ADAPT
NORTHERN HERITAGE
TOOLKIT

Information sources

*for climate risk management
of northern historic places*

Acknowledgements

Editors

Version

Disclaimer

www.adaptnorthernheritage.org

Contents

Cover image

The project Adapt Northern Heritage organised site workshops and visits to its case study Ballinskelligs Abbey and Ballinskelligs Castle during the summers of 2018 and 2019 to discuss the impacts of climate change and start discussions about their adaptation. The front cover depicts the 2018 site visit, guided by the Office of Public Works and Kerry County Council.

Image © Historic Environment Scotland | photographer: Carsten Hermann

INTRODUCTION

Finding authoritative and reliable information to inform risk management for cultural heritage affected by climate change can be a complex and tedious task. Such information is required for the risk management process described in the guide for *Assessing Risks and Planning Adaptation*, developed by the project Adapt Northern Heritage. Together with other publications, this guide and the *Information Sources* form the Adapt Northern Heritage Toolkit, which is freely available to support northern communities to better understand the impacts of climate change on their historic places and start discussions about their adaptation to make them either more resilient to the impacts or manage their loss.

The *Information Sources* list relevant online portals, publications and data publishers for select northern countries. Where possible, guidance is also provided on the use of climate projection scenarios. The information is listed country by country, with a special chapter on *International and European* sources, which also includes select references to recently completed or active demonstration and research projects.

Other publications of the project Adapt Northern Heritage include *Adaptation Stories* and *Conservation Factsheet* as well as the proceedings and presentation videos of the project's international, virtual conference.

INTERNATIONAL AND EUROPEAN

Research and demonstration projects

CHERISH

CHERISH (Climate, Heritage and Environments of Reefs, Islands and Headlands) is an exciting, 6 year European-funded Ireland-Wales project between the Royal Commission on the Ancient and Historical Monuments of Wales, the Discovery Programme: Centre for Archaeology and Innovation Ireland, Aberystwyth University: Department of Geography and Earth Sciences and Geological Survey, Ireland. The project will receive €5.1 million through the Ireland-Wales 2014-2020 Programme.

http://www.cherishproject.eu/en/

C.L.I.M.A.T.E.

Collaborative learning initiative managing and adaption to the environment (CLIMATE)

http://climate.interreg-npa.eu/

Climate for Culture

"high resolution climate models are developed during the project which, for the first time, are coupled with whole building simulation tools" "using the regional model REMO, developed at the Max Planck Institute for Meteorology".

http://www.climateforculture.eu/

CoastAdapt

CoastAdapt is an information delivery and decision support framework. It is for anyone with an interest in Australia's coast, the risks it faces from climate change and sea-level rise, and what can be done to respond to those risks.

CoastAdapt contains information and guidance to help people from all walks of life understand climate change and the responses available to manage the impacts. Although there is a focus on Australia's coastal regions, CoastAdapt also links the user to climate change resources on the NCCARF website and beyond that are relevant to Australia more broadly.

www.coastadapt.com.au

CultCoast

The CULTCOAST project will address cultural heritage sites, environments and landscapes in Arctic coastal areas. The aim is to find methods to monitor, manage and preserve these environmental goods that are exposed to threats from climate change and development pressure.

Climate is changing. High North areas suffer more from combined threats and have previously been well protected by permafrost and sea ice. Heritage sites there are also exposed to increasing stress from tourism and development.

The researchers will map, monitor and gather input from selected sites above and below the ground, on Svalbard and Andøya. The information will be used to develop methods to

evaluate and prioritize sites. Furthermore, we will develop mitigation and adaptation measures and management strategies related to coastal cultural heritage sites, environments and landscapes. To achieve this the project has a interdisciplinary approach combining archaeology, building protection, geography, quaternary geology and climate science.
https://www.niku.no/en/prosjekter/cultcoast/

Noah's Ark
Global climate change impact on built heritage and cultural landscapes
http://cordis.europa.eu/docs/publications/1247/124722791-6_en.pdf

