10th Nordic Conference on the Water Framework Directive

-Conference Report-

UMHVERFIS STOFNUN
ENVIRONMENT AGENCY

November 2022

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1. The 10th Nordic WFD Conference

Overview and setup of the conference

The 10th Nordic Water Framework Directive Conference took place in Reykjavík, Iceland, August 30th- September 1st, 2022. The conference was hybrid; online and on site. Over 50 participants joined the conference online, and about 120 guests joined us in Reykjavík. Attendees represented local, regional and national agencies and institutions from the Nordic countries. The conference serves as a place for specialists to share their experiences, best practices, discuss mutual challenges and possible solutions as well as building networks. The opportunity for specialists and interested stakeholders to meet in person and discuss shared issues is important.

The first day of the conference was focused on the WFD Progress in each country and included presentations on Water governance & sector integration as well as Outputs from research projects & new technologies in recent years. In total, 18 presenters joined us the first day.

On the second day of the conference, eight workshops were held, which covered interests and topics regarding the WFD in the Nordic regions. The third and final day of the conference, attendees were invited on an excursion which toured the Þingvellir (National Park), Ljósafossvirkjun (Hydrological power station), interactive exhibitions, unique water bodies and geothermal areas.

While day 1 was open for public participation and focused on management, research and non-governmental organizations, day 2 and 3 were for WFD-specialists only.

The conference program was developed by the conference committee.

The conference committee members include:

- Ásta Maack, Hólmfríður Þorsteinsdottir and Marianne Jensdóttir Fjeld at the Environment Agency of Iceland
- Anders Iversen and Sunniva Sivsdatter Hartmann at the Norwegian Environment Agency
- Niklas Holmgren at the Water Authority in Södra Östersjön, Anneli Harlén at the Swedish Agency for Marine and Water Management and Jenny McCarthy at Sweden's geological Survey.
- Vincent Westberg at the Centre for Economic Development, Transport and the Environment in Finland (ELY) and Sari Väisänen at The Finnish Environment Institute (SYKE)
- Kirsten Vielwerth at the Danish Ministry of Environment and Nanna Granlie Vossen at the Danish Environmental Protection Agency

The Environment Agency of Iceland would like to thank The Nordic Council of Ministers for financial support. Also thanks to presenters and participants, for taking the time to contribute to a successful and eventful conference.

An overview of the conference is available at the conference website: https://nordicwfd2022.vatn.is/

2. Conference Programme

Conference plan, working groups and information on the excursion

Day 1- August 30th Presentations

Opening of the conference

Guðlaugur Þór Þórðarson, The minister of Environment, Energy and Climate

Presentation from the European Commission

Bettina Doeser – Directorate General Environment, EU

National Overview of the WFD- Progress in the Nordic countries

Iceland - **Sigrún Ágústsdóttir**, The Environment Agency of Iceland
Norway - **Tor Simon Pedersen**, The Norwegian Ministry of Climate and
Sweden - Environment
Signhild Nerheim, Swedish Agency for Marine and Water
Finland - Management and **Johan Kling**, Water Resources Management
Denmark - **Turo Hjerppe**, Ministry of Environment
Nanna Granlie Vossen, Danish Environmental Protection Agency

Water governance and sector integration:

Experiences and lessons learned from the first Swedish DMP – drought management plan.

Irene Bohman – Director in the South Baltic water district authority

Collaborative water management across England – An overview of the Catchment Based Approach (CaBA)

Damian Crilly, the Environment Agency of the United Kingdom and Dr. Rob Collins, the Rivers Trust

Legal implications of the WFD

Kirsten Vielwerth – Policy advisor at the Ministry of the Environment of Denmark

Water Governance: an OECD perspective

Oriana Romano, Water Governance and Circular Economy of OECD. Cities, Urban Policies, and Sustainable Development Division. Centre for Entrepreneurship, SMEs, Regions and Cities

Setting WFD objectives in N2000 sites

Ann-Karin Thorén, the Swedish Agency for Marine and Water Management

LIFE IP Rich Waters: Creating momentum for implementation of the WFD in Sweden

Rosita Ericsson, Life IP Rich Waters

Outputs from research projects and new technologies:

The MERLIN project for mainstreaming river and wetland restoration in Europe
Dr. Sebastian Birk, Merlin restoration project

Securing biodiversity, functional integrity & ecosystem services in DRYing rivER networks (DRYvER)
Thibault Datry, French National Institute for Agriculture, Food, and Environment (INRAE)- Department of Waters

Safeguard Biodiversity and improve Climate Adaptation in catchment areas under pressure: tools and Solutions (SABICAS)
Dr. Benjamin Kupilas, NIVA

Environmental design of regulated rivers to maintain hydro-morphological processes and biodiversity
Atle Harby, SINTEF Energy research

The practical application of the 'nature-based' approach in river management: multi-scale case study on the Andakílsá River, Iceland'
Dr. Hamish Moir, Cbec restoration in Scotland and Embla Náttúrusmídi ehf

Day 2 - August 31st
Working Groups

The Working groups were intended for specialists working directly on implementing the Water Framework Directive in the Nordic countries

Working Groups are as follows:
WG1: Legal implications of the WFD and court rulings- Central legal issues and exemptions
WG3: Program of measures and implementation of measures
WG4: Sharing experiences on Water Governance structure
WG6: Classification of hydro-morphology

WG1: Legal implications of the WFD and court rulings- Court cases
WG2: Groundwater
WG4: Sharing experiences in Local Water Management
WG7: Implementation on restoration measures (hydro-morphological pressures)
WG8: Data management for WFD

Day 3 - September 1st
Excursion

The Excursion included stops at:

- Þingvellir and Þingvallavatn
  - National Park
- Ljósafossvirkjun
  - Hydrological PowerStation with an interactive exhibition
- Skyrland
  - An interactive exhibition of the Icelandic staple dairy food Skyr.
- Grænavatn
  - A naturally green and acidic water body (pH 2-3)
- Seltún
  - Geothermal area

3. Presenters

Overview and summary in order of of presentations

Name:
Bettina Doeser

Head of Sustainable Freshwater Management,
Directorate General Environment, EU

Name of presentation:
Presentation from the European Commission

Issues related to water are becoming more urgent as draughts are becoming more frequent and causing significant problems across industries and societies.
Several targets in the Green Deal, are related to the WFD that should be met before 2030. The main policies connecting to the WFD are Biodiversity Strategy, Nature Restoration Law, Circular Economy og Zero Pollution Strategy as well as EU Climate Adaption and Resilience Strategy and the Common Agricultural policy

In the Commission implementation report issued in December 2021 the implementation of measures was identified as ongoing, but Covid-19 has had its negative effect. Overall, the Member States are tackling the pollution issues, water quantity measures and water efficiency. Lack of sufficient financing is though delaying the progress.

A total of 11 RBMP and a 12 Floods Management plans have been reported to the Commission from Member states. The commission is starting to assess these reports and hopes to be able to issue the next implementation report early in the year 2024. In that report there will be a focus on the critical points that are the key to achieve as much as possible before 2027, for example exemptions and how they have been handled.

Regarding water policy many changes are under way e.g., in July 2022, an updated Watchlist was issued, where new pharmaceuticals and pesticides were added. In August a guideline on water reuse was published, which aims to prepare Member States for the application of the new Water Reuse Regulation. The Water Reuse Regulation will also be adopted into the EEA agreement.
In January 2023 a new Drinking Water Directive will be adopted, and a re-visioned Urban Wastewater Treatment Directive is set to be finished in the autumn of 2023. Revisions of the Environmental Quality Standard Directive and Ground Water Directive are also under way.

The commission is determined to maintain the ambition in implementing the water legislation and to better tackle e.g., the climate change challenges. There is a need to be more water resilient to be able to tackle water scarcity and flooding. There will be a large UN water conference in March of 2023, and it is vital to use the momentum of that conference to push water issues forward.

Name:
Sigrún Ágústsdóttir
Director of the The Environment Agency of Iceland

Name of presentation:
National Overview of the WFD- Progress in Iceland

In April of 2022, the Icelandic minister of Environment, Energy and Climate signed Iceland's first river basin management plan. This step is a very important step of many to build a water management system in Iceland to ensure the protection and sustainable utilization of our water resources in a greater perspective. There is much to be gained by maintaining a good water status, because we know it can be extremely costly and difficult to improve the status once it has become bad.

