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BIODIVERSITY ACTION PLAN

1 BACKGROUND

Fortum's operations have an impact on local biodiversity. For example hydropower production alters water systems by abstraction, impoundment and regulation of water level and flow, and therefore impacts the biodiversity of the local aquatic ecosystems, particularly the fish population. However, hydropower is important in the fight against climate change, which is globally one of the greatest threats to biodiversity. Emissions from fossil fuel-based energy production may impact biodiversity at a global and local level. Increasing CO_2-free energy production mitigates the biodiversity loss caused by climate change. The construction of any facility may have impacts on biodiversity by turning natural areas to a built environment. Indirect impacts from our operations may be caused by, for example, the procurement of biomass for use as fuel or raw material, as well as the procurement of other fuels.

Fortum aims to improve biodiversity in connection with its operations. The need for measures is defined in the Biodiversity Manual. The measures are focused on priority areas with high biodiversity value or those with high potential for improvement. This Group-level action plan is based on measures going beyond site-specific legal or license obligations. In addition to the measures listed in this action plan, Fortum is taking part in other biodiversity-related projects/initiatives. For additional information, please visit the biodiversity section on our website and Environmental Report for Hydropower 2022.

Further, Fortum has also committed to the ambitious biodiversity target of no net loss of biodiversity (excluding any aquatic impacts) from existing and new operations (Scopes 1, 2) from 2030 onwards. In addition, the company will reduce its negative dynamic terrestrial impacts in upstream Scope 3 by 50% by 2030 (base-year 2021). Fortum will continue to implement local initiatives, especially in hydropower production, and is committed to developing a science-based methodology during 2023 to assess the company's aquatic impacts.

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Our biodiversity-related measures are connected mainly to the Sustainable Development Goals 15 and 14:

SDG 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation, and halt biodiversity loss

SDG 14. Conserve and sustainably use the oceans, seas, and marine resources for sustainable development

2 TARGETS

The main target of this action plan is to improve biodiversity in connection with the watercourses where we operate hydropower plants in Sweden and Finland. Additionally, the action plan aims to improve terrestrial biodiversity of some locations near Fortum's operations.

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3 ACTIONS

Action	Location	Schedule	Cooperation partners	Status
Fortum Hydropower, Sweden				
Low Profitable Dam (LPD) 2023	Sweden – River Uvån	2018-		Ongoing
In year 2023 we are planning to remove five small dams in River Uvån: Östra and Västra Görsjön, Lilla Ullen, and Östra and Västra Gällsjön. **At Östra and Västra Görsjön, we are planning to remove the dam's outlet, threshold and connecting parts of the dam. After removing the dam, the water level in Görsjöarna will return to conditions that prevailed before the damming in the 1940s. At Lilla Ullen, we are also planning to remove the dam and all its connecting parts, thereby resetting the water levels to conditions before the damming.** At Östra Gällsjön and Västra Gällsjön, we are also planning to remove the dams and return the water levels to the pre-damming situation. Additionally, blocks, stone and natural gravel will be placed with a slight slope towards a new defining section upstream of the dam locations. A deep groove will be built centrally in the outlet bay to obtain a sufficient water depth even during low tide.				

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Action	Location	Schedule	Cooperation partners	Status
Habitat improvement measures at Lower River Dalälven.	Near Untra and Lanforsen HPP and area of Ambricka. Lower River Dalälven, Sweden	2011-	Upplandstiftelsen	Planning ongoing for measures in 2024-2026
Target: Improving biodiversity values **Description**: The project continues in 2023 and consists of various measures to develop the high biodiversity values that are linked to Fortum's land areas surrounding the Untra and Lanforsen hydropower plants in River Dalälven. In 2023, we continued environmental inventories and habitat restoration/maintenance measures such as pulling up reeds and mowing hay in Ambricka meadow. Near Untra HPP, plans were made to thin out the overly dense tree covered areas during winter. Also invasive alien species vegetation, mainly lupin, were removed from areas in Södrä Kvarnön and Stor-Gysinge. Lupin vegetation was also removed during summer of 2023 near Landforsen in Tippön. In addition, an inventory of local fungi populations was made in Tippön och Askön.				
Krafttag ål (Eel programme)	Rivers Göta älv, Lagan, Ätran, and Motala ström, Sweden	2015-	Swedish Agency for Marine and Water Management and five hydropower companies	Yearly implementation
Target: Actions for the threatened eel population **Description**: The trap and transport of silver eels is planned to be carried out during 2023 in four Swedish rivers: Göta älv, Lagan, Ätran, and Motala ström. Migrating eels are to be transported from lakes to areas downstream hydropower plants. The work will be performed in an industry programme, managed by Energiforsk, with participation from Fortum and five other hydropower companies. There will also be a release of (imported from France) young eels, on the Swedish West coast.				

