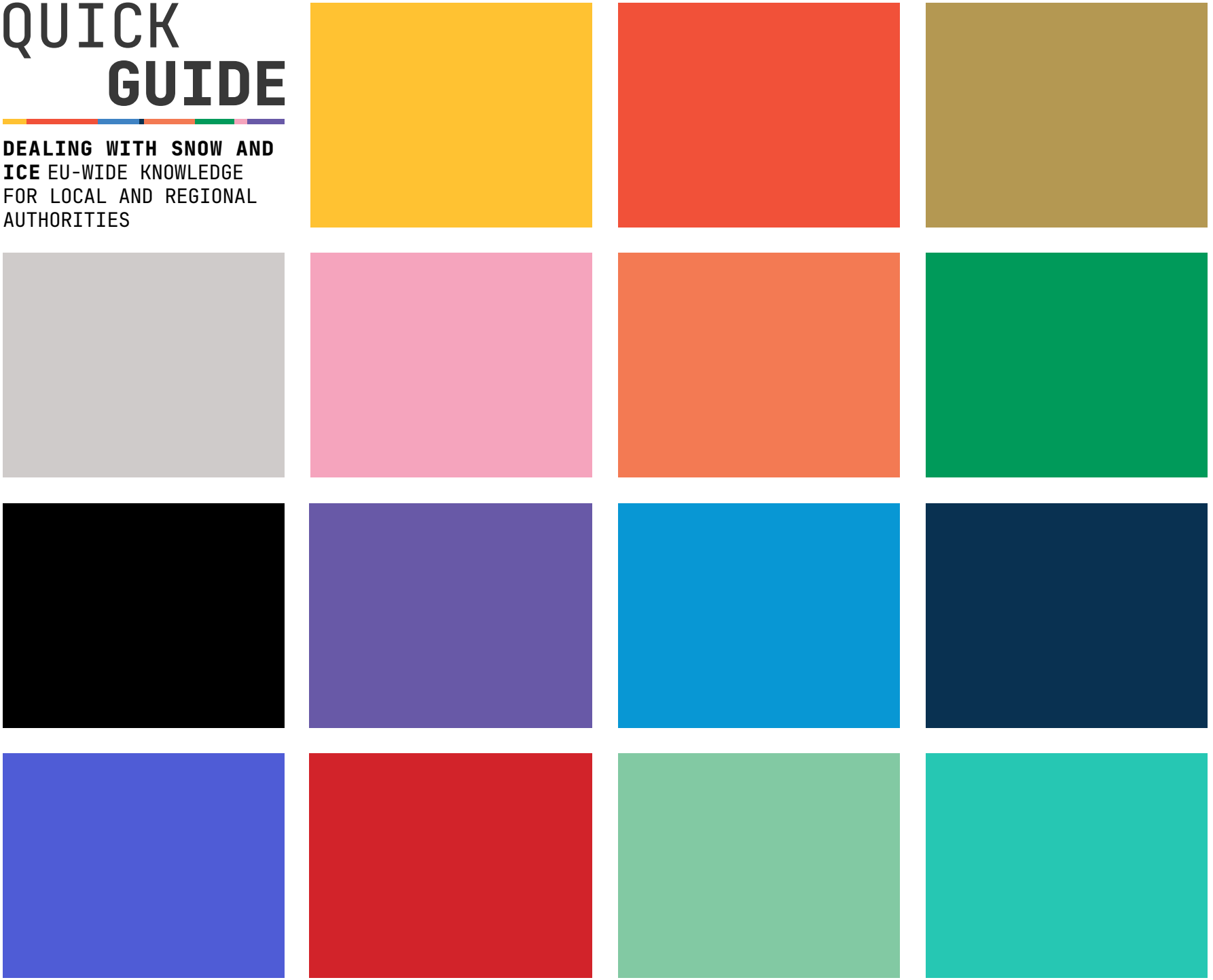
QUICK GUIDE

DEALING WITH SNOW AND ICE EU-WIDE KNOWLEDGE FOR LOCAL AND REGIONAL AUTHORITIES



This content was prepared by the projects REGILIENCE, IMPETUS, TransformAr, ARSINOE, Pathways2Resilience with the support of the EU Mission on Adaptation.

