

# Wellbeing from blue spaces

Streams in research and good practices

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# Foreword

**Nature** offers wellbeing to human beings in many forms, such as food, recreation and business opportunities, and it is well known that it can also enhance people's mental, physical and social wellbeing and support their learning. Previous debate on the positive effects of nature on wellbeing has primarily focused on forests and other green spaces. The development of the blue bioeconomy has created the need to investigate the opportunities offered by natural water environments (i.e. blue spaces) more closely to create wellbeing services for different customer groups that are not limited to recreation and tourism. This has generated lively discussion, and new research and development projects have recently been initiated or are being prepared with a call for better understanding of the various aspects of this area.

**This** publication seeks to respond to this need and focus on the broad field of 'blue wellbeing', which covers all the services generated in blue spaces ranging from activities in everyday life, tourism, learning, and health and social services. Within this framework, 'blue care' services refer specifically to activities arranged for people with special needs to support their health, wellbeing and social inclusion. The publication describes natural water environments as a source for multiple blue wellbeing services, as well as services' use, availability and their effects on health, with some examples of the activities in this field. The conclusion briefly discusses future research and policy needs.

**The** publication is the result of the BlueNordic project, which aimed to map new initiatives in the blue bioeconomy in the Nordic countries. It is also connected with the FRESHABIT LIFE IP (LIFE14 IPE/FI/023), which aims to accommodate an extensive variety of practical measures and create practices to preserve Finland's freshwater environments and heritage. Overall, the publication is based on a wide range of sources: existing research literature, workshops and meetings that these two projects have organised around this topic, as well as a consultation with various practitioners and researchers working in the field. The authors are grateful for all these contributions!





# 1. Blue spaces as a source of wellbeing

## What does 'blue space' mean?

About 71 per cent of the Earth's surface is covered by water.<sup>1</sup> Most of this water is in oceans, but water has also accumulated in post-glacial formations of various sizes, such as lakes, rivers, channels, streams and peatland. Compared to many other regions, surface water makes up a high proportion of the land area in the Nordic countries: In Finland and Sweden surface water lakes and rivers covers roughly around 10 per cent of the total area of the country. In Norway, Iceland and Denmark the figures are lower but this is compensated by long and fragmented coastline.

Following international literature we call natural water environments as 'blue spaces'<sup>2</sup>. Blue space refers not only to water, but also to its surroundings. This is appropriate, because shores forests and built environments are often integral parts of the water landscape, and consequently of the wellbeing experience. Landscapes with both blue and green spaces are perceived as being most pleasant.<sup>3</sup> Most people may associate 'blue space' with open water. However, much of Earth's water is covered with ice or is in the form of snow for a significant part of the year, or occurs in glaciers year-round. Therefore, when discussing the possibilities to utilise water environments in wellbeing services, opportunities provided by 'white spaces' should not be overlooked.<sup>4</sup>

## The inseparable bond between humans and water

The relationship between humans and water is ancient and all-encompassing: our very early ancestors lived in water, we spend the first months of our existence in water, around 70 per cent of the human body is water, and we need around three litres of water a day to maintain our bodily functions.

Blue spaces have historical significance around the world. Early humans established their settlements in coastal areas and along rivers due to the favourable climatic conditions and fertile soil. Water also provided important travel and transport routes. Waterways connected people, but they could also separate people and villages during bad weather or the thaw season. Fish were a major source of nutrition, and fishing and hunting were important livelihood activities, particularly in coastal and archipelago areas. Trade and industrial activities have significantly impacted coastal landscapes. Since the Middle Ages, flowing water has been harnessed to power mills and sawmills. In the 19th century, entire mill communities and towns were established along flowing watercourses. Coastal regions are traditional trading places, but they have also been used for defence. The cultural residue of these different uses are often still visible in waterfront landscapes.

Water is an important element in all areas of the human life: our everyday activities, art, religion and science; water has had a significant impact on human languages and culture.<sup>5</sup> Water is also one of the oldest cultural symbols in the world: a metaphor for life and the passage of time. The aesthetic and recreational significance of water for human wellbeing was recognised early on. This is why coastal areas, natural mineral springs and spas have been particularly popular travel destinations all around Europe for centuries.<sup>6</sup> Urban areas with no natural water bodies are decorated with fountains, ponds or canals. In recent decades, urban waterfront areas, such as old ports and industrial areas, have been repurposed as recreational areas and event venues<sup>7</sup>.

## The many faces of blue spaces

Water is not always an attractive environment. Sudden, extreme weather phenomenon like storms and floods - which are to become more frequent in the future due to climate change - can turn water into a frightening and distressing element. Municipal waste, aquatic insects, industrial wastewater, and eutrophication caused by agriculture and forestry have caused serious harm to human health and restricted the recreational use of waters.<sup>8</sup> The state of Nordic water systems has improved in many sectors since the 1970s, but there is still room for improvement. Many lakes

still suffer from eutrophication and brownification or overgrowth of vegetation on the shores. Issues in water quality are easy to observe, which perhaps explains why people more actively volunteer for water-related conservation activities. The Nordic countries have an abundance of relatively clean blue spaces, and we can debate on how to utilise them for recreation, but in many countries lack of clean drinking water is an everyday struggle. By 2025, up to two thirds of the world's population will suffer from lack of access to water to some degree.<sup>9</sup> Therefore, the Nordic countries could potentially play an even greater role in the global water supply and as a source of other wellbeing.

### Services to enhance wellbeing

Blue spaces offer a range of possibilities to promote human wellbeing and human health. Health and wellbeing are broad and ambiguous concepts and can be defined in a variety of ways. Here, we understand wellbeing in its broad sense: health, satisfaction of basic human needs and quality of life. Moreover, health emphasises individual and social strengths instead of the absence of illness.<sup>10</sup> It can be seen a continuum between illness and perfect health. In addition to curing diseases, rehabilitation and social inclusion, it is also important to promote health in a manner that emphasises the possibilities of individuals and communities to prevent health risks and illnesses.

