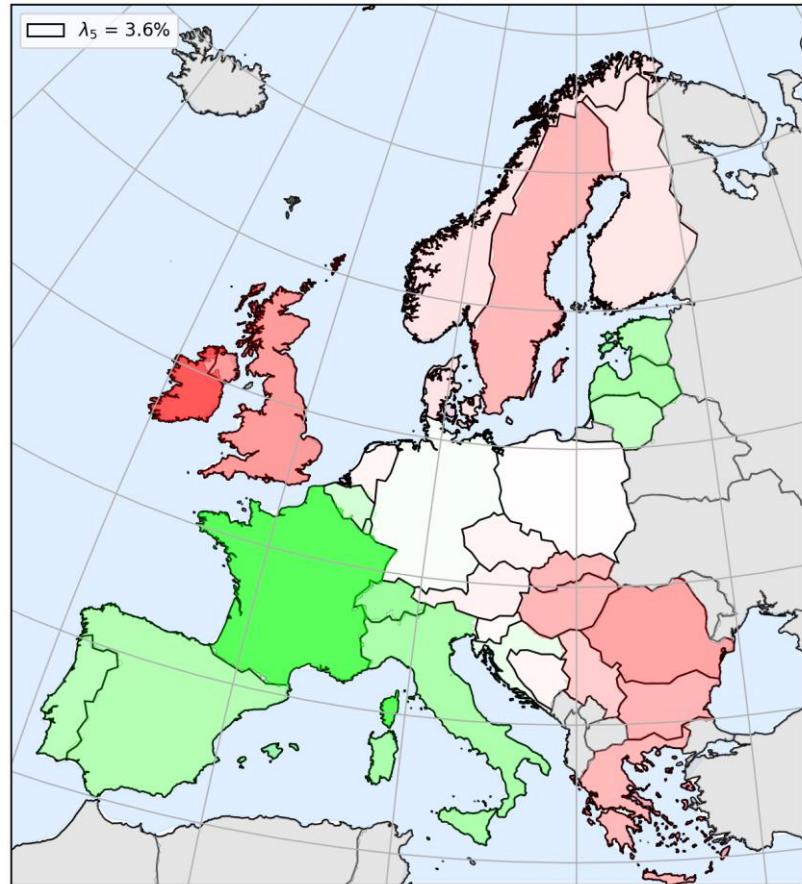


Transport Nodal Price - postnetwork-elec_v2g50_0.125_0.05.h5
Fourier Power Spectra: $\lambda_4 = 4.3\%$

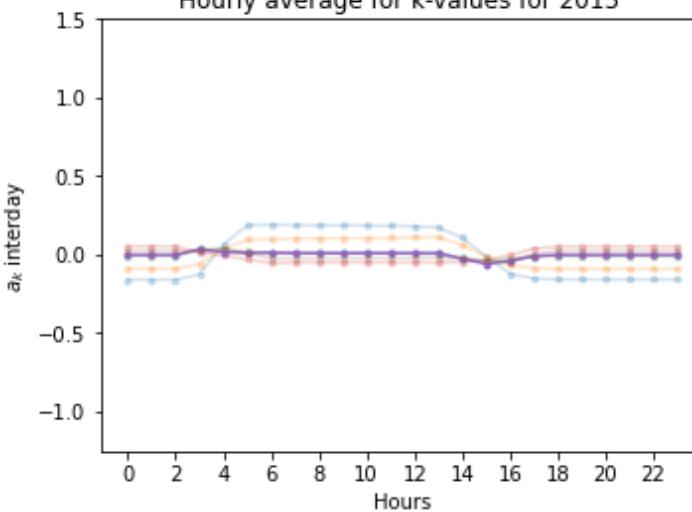


Principle Component 5

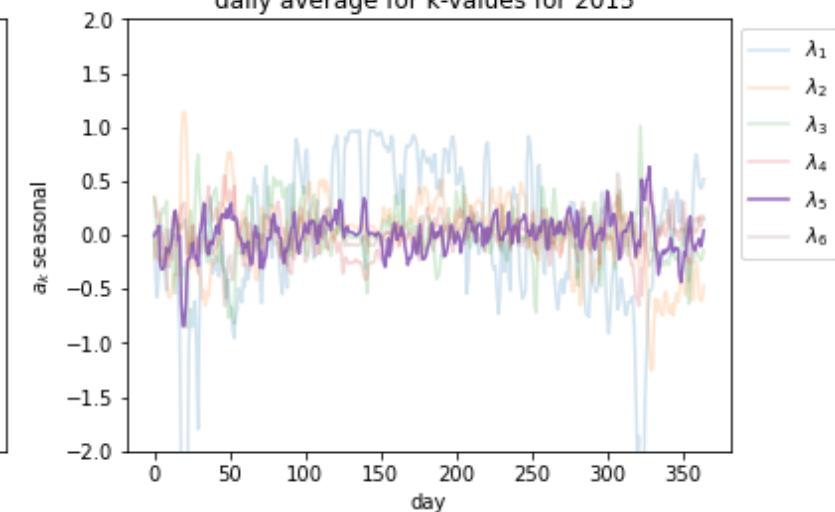
postnetwork-elec_v2g50_0.125_0.05.h5
Nodal price for transport only



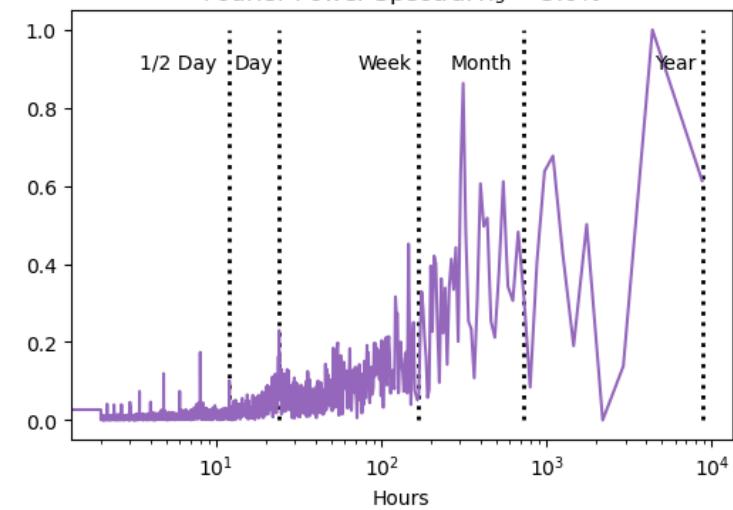
Transport Nodal Price - postnetwork-elec_v2g50_0.125_0.05.h5
Hourly average for k-values for 2015



