

Second workshop in the case study



In September, the second workshop was held with the case study group within the C5a project. The group consists of various actors around the River Klarälven area who represent different sectors and interests. The aim was to describe how we want the flow of the River Klarälven and our areas of interest to look in the future and to identify how the goals for our different areas of interest differ and are similar to each other. Are there conflicts between our different goals? How is it affected by a changing climate?

Target images in the River Klarälven area

The meeting and workshop were held in two different parts where representatives from: Värmland County Administrative Board, SMHI, SGI, The Swedish Transport Administration, Fortum, Karlstad University, Karlstad municipality, Hagfors municipality, Malung-Sälens municipality, Munkfors municipality, Tosby municipality, Hammarö municipality, Kils municipality and Forshaga municipality, participated. The participants discussed based on their skills, sector and profession. The discussion was conducted based on these issues:

How do you want it looks to the future?

What characterizes
a sustainable society
in the River Klarälven area?

What are the goal
conflicts?

What are the synergies
between the different
target images?

How have we taken care
of a changing climate?



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Overall target image

Based on the questions on the previous page, participants discussed the target points that they all can agree and which target points where they saw conflicting objectives or disagreed with each other.

- The overall conclusion that we came to together in this workshop was, that if you have an overall target picture "attractive, sustainable, long-term, etc." then "everyone" can stand behind. If you become more concrete "want to build erosion protection", "want to make the river meander" etc., then you see clear target conflicts, says Karin de Beer, climate adaptation coordinator Värmland County Administrative Board.

Below are examples of the discussions that concern the various subject areas that were represented.

Tourism / Outdoor life

- The River Klarälven is very important for outdoor life and the hospitality industry (sports, culture and nature).
- Small-scale and diversified businesses (bakeries, arts, crafts, general store...).
- Attractive for cycling tourism with guide books and infrastructure for accommodation / service.
- Opportunity for fishing wild salmon.
- Better hiking trails along the river.
- Develop summer tourism at ski resorts.

What is really attractive? That question was discussed extensively and it can be very different depending on who you ask. In this area, there is a great risk of goal conflicts. An example is boating. There are different conditions in different parts of Klarälven. Shall we think rafts, or jetskis? We must weigh interests against each other, so that boating suits the place. In the northern Klarälvdalen, it may be desirable with the calm and raft and canoe. In Karlstad, tourists may have more expectations of, for example, motor boats and jetskis.

Something that the participants stated was important was sight clearing with reflection. This is so that the beach forest can continue to bind soil and reduce erosion. Something that was raised as good for tourism and biodiversity was the presence of grazing animals. It was important, however, to preserve a layer of trees and preserve the possibility for the animals to escape in the event of high tide.

Trade and Industry

- Attractive for business.
- Small-scale and diversified businesses.
- Infrastructure for housing and service for tourism.

- Sustainable forestry.

Hydroelectric

- The regulation of the Klarälven is adapted to the need for electric power in an energy system where production takes place with renewable energy sources (today the short-term regulation is controlled by time).
- The dialogue with power plant actors is good and the opportunities to regulate the river based on different climate-related needs are well developed.
- The speed of bottling changes is adjusted to reduce the impact on the environment.

In the discussions about hydropower, it was pointed out that the regulation of Klarälven must take into account both the environment and energy systems. That balance point can be in several different places. When do you choose to regulate the Klarälven to benefit the energy system? And when do you choose to promote biodiversity? The environment sets a framework that we must stay within.

The power plant dam, Höljesdammen has only 8% control capacity. But you gain time when there are high flows and you can cut the highest peak. We have many societal interests that do not tolerate a natural high flow in Klarälven, even though such a flow is needed for parts of the biological diversity.

Security and infrastructure

- Everyone arrives smoothly, green and safe. Want a road that meets the needs. Should all transport go by road, or should other modes of transport be used?
- Erosion protection so that people can stay safe.
- People must be protected and buildings and infra-

structure must not be damaged by climate-related events.

- New housing and infrastructure are being built on secure land. Land with a risk of landslides is remedied with sustainable solutions for existing buildings.
- Road 62 is a national road and very important for the municipalities: communication opportunities are secured in the long term.