REGILIENCE Regional Pathways to Climate Resilience

IMPETUS

TransformAr

ARSINOE

PATHWAYS2RESILIENCE

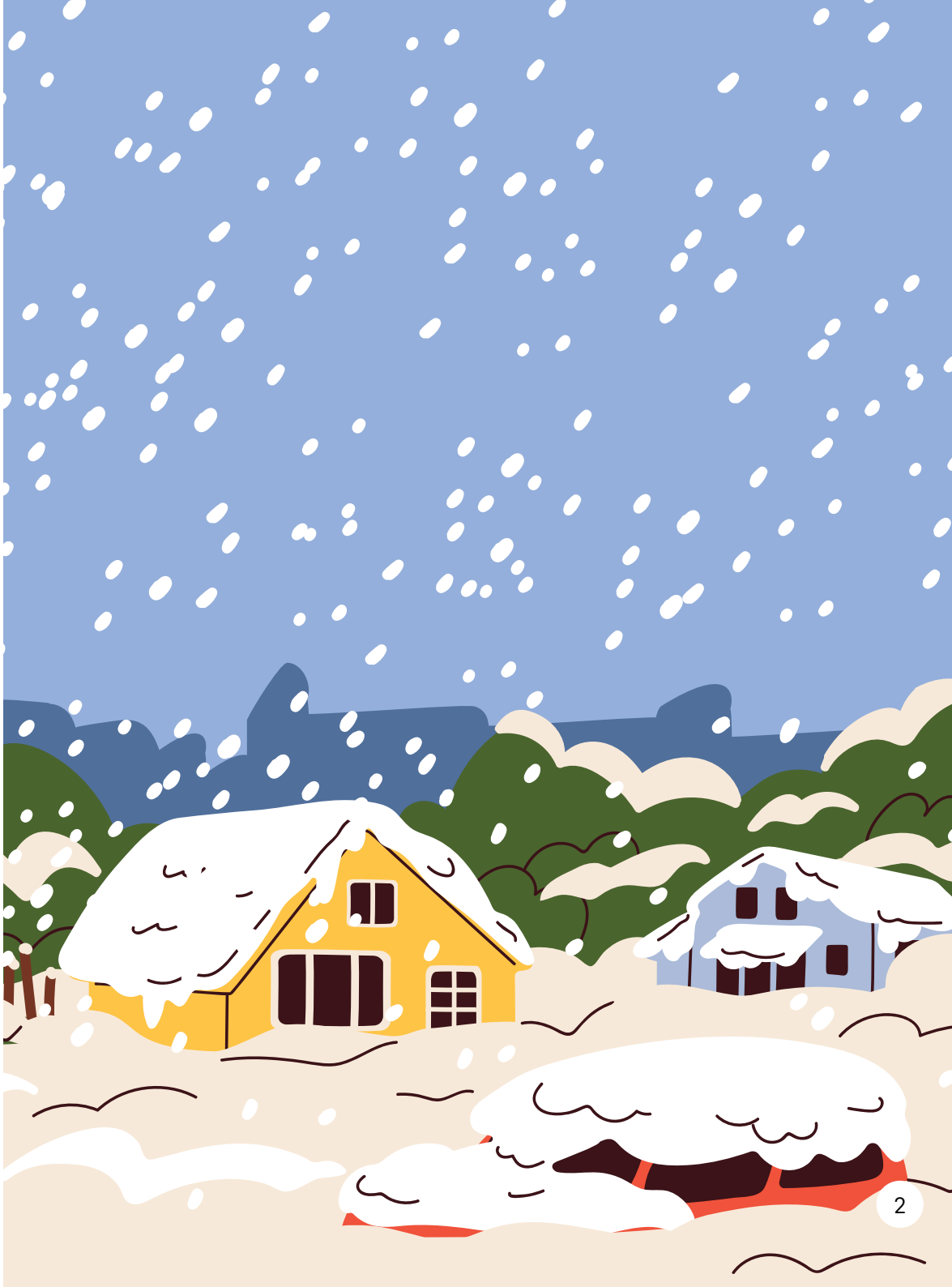
DEALING WITH SNOW AND ICE

EU-WIDE KNOWLEDGE FOR LOCAL AND REGIONAL AUTHORITIES

WHAT ARE SNOW AND ICE IN THE CONTEXT OF EXTREME WEATHER?