daily average for k-values for 2015

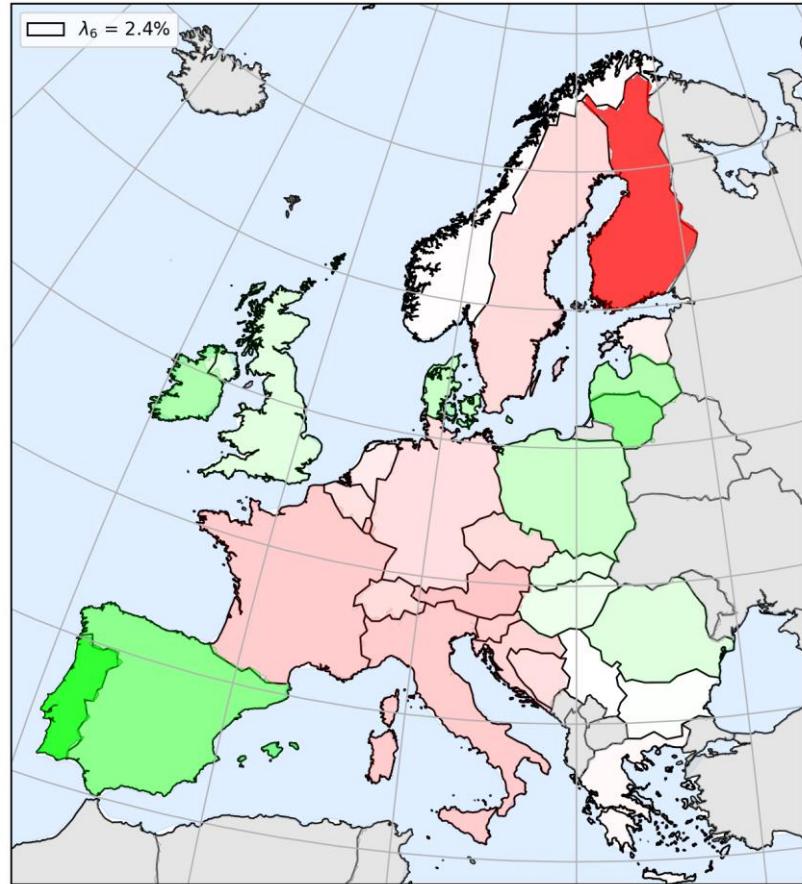


Transport Nodal Price - postnetwork-elec_v2g50_0.125_0.05.h5
Fourier Power Spectra: $\lambda_5 = 3.6\%$

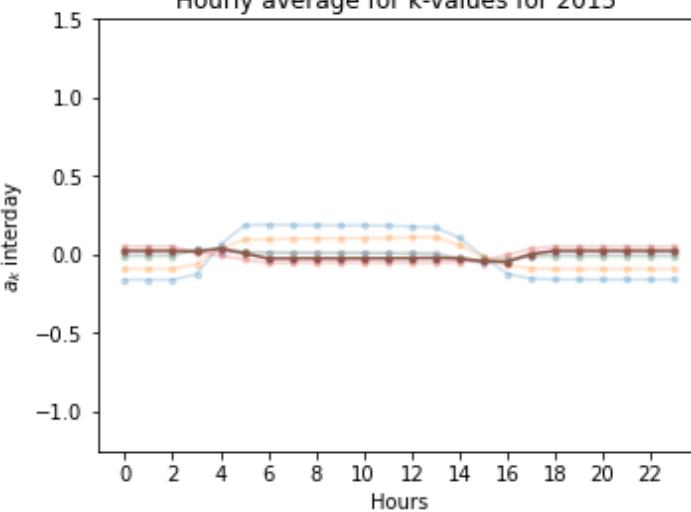


Principle Component 6

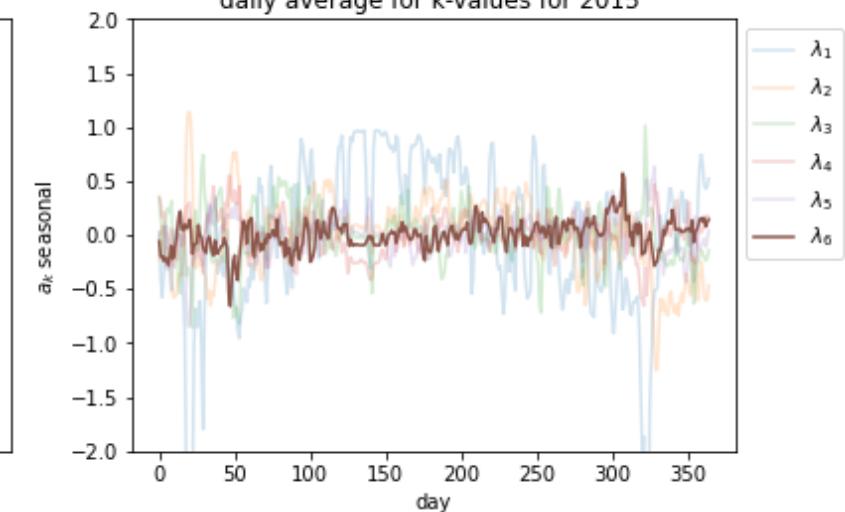
postnetwork-elec_v2g50_0.125_0.05.h5
Nodal price for transport only



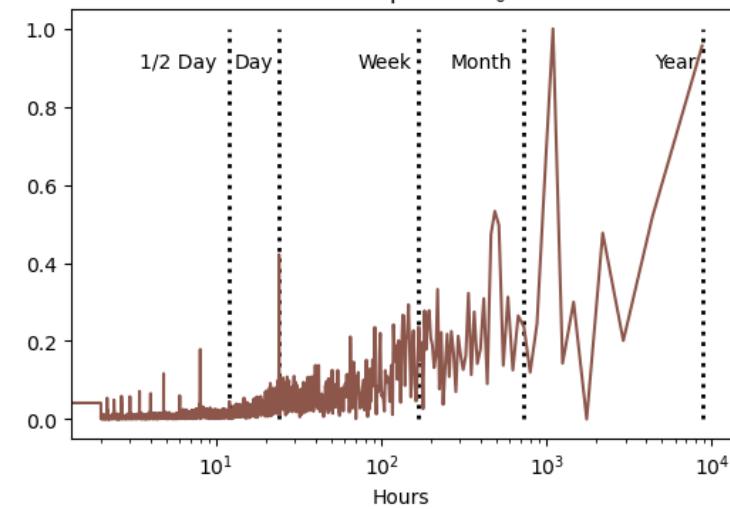
Transport Nodal Price - postnetwork-elec_v2g50_0.125_0.05.h5
Hourly average for k-values for 2015



daily average for k-values for 2015



Transport Nodal Price - postnetwork-elec_v2g50_0.125_0.05.h5
Fourier Power Spectra: $\lambda_6 = 2.4\%$

