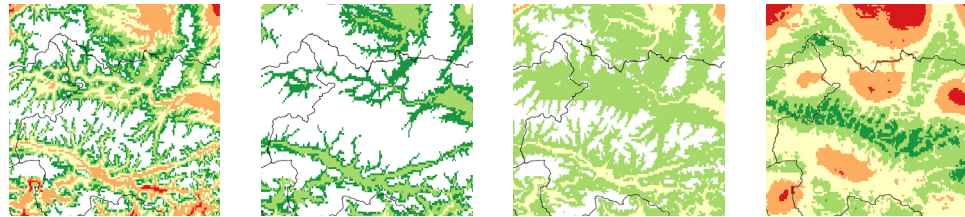




## CLIMATE IMPACT MAPS

Kozłowska Anna, Bügelmayer-Blaschek Marianne, Kristofer Hasel, Tötzer Tanja



### ROBINE PROJECT

Regionsspezifische Impactuntersuchung von Klimawandel für eine robuste und integrale Energieinfrastruktur in Österreich



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Title: Climate Impact Maps

Authors: Kozłowska Anna, Bügelmayer-Blaschek Marianne, Kristofer Hasel, Tötzer Tanja

Date: 08/2025

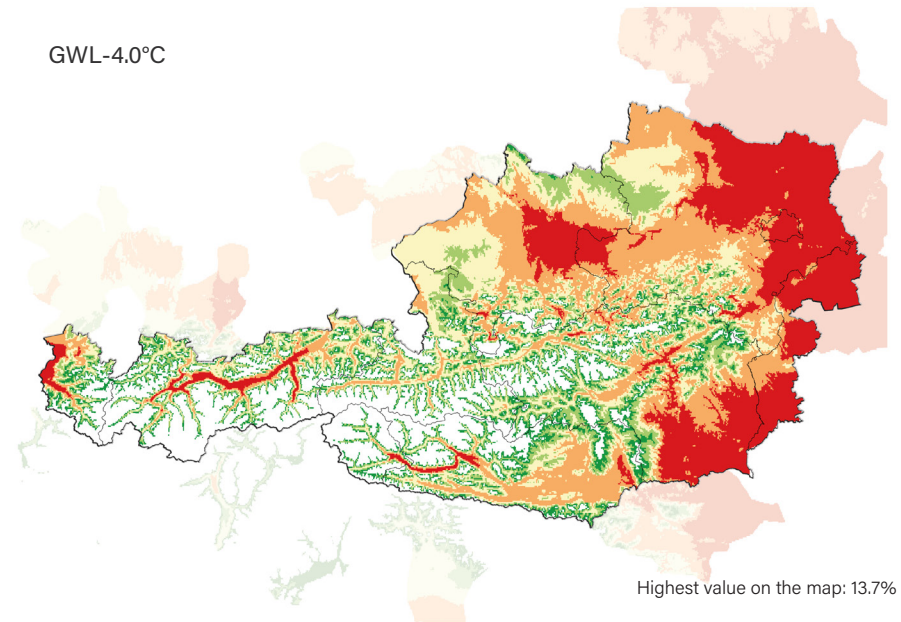
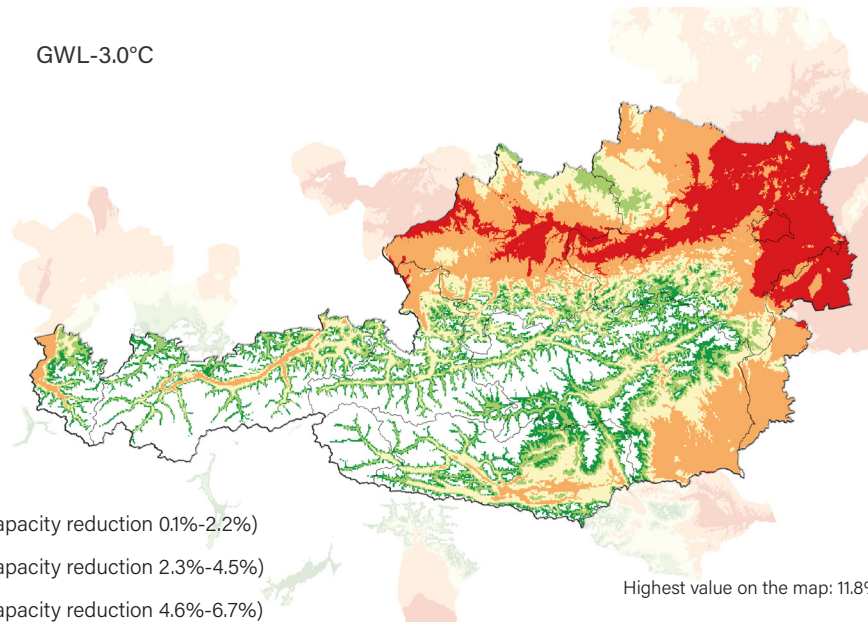
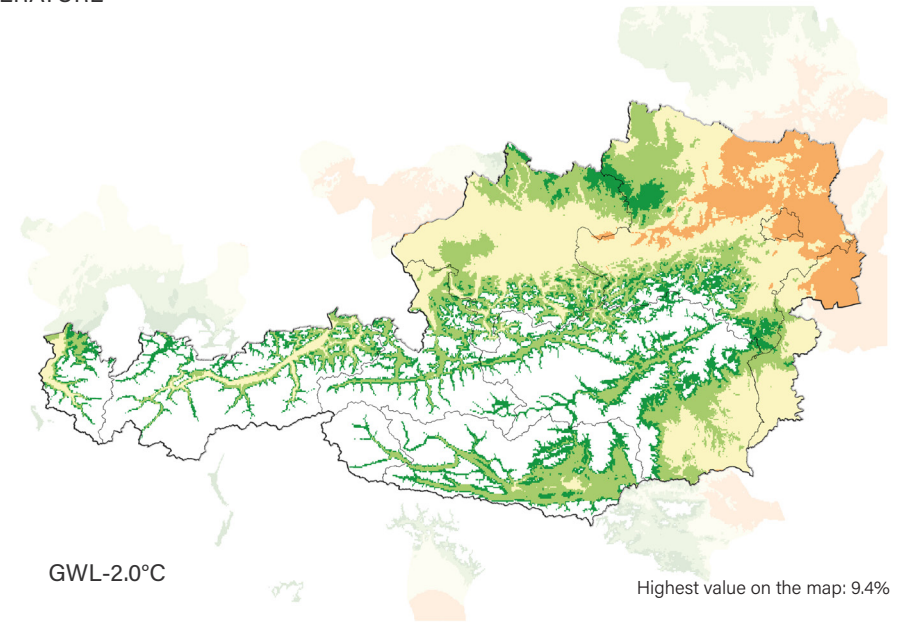
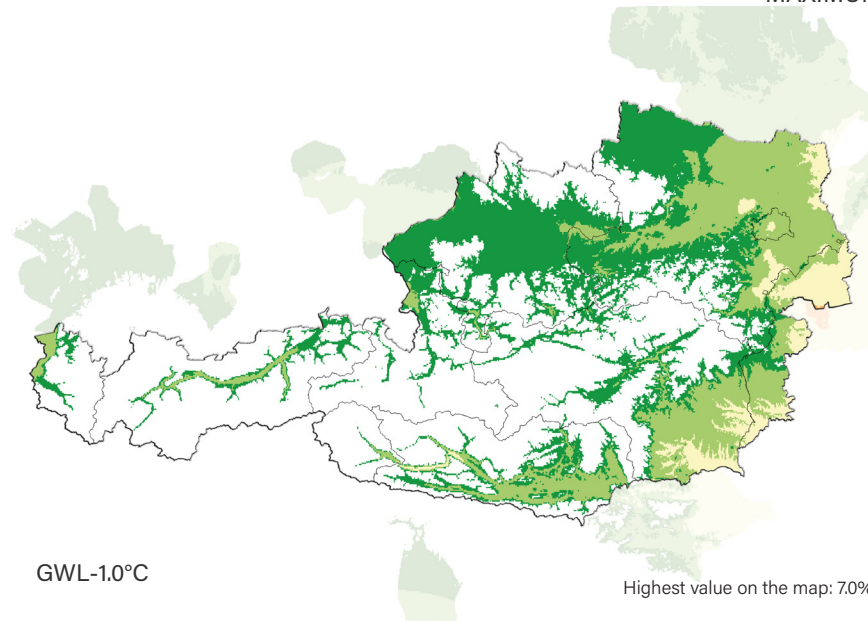
Project: ROBINE Regionsspezifische Impactuntersuchung von Klimawandel für eine robuste und integrale Energieinfrastruktur in Österreich

Funding Information: The project ROBINE is funded by the Climate and Energy Fund (KLI.EN) through the Austrian Research Promotion Agency (FFG) under project number FO999905716, as part of the Energy Research Call 2022 (Energieforschung 2022). <https://projekte.ffg.at/projekt/4875808>

DOI: 10.5281/zenodo.17063332

## REDUCTION OF TRANSMISSION CAPACITY OF LIGHT-METAL OVERHEAD POWER LINES

MAXIMUM TEMPERATURE

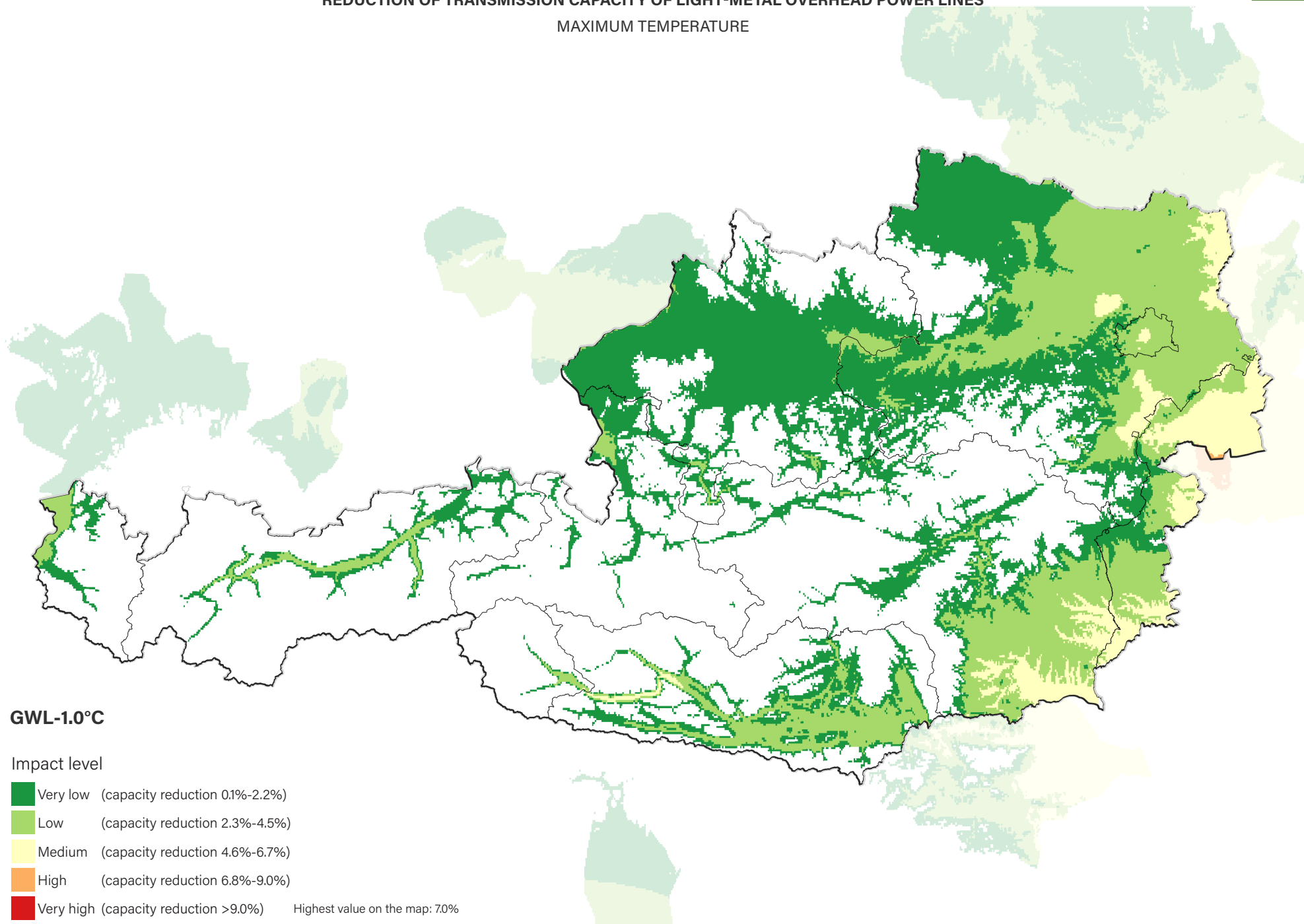


## Impact level

- Very low (capacity reduction 0.1%-2.2%)
- Low (capacity reduction 2.3%-4.5%)
- Medium (capacity reduction 4.6%-6.7%)
- High (capacity reduction 6.8%-9.0%)
- Very high (capacity reduction >9.0%)