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Habitat improvements around Fortum hydropower plants	Edsforsen, Forshult, Dejefors, Forshaga, Krakerud, Munkfors and Skoga HPPs, River Klarälven, Sweden	2019-2031	County of Värmland	Ongoing
Target: Improvements for biodiversity and managing invasive species **Description:** Biodiversity actions on land around HPPs have been implemented since 2019, based on a biodiversity study from external consultants. The land area covered by potential nature conservation is approx. 115 ha within 55 individual maintenance areas. In 2021-2022, a systematic conservation plan with yearly actions for every maintenance area was produced and implemented as a basis for actions over the next 10 years. The measures in the plan have also been prioritised based on ecological value and cost-effectiveness, leaving 40 areas as highly prioritised. A large proportion of the measures cover biological diversity in forests, such as regeneration of dead wood/trees, beneficial for deciduous forests and old/large trees. Restoration of meadows is also included as a prioritised measure. In 2022, measures to restore meadows was carried out within 10 areas around 7 HPPs (in total 2.8 ha). Dead and/or dying trees were regenerated within approx. 16 ha of land, especially around Skoga HPP. In 2023, measures are ongoing according to plan, e.g. annual mowing of meadow areas, thinning out competing trees to benefit valuable trees, and removal of invasive plants. In total, actions in 2023 are planned within 17 separate areas totalling 38 ha. The progress will be reported in December 2023. Standardised baseline studies of biodiversity were carried out in summer 2023 by conservation experts in some areas, but the results have not yet been reported.				
Habitat improvements around Fortum hydropower plants	Ljusnefors, Ljusneströmmar, Höljebro, Bergvik	2023-2031		Started
Target: Improvements for biodiversity and managing invasive species **Description:** Biodiversity actions on land around HPPs based on a biodiversity study from external consultants. Systematic conservation plan with yearly actions for every maintenance area will be produced and implemented as a basis for actions over the next 10 years. The measures in the plan will be prioritised based on ecological value and cost-effectiveness, leaving 40 areas as highly prioritised.				

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Habitat improvement in the water and around Söräng hydropower plant	Söräng (former hydropower plant), River Voxnan (tributary to Ljusnan), Sweden	2021-	"Voxnadalens biosfärsområde" and "Ljusnan Voxnan Vattenvårdsförbund"	Planning ongoing
Target: Improvements for fish and terrestrial species **Description:** An external consultant conducted a field study to determine the potential for habitat improvements. The results from the study will be used to determine which biodiversity measures to implement. The consultant's report was ready and presented in February 2023. In 2023, the Bollnäs and Ovanåker municipality was informed about the project. Two of the area's active angler associations were also contacted and informed. Local landowners received the information at a meeting in Söräng before summer. The authorities in Gävleborg were critical with the measures suggested so the project was put on hold. The work is planned to be done in cooperation with "Voxnadalens Biosfärsområde" during 2024 and 2025.				
Avesta hydropower plant meadow improvement	Avesta HPP, River Dalälven, Sweden	2021-	Municipality of Avesta	Ongoing
Target: Improvement for butterflies and meadow flowers **Description:** Actions in 2023 concentrate on general maintenance of the meadow, such as mowing and weed removal, and keeping the sandy banks clear. A more comprehensive mowing is planned for autumn and will be done using traditional methods with the help of working horses. New signs and information about the biodiversity work in the popular recreation area were posted in 2023.				

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Action	Location	Schedule	Cooperation partners	Status
Fortum Generation, Hydropower, Finland				
Releases of young salmon and seatrout in the tributaries of River Oulujoki	Muhos, Utajärvi and Vaala, River Oulujoki, Finland	2005-	Municipalities of Muhos, Utajärvi and Vaala, ELY centre** of North Ostrobothnia	Yearly implementation
Target: Improve migrant fish populations in River Oulujoki by releasing fish fry to breeding grounds **Description:** In addition to power companies' legal obligations for fish stocking in the Oulujoki catchment area, about 50,000 one-year-old salmon or seatrout are stocked yearly to River Oulujoki tributaries, the Muhosjoki, Utosjoki and Kutujoki rivers. This fish stocking project, initiated in 2005, contributes to the creation of a viable population of migrating fish in River Oulujoki. Monitoring has proven that the fish have grown well in the stocking area. In 2022, 7,160 one-year-old salmon and 8,000 one-year-old seatrout were stocked in River Kutujoki, 7,740 salmon and 6,500 seatrout in River Utosjoki, and 7,700 salmon and 7,000 seatrout in River Muhosjoki.				
Seitenoikea fish passage in River Emäjoki	River Emäjoki, Finland	2023	Ramboll	Planning ongoing
Target: Determine the best solution for upstream migration of fish for Seitenoikea HPP **Description:** The Seitenoikea HPP dam is currently a barrier to migrating fish. In the national fish passage strategy, the Hyrynsalmi route is a top target for restoring the natural life cycle of lake trout, and Seitenoikea is a top target for building a fish passage and restoring the migration connection. Alternative ways to build a fish passage in Seitenoikea will be studied. The impacts and costs of alternatives will be compared. Based on the feasibility study, the general planning of the by-pass solution will start, and then the permits needed for its construction will be applied for. The timetable for implementing the project will be clarified as the planning progresses. Fortum to study a by-pass solution for the Seitenoikea hydropower plant to enable fish to migrate upstream | Fortum				