## Typology of blue wellbeing services

**Everyday activities** covers all the different ways blue spaces are present in our everyday lives through living, work, play, travel and leisure activities. Most people come into contact with blue spaces in their everyday environments, but there are significant regional and social differences in this area.

**Recreation and tourism services** refer to self-motivated or guided services that aim to provide water-related experiences, adventures and fun for people.

**Education services** refer to early childhood education and school excursions that aim to promote learning in blue spaces, about blue spaces, and for the benefit of blue spaces. Educational services play a key role in promoting environmentally responsible citizenship.

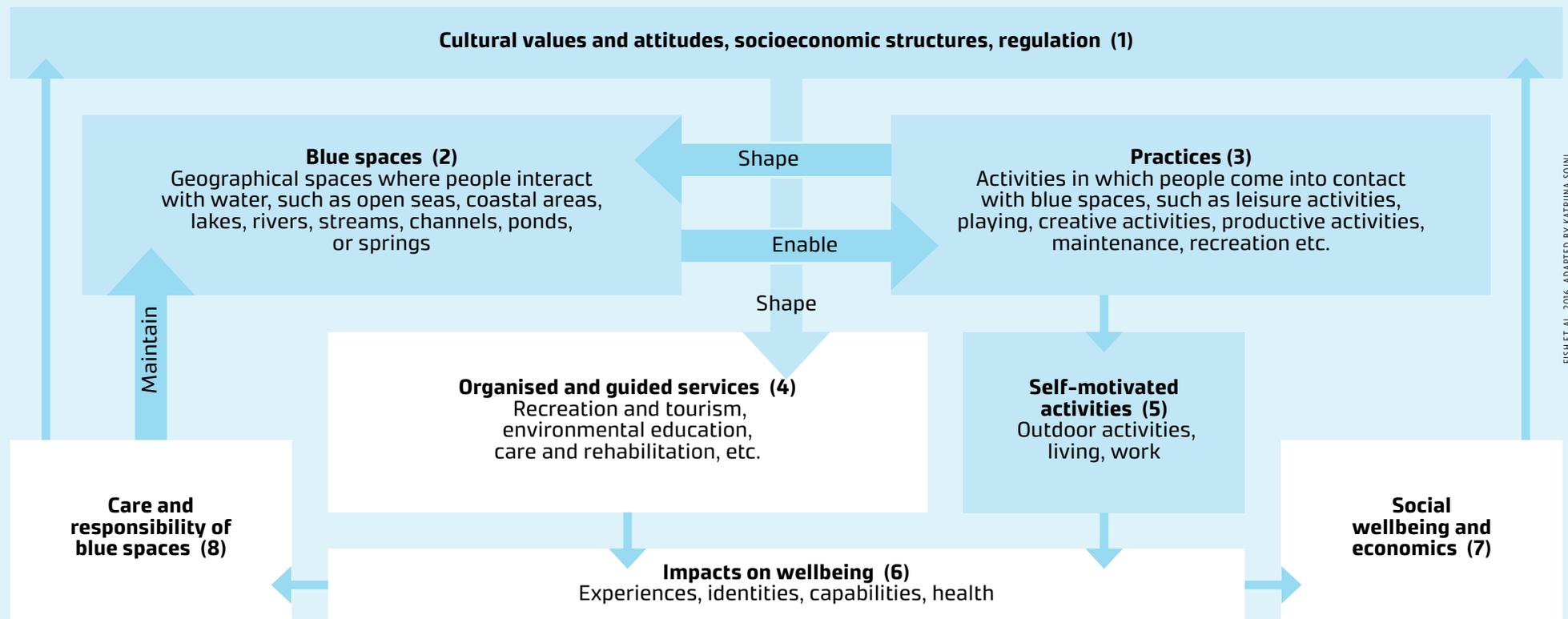
**Rehabilitation and social reintegration services** refer to services that aim to actively support or enhance human wellbeing. Customers of these services need support in the maintenance of their health or wellbeing, finding employment (rehabilitative work), or coping with their everyday life. These services are also referred to by the term 'blue care'.

*The above service categories may overlap and may borrow elements from other services. For example, a fishing guide can offer both tourism and rehabilitation services, depending on the customer group or collaboration partner.*

Number of participants

Self-motivated participation

ADAPTED SITRA 2013



FISH ET AL. 2016. ADAPTED BY KATRINA SOINI

## Water environments as cultural ecosystem services

In recent years, the concept of ‘ecosystem services’ has been used in identifying and evaluating the positive effects of nature on human wellbeing. Ecosystem services are all services provided by nature that support and maintain natural processes and guarantee food, clean water, clean air, and other basic necessities and wellbeing for humans. According to the ecosystem services framework, services (see Box 2 in the figure below) provided by blue spaces are considered immaterial ‘cultural ecosystem services’ (Box 6), with multiple benefits:

- health (mental, social and physical)
- knowledge and skills related to blue spaces (capabilities)

- experiences related to blue spaces (aesthetics, tranquillity, emotions)
- identity (sense of place, symbolic meanings associated with water)

In practice, these benefits only materialise when people interact with blue spaces in their living environment or through their work, leisure or creative activities, environmental management projects, tourism, or some other services (Box 3). Such activities may be spontaneous and self-motivated, or they may involve participating in guided services (Boxes 4 and 5). The utilisation of blue spaces is steered by different social norms and cultural habits and practices, such as the

extensive ‘everyman’s rights’ in Finland, and by various legal provisions and nature conservation requirements (Box 1).

Blue wellbeing services and their use can influence both the regional and national economies, as they have the potential to boost service provision and business activities and to improve public health (Box 7). Other benefits have also been identified: Blue spaces, as with many other natural spaces, provide new ways to understand the relationship between humans and nature and have the potential to make people care, take responsibility and act for the benefit of water environments (Box 8), ultimately changing the values and attitudes of the general public.