REMAINS of Greenland
REsearch and Management of Archaeological sites IN a changing environment and Society
Climate change is leading to an accelerated destruction of archaeological sites in the Arctic. REMAINS will improve the understanding of processes controlling the preservation of archaeological sites in Greenland and provide research-based tools that can be used for locating and managing sites at risk.
www.remains.eu

Information portals

Arctic Spatial Data Infrastructure
The Arctic SDI is a collaborative partner-based effort of the National Mapping Agencies Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden and USA to (1) to lead and guide the development of an Arctic Spatial Data Infrastructure and (2) provide open access to a coherent and authoritative Arctic reference map and thematic Arctic data through the publication of selected data from their respective holdings and from other sources.
https://arctic-sdi.org/

ClicC
Climate Change Portal for Copernicus
http://www.clipc.eu/

Climate Adapt web portal
European Climate Adaptation Platform
http://climate-adapt.eea.europa.eu/knowledge/tools

HEREIN System
The HEREIN System is a tool to collect data and information related to financing mechanisms, legislations, documentation systems, integrated conservation strategies and awareness-raising actions among others. This data base is complemented by a unique multilingual HEREIN Thesaurus containing over 500 terms and concepts in the 14 languages presently available.
https://www.coe.int/en/web/culture-and-heritage/herein-heritage-network

Regional Climate Model (REMO)
Climate Service Center Germany, Helmholtz-Zentrum Geesthacht
http://www.remo-rcm.de/

Climate Adapt
Sharing Adaptation information Across Europe
https://climate-adapt.eea.europa.eu/

European Forest Fire Information System
The European Forest Fire Information System (EFFIS) supports the services in charge of the protection of forests against fires in the EU countries and provides the European Commission services and the European Parliament with updated and reliable information on wildland fires in Europe.
https://effis.jrc.ec.europa.eu/

MeteoAlarm
European online portal to congregating extreme weather alerts
https://www.meteoalarm.eu/

European Environment Information and Observation Network
https://www.eionet.europa.eu/

Publications by organisations

Canadian Conservation Institute
The Canadian Conservation Institute (CCI), a Special Operating Agency within the Department of Canadian Heritage, advances and promotes the conservation of Canada's heritage collections through its expertise in conservation science, treatment and preventive conservation. CCI works with heritage institutions and professionals to ensure these heritage collections are preserved and accessible to Canadians now and in the future.
https://www.canada.ca/en/conservation-institute.html
For publications, see ICCROM

Getty Conservation Institute
The Getty Conservation Institute (GCI) works internationally to advance conservation practice in the visual arts—broadly interpreted to include objects, collections, architecture, and sites. The Institute serves the conservation community through scientific research, education and training, field projects, and the dissemination of information. In all its endeavours, the GCI creates and delivers knowledge that contributes to the conservation of the world's cultural heritage.

Lecture on material science for architectural conservation
Getty Conservation Institute
https://www.getty.edu/conservation/publications_resources/pdf_publications/pdf/torraca.pdf

ICCROM

International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM)

ICCROM is an intergovernmental organization working in service to its Member States to promote the conservation of all forms of cultural heritage, in every region of the world. It operates in the spirit of the 2001 UNESCO Universal Declaration on Cultural Diversity, which states that "Respect for the diversity of cultures, tolerance, dialogue and cooperation, in a climate of mutual trust and understanding are among the best guarantees of international peace and security."

www.iccrom.org

A guide to risk management of cultural heritage
Canadian Conservation Institute and ICCROM
https://www.iccrom.org/wp-content/uploads/Guide-to-Risk-Managment_English.pdf

Intergovernmental Panel on Climate Change

The Intergovernmental Panel on Climate Change (IPCC) is the United Nations body for assessing the science related to climate change.

