ERMOND - Ecosystem resilience for mitigation of natural disasters

Dr. **Gudmundur Halldórsson**, Research Coordinator, Soil Conservation Service of Iceland

Iceland's Presidency of the Nordic Council of Ministers 2014

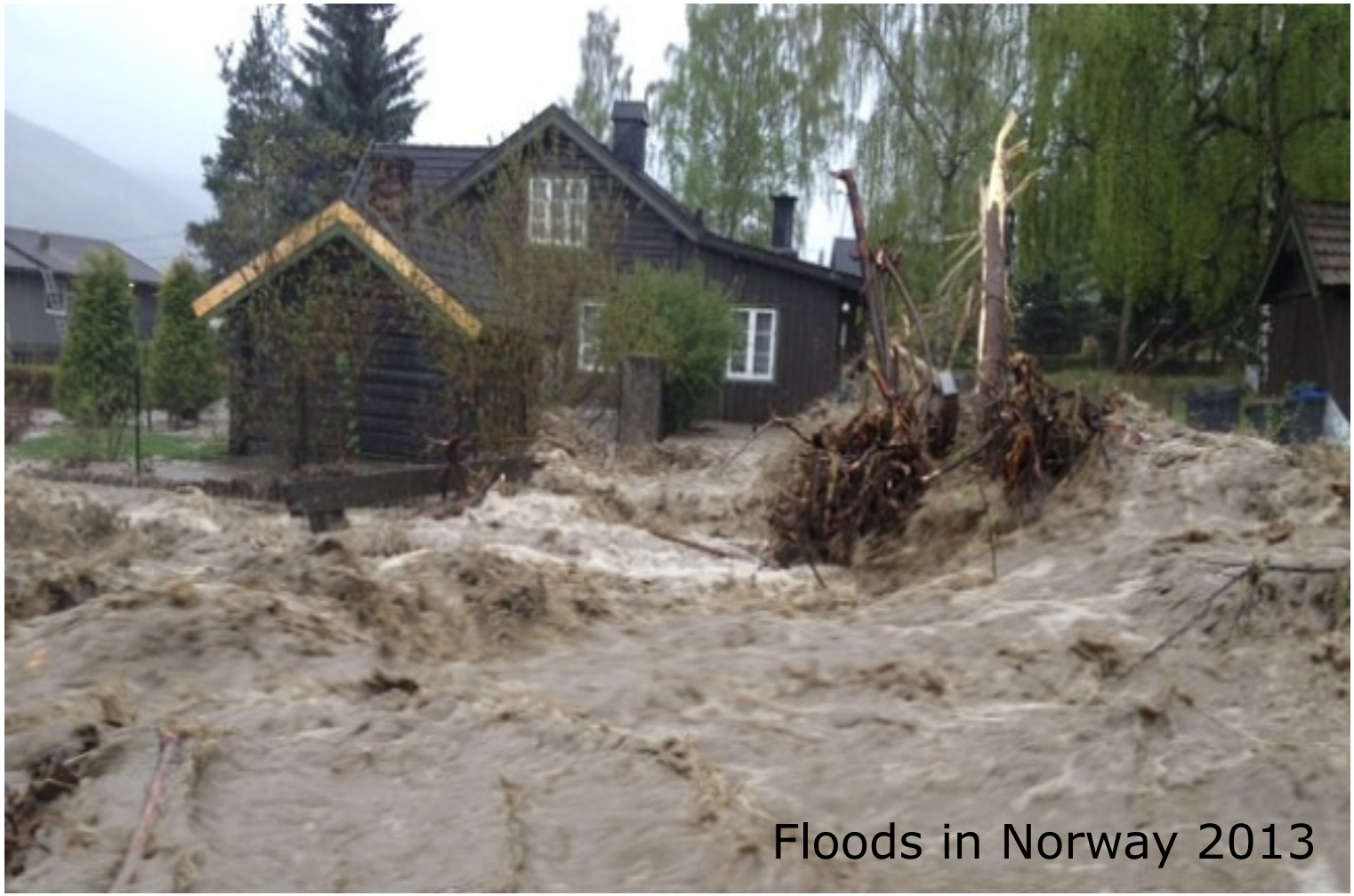
Project goal

Reduce effects of natural hazards thorugh stragetic build up of ecosystem resilience

