

CLIMATE CHANGES IN THE FAROE ISLANDS

The Faroe Islands have a very characteristic oceanic climate with small mean-temperature differences (~10°C) between summer and winter. The country is subject to frequently occurring cyclones entailing rainfall and storms or hurricanes. High wind speeds, gusts and hurricanes are common during winters, but storms and gusts can also occur during summers, albeit at a much lower frequency compared to winters.

Based on global climatic models and the standard-normal period 1961-1990, projections for the 30-year period 2071-2100 have yielded the following general pattern for the climate in the Faroe Islands (Denmark's Sixth National Communication, 2013):

- A rise of around 3°C in annual mean temperature, with only a slight difference in the temperature rise in summer and winter.
- A rise in winter precipitation of about 30%, but only slight or no increase in the summer.

However, a standard-normal period of 30 years is a relatively short time of reference when discussing climate change (Cappelen and Laursen, 1998), and this should be kept in mind when considering this projection.



Climate change management and adaptation project

As a member of a group of partners in some of the Nordic countries and certain regions of the United Kingdom and Ireland, the University of the Faroe Islands have commenced a project in autumn 2017 on climate change – with key focus on preparedness, adaptation, and mitigation. The aim of the programme is to tackle climate change on local and regional levels through increasing public awareness and by using models of best practice to develop climate adaptation plans for local authorities. The project will also develop a preparedness scale matrix for local authorities.

This will be done by analysing and evaluating existing climate-change data and issues. The climate adaptation plans developed within the project will seek to identify the risks and vulnerabilities posed by climate change in the short, medium and long terms and will serve as a valuable input as to developing a community resilience to a changing climate.

The project will build solutions to maintain the balance between competing environmental, economic and social interests, and explore models for monetary valuation of climate change adaptation, audit of the economic value in developing the plans and the potential economic costs of not acting, i.e. pay now for preventative measures or pay later following the impacts of climate change.

In addition to the university there is also the **power company SEV**, which is an inter-municipal community, owned by all the municipalities in the Faroe Islands. As the main supplier of energy in the country, SEV has approached the challenge of providing sustainable energy by building extensive hydropower installations, along with wind power installations to make the Faroese energy supply much more sustainable. Of SEV's total annual electricity production, 60% is derived from water and wind, while the oil-fired thermal power plants account for the remaining 40%. SEV has a green profile strategy aiming at becoming 100% green by 2030.

Tórshavn municipality, the biggest municipality in the Faroe Islands, is also a participating partner. The municipality has a population of roughly 21,000, which equates to about 42% of the total population of the Faroe Islands. The municipality has a strong focus on the environment.

TÓRSHAVNAR
KOMMUNA



Cappelen, J., and Laursen, E. V. (1998) *The climate of the Faroe Islands – with Climatological Standard Normals, 1961 – 1990*. Danish Meteorological Institute Technical Report 98-14. 62 pp.

Cappelen, J., Jørgensen, P. V., Heinesen, S. P., Poulsen, J., Heinesen, R. (2001) *Onshore Climate Review for the Faroe Islands – Including comments on building practices and relevant codes*. Faroese GEM Joint Industry Project. 65 pp.

Dahl, M-P. J.; Jensen, N. H.; Veihe, A.; Mortensen, L. (2013) Magnitude-frequency characteristics and preparatory factors for spatial debris-slide distribution in the northern Faroe Islands. *Geomorphology* 188, p. 3-11.

Denmark's Sixth National Communication on Climate Change and Denmark's First Biennial Report under the United Nations Framework Convention on Climate Change and the Kyoto Protocol (2013) Danish Ministry of Climate, Energy and Building.

SWOT analysis

The SWOT analysis sheds light on various aspects of climate changes, strengths and weaknesses in the current situation, as well as possible advantages and disadvantages related to climate changes.

Strengths

Thanks to prolonged climate measurements in the Faroe Islands, undertaken by Denmark's Meteorological Institute, and later also by the Faroese Department of Public Works, we are in the possession of climatological data series and normals, mainly from 1961 onwards, but also a more general description of weather and climate from the beginning of 1920s.