The IPCC prepares comprehensive Assessment Reports about knowledge on climate change, its causes, potential impacts and response options. The IPCC also produces Special Reports, which are an assessment on a specific issue and Methodology Reports, which provide practical guidelines for the preparation of greenhouse gas inventories.
https://www.ipcc.ch/reports/

Europa Nostra

Europa Nostra is the European voice of civil society committed to safeguarding and promoting cultural and natural heritage. Europa Nostra campaigns to save Europe's endangered monuments, sites and landscapes, in particular through the 7 Most Endangered programme. It celebrates excellence through the European Heritage Awards / Europa Nostra Awards. Europa Nostra actively contributes to the definition and implementation of European strategies and policies related to heritage, through a participatory dialogue with European Institutions and the coordination of the European Heritage Alliance 3.3.
https://www.europanostra.org/

European Union

The European Union is a unique economic and political union between 27 EU countries that together cover much of the continent. The EU has delivered more than half a century of peace,

stability and prosperity, helped raise living standards and launched a single European currency: the euro. More than 340 million EU citizens in 19 countries now use it as their currency and enjoy its benefits.

The atlas of climate change impact on European cultural heritage: Scientific analysis and management strategies.
https://op.europa.eu/en/publication-detail/-/publication/3de7d536-d2bd-463d-b40d-684b067ae7ee

Overview of Disaster Risks that the EU faces: Internal assessment based on JRC databases
Joint Research Centre of the European Union
https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/overview-disaster-risks-eu-faces-internal-assessment-based-jrc-databases

UNESCO World Heritage Centre

The World Heritage Centre is the focal point and coordinator within UNESCO for all matters related to World Heritage.

The Centre organises the annual sessions of the World Heritage Committee and its Bureau, provides advice to States Parties in the preparation of site nominations, organises international assistance from the World Heritage Fund upon request, and coordinates both the reporting on the condition of sites and the emergency action undertaken when a site is threatened. The Centre also organises technical seminars and workshops, updates the World Heritage List and database, develops teaching materials to raise awareness among young people of the need for heritage preservation, and keeps the public informed of World Heritage issues.

World Heritage and Tourism in a Changing Climate
UNESCO World Heritage Centre: Report 22
https://whc.unesco.org/en/activities/883/

Policy document on the impacts of Climate change on World Heritage
UNESCO World Heritage Centre: Report 22
https://whc.unesco.org/en/CC-policy-document/

Climate change and World Heritage
UNESCO World Heritage Centre
https://whc.unesco.org/en/series/22/

Practical guide on Climate Change Adaptation for Natural World Heritage Sites
UNESCO World Heritage Centre: Paper 37
https://whc.unesco.org/en/series/37/

Information sources

Adapting to change: The state of conservation of World Heritage forests in 2011
UNESCO World Heritage Centre: Paper 30
https://whc.unesco.org/en/series/30/

Case Studies on Climate Change and World Heritage
UNESCO World Heritage Centre: Paper 30
https://whc.unesco.org/en/activities/473/

Managing Disaster Risks for World Heritage
UNESCO World Heritage Centre: Report 22
https://whc.unesco.org/en/managing-disaster-risks/

Policy for the Integration of a Sustainable Development Perspective into the Processes of the World Heritage Convention
UNESCO World Heritage Centre, Report 22
https://whc.unesco.org/document/139747

ALASKA

Introduction

Alaska has a rich and ancient cultural heritage with to which numerous contemporary indigenous Alaska Native groups maintain active connections. Alaska has low population density and little developed land and infrastructure, which results in a well-preserved archaeological record. Historical era remains relate to mining, commercial fishing, fur industry and WWII. Major landowners/land managers in Alaska are the federal government (incl. national parks and wildlife refuges), state government, and Alaska Native corporations. Threats to heritage resources from climate change are significant, widespread, and increasing and include processes such as coastal erosion, loss of permafrost, and changes to wildland fire regimes. No state-wide strategy for climate change response exists, leaving land managers to pursue individual response plans.

National governance framework

National governmental organisations

Major federal government land managers in Alaska include Bureau of Land Management, National Park Service, Fish and Wildlife Service, and each also has research and monitoring capabilities (employing cultural resource managers, archaeologists, historians, historic architects, climatologists, etc.). Other agencies such as the U.S. Geological Survey supply information and expertise, but do not manage resources.