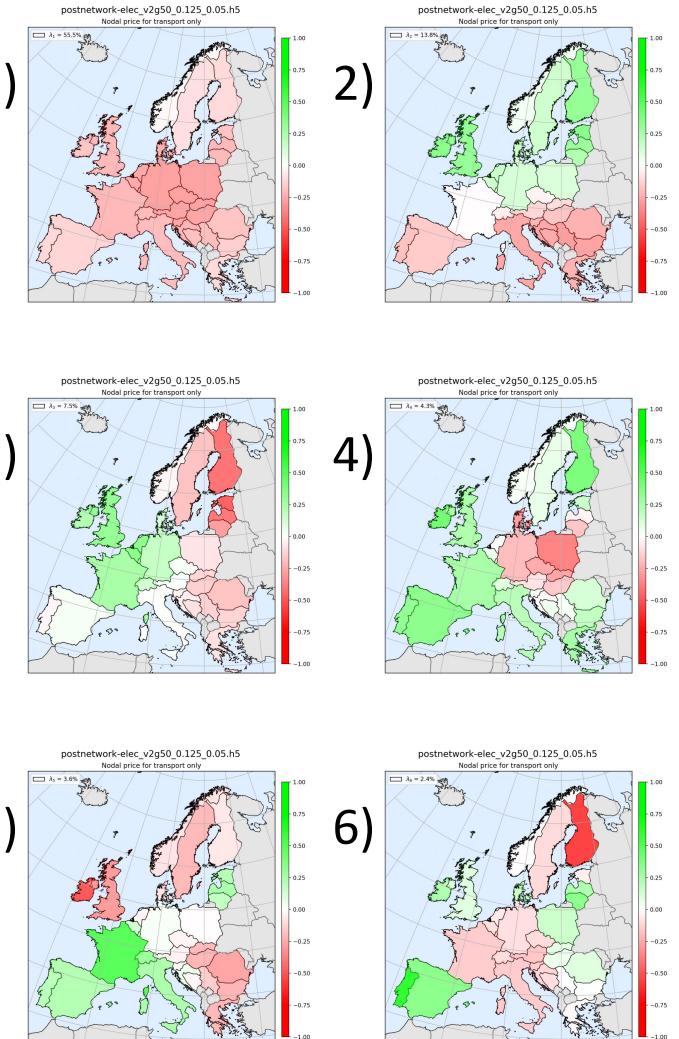


Electricity Coupled with the Transport Sector

Transport Mismatch and NP Coherence

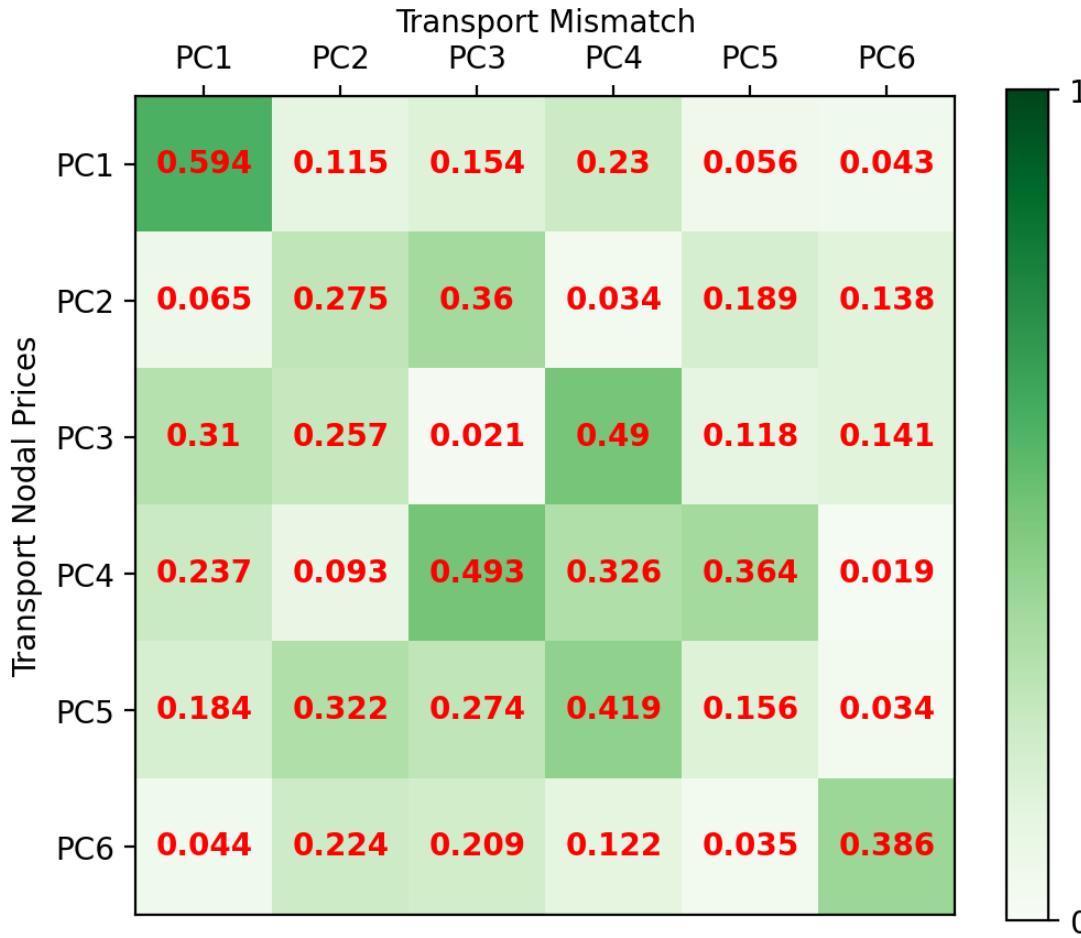
Coherence Method 1

Nodal Price

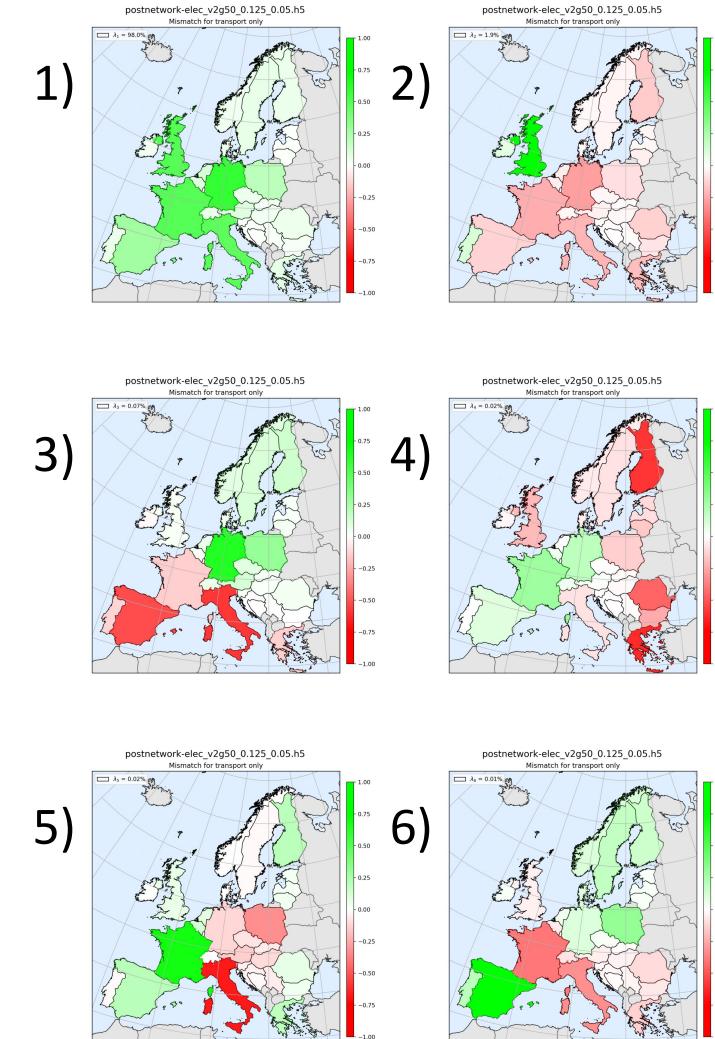


postnetwork-elec_v2g50_0.125_0.05.h5

Coherence 1: Transport mismatch and nodal price

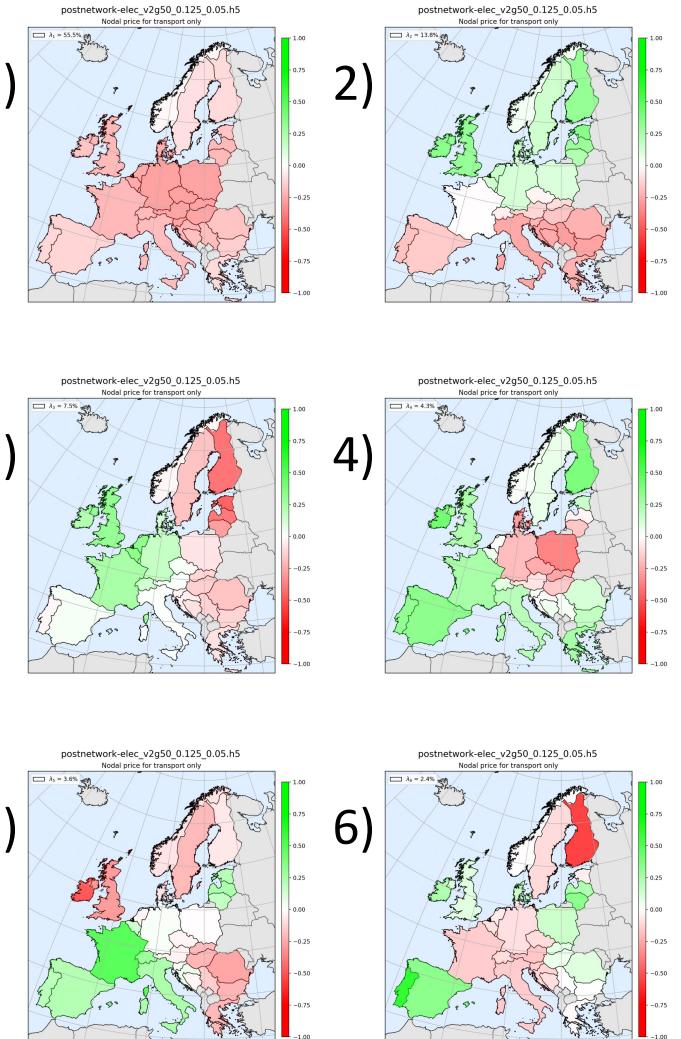


Mismatch



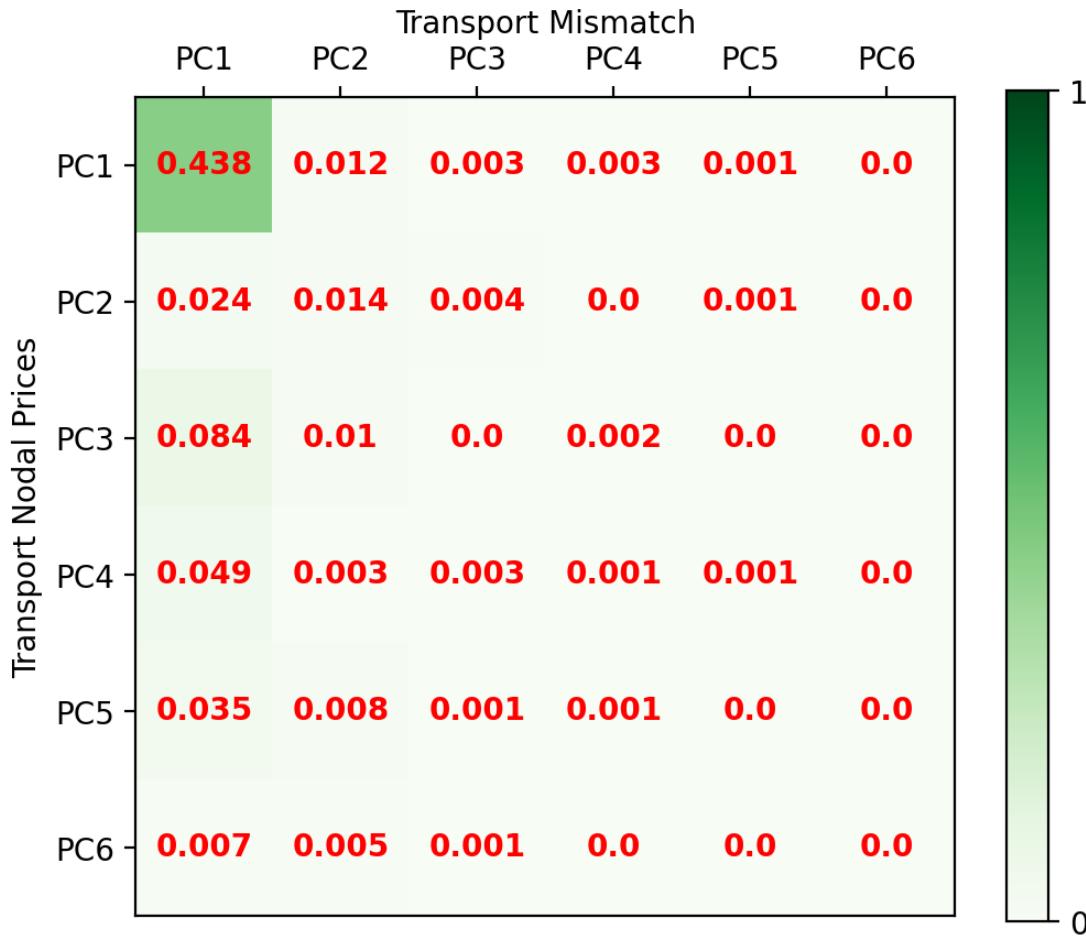
Coherence Method 2

Nodal Price

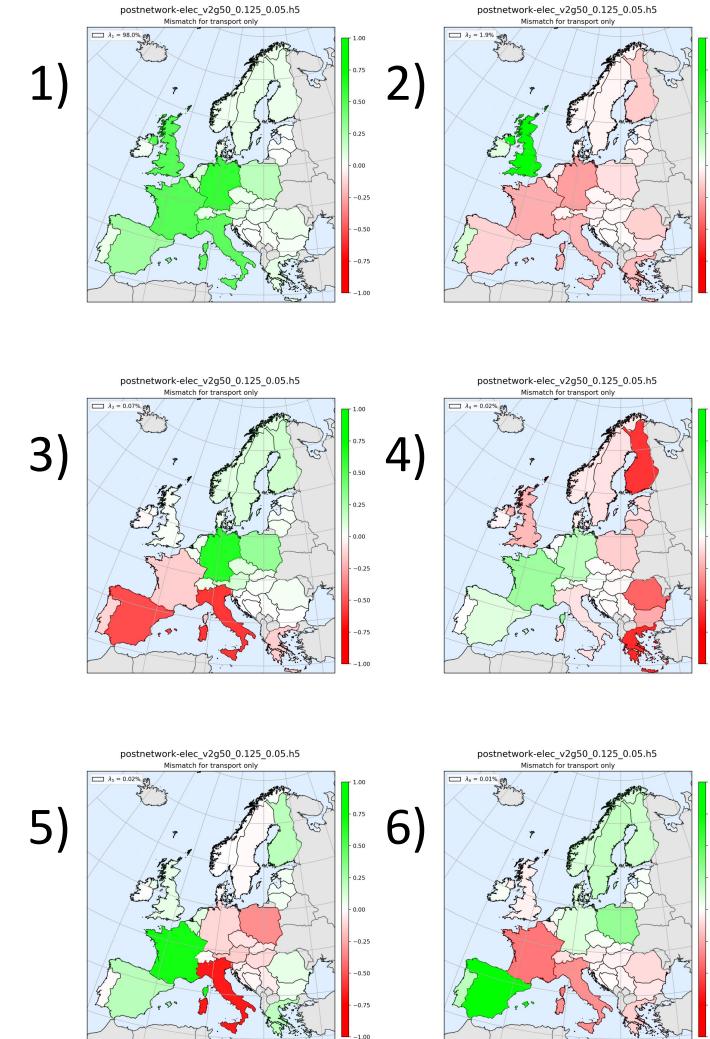


postnetwork-elec_v2g50_0.125_0.05.h5

Coherence 2: Transport mismatch and nodal price

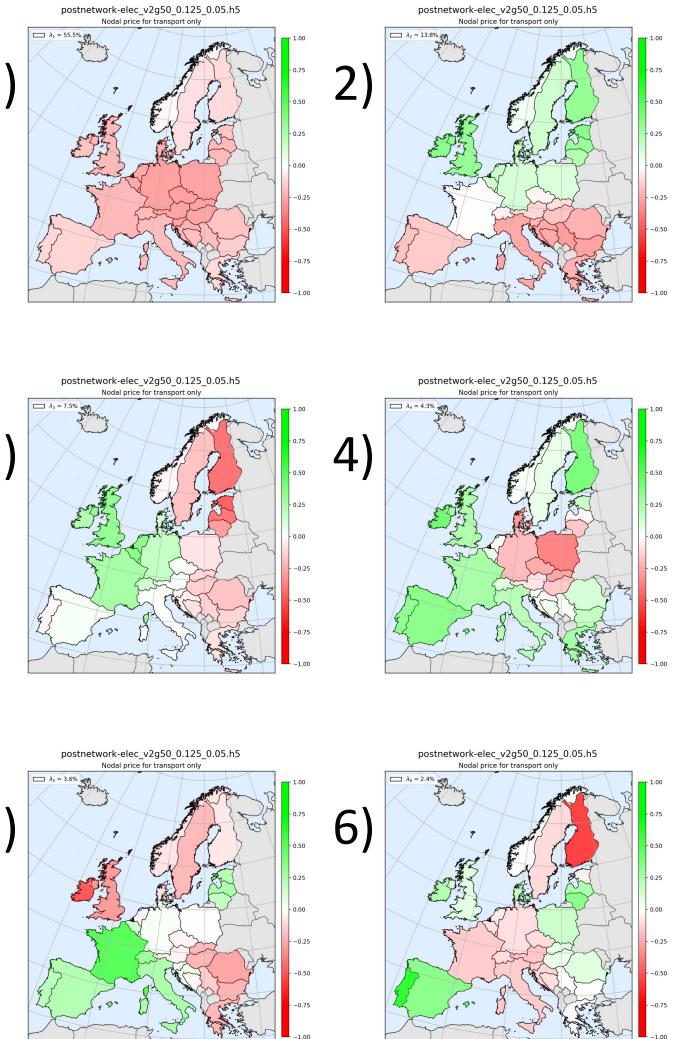


Mismatch



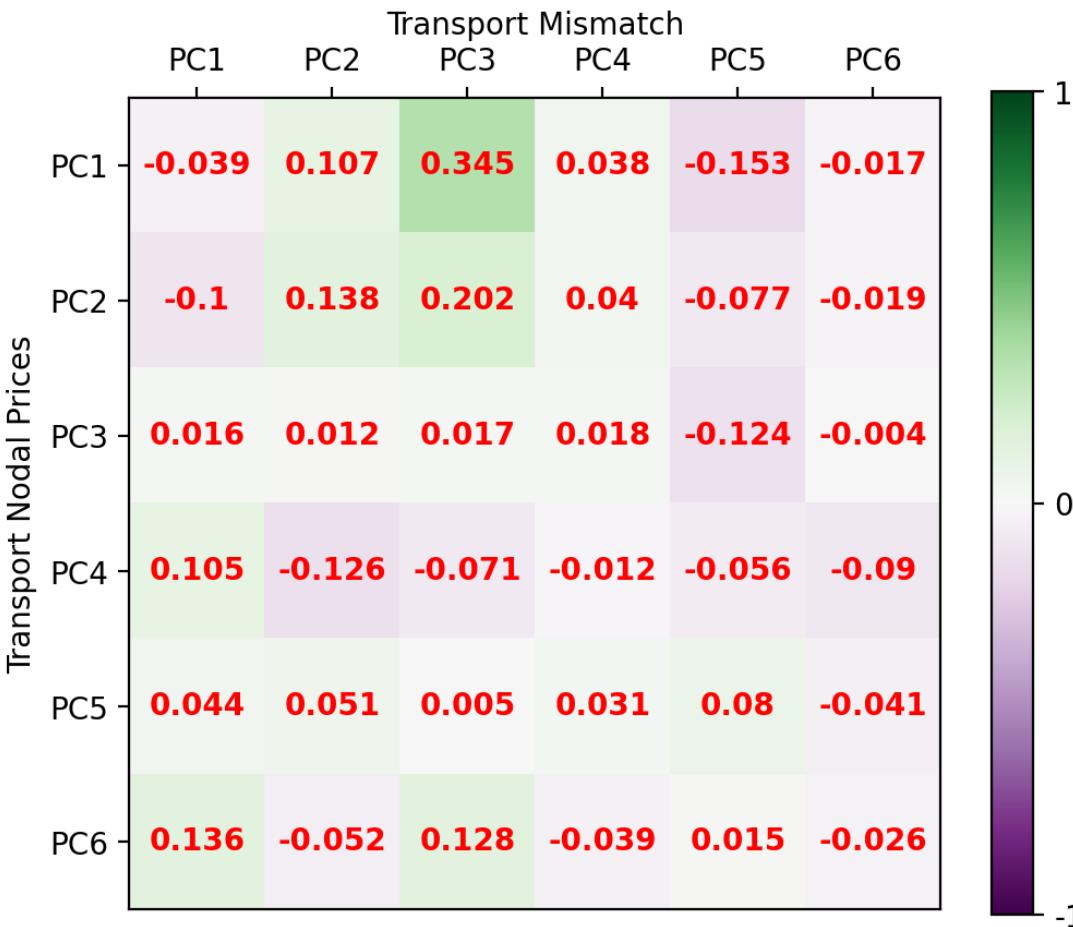
Coherence Method 3

Nodal Price

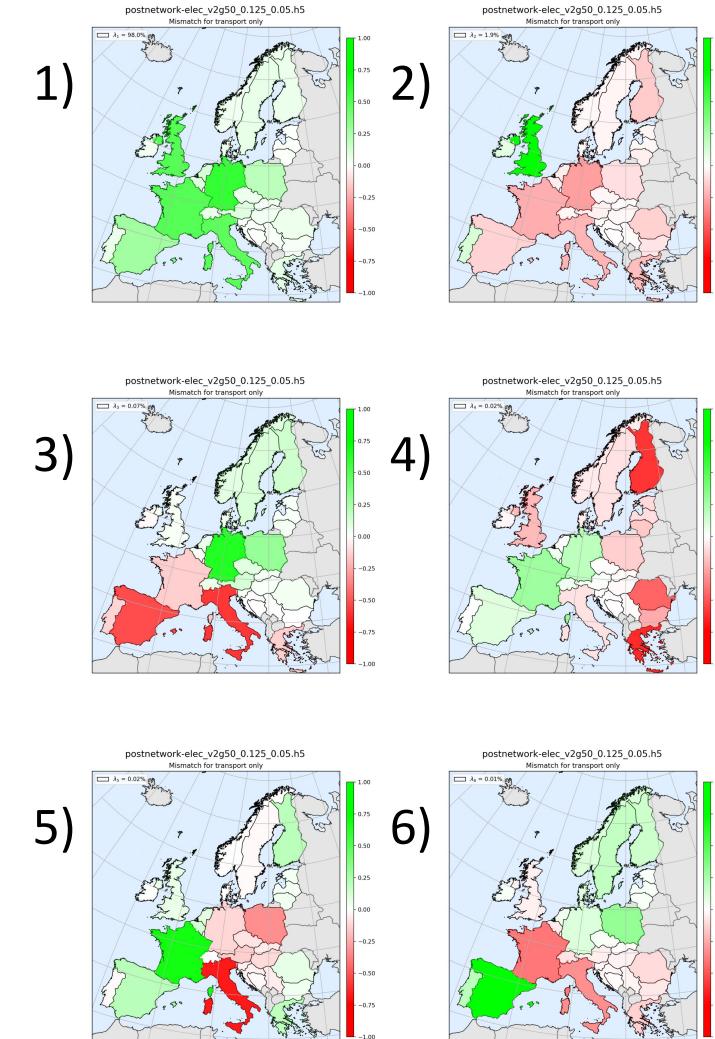


postnetwork-elec_v2g50_0.125_0.05.h5