Extreme cases of snowfall and ice refer to severe winter conditions that exceed the expected conditions in the area.

These events can include blizzards, ice storms, heavy snowfall and polar vortexes, for example. These extreme weather events can disrupt daily life, damage infrastructure, and pose serious health risks, especially for the vulnerable groups, among others. They can also negatively impact our ability to travel, commute and transport goods.

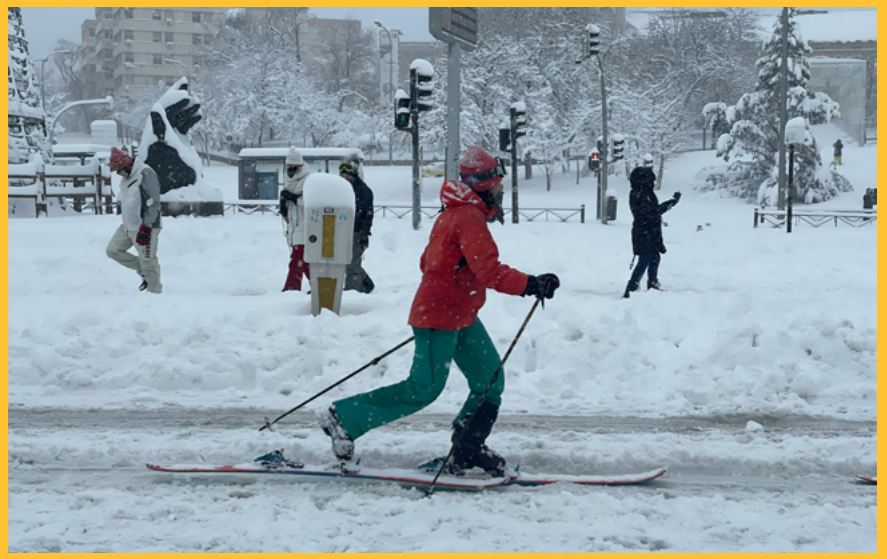


