

## THE BALTIC CLIMATE SCHOOL

# Climate Change in the Baltic Sea Region

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CIRCULAR ECONOMY

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# CLIMATE CHANGE IN THE BALTIC SEA REGION

Trends, Risks and Solutions  
for the Most Impacted Communities  
and for Everyone

- Maria Falaleeva
- Ewa Leś
- Anna Ushakova
- Iryna Usava
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# BALTIC SEA REGION

- Denmark
- Sweden
- Finland
- Russia
- Estonia
- Latvia
- Lithuania
- Poland
- Belarus
- Ukraine
- Czech
- Germany





# GENERAL TRENDS OF CLIMATE PARAMETERS IN THE BALTIC REGION

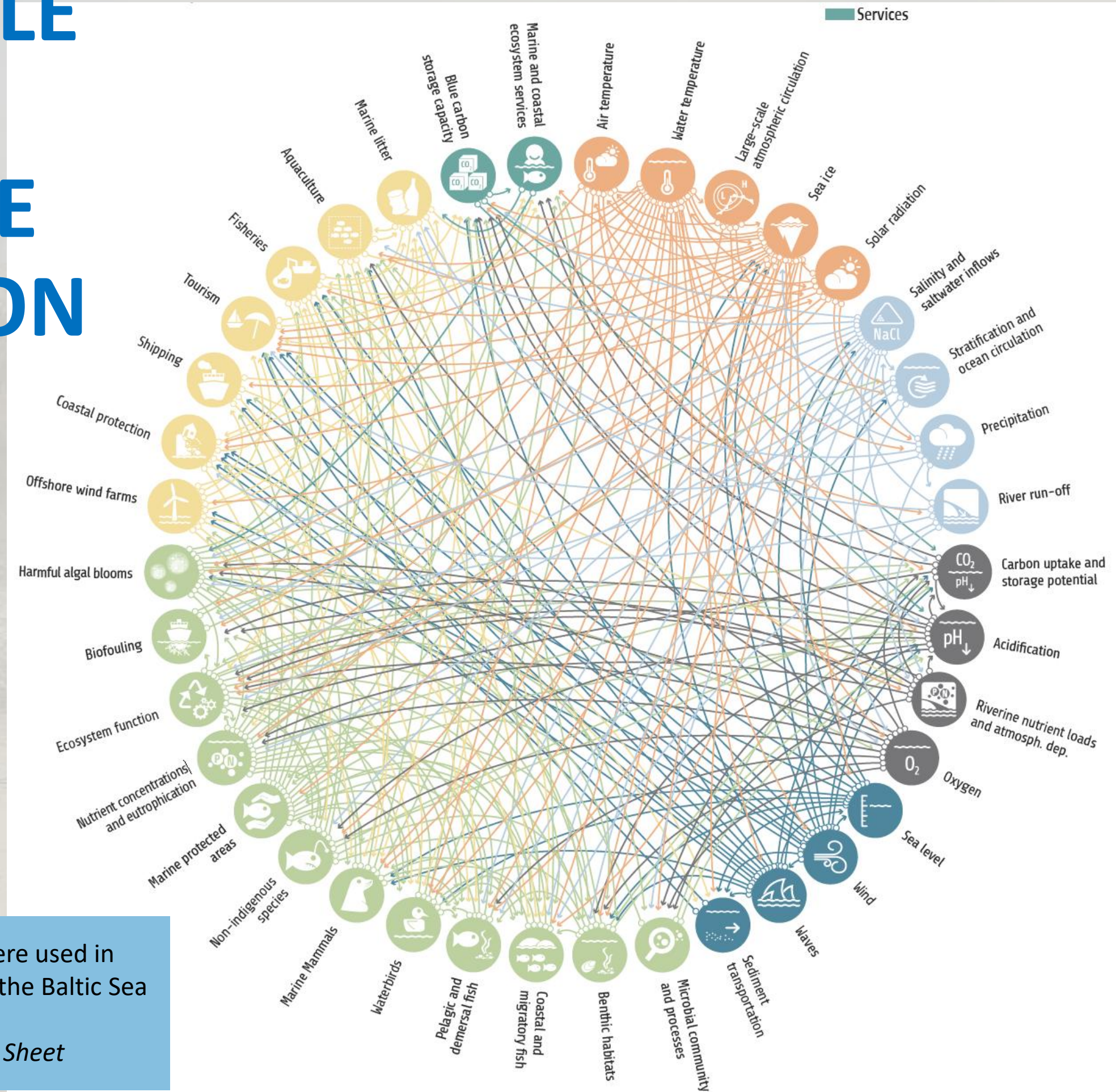
Parameter	Existing trend	Forecast	General description of changes
Average annual air temperature	↗	↗	The average annual air temperature is rising, and this increase will continue.
Winter season	↘	↘	Over the last 100 years, winters have become milder. A shortening of the winter season is expected.
Precipitation	↔	↗	Statistically significant trends are ambiguous. Average precipitation is likely to increase.
Sea surface temperature	↗	↗	The surface temperature of the Baltic Sea is rising faster than the average temperature of the world's oceans and will continue to rise.
Ice cover extent	↘	↘	The maximum ice cover area has decreased. This trend will likely continue under climate change.
Sea level	↗	↗	The Baltic Sea level is rising and will continue to rise.
Sea salinity	↔	↔	No statistically significant changes detected; future forecasts are highly uncertain.
Oxygen deficiency	↗	↗	An increase in oxygen deficiency is expected.
River runoff	↔	↗	No significant changes observed recently. A 2–22% increase in overall runoff into the Baltic is projected as temperatures rise.
Extreme precipitation	↗	↗	An increase in the intensity of extreme precipitation is observed. Such events are expected to become more frequent and stronger in all seasons.
Heatwaves	↗	↗	Increase in duration and frequency of heatwaves.
Frosty days	↘	↘	The number of frosty days has decreased and will continue to decrease.
Extreme winds	↔	↗	Current trends are unclear. By 2100, an increase in the frequency of strong wind gusts associated with summer storms is projected.