## REDUCTION OF TRANSMISSION CAPACITY OF LIGHT-METAL OVERHEAD POWER LINES

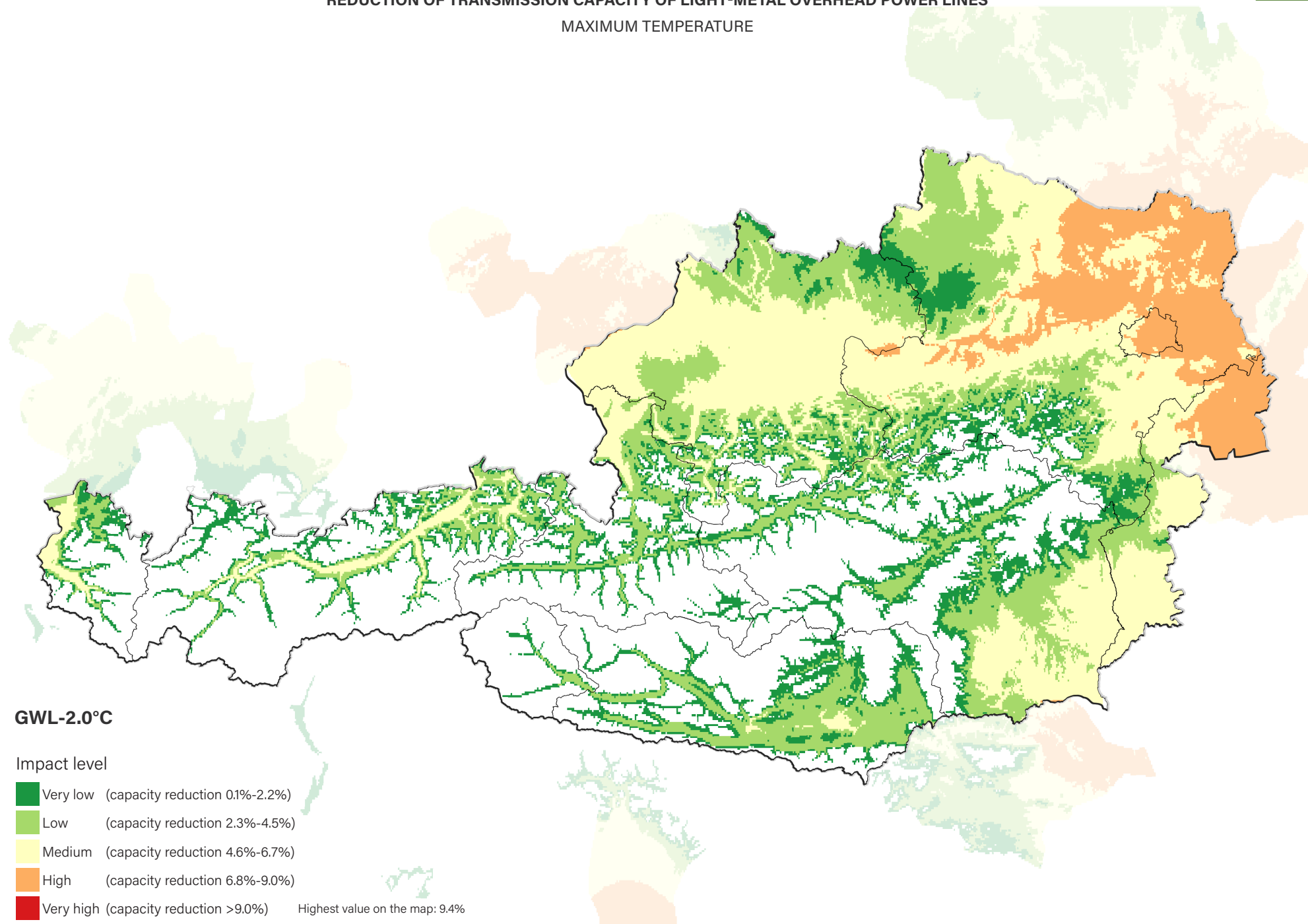
MAXIMUM TEMPERATURE





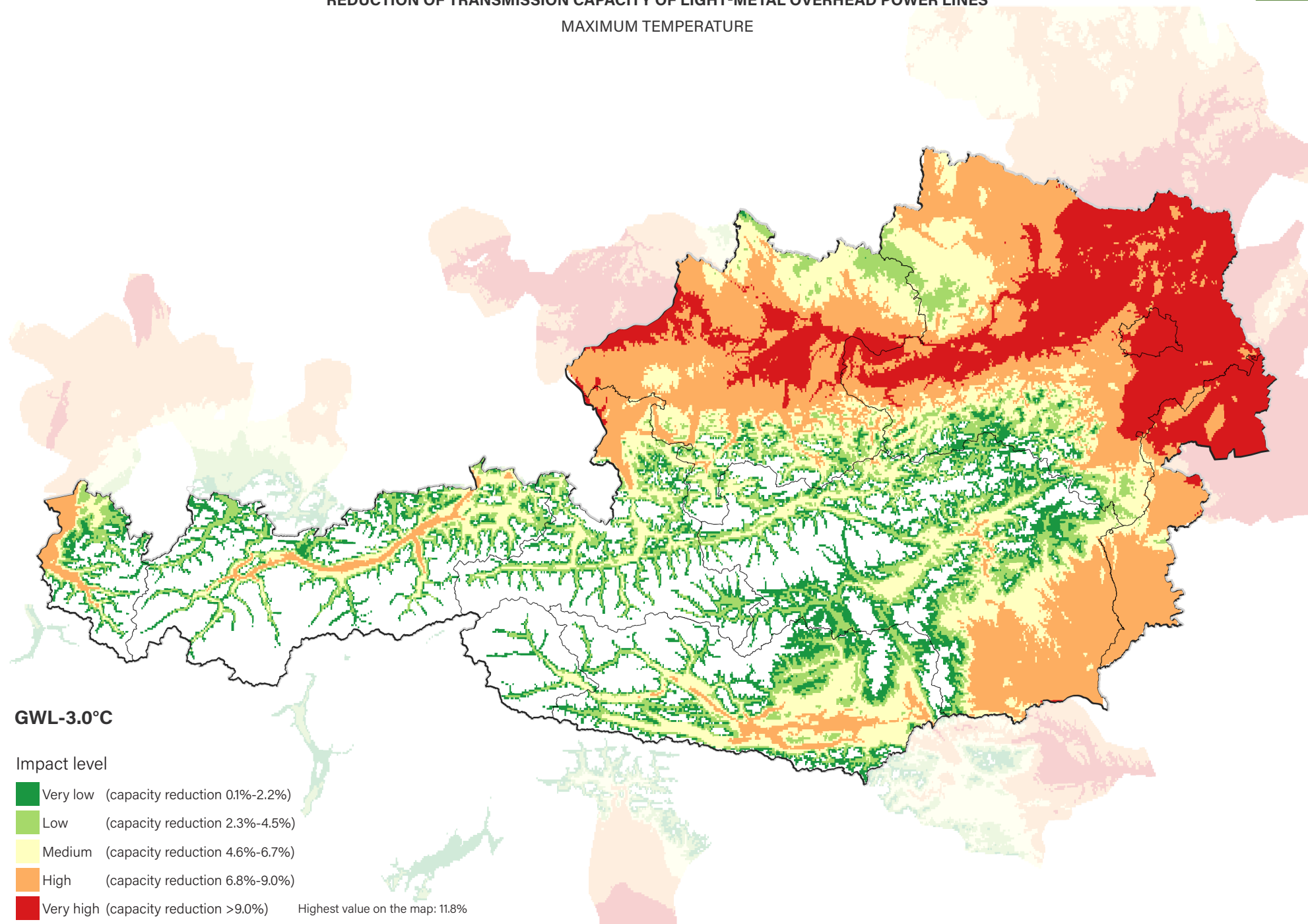
## REDUCTION OF TRANSMISSION CAPACITY OF LIGHT-METAL OVERHEAD POWER LINES

MAXIMUM TEMPERATURE



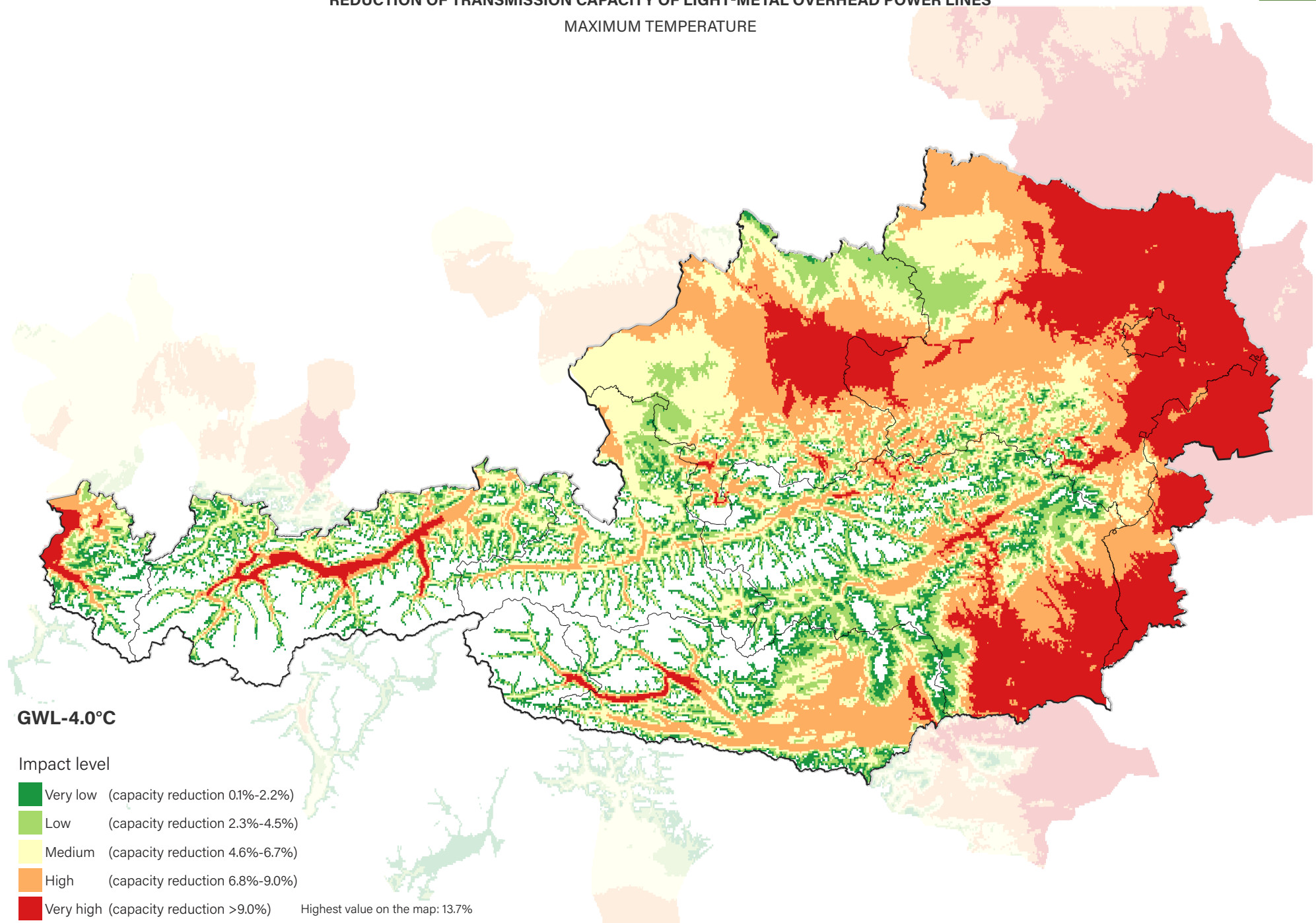
## REDUCTION OF TRANSMISSION CAPACITY OF LIGHT-METAL OVERHEAD POWER LINES

MAXIMUM TEMPERATURE



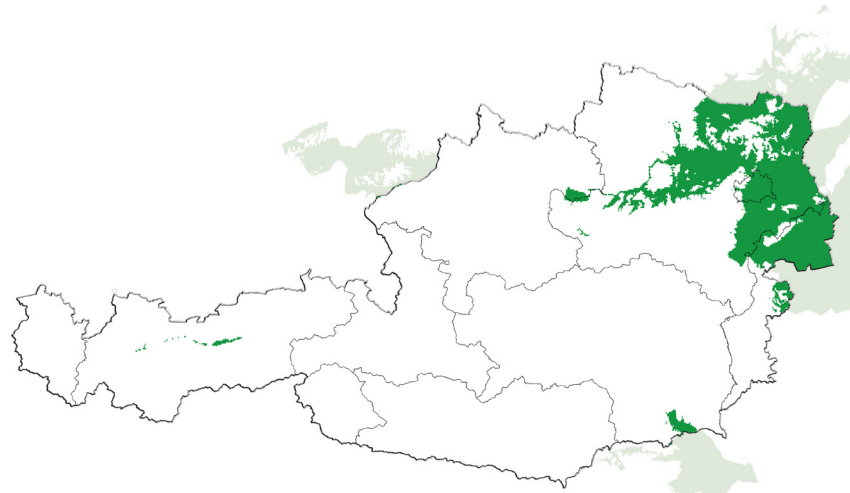
## REDUCTION OF TRANSMISSION CAPACITY OF LIGHT-METAL OVERHEAD POWER LINES

MAXIMUM TEMPERATURE



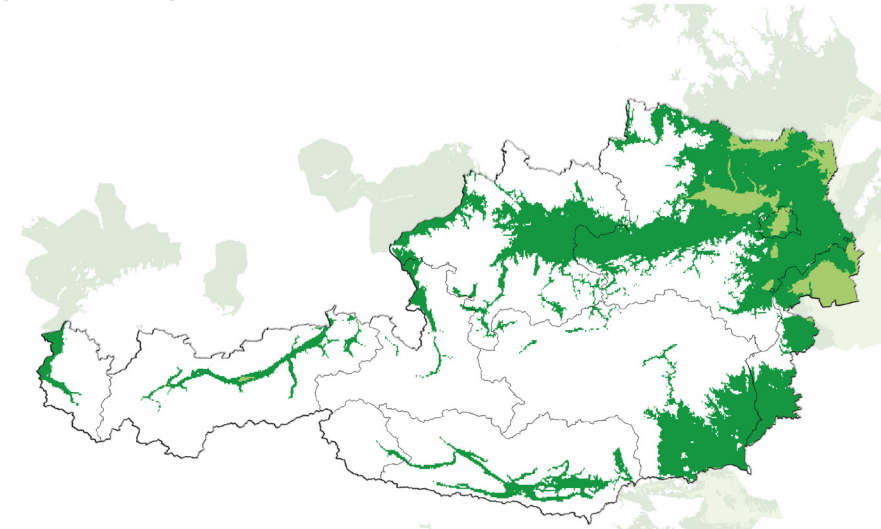
## REDUCTION OF TRANSMISSION CAPACITY OF LIGHT-METAL OVERHEAD POWER LINES

AVERAGE ANNUAL MAXIMUM TEMPERATURE



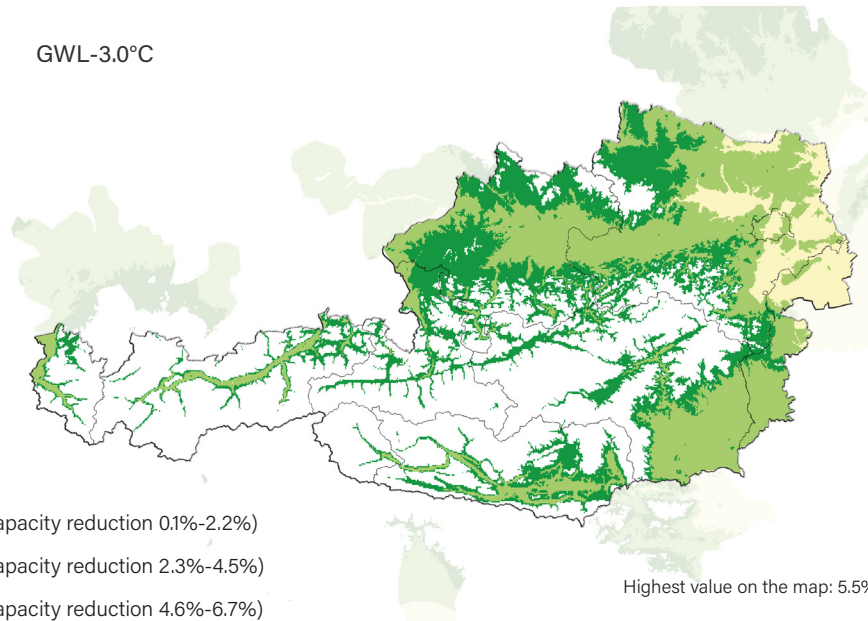
GWL-1.0°C

Highest value on the map: 1.5%



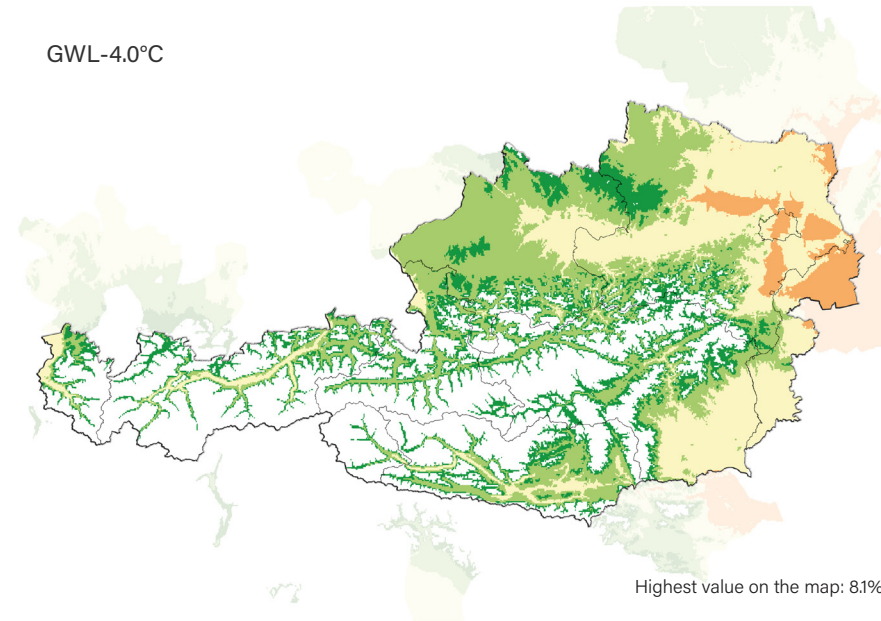
GWL-2.0°C

Highest value on the map: 3.3%



GWL-3.0°C

Highest value on the map: 5.5%



GWL-4.0°C

Highest value on the map: 8.1%

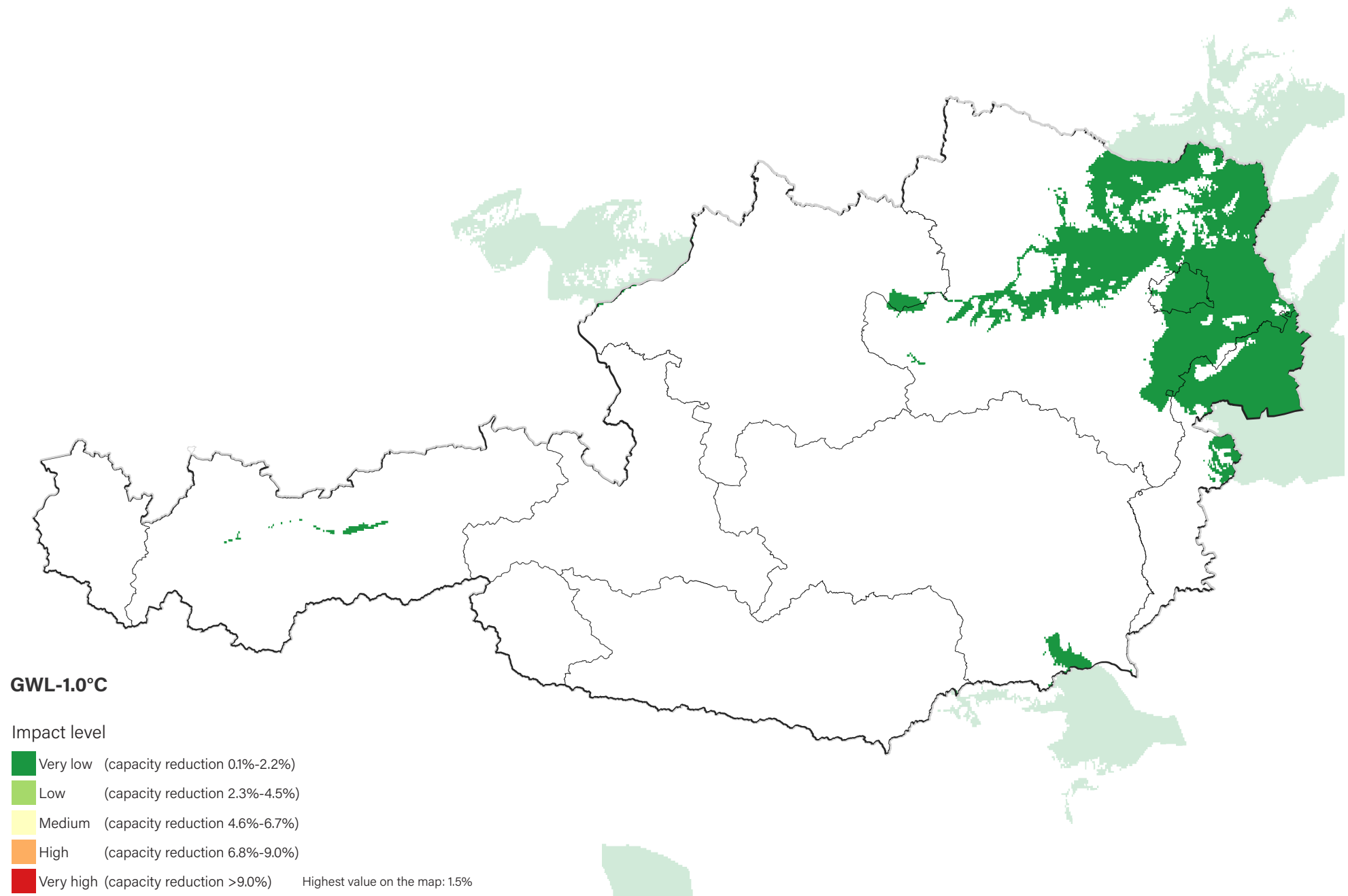
## Impact level

- Very low (capacity reduction 0.1%-2.2%)
- Low (capacity reduction 2.3%-4.5%)
- Medium (capacity reduction 4.6%-6.7%)
- High (capacity reduction 6.8%-9.0%)
- Very high (capacity reduction >9.0%)



## REDUCTION OF TRANSMISSION CAPACITY OF LIGHT-METAL OVERHEAD POWER LINES

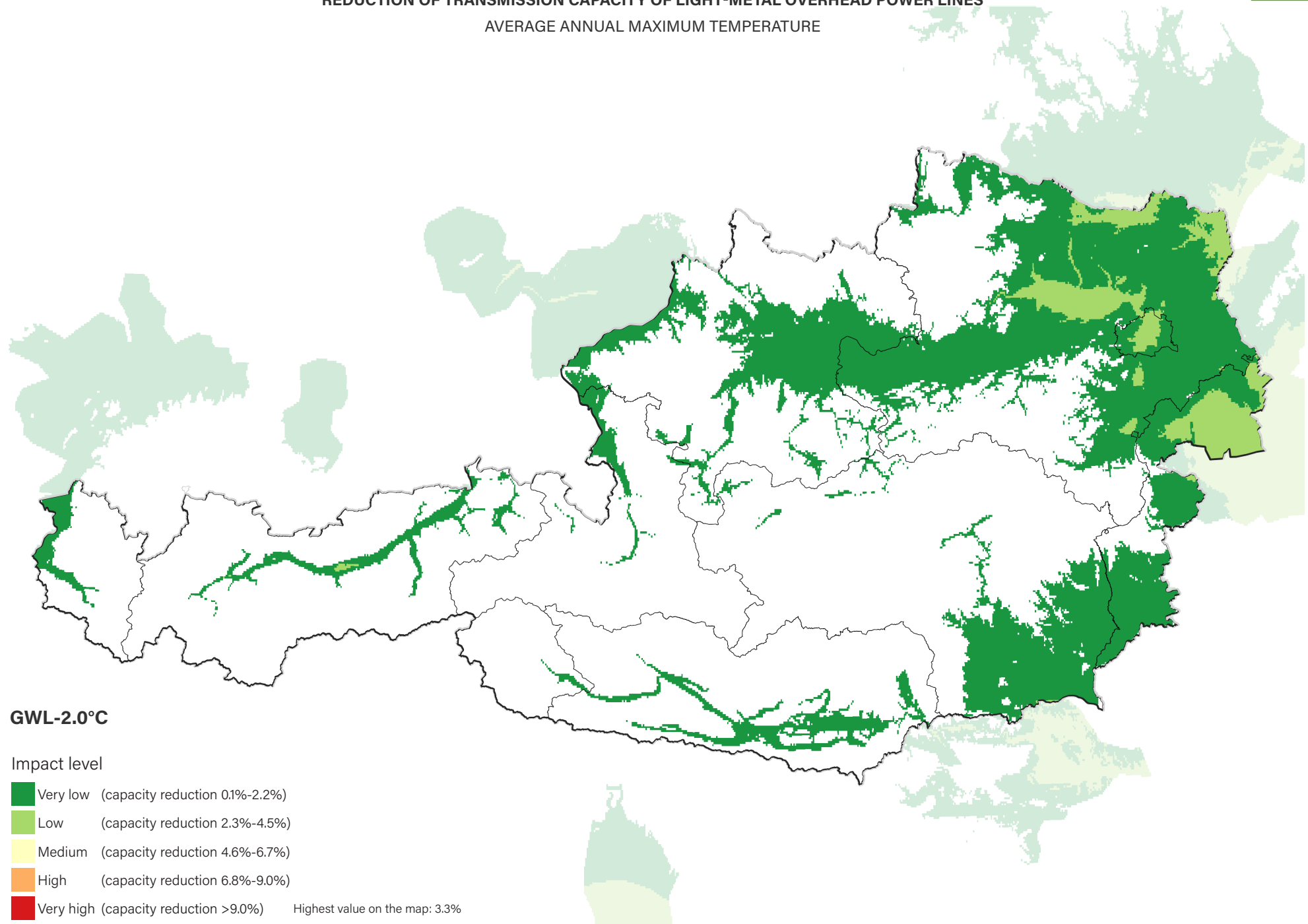
AVERAGE ANNUAL MAXIMUM TEMPERATURE





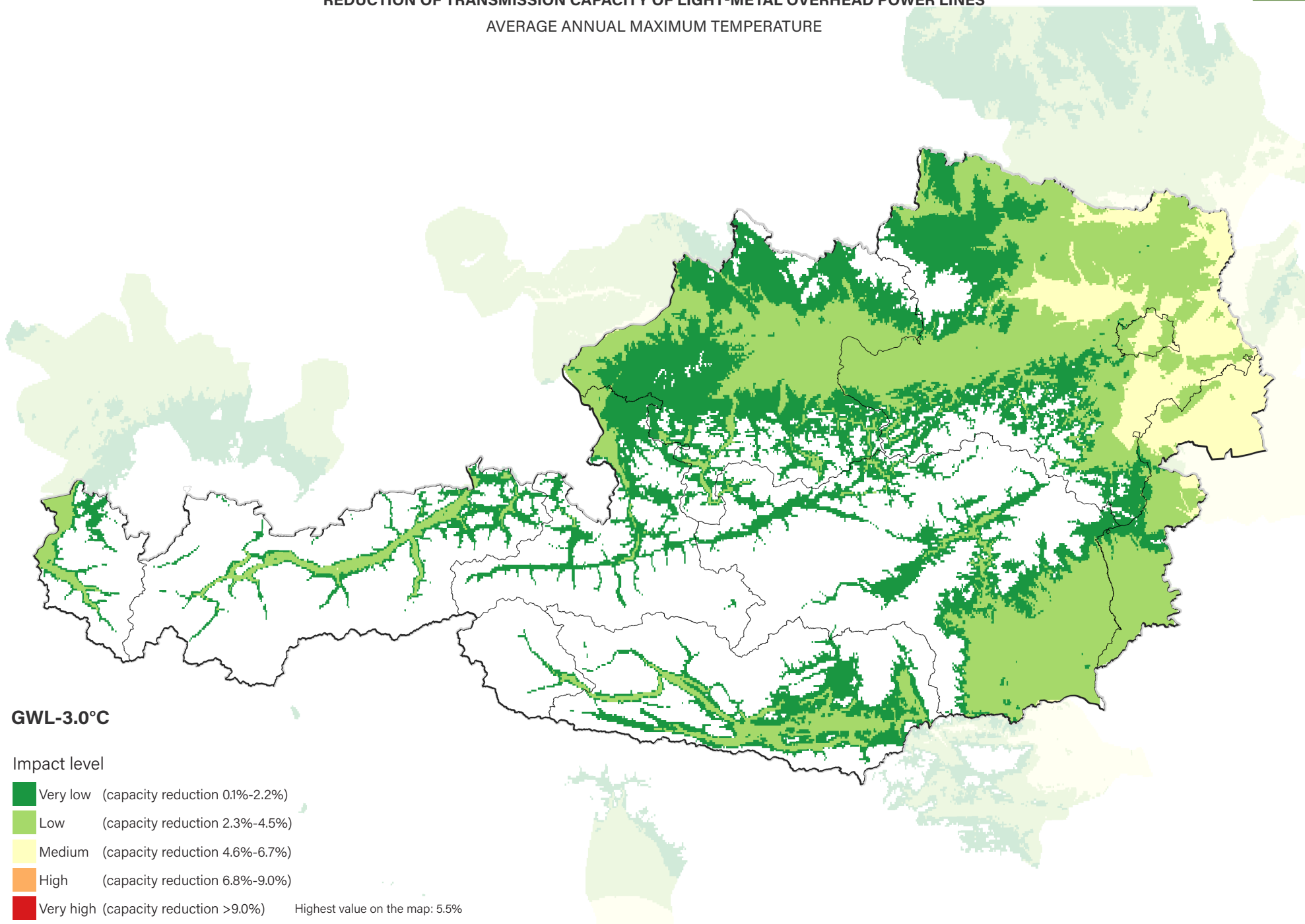
## REDUCTION OF TRANSMISSION CAPACITY OF LIGHT-METAL OVERHEAD POWER LINES

AVERAGE ANNUAL MAXIMUM TEMPERATURE



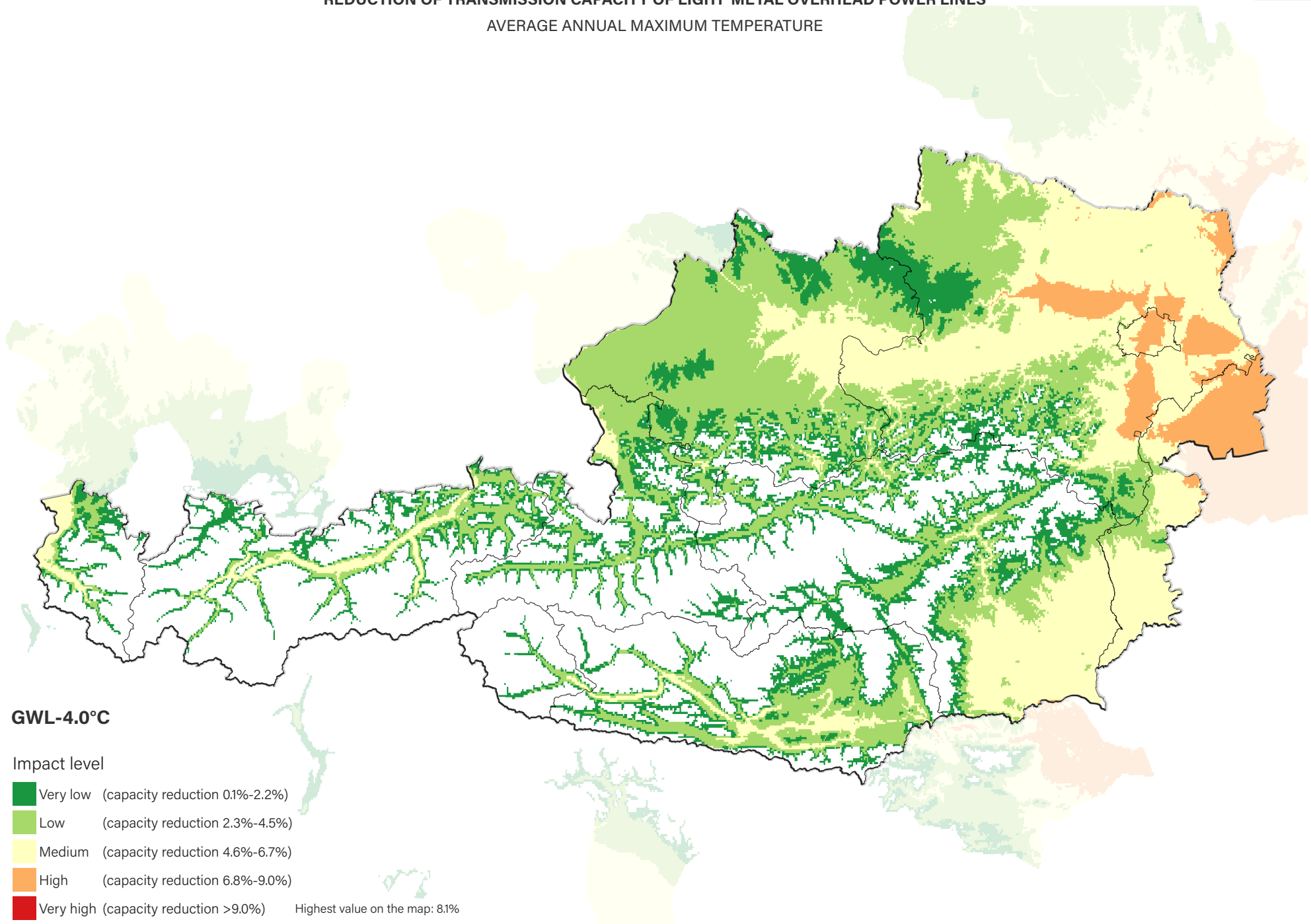
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AVERAGE ANNUAL MAXIMUM TEMPERATURE



