EEA Grants Programmes
Adaptation to Climate Change in Slovakia and Hungary
Study Trip to Bergen, Norway
June 24–27, 2014

Within the framework of an EEA Grants programme bilateral fund, the Norwegian Directorate for Civil Protection (DSB) and Norwegian Water Resources and Energy Directorate (NVE) organised a study tour related to climate change adaptation for the Hungarian and Slovakian programme areas. The chief aim of the event was to strengthen bilateral relations between Norway and the recipient countries, Hungary and Slovakia, while also providing an opportunity to exchange adaptation-related challenges and knowledge. The organisers selected the City of Bergen for hosting the study visit. Located on the western coast of Norway, Bergen has recently experienced a number of extreme weather events resulting in huge amounts of damage. Bergen has therefore initiated several measures to reduce risks and minimise damage from climate change.

There were four participants each from Hungary and Slovakia, representing the national-level fund/programme operator, present project partners and current call applicant. Bergen Municipality hosted the first day's proceedings; on day two, participants visited the Bjerknes Centre for Climate Research at the University of Bergen.

The municipal programme opened with some information about Bergen and its climatic conditions. Short presentations followed regarding climate adaptation challenges in Hungary and Slovakia. What emerged is that these various locales share a wide range of water-related problems—from flooding to drought—on a year-to-year basis. Bearing these concerns in mind, urban and regional development plans should acknowledge that "probable" impacts from climate change are in fact already visible. The increased frequency of heat waves has and will continue to take a greater toll on human health, and new viruses and bacteria will likely appear, resulting in new types of illness.

For their part, Municipality of Bergen representatives provided an impressive array of information about the city and its efforts to adapt to climate change. The City of Bergen, founded in 1070 and one of Europe's rainiest cities, has an understandably long tradition of surface water management. Existing water systems are about to reach the limits of their capacity, and present levels of rainfall intensity and more frequent flooding are only adding to the strain. Trip

participants also learned about how Bergen's water sector is organised—i.e. its main institutions, duties and responsibilities. The city pays a special attention to forging cooperation between water planners and urban planners. Another consideration is that storm water should be treated and put to some positive urban use. The city's water supply and sewage systems were also introduced, along with related technical and financial details. Finally, the "Bergen Master Plan" was revealed as a prime example of how a modern city should handle its water resources.

Bergen has a well-developed surface water management system, and appropriate development guidelines have been established. All development plans must include a plan for surface water management to deal with any contingency, such as storm water runoff, heavy flooding or pipe capacity overflow.

One of the biggest local challenges is to cope with the regular high tide at Bryggen, a favourite tourist destination. It was mentioned that projections for sea level rise need to be updated regularly in order to take proactive action to protect this popular area.

The next item on the agenda was a brief presentation of the MARE (Managing Adaptive Responses for Changing Flood Risks) initiative, which showcased some pilot projects as successful examples of improved water management in the region in partnership with Norwegian authorities, researchers and schools. One such outcome is a "climate-proofing toolbox", which provides guidance on how to design and operate urban drainage systems to deal with everyday events such as excessive rainfall, water runoff and flooding, as well as how to maximise opportunities for communities to reap unexpected benefits from such events. MARE has been grown into a new initiative called CAMINO (Climate Adaptation Mainstreaming through Innovation), the aim of which is to construct a new system to separate storm water from sewage water, and to build new escape routes for flood waters and torrential rainfall. Participants learned how to integrate these guidelines into urban planning schemes.

The municipality has regular contact and with the county and neighbouring communities to harmonise and coordinate water supply and management efforts. The "Green Roofs" project was mentioned as a natural and traditional means of enhancing water retention and reducing water runoff.

The first day concluded with a visit to the Svartediket water treatment facility, located near the city centre. Gathering several metres below the surface in a huge cave, participants viewed a massive set of water pipes and the technical facilities used for treating surface water for use as drinking water. Wholly automated, the system is supervised by two people.

The next day, participants visited the Bjerknes Centre for Climate Research. This renowned facility, which employs 150 scientists from 25 countries, contributes to IPCC reports and conducts research on, for example, reconstructing past climate conditions, carbon cycles, global climate modelling, regional downscaling, ice-sheet cover estimates and ocean stream intensity. Some observation results and research outcomes were presented, such as atmospheric CO_2 concentration measured at Mauna Loa (which recently exceeded a historical threshold of 400 ppm), yearly variation of global surface temperature, climate projections for the new IPCC scenarios, regional climate modelling outputs, and analyses of extreme events. It is evident that adaptation-related modelling is taking on greater urgency. Through close cooperation, the Centre

provides Hordaland County with hydro-meteorological estimates and information on water balance and water runoff simulations to investigate adaptation-related needs.

Representatives from Hordaland County briefly outlined their efforts and activities to cope with climate challenge. The Climate Action Plan came into being following extremely heavy rainfall in 2007 that resulted in enormous amounts of damage. It was stressed that cooperation between actors and different levels of administration across the country is vital. A public-private partnership (PPP) was established to increase climate action engagement in the region. Money is also being spent on education to increase public awareness of climate change and its effects.

The professional itinerary came to an end with a ride up the Floibanen funicular and a pleasing harbour cruise. The participants are extremely grateful to the organisers for their work in putting together an informative and memorable event in the City of Bergen.

Participants from Slovakia

Natalia Durkova, Government Office of the Slovak Republic
Simon Borisek, Government Office of the Slovak Republic
Zuzana Hudekova, representing Bratislava
Miroslav Hrib, representing Zvolen and Bardejov

Participants from Hungary

Judit Balint, Regional Environmental Center (REC)
Zsuzsanna Ivanyi, Regional Environmental Center (REC)
Peter Kajner, National Adaptation Center, Budapest
Gabriella Szepszo, Hungarian Meteorological Service

Participants from Norway

The Norwegian Directorate for Civil Protection (DSB)
Karl Kerner, Regional & Local Risk Management
Karen Lie, Regional & Local Risk Management

The Norwegian Water Resources and Energy Directorate (NVE)
Bjorn Aulie, International Section, Director General's Office
Bent Braskerud, Department of Hydrology