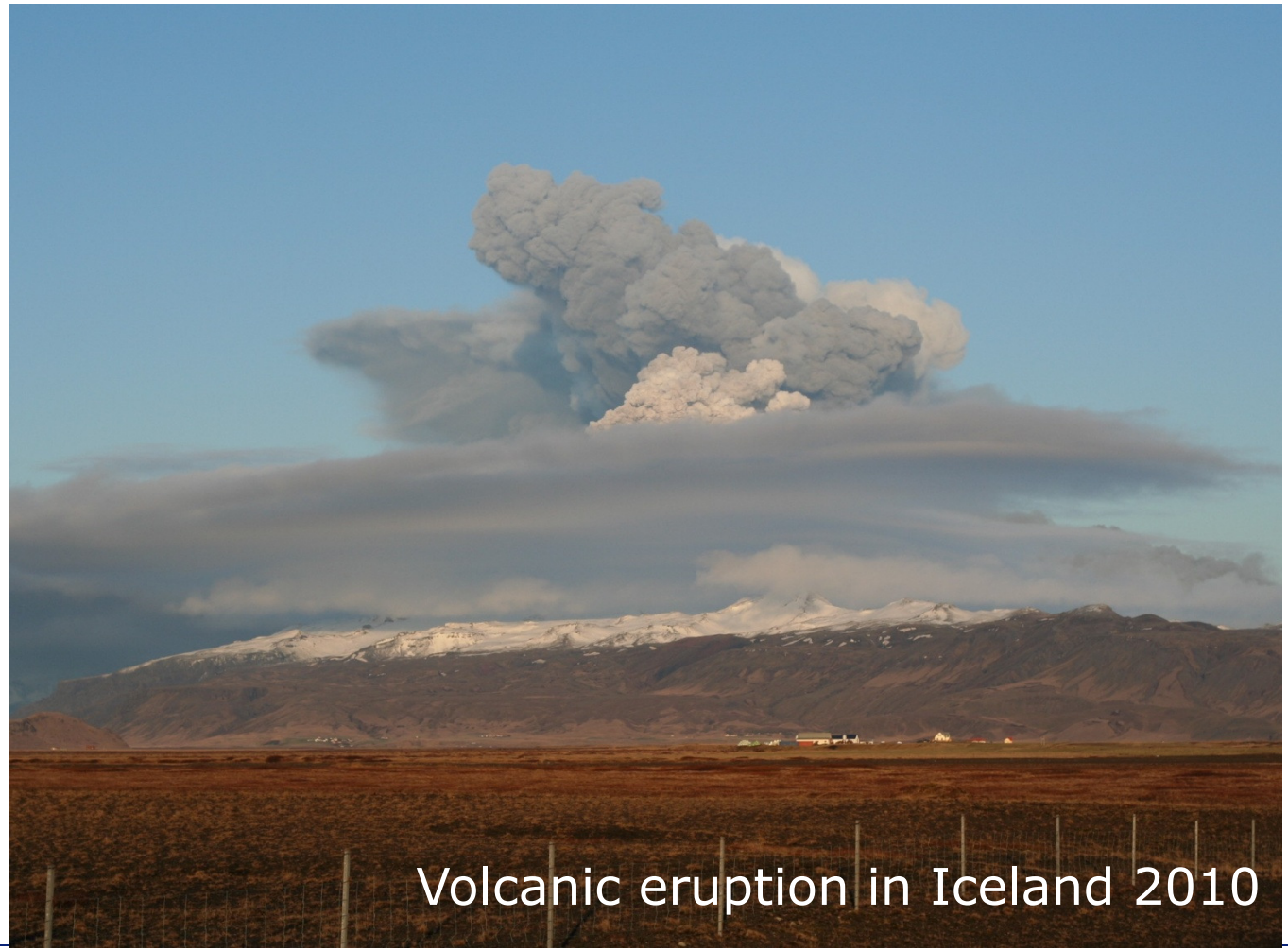
The project is expected to:

- affect Nordic and national policy on natural hazard risk management,
- affect strategies for build up and management of natural resources, and
- replace to a certain extent engineered risk reduction solutions with stragetic build up of ecosystem resilience.