The first RBMP includes an extensive mapping and analysis of the current status that has been done in cooperation with stakeholders, national agencies and administrative bodies. Many actions remain to be taken and there are many opportunities and challenges ahead.

The most common pressures on water bodies in Iceland relate to: groundwater abstraction, hydro-morphology, aqua-farming, industry, wastewater, urban runoff and agriculture. The Programme of Measures includes 57 measures in 6 categories. In Iceland only one water body has been identified in bad chemical status, but two more are being analysed.

Many actions are being taken regarding better wastewater treatment but only 76% of Icelanders have some kind of treatment (though not always fulfilling requirements) and there we have been putting our focus on greater results. There is also an increased focus on emerging pollutants, such as microplastics and pharmaceuticals, as well as collecting more data and monitoring to be able to confirm the status of water bodies.

Cooperation and knowledge sharing between the Nordic countries is valuable and precious, especially to Iceland. We deal with similar obstacles, such as hydro-power production.

Name:
Tor Simon Pedersen

Senior adviser, The Norwegian Ministry of Climate and Environment

Name of presentation:
National Overview of the WFD- Progress in Norway

In Norway there are over 34.000 water bodies, 100 sub-catchments and 5 RBMD.
In addition, Norway splits 10 transnational RBMD with Finland and Sweden.
The water governance structure in Norway has four layers: the committee of Ministries, committee of Agencies, RBD Water Board and Catchment Water Board. The RBMP for all the districts will be agreed upon in October 2022. Due to the complexity of all the RBMP the ministry has requested the Environment Agency to report on the largest challenges for the next years.

Roughly 75% of water bodies in Norway are classified as in good or high status. The largest pressures on waterbodies are acid rain, hydro pressures, agriculture, wastewater and invasive species.

Those who are responsible for the implementation of the measures in the Programme of Measures are the Municipalities (66%) whereas about 30% of measures are under the responsibility of the County governor, EAI, Food Safety Authority and Water Resources and Energy Directorate. Other responsible parties include various entities.
In 2027 it is expected that 85% of waterbodies will achieve good or high status. In 2033 it is expected that about 95% of waterbodies should be in good or high status, even though Norway is one water cycle behind EU Member States.

Improvements proposed:

- Strengthening legal requirements are ongoing, but they take time
- Regarding economic and administrative tools, there has been a demand for a larger budget for the POMs, although they received their largest to date in 2022.

Improvements made since 2016

- Data in Vannmiljö has doubled
- National guidelines are very important for the implementation and conflicts are fewer.
- Proposed measures are more specific, economic costs, environmental and social benefits are better defined.

According to the OECD environmental performance review, the implementation is well structured.

Name:
Signhild Nerheim & Johan Kling

Nerheim: Head of unit, Water Management at Swedish Agency for Marine and Water Management

Kling: Head of section, Water Resources Management

Name of presentation:
National Overview of the WFD- Progress in Sweden

Challenges were brought up, as meeting the Environmental goals is difficult from the Swedish perspective due to various interests of various entities as well as financing of measures, administrative planning, and execution. In addition, droughts and floods have increased in Sweden which negatively affects biodiversity.

Most significant pressures in Sweden include dams, barriers and locks which are unknown or obsolete; dams, barriers and locks due to hydro power; agriculture; pressures from wastewater and point sources and urban waste water treatment facilities.

Progress
Financing has gone well, and the PPP has been set in place for hydropower. There has been an increase in funding for eutrophication and wetland initiatives as well as funding through the LOVA programme.

Work in progress – monitoring
It is very important to assess status and organize risk-based monitoring and cost effectiveness. In addition, it is vital to collect, handle and digitise data. Data must be homogenized from different entities, so it is possible to compare.
Groundwater – is more present in the permitting processes and in the progress of development of local threshold value. There have been increased funding for mapping and monitoring of groundwater levels, as well as improvement of situation maps of groundwater.

Name:
Turo Hjerppe

Senior specialist at the Ministry of Environment

Name of presentation:
National Overview of the WFD- Progress in Finland

The presentation gave an overview to the implementation of the WFD in Finland. The government approved River Basin Management Plans for 2022-2027 in December 2021. The plans have been reported to the Commission in pdf format, but the electronic reporting is delayed due to technical challenges. The exemption of less stringent objectives was applied for the first time in four surface water bodies and one groundwater body. All of these water bodies have been affected by long lasting historical pollution.

The Programmes of Measures were published for the first time also in a webportal www.etpo.fi. In addition, a project for renewing the data management and information sharing system is on going. An evaluation of the previous planning cycle was conducted in the first half of the 2022, and development of governance structres is planned and about to be executed in september. The objectives of the development is to i) better integrate WFD and MSFD implementation on Finland and ii) better integrate governance at different levels (national, regional, local).

Name:
Nanna Granlie Vossen

Freshwater biologist at the Danish Environmental Protection Agency

Name of presentation:
National Overview of the WFD- Progress in Denmark

Aquatic environment management planning first began in Denmark in 1987, with the implementation of action plans for the aquatic environment. At present, Denmark is finalising their proposal for their third river basin management plan in accordance with the EU Water Framework Directive.

Denmark has four river basin districts, 23 main river catchments and approx. 10,550 water bodies. Pressures on water bodies include nutrient loading from diffuse (mainly farmland) and point sources, inputs of hazardous substances, physical alteration of watercourses and coastal water bodies, biological imbalance due to e.g. invasive species, water extraction and overexploitation of groundwater.

The programme of measures in the proposal is based on a green transition of the agricultural sector and includes measures that will reduce nitrogran discharge to coastal waters by approx. 10,800 tonnes in 2027. Mitigation measures also include removal of 400 barriers from watercourses, lake restoration projects, extension of trawl-free zones, acquisition of aquaculture and improved wastewater treatment.

As of May 2022, projects to remove 1,322 TN/year mainly by implementation of wetlands, were approved or in the pipeline for approval. Status on the implementation of other mitigation measures were also presented, along with status toward achievement of good status/potential.

Denmark's development track includes more modelling, research and mapping, development of more mitigation measures, further engagement of local stakeholders and performance of a second opinon under consultation of international scientists.

Name:

Irene Bohman

Director in the South Baltic water district authority

Name of presentation:

Experiences and lessons learned from the first Swedish DMP – drought management plan

- Important issue in South Baltic river basin.
- Big involvement during consultation and dialouges
- Numerous actors are partially responsible and involved in the work – both an advantage and sometimes difficult
- Data supply must be improved. Regional and local differences are important.
- We ask for EQS for quantitativs status in surface water. E.g. specific limits in flow when abstraction must be restricted.
- What time perspective should be included in the risk analysis?
- Measures needed depend on "starting conditions" - on-going measures, available data, prediction of future water requirements etc
- In Sweden we have an old water legislation focused on draining and water abstracion permits have no time limit
- Strategies how to prioritize among water users during drought events must be developed

Name:

Damian Crilly & Dr. Rob Collins

Damian: Manager, Strategic Catchment Partnerships. Environment Agency (pictured)

Dr. Rob: Director of Policy and Science at the Rivers Trust and Chair of the CaBA National Support Group

Name of presentation:

Experiences and lessons learned from the first Swedish DMP – drought management plan.

Catchment Based Approach (Damian) - pictured

The Catchment Based Approach is supported by the Environment Agency through the provision of:

- Funding support for 'hosting' partnerships, capacity building and project activity.
- A dedicated national network of Environment Agency Catchment Coordinators to support the catchment partnerships.
- The Catchment Data Explorer web site. This has been developed to provide open access to river basin planning data and evidence that is spatially referenced to the river basin, catchment and water body scales. It provides access to Catchment Partnership Pages in the river basin management plans. These set out membership of the catchment partnership, the priority issues in the catchment and agreed measure to address them

River Basin Planning (Dr. Rob)

The Water Framework Directive introduced a systemic approach to improve ecosystem integrity using the target measure of good ecological status according to a range of biological, chemical and physical parameters.

It specifies environmental objectives and measures for water bodies through 6-yearly river basin planning and action over 3 cycles.

Each stage in the river basin planning process must involve stakeholder engagement and extensive public consultation.

River basin planning in England now fully incorporates the Catchment Based Approach as the basis for developing and delivering river basin management plans.