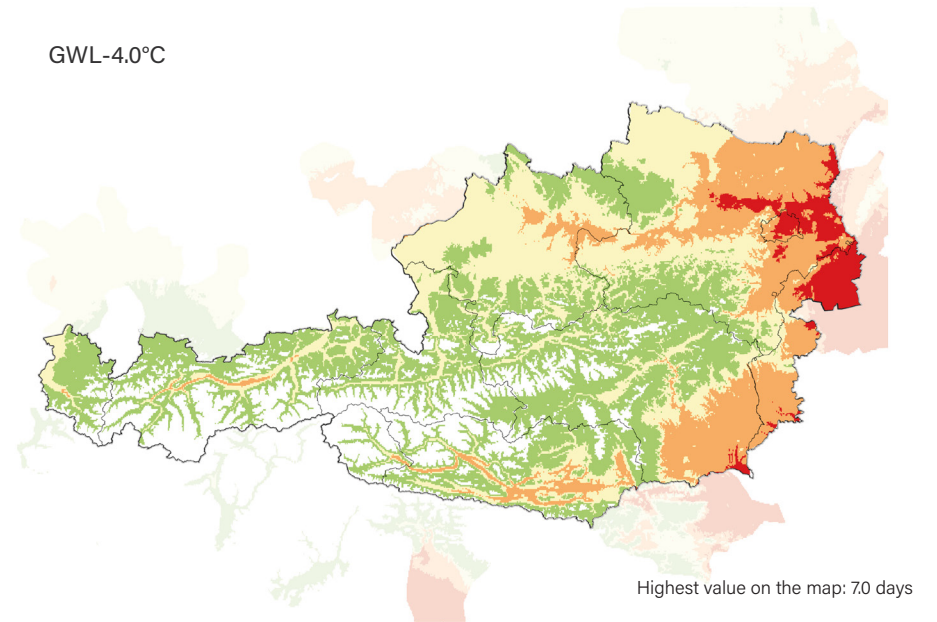
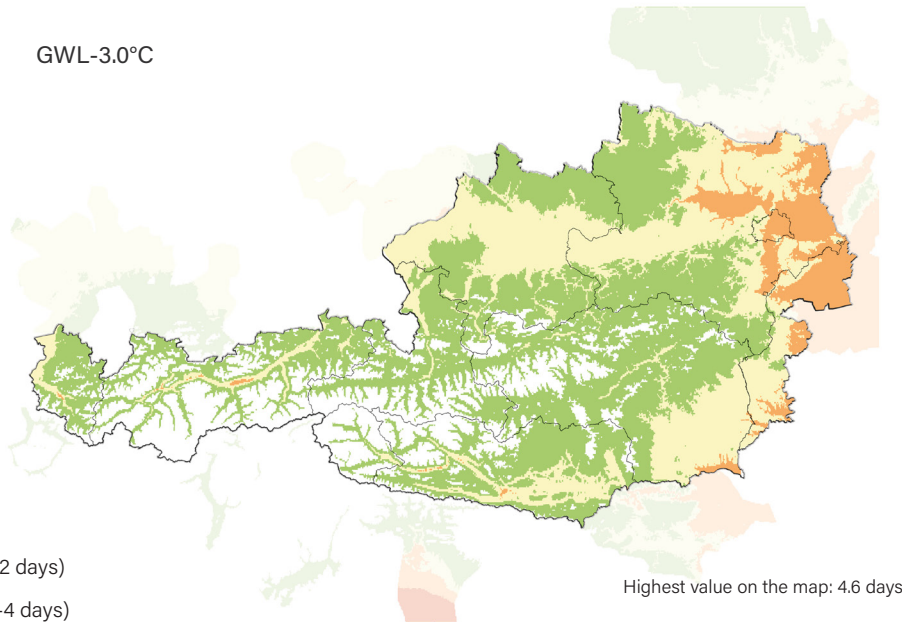
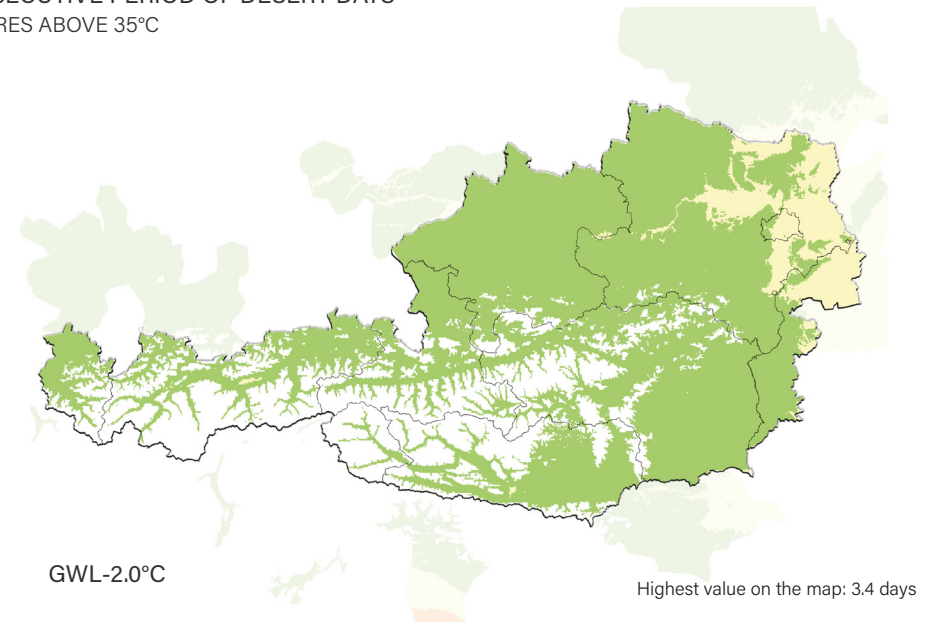
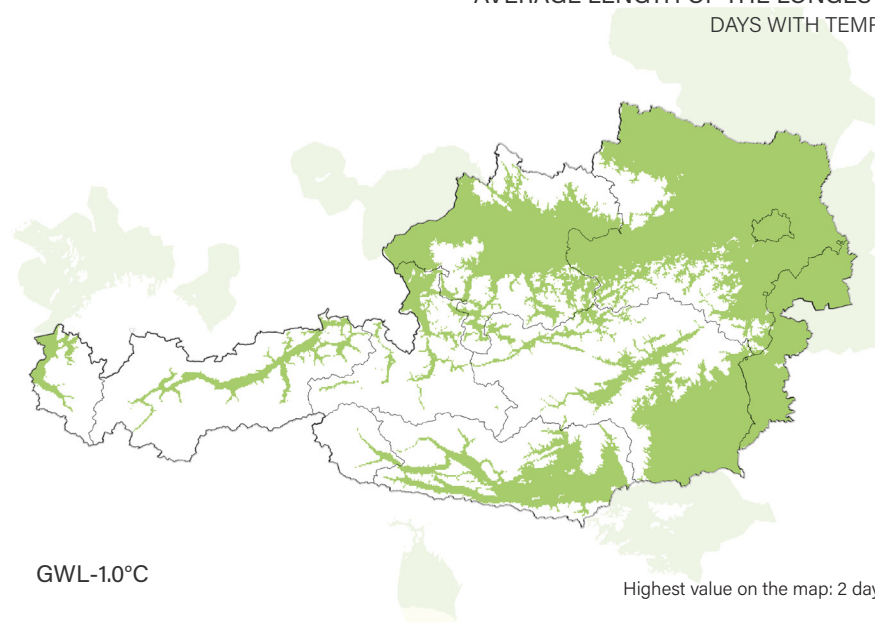
## REDUCTION OF TRANSMISSION CAPACITY OF LIGHT-METAL OVERHEAD POWER LINES

AVERAGE ANNUAL MAXIMUM TEMPERATURE



**REDUCTION OF TRANSMISSION CAPACITY OF LIGHT-METAL OVERHEAD POWER LINES**

AVERAGE LENGTH OF THE LONGEST CONSECUTIVE PERIOD OF DESERT DAYS  
 DAYS WITH TEMPERATURES ABOVE 35°C

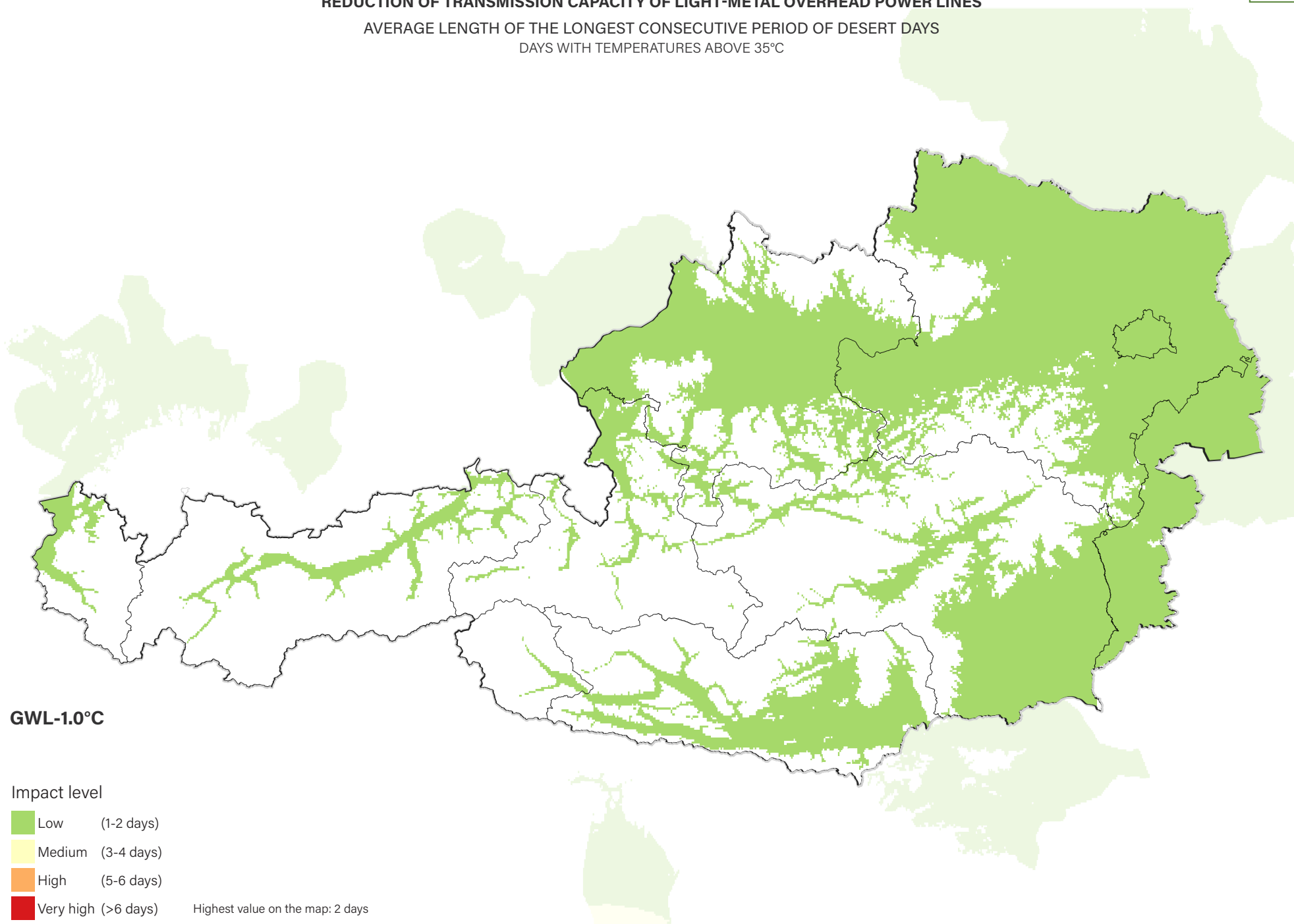


## Impact level

- Low (1-2 days)
- Medium (3-4 days)
- High (5-6 days)
- Very high (>6 days)