Blue  
spaces  
activate and  
stimulate

**Blue spaces** can have varied impacts on the physical, mental and social wellbeing and health of humans, which people can feel and observe in themselves when around water.<sup>13,14,15,16</sup> Compared to many other natural spaces, there is less research on the effects of blue spaces on wellbeing. Although the mechanisms behind the positive effects of green and blue spaces on wellbeing are obviously very similar, there are some characteristics in the health effects resulting from blue spaces that we briefly discuss below.

### **Blue spaces provide multi-sensory experiences**

The dominant human sense is sight. The positive effects of blue spaces on wellbeing are primarily based on the fact that water is as an aesthetically pleasing element.<sup>4</sup> Water elements in a space or landscape can make the environment significantly more pleasant. This is also true for elements combining water and vegetation and for complex natural elements combining different zones, shapes and colours. Blue spaces are also perceived as pleasant because watercourses expand the landscape.<sup>14,16</sup> A sense of space, continuity and freedom are also commonly associated with blue spaces;<sup>14</sup> the flowing motion, colour and clarity of water and light patterns that change according to the weather, time of day

and season make blue spaces visually fluid and interesting environments.<sup>16,17</sup> Similarly, in winter, the crystal clear ice cover or a snowy landscape that changes according to the weather and light conditions may make an interesting visual element.<sup>3</sup>

Auditory, somatosensory and kinaesthetic sensations linked to water are also important for restorative and therapeutic experiences. Water temperature, water flow and motion, as well as sounds that change according to weather and wind conditions, are considered pleasant and even therapeutic. Odours are also important in how attractive people perceive the water landscape to be. People experience kinaesthetically while swimming or travelling over water by other means.<sup>14,16</sup> Swimming, diving and floating in or on water can generate special auditory, somatosensory and kinaesthetic sensations, meditative experiences, and a sense of belonging to nature.<sup>17,18</sup> Moving on ice or in snow can also generate multi-sensory stimulation.<sup>19</sup>

### **Blue spaces are a versatile source of wellbeing**

As well as being aesthetically pleasing, blue spaces facilitate a number of activities. Shores are popular areas for outdoor activities. Research has shown that having a body of water in the proximity of a residential area makes residents

more physically active and consequently increases their health and wellbeing.<sup>13,16</sup> Blue spaces are actively used for recreation, exercise and sports, often together with other people, making them important areas for social interaction.<sup>20</sup> Water covered with ice or snow also promotes outdoor activities, although snow and ice can also involve the risk of slipping or of the ice breaking.<sup>3</sup>

As with many other natural spaces, blue spaces can help to reduce asthma and allergies, as spending time in nature can increase the diversity of the microbial flora of the skin and intestines and improve resistance to disease.<sup>21,22</sup> Spending a lot of time on sunny shores increases the intake of vitamin D, but involves the risk of excessive exposure to sunlight.<sup>23</sup> Sometimes blue spaces are perceived as risky environments. However, accidents are rarely due to the environmental conditions alone; they more often result from risky behaviour.<sup>24</sup>

Research has also shown that people are happier when around water,<sup>7</sup> as well as less stressed than when in other environments.<sup>25</sup> The significance of sense of place and place identity to wellbeing has also been studied. In surveys investigating people's favourite places, blue spaces are often highlighted. According to studies, examining people's relationship with nature, we utilise our physical environment for mental self-regulation, and our favourite natural spaces help

# How are the wellbeing and health effects of nature achieved?

us regulate our mental status towards a health-promoting mindset.<sup>26,27,28</sup> Even a brief visit to a natural space can facilitate recovery from stress and improve people's mood, and regular visits have a clear link to mental wellbeing.<sup>29,30</sup> A view from a window to a green or blue space can also improve mood and enhance wellbeing<sup>13</sup> in all seasons of the year.<sup>3</sup>

The positive effects of water elements on wellbeing should be utilised in the design of everyday living spaces, because people consider landscapes with water elements and blue spaces pleasing. Water elements can also make residential areas more pleasant and make people appreciate them more. If a landscape does not have any natural water elements, these can be introduced to the environment on a smaller scale, e.g. through fountains, ponds, fish tanks, photographs or blue soundscapes. The cooling, therapeutic and calming effects of water can also be significant factors to consider when designing healthcare establishments and planning their location.<sup>13,14,15,16</sup> It is hardly a coincidence that in the past, retirement homes, sanatoriums and hospitals were often built next to water.

**Water** elements in the landscape help to alleviate stress and improve mood.<sup>16</sup> The mechanisms behind the therapeutic effects of green spaces have been studied for a long time.<sup>31,32</sup> The physiological and psychological therapeutic mechanisms of natural spaces are interconnected. According to Stress Reduction Theory (SRT), which focuses on the reduction of emotional and physiological stress in humans, natural environments and elements are subconsciously perceived as pleasant and can thus reduce stress hormone levels and consequently decrease blood pressure, slow the heart rate and rate of breathing, and relax muscle tension. At the same time, pleasure hormone levels rise, improving mood and increasing positive feelings.<sup>32</sup>

**Successful** use of blue spaces in education is based on the fact that nature experiences promote problem-solving and restoration of attention after exhausting experiences or tasks. Attention Restoration Theory (ART) asserts that the body recovers back to pre-stress levels more quickly in natural environments than in built environments. Experiences and activities in natural environments activate areas of the nervous system that are not activated in built environments.<sup>31,33</sup> The concentration of children with ADHD, for example, has been found to improve significantly more after exercising in nature than after exercising indoors.<sup>34</sup>





Activities  
and wellness  
services  
in blue  
spaces

*You need a boat or some other vessel to move around on water. In some cities, you can rent a rowboat by registering as a service user.*

### 3.1. Everyday activities

Worldwide, water is an integral part of our everyday living, working, playing and outdoor exercising environment. According to estimates, a total of 80 per cent of the world's population lives within around a hundred kilometres of a sea, lake or river. Half a billion people depend on water for their livelihood, and up to two thirds of the global economy is connected to water. A billion people rely on fish and other seafood for protein. Water provides an important livelihood and nutrition, in developing countries in particular.<sup>35</sup>

Fishing in the Nordic countries is important both as an industry and as a hobby, leading to a high demand for sustainable management of fisheries resources. Commercial fishing happens mainly in marine areas, but freshwaters are popular amongst recreational anglers. While the numbers of commercial fishermen is fairly low across the Nordic region, the fisheries industry is of high national and/or regional importance. For example, in Greenland, Iceland and the Faroe Islands, fisheries and fish production make the most significant economic contribution to the welfare of society. The fishing industry embeds many cultural meanings.

