

# Great differences between EU Member States in how well transport systems cope with weather phenomena

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In a broad-based study covering all 27 EU Member States, VTT Technical Research Centre of Finland lead an evaluation of the risks posed to transport by extreme weather phenomena. This recent study demonstrates that the level of risks varies significantly among the EU Member States.

This is the first study in the world to evaluate the risks posed to [transport](#) by weather phenomena on a country-specific and mode-specific basis. Among the EU Member States, Poland has the highest [risk level](#) indicator. The highest-risk regions are in the countries of Eastern Europe and in [mountainous areas](#). Low-risk countries include Ireland, Austria, Luxembourg and the [Nordic countries](#).

The risk-level evaluation was conducted using a risk indicator designed by VTT scientists. The calculations were performed on substantial datasets and involved estimating the probability of phenomena such as heavy rain, floods, landslides, storms and heat waves based on long-term weather statistics. The [weather data](#) for the study were supplied by the Finnish Meteorological Institute. The risk indicator also incorporated country-specific data on [traffic density](#), population density, the quality level of transport systems and the [economic resources](#) available.

"This is an internationally unique study, because risk levels have never before been determined on a country-specific basis. We found

considerable differences in risk levels between countries and regions. In the Nordic countries, Ireland, Austria and Luxembourg, transport systems cope with extreme weather phenomena considerably better than in the EU Member States on average. A number of factors contribute to these low risk levels: a strong economy, low traffic densities and a transport infrastructure that is in good condition and runs smoothly", explains Principal Scientist Pekka Leviäkangas from VTT. "Transport systems face significant risks from extreme weather phenomena in all EU Member States, and it is vital to be able to manage these risks in order to ensure the smooth and safe flow of traffic and thereby the continued functioning of society at large." Cyprus and Malta are also low-risk countries.

## **Significant differences between countries**

The study involved evaluating the risk levels associated with extreme weather phenomena in transport as regards accidents, delays and infrastructure. The cost to transport caused by extreme weather phenomena in the EU Member States is estimated at EUR 15 billion per year at the very least. The majority of this is due to road accidents and delays to transport of goods. Heavy rain and floods cause the most disruption. [Heat waves](#) are a significant adverse phenomenon in southern Europe. In the

Nordic countries and in mountainous areas, traffic flow may be compromised by snow, ice and frost. Mountainous areas are also prone to landslides Poland emerged as the country with the highest individual risk indicator. The risk level is also quite high in Italy, Romania and Hungary. Considered by region, the highest risk levels are found in Eastern European countries and in mountainous areas. "Poland has high volumes of traffic and large harbours, and the country's transport systems are in poorer shape than for most parts of the EU. Also, the country experiences a comparatively high incidence of [extreme weather](#)

phenomena. A problem at a transport hub, such as a port, has extensive knock-on effects on road and rail transport. Poland also has a fairly high population density, and its economy is at the lower end of the scale within the EU," says Leviäkangas. "That is why the risk level there is high."

"Bad weather increases the probability of road accidents. One should always take account of the weather when planning travel, where possible," says Leviäkangas.

"Transport infrastructure can be improved through careful planning that takes better account of weather phenomena. The climate is warming up, and there are weak signals indicating that extreme [weather phenomena](#) are on the increase," adds Leviäkangas. "Much greater attention should be paid to the maintenance and upkeep of the transport infrastructure, particularly in urban areas. Drainage systems, for instance, should be functioning as designed, and they should be regularly serviced - sometimes even small things can matter. The appropriate preparation can save a lot in costs in the long term."

**More information:** [www.vtt.fi/inf/pdf/technology/2012/T43.pdf](http://www.vtt.fi/inf/pdf/technology/2012/T43.pdf)

Provided by VTT Technical Research Centre of Finland

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