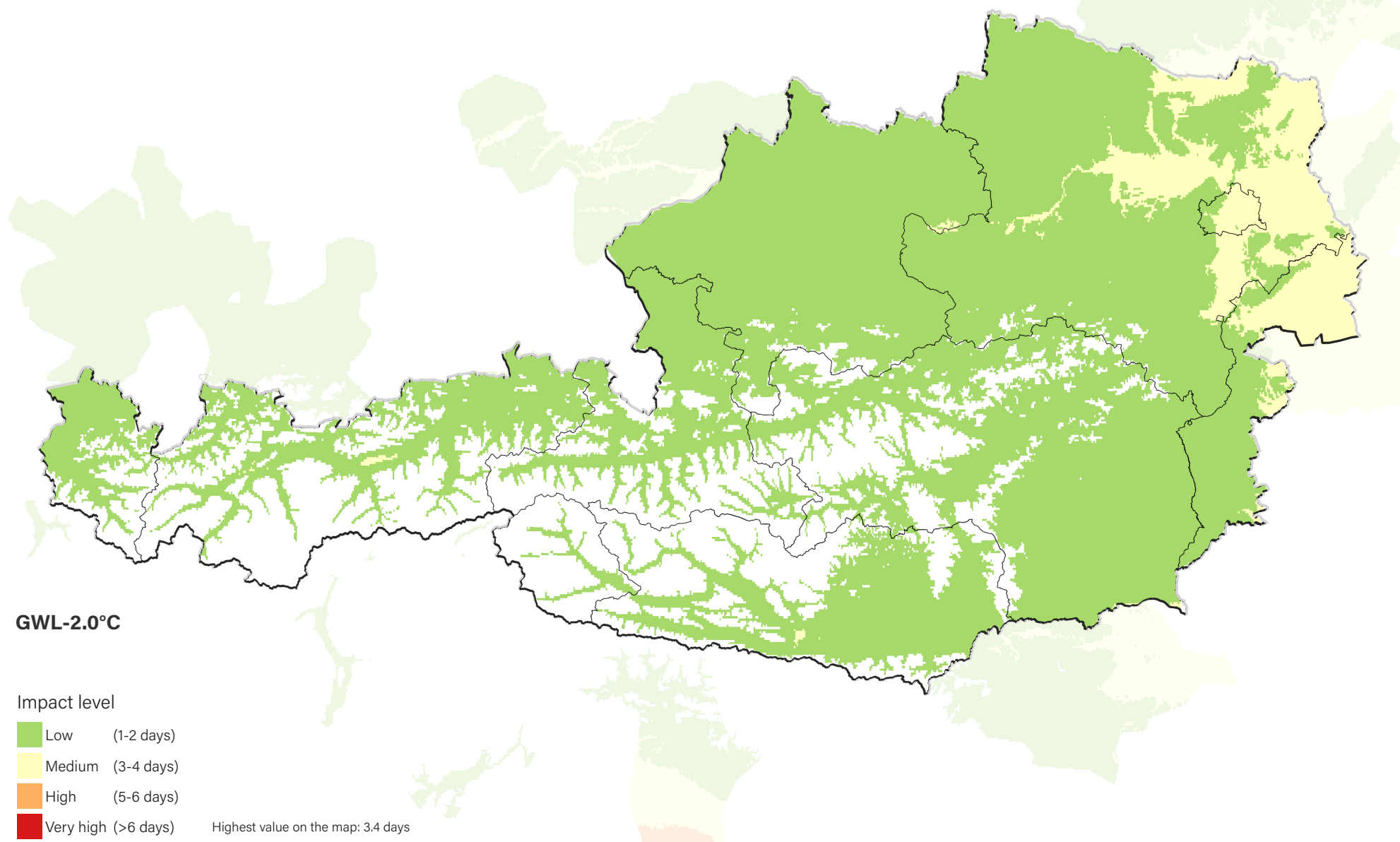
## REDUCTION OF TRANSMISSION CAPACITY OF LIGHT-METAL OVERHEAD POWER LINES

AVERAGE LENGTH OF THE LONGEST CONSECUTIVE PERIOD OF DESERT DAYS  
DAYS WITH TEMPERATURES ABOVE 35°C



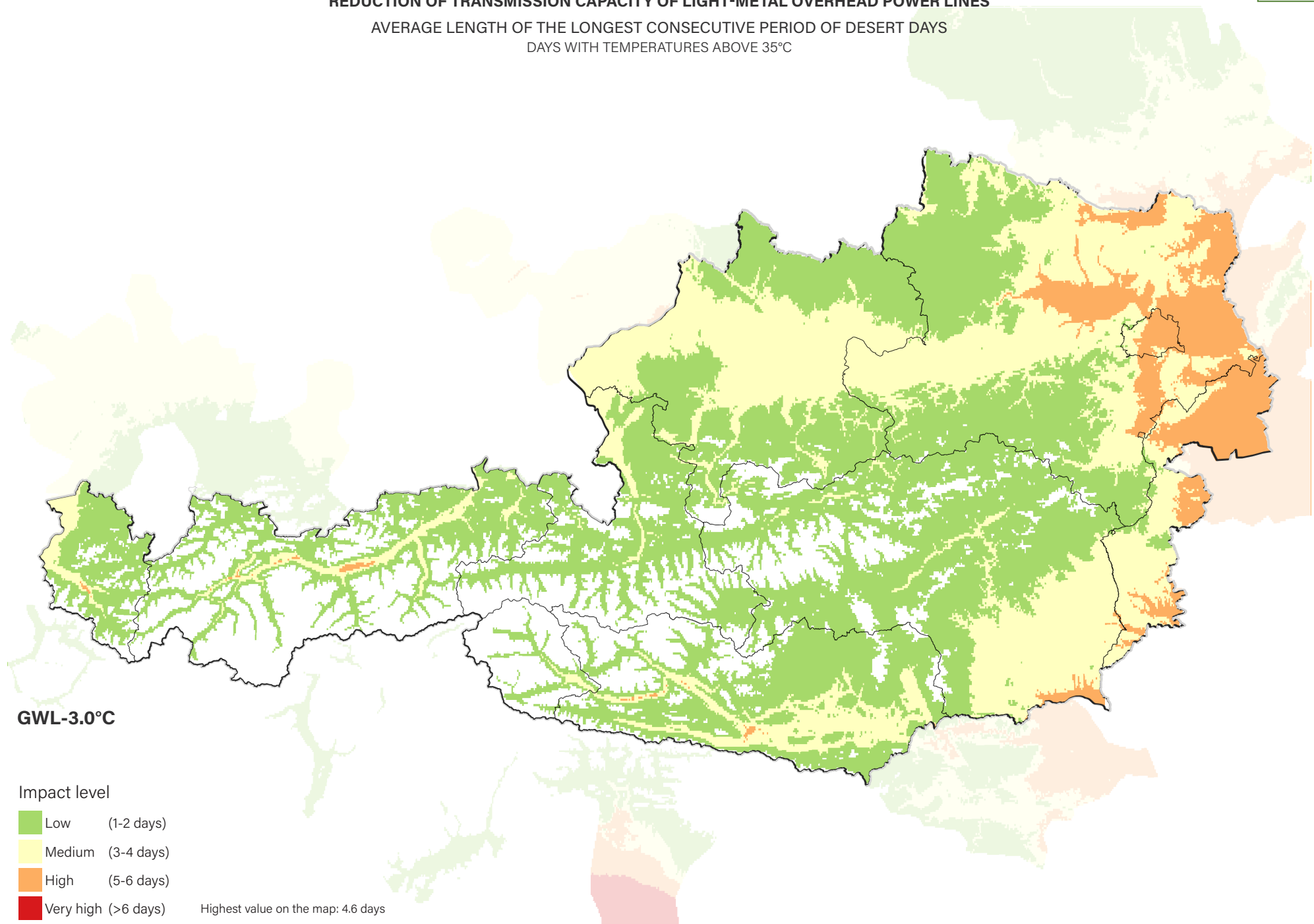


**REDUCTION OF TRANSMISSION CAPACITY OF LIGHT-METAL OVERHEAD POWER LINES**

 AVERAGE LENGTH OF THE LONGEST CONSECUTIVE PERIOD OF DESERT DAYS  
 DAYS WITH TEMPERATURES ABOVE 35°C


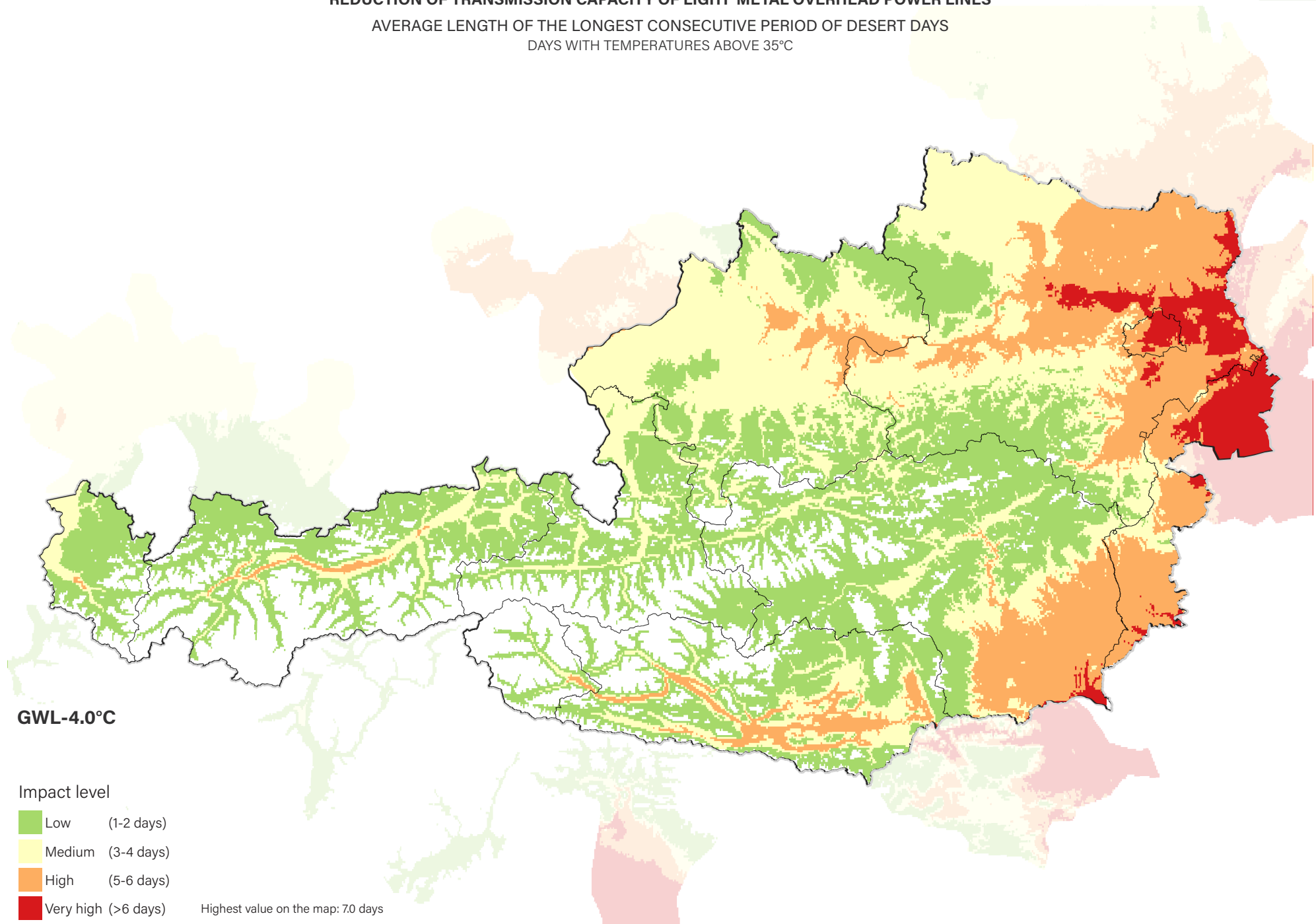
## REDUCTION OF TRANSMISSION CAPACITY OF LIGHT-METAL OVERHEAD POWER LINES

AVERAGE LENGTH OF THE LONGEST CONSECUTIVE PERIOD OF DESERT DAYS  
DAYS WITH TEMPERATURES ABOVE 35°C



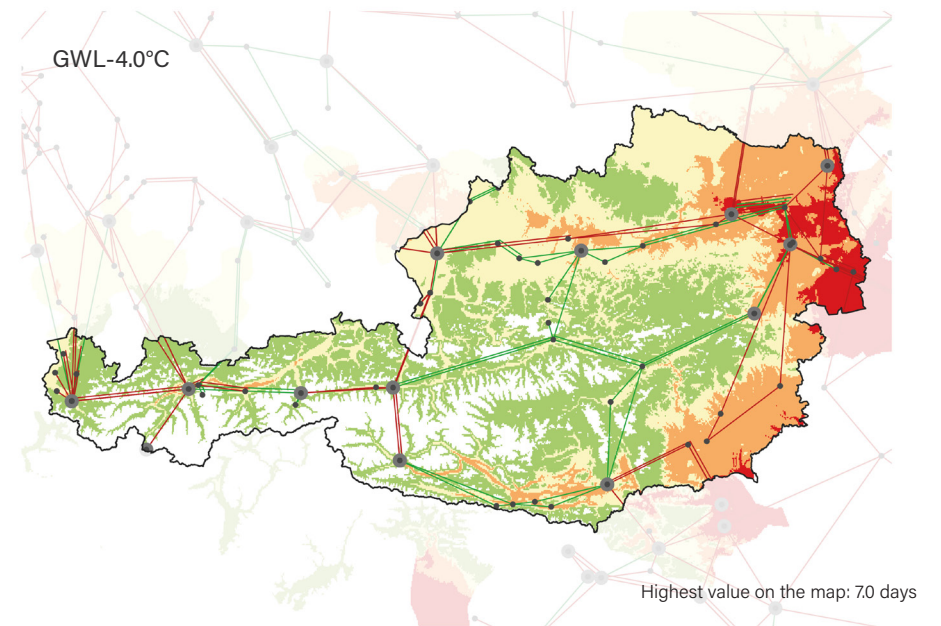
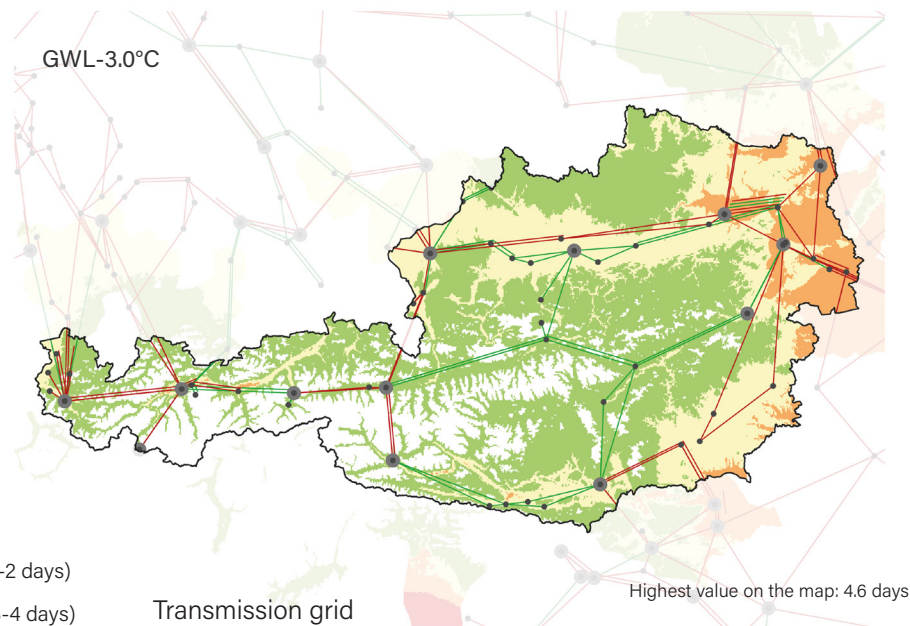
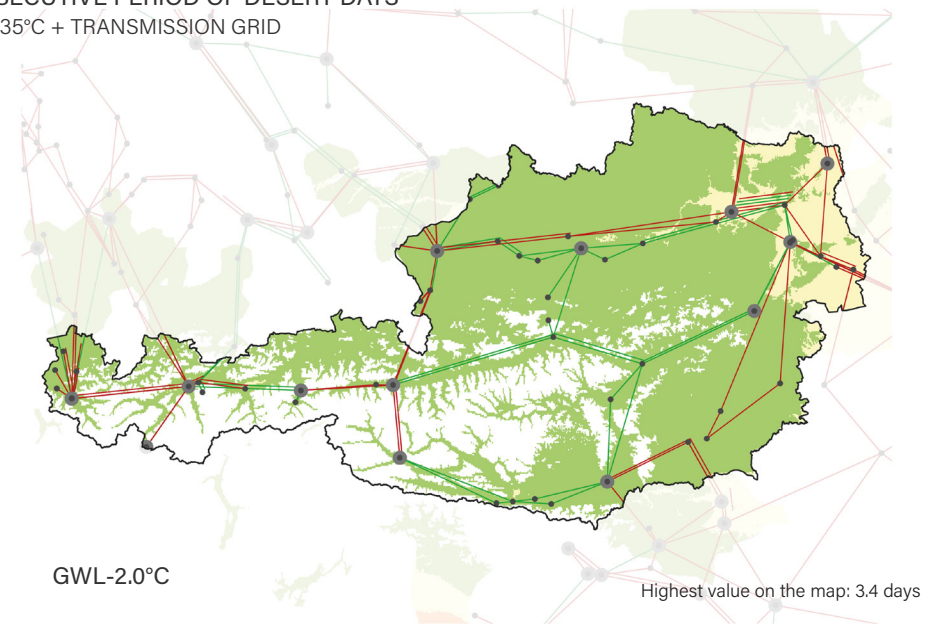
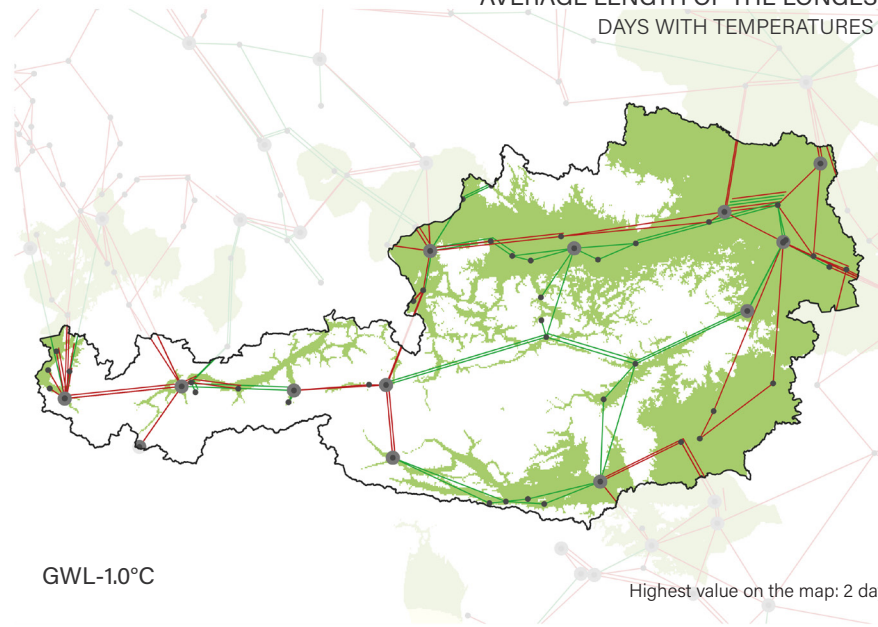
## REDUCTION OF TRANSMISSION CAPACITY OF LIGHT-METAL OVERHEAD POWER LINES

AVERAGE LENGTH OF THE LONGEST CONSECUTIVE PERIOD OF DESERT DAYS  
DAYS WITH TEMPERATURES ABOVE 35°C



# REDUCTION OF TRANSMISSION CAPACITY OF LIGHT-METAL OVERHEAD POWER LINES

AVERAGE LENGTH OF THE LONGEST CONSECUTIVE PERIOD OF DESERT DAYS  
 DAYS WITH TEMPERATURES ABOVE 35°C + TRANSMISSION GRID



## Impact level

- Low (1-2 days)
- Medium (3-4 days)
- High (5-6 days)
- Very high (>6 days)

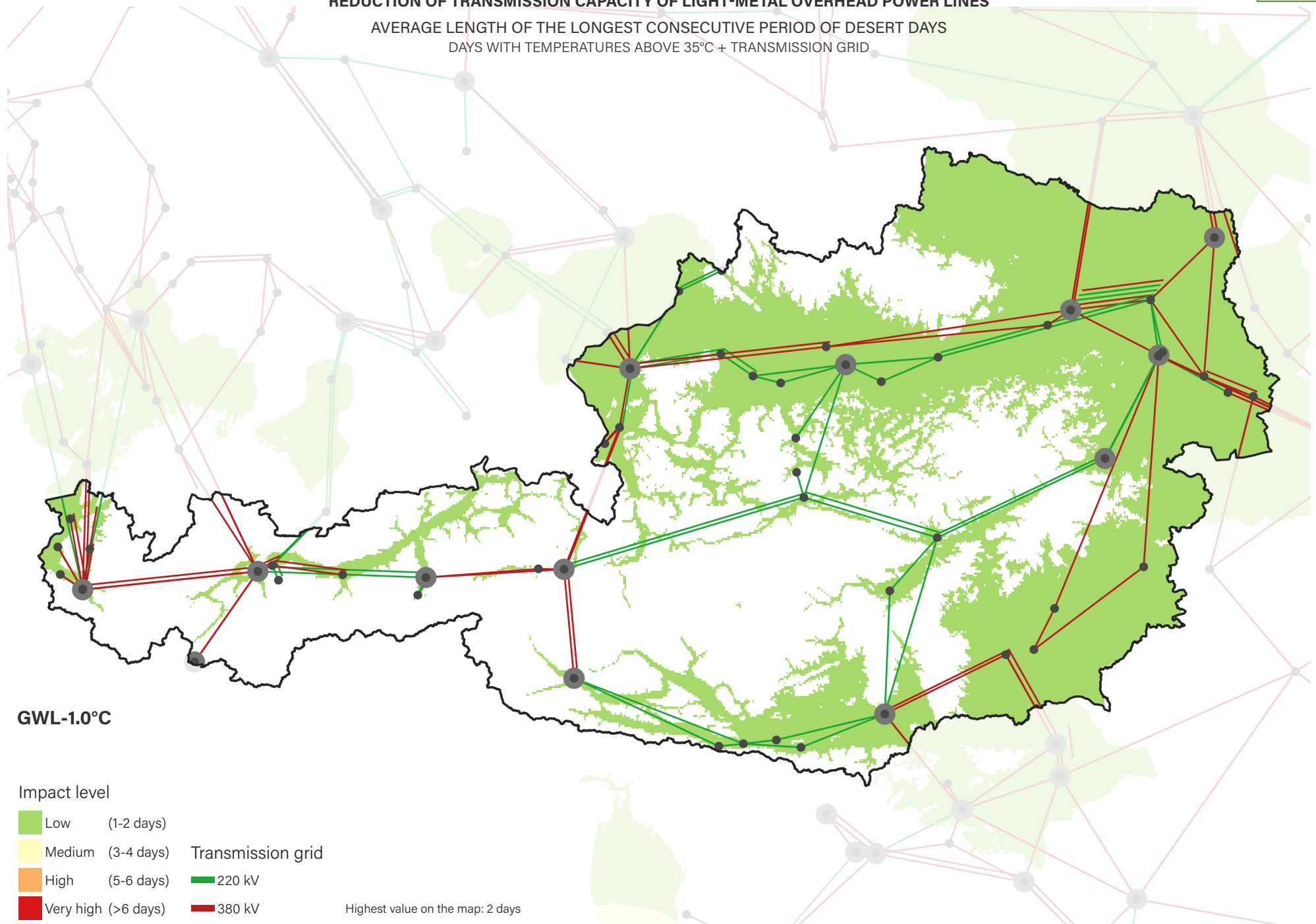
## Transmission grid

- 220 kV
- 380 kV



# REDUCTION OF TRANSMISSION CAPACITY OF LIGHT-METAL OVERHEAD POWER LINES

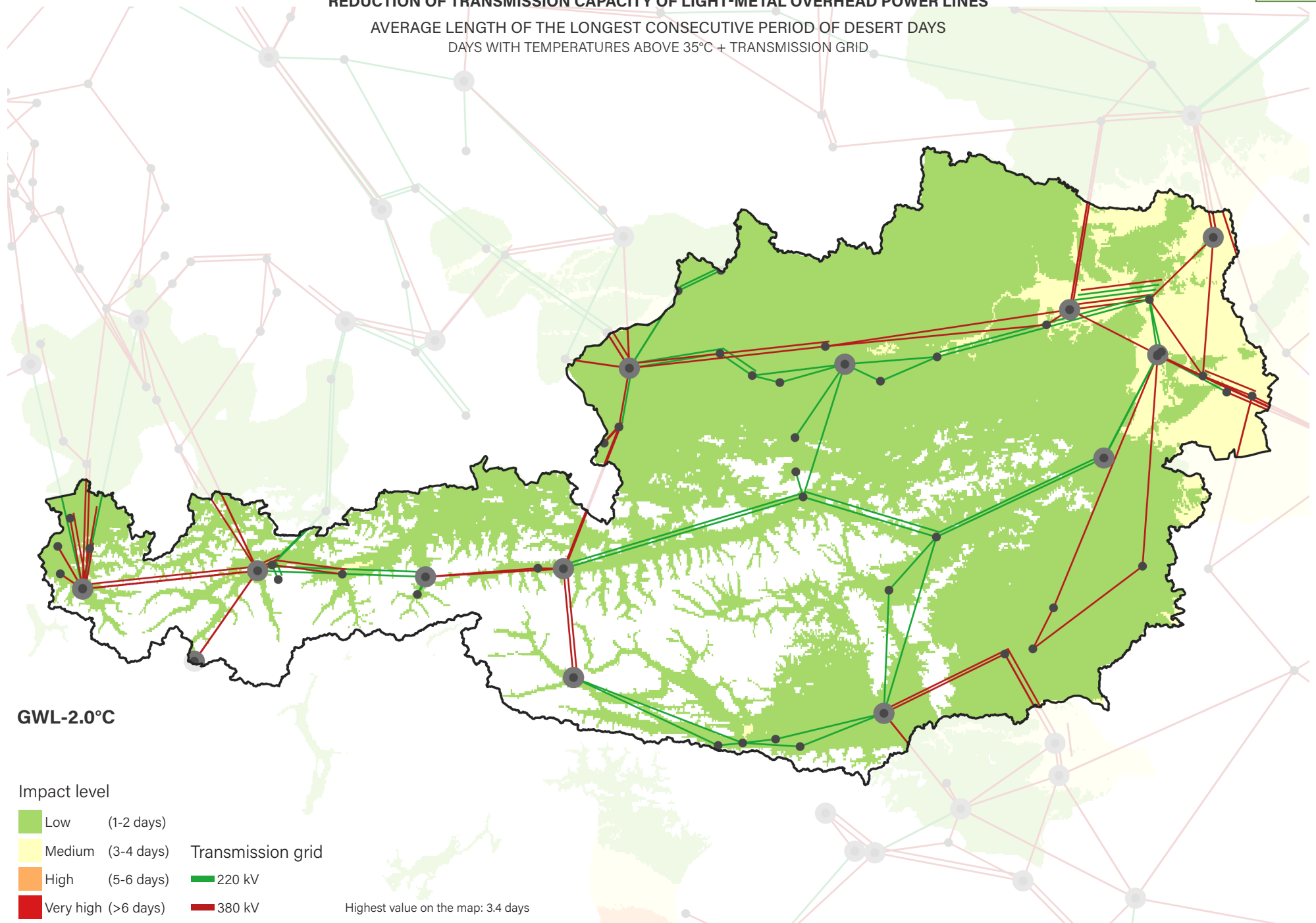
AVERAGE LENGTH OF THE LONGEST CONSECUTIVE PERIOD OF DESERT DAYS  
 DAYS WITH TEMPERATURES ABOVE 35°C + TRANSMISSION GRID