Coherence 3: Transport mismatch and nodal price



Mismatch

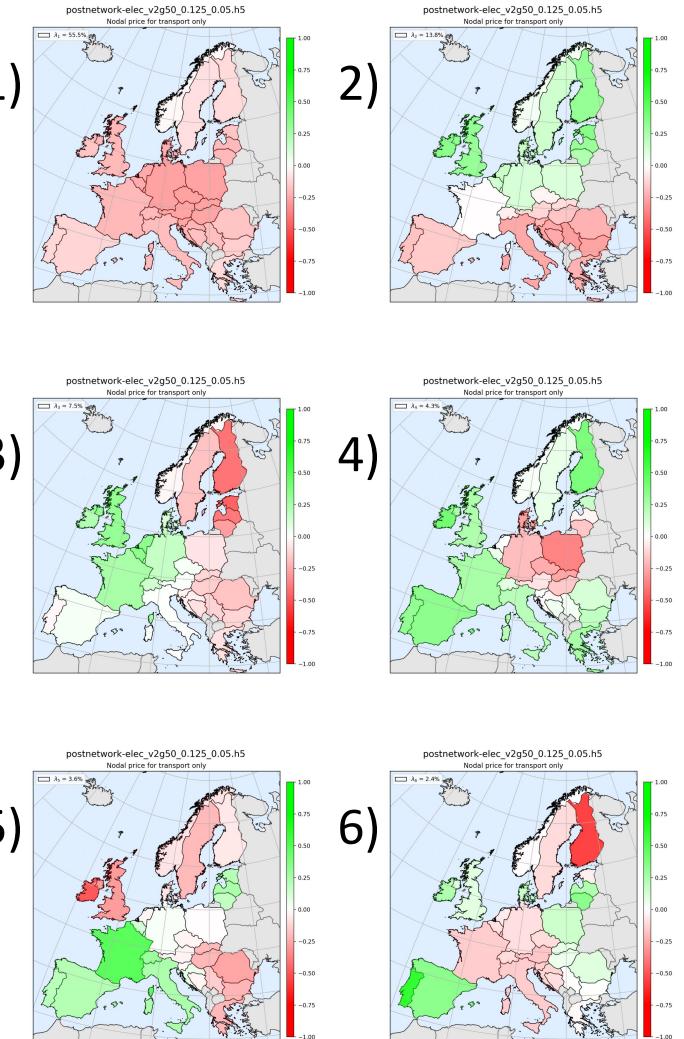


Electricity Coupled with the Transport Sector

Electricity NP and Transport NP Coherence

Coherence Method 1

TNP

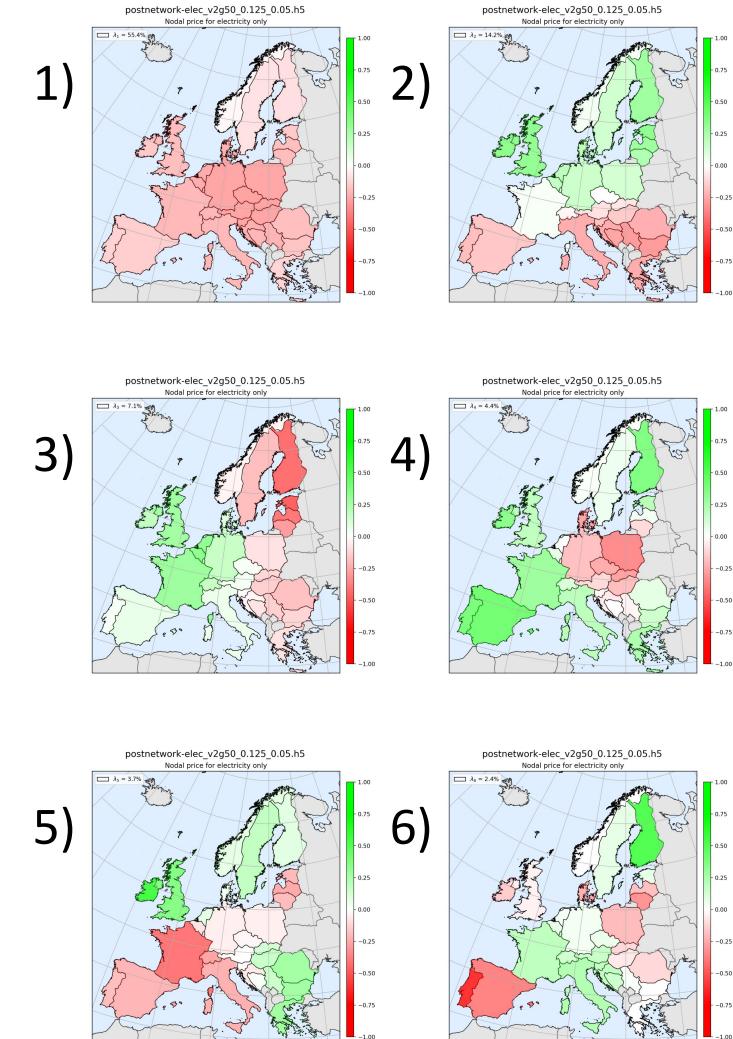