Name:
Kirsten Vielwerth
Policy advisor at the Ministry of the Environment of Denmark

Name of presentation:
Legal implications of the WFD

Kirsten presented an overview of WFD court cases since the last Nordic WFD conference- held in Finland 2019. Kirsten gave an overview of 5 recent court cases:

1. C-105/18 – C-113/18: COM vs. ES on Art. 9(1) Recovery of costs of water services.
Spanish tax on the use of inland waters for the production of electricity in inter-communities river basins in accordance with article 9(1) and the polluter pays principle?
The court ruling replied: Yes.

2. C-535/18: Judgement 28 May (Detmold)
Decision by local government in DE to approve the plan for the construction of an approximately 3,7 km long section of motorway entailing runoff of rainwater to the surrounding surface or groundwater. Preliminary question no 3: How to interpret "deterioration of the status of a body of groundwater" in Art 4(1)(b)(i)? As soon as at least 1 EQS or threshold value for 1 parameter is exceeded? If the relevant threshold has already been exceeded, will any additional (measurable) increase of the concentration constitute a deterioration?
The court ruling was yes on both accounts, but the court added that the values measured at each monitoring point must be taken into account individually.

3. C-559/19: Art 4(1) Deterioration of a body of a groundwater (Doñana)
Doñana national park and adjacent protected areas are surrounded by intensive agricultural activities, in particular strawberries. Since before the WFD came into force. More groundwater has been abstracted than is recharged. Does the continuation of excessive groundwater abstraction constitute deterioration of the affected groundwater bodies under Art. 4 of the WFD?
The court ruling was: no, as long as the excess abstraction remains at the same level, it is not deterioration.

4. C-525/20 Art 4(1) and (7) Temporary deterioration of surface water. Temporary and short-term deterioration without long term effects: would they have to be taken into account?
The court did not accept this.

5. C-121/21: Art (Future) non-use of exceptions (Turów open cast mine) EIA decision on Turów declared immediately enforceable – object of the complaint remains unclear; AG concludes that sufficient legal protection exists.
This case was withdrawn. And the case was settled and struck from the books.

Name:
Oriana Romano

Head of Unit, Water Governance and Circular Economy of OECD. Cities, Urban Policies, and Sustainable Development Division. Centre for Entrepreneurship, SMEs, Regions and Cities

Name of presentation:

Water Governance: an OECD perspective

Climate change affects Nordic countries by provoking a substantial increase in the average annual temperature. All Nordics (aside from Iceland) are affected by high levels of nutrient pollution from agriculture. They are also affected by other sources such as municipal sewage to varying degrees.

Nordics have a varying ecological status of waterbodies that can threaten compliance with the WFD, notably due to rural and urban sources.
The OECD Principles on Water Governance offer an evaluation framework to countries to improve their water governance system. Various good examples can be found in the Nordic countries.

In Norway, the implementation of the WFD is well structured, involving all levels of government, as well as multiple sector agencies. Key elements are broad inclusion of stakeholders but with co-ordinating responsibility clearly assigned, measurable objectives with a reporting process attached and strong local anchoring of decision-making. Nevertheless, there is room for improving operational efficiency of water services and co-ordination between different administrative levels.

In Finland, a mid-term evaluation of the National Climate Change Adaptation Plan 2022 concluded that awareness of climate change and adaptation needs has increased among administrative actors. It also found that adaptation objectives have been integrated into planning and activities of the various sectors. The most advanced sector is water management, where adaptation has been integrated into decision making and where digital monitoring and risk management processes have been developed.

Until 2017, Denmark had a regulation where the same rules applied to all farmers. With the targeted catch crops programme from 2017 and targeted regulation from 2019, Denmark has implemented a differentiated system based on water pollution risk. This is a step in the right direction, as it improves cost-effectiveness by focusing efforts on vulnerable areas, in line with the spirit of the WFD and the EU Nitrates Directive. Targeted regulation aims to focus on watersheds threatened by nitrogen pollution, leaving farmers in other watersheds more flexibility in managing the use of their nutrients than was the case with non-targeted regulation.

Name:
Ann-Karin Thorén

Senior Analyst at the Swedish Agency for Marine and Water Management

Name of presentation:

Setting WFD objectives in Natura 2000 areas

According to a parliamentary agreement, the Swedish Agency for Marine and Water Management has developed a national plan for revising approximately 2000 permits for Swedish hydropower plants in environmental court processes until 2040. The permits have to follow the WFD objectives.

In protected areas within the Natura 2000 network, favorable conservation status for species and habitats according to the Habitats directive have to be taken into consideration when setting WFD objectives.

In an EU LIFE project, the Swedish Agency for Marine and Water Management has developed a national guideline in order to streamline the setting of WFD objectives in Natura 2000 sites.

The guideline was developed in close cooperation with the users, the water district authorities and the county administrative boards.
One principle step in the guideline is to assess the ecological requirements of the species and habitats in the area based on the conservation plan for the Natura 2000 site. The site specific ecological requirement are then integrated in the WFD objectives by the quality elements of ecological status.
Water district authorities can apply exemptions according to WFD as long as it is consistent with the implementation of the objectives in Natura 2000 areas.
Exemptions from the objectives in Natura 2000 areas can only be given by the Swedish government, motivated by a overriding public interest of social or economic nature.

Name:

Rosita Ericsson

Communication officer at Life IP Rich Waters
Northern Baltic Sea River Basin District

Name of presentation:

LIFE IP Rich Waters: Creating momentum for implementation of the WFD in Sweden

The EU-funded project LIFE IP Rich Waters aims to boost the full implementation of the River Basin Management Plan of the Northern Baltic Sea District. Many water bodies in Sweden have severe problems due to eutrophication, physical changes and environmental pollution. The project addresses important gaps in the implementation of the WFD and aims at effecting most parts of the water administration. The 20 sub-projects are divided into five thematic areas. In each of these areas there are projects that focus on better cooperation, methodology development and policy, but also projects that implement concrete measures, demonstrating best practice or innovative solutions. The project is a partnership between national and regional authorities, municipalities, companies, researchers and water conservation associations. In total Rich Waters involves 35 beneficiaries, representing the most important stakeholders in the implementation of the RBMP.

Earlier this year LIFE IP Rich Waters completed its second interim report to the EU, marking two-thirds of the project period (2017-2022). In the presentation, different areas of results were summarized:

- Good examples of concrete physical measures
- Direct environmental effects
- Contributions to Swedish water administration
- Decision making tools
- Methodology development
- New solutions and new technology
- Project development
- Networks and new forms of cooperation

Name:

Dr. Sebastian Birk

Scientist and coordinator of Merlin restoration project

University of Duisburg-Essen

Name of presentation:

Mainstreaming the restoration of rivers and wetlands in Europe

Demonstrating best-practice restoration: For 17 flagship restoration projects across Europe, the EU-funded project MERLIN* explores social, economic and environmental success factors, generating a blueprint for the proficient implementation of Nature-based Solutions suited for immediate replication. With investing more than 10 million € in further hands-on upscaling measures, MERLIN upgrades these 17 projects into radiant beacons of innovation for the systemic change. These include the removal of weirs and dams, re-wetting of peatlands and measures to connect rivers and their floodplains.

Upscaling into broader landscapes: MERLIN identifies landscapes with high potential and priority for transformative restoration, particularly focusing on essential ecosystem services, biodiversity targets, and climate change mitigation and adaption. MERLIN illustrates environmental value chains as well as costs and benefits of Nature-based Solutions for selected European regions. This economic analysis demonstrates the opportunities for green business resulting from transformative restoration.

Engaging with investors and economic sectors: MERLIN closely collaborates with local communities and key economic sectors such as agriculture, water supply, navigation and insurance industry. Main focus is to co-develop win-win solutions spearheading systemic economic, social and environmental change. MERLIN delineates models for private investment into restoration alongside public funding, tailored to contexts specific for economic sectors and countries. The restoration of the Emscher catchment (Germany) has mainly been financed by fees, another less commonly employed financing mechanism.