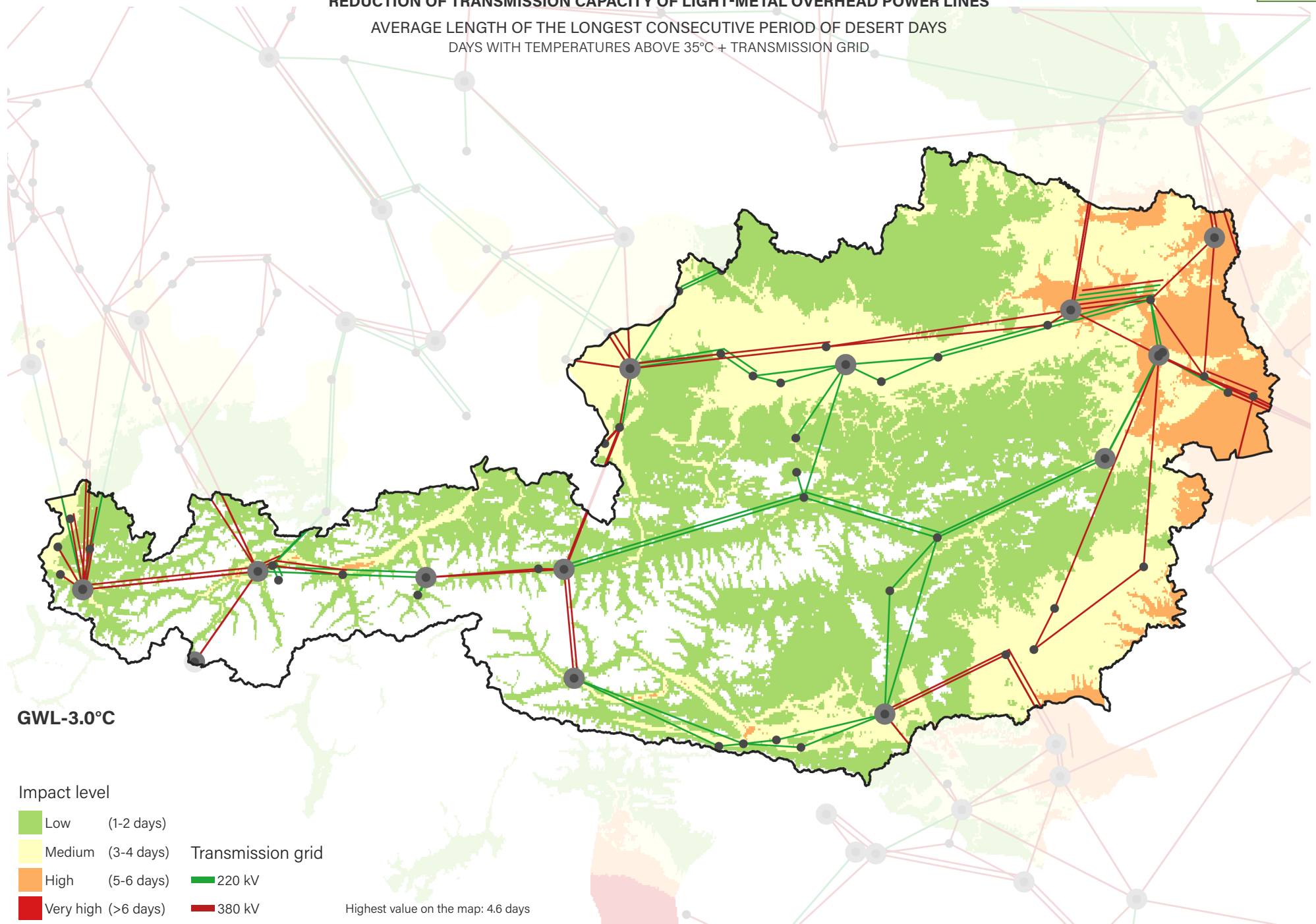
# REDUCTION OF TRANSMISSION CAPACITY OF LIGHT-METAL OVERHEAD POWER LINES

AVERAGE LENGTH OF THE LONGEST CONSECUTIVE PERIOD OF DESERT DAYS  
 DAYS WITH TEMPERATURES ABOVE 35°C + TRANSMISSION GRID



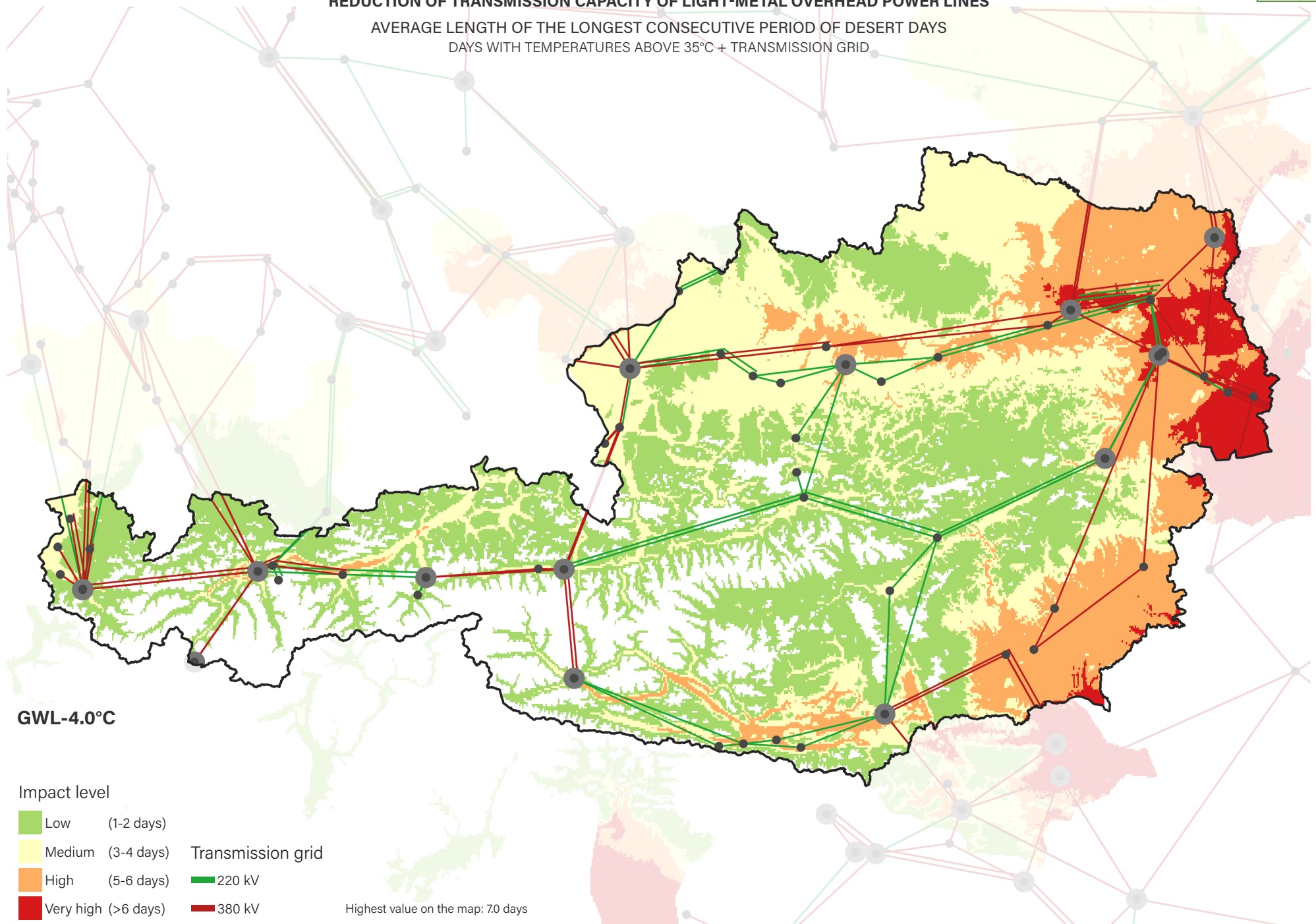
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AVERAGE LENGTH OF THE LONGEST CONSECUTIVE PERIOD OF DESERT DAYS  
 DAYS WITH TEMPERATURES ABOVE 35°C + TRANSMISSION GRID

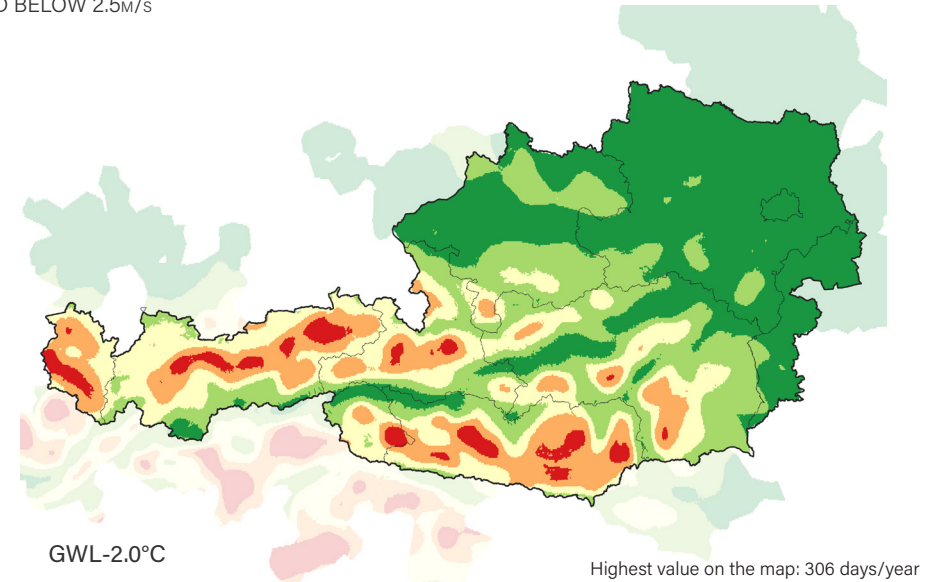


## REDUCTION OF TRANSMISSION CAPACITY OF LIGHT-METAL OVERHEAD POWER LINES

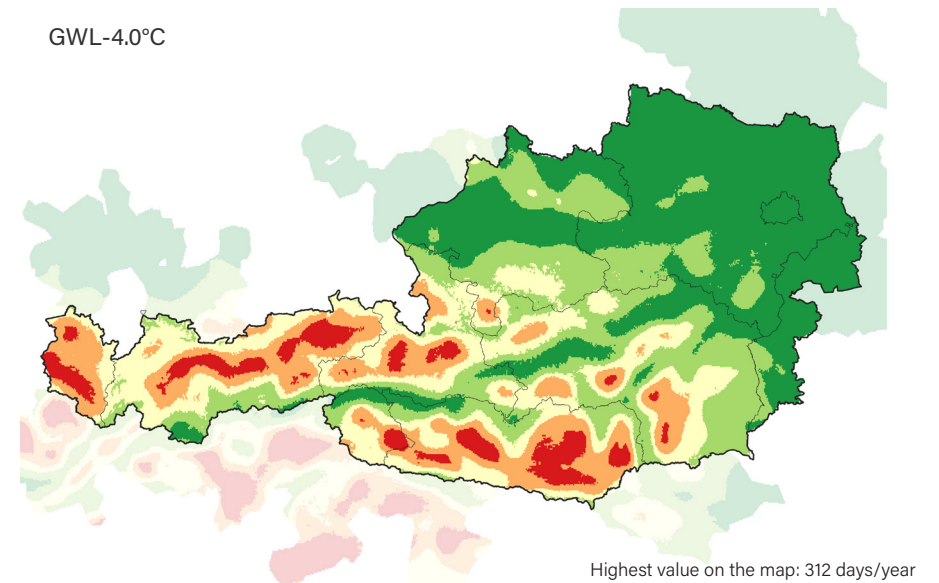
AVERAGE LENGTH OF THE LONGEST CONSECUTIVE PERIOD OF DESERT DAYS  
 DAYS WITH TEMPERATURES ABOVE 35°C + TRANSMISSION GRID



AVERAGE FREQUENCY OF CALM DAYS  
DAYS WITH WIND SPEED BELOW 2.5m/s



GWL-4.0°C



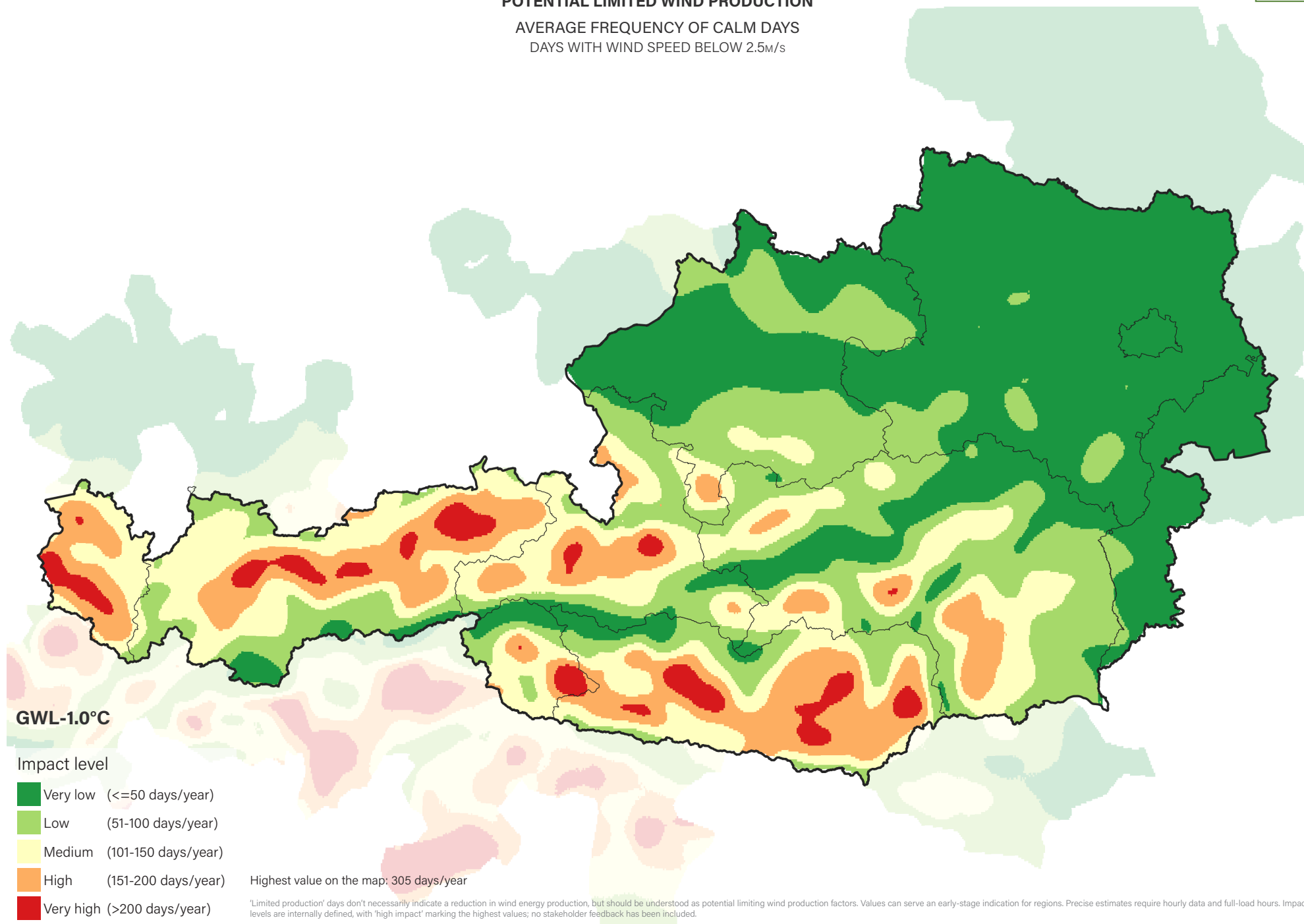
Very low (<=50 days/year)  
Low (51-100 days/year)  
Medium (101-150 days/year)  
High (151-200 days/year)  
Very high (>200 days/year)

- 23 -



## POTENTIAL LIMITED WIND PRODUCTION

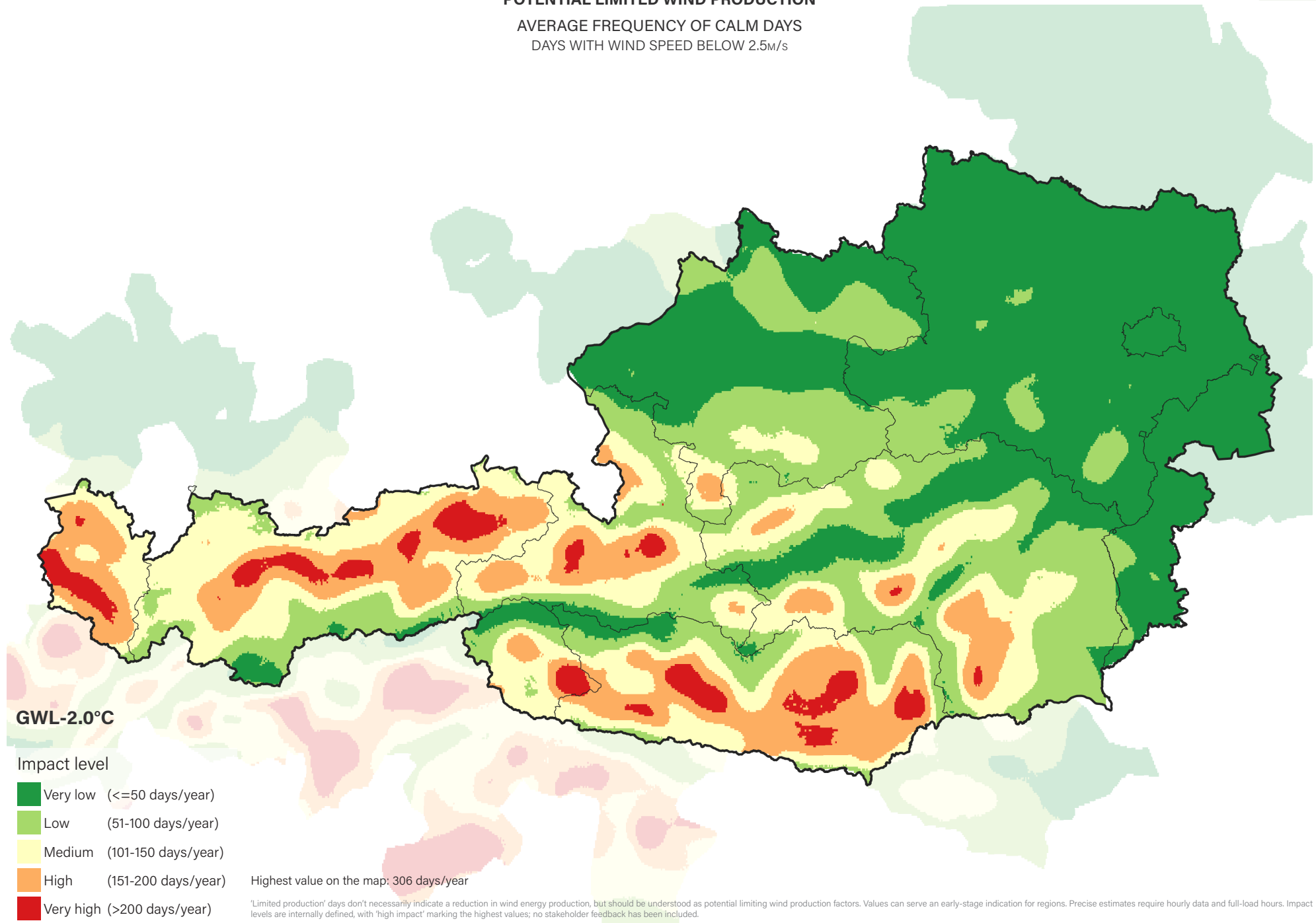
AVERAGE FREQUENCY OF CALM DAYS  
DAYS WITH WIND SPEED BELOW 2.5m/s