postnetwork-elec_v2g50_0.125_0.05.h5

Coherence 1: Electricity and transport nodal prices

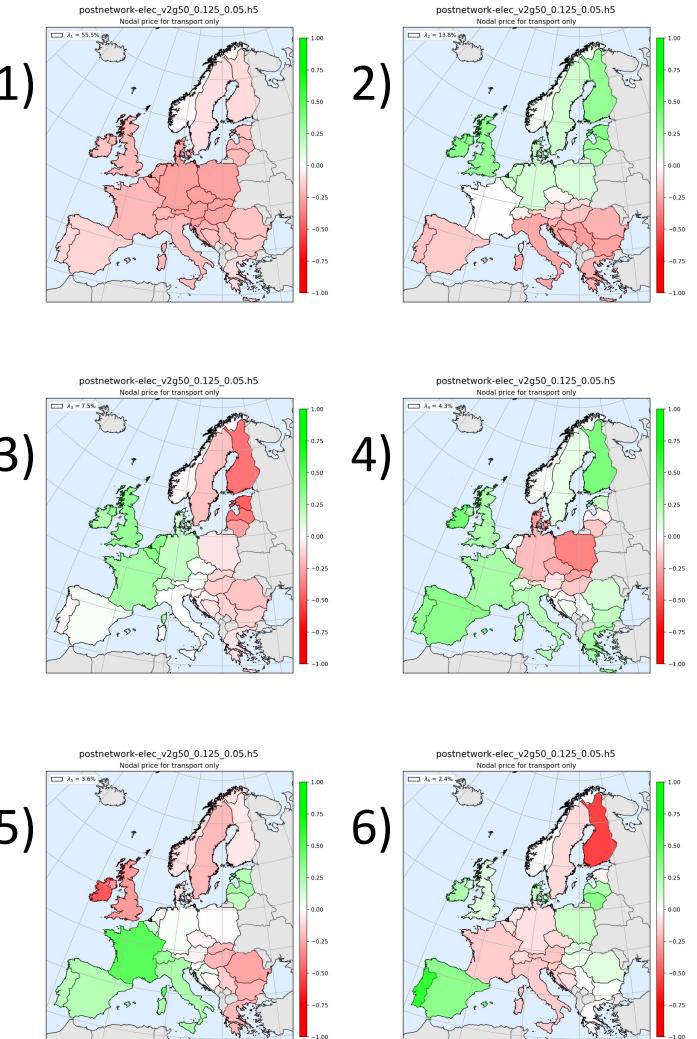


ENP



Coherence Method 2

TNP

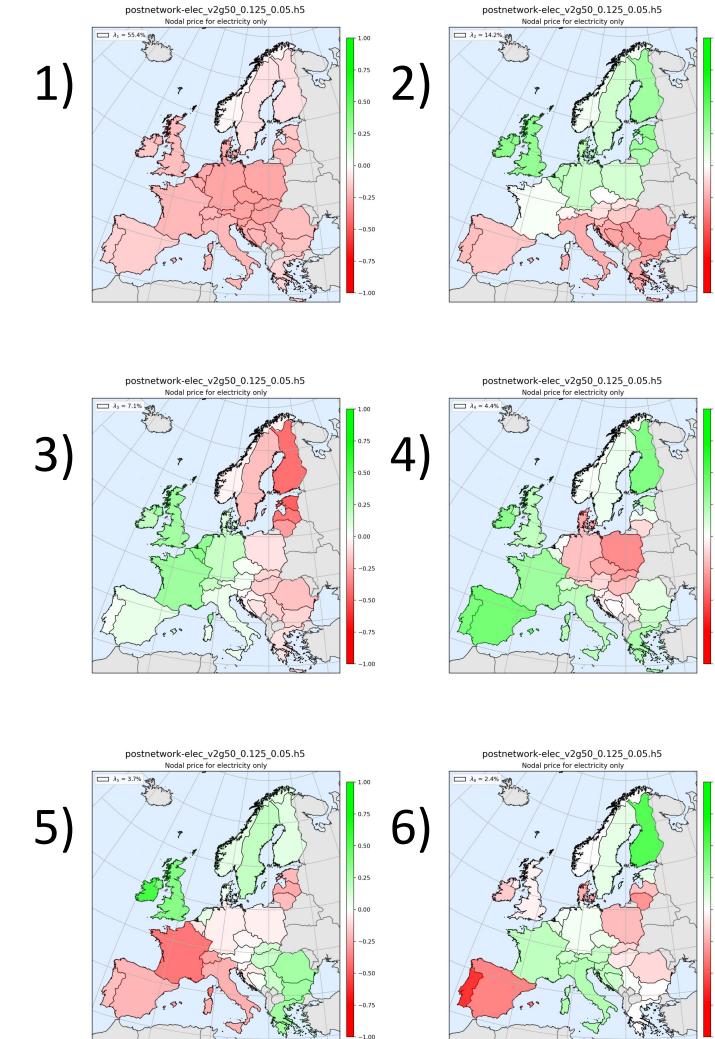


postnetwork-elec_v2g50_0.125_0.05.h5