- Funded under the European Commission's Horizon 2020 programme (grant agreement No 101036337)

Name:
Thibault Datry

French National Institute for Agriculture, Food, and Environment (INRAE) –
Department of Waters

Name of presentation:
Securing biodiversity, functional integrity & ecosystem services in DRYing rivER networks (DRYvER)

DRYvER is a research and innovation activities that will run from 2020-2024 and consists a total of 25 pluri-disciplinary partners. Over 60% of the global river network is naturally intermittent. Climate change and increased human water use cause rivers and streams to dry up, which has dramatically increased worldwide in the past years. Thus, there is an urgent need to understand the social-ecological consequences of drying rivers because shifts from permanent to intermittent flows represent major tipping points for rivers with dramatic environmental, socio-economical, and even geopolitical consequences.The high-level model of DRYvER is presented in the adaptive management cycle (with five work packages) that aims at converting climate change into the fragmentation of river network by drying and look at the consequences of that fragmentation. The aim is to translate climate projections into changes in flow intermittence patterns at multiple scales and to implement a dynamic meta-system perspective to understand the cascading changes in biodiversity and ecosystem services. Furthermore to develop a multi-criteria decision framework combining scientific management, scocio-economic, legislative barriers and leverages to promote an adaptive management of drying river networks (DRNs).

A case study was introduced calibrating the high-level model in a french river. The work packages of the high-level model were included in the case study, which measured different aspects: hydrological modelling, Metacommunity dynamics, Biochemical functions, Ecosystem services and Adaptive management. Across the work packages they upscale the scenario of biodiversity function and services on continental scale. This is where they quantify that over 60% of the global river networks is prone to intermittence flow.

The scientific impact of DRYvER include e.g. global maps of climate change impacts in DRNs and identification of tipping points in drying in space and time. Finding have resulted in several scientific impacts as well as societal and policy impacts e.g. in identifying options for environmental dicision-making and to enable science-policy interfacing at local, national, regional and EU level to embrace adaptive management strategies of DRNs. Several publications on the project have been published, DRYVER has made a dedicated citizen-science tool (a cell phone app) which helps to monitor rivers. It is open for all and has been translated to 23 languages.

Name:
Benjamin Kupilas

Researcher Norwegian Institute for Water Research (NIVA)

Name of presentation:
SAfeguard Biodiversity and improve Climate Adaptation in catchment areas under pressure: tools and Solutions (SABICAS)

SABICAS works with nature-based solutions (NbS) along rivers to safeguard biodiversity and improve climate adaptation in catchment areas under pressure from a range of land-uses. It is a transdiciplinary research project funded by The Research Council of Norway and involves eleven partners working with research, governance and biodiversity.

The project focuses on two Norwegian river catchments that are impacted differently by human activities. We study how small parts of land area can be transformed into resilient, (eco)functioning NbS using riparian zones, wetlands, and floodplains. SABICAS aims to provide tools and knowledge needed to quantify benefits and co-benefits of these NbS. Examples are biodiversity improvements, climate adaptation, and mitigating negative effects of other land-use stressors for freshwater-dependent biodiversity and human society. SABICAS will find out which types and designs of NbS are most effective. The project engages with all key stakeholders, from recreational fishermen to farmers, from local grassroots to policy-makers, through several activities. The close dialogue will influence how we investigate effects of NbS and how to prioritize the different solutions at appropriate scales.

The overall aim is to develop a user-friendly toolbox to optimize the use of NbS at the catchment scale that can be used for future management of rivers.
What will SABICAS contribute?

- Balancing societal land use needs with the need to protect biodiversity and adapt to climate change
- Filling key knowledge gaps
- Propose innovative solutions to implement NbS in Norwegian river management
- Accelerate multi-functional, multi-beneficial, cross-sectoral and interdisciplinary future use of NbS
- Improve sustainable use and management of land and river

Name:

Atle Harby

Senior Research Scientist at SINTEF Energy research

Name of presentation:

Environmental design of regulated rivers to maintain hydro-morphological processes and biodiversity

The talk first focused on highlighting the different hydrological and geomorphological processes in rivers, focusing on the need to assess different spatial and temporal scales – ranging from catchments to microhabitat and from seconds to years. Then the presentation briefly showed the concept of environmental design of regulating rivers. This method is looking at bottlenecks that are limiting fish populations or other users/services – defining the diagnosis. Then the method will look for mitigation measures – either by releasing water or implementing habitat measures.

The relationship between hydro-morphology and impacts on the ecosystem and other users/services, are crucial to describe. A new, proposed system to classify hydro-morphology builds on the same relationships.

A set of indicators describing four categories of HyMo is proposed including indicators for HyMo changes:

- along the river (lateral connectivity)
- across the river (longitudinal connectivity)
- inside the river (in-channel habitats), and
- hydrology (all factors).

The system has been tested and it is under consideration for use in Norway. Parts of the system have also been adapted in Iceland. Finally, Harby pointed to www.fithydro.wiki, the results of an EU-funded project giving information about mitigation measures, test sites and solutions, methods, tools and devices for rivers with hydropower and fish.

Name:

Dr. Hamish Moir

Specialist from Cbec restoration in Scotland

Name of presentation:

The practical application of the 'nature-based' approach in river management: multi-scale case study on the Andakílsá River, Iceland'

Nature-based solutions (NbS) represent an important practical mechanism for delivering WFD objectives. They provide a sustainable approach of reinstating or replicating natural form/ process that traditional 'hard engineering'/ river management; in this way, NbS aim to work with rather than resist natural river processes. A multi-scale NbS case study on the Andakilsa River, west Iceland was presented.

A site-specific bank erosion issue was addressed by applying a sustainable 'large wood' based design; in contrast to using large rock, this approach actively dissipates flow energy, allows for natural adjustment and greatly improves biodiversity. However, to properly apply NbS, wider scale issues responsible for the bank erosion require to be addressed. This is related to the trapping of coarse sediment in the hydropower intake reservoir immediately upstream, resulting in both greater erosive potential of the flow and systematic riverbed incision downstream. Sediment management at hydropower schemes is necessary to reinstate important geomorphic connectivity, allowing for sustainable river evolution downstream and limiting ecological impact.

A conceptual approach to sustainable sediment management at Andakilsa was presented, involving the 'retro-fitting' of a variable elevation spillway crest that would allow the natural passage of coarse sediment over the structure and downstream during high flow events. However, the reservoir receives artificially elevated sediment supply rates, owning to upstream landuse practices. To 'naturalise' supply, it was suggested to establish native tree cover in the upper catchment; this would reduce excessive bank erosion (i.e. the banks would be stabilised by more diverse riparian vegetation) and increase in-channel storage (i.e. through increased hydraulic roughness from large wood). While this tackles the specific issue of excessive supply, there are also considerable potential additional benefits (e.g. WFD classification status, slowing runoff, biodiversity, social wellbeing etc). A specific case study is presented here but the widespread application of NbS is necessary to improve resilience to the predicted effects of climate change and address the associated biodiversity crisis.

4. Working Groups

Overview and summary of working groups

Working Group 1a: Legal implications of the WFD and court rulings- Central legal issues and exemptions

Working Group 1b: Legal implications of the WFD and court rulings- Court cases

Working Group 1 a and 1 b focused on the central legal issues and exemptions that are at the fore¬front of the legal work that flows from the Water Framework Directive among the Nordic Countries in 2022. The countries gave an update on what had happened since the last Nordic WFD Conference in 2019, regarding major legal issues.

The countries are at different stages of implementing the WFD and River Basin Management (RBMPs) Cycles. The pressures on the waterbodies differ to some extent, and so does the legal and administra¬tive systems in the countries. However, some problems are similar and there is much to gain from information and knowledge sharing to inspire each other on the tackling the legal issues that the water management planning presents. The use of exemptions, both at present and in the future, were highlighted in the discussions.

Much attention was given to the Court cases – both the judgements from the European Court of Justice (ECJ) and the national court cases that some of the countries have encountered. The countries went into details on the major rulings on the concept of 'deterioration' in the WFD, i.e. C-461/13 (The Weser Ruling on deterioration of surface water), the C-535/18 (The Detmold Ruling on deterioration of groundwater) and the C-525/20 (Association France Nature Environment on temporary deterioration). The countries saw a definite need for establishing a network among the jurists to exchange knowledge, views and analyses of the ECJ rulings as they have direct implications on the interpretation of the WFD and hence the legal status in the Nordic Countries.

The countries that already have had national court cases stemming from the implementation of the WFD (FI, SE and DK) gave a brief presentation of the cases and what the core legal disputes were/are about. This could give the other countries a look into the crystal ball on what might become legal cases in their countries at a later stage.

Moreover, the Nordic Countries called for concerted action towards the European Commis¬sion with respect initiate a process with the aim of clarifying how to deal with recent ECJ judge¬ment on temporary deterioration (C-525/20) in practical terms in the countries.

Working Group 2: Groundwater

Each participating country presented challenges concerning e.g. groundwater bodies (GWBs), monitoring and threshold values.