Fishing is also a very popular recreational hobby in the Nordic countries. The statistics on the amount of recreational fishing are varied, but it has been estimated that in Finland, Sweden

and Norway, 30–50 per cent of the population go fishing, which has also a remarkable economic value besides the recreational value for the people.<sup>36</sup>

In addition to living and working, blue spaces are used for relaxation, recreation and recovery, as well as for a variety of activities throughout the year. Holiday homes are also often located around water. During the seasons when water is flowing freely, watercourses are used for fishing, swimming, boating, canoeing, paddle-boarding, birdwatching, observing aquatic flora and fauna, etc. In winter, ice-covered water can be used for skiing, skating, sledding, ice fishing or ice swimming.

For example, Finns exercise on average in their surrounding outdoor areas more than a hundred times per year, i.e. once in every three days.<sup>37</sup> A third of these times takes place in areas with a water element, and nine out of ten times in areas or routes with forest. More than half of Finnish wild swimming enthusiasts live within at most three kilometres of a natural watercourse. A third of all swimming takes place within the neighbourhood, i.e. at most 500 metres away from home. Owners of rowboats live within 15 minutes, or at most three kilometres, of a watercourse. Almost 1.5 million Finns report fishing as a hobby. Fishing is common among all age groups. Most people go fishing near their home, while on



**Many municipalities and nature tourism and programme service providers maintain skating routes, and rent skates and kick sleds for activities on natural ice.**



holiday at a summer cottage, or on fishing trips. Nearly half of all urban dwellers go fishing while at a summer cottage.<sup>38</sup>

### Accessibility

Blue spaces can generate everyday wellbeing only if they are of high quality and easy to access. Overall, access can be restricted for various physical, financial or cultural reasons. Blue spaces that are far away or have poor traffic connections or that are reserved for other uses, such as housing, productive activities or nature conservation, are inaccessible to the public, and there are regulations concerning fishing rights and access to freshwater. For some cultural reasons, water environments may be perceived as alien or frightening, or people may just not be used to accessing them, even though there are no physical, regulatory or financial barriers. In some areas or periods, accessibility can be restricted by problems in water quality, such as algal blooms.

In urban areas, waterfronts can be among very few natural areas.<sup>39</sup> Therefore, it is important that open recreational areas are near water elements, facilitating equal access for all citizens regardless of their socioeconomic status<sup>40</sup>. However, in respect to equal access and water quality, there are great differences between regions: living near a body of water can be expensive, limiting equal and fair opportunities to enjoy water

environments. In some other parts of the world, coastal (and often polluted) areas are inhabited by the poorest citizens.

### Access to blue spaces for people with disabilities

The amount of people with permanent reduced mobility or disabilities is growing, in particular as the population ages. Whether an environment is perceived as accessible is a very personal matter. On the other hand, accessibility of blue spaces is highly impacted by the season or weather conditions: in winter, even highly accessible pathways may be inaccessible if they are covered with snow or ice, and sunny weather can dilute the effect of high-contrast signage. Accessibility and the suitability of the service should be assessed beforehand, and the site as well as the planned activities should be described thoroughly beforehand according to the special needs and requirements of the clients.

The term 'adapted physical activity' means physical activities practiced by special groups, i.e. by people who find it difficult to participate in generally available sports and exercise services due to a disability, illness, reduced capability or fear of social situations, and who need adapted and special services to participate. These groups can benefit greatly from physical activity, and exercise services can enhance the capabilities

required to cope in everyday life as independently as possible. They can participate in almost all forms of exercise, provided that they have access to all the necessary support services and that these services are adapted to their needs with the help of scientific knowledge and, if necessary, a bit of imagination.<sup>41</sup> Where necessary, an assistant and different tools and aids can be used to facilitate participation. There are also companies specialising in outdoor physical exercise services for special groups and providing, for example, fishing boats for people with disabilities.

### 3.2. Blue spaces in nature and wellness tourism

In addition to self-motivated everyday exercise near people's homes, watercourses have traditionally provided environments for self-guided tours and various tourism services for all seasons. Due to the rich nature and cultural history, waterfronts are considered attractive by tourists in urban and rural areas alike. For example, approximately half of all nature tourism in Finland somehow links to blue spaces. Urban tourism around the shores of seas, lakes and rivers is more often associated with festivals, events and cultural events, while rural tourism is characterised by the appreciation of clean nature, small-scale activities and individually tailored services.<sup>44</sup>

# Accessible canoeing

**Canoeing** provides an excellent way to experience blue spaces. It also enables accessing nature sites that are otherwise inaccessible. Canoeing along the shoreline can open up new perspectives even on familiar shores. It also provides a multi-sensory experience of nature. Different seasons paint the landscape with different colours, and wind and rain can generate new smells and sensory stimuli.

Canoeing is suitable for almost all customer groups, provided that they have access to the necessary aids and assistants or professional

guides who understand their needs. The most important task of a guide is to enable participation. Participants may also find it exciting just to keep their hand in water during the journey and to enjoy the sensation of water on their skin. The mobility challenges of the participants should be investigated in advance. The guide should plan the solutions for the needs of the participants and select the landing sites according to their accessibility. A special U-shaped jetty could facilitate boarding and exiting.