Climate projections and weather observations

Recommendation for the use of climate projections

- Alaska has recently experienced profound environmental change related to extreme weather events and deviations from the historical climate.
- Temperatures have been consistently warmer than at any time in the past century.
- Coastal flooding and erosion is increasingly damaging due to loss of sea ice, which in the past has served as a buffer to ocean storms.
- Permafrost is warming in Alaska. The large thaw depths in recent years are consistent with high air temperatures of the 2016–2018 period.

Alaska's Changing Environment: Documenting Alaska's physical and biological changes through observations - https://uaf-iarc.org/our-work/alaskas-changing-environment/

Relevant information sources

National Park Service Arctic Inventory and Monitoring Network, Climate Vital Sign
https://www.nps.gov/im/arcn/climate.htm

Alaska's Changing Environment: Documenting Alaska's physical and biological changes through observations
https://uaf-iarc.org/our-work/alaskas-changing-environment/

Scenarios Network for Alaska and Arctic Planning, University of Alaska Fairbanks
https://www.snap.uaf.edu/

Hazards

Coastal erosion – this is an acute issue in northern Alaska where warming climate has reduced sea ice cover and thawed permafrost, making coastlines vulnerable to dramatically increased rates of erosion.

Permafrost thaw/instability – warming climate is triggering permafrost thaw and subsequent ground instability, erosion, changes to hydrology, and increased erosion.

Changes to wildland fire regimes – increased fire frequency and intensity in some areas, shifting zones of wildfire occurrence

Cultural heritage information

Information sources on historic environment conservation

Climate change scenario planning for Alaska Region National Park Service Units (link)

Jones, B.M., Hinkel, K.M., Arp, C.D. & Eisner, W.R.. 2008. Modern erosion rates and loss of coastal features and sites, Beaufort Sea coastline, Alaska. *Arctic* 61: 361–72.

Jensen, A.M. 2017. Threatened heritage and community archaeology on Alaska's North Slope, in Dawson, T., Nimura, C., López-Romero, E. & Daire, M.-Y. (ed.) *Public archaeology and climate change*: 126–37. Oxford: Oxbow.

Collaborative Research Projects Investigate Impacts of Climate Change on Arctic Archaeology
https://www.arcus.org/witness-the-arctic/2014/1/article/20437

Online maps of historic environment data

Alaska Heritage Resources Survey Cultural Resources Record Density Map
http://dnr.alaska.gov/parks/oha/ahrs/useragreeform.htm

A Survey of Human Migration in Alaska's National Parks through Time
https://www.nps.gov/articles/aps-17-1-2.htm

Satellite data record shows climate change's impact on fires
https://www.eurekalert.org/pub_releases/2019-09/nsfc-sdr091019.php

New permafrost map shows regions vulnerable to thaw, carbon release
https://phys.org/news/2016-10-permafrost-regions-vulnerable-carbon.html

IRELAND

Introduction

Ireland is an island west of the United Kingdom. It is about 302 miles long and 170 miles wide, which covers approx. 32,600 square miles.

Ireland has 32 counties – 26 in the Republic of Ireland and 6 in Northern Ireland. There are about 6 million people living on the island – 4.3 million people live in the Republic of Ireland and 1.7 million in Northern Ireland.

The Republic of Ireland is a parliamentary democracy with a president as head of state.