Iceland has identified 313 groundwater bodies but foresees need of further delineation. Some GWBs have large catchment areas that needs to be part of the risk assessment process. The weather conditions in Iceland are characterised by high annual precipitation, snow, and glaciers. The bedrock is distinctly different from the rest of the Nordic countries with often very young geological formations and a high content of lava. The soils are very thin, and the retention time is low. There are only 4 GWBs at risk concerning chemical status, with a need of follow up. The GWB underlying the airport is polluted. For quantitative status, monitoring needs are defined by the following thresholds: <50 l /s no need for monitoring, >100 l/s quantitative modelling required.

Finland has identified 3900 GWBs in shallow groundwater, mainly in eskers. 91 GWBs are in poor chemical status, and 2 GWBs are in poor quantitative status. There is a need for more monitoring and use of grouping of GWBs. Finland is now adopting a new method for grouping in low-pressure areas. They are introducing new threshold values and new parameters (e.g. TNT, RDX and HMX; PFAS; pharmaceuticals; non-relevant metabolites pesticides according to the GWD annex revision). Implementation of the drinking water directive is at hand (integration with WFD), and there is ongoing work with a new database with a large increase in number of monitoring stations (11 000). Finland raised the question concerning pollution from unknown sources when measures must be taken to reach good status in 2027.

Denmark has identified 2050 GWBs (earlier 402 GWBs but has now ungrouped and reported them separately). The list of threshold values is based on substances found that are exceeding set criteria. Natural background levels are calculated. There is a need to integrate the assessments with groundwater dependent ecosystems.

Norway has identified 1200 GWBs, mostly in sediments. The source of drinking water is mainly surface water, only 15 % originates from groundwater. GWB pressure is modelled and there is a risk-based approach to monitoring where GWBs with high indicated pressure is identified for monitoring needs. All GWBs in Norway have good status. The challenges in Norway include data needs, the high number of GWBs, new threshold values and implementation of measures for GWBs at risk.

Sweden has identified 3700 GWBs, mostly in quaternary deposits. There is a need for more monitoring data, especially in the high-pressure areas. We have started the process of introducing local threshold values (analysing 20 GWBs). One challenge is lack of abstraction data for use in water balance calculations in quantitative risk and status assessments. Sweden also shared some experiences on groundwater status assessment, where criteria water balance, saltwater intrusion, effects on associated aquatic ecosystems and groundwater dependent terrestrial ecosystems now more resembles quality elements of surface water management; a methodology more in line with the classification tests according to CIS guidance no 18.

Working Group 3: Program of measures and implementation of measures

	Iceland	Norway	Denmark	Sweden	Finland
Program of Measures (PoM)	1st : Waste water prio and implementing of regulation		?	Binding, but slow adaptation	Basic measurers binding, not supplementary
Environmental objectives	Not legally quite clear, likely binding through POM	Binding for basic measures	Binding	Binding	Not binding
CAP – agriculture	Not problem	National fund	Yes	Yes per WB, and national funds LOVA	Yes
Restoration part of PoM	Of wetlands yes	Yes	Yes	Strategy planned	Yes (national)
Physical planning part of PoM	Yes	Yes	?	Yes	Not legal binding
Drinking water protected areas part of PoM	Yes	Yes, weak	Yes, now mandatory	Yes, 30% missing	Yes
Stormwater part of PoM	Little – through the WWTD	Yes		Plan per municipality binding	Yes
Wastewater part of PoM	Yes, 20% funding State	Yes, PPP	Yes	Yes, PPP	Yes
Hydro Power plan	Yes old one, but not WFD compliant	Yes	?	Yes, national plan	Yes, regional plans
Electronic PoM	Vatnavefsjá	Vann-Net	?	VISS	eTPO (new)
Municipality PoM	UWWT	Wastewater Agriculture	?	Mandatory measures, coordinate	Many small ones.
Measure per WB in PoM	Yes	Per waterbody – important	?	Indicative	Subbasin level – WB

Future Cooperation?

- Maybe forestry?
- Assessment of PoM on national level – peer review EU project again?

Measures-WFD Nordic

Similar:

- Sewage
- Restoration
- Microplastics and pharmaceuticals
- Lack of responsibility from government, agencies, counties and municipalities
- Costs difficult

Differences:

- Governance
- Top down: Finland, Denmark
- All levels: Sweden
- Bottom-up: Norway
- Water scarcity PoM: One district Sweden.
- Appeals of PoM: Sweden and Finland-
- Cycle: Iceland (1st), Norway (2nd), Finland, Sweden, Denmark (3rd)

Working Group 4a: Sharing experiences on Water Governance structure

Working Group 4b: Sharing experiences in Local Water Management

WG 4a-Take home points:

Integration (coordination) horizontally and vertically:

- Based on a Catchments-based (ecosystem-based) approach.
- Create platforms/arenas for:
  - Horizontal sector integration across ministries/agencies.
  - Vertical integration local – regional- national (top down and bottom up).
- Examples: Committees, steering groups, task groups, projects, networks, forums, reference groups.
- Important to clarify roles and responsibilities.
- Importance of communicating to politicians on all levels to secure long term financial predictability. (Including use of EU instruments).
- Need for sufficient staff/capacity at all levels.
- Periodic evaluation of Governance, make improvements.

WG 4b-Take home points:

Local platforms/arenas:

- There is a need for platforms/arenas for dialogue/collaboration that are stable and reliable over time: Examples are local Water Councils / Catchment Water Boards / Water Associations addressing the local conditions.
- These platforms/arenas need mandate, legitimacy, deliberate structure and approach, clearly formulated tasks and functions, requirements for participation, and periodic evaluation:
  - need to compromise – respect each other's views and opinions,
  - work together towards a common goal (not blame each other)
  - coordinate plans, management and measures,
  - integrate water/environmental issues into everyday protocol.
  - impartial hosts/chairs is a key to success.
- Voluntary organisations can be involved through a local reference group, with annual cycle of regular meetings.
- Private sectors and business must be involved so they get ownership of the local initiatives.
- Adjust focus from data collection to involvement and measure implementation (where the pressures/causes are known).

WG 4b-Take home points:

Local participation:

- Local support is important for the credibility and implementation of RBMPs and PoMs.
- Information, consultation and involvement of the public/stakeholders helps change knowledge, awareness and attitudes of local stakeholders: make environmental responsibility genuine.
- Create incentives for local voluntary measures: visible needs and results, courage to take initiative to make changes.
- Involve local NGOs and people in taking care of their own lake or river: Needs to be rewarding to the participants (celebrate results and progress).
- Catchment coordinators/officers/facilitators – are a model for bottom up.

Knowledge:

- Put research results to practise: Knowledge needs to be easy to access and understand.
- Create arena/platform for researchers and management to work together.
- Interdisciplinary cooperation is a key (especially in education).
- Local and experience-based knowledge must be included.
- Sharing of experiences and routines is needed, for instance through restoration networks.
- Let citizens contribute with knowledge in the form of citizen science, get it into the knowledge-base of the RBMPs.

Funding:

- National and regional funding is necessary for levelling up local resources.
- Building trust takes time – long term funding of local governance structure is necessary.
- Flexible funding with sufficient time for delivery will make room for better results.
- Look for different sources of funding (non-government).

Working Group 6: Classification of hydro-morphology

Overview of the status for a hymo classification system – short presentation for each country

Norway:

Class boundaries in present day system are based on expert judgement. Minimum criteria for GEP partly assessed by expert judgement. At present there is proposed systems for rivers and lakes. The systems have been tested by researches as well as managers. A coastal system is in progress. The proposed systems will be presented to competent authorities for approval before entering the official national classification system

Continuity, amplitude of water level changes, change in wetted area are used as proxy parameters for biology in rivers and lakes.

Coast: Have looked at systems from Spain, Ireland and Sweden. Will go forward using several elements from the Swedish system.

Iceland:

Rivers: Have classified rivers with the proposed Norwegian classification system for rivers. Due to extensive glacial rivers, a parameter on sediment transport was added. HMWBs was classified.

No systems for transitional or coastal waters

Finland:

Have classification systems for hymo in both rivers, lakes and coastal waters. No major changes in the HyMo-classification system in recent years. Scoring systems with variable number of parameters have been established and used for rivers, lakes and coastal waters to assign the HyMo-status. There has been some recent developments in assessing the hydrological status of streams and rivers with predictive models. This is not yet in operational use and needs further testing of different flow metrics.