NordBio



NordBio



Volcanic eruption in Iceland 2010

Background

Natural disasters are a major threat to all human societies and cause serious damage every year

- Natural disasters affect over 200 million people annually
- Frequency and damage of/by natural disasters is increasing
- Natural disasters have extensive effects in the Nordic countries,
  - e.g.: floods, extreme storms, volcanic eruptions

Background

➢"Healthy" ecosystems have the ability to mitigate the effect of natural disasters

➢Therefore, ecosystem restoration can reduce the effects of natural disasters

- protection forests reduce the risk of avalanches,
- wetlands reduce the risk of floods,
- woodlands protect against erosion, increase slope stability and stabilize tephra fall-out from volcanoes

Background

- The extensive ecosystem degradation which has occurred during the last decades has seriously reduced the resilience of ecosystems to such hazards.

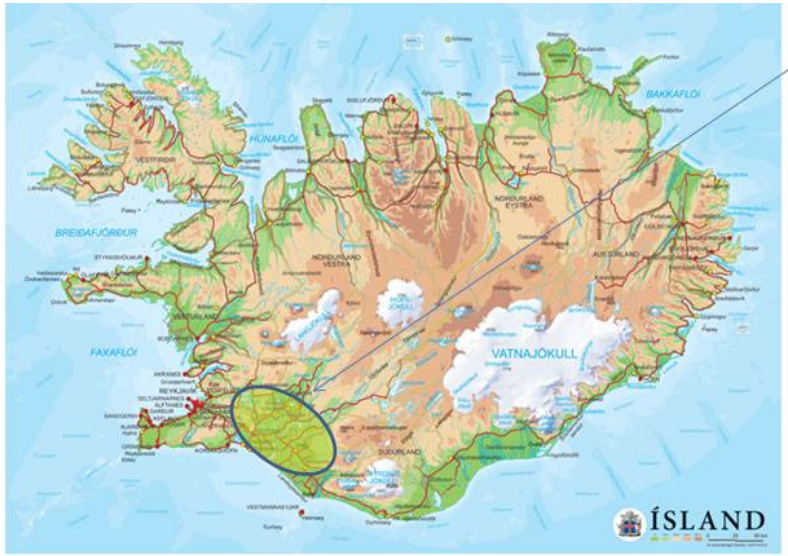
- Governments traditionally try to cope with disasters using warnings before disaster strikes, emergency relief after a disaster has occurred and engineered solutions, such as levees, to reduce the likelihood of a future disaster.

- The role of ecosystems in the context of disasters is perhaps the most overlooked component in disaster risk reduction and development planning.

Project outputs

- overview of:
    a. natural disasters in the Nordic region and
    b. how ecological restoration actions can be used to mitigate such hazards,
- feasibility case studies of strategic expansion of ecosystem resilience and
- recommendations of actions to enhance build-up of ecosystem resilience in the Nordic region

Case study



Case study area x: South Iceland

Resources – present & potential:

- Fish
- Nature (tourism)
- Agriculture (dairy and cereal production)
- Forestry

Natural hazards – present & potential:

- Volcanic eruptions
- Erosion
- Floods
- New pests & diseases

Other Nordic benefits

The project has the potential to strengthen:

- Nordic cooperation in the field of natural hazard risk management
- Activity plan for Nordic Aichi restoration
- Nordic influence on natural hazard risk reduction policy in EU and international context
- Nordic role in developmental aid through potental incorporation of build up of ecosystem resilience into the developmental aid programs

ERMOND and NordBio

- Reducing the effects of natural hazards on infrastructures, resources and society is important for Nordic bioeconomy

- Regional and national strategies for Nordic bioeconomy need to include strategies for risk management

- Stragetic build up of ecosystem resilience gives many "by-products" which are important for Nordic bioeconomy and environment

Project group

Country	*Institute*	*Participants*	*Field*
Iceland	Soil Conservation Service	Gudmundur Halldórsson	Project leader
Iceland	Soil Conservation Service	Anna María Ágústsdóttir	Natural hazards
Iceland	Agricultural University	Ása L. Aradóttir	Ecosystem restoration
Iceland	Agricultural University	Ólafur Arnalds	Natural hazards
Iceland	Icelandic Met Office	Sigrún Karlsdóttir	Natural hazards
Norway	Norwegian Inst. for Nature Res.	Dagmar Hagen	Ecosystem restoration
Norway	Norwegian Water Resourses & Energy Directorate	Aart Verhage	Natural hazards
Denmark	University of Copenhagen	Karsten Raulund-Rasmussen	Ecosystem restoration
Finland	METLA	Anne Tolvanen	Ecosystem restoration
Finland	Finnish Meteorological Institute	Adriaan Perrels	Natural hazards
Sweden	Umea University	Christer Nilsson	Ecosystem restoration