# Products and service models for blue tourism

*The Island Committee and the Ministry of Agriculture and Forestry have investigated good products and operating models for island, coastal and water-based tourism in Finland.<sup>46</sup> The products were evaluated according to the following criteria: experiences, exoticness, physical activities, landscape, multi-sensory activities, tranquillity and silence. Many of the service models identified are also suitable as blue care and blue wellbeing services, for example:*

*Wild swimming: long-distance open water swimming, short swimming trips, winter swimming*

*Underwater experience products: underwater nature trails, underwater statue trails, wreck diving parks*

*Commercial canoeing and stand-up paddle boarding trips ('SUP safaris')*

*Spa culture and wellbeing and wellness services: Scandinavian spa, nature spas, water therapy*

*Sauna services: sauna adventures, sauna culture, the story of the sauna, the 'sauna region' concept, urban saunas, sauna rafts*

*Fishing tourism products, ice fishing cabins*

*Routes facilitating commercialisation of blue spaces: car, motorcycle and cycling routes (such as the Åland archipelago route, the Archipelago Trail or the Puumala island route), wellness cycling services, 'fatbike' services*

*Electric vehicles and vessels: Segway and hovercraft safaris, electric motor-propelled rental boats*

*Lodging in blue spaces: 'glamping' i.e. glamorous camping, houseboating, mini-caravans*

*Blue space events utilising local traditions and culture: sledding on ice, ice surfing, tour skating, swimrunning, water cycling, and other physical events in blue spaces*

*Commercialisation of darkness in sites with no light pollution, such as in natural parks or in archipelagos: relaxation, stargazing, listening to the sounds of nature (for example, the activities of Mörk Ö Week, held in November in Kustavi, combine culture and wellness with darkness)*





# National Parks accessible for public visitors

*National parks can provide versatile opportunities for recreation for the public visitors, who can enjoy the open waters and mazes of islands by hiking, or in a boat or canoe. The Southern Konnevesi National Park is located on the shores and islands of the crystal clear Konnevesi lake. In addition to self-guided water tours and hiking, 40 local companies offer tourists guided summer and winter excursions, equipment rental, food and catering services, transportation to island destinations, as well as accommodation and conference services.*

METSÄHALLITUS | MERI-HILUKKA MÄKELÄ

Health and wellness tourism near water bodies is an age-old phenomenon: in the 19th century, the European gentry travelled to spas to seek treatments and spend time with their friends. According to the current definition, 'wellness tourism' means tourism primarily motivated by personal wellbeing, promotion or maintenance of personal health, learning, relaxation, or pampering yourself. Wellness tourists actively participate in promoting their personal wellbeing, including when they need additional help, support or accessible services. A wellness trip tailored around water environments can include a range of services from physical activities to services focusing on mental wellbeing.<sup>45</sup>

Both good water quality and attractive and well-maintained littoral landscapes are preconditions for developing nature and wellness tourism.

## 3.3. Blue spaces as learning environments

Beaches, shores and riverbanks are often considered just pleasant excursion destinations that provide a welcomed change in the everyday school environment. However, competent educators can turn these trips into educational

events that help to implement the curriculum and achieve the learning targets. Blue spaces can be easily adapted into inspirational teaching and learning environments for teachers and learners of different ages. Experiential learning in natural environments has proven to be an effective and efficient way to promote learning.<sup>47</sup>

Having lessons outside the classroom can have a range of positive effects. Learning in outdoor environments, particularly in natural environments, promotes physical and mental wellbeing, enhances motor skills, and increases physical activity among schoolchildren. They often find exercises in natural environments more meaningful, which motivates them to learn more and facilitates understanding of even complex topics. Learning outdoors can also enhance short-term and long-term memory, improve concentration, and facilitate the combining of different school subjects.<sup>48</sup>

Blue spaces provide practical opportunities to learn about the origin of food, different plant and fish species, entrepreneurship, or abstract concepts or processes such as ecosystems, sustainable development, or water and nutrient cycles. Freshwater environments can also inspire lessons in mathematics, physics and chemistry.



*Entrepreneur Anders Myntti teaches children about different fish species found in the Unesco World Heritage region of the Kvarken Archipelago.*



*Chef Björn Helsing shows primary school pupils how to fry fish sticks made from pike.*

## Collaboration with entrepreneurs – experiential lessons

*In this project, teachers, fishermen and wilderness guides joined forces and designed customised educational programmes for children in daycare and in basic education on the basis of the general curriculum. The daycare children were taught about fish species and fish behaviour through games. For example, they had the chance to see if they could outrun a perch, pike or roach and to try how it feels to hold a fish. Primary school pupils (grades 1-6) had lessons about the topic first in a classroom setting and then in the natural environment - a fishing port and the seashore - where they were told about*

*the everyday life of fishermen, fish species, fish anatomy, blue spaces, aquatic ecosystems and sustainability. The experiential lessons continued in the school kitchen, where a chef taught the pupils how to cook fish sticks made from pike. The children were also taught how to fillet a whole fish. For lower secondary-level pupils (grades 7-9), the theme was implemented by deepening and expanding the primary-level programme focusing on ethics, health and personal dietary choices, as well as on sustainable development and animal welfare. Lessons about fishing provided a natural way to discuss complex and abstract topics such*

*as sustainable development, climate change, and healthy and responsible food choices in everyday life.*

**The** Natural Resources Institute Finland (Luke) implemented an experiential learning project about fish and blue spaces in the Unesco World Heritage region of the Kvarken Archipelago in 2015. The project was funded by the European Maritime and Fisheries Fund and implemented by fisherman Rune Cederberg, nature entrepreneurs Anita Storm and Anders Myntti, and chef Björn Helsing.

### 3.4. Blue spaces in health promotion and social services

#### Physical wellbeing

Blue spaces promote physical activity, which is important for weight control and promoting physical health.<sup>15</sup> When exercising in nature, the multi-sensory elements in the environment act as diversions and reduce the sense of exertion, making the activity feel easier than when exercising indoors.<sup>49</sup> This also applies to outdoor activities in blue spaces and shores, because people generally consider environments and landscapes with water elements pleasant, also in winter.<sup>3,14,16</sup>

The characteristics of water make swimming a suitable activity for maintaining good physical fitness independent of age, body type, fitness, injuries or reduced mobility.<sup>18,50</sup> For the same reasons, aquatic therapy (both indoors and outdoors) is one of the most common rehabilitation methods, used to promote physical capabilities among a variety of customer groups.