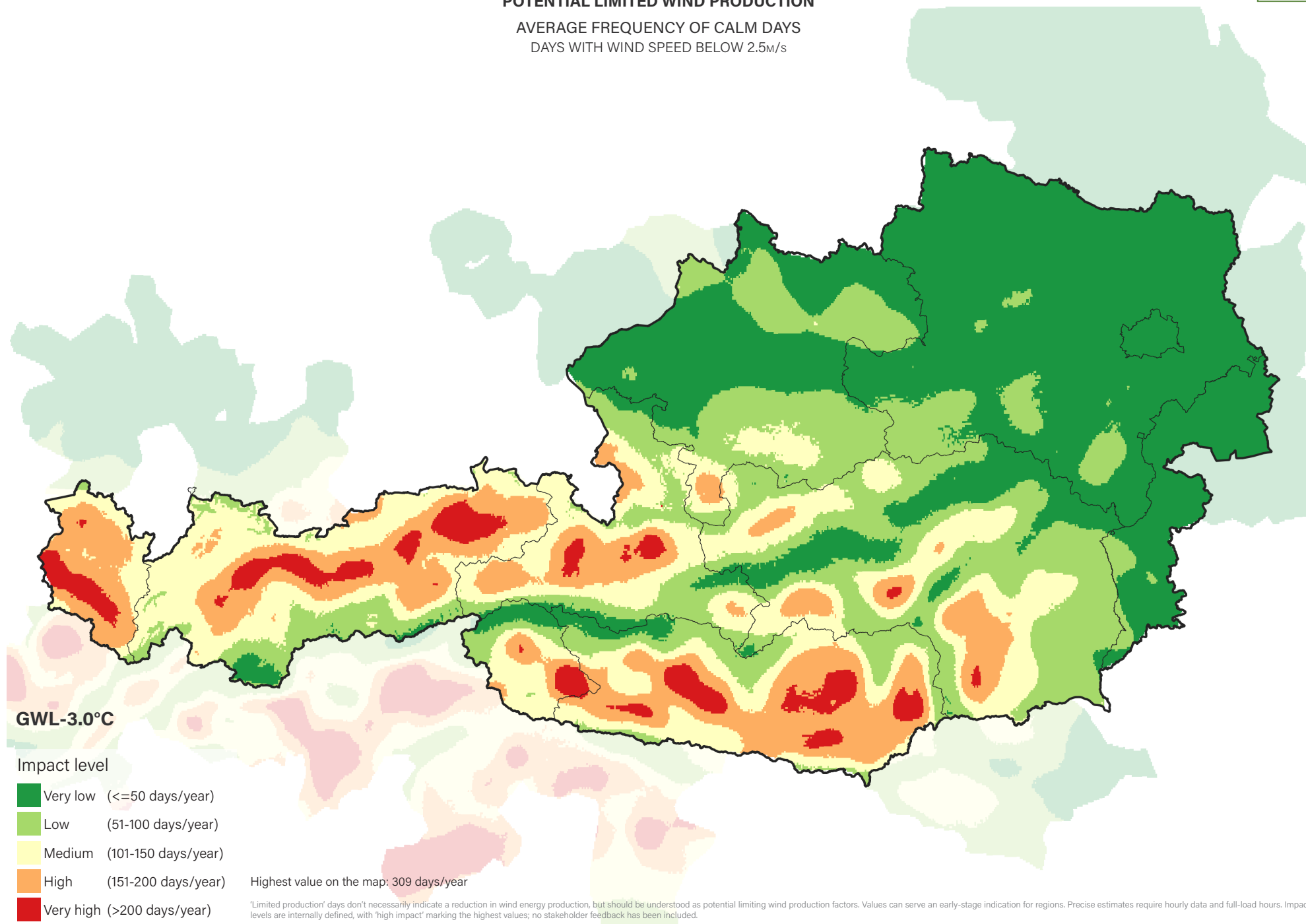
## POTENTIAL LIMITED WIND PRODUCTION

AVERAGE FREQUENCY OF CALM DAYS  
DAYS WITH WIND SPEED BELOW 2.5m/s



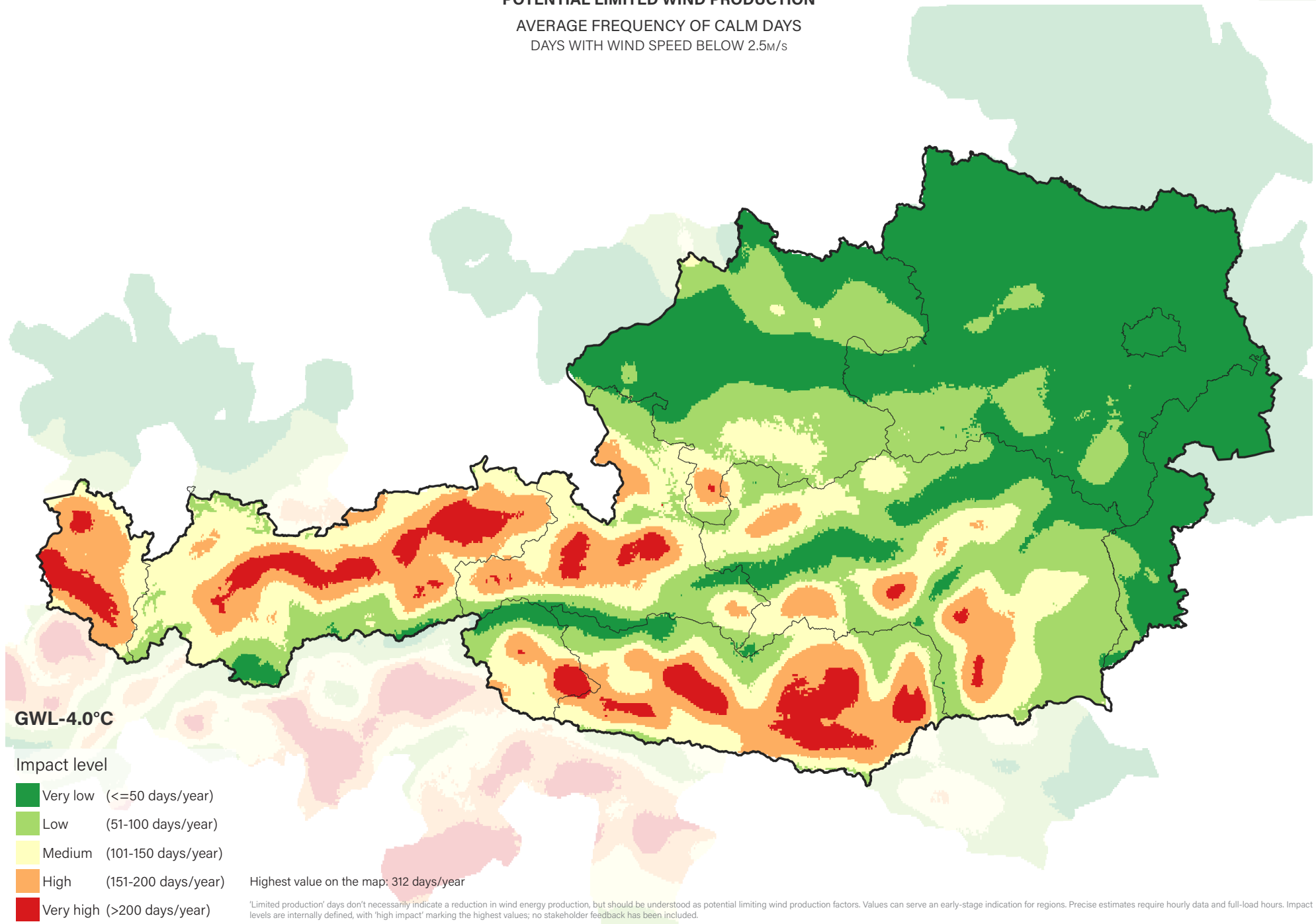
## POTENTIAL LIMITED WIND PRODUCTION

AVERAGE FREQUENCY OF CALM DAYS  
DAYS WITH WIND SPEED BELOW 2.5m/s



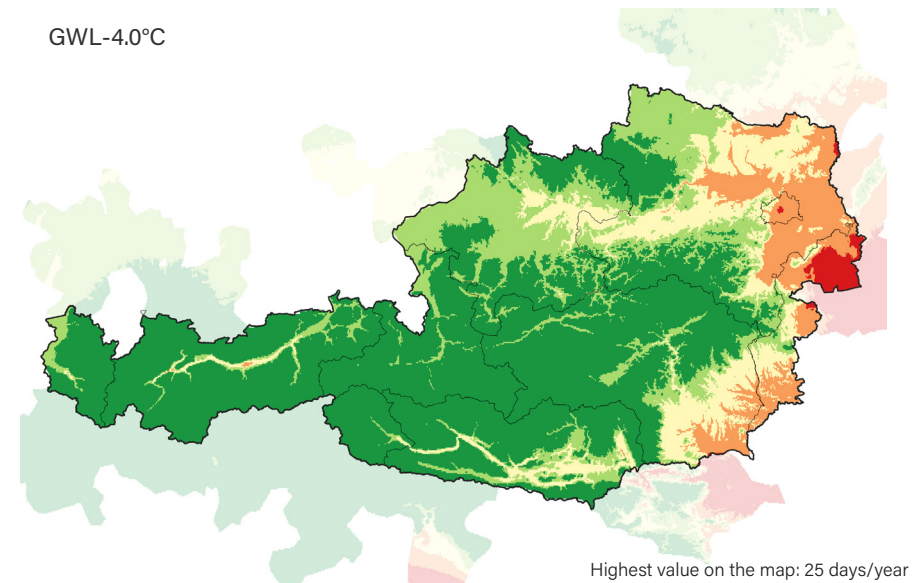
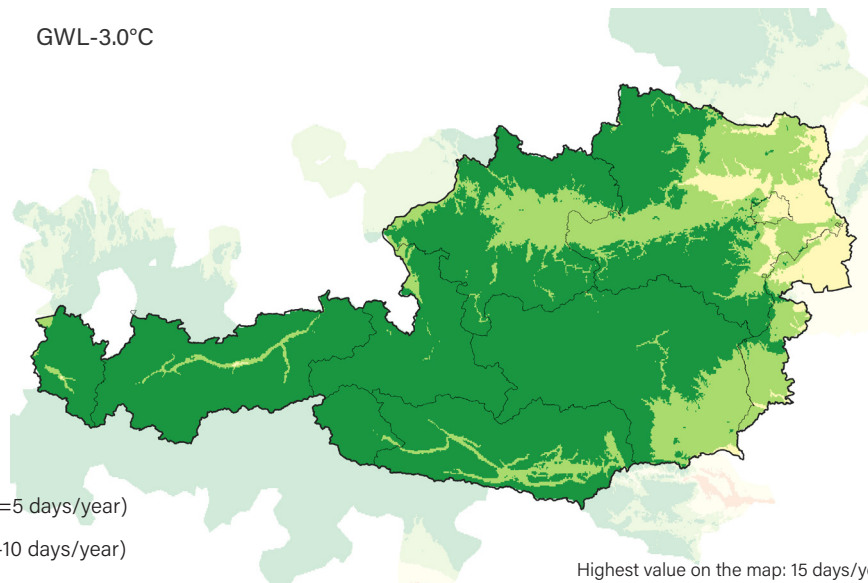
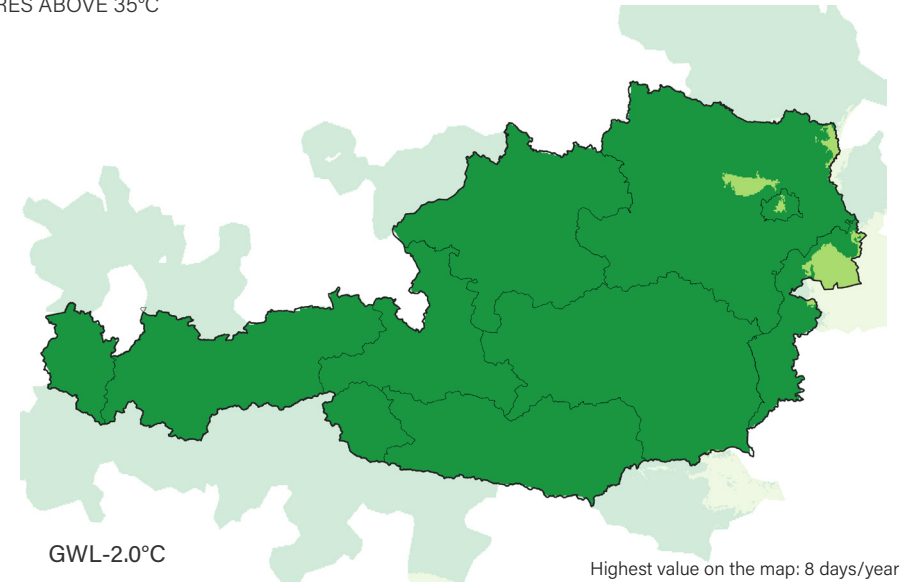
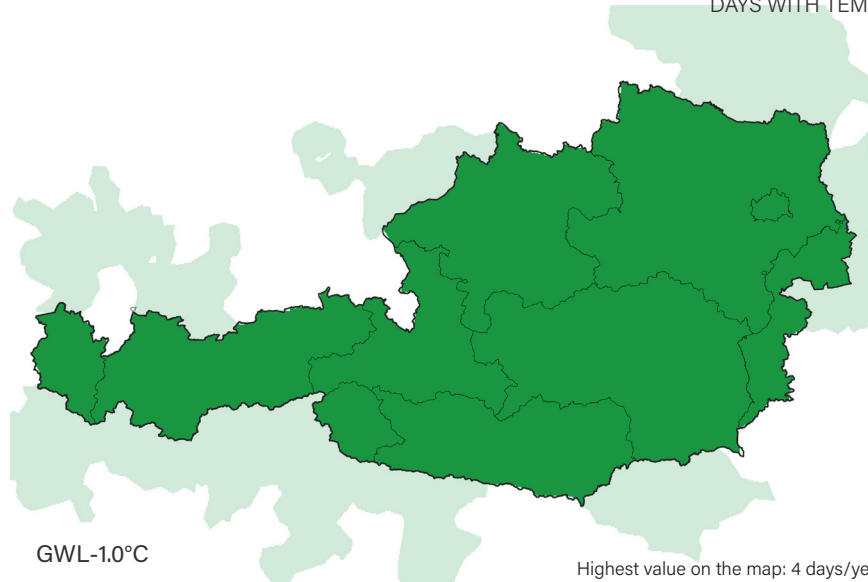
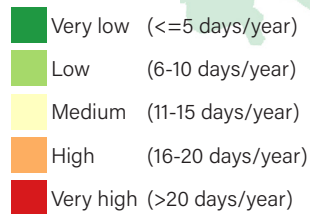
## POTENTIAL LIMITED WIND PRODUCTION

AVERAGE FREQUENCY OF CALM DAYS  
DAYS WITH WIND SPEED BELOW 2.5m/s



**POTENTIAL LIMITED WIND PRODUCTION**

AVERAGE FREQUENCY OF DESERT DAYS  
 DAYS WITH TEMPERATURES ABOVE 35°C

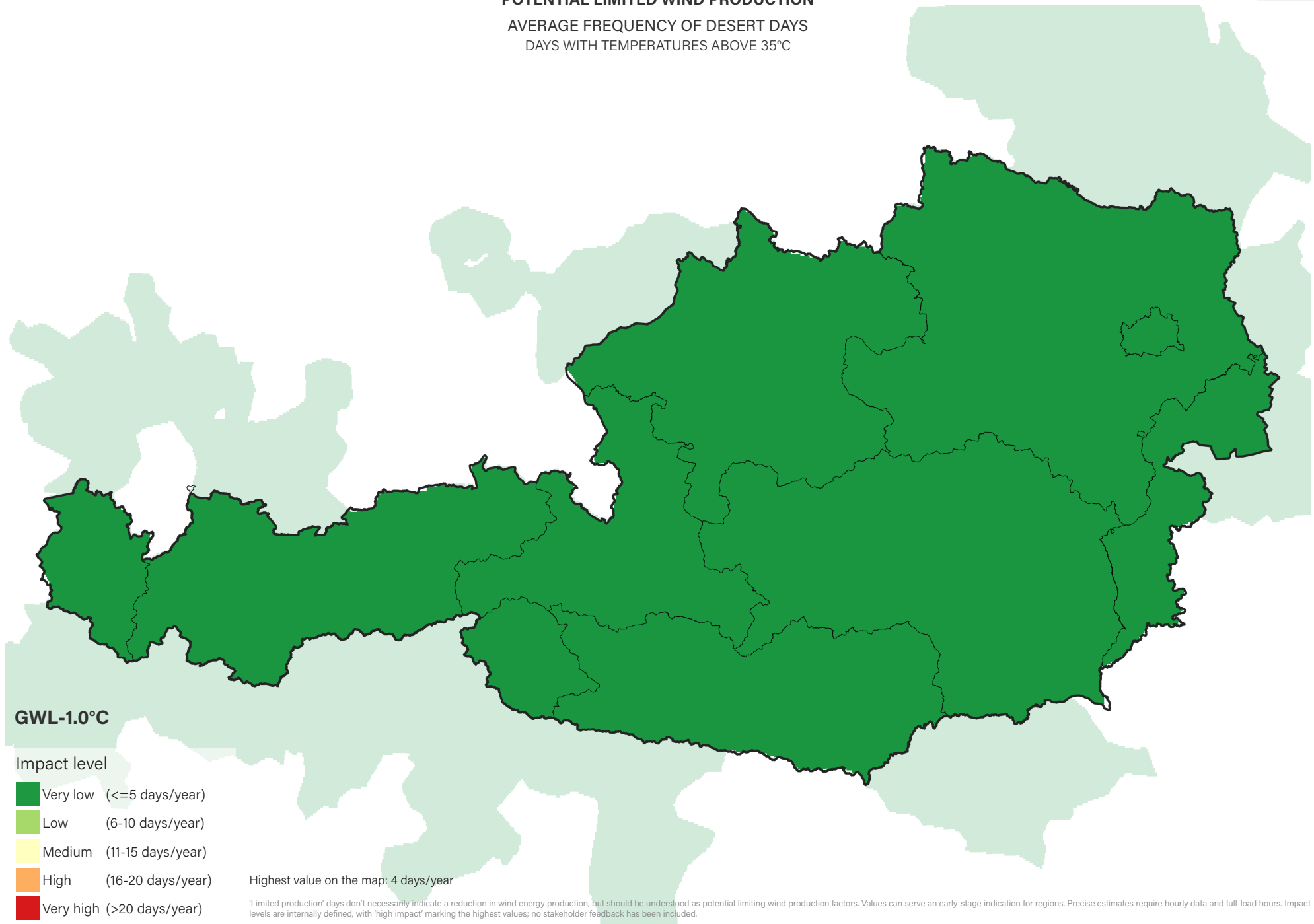
**Impact level**

\*Limited production' days don't necessarily indicate a reduction in wind energy production, but should be understood as potential limiting wind production factors. Values can serve an early-stage indication for regions. Precise estimates require hourly data and full-load hours. Impact levels are internally defined, with 'high impact' marking the highest values; no stakeholder feedback has been included.