# TEMPERATURE CHANGES IN THE PERIOD 1976–2020

Region	Linear trend of average annual temperature (°C/decade)
World	0.18
Northern Hemisphere (land)	0.34
Baltic Region	~0.53



# GROUPS VULNERABLE TO THE IMPACT OF CLIMATE CHANGE IN THE BALTIC REGION



Linkages between the different parameters that were used in the assessment of the effects of climate change in the Baltic Sea

Source: *Climate Change in the Baltic Sea 2024 Fact Sheet*



# IMPACT OF CLIMATE CHANGE ON COMMUNITIES: OVERVIEW

Climate parameters	Existing trend	Forecast	Communities
Average annual air temperature	↗	↗	X X X X X
Winter season	↘	↘	X X X
Precipitation	↔	↗	X X X
Sea surface temperature	↗	↗	X X
Ice cover extent	↘	↘	X X X
Sea level	↗	↗	X X X
Sea salinity	↔	↔	X
Oxygen deficiency	↗	↗	X
River runoff	↔	↗	X X
Short-term precipitation	↗	↗	X X
Heatwaves	↗	↗	X X
Frosty days	↘	↘	X X X X
Extreme winds	↔	↗	X X



# AGRICULTURE IN THE COUNTRIES OF THE BALTIC REGION

Country	% rural population	% employed in agriculture	% agricultural land	% of agriculture in GDP	% CO <sub>2</sub> equivalent from agriculture
Denmark	11.63	2.04	65.45	0.78	25.18
Sweden	11.51	1.97	7.37	1.41	17.78
Poland	39.87	8.40	47.37	2.13	8.98
Lithuania	31.80	5.32	46.92	4.02	23.91
Latvia	31.46	6.81	31.66	5.12	27.42
Estonia	30.39	2.69	23.09	2.52	15.59
Finland	14.32	4.11	7.46	2.38	11.04
Germany	22.35	1.25	47.49	1.11	8.37



# CLIMATE IMPACTS AND RISKS

Country	Change
Sweden	↑↑ (significant increase)
Finland	↑↑ (significant increase)
Estonia	↑ (moderate increase)
Latvia	↑ (moderate increase)
Lithuania	~↑ (uncertain, upward trend)
Russia	↑↑ (significant increase)
Germany	↓ (moderate decrease)





CHOOSE MAP

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COASTAL RISK SCREENING TOOL

## LAND PROJECTED TO BE BELOW TIDELINE IN 2100

Explore how different warming  
scenarios affect sea level rise in the  
coming decades.