National governance framework

National governmental organisations

Irish Government
https://www.gov.ie/en/

Climate projections and weather observations

Recommendation for the use of climate projections

Climate and adaptation information on portal of Climate Ireland
This *climate information platform* provides (spatial) data on climate observation and projections, select natural hazards, risk assessments and adaptation planning. Sectoral information about adaptation planning includes the sector Tourism and Heritage.
https://www.climateireland.ie/

Research performed by or for the Environmental Protection Agency
The Environmental Protection Agency is at the front line of environmental protection and policing. They ensure that Ireland's environment is protected and monitor changes in environmental trends to detect early warning signs of neglect or deterioration.
http://www.epa.ie/pubs/reports/research/climate/

Irish Met Office (Met Eireann)
www.meterieann.ie

Relevant information sources

Department of Communications, Climate Action & Environment
The Department of Communications, Climate Action and the Environment is responsible for the delivery of policies and programmes in several areas and must ensure that all of the policies are in line with EU and global obligations.
https://dccae.gov.ie/en-ie/climate-action/Pages/default.aspx

Irish Government
https://www.gov.ie/en/category/environment/

Environmental data on the Geoportal of the Environmental Protection Agency
The geoportal is designed to make data about the environment easier to find, browse and understand.
http://gis.epa.ie/

Valentia Observatory Daily Datasets (Met Eireann)
Daily weather records from Valentia Observatory January 1942 to the present
https://data.gov.ie/dataset/valentia-observatory-daily-data

Met Eireann Datasets
Climatic and weather data including daily, monthly, annual and historic datasets as well as long term data relating to precipitation etc
https://www.met.ie/climate/available-data

Hazards

Flood maps portal of Office of Public Works
Flood Hazard Maps show information on a map about places that may be at risk from flooding.
http://www.floodmaps.ie/

Cultural heritage information

Information sources on historic environment conservation

Built Heritage & Architectural Policy Unit (Dept. Culture, Heritage & the Gaeltacht)
Strategies, initiatives and publications by state unit charged with conservation of built heritage
https://www.chg.gov.ie/about/information-requests/freedom-of-information/foi-publications-scheme/services-provided-by-the-department/built-heritage-and-architectural-policy-unit/

Conservation Projects & Programmes (Heritage Council)
https://www.heritagecouncil.ie/projects/conservation

Department of Communication, Climate Action and Environment
https://www.dccae.gov.ie/en-ie/climate-action/topics/adapting-to-climate-change/national-adaptation-framework/Pages/default.aspx

Online maps of historic environment data

Geological Survey Ireland (GSI)
Wide range of datasets from bedrock, quaternary, groundwater, marine, geological heritage, to geotechnical, minerals, geophysics, geochemistry and geohazards.
https://www.gsi.ie/en-ie/data-and-maps/Pages/default.aspx

Geo-hive (GSI, NMS etc.)
Wide range of geological, historical datasets and maps
http://map.geohive.ie/mapviewer.htmlhttp://map.geohive.ie/mapviewer.html

Archaeological Survey of Ireland (National Monuments Service)
Map viewer showing all recorded archaeological monuments and nationally listed protected structures
https://webgis.archaeology.ie/historicenvironment/

Heritage Maps (Heritage Council)
Online map viewer with wide ranging datasets on all aspects of heritage and conservation
https://www.heritagemaps.ie/WebApps/HeritageMaps/index.html

NORWAY

Introduction

The politics on how to deal with climate change differs from country to country.

The information on expected climate change and on associated hazards are developed and presented in different ways and on different web pages in our countries. Therefore, we have developed National appendix.

On what level do you need data?

How detailed data on climate scenarios depends upon how detailed your assessment is planning to be. You may also go into more detail on the challenges most relevant for your site.

It is also sensible to keep in mind what timeframe is most relevant for you. Maybe you should consider using a couple of timeframes; one short time and one with a longer perspective. This can be relevant when considering when to conduct adaptation measures and how comprehensive adaptation measures should be at a certain time.

National Guidelines

National governmental organisations

In Norway it is decided to use high alternative scenarios. Climate change is an important basis for society's adaptation to climate change. To be well prepared, the government wants work on climate change adaptation to be based on high alternatives from the national climate changes scenarios when assessing the consequences of climate change.

The Directorate for Social Security and Emergency Planning (DSB) shall provide an overview of risk and vulnerability in society. They are working on preventing accidents, crises and other unwanted incidents, and shall ensure good preparation and effective accident and crisis management. DSB issues guidelines and information on emergency preparation, planning etc.