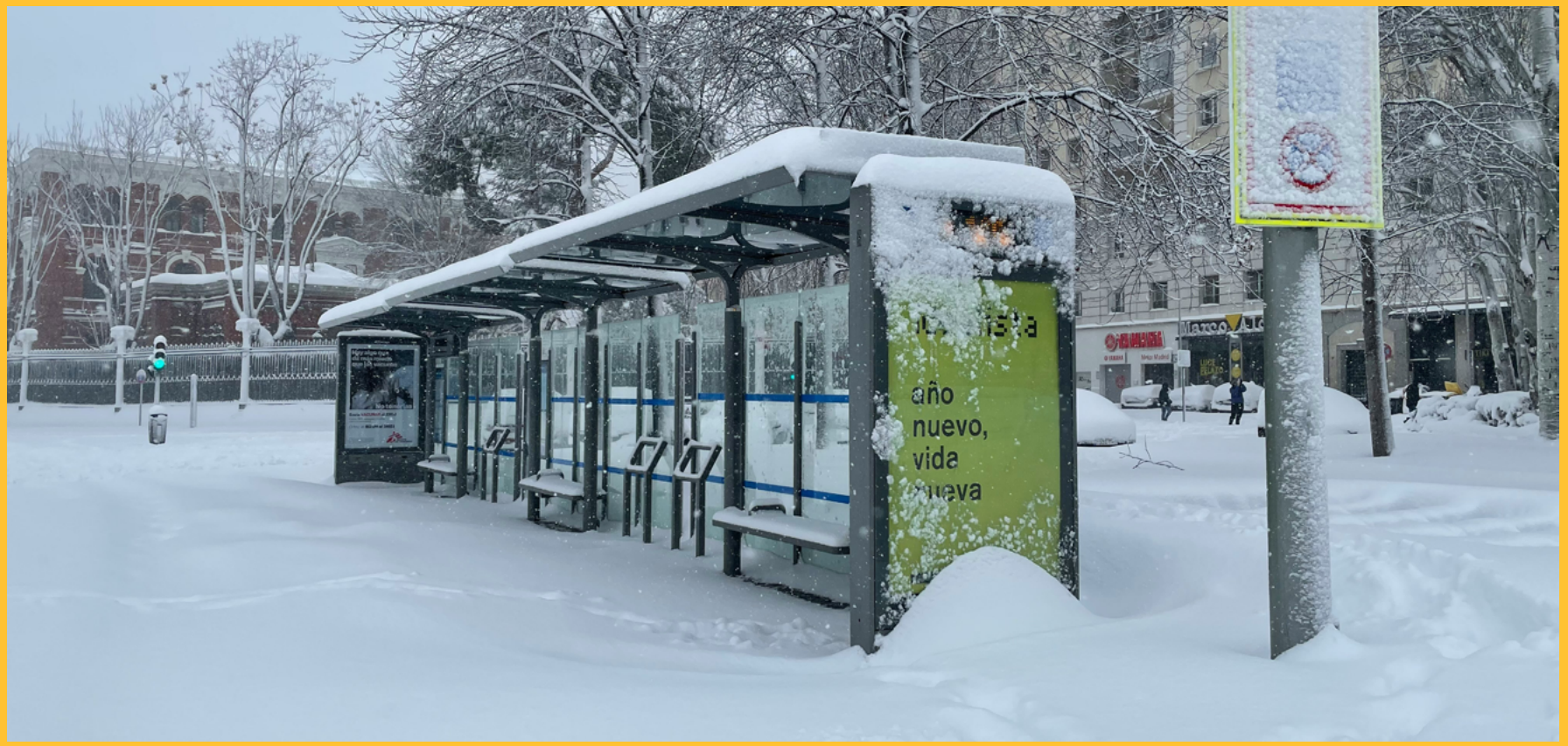
KEY FACTS & RECENT EVENTS

Between 1980 and 2023, climate-related extreme events caused an estimated

EUR 738 billion (2023 prices) in damages across the EU, with over EUR 162 billion incurred between 2021 and 2023.

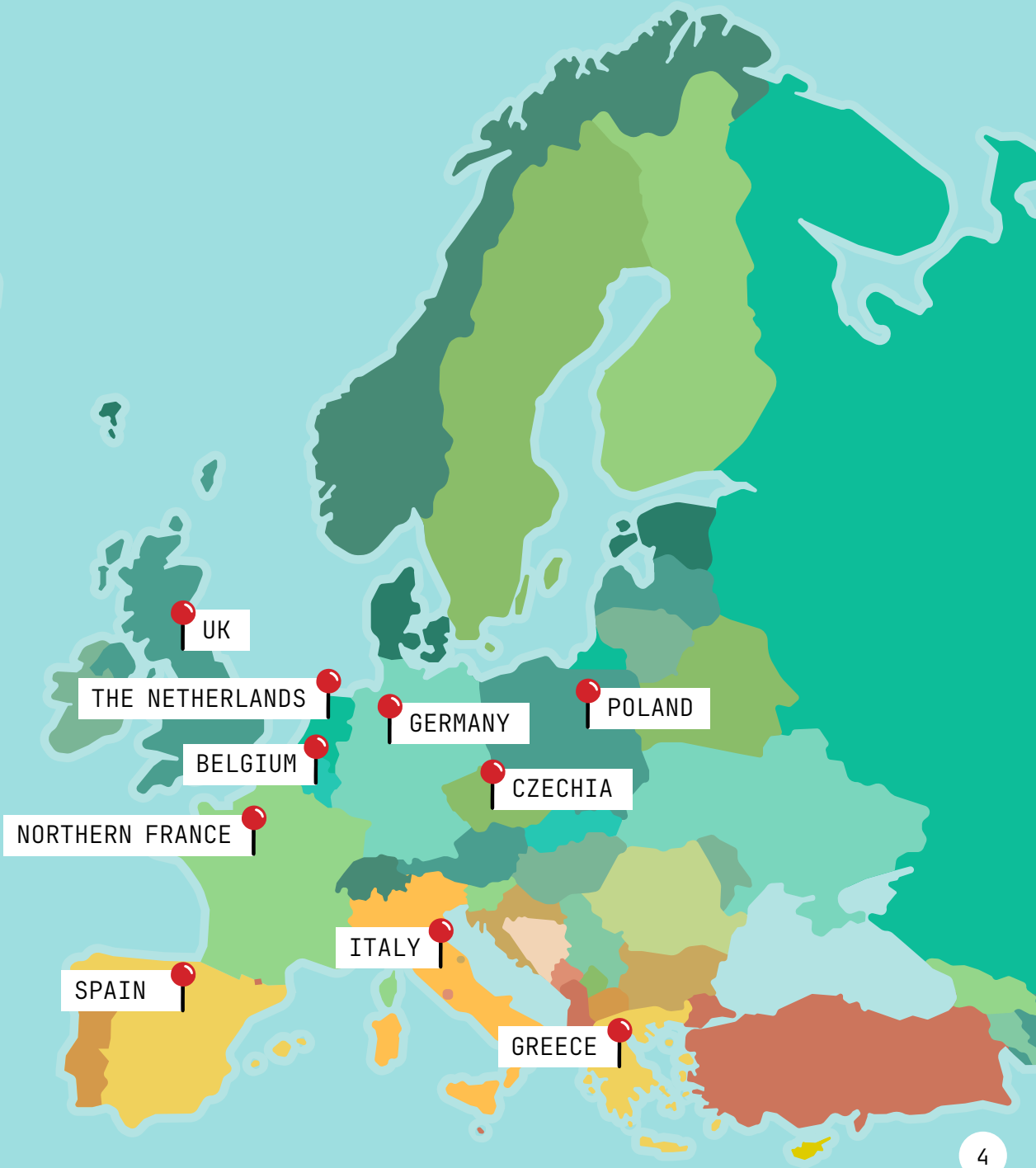
While comprehensive EU-wide data on damage resulting from extreme winter conditions are limited, physical damage and other losses amount to billions of Euros due to lost revenues from business, travel and transport interruptions.