Fishing can be used to maintain, enhance and rehabilitate motor skills. Fishing increases physical and outdoor activity year-round, and is thus an important activity in terms of preventing illness and maintaining good physical health. The level of exertion in fishing is easy to adjust and gradually increase, which makes it a suitable

## Fishing for children and young people

**A group** of eight primary school children were given three fishing lessons by two professional fishing guides and one assistant guide. In each lesson, half of the time was spent on angling with a rod from the shore, and the other half on jigging from a fishing platform, trolling and spin fishing. The fishing guides also covered the general safety rules for water activities and fishing, fish biology and processing fish. The catch included almost ten different fish species.

**The feedback** on the pilot project from the children and their parents was positive, and there were no absences during the course. Concentration on the task at hand and the independence of the participants increased after each lesson. The cohesion among the children also improved during the course. Meaningful activities and active participation by the guides were found to be important to maintain the attention and excitement of the children. The fishing lessons had also been discussed multiple times at home between the children and their parents, and between the children and their family support person,

even after the project ended. According to the feedback, the fishing lessons had provided a positive topic for discussion and had increased communication between the children and their parents.

**Clear** signage guiding to the meeting point, professional skills of the guides in terms of both interacting with the children and fishing, and absence of urgency were identified as the most important factors for creating a good fishing experience. The pilot project generated information about how to utilise fishing in activating children and young people, about practical issues to consider if water is not a previously familiar element to the customer group, and about the positive effects of fishing on communication and wellbeing.

The pilot project 'Siika ja Harri - Hyvinvointikalastusta nuorille Keski-Suomessa' [Fishing for wellbeing among young people in Central Finland] was organised by the Save the Children Finland and Natural Resources Institute Finland in 2017.



activity for promoting physical fitness among people in all fitness levels and of all ages. Fishing has been found to be suitable for many people who are otherwise not interested in exercising, and it is easy to adapt it for different kinds of restrictions. This can be achieved by choosing accessible fishing sites and using adapted fishing gear. Another advantage of fishing is that it can be started as a guided activity, and once the skills and personal motivation increase, it can be continued as a self-motivated leisure and exercise activity.<sup>51,52,53</sup> The Iktyocare project covers occupational therapeutic activities that utilise fishing to maintain and enhance physical capabilities and health of individuals.<sup>54</sup>

## Mental wellbeing

Outdoor activities have a clear link to mental wellbeing. Even brief visits to nature can promote recovery from stress and improve general mood.<sup>29,30,55</sup>

Hiking in natural spaces has been successfully used in treating depression and in social rehabilitation.<sup>56,57</sup> According to a study of psychiatric patients, landscapes have a direct link to emotions and can thus reduce anxiety and elevate mood. The patients associated water with a variety of metaphors reflecting their inner feelings. In other words, blue spaces provided the patients with tools to identify and vocalise their emotions. The

# Voluntary peatland restoration project

*The volunteer projects, organised by the Central Finland branch of the Finnish Association for Nature Conservation (as part of the Freshabit LIFE IP project in 2016 and 2017), jointly implemented by local residents and Afghan asylum seekers, focused on restoring a peatland by clearing pines that had grown along ditches and by blocking drainage ditches in order to return the peatland to its natural state. The project promoted natural interaction between the asylum seekers and local residents. It gave the asylum seekers an opportunity to hear and*

*learn the Finnish language. As a result of the project, the number of butterfly species and vegetation typical of open mires has increased in the area, and a number of different bird species have been found to nest in ponds that have formed in place of the blocked ditches.<sup>62</sup>*

**Volunteer workers constructing a dam to promote peatland restoration. Asylum seekers were keen to participate in the local volunteer project.**



emotions ranged from enchantment to deep-rooted fears. An open water landscape and being able to view the horizon generated a sense of freedom and refreshment. The continuous movement of water helped the patients feel relaxed and invigorated. Water and its movement were perceived as representing continuity, but also continuous change.<sup>14</sup>

Multi-sensory and seasonal outdoors activities supporting the care of the elderly or people with mental disabilities can enhance occupational identity among these customer groups. Sensations created by nature can arouse memories and generate positive feelings.<sup>58,59</sup> Activities in natural spaces are also used as support measures in non-institutional child welfare care <sup>60</sup>.

In the integration of immigrants, getting to know the nature of the new host country in different seasons of the year can foster understanding of the new culture and facilitate integration into that culture. Knowing what you can do and are permitted to do in nature can alleviate nature-related fears. Self-motivated outdoor activities, such as fishing, can become important for the everyday wellbeing of immigrants.<sup>61</sup>

Wild swimming enthusiasts have reported that they have emotional links to certain places and certain types of swimming environment. According to research, swimming can arouse strong

experiences of wellness and positive emotions, which in turn can enhance mental wellbeing and provide swimmers with an incentive to swim regularly.<sup>18,50</sup> Winter swimming is also perceived to reduce stress, enhance mood and sleep, and prevent aches and respiratory infections.<sup>63</sup>

Fishing is considered a meaningful activity, and thus an activity that enhances mental wellbeing. Fishing offers opportunities to learn new cognitive skills, as well as the excitement and pleasure of catching fish. Improving fishing skills can improve self-esteem, which provides additional motivation to continue the activity on a regular basis. Fishing also provides opportunities to take time for yourself and escape the stresses of everyday life to a calm natural environment. Fishing fosters and enhances the type of concentration that enables focusing on a seemingly simple and effortless activity for long periods of time. Fishing requires focusing attention on a passive activity, providing an addictive and therapeutic mental break from the everyday life.<sup>51,52,53</sup>

## Social wellbeing

Swimming in natural water often takes place in groups, which increases social wellbeing and safety. Wild swimming enthusiasts consider social interaction as one of the motivators promoting regular swimming.<sup>18,50</sup> The same is also reported by winter swimmers.<sup>63</sup>