The "Klimahjelperen" is a guide in how to safeguard social security in planning. It also contains good overview of available information related to various climate-related hazards.
https://www.dsb.no/globalassets/dokumenter/veiledere-handboker-og-informasjonsmateriell/veiledere/klimahjelperen.pdf

Veileder til helhetlig risiko- og sårbarhetsanalyse i kommunen (Guide for comprehensive risk and vulnerability assessment in the municipalities) gives an overview of the municipality's duty

related to emergency preparation. In addition, it introduces ROS methodology that may interesting to people other than the municipalities.
https://www.dsb.no/veiledere-handboker-og-informasjonsmateriell/veileder-til-helhetlig-risik og-sarbarhetsanalyse-i-kommunen/

Information on Climate Change

There are a wide range of sources of information on expected climate change and associate hazards. The main sources in Norway are:

Klimaservicesentret - Norwegian Centre for Climate Services (NCCS).
https://klimaservicesenteret.no/
The main objective of the NCCS is to provide a basis for climate change adaptation in Norway a facilitates and communicates climate and hydrological data so that they can be used for clim adaptation and in further research on the consequence of climate change on nature and socie *Climate profiles* for the counties provide a concise summary of the current climate, expec climate change and climate challenges for each county.

Klimaprojections is calculations on how climate will be in the future. Here you may choose clim driver, national climate change scenario, period and geographical area.
https://klimaservicesenteret.no/faces/desktop/scenarios.xhtml

Klimatilpasning.no - The Norwegian Climate Change Adaptation Portal
http://www.klimatilpasning.no/
The Norwegian portal for climate change adaptation (CCA) is intended to support the society Norway in preparing for the consequence of climate change. The portal offers comprehens information about ongoing work on climate change adaptation in Norway, lessons learned a relevant research, developments and publications. The portal provide knowledge, guidance a sharing of experiences of climate change adaptation.

The guide "*Sea level rise and storm flow*" DSB provides an introduction to the municipalities' w in this area and gives an overview of the expected sea level and storm flow in Norweg municipalities.
http://www.dsbinfo.no/DSBno/2016/Tema/havnivaastigning-og-stormflo/?page=1

Kartverket – Norwegian mapping Autority gives an oportunity to see anticipated sea level rice your municipality :https://www.kartverket.no/sehavniva/

Climate Change Adaptation in Norway (White Paper 33) (2013)

In English:
https://climate-laws.org/rails/active_storage/blobs/eyJfcmFpbHMiOnsibWVzc2FnZSI6IkJBaHBcDhLIiwiZXhwIjpudW xsLCJwdXIiOiJibG9iX2lkIn19--3ae56dae347387db1b28d74c309849f18d6542dd/1518%20English.pdf

In Norwegian:
https://climate-laws.org/rails/active_storage/blobs/eyJfcmFpbHMiOnsibWVzc2FnZSI6IkJBaHBBcDRLIiwiZXhwIjpudWxsLCJwdXIiOiJibG9iX2lkIn19--77413658dc6ebc93ca4f7f269ab83bbed3584e63/1518%20Norwegian.pdf

Climate projections and weather observations

Recommendation for the use of climate projections

"Climate projections are an important basis for society's adaptation to climate change", note the Government of Norway in its publication Climate Change Adaptation in Norway (also referred to as White Paper 33), recommending that "assessments of the impacts of climate change … be based on figures from the high end of the range of national climate projections." (Ministry of the Environment, 2013, p.5-6)

Hazards

DSB's map. This site uses information from, among others, NVE (see below) and the Directorate for Cultural Heritage. On this site you can enter data on cultural monuments and various types of hazards such as rock jumps, floods etc at your site/area.
 https://kart.dsb.no/

