

Extreme weather conditions cost EU's transport system at least 15 billion annually

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A study carried out by VTT Technical Research Centre of Finland indicates that extreme weather conditions cost EU transport system at least €15 billion a year. Currently, the greatest costs incurred are from road accidents, with the associated material damage and psychological suffering. However, costs arising from accidents are expected to decrease in volume, though time-related costs attributable to delays are projected to increase. In part, this is due to climate change, whose impact on extreme weather phenomena was addressed in the study, and because of consequent costs.

In the study conducted by VTT and EWENT project partners, researchers calculated the costs, caused by extreme weather phenomena for the [transport system](#), its users and customers of freight carriers in the 27 EU member states. This marks the first time calculations have been completed on this scale and scope. The study shows that the mode of traffic most vulnerable to extreme weather is [road traffic](#). It continues to have a higher volume than the other modes, with the additional factor of not being centralised or professionally controlled, in contrast to rail or aviation. In particular, the consequences of extreme weather are visible in road traffic in the form of increased [road accidents](#) and the cost arising from them. In other traffic modes, far more likely than accidents will be time-related costs with a variety of causes, typically delays. Aviation in particular is prone to time-related costs in extreme weather. The annual net cost in European aviation is on the order of billions of euros, borne by travellers and airline operators. Surprisingly, infrastructure related costs did not have a lion's share of the total costs.

In road traffic, heavy time-related costs are particularly frequent in freight traffic. At EU level, annual losses, measured to be around 6 € billions annually, are suffered by the customers of freight carriers as a result of time-related costs, and here is a risk of continued growth in costs. This is due to the growth in volumes of freight-carrying traffic, which is forecast at 1-2 per cent a year. Furthermore, improved efficiency in production chains accentuates the importance of adherence to timetables, creating further potential for growth in time-related costs.

Passengers in road traffic will incur time-related costs, as [extreme weather conditions](#) slow down traffic, keeping people away from productive work. At the same time, however, road accidents will be on the decline in the EU. VTT's researchers estimate that improvements to vehicle safety, along with the warming caused by climate change, may reduce the cost arising from road accidents by as much as half by 2040-2070.

The impact of climate change is difficult to predict

However, the impact of [climate change](#) on extreme [weather conditions](#), along with the cost arising from such conditions, is hard to estimate with any accuracy. In the North, where most costs incurred by traffic are attributable to snow and ice, heavy snowfalls may actually become more frequent, despite climatic warming. In Southern Europe, one cost factor to be reckoned, but which is studied far too little, with in the future may be heat waves, leading to decreased pedestrian traffic and cycling, and to increased motorised traffic. Moreover, as droughts grow in frequency, so will sand storms and dust storms, and as heat waves are followed by torrential rains, soil will become less firm, creating potential for landslides.

The traffic mode least affected by extreme weather is sea traffic. However, transport by sea is no solution to the problem of the time-

related costs, experienced by European transport traffic, because cost-efficiency continues to be the factor that dictates the choice of transport mode. Bulk freight is transported by rail or waterways, with lower average speeds but a better guarantee against the vagaries of weather. High-priced freight, sensitive to schedule disruptions, is transported by road and air, which are fast transport modes but susceptible to the whims of extreme weather.

In conditions that are extreme but at the moderate end of the scale, time-related [costs](#) can be cut by means of intensified maintenance measures and improved communications. Unfortunately, the consequences of genuinely [extreme weather](#) phenomena are hard to predict and prevent. A decrease in traffic volume would have the most beneficial impact, brought about through improved mass transport, virtual presence communications, and remote work. As a bonus, this would make traffic more manageable not just for professional drivers; it would also help minimise the environmental impact created by road [traffic](#).

More information: The report "The costs of extreme weather for the European transport systems. EWENT project D4", is available at www.vtt.fi/inf/pdf/technology/2012/T36.pdf

Provided by VTT Technical Research Centre of Finland

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