Recent instances of extreme ice and snow:

- **January 2021**, Storm Filomena (Spain): Up to 60 cm of snow for more than a week in Madrid caused major disruptions in transportation and daily activities, with 5 fatalities.
- **January 2022**, Storm Elpis (Eastern Mediterranean): This heavy snowstorm in areas unaccustomed to such conditions led to halts in transportation and power outages with at least three fatalities.
- **December 2023**, Storm Ciro (Central Europe): Resulted in 15,000 households without power in Czechia. The storm caused over 760 flight cancellations at Munich Airport alone.



KEY IMPACTS ON YOUR COMMUNITY

Infrastructure:

Damage to transportation infrastructure, power lines, agriculture and in extreme cases buildings.

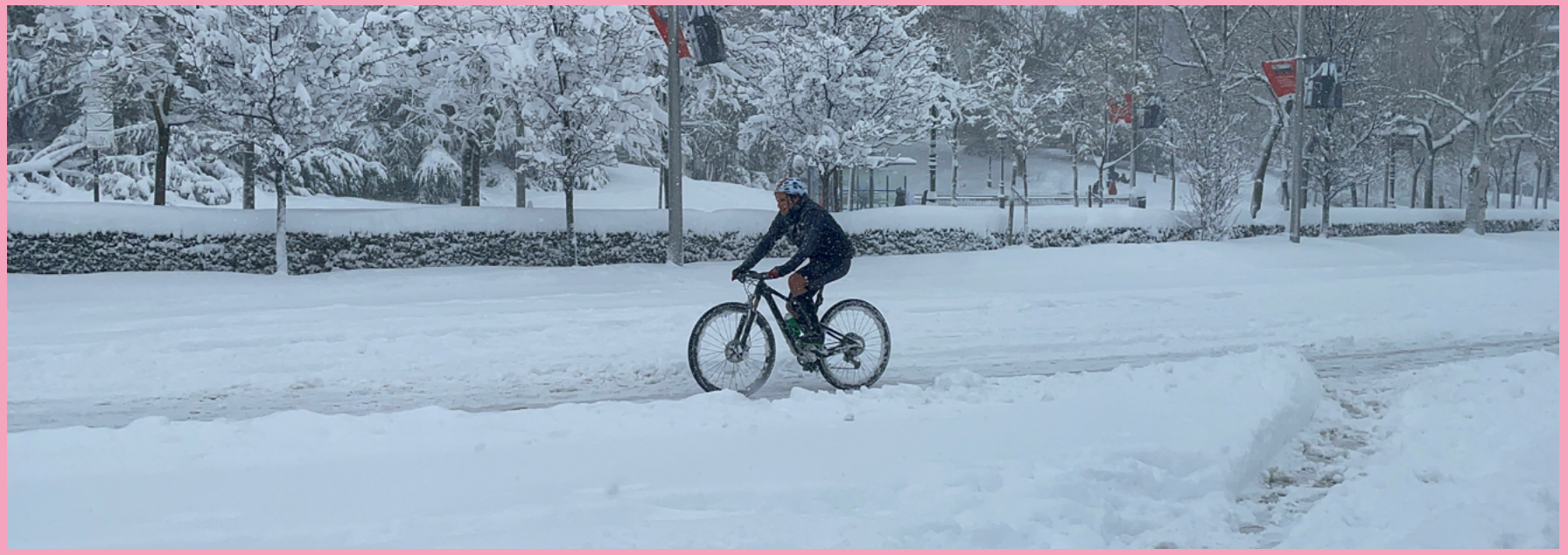
Health:

Risk of injuries due to slipping on ice, extreme cold, reduced access to critical services such as healthcare, associated with transportation halts.

Environment:

Snow damaging trees and ice damaging the soil of green areas in cities and municipalities.

The unintended impacts of winter de-icing salt, causing chloride pollution due to water run-off and damaging the environment.



HOW TO TAKE ACTION

Understand your risks from snow and ice: data, maps and tools

Gather information on potential extreme cases of snowfall and ice in your area from various sources, such as the European Severe Weather Database managed by the European Severe Storms Laboratory to better understand their severity and potential impacts. Use weather forecasts such as the European Centre for Medium-Range Weather Forecasts (ECMWF) to identify potential weather extremes and prepare yourself and your community to react to them.

The Copernicus EMS provides free mapping services during natural hazards. Extreme snowfall or ice has not yet been mapped; however, storms have been. Utilising satellite imagery and other geospatial data, the service offers detailed maps to assess the extent and impact of disasters.

Use tools to identify and assess your exposure to snowstorms. Tools such as the Quick Risk Estimation Tool are designed to help identify and understand current and future risks, stresses, shocks, and exposure threatening human and physical assets.

EUROPEAN SEVERE WEATHER DATABASE

ECMWF

THE COPERNICUS EMS

QUICK RISK ESTIMATION TOOL

Implement concrete actions

Find 5 recommended actions for reducing the impact of snow and ice in this **database**, each of them describing costs and benefits, legal aspects for implementation and referring to implemented case studies.

Some of the actions which can be implemented at the urban or municipal level are:

- Establishment of effective **early warning systems** for extreme weather events.
- Adapting **electricity transmission and distribution networks** to extreme weather, including heavy snowfall.
- Definition and implementation of climate-proofing **standards for road design, construction and maintenance** to ensure transport infrastructure can still function during heavy snowfall and ice events.

Assess your planned actions with this **self-assessment tool** to avoid negative effects which increase vulnerability, diminish well-being or undermine sustainable development. It's available in 10 languages!

