

The discussions at the SuMaNu International workshops

SuMaNu platform project organized in cooperation with other organizations three international workshops contributing to the SuMaNu policy recommendations.

The aim of the workshops was to ensure the regional relevance of the joint policy recommendations. This was done by presenting and discussing the outputs of WP2 and the draft policy recommendations that were created based on the project results. The feedback from the workshops contributed on the process of finalizing the policy recommendations.

This short report describes the discussions in each of the three workshops and analyses the given feedback to the project results and recommendations.

HELCOM workshop on nutrient recycling measures

HELCOM workshop on nutrient recycling measures was organized as a face-to-face workshop on 5-6 Feb 2020 in Helsinki. The workshop was organized jointly by the Ministry of Environment and Ministry of Agriculture and Forestry of Finland, HELCOM, European Union Strategy for the Baltic Sea Region Policy Area Nutri and Bioeconomy, and SuMaNu and BSR Water project platforms.

The workshop was attended by all HELCOM Contracting Parties except for Lithuania, as well as HELCOM Observers BFFE, CCB, EurEau, Race for the Baltic and WWF, the coordinators of EUSBSR Policy Areas Bioeconomy, Hazards and Nutri, representatives of international projects and invited guests.

The aim of the workshop was to outline possible measures that could increase recycling of nutrients in the Baltic Sea Region, achieve the agreed objectives of the Baltic Sea Regional Nutrient recycling strategy (Annex 1) and be included in the updated Baltic Sea Action Plan. The workshop dealt with measures related to both agriculture and wastewater sector, and their synergies.

In the beginning of the workshop, Proman Consulting presented study results on nutrient flows in the Baltic Sea Region. Their conclusion was that there is a high potential for more efficient nutrient use in the Baltic Sea region, and the use of mineral nitrogen and phosphorus fertilizers could be significantly reduced. This would require a combination of reducing nutrient surpluses and mobilizing untapped recovery potentials as well as nutrient exchange between regions and even countries.

Next in the plenary session were the keynote speeches. Ms. Minna Sarvi presented measures for more efficient use of nutrients and cost-effective nutrient recycling in

agriculture, as formulated in the project platform SuMaNu. Mr Taavo Tenno presented the palette of solutions for nutrient recycling in the wastewater sector, that were formulated in the project platform BSR Water.

After the plenary, the work in six groups resulted in a long list of potential measures under each objective and sub-objective of the Baltic Sea Region Nutrient Recycling Strategy. All draft measures of SuMaNu project were among the suggested measures.

Many synergies and interlinkages between the objectives as well as the measures to reach those objectives were recognized. At the joint final plenary session, the participants discussed a compilation of the proposed measures under relevant objectives and made several additional remarks on the presented suggestions.

The remarks at the closing plenary session are summarized below.

1. Baltic Sea region as a model area for nutrient recycling

The possibility to use the payments under the EU common agricultural policy (CAP) to enhance sustainable agriculture and nutrient recycling in the HELCOM countries that are EU members was highlighted. The CAP support is paid on implementing measures but not on the basis of, how efficient the measures are, e.g. in reducing nutrient runoff in a particular farm. It was suggested that methods to better quantify the efficiency of measures should be developed.

One suggested measure was limiting livestock density to reduce nutrient surpluses. It was discussed that an alternative to moving the animals or limiting animal density is moving the nutrients from the surplus areas. Moving the nutrients relies on manure processing which in turn depends on volume. Thus, limiting livestock density could result in a situation in which processing is not viable. However, there are other environmental aspects to consider, since large livestock densities can, for instance, increase ammonia emissions and the leaching of nitrates to ground water. On the other hand, in some cases the problem might not be the large amount of manure in the areas where the livestock density is high, but the inefficient use of manure and adding mineral fertilizers on top of the manure. Manure nutrients should be used efficiently, and manure should not be considered as a waste that the farm needs to get rid of, but as a valuable resource.

Another suggested measure was mandatory nutrient recycling for large wastewater treatment plants. It was pointed out that according to the conclusions of the recent Swedish sludge inquiry, the mandatory recovery is not yet feasible. Nutrient recovery would require large investments which would be paid by water users. The larger the city the better the chances of financing such investments. It might be better to say that nutrient recovery in the wastewater sector should be promoted.

2. Reducing environmental impacts

It was pointed out that although nutrient recovery technologies in the wastewater sector should be promoted, in areas with high livestock density, manure should be used first. It was

also questioned whether promoting organic fertilizers, as suggested, leads to reducing the nutrient losses and not increasing them.

Regarding ammonia emissions, the participants discussed that there are many measures which are “low-hanging fruits” for reducing ammonia emissions and the implementation of such measures and practices should be enhanced.

The importance of soil quality and carbon sequestration issues will rise in the future, as well as climate change adaptation. This could be a driver for nutrient recycling. Adapting to climate change may require a need to rethink manure use, spreading and storage.

3. Safe nutrient recycling

Analysis of harmful substances from nutrient-rich streams was suggested as a measure, but it was discussed that analyzing increasing number of substances is very expensive. Concentrations of hazardous substances can often be below the detection limit. There are also emerging substances to consider. Since end-of-pipe solutions are difficult and expensive, the focus should be on the upstream measures both in agriculture and wastewater sectors.

Awareness raising among consumers is also important, e.g. to avoid unnecessary use and release of pharmaceuticals and safe handling of chemicals in households. Regarding harmful substances, also the use of plant protection products should be considered.

4. Knowledge exchange and awareness raising

In general, there is a need to improve our knowledge on nutrient flows. In the global context, cooperation with other regional seas conventions and relevant global forums could be considered. The important role of advisory was recognized and information exchange on new advisory models such as catchment officers should be increased.

5. Creating business opportunities

It was discussed that, currently, the profitability of manