Case Studies for a Transatlantic Dialogue

Coasts

German Baltic

Timmendorfer Strand, Germany

Originally shaped by glaciers, the southern Baltic Sea coast is composed of easily erodible material and is gently subsiding. Its cliffs, low-lying bays and sandy beaches are exposed mainly to north-easterly winds, waves and storm surges eroding the shores. Timmendorfer Strand, one of the most desirable resort destinations in that region, has a population of ca. 8.800 people living at most 7 feet above sea level and a dominant coastal tourism sector. Though warming due to climate change favors seaside tourism in the Baltic region, negative effects are expected on water quality and beach width; in the long run sea-level rise will increase the risk of flooding. After years of discussion in the community and with funding from state and federal sources, the community recently decided to improve its coastal protection approach by reinforcing its shoreline promenade by a seawall surrounded with dunes; the latter formed naturally after beach replenishment measures.
Web: http://klimzug-radost.de/en and http://www.ecologic.eu/2926

Bay of Kiel, Germany

Until now, most costal defense along the German Baltic coast is focused on infrastructure protection against flooding; with respect to erosion and land loss problems, however, cities are hot spots of vulnerability. Most communities along the Bay of Kiel, with the state capital Kiel (population 250,000) at its southern end, are facing this problem. Kiel and 20 smaller communities formed a regional Climate Alliance to develop a coordinated approach to adaptation. Goals of the Alliance are to find joint answers to the high costs caused by coastal erosion, develop a climate-friendly tourism destination, educate residents about climate change and adaptation, reduce CO2 emissions, and lobby for the necessary financial and political support. Achievements to date include a feasibility study of using bicycle-carrying vehicles to create a more climate-friendly region; climate change Infotainment; discussions of retreat options for the community of Strande, public awareness raising and garnering support for a political declaration on creating a climate-resilient region.
Web: http://www.klimabuendnis-kieler-bucht.de/

U.S.Atlantic

Chesapeake Bay, United States

Sea level rise, permanent inundation, periodic flooding, and erosion as well as wetland losses are already significant challenges along the Chesapeake Bay and the open mid-Atlantic coastline. Thirteen islands have disappeared from the Bay due to relative sea-level rise. Existing problems will be aggravated by accelerating climate change, sea-level rise and continuing human development. Depending on location, sea level here has risen 1-2 feet (ca. 50 cm) since 1900 and is expected to rise at least this much again by 2050 (at twice the global average rate). The State of Maryland's response—one of two states with coastline on the Bay—has been progressive: Committed to using the best available science, the state has engaged in statewide adaptation planning and the governor has signed Executive Orders to help communities prepare for and become more resilient in the face of climate change impacts and extreme events and to build new construction in smarter ways.
Web: http://www.dnr.maryland.gov/climatechange/

North Carolina, United States

Some 200 miles (320 km) of narrow barrier islands strung together make up the Outer Banks off the coast of North Carolina and parts of Virginia. They shelter the wide coastal plains of the state and the extensive estuarine shorelines behind. Sea level along some parts of the coast has risen at about the global average rate, while other areas have seen close to 2 ft (60cm) of rise since 1900, due in part to land subsidence. While the state has one of the most progressive coastal zone management programs in the nation – demanding erosion-rate based setbacks and disallowing hardening of the shoreline, retreat in recent years has become more difficult as development has limited available space to move back to. Recent efforts to begin planning for sea-level rise have been opposed by development interests, forcing a more conservative approach to adaptation.
Web: http://dcm2.enr.state.nc.us/Hazards/slr.html

Mountains

European Alps

Virgen, Austria

Virgen is a small community located in East Tyrol, south of the main chain of the Alps. The main economic sectors are agriculture and tourism. Climate models suggest that by 2050 the average annual temperature could increase by about 2.5° C with a corresponding decrease in the snow cover duration by up to 30 - 50%. The community has good infrastructure and significant social capital. Challenges include aging population, outmigration of youth, limited financial resources, a scarcity of jobs, lack of local employment, need for commuting, and decreasing summer tourism. There has been extensive work on climate change mitigation.
Responses: Virgen is actively engaging with the challenges of climate change through awareness raising, optimizing early warning systems, and improving emergency services. In addition to installing irrigation and storage systems, it is exploring alternatives for agriculture and forestry, as well as the opportunities that result from the fact that in a hotter world, high altitudes are likely to be even more attractive for tourists.

Grindelwald, Switzerland

Grindelwald is a small rural village on the north side of the Central Alps of Switzerland; the region became a UNESCO World Heritage site in 2001, due to its remarkable natural landscape. With more than 1.1 million overnight stays per year the village is a touristic hot spot. Climate change in this region is mainly manifested by the extensive melting of the glacier, the loss of permafrost, landslide and rockfall hazards, as well as impacts on the montane ecology.
Responses:The measure presented at the workshop was an awareness-raising initiative using mobile phones to guide visitors on seven “climate paths” to show the impacts of climate change and to provide information on how to reduce CO_2 emissions.

Southern Rocky Mts.

Aspen, CO & Roaring Fork Valley, United States

The Roaring Fork Valley, situated in the Southern Rocky Mountain in western Colorado, USA includes the affluent resort community of Aspen. Until the silver market crash at the end of the 19th century, Aspen was a thriving silver mining community. Today, summer and winter tourism along with year-round cultural and athletic events drives the local economy. Changes in the timing and availability of water, including alterations to snowfall and snowpack, are the most significant risks to the Roaring Fork Valley. For instance, existing variability in snowfall, as well as temperature-driven changes in the fraction of precipitation coming as rain versus snow, will pose impacts to winter and summertime recreation as well as downstream agricultural and metropolitan water users. Forest ecosystems that dominate the landscape in this region are also undergoing change, including pressures from insect and disease agents as well as altered fire regimes.
Responses: Response strategies to natural variability in the arid mountain regions of the West have included the past construction of reservoirs for water storage and electricity production, development of snowmaking infrastructure for skiing resorts, as well as a complex legal framework for allocating water rights. In light of climate change, additional capacity in water storage and snowmaking infrastructure is contemplated along with more careful management of water demand through efficiency improvements. Additional transformative changes are envisioned, such as expanding recreational offerings beyond the traditional summer and winter time seasons (e.g. encouraging an earlier rafting season) and new legal frameworks that incentivize water conservation and other practices that enhance resiliency to variability and extremes.

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