Coherence 2: Electricity and transport nodal prices

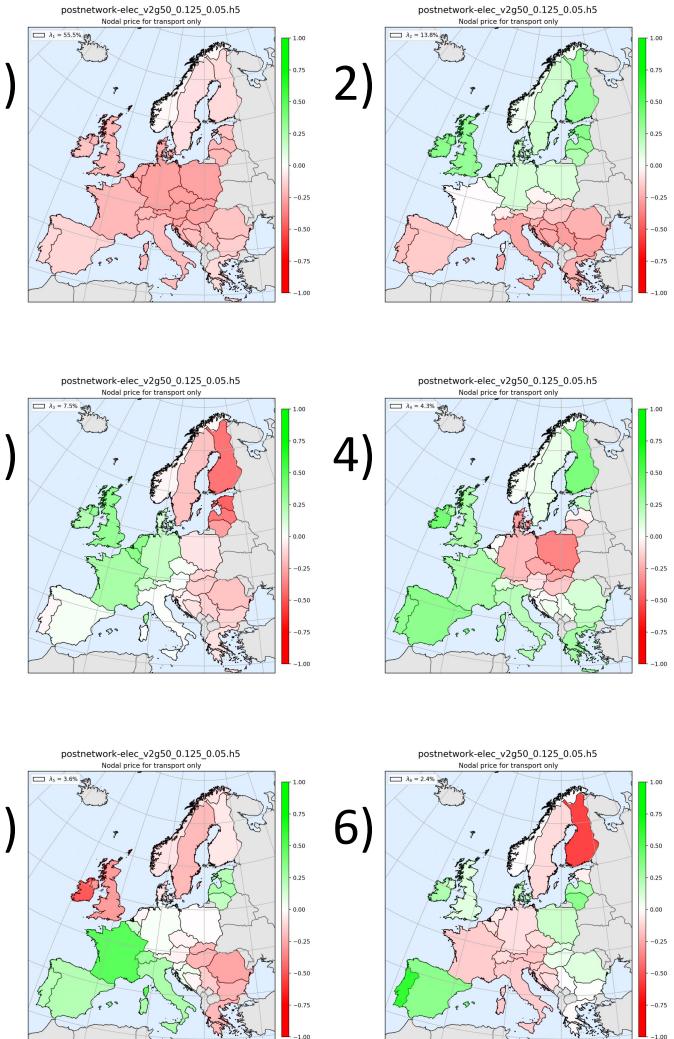


ENP



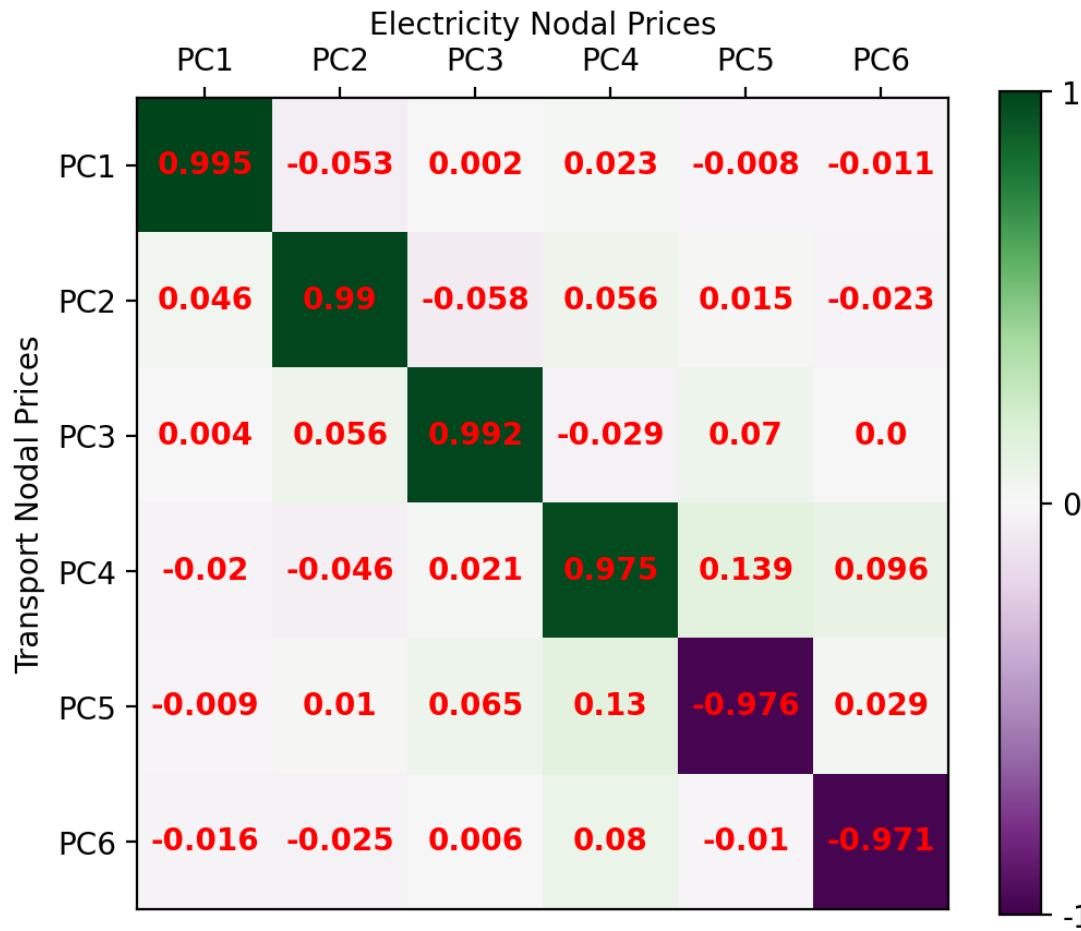
Coherence Method 3

TNP



postnetwork-elec_v2g50_0.125_0.05.h5

Coherence 3: Electricity and transport nodal prices



ENP