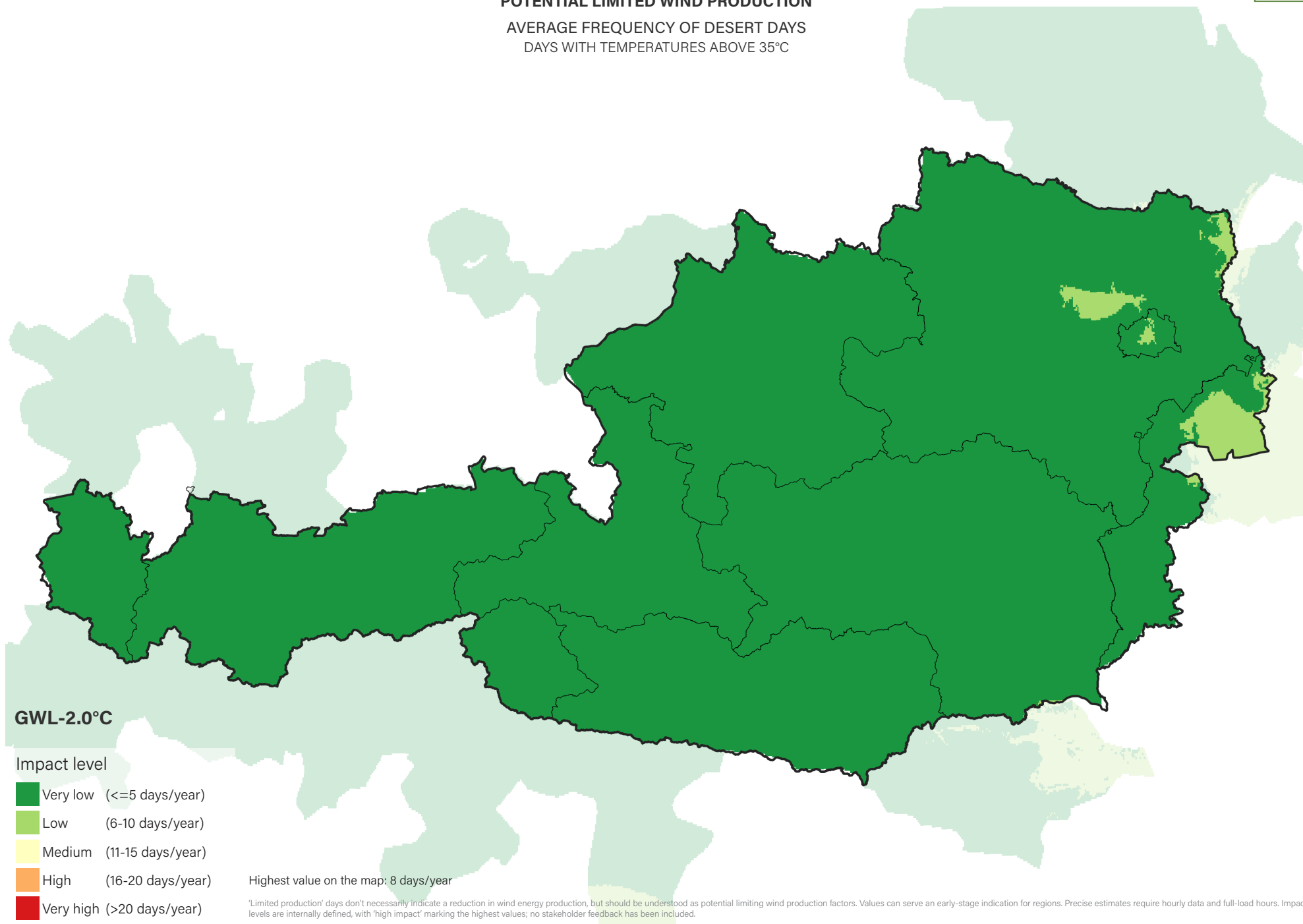
## POTENTIAL LIMITED WIND PRODUCTION

AVERAGE FREQUENCY OF DESERT DAYS  
DAYS WITH TEMPERATURES ABOVE 35°C



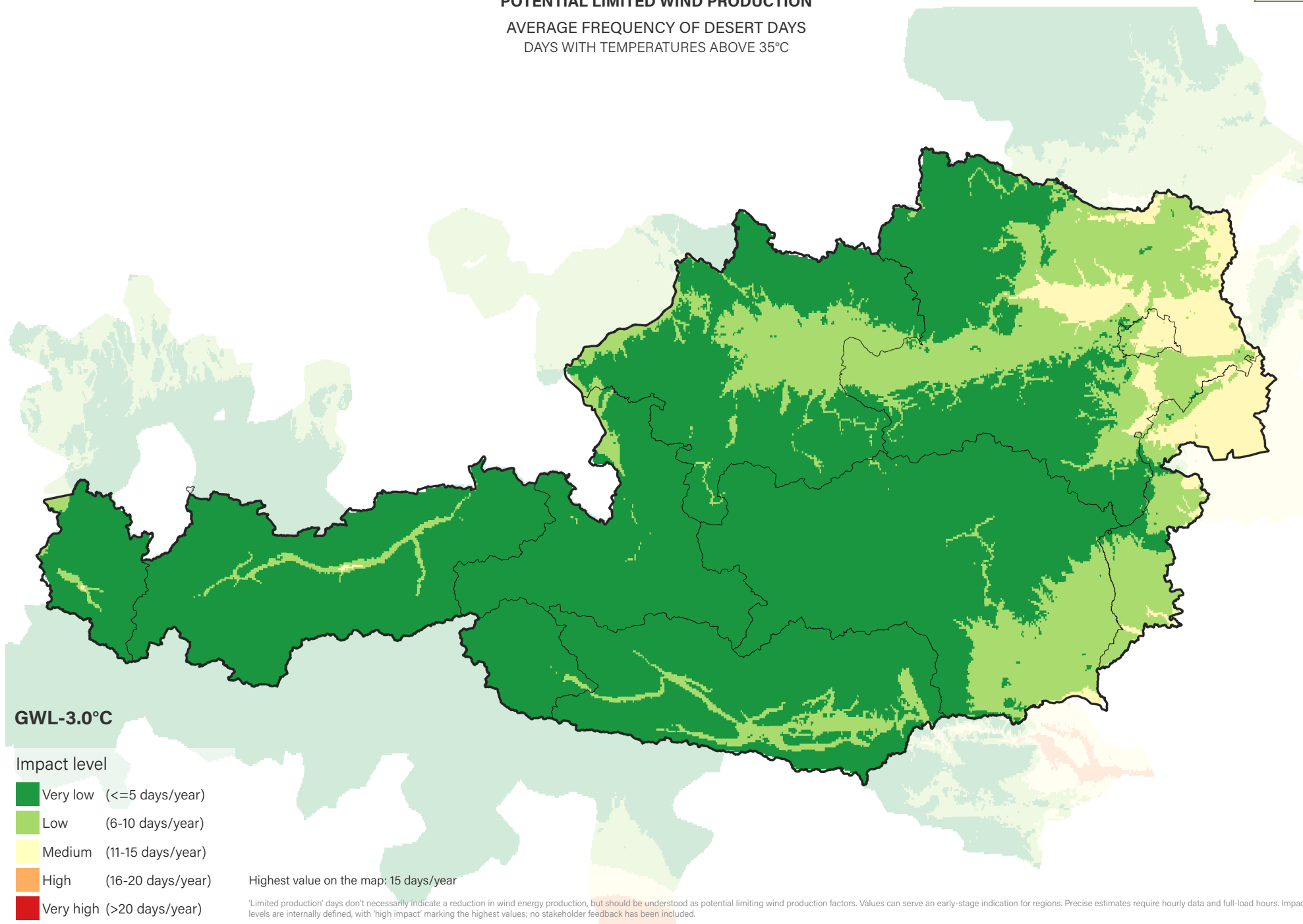
## POTENTIAL LIMITED WIND PRODUCTION

AVERAGE FREQUENCY OF DESERT DAYS  
DAYS WITH TEMPERATURES ABOVE 35°C



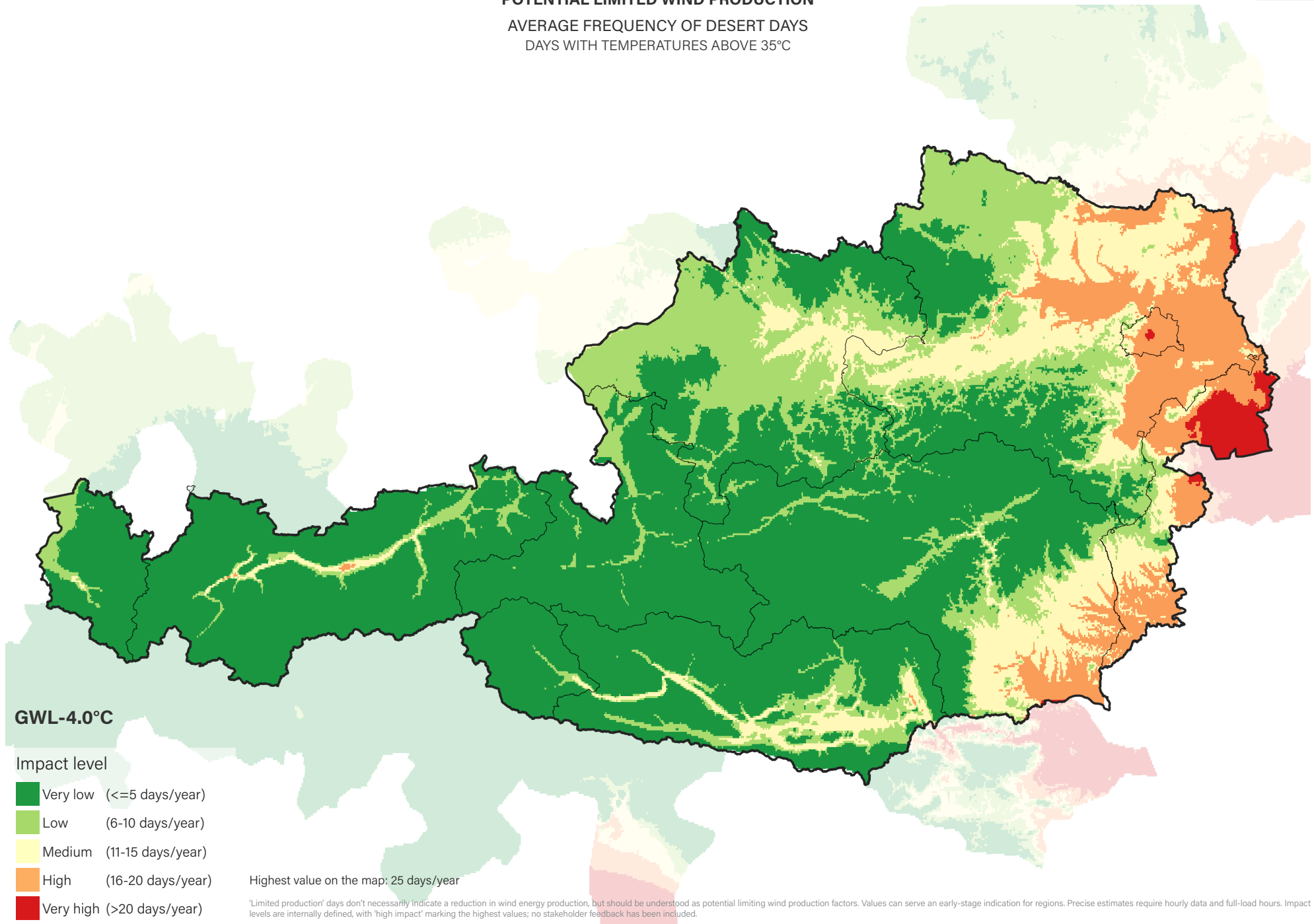
## POTENTIAL LIMITED WIND PRODUCTION

AVERAGE FREQUENCY OF DESERT DAYS  
DAYS WITH TEMPERATURES ABOVE 35°C



## POTENTIAL LIMITED WIND PRODUCTION

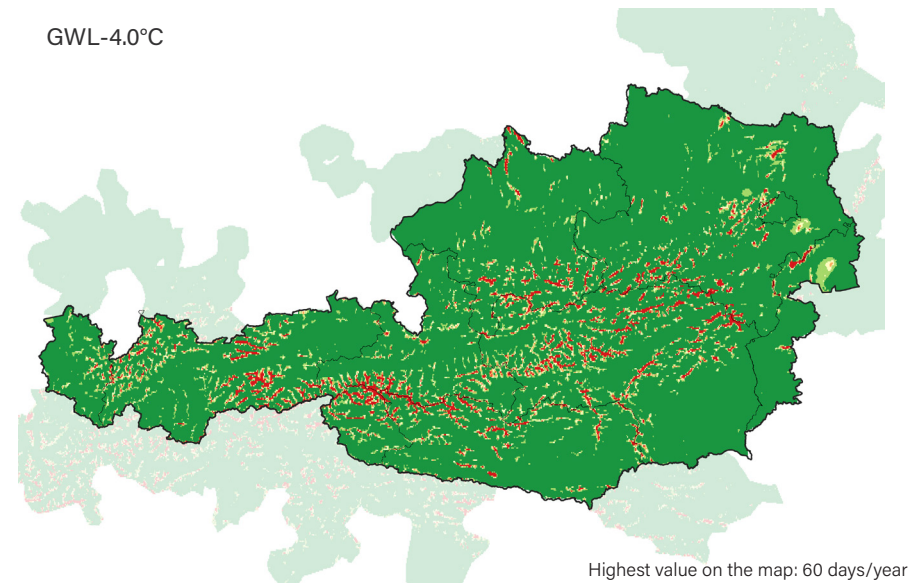
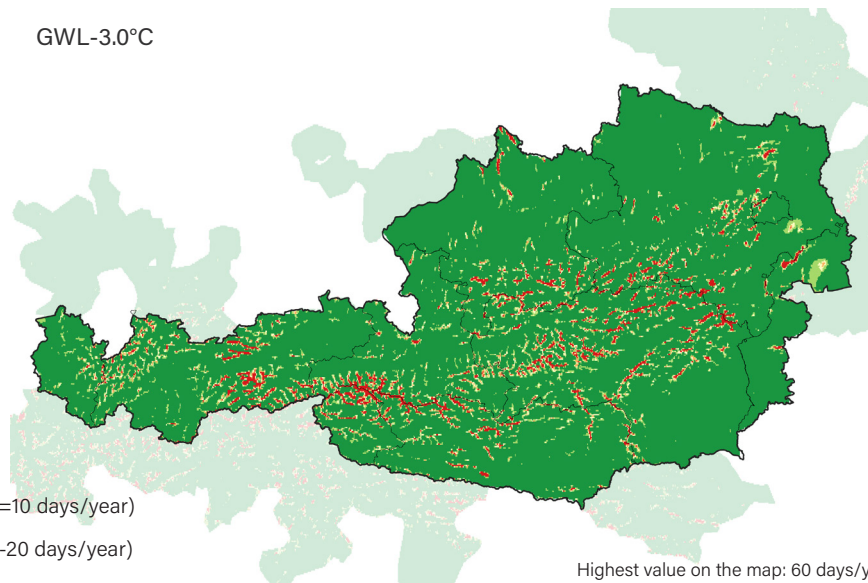
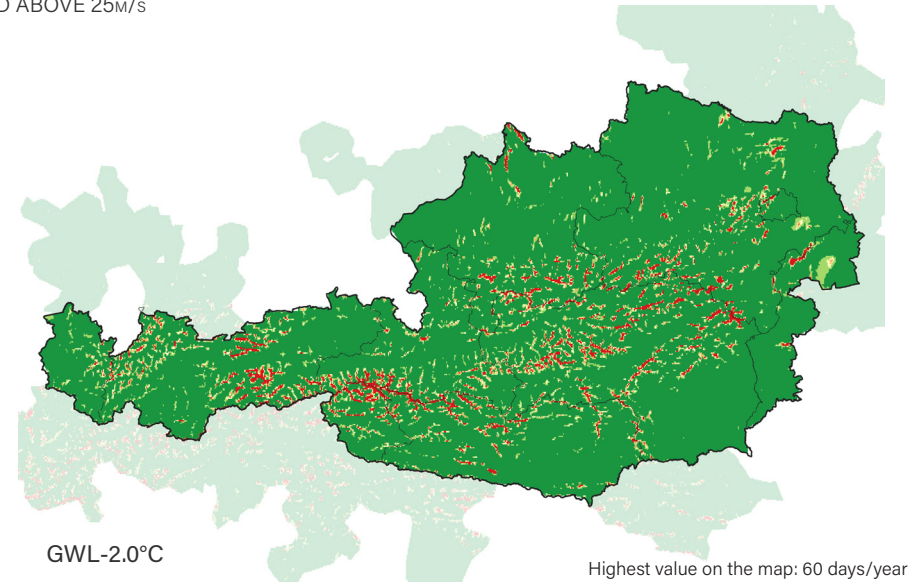
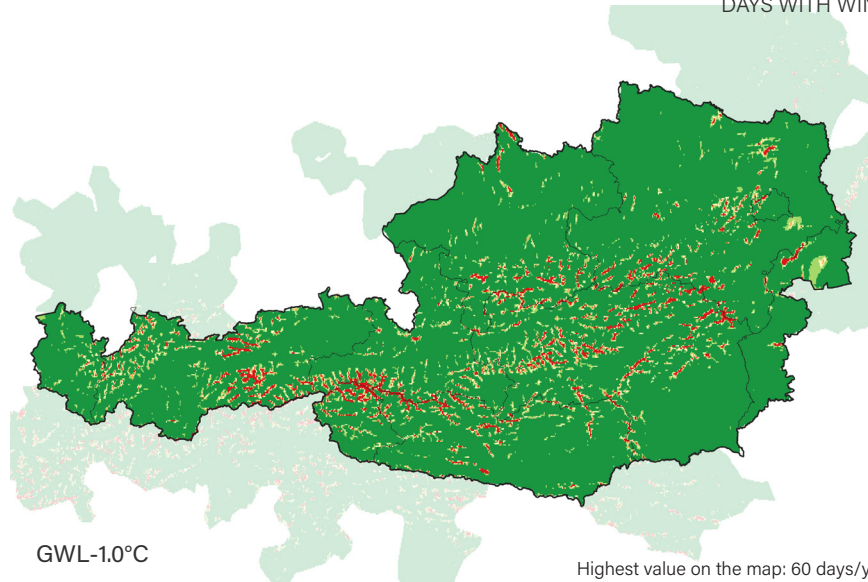
AVERAGE FREQUENCY OF DESERT DAYS  
DAYS WITH TEMPERATURES ABOVE 35°C





**POTENTIAL LIMITED WIND PRODUCTION**

AVERAGE FREQUENCY OF STORM DAYS  
 DAYS WITH WIND SPEED ABOVE 25m/s

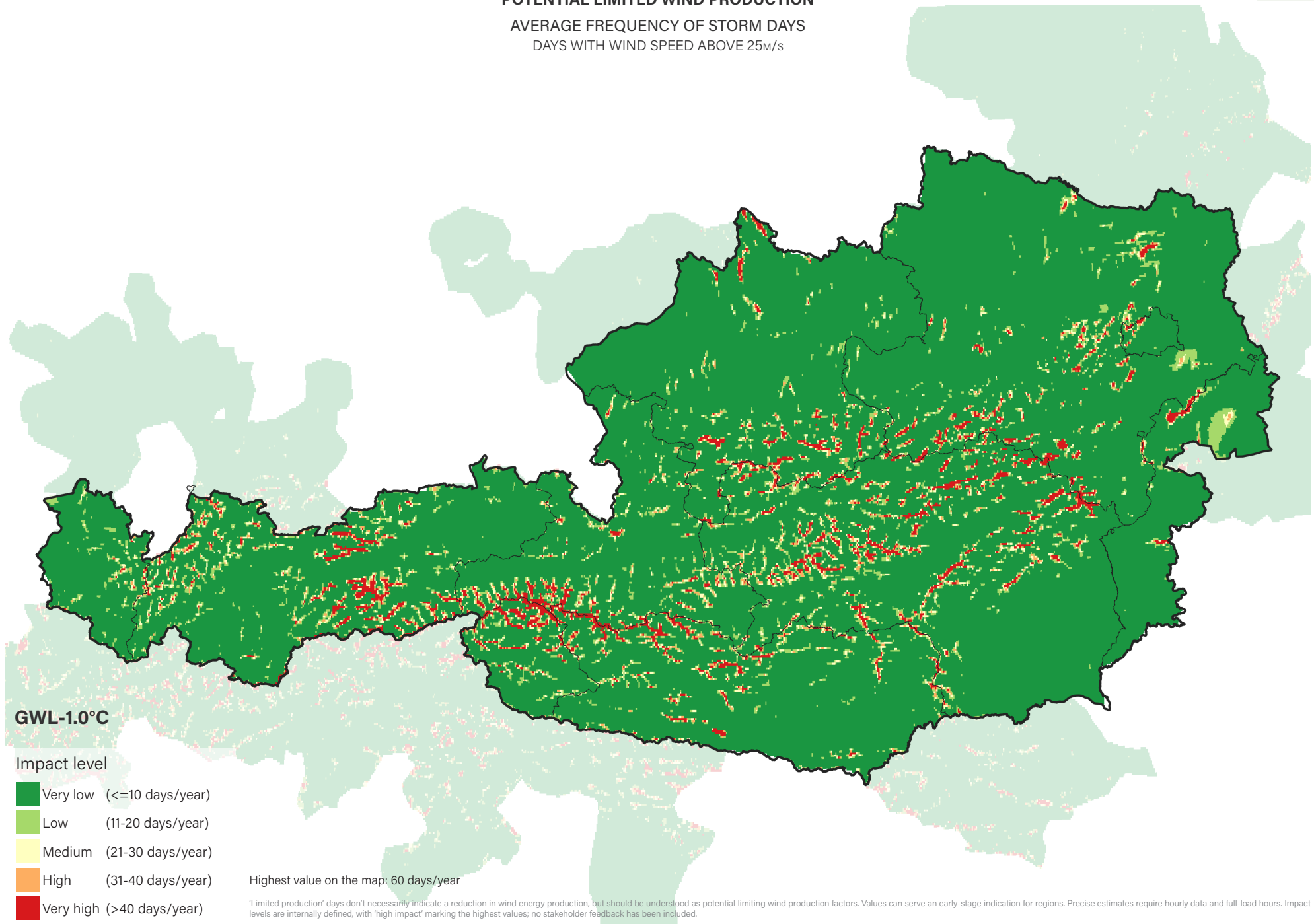
**Impact level**

- Very low (<=10 days/year)
- Low (11-20 days/year)
- Medium (21-30 days/year)
- High (31-40 days/year)
- Very high (>40 days/year)

\*Limited production' days don't necessarily indicate a reduction in wind energy production, but should be understood as potential limiting wind production factors. Values can serve an early-stage indication for regions. Precise estimates require hourly data and full-load hours. Impact levels are internally defined, with 'high impact' marking the highest values; no stakeholder feedback has been included.

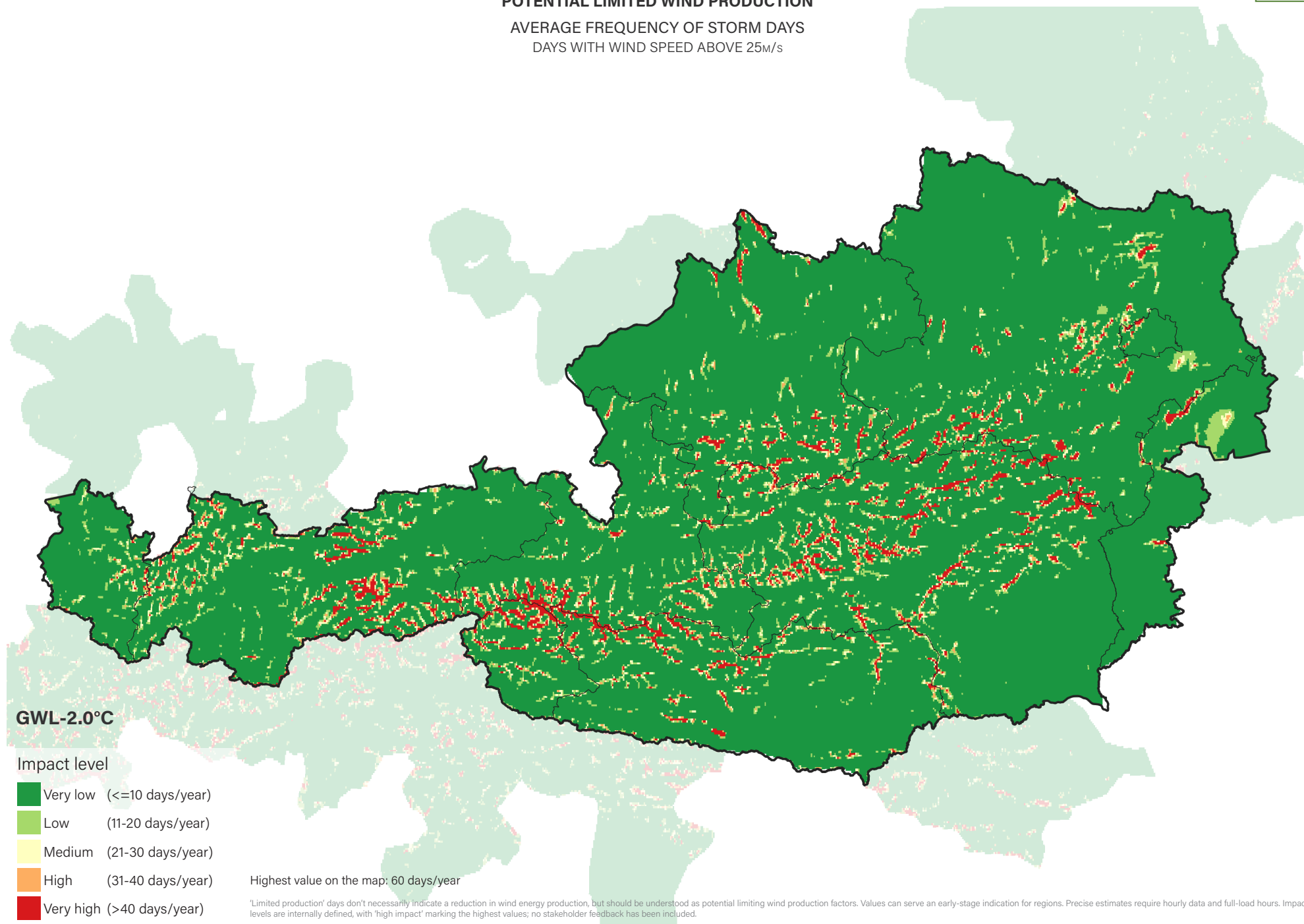
## POTENTIAL LIMITED WIND PRODUCTION

AVERAGE FREQUENCY OF STORM DAYS  
DAYS WITH WIND SPEED ABOVE 25m/s



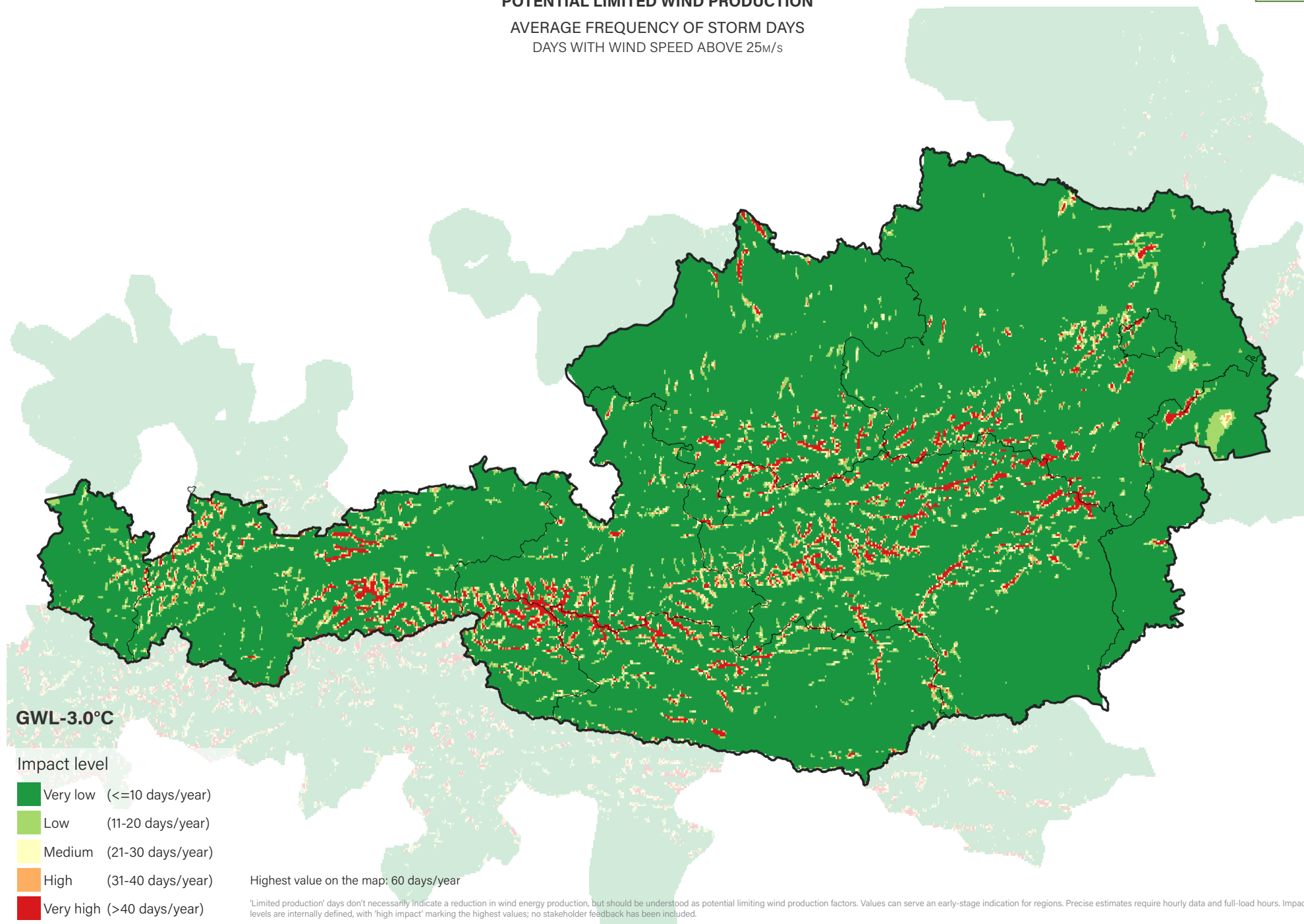
## POTENTIAL LIMITED WIND PRODUCTION

AVERAGE FREQUENCY OF STORM DAYS  
DAYS WITH WIND SPEED ABOVE 25m/s



## POTENTIAL LIMITED WIND PRODUCTION

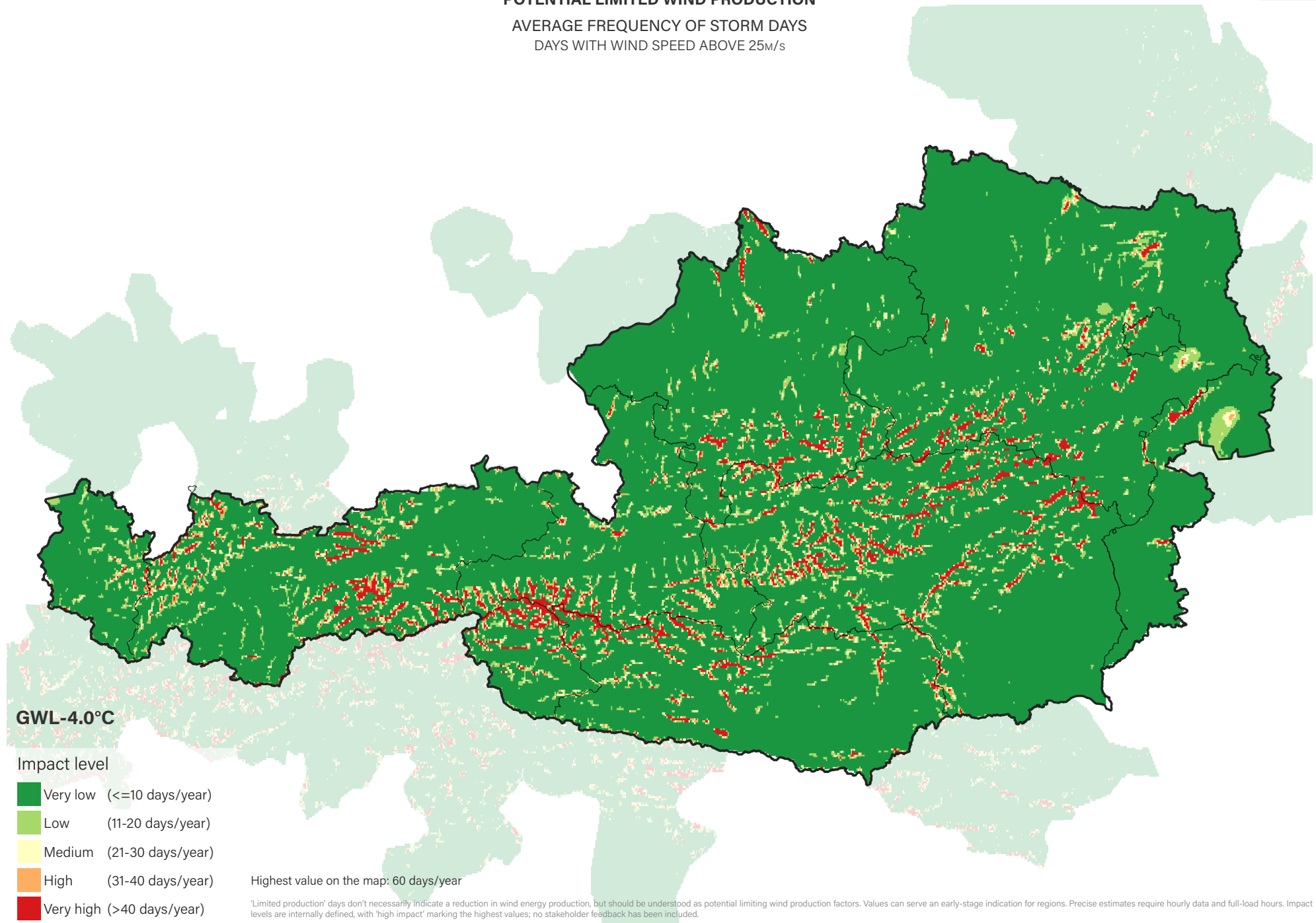
AVERAGE FREQUENCY OF STORM DAYS  
DAYS WITH WIND SPEED ABOVE 25m/s