Sweden:

Have classification systems for HyMo in both rivers, lakes and coastal waters.

Rivers: Fish is a biological index

Lakes: Use different biological indicators along with physical indicators

Marine: Mapped all physical alterations along the whole cost. No good biological indicator for physical alterations. Connectivity is modelled along the coast.

Many ditches and road crossings etc that alters the waterflow.

Conclusions:

Classification of hydro morphology is complex and there is a need for proper training of personnel to perform the task.

Proposed continued contact on this matter by establishing a Nordic hydro morphology group.

Working Group 7: Implementation on restoration measures (hydro-morphological pressures)

	Iceland	Norway	Denmark	Sweden	Finland
Linked to HyMo-pressures?	No	Yes (not all wbs)	Yes (not all wbs)	Yes (not all wbs)	Yes (not all wbs)
Source of pressure removed?	Seldom	Seldom	Seldom	Historical but not modern (agriculture)	Seldom
Are measures linked to water bodies?	No?	Yes? (not small)	Yes	Yes (not small)	Not all, only those in PoM
Implemeter identified?	Yes	Normally	Yes	Large: yes Small: no?	Sometimes, found through applications
Financer of restorations?	State, municipalities, enterprises	State, region, municipality, enterprises	EU, state, municipalities	Enterprises, state	EU, State, region, municipality, enterprises
Funding provided to who?	All (even enterprises)	All (even enterprises)	Municipalities	State funding to regions, municipalities	All (even enterprises)
Climate change adaptation?	Synergy effects	Riparian zones, wetlands, flood beds	Synergy effects	Riparian zones, wetlands, flood beds	Water retention projects
National programs?	No	Yes	Yes	Yes	Yes
Evaluation of restorations?	No	No formal setup	No formal setup	No formal setup, Program evaluation, strategy follow up	Program evaluation Case by case
Dissemination and communication of results	Need for assessing dissemination and communication methods for spreading information about restoration methods, funding options and results/effects of restorations.				

Working Group 8: Data Management

Summary of WG 8 Data management

Questions for discussion in the working group

1) Do you change water body geometries for each cycle or not?
2) Have you changed classification systems for different cycles?
3) How many external viewers do you have for your information system?
4) Do you have drainage areas per water body as one geometric layer?
5) A new focus on information security have affected the Water Informations Systems in Open Data in the Nordic countries

Conclusions

Similarities

- Complex datasystems
- Datasystems used to report and to communicate with the public
- Two groups for the datavisuals; public and managers

Differences

- Different datasystems, different interfaces (except Norway and Iceland)
- Norway and Sweden outsourced the data-input (leading to many users of the datasystem)

Reporting from the Nordic countries

Similarities

Same problems; datahandling from EEA, changes in the reporting method

Differences

Using different platforms; access, VISS, etc

Further work

- Contacting COM regarding WFD reporting experiences - use less blockers to be able to report
- Forming a Nordic resource-group?

a) Sharing good practices on data visuals (teamsgroup/mailinglist)
b) Regular meetings/mail/news on how it is going (reporting or other)

5. Posters

National data of the Nordic countries

General information of waterbodies (WB)

Overview og Waterbodies

COUNTRY	CYCLE	NUMBER OF DISTRICTS	NUMBER OF WB
DENMARK	2022-2027 (3)	4	10550
FINLAND	2022-2027 (3)	7+1 (Åland Islands)	6876
ICELAND	2022-2027 (1)	1	2719
NORWAY	2022-2027 (2)	15	33779
SWEDEN	2017-2021 (3)	5	27516

Waterbodies under the monitoring program

COUNTRY	NUMBER OF WB MONITORED	% OF THE TOTAL NUMBER OF WB
DENMARK	10550	100%
FINLAND	2639	38%
ICELAND	23	0,8%
NORWAY	9586	28%
SWEDEN	2535	9%

Main pressures on Waterbodies

DENMARK	FINLAND	ICELAND	NORWAY	SWEDEN
Influx of nitrate and phosphorus from agriculture and wastewater from industry, households and aquaculture	Diffuse sources – agriculture	Wastewater	Introduced species	Connectivity - hydropower all sizes
Influx of organic material to rivers and physical deterioration of river habitats. Influx and release of phosphorus in lakes	Diffuse sources – forestry	Urban runoff	Diffuse sources- Agriculture	Morphology - agriculture and forestry
Nitrate from agriculture, pesticides and metabolites and chemical pollutants in groundwater	Diffuse sources – scattered households' sewage	Aquaculture	Long-range pollution	Diffuse sources - agriculture
Groundwater abstraction	Diffuse sources – internal loading	Groundwater abstraction	Diffuse sources - scattered household sewage	Diffuse sources - scattered household sewage
Inputs of hazardous substances from point and diffuse sources, e.g., wastewater, surface runoff, and atmospheric deposition	Morphology - other	Hydro-morphological pressures	Connectivity - Hydropower	Diffuse sources – stormwater

General information of waterbodies (WB)

Waterbodies designated as heavily modified or artificial

COUNTRY	NUMBER OF WB DESIGNATED AS HEAVILY MODIFIED OR ARTIFICIAL	RATIO
DENMARK	720	6,8%
FINLAND	176	2,5%
ICELAND	-	0%
NORWAY	3765	11,1%
SWEDEN	668	2,4%

Waterbodies with exemptions

COUNTRY	NUMBER OF WB WITH EXEMPTIONS	RATIO
DENMARK	920	8,7%
FINLAND	1740	25%
ICELAND	0	0%
NORWAY	2988	10,4%
SWEDEN	3597	13%

Main focus for the next water management cycle (2022-2027)

DENMARK	FINLAND	ICELAND	NORWAY	SWEDEN
Full application of the WFD by 2027 which includes a revisit of the plan in 2023/2024 to assess and if necessary, implement further measures to reach good status	Implementing the measures and targeting the implementation to waterbodies and ground waters with best potential to reach good status	Assessment of pressure and risk analysis on wb	Plastic (macro and micro)	National plan for hydropower
To stop the leakage of nitrogen from agricultural lands by at least 13.100 tons of nitrate from the coastal water-bodies	Retention of water runoff from agriculture and forestry and integrating the measures with climate change measure	Strengthening the ecological classification systems for wb	Restoration (UN decade on Restoration)	Permits for industries - Weser
Restoration of watercourses	Restoration of waters, including removing barriers for fish migration	Integration of wfd-requirements in the polluting sector	-	Drainage agriculture land

Governance

DENMARK

A river basin management plan is developed for each of the four river basin districts, that cover a total of 23 main river catchments. Public participation, in general, is a high priority, and Water Councils provide knowledge and entitlement from the local level on watercourses. The political process in river basin management planning is carried out by the ministry, supported by the Protection Agency, which is responsible for the scientific foundation of the plan. Managing the program of measures is the responsibility of the Protection Agency, but the concrete mitigation measures are implemented by both municipalities (e.g., river restoration) and state (e.g., targeted catch crops) with state and/or EU funding

NORWAY

At the RBD level, nine Regional Councils are entrusted the task as planning authority for the RBMPs, while the respective County Governors' Environmental Departments are responsible for the monitoring and classification. In each River Basin District, there is a District Water Board, facilitating the participation and sector integration of all relevant authorities.

At the local level, the waterbodies have been grouped into 105 catchments, as a practical operational level for water management. Each catchment has a local Water Board and involves on average 3 or 4 municipalities, responsible for drinking water, sewage, land use planning, and local measures in agriculture. Almost all catchments have a coordinator as a joint resource and expertise assisting the municipalities with their responsibilities and tasks in water management and contributing to stakeholder participation and public information at the local level.

At the national level, sector integration is facilitated through a Committee of Ministries, chaired by the Norwegian Ministry of Climate and Environment, and encompassing 8 ministries. A permanent Committee of Agencies is also in place, chaired by the Norwegian Environment Agency, and encompassing 10 agencies. The Committee of Agencies has been delegated the task of preparing national guidance for the River Basin Districts (RBDs), advising the ministries on the final approval of the updated RBMPs and has two sub-groups on status classification and restoration. The Agencies run a shared national water website and organize the National Water Environment Conferences. A National Reference Group secures the participation of national industry associations, NGOs, and civil society representatives

ICELAND

Iceland is one River Basin District and divided into four Water Regions. Cooperation with various entities is formulated into the law to ensure the full and successful implementation of the framework. Seven consultation committees have been established and divided into three categories.

