An introductory, geostatistical and geomorphological review of the effects of geohazards and severe weather events as a retrospect throughout 2009/2010.

Funding: National (Norway)
Duration: Dec 2009 - Jul 2020
Status: Ongoing

Background & policy context:

There is no form of hazard which has a greater economic impact than natural hazards. While the incidents took place in 2009/2010, there was a need to set together overviews of the disasters distribution and the expected size of events at critical locations.

Certain railway lines shall be studied in this project to understand how the harsh 2009/2010 seasons severe weather and geohazards affected railway transport.

Knowledge of how earlier disasters have been handled is useful in an emergency. During the so called “trainchaos” 2009/2010 it turned out that such information was time consuming and very difficult to obtain. This is the motivation for this project, to gather knowledge, as the basis for handling of future disasters related to geohazards. In case of many of the most devastating events caused by certain climate conditions can the source of the weather be far away from Norway. Also, some of these weather patterns shall be described.

Objectives:

- To understand how climate change affects the frequency, intensity and distribution of extreme weather events.
- To gather today’s knowledge of how extreme weather conditions, affect railway infrastructure.
- To quantify vulnerability and socioeconomic importance of railway infrastructure.
- To determine which hedging measures will be most effective in terms of climate adaptation for the railway infrastructure.

Methodology:

The project focuses on natural disasters, the physical impacts - in this case of nature and technology, involving different material and temporal damage. It is usually recommended not to manipulate either the independent nor the dependent variables, so case study method was chosen for this study.

Parent Programmes:
Climate and Transportation

Institute type: Public institution
Institute name: Norwegian Public Roads Administration (Statens Vegvesen)
Funding type: Public (national/regional/local)

Partners:
- Jernbaneverket
- UIO

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Key Results:

- Main part of different incidents was in 2009/2010 directly related to train operating company as internal factor and is associated particularly with equipment faults which in many of the cases entails rolling stock of a railway. The situation what different agencies and companies have been facing in 2009/2010 is described well. Though, all that information was not available to the organizations/people involved, at that time. Project deals only with incidents related to geohazards presented as weather and landslide/landslide risk/notification.
- Main incidents on the railway network have occurred during 2009/2010 winter season and have been mostly related to equipment and infrastructure. Most of the events linked to geohazards have taken place during spring and summertime. The main incidents related to geohazards are caused by rockfalls, followed by debris flow or debris flood and snow avalanches. The rigging factors for the last three landslide types are very often linked to different weather events.
- Norwegian and foreign railway operators were unprepared for the severe weather conditions that occurred in 2009/2010. The response to weather challenges has been marked by improvised measures rather than pre-established routines.

Related Projects:

- Impacts of extreme weather events on infrastructure in Norway (InfraRisk)
- Related programme - Freight Transport and Logistics (Næringslivets transporter)
- Related programme - Climate and Transportation (Klima og transport)

Documents:

Simplified case study example “Natural Disaster and Environmental Disaster” (in Norwegian)

STRIA Roadmaps: Infrastructure
Transport mode: Rail transport
Transport sectors: Passenger transport, Freight transport
Transport policies: Societal/Economic issues, Safety/Security,
Geo-spatial type: Other