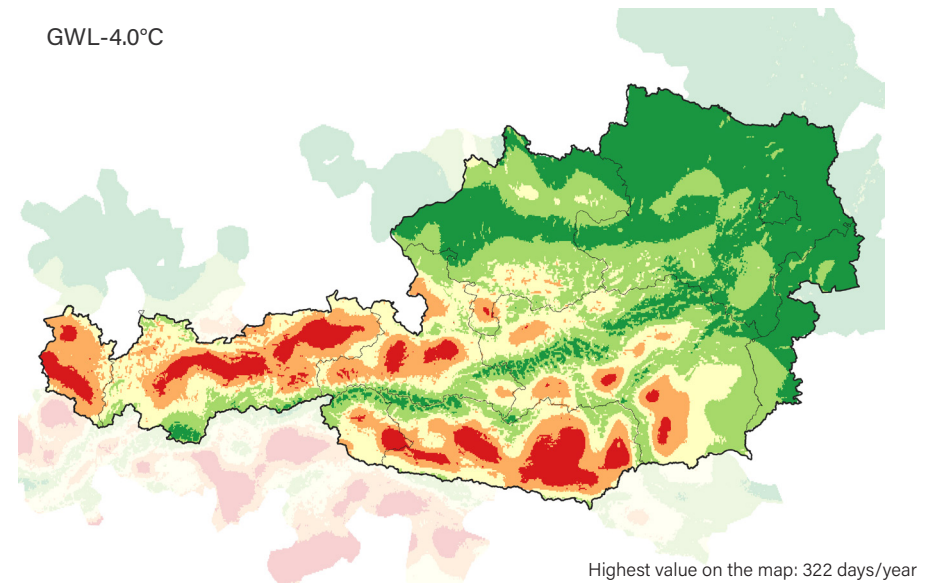
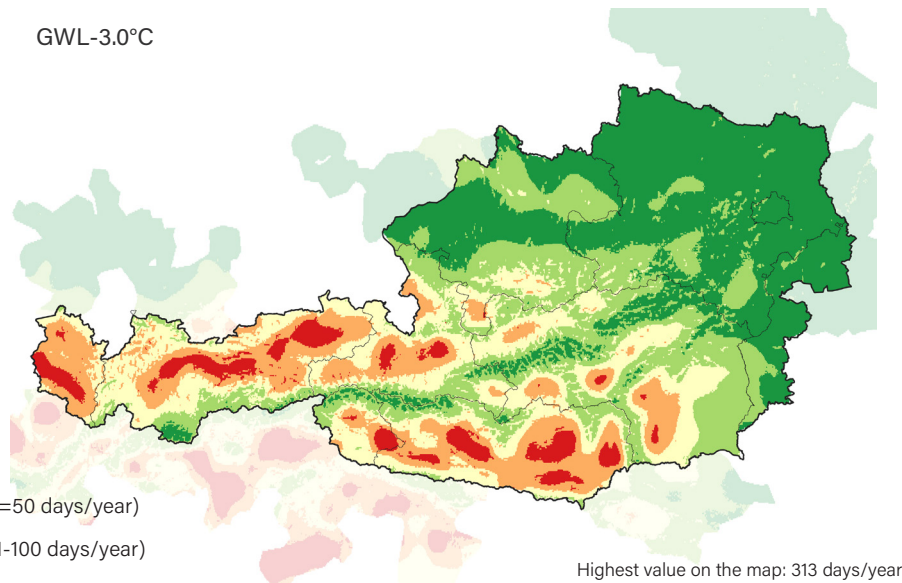
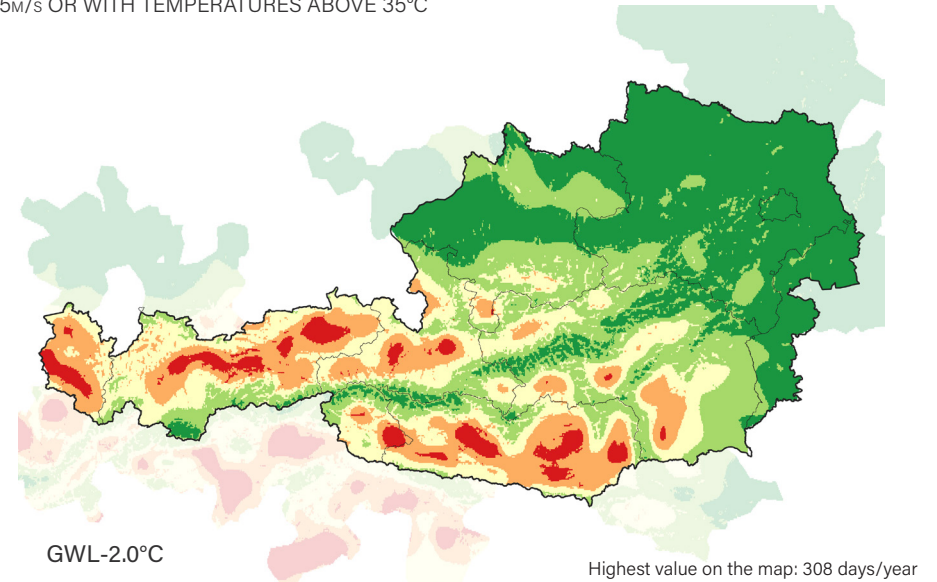
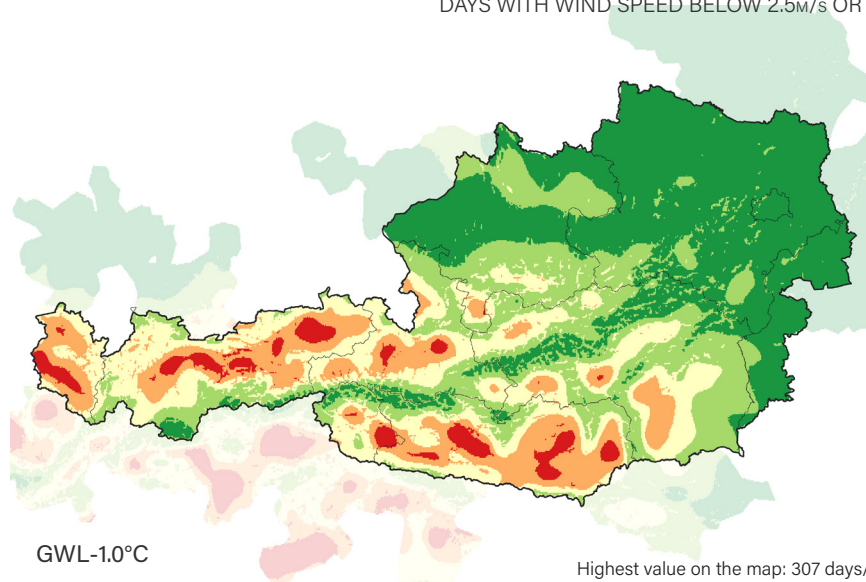
## POTENTIAL LIMITED WIND PRODUCTION

AVERAGE FREQUENCY OF STORM DAYS  
DAYS WITH WIND SPEED ABOVE 25m/s



## POTENTIAL LIMITED WIND PRODUCTION

AVERAGE FREQUENCY OF CALM DAYS + AVERAGE FREQUENCY OF STORM DAYS + AVERAGE FREQUENCY OF DESERT DAYS  
DAYS WITH WIND SPEED BELOW 2.5m/s OR ABOVE 25m/s OR WITH TEMPERATURES ABOVE 35°C



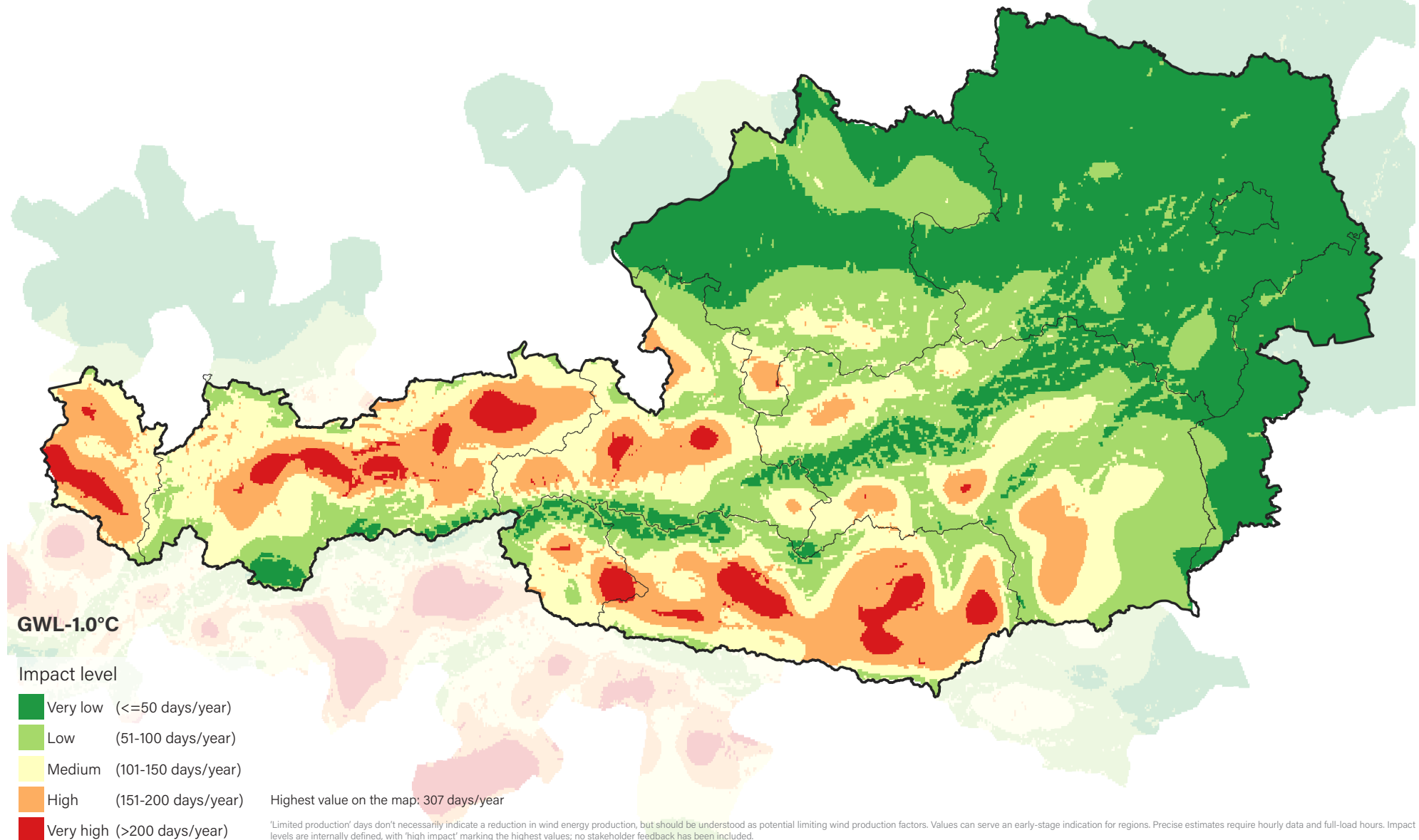
## Impact level

- Very low (<=50 days/year)
- Low (51-100 days/year)
- Medium (101-150 days/year)
- High (151-200 days/year)
- Very high (>200 days/year)

\*Limited production' days don't necessarily indicate a reduction in wind energy production, but should be understood as potential limiting wind production factors. Values can serve an early-stage indication for regions. Precise estimates require hourly data and full-load hours. Impact levels are internally defined, with 'high impact' marking the highest values; no stakeholder feedback has been included.

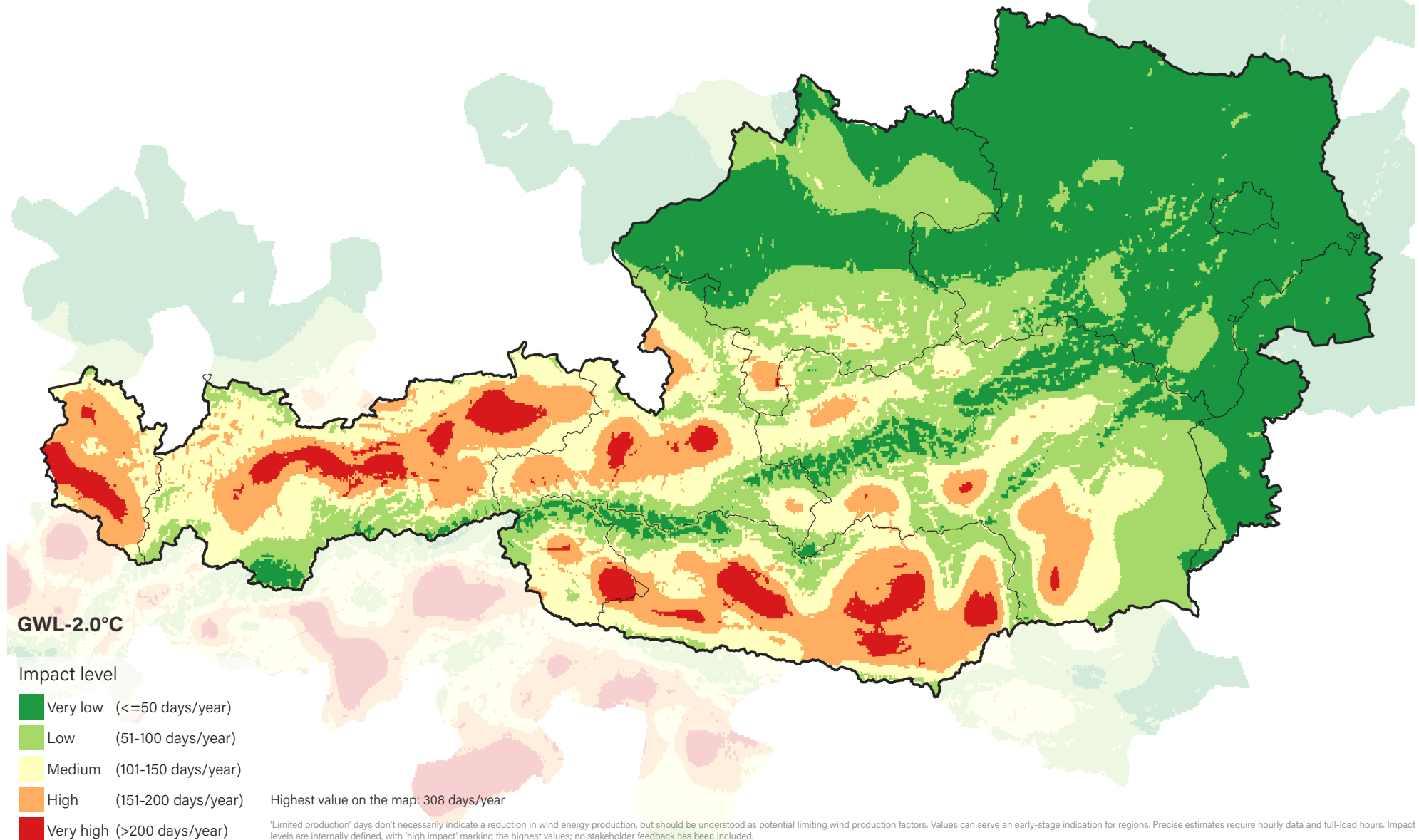
**POTENTIAL LIMITED WIND PRODUCTION**

AVERAGE FREQUENCY OF CALM DAYS + AVERAGE FREQUENCY OF STORM DAYS + AVERAGE FREQUENCY OF DESERT DAYS  
 DAYS WITH WIND SPEED BELOW 2.5m/s OR ABOVE 25m/s OR WITH TEMPERATURES ABOVE 35°C



**POTENTIAL LIMITED WIND PRODUCTION**

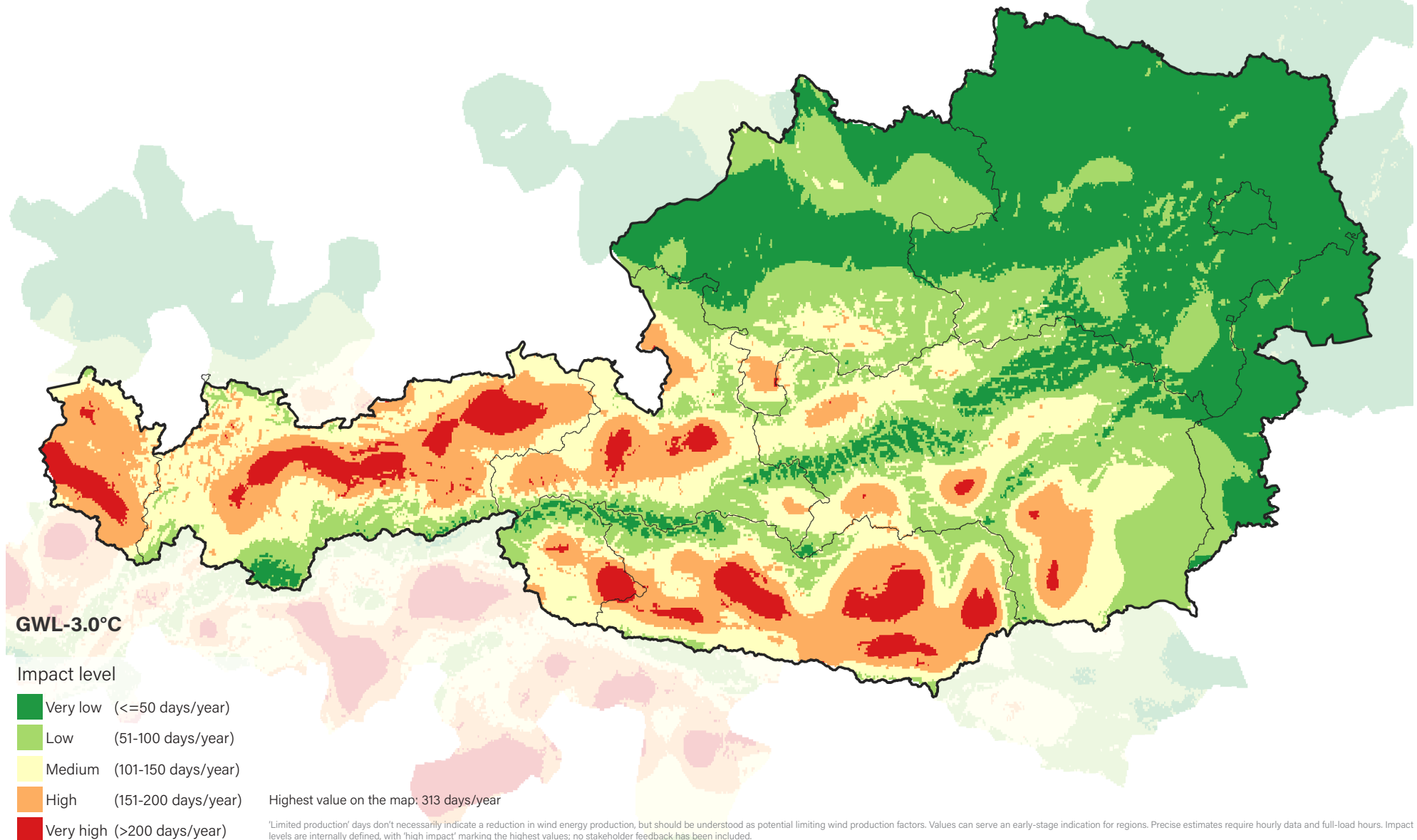
AVERAGE FREQUENCY OF CALM DAYS + AVERAGE FREQUENCY OF STORM DAYS + AVERAGE FREQUENCY OF DESERT DAYS  
 DAYS WITH WIND SPEED BELOW 2.5m/s OR ABOVE 25m/s OR WITH TEMPERATURES ABOVE 35°C





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