1) Water Council Committee with representatives from the government and the Icelandic Association of Local Authorities

2) Two Advisory Committees where there are representatives from the public organizations, NGO's and various associations from the industry and nature conservation groups.

3) Four Water Region Committees with representatives from municipalities and local health inspectorates. The Water Region committees are managed by the Environment Agency of Iceland

These committees are important in gathering data on, for example, pressures on water, reviewing information as well as ensuring close cooperation between entities.

SWEDEN

Five regional water authorities based on water districts.

For every water district authority, there is a special water district board – the water delegation. Their task is to decide on environmental quality standards, programs of measures, and management plans. The delegation comprises expert members appointed by the government for a fixed term. The delegation is chaired by the county governor at the county administrative board that constitutes the water district authority.

Swedish Agency Marine and Water Management (SWAM): The regulatory and guiding authority for the implementation of the EU Water Framework Directive. SWAM also coordinates Sweden's five water district authorities which in turn oversee the work carried out by the counties within their districts. SWAM participates at the EU level and reports on the country's progress. They also try to harmonize our cross-border efforts, such as those with Norway and Finland with which Sweden shares river basins.

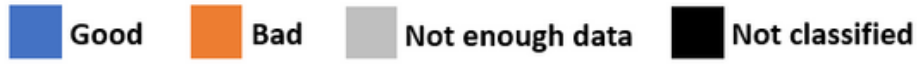
Swedish Geological Survey (SGU): Supports the water authorities in tasks related to characterization, risk and status assessment, monitoring, measures, reporting, and so forth. SGU is also the main groundwater data provider including groundwater body delineations and hydrogeological data, monitoring stations, chemical analyses, and water levels for risk analysis and status classification.

FINLAND

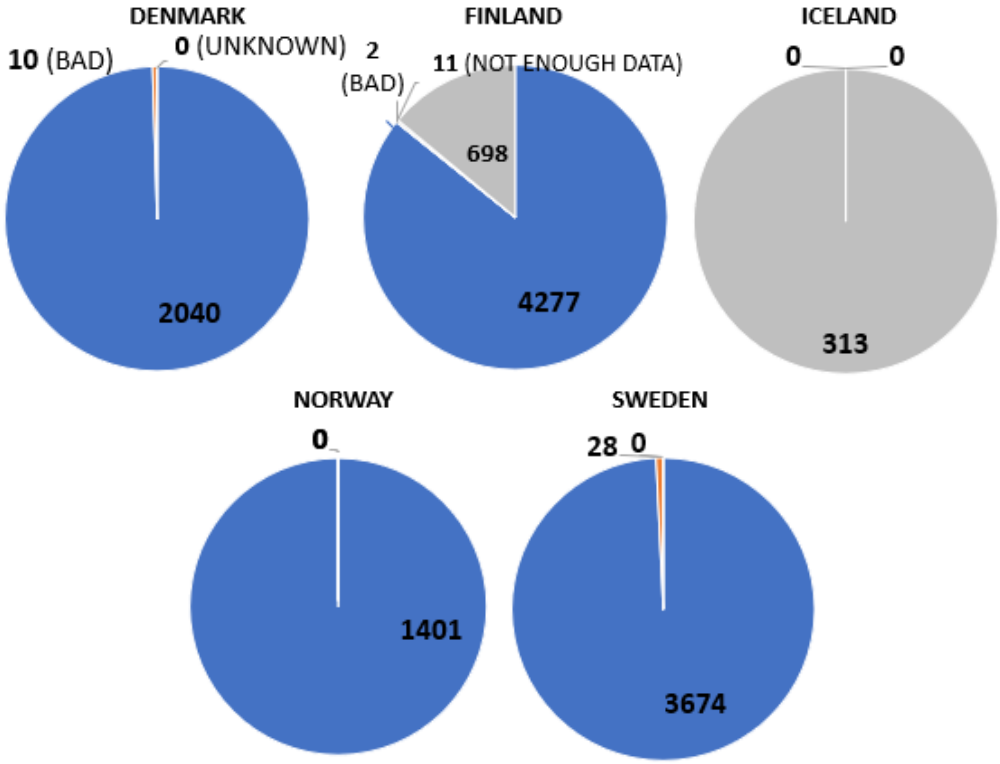
Eight water districts of which one is the Åland Islands that govern their EU policy independently. The seven districts on the mainland are governed by a regional environmental authority (Centre for development, traffic, and the environment) that functions as the water authority coordinating other regional environmental authorities in the district. Each district has a steering committee, and every regional authority has one or several cooperation groups that consists of relevant stakeholders in the area.

Groundwaterbodies

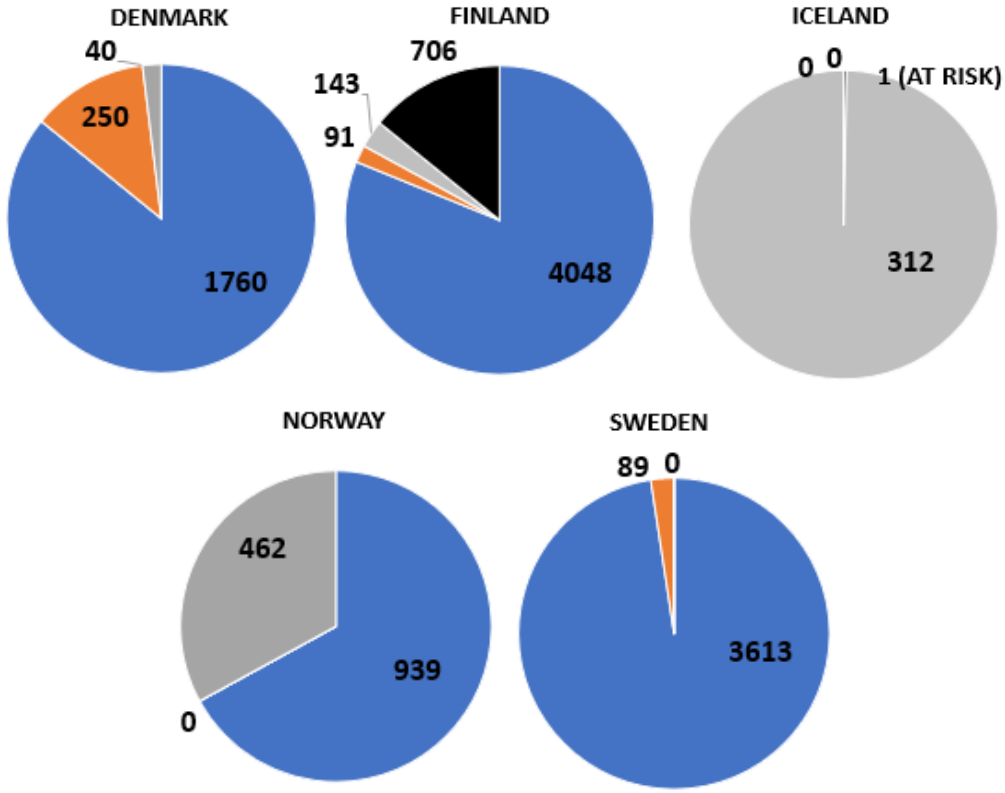
The status of groundwaterbodies is measured in quantitative and chemical status