Weaknesses

However, great care must be taken when comparing 1961-1990 values with 1931-1960 values (standard-normal 30-year periods) as several observation sites have been relocated and a number of meteorological instruments have been changed. This could easily introduce artificial trends into the material, masking natural trends. Furthermore, the erection of new buildings, mainly in Tórshavn, in the vicinity of measuring sites can give misleading comparisons of data before and after the erections (particularly of wind data).

Opportunities

Warmer summers can bring along opportunities to grow new sorts of crops, as well as benefit a growing tourism industry. Warmer sea waters may have a positive effect on growth in the ocean and give rise to new fish species, which in turn creates new opportunities for the industry (though this can be at the expense of the migration of current fish species). Recent years have shown a dramatic increase of pelagic fish species in Faroese waters. Changing flora and fauna (particularly birds and insects) on land may also yield new opportunities. More rain and wind can have a beneficial effect on the production of sustainable power.

Threats

More extreme weather mainly in the form of increased wind speeds and more precipitation, which can be expected during winters, can have serious consequences for a wide range of affairs in the society. In addition to what has been mentioned above, under Climate related risks, hazards and issues, this will make it necessary to reassess the currently used standards for construction. No building codes are formally in force for the Faroe Islands. Danish codes have been used in practice, with respect for the differences between the Danish and the Faroese climate. Codes for materials (steel, concrete, timber etc.) are used directly (Cappelen et al., 2001). The main concern with buildings in the Faroes is the extreme wind climate, which varies significantly from place to place, and the combination of wind and rain climate.

Climate related risks, hazards and issues

The project will look into the following topics:

Landslides: The risk of increased landslides due to increased precipitation. There are already indications on vulnerabilities due to land use that is related to sheep density in particular (Dahl *et al.*, 2013)

Erosion: Increased erosion (of both rock and soil) may result from increased precipitation, as it leads to more extensive and powerful run-offs, lake streams and waterfalls, increased winds leading to rougher seas, which will have an increased damaging effect on land and, particularly, coastal areas.

Change in fishery: The fishery may change due to a shift in sea temperature and/or changed ocean currents. In recent years, the most economically important fish stocks have changed from being dominated by demersal fish species to pelagic fish species.

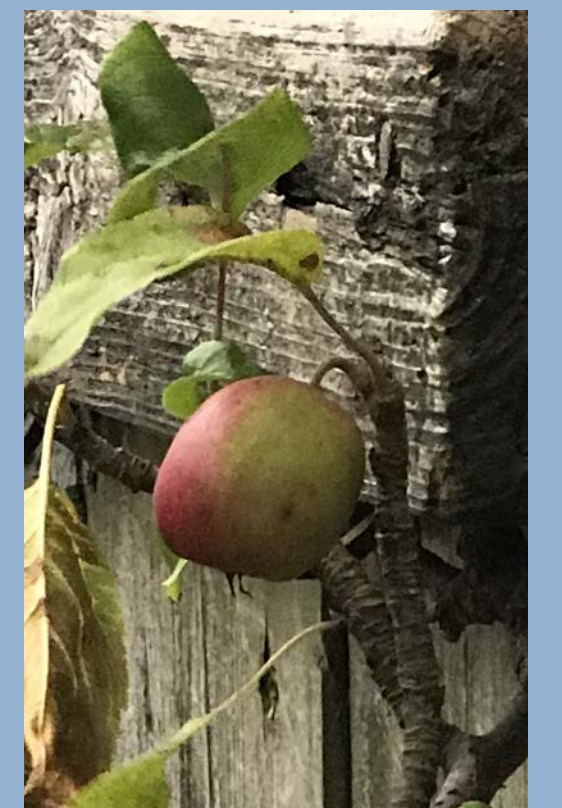
Precipitation: An increase in precipitation will induce increased pressure on the existing drain and sewerage systems, which may become a big challenge for the municipalities.

Storms and construction: More extreme weather will entail new or different challenges to construction. This needs to be considered even if construction in the Faroe Islands in general is strong and built to withstand extreme weather.

New terrestrial plants and animals: Occurrence of new species are recorded in the Faroe Islands at regular intervals, but there are no publications available on these new findings yet.

New plant and animal diseases: As new species and breeds are recorded, new diseases are expected, but there is no official registration of occurrences.

Coastal management: Measures to protect buildings, roads and harbours from rising sea levels in conjunction with extreme weather.



A tiny apple growing in Tórshavn might indicate a change both with regard to growth conditions and available pollinators.

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