In the area of safety and infrastructure, erosion protection in the Klarälven was discussed. Erosion protection is complicated as it affects erosion and sedimentation patterns throughout the river. It can lead to landslides and landslides further downstream.

Thinking differently and what we want in the future is difficult. For example, functioning infrastructure, jobs and business can look completely different compared to what we are used to today. What will the need for transport look like? Need traditional roads or something else? What will job commuting and goods transport look like? Will road traffic on roads decrease?

Environmental Protection / water management / ecosystem services

- The morphology reaches good ecological stature. The river level is mostly natural. This means that high flows are taken care of by flooding the river level. This reduces the risk of flooding downstream.
- Meandering and erosion in Klarälven develop as naturally as possible.
- Road routes of RV62 is adapted so that it does not affect the meandering of the river.
- Clean surface and groundwater.
- The water issue is important for people in Värmland and 2045 know works, conditions, challenges, etc.
- The river Klarälven area is characterized by well-functioning ecosystem services.

A goal of increased knowledge among the public is important to work on, to inform about the river's values. If you can get the local population to start using the river, connected to outdoor life, it contributes to an increased commitment to the river and its natural values. One would like a balance of everything: Buildings, risks, nature, etc .. It is an extremely complex issue.

Climate adaptation

- Nature-based solutions.
- Flexible solutions. Have the opportunity to evaluate and change.
- Green solutions for various problems, noise, heavy rains, etc. They provide so much added value. Solve problems with the help of nature.
- Preserve green areas, larger flood areas within planned areas to collect water.
- Stormwater management: replaced stormwater pipes to a greater extent with ditches.
- Climate-adapted agriculture and forestry.
- Climate control measures exist that handle the entire Klarälven (takes into account flows, water temperatures and water quality when letting water through dams).

How do we then take care of the changing climate? An example is open stormwater management and ecosystem services. By replacing stormwater pipes with ditches, we can replace old solutions with nature-based ones. However, it requires knowledge from planners, and builders, as well as finances. Increasing and building motivation is important in order to be able to work more with such climate adaptation measures. There may be concerns about the increased presence of mosquitoes if there are stormwater ponds. How can we deal with this?

Openness to new types of solutions is important. We also need to get inspiration from the rest of Sweden, Europe and the world.

Spatial planning and building development

- It is important to find solutions that are good for both nature and people.
- Thinking of building climate-smart and resource-efficient.
- Planning new buildings, so that this is not planned where there is a risk of landslides or floods both today and in the future.
- Create such a good foundation for everything that is to be built that it will work for many years to come. Safe public transport and cycle paths near homes.
- Higher density in building structure, which means that apartment buildings are rewarded.
- We have a good knowledge as a basis for community planning.

What happens now?

On November 10, the next meeting of the case study will take place. Then, based on the data that SMHI produces about the water flow in the Klarälven, we will discuss how it affects our various interests, regulation, subject areas and geographical areas. We will take part in each other's perspectives and impart knowledge. We will immerse ourselves in the Cloud 2 Coast concept to be developed in the overall project. Paul Sayers from Sayers and Partners in the UK will help us with that.

Facts about the case study and the C5a project

Värmland County Administrative Board in Sweden is participating in C5a, an international project taking place between 2019-2021. The project deals with climate change adaptation. Within the project Värmland is conducting a case study about River Klarälven on water flow and regulation in a changing climate.

We want to investigate how a holistic perspective and cooperation across subject areas benefits measures in the River Klarälven area. The goal of the case study is, among other things, knowledge sharing between stakeholders in the River Klarälven area, which contributes to a holistic perspective. This will increase knowledge about the impact of a changed climate of the river flow of Klarälven, regulation and area and increase collaboration across subject areas and geographical areas. It will also integrate a holistic perspective in the planning of measures in the River Klarälven area.

Within the case study, we also have a working group funded by Swedish Meteorological and Hydrological Institute (SMHI) and the authorities' climate adaptation network. The group consists of representatives from: Värmland County Administrative Board, SMHI, The Swedish Geotechnical Institute (SGI), The Swedish Transport Administration. The group works to plan and carry out the case study's activities and compile the results.



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