NVE - The Norwegian Water Resources and Energy Directorate https://www.nve.no/
At their web page you can find maps on different kind of hazards.
- Quick clay zones (hazard and risk map) ► Map tool
- Flood and inundation (hazard map (local areas), susceptibility map) ► Map tool
- Avalanche (susceptibility map) ► Map tool
- Debris flow/landslide (susceptibility map) ► Map tool
- Rock fall (susceptibility map) ► Map tool
- Rock fall (hazard map) ► Map tool
- Rockslide (hazard map) ► Map tool
- Landslide and avalanche events ► Map tool
- Wind resources (1x1-km² grid) ► Map tool
- Snow and climate (1x1-km² grid) ► Map tool
- The river network database (ELVIS) ► Map tool
- The catchment database (REGINE) ► Map tool ► Read more
- The glacier database *Download not available.* ► Map tool ► Read more
- Hydrological data; gauging stations (discharge, water level, ground water level etc.) and run-off map layer ► Map tool ► Read more
- Waterbodies (as defined in the EU Water Framework Directive). *Download not* available. ► Map tool

RUSSIA

Introduction

The most well know feature of the Russian climate is its very cold winter, brought about by the country's high latitudes, vast land mass and lack of any topographic obstructions to protect it from arctic winds sweeping across its long, north-facing and often frozen coastline.

National governance framework

National governmental organisations

Ministry of Natural Resources and Environment of the Russian Federation
http://www.mnr.gov.ru/open_ministry/open_data/

Climate projections and weather observations

Recommendation for the use of climate projections

All-Russian Research Institute of Hydrometeorological Information - World Data Center
http://meteo.ru/about/general-information

Relevant information sources

Weather & climate monitoring database
http://meteocenter.net/ussr_fact.htm

Climate Change Post
https://www.climatechangepost.com/russia/climate-change/

Hazards

Surface meteorological and Hazards observations
https://data.gov.ru/opendata/7703092752-meteo

Cultural heritage information

Information sources on historic environment conservation

The Unified State Register of Cultural Heritage Sites (Monuments of History and Culture) of the Russian Federation
https://opendata.mkrf.ru/opendata/7705851331-egrkn/

Online maps of historic environment data

Database of Cultural Heritage objects in Russia
https://tools.wmflabs.org/ru_monuments/stats.htm

SCOTLAND

National governance framework

National governmental organisations

Scottish Government Spatial Data Infrastructure
Aggregator portal for public data, including spatial data on the environment
https://data.gov.uk/

Scotland's Environment web (Scottish Government et al.)
Aggregator portal for environmental data, including data on the historic environment
https://www.environment.gov.scot

Data portal of the Government of the United Kingdom
Aggregator portal for spatial data, including environmental data
https://data.gov.uk/publisher/scottish-government-spatial-data-infrastructure

Sustainable Scotland Network
Scotland's largest network of public sector sustainability professionals
https://www.sniffer.org.uk/sustainable-scotland-network

Climate projections and weather observations

Recommendation for the use of climate projections

MET Office (government of the United Kingdom)
Weather and climate change data
https://www.metoffice.gov.uk/datapoint

UKCP18
Climate observations and projections
https://www.metoffice.gov.uk/research/approach/collaboration/ukcp/about

Adaptation Scotland
Data on climate trends and projections
https://www.adaptationscotland.org.uk/why-adapt/climate-trends-and-projections

Relevant information sources

Climate X Change
Scotland's centre of expertise connecting climate change research and policy
https://www.climatexchange.org.uk/research/indicators-and-trends/indicators/bb6-cultural-heritage-in-flood-risk-areas/

Hazards

British Geological Survey
(Spatial) data on geology, including data on natural hazards
http://www.bgs.ac.uk/data/services/mash-ups/desktopgis.html

Dynamic Coast (Scottish Government et al.)
(Spatial) data on coastal change assessments
http://www.dynamiccoast.com/

Scottish Environment Protection Agency
(Spatial) data on Scotland's environment, including flood data
http://map.sepa.org.uk/rbmp/

Sepa flood maps:
https://www.sepa.org.uk/environment/water/flooding/flood-maps/
Floodline:
https://www.sepa.org.uk/environment/water/flooding/floodline/

Cultural heritage information

Information sources on historic environment conservation

Scottish Natural Heritage
(Spatial) data on Scotland's *natural* environment, including *natural heritage* designations
https://gateway.snh.gov.uk/sitelink/

Historic Environment Scotland
Data on Scotland's historic environment
http://portal.historicenvironment.scot/designations (cultural heritage designation data)
https://canmore.org.uk/ (archival data)
https://www.scran.ac.uk/ (imagery data)
http://portal.historicenvironment.scot/spatialdownloads (spatial)

Online maps of historic environment data

PastMap (Historic Environment Scotland)
Aggregator portal for cultural heritage data, including spatial data
http://pastmap.org.uk/

Scotland's Environment Web (maps)
Spatial environmental data, features and sits of interest from many different sources.
https://www.environment.gov.scot/maps/

Historic Environment Scotland
The map search is provided to help identify the designated asset.
http://historicscotland.maps.arcgis.com/apps/Viewer/index.html?appid=18d2608ac128406
6ba3927312710d16d

SWEDEN

National framework/ prerequisites and guidelines for work on reducing climate risk and preparedness.

The information of Sweden is easiest accessed by The European Climate Adaptation Platform Climate-ADAPT, Country profile Sweden. The information of Sweden is checked and managed by Swedish Meteorological and Hydrological Institute (SMHI), The Manager of the National knowledge centre for adaptation to climate change.

Adaptation Strategies

The Swedish Government and Parliament points out Principles for the work on climate adaptation in the National Adaptation Strategy: Climate adaptation work should be conducted based on guiding principles on sustainable development, reciprocity, scientific basis, the precautionary principle, integration of adaptation measures, flexibility, management of uncertainty and risk factors, time perspectives and transparency.

The Strategy stakes that it is inappropriate and can be directly counterproductive to at a specific point in time determine which climate scenario and time perspective which should be the starting point for all types of decision-making by all players, and what risks may be considered acceptable.

Implementation means

To underpin the National Adaptation Strategy with specific actions the Government decided in June 2018 on an ordinance which mandates 32 national authorities and the 21 County Administrative Boards to initiate, support and follow up on adaptation within their area of responsibility, including to develop action plans.

Sweden has a well-established and functioning framework for disaster risk reduction (DRR), including work in forums for crisis preparedness. The work is coordinated by the Swedish Civil Contingencies Agency (MSB). Cooperation is promoted on all levels and between sectors and actors working with land use planning, risk management, natural disasters and climate adaptation, in order to reduce risks and enhance preparedness. Several coordination forums currently exist in Sweden where sector agencies and other stakeholders can share experiences and plan key actions.

There is a National network for adaptation, promoting both vertical and horizontal cooperation, including the 21 counties, and 19 Government agencies. The secretariat for the network is provided by SMHI.

Information on Climate Change

The main sources in Sweden are:

Climate research at the Rossby Centre is offering open access to climate-relevant data. Other weather related observational data is also freely available and can be downloaded at the site for open data. New and emerging research and decision support is added continuously to the website. In 2018, new information on the effects of global sea level rise on Sweden was added. The National Knowledge Centre for Climate Change Adaptation with support from Rossby Centre, offers products, advisory services and decision-relevant knowledge (see below). Through the portal klimatanpassning.se information can be found on climate change, climate-relevant research in Sweden, climate adaptation initiatives and stakeholders.

Regional climate change analysis for all 21 Swedish regions was carried out during 2015. The reports include scenarios for about 15 climate indexes with the future development in comparisons between the past and the situation today. The scenarios are also available as national geographic information layers in an open accessible database.

The environmental objectives system analyses and follows up 16 environmental quality objectives and a number of milestone targets every year. Every fourth year a deep analysis is made which is an indicator of the status of the Environment. The reports can be found at http://www.sverigesmiljomal.se/.

Web based information for climate change adaption is found at the Swedish Portal for climate change adaption klimatanpassning.se,

https://www.klimatanpassning.se/klimatanpassa/underlag-for-klimatanpassning/databaser

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