Fishing provides opportunities for enhancing social wellbeing. Recreational anglers perceive fishing as an important opportunity to spend some time with friends and family in pleasant natural environments. For older people, fishing can provide an opportunity to learn new skills, to maintain their physical activity or to enjoy a shared activity with friends. The above also applies to fishing among special and rehabilitation groups. For different rehabilitation customers, social interaction enabled by fishing can provide an opportunity to join a community and to experience positive feelings.<sup>51,52,53</sup>

Fishing activities aimed at special groups, such as immigrants or people recovering from substance abuse, have been successfully held for a long time. Many rehabilitation customers find fishing an interesting, exciting and motivating way to spend time in nature. Fishing also provides an opportunity for other outdoor activities, such as camping or birdwatching, which can also enhance wellbeing. There are training programmes for special group fishing guides, as well as winter fishing courses.<sup>64,65</sup>

## Rehabilitative work activities

The aim of rehabilitative work activities is to improve control of everyday life and occupational capabilities among long-term unemployed people. These activities are results-oriented and aim to

facilitate the re-entry of jobseekers to the open labour market, as well as their participation in other measures promoting their ability to work. Rehabilitative work activities take place in real-life working environments, and often in groups. Restoration of blue spaces is a suitable rehabilitative activity for a variety of customer groups. These activities can include, for example, eradication of aquatic plants or obstacles preventing fish migration, or spreading new spawning gravel for fish. The results of the work can be immediately seen, which creates satisfaction and sense of relevance. The work is done in groups, and well-organised activities can increase feelings of participation and provide stimulation, learning and nature experiences, as well as enhancing awareness of environmental matters among the participants. Physical activities in outdoor environments increase appetite and cause positive physical tiredness, helping to promote sticking with a normal daily rhythm and enhancing the participants' sleep and quality of life. All these factors combined improve the participants' commitment to the activity at hand and enable the achievement of the goals in a shorter period of time.<sup>66</sup>

In addition to rehabilitative work activities, restoration of blue spaces can also provide shared nature and recreation experiences among customer groups of varying ages and fitness levels.<sup>67</sup>

## Fishing as rehabilitative work for long-term unemployed young men

**Fishing** as a rehabilitative work activity has been piloted in the Vaasa region. The pilot project was designed so that the participants could leave their everyday environment to try fishing and processing their catch. The purpose of organising the activities in a natural blue space was to support the young men's mental wellbeing, as mental problems are among the most significant reasons for social exclusion. Another objective was to motivate the young men to take up a new hobby or to try a new career.

**The project** consisted of five 3-hour lessons, which took place every other week. Each lesson included four to six participants. In the first four lessons, the group were introduced to a fishing vessel, an icemaker and a fishing port and its services, as well as to various fishing-related activities such as collecting catch from fishing nets, preparing and making fishing nets, various fishing methods, gutting and filleting catch, and sharpening filleting knives. Winter fishing, i.e. casting fishing nets under the ice cover, was also part of the programme. In the fifth

lesson, the group had a lesson about fishing as a profession and about related opportunities. Each lesson also included a coffee break in the fishermen's hut. These breaks proved to be important moments for reflection and questions. Each person has their own reasons for their long-term unemployment, and therefore it is important to keep the pace slow and flexible to ensure that the participants feel that they can keep up with the lessons without any performance pressures.

**Kalastus** kuntouttavana työtoimintana [Fishing as a rehabilitative work measure] pilot project was organised by Natural Resources Institute Finland, the municipality of Malax and fisherman Per-Henrik Bergström in 2018. The project was implemented in the Kvarken Archipelago region, which is a Unesco World Heritage site with an active, small-scale coastal fishing industry.





## DEEP

Seeking for solutions for increasing accessibility to blue spaces

**Blue spaces** are already utilised in a number of ways for self-motivated maintenance of personal wellbeing. As the examples in this publication show, there are also several innovative services being developed for the needs of different customer groups. The Natural Resources Institute Finland and Helsinki Think Company, in collaboration with the Finnish Environment Institute and the Helsinki Institute of Sustainability Science, organised DEEP – the Water Wellbeing Challenge, which took place on 16-18 October 2018. The challenge called for new types of blue services and new solutions that could improve access to blue spaces for different customer groups. Students from a variety of educational and cultural backgrounds participated in the challenge. Below is a brief presentation of three of the ideas submitted. These are all ideas that require further exploration, but open new avenues how the accessibility of the blue spaces could be extended.

## **Everyone on Board** - Improving access to sailing and water environments for economically disadvantaged children

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Even though there are multiple different water environments in Finland, access to them can be unequal and restricted to some groups in society. Sailing provides a way to experience water environments with all the senses and to learn about nature and sailing practices. Sailing is also more environmentally friendly than a motorboat and requires detailed knowledge about bio-physical conditions, such as wind. However, sailing is an expensive hobby, and therefore mostly limited to those who can afford it. This also means that only certain groups in society can enjoy water environments beyond the shore. Children's affective relationship towards nature is formed in their early years through learning, understanding and experiencing nature. Providing access to sailing for children who cannot otherwise access it would increase their time spent in water environments and learning about them.

As a solution, we introduce an initiative that connects private sailboat owners with children who do not have access to sailing. We would utilise existing resources, such as sailboats and other equipment, and encourage boat owners to donate their time and resources to enable these children to experience sailing. The programme is aimed at children aged 7-12. Information about the programme will be disseminated through primary schools located in poorer areas in order to reach the target group.

By collaborating with established NGOs that focus on working with children and their rights, we aim to utilise an existing base of volunteers to provide additional support for implementing and supervising the excursions. One sailing excursion would take only up to three children at once to ensure sufficient safety and supervision on the boat. The children would get a couple of hours of experience on the sea or a lake, learning about sailing and water environments. The owner of the boat gets to be part of the social work. In addition, there is a possibility to build longer-term relationships between the participants if they wish. In the future, the programme will actively collect feedback on the excursion experiences in order to develop the programme, as well as to evaluate the outcomes and valuable insight from the different actors involved.