Quantitative



Chemical

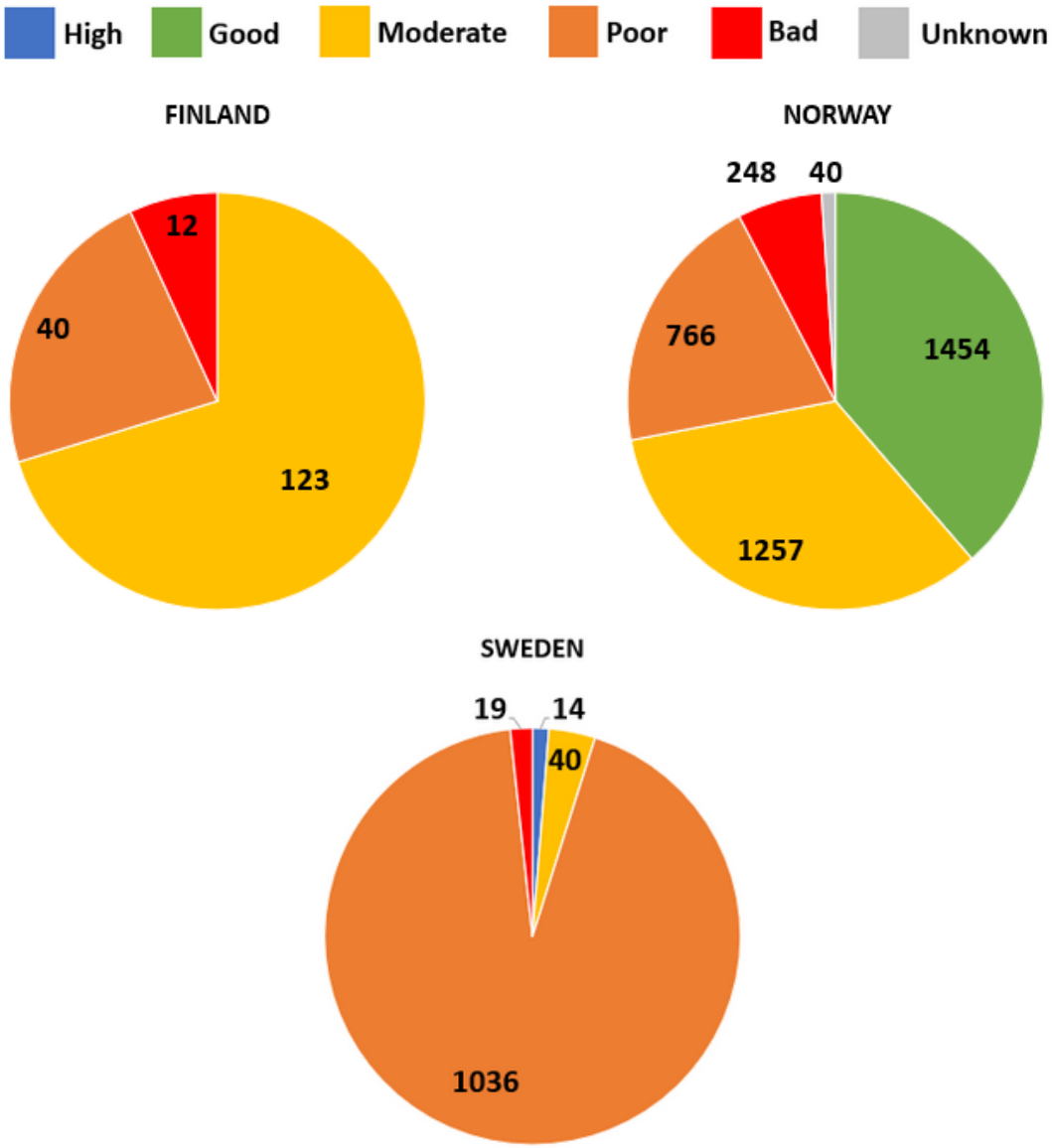


Ecological potential of waterbodies (WB)

What is ecological potential?

For waterbodies that are designated as heavily modified (HMWB) the status of the waterbody is classified according to their ecological potential, not ecological status. HMWB are under significant morphological pressures, e.g., from hydropower plants. In HMWB the environmental objective is good ecological potential (GEP).

GEP equals the ecological conditions that may be achieved by implementing all realistic mitigating measures that do not have a significant adverse effect on water use. The method for designating HMWBs, and assessing their measures and potential follows the "mitigation measures approach".



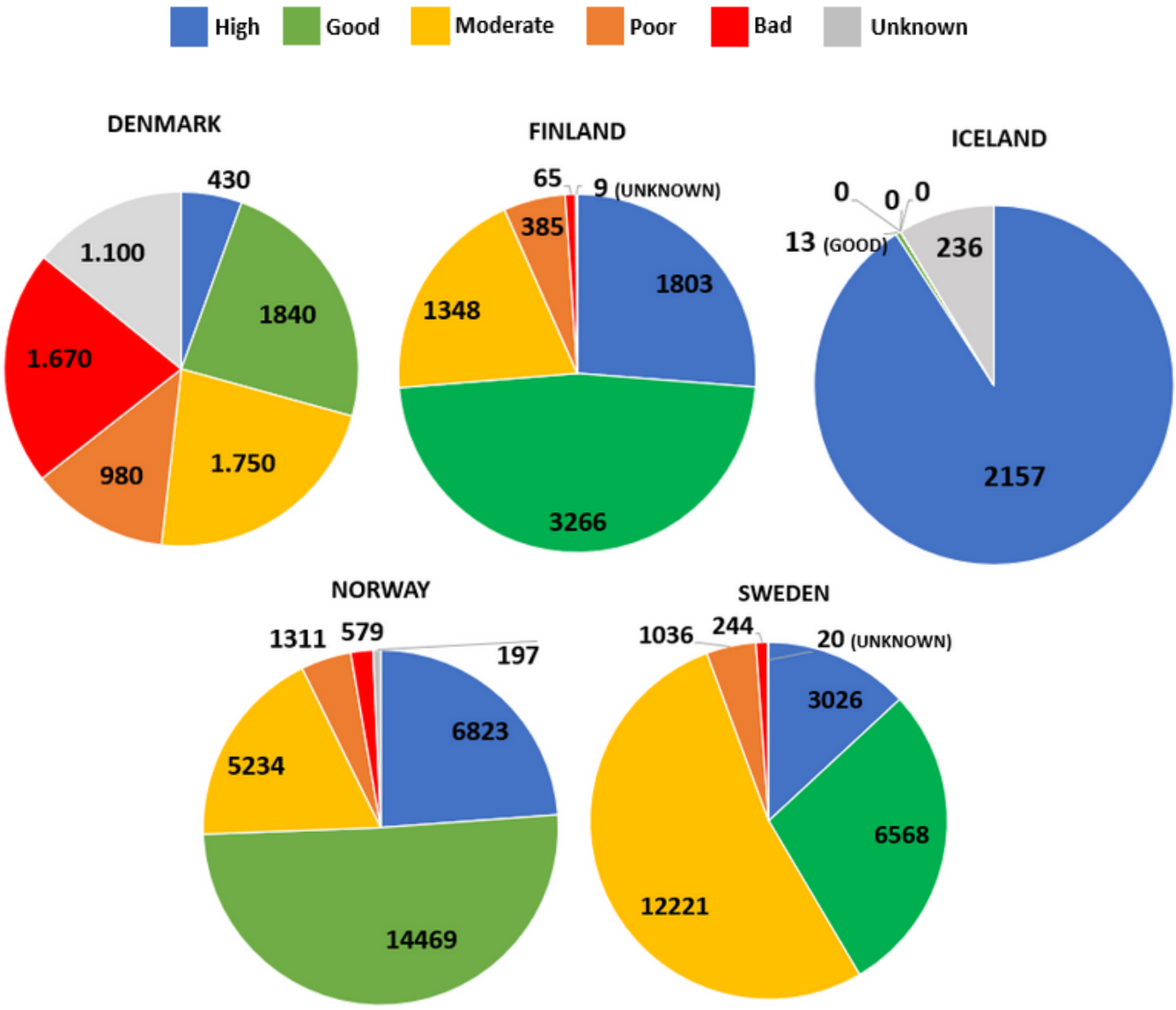
Ecological status of waterbodies (WB)

What is ecological status?

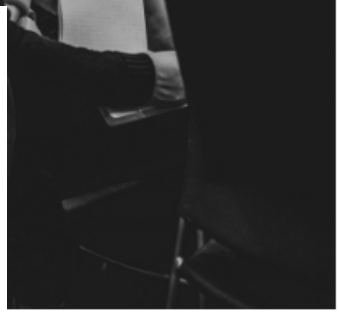
The ecological status of a waterbody is classified into five categories: high, good, moderate, poor, or bad.

Waterbodies that are classified as high status are usually without pressures, but some of them can be affected by small-scale pressure without it influencing their status. The rule of thumb is that as the pressures increase on a water body it will be reflected in the declining status of the waterbody.
As the magnitude and number of different pressure factors increase the status of a waterbody will decline.

For waterbodies that are designated as heavily modified the status of the waterbody is classified according to their ecological potential, not ecological status. The ecological potential is not displayed in these figures.
Where we lack sufficient data, the status is marked "unknown".



6. Pictures from the conference



More pictures from the conference can be found on the conference webpage:
https://nordicwfd2022.vatn.is/photos/

7. Collaborating agencies

The programme for the eighth Nordic conference is a collaboration between the following agencies