DETAILS AND LIMITATIONS

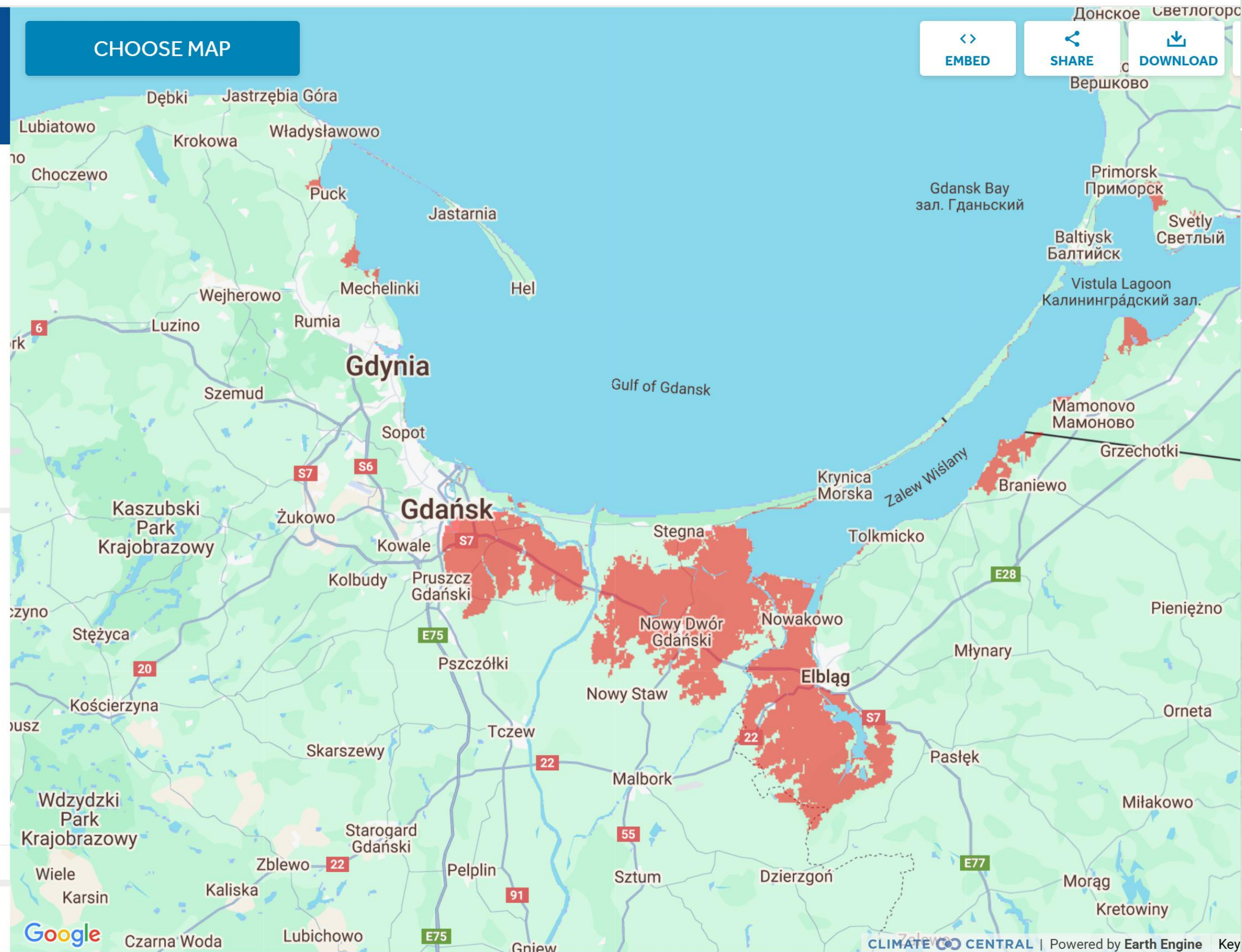
TEMPERATURE INCREASE BY 2100

+1.5°C

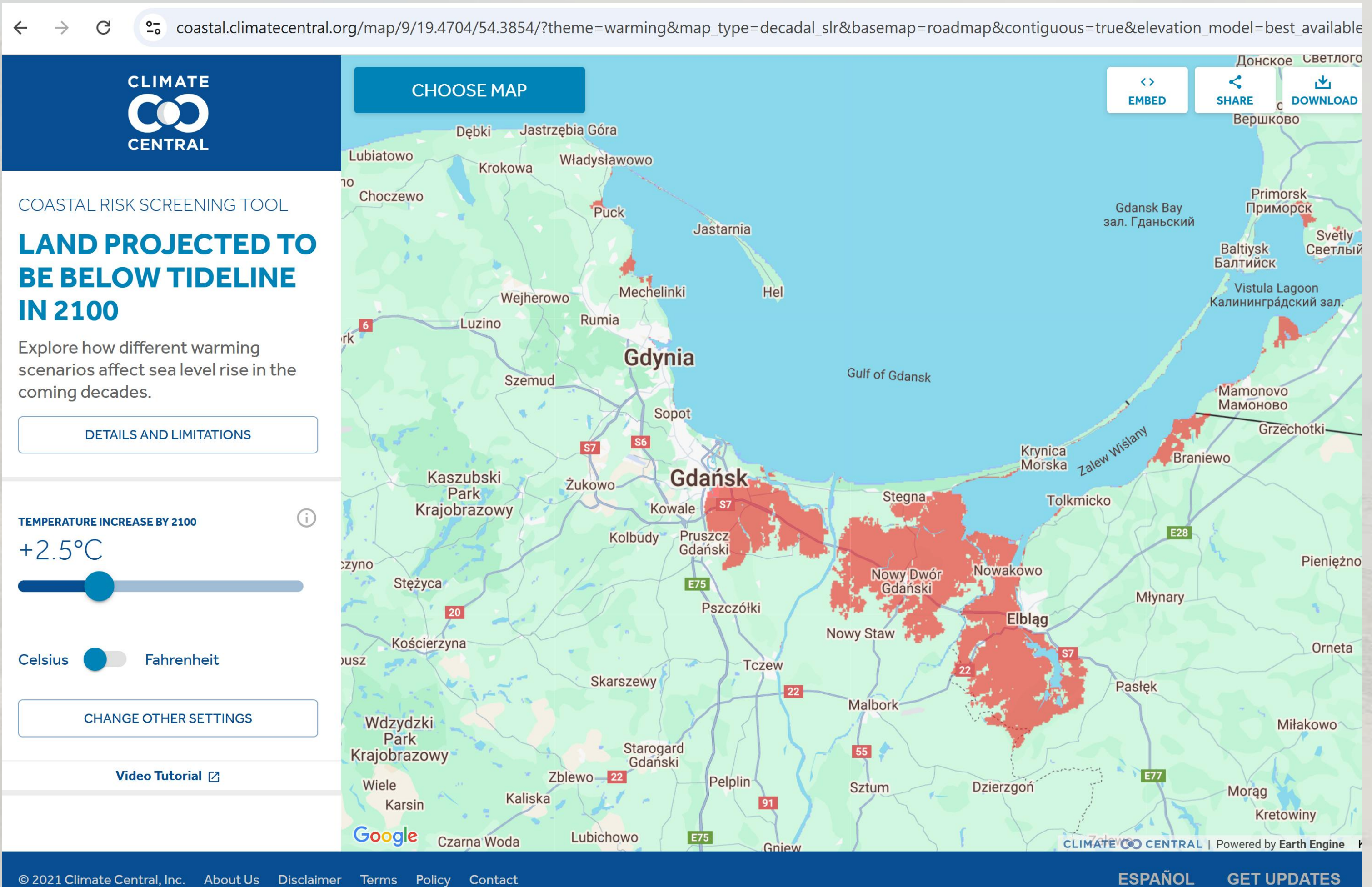
Celsius Fahrenheit

CHANGE OTHER SETTINGS

Video Tutorial

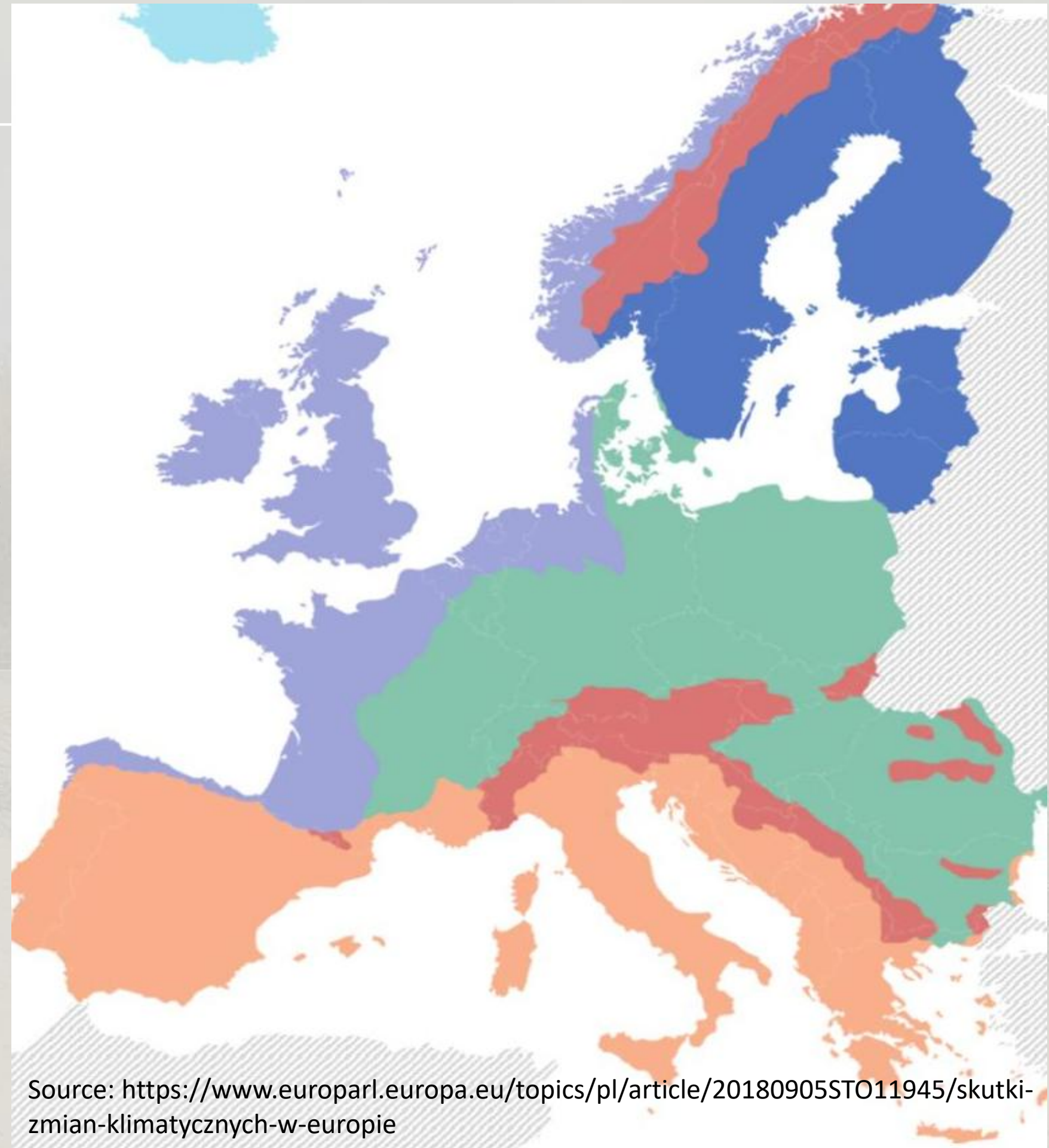








- **Soil moisture deficit:** A declining trend in soil water availability is visible in Poland, which may hinder cultivation of many crops, especially cereals, without additional irrigation.
- **Impact of higher temperatures on yields:** Higher temperatures in some regions may favor crops such as maize and rapeseed. However, excessive heat may negatively affect cereals such as wheat.
- **Change in crop structure:** Agriculture in Poland, like in other European countries, will likely need to adapt. This may include introducing new drought-resistant varieties and addressing other climate challenges.





# MITIGATION AND ADAPTATION TO CLIMATE CHANGE IN THE BALTIC SEA REGION

Country	NDC target – 2030	National targets – 2030 (compared to 2005)	NDC target – 2050
Denmark	Emission reduction of 55% by 2030	-50%	Climate neutrality by 2050
Estonia		-24%	Climate neutrality by 2050
Finland		-50%	Climate neutrality by 2035
Germany		-50%	Climate neutrality by 2045
Latvia		-17%	Climate neutrality by 2050
Lithuania		-21%	Climate neutrality by 2050
Poland		-17.7%	No target
Sweden		-50%	Climate neutrality by 2045



It is important to plan,  
support, and implement  
actions in various areas



# Climate Change in the Baltic Sea Region: Trends, Risks and Solutions for the Most Impacted Communities and for Everyone





## *THANK YOU*

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MORE INFO HERE