ADAPTATION OPTIONS DATABASE
EARLY WARNING SYSTEMS
ELECTRICITY NETWORKS
STANDARDS FOR ROAD DESIGN
SELF-ASSESSMENT TOOL

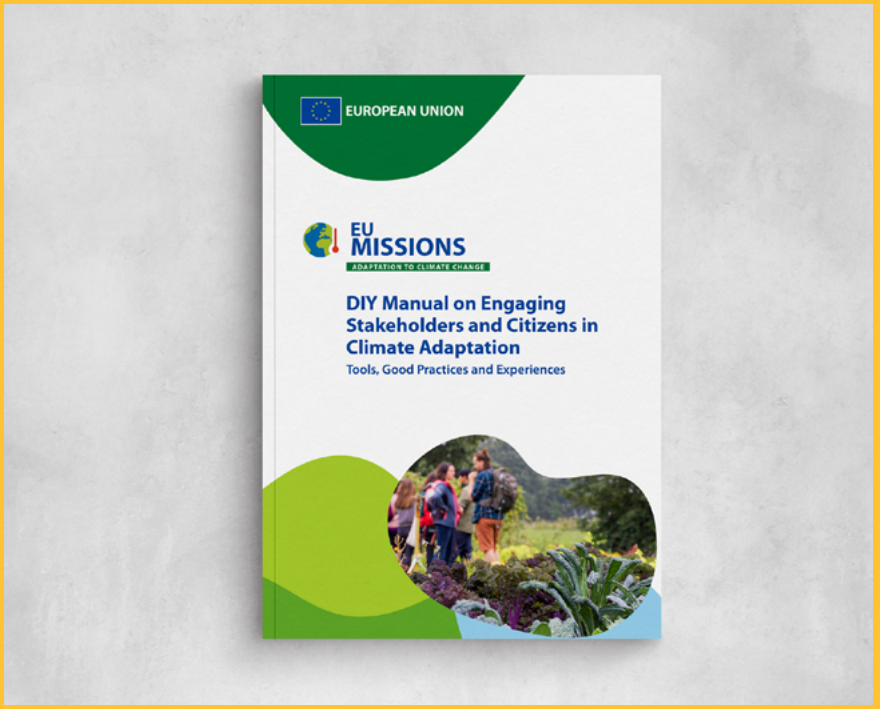
Find funding opportunities

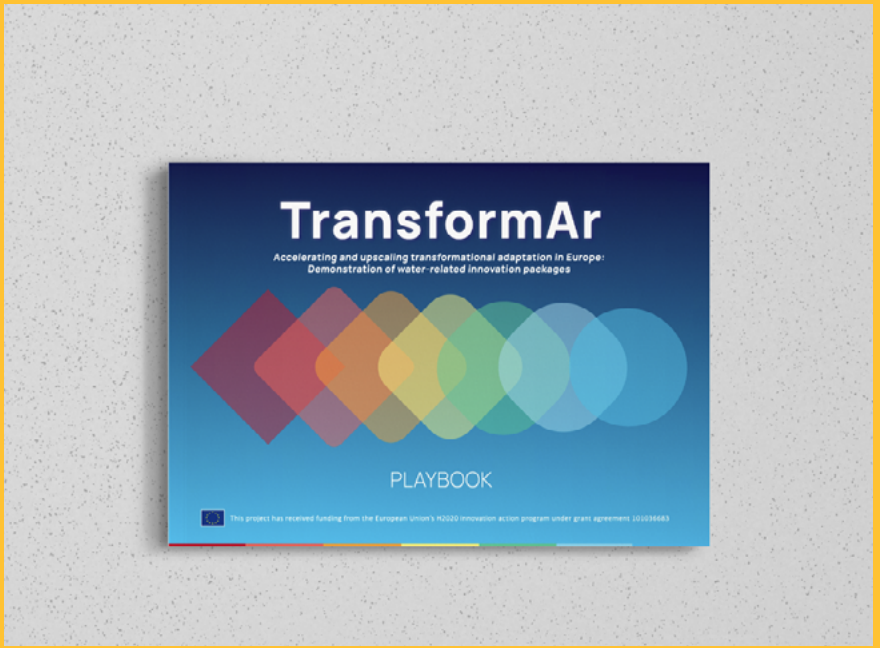
Access EU and national funding options via MIP4Adapt to support your extreme snow and ice adaptation strategies.

Engage stakeholders and citizens in decision-making and action

Check the MIP4Adapt Do-It-Yourself Manual on Engaging Stakeholders and Citizens in Climate Adaptation to learn how to involve communities in preparing for and mitigating the effects of extreme weather.

You can also use specific tools like the TransformAr Playbook to plan participatory workshops.





MIP4ADAPT
DIY MANUAL ON ENGAGING
TRANSFORMAR PLAYBOOK

PRACTICAL EXAMPLES FOR MUNICIPALITIES

For inspiration from practical examples,

Find and read adaptation stories – e.g. about how alpine protection forests can reduce the risk of avalanches from extreme snowfall.

Find detailed information by selecting one of the over 10 “climate impacts – Ice and Snow” case studies – e.g. about making railway transport resilient to climate impacts in Austria.

Above: A mixed forest island above a drainage basin, holding back water during extreme events, municipality of Wildermieming in Tyrol. ©Klimabündnis Tirol, S. Mourits-Andersen.