SAARA TUOHIMETSÄ

## Educational camp modules as tools for building children's environmental awareness of water environments

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Societies are becoming increasingly urbanised, and current and future generations are growing unfamiliar with natural environments. Families with resources making it possible to travel and have nature-related hobbies or those with summer cottages might still be able to provide their children with a relationship with nature. Unfortunately, there are many for whom this is a mere dream.

As a solution, we propose a two-to-three-day, sustainability-themed, camp-like study module integrated into primary education. The module would be take place in the natural water environment (e.g. by a lake or the sea) and be accessible to all schoolchildren regardless of their socioeconomic background. Children could be taught about water environments at the site, which would ideally help build their feeling of agency regarding nature. As a result, they would have more knowledge of and respect for the natural environment and take more responsibility

for their actions, i.e. wise use of water. They would likely pass their knowledge and attitudes on to their social circle, increasing the impact of the module. We believe that the best target group would be children aged 13-15, when they are beginning to build their worldview and starting to think of future careers. From this perspective, we would also engage representatives of relevant businesses and practitioners with the module to give insights into possible professional paths related to water environments.

The educational content would be built in collaboration with universities with programmes in sustainability and teacher education. Actual activities at the camp could be provided by university students from the fields mentioned. The schoolchildren could get inspiration and guidance from the students, and the students could get valuable work experience and study credits. Providing this type of educational activity would require financial resources, which could be organised in collaboration between relevant governmental and non-governmental organizations related to sustainability and the environment, and also businesses functioning in and dependent on water environments.

## Nilo Office\* - workspaces in the waterfront area

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SURESH GURUNG, Sustainable Building Engineer

People living in cities are spending more time at work and less time in natural environments. This can cause fatigue and increase stress levels. Work-related stress not only disrupts people's work-life balance, but can also increase the risk of early death. A number of studies have shown that spending time in nature can decrease the level of stress.

Nilo Office is a concept to provide office space close to nature and water sources. Employees and staff will get to spend more time in nature, and this will encourage people to spend more time in natural environments during their leisure time. Nilo Office will use shipping containers as an office space installed at a commuting distance close to the water sources and woods. The containers are suitable for this purpose due to their strong structure and easy transportation. A standard shipping container is 2.4 m wide and 6.1 m long with an internal floor area of approximately 14 m<sup>2</sup>. Big windows (one of the three walls) to provide a view to nature. A Nilo Office facility will consist of altogether 3-5 containers for office space, one container for a kitchen, and a portable toilet. No new foundations need to be built on the land,

since all the units and containers are movable. The energy demand can be met using solar panels to keep the carbon footprint low, and the facility will include basic office comforts and internet connection. The exterior look of the container can be made to fit into the environment.

Nilo Office spaces can be suitable for many entrepreneurs, start-ups and researchers where they can find peaceful, relaxing and affordable space to work. It can also be suitable for companies to provide remote office space for their employees. Establishing Nilo Office facilities would need collaboration with the shipping industry, companies interested in turning them into offices, as well as landowners willing to hire their land for this purposes.

*\*Nilo is Nepali and means 'blue'.*





Looking to  
the future  
of blue  
wellbeing

**This** publication reveals that natural water environments richly and dynamically connect natural and cultural elements, stimulating our physical activity and multisensory experiences and emotions. Tourism and recreation services have been the most developed up to now, while access to blue space in everyday life and services designed for special groups (children, the elderly, the disabled, the socially excluded) needs particular attention. Based on the views of some practitioners and experts, we present the following aspects for the field's future development:

### Cornerstones

- **Good water quality** is a key requirement for human wellbeing, not only for drinking but for many services and businesses, as well as for biodiversity. It should also be considered an intrinsic value. Although water treatment practices have improved in many sectors in recent decades, there is still much work to be done to maintain and improve water for the wellbeing of human beings and nature.
- **Equal access** to blue spaces should be promoted.
- **Responsible use** and business should be given for any activity taking place in the natural water environment.

### Winds of change

- **Environmental change:** The effects of climate change may alter the conditions for the wellbeing field's use of natural water environments: rapidly changing weather conditions (storms, heavy rains, no longer permanent ice) may limit the use of the water environment and drought may lead to low water and reduced quality
- **Technological change:** Various digital solutions enable better access to blue spaces and new types of wellbeing service.
- **Multiple interests:** As there is an increasing number of different - and sometimes competing - uses for water environments, special attention should be paid to how these interests and forms will be incorporated, and how overuse of fragile environments can be avoided.
- **Increased multiculturality:** Multiculturalism refers broadly to the co-existence of diverse cultural groups manifesting different habits, assumptions, values and patterns of thinking. This also has implications for different attitudes and the use of water environments.





## Steps forward

- **To** focus more on blue and white spaces in the design and planning of wellbeing and tourism services. We should understand its specificity while remembering the natural connections to green spaces.
- **To** ensure both physical and visual access to blue space both in urban and rural areas
- **To** broadly explore possibilities of collaboration between different parties - large, medium and small companies, public and private partnerships and the Nordic countries, which are environmentally, culturally and institutionally similar in many ways.
- **To** assign special areas for certain uses: Sometimes, instead of trying to accommodate different activities in one site, it may be more feasible to separate them to avoid overlap or even conflicts among their users and the overuse of nature. It is also important to identify the most restorative water environments for different activities.
- **To** design new services for special target groups: We should experiment with low-threshold services for small target groups to learn more about them.

- **To** combine human restoration and learning, and environmental restoration: Early experiments show that this may provide meaningful activities, learning and social interaction between various groups.
- **To** produce more evidence on health and wellbeing effects, and their value for citizens and society: Although there is already research on and evidence of the positive effects of the water environment on human wellbeing, more is needed on health and wellbeing effects on human beings among different customer groups, as well as their economic value. This is beneficial for policymaking in the health and social care sector, for example, but also to encourage citizens to use the water environment more actively.
- **To** utilize technology in an appropriate way: We should explore the possibilities of technology to increase accessibility, as well as physical, mental and cultural wellbeing. However, we should be aware that technology should be used to assist and to strengthen, rather than weaken, human beings' relationship with nature.

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