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Montta fish trap operation and development	Montta HPP, Muhos, River Oulujoki, Finland	2021-	Municipalities of Muhos, Utajärvi and Vaala, ELY centre** of North Ostrobothnia	Ongoing
Target: Strengthen stream fish populations in River Oulujoki **Description:** The main focus at the Montta fish trap is to trap and transport mature salmonids to the improved spawning areas in the tributaries upstream of several dams in River Oulujoki. In 2020, we transported the first salmon and trout spawning pairs to River Utosjoki, a tributary of Oulujoki. When suitable, one of the aims is to try to collect eggs from the trapped salmon to improve the quality and the genetic biodiversity of the farmed salmon population at Fortum's fish farm in Montta. The expected outcome is an improvement in the salmon stocking results. In 2022, trapped mature salmon and trout were transported to River Utosjoki, Oulujoki's tributary. We also gave mature fish to Natural Resources Institute Finland for renewing their broodstock used for salmon stocking obligations. In 2022, we started to monitor the results of the transports in Rivers Kutujoki and Utosjoki by electrofishing. The described measures are continuing in 2023.				
Establishment of a flower meadow	Muhos, Pyhäkoski, River Oulujoki, Finland	2023	Municipalities of Muhos	Autumn 2023
Target: Enhance biodiversity **Description**: Together with the municipality of Muhos, Fortum is renovating the trailhead area of Lemmenpolku next to Fortum's Pyhäkoski power plant. In the restoration project, the deforested area at the trailhead will be renovated into a meadow. The area lighting and information boards will be upgraded to improve safety and enjoyment of outdoor activities. The renovation work is expected to be completed by the end of the year.				

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Action	Location	Schedule	Cooperation partners	Status
Fishheart solution for upstream passage of fish at Leppikoski hydropower plant and supporting actions	Leppikoski HPP, Paltamo, River Emäjoki, Finland	2021-	Fishing rights owners' associations Paltamo I and Paltamo II	Ongoing
Target: Give fish the possibility to pass the dam **Description:** Fortum's goal is to strengthen the natural cycle of lake trout in the vicinity of the Leppikoski hydropower plant in the Oulujoki watershed, which is one of the top targets in the national fishway strategy. In 2021, Fortum constructed a hydraulic dam bypass solution, Fishheart, at the Leppikoski power plant. Fishheart is a Finnish innovation to enable fish passage over a migratory obstacle. In order for the fish passage to be useful in strengthening migratory fish stocks, habitats and breeding areas are needed for the fish to migrate to. A total of 26 hectares of potential habitats and breeding areas of lake trout can be found in the tributaries above Leppikoski.				

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Fortum Circular Solutions, Recycling & Waste, Sweden				
Kumla butterfly landscape	Kumla, Sweden	2020-2026	Kumla municipality	Ongoing
Target: Increase biodiversity by restoring former grasslands to meadows **Description:** In Sweden, we are taking part in the project coordinated by the Kumla municipality to build a butterfly landscape in the area close to our waste treatment facility, in the Norra Mossby area. The aim of the butterfly landscape project is to increase the biodiversity in the area and to restore former grasslands to benefit plants and insects, and butterflies in particular, which thrive in meadowland with calcareous soil. The project also aims to use the butterfly path and landscape for educational purposes. During 2020, sandy habitats for solitary bees were created and meadows were restored. In 2021-2022, the meadow land areas were expanded in order to increase biodiversity, and measures to simplify the future care of these areas were made. In 2023, various management practices, such as felling and the control of problematic species, as well as the opening of another of the meadows will be executed. In 2023, we are also planning to plant meadow flowers on at least 7 hectares of the landfill surface at Fortum's waste facility in Kumla, close to the location of the Kumla butterfly landscape. In 2024, we plan to construct a sand embankment in a protective embankment at our site to create nesting places for swallow sand martins. https://www.fortum.com/media/2021/06/butterfly-landscape-kumla-sweden				