Below: Local protection measure implemented after the debris flow event occurred in an area close to Taxenbach in June 2013. ©ÖBB Infra AG

ADAPTATION STORIES

ALPINE PROTECTION FORESTS

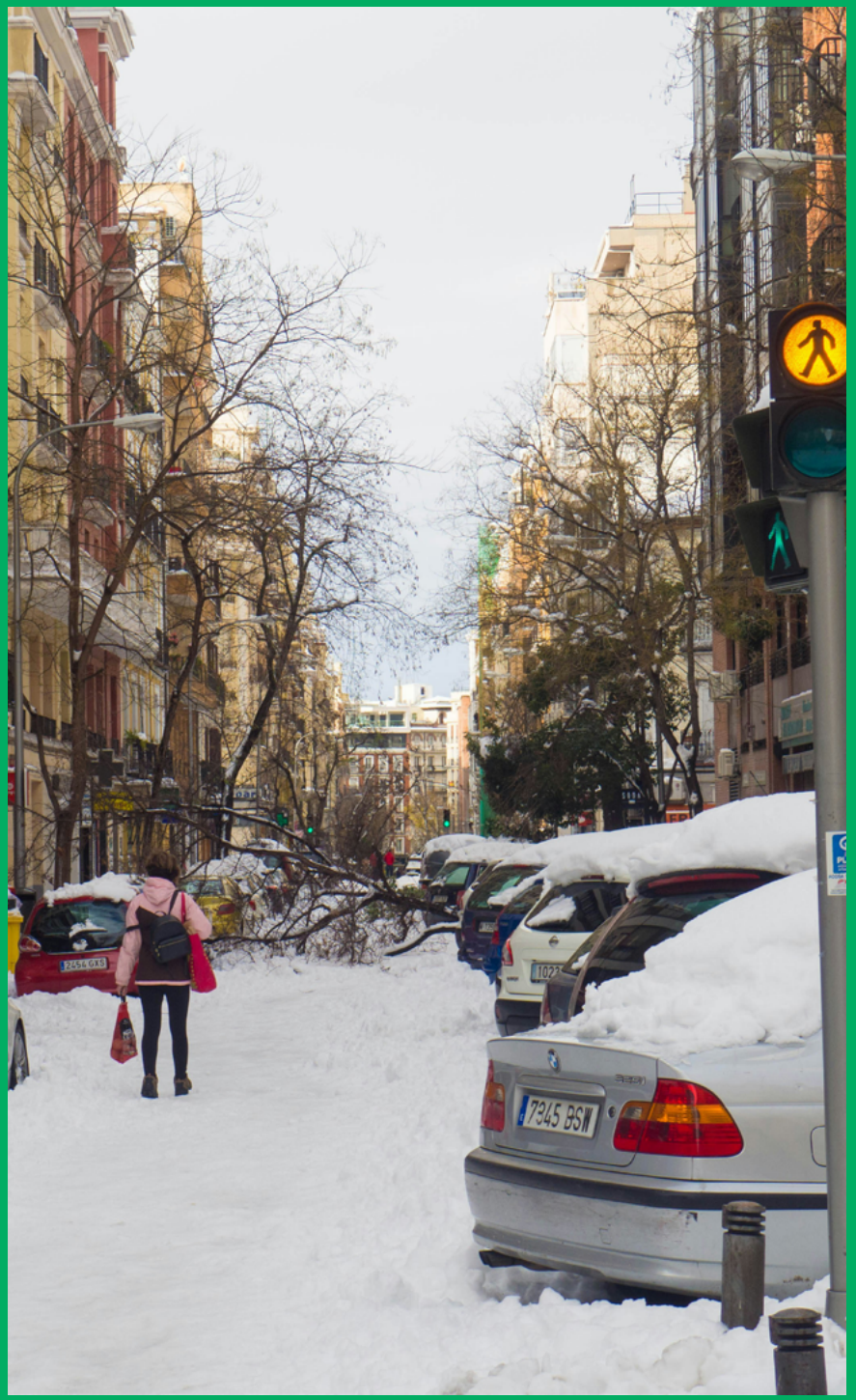
ICE AND SNOW CASE STUDIES

RAILWAY IN AUSTRIA

NEED HELP?

Contact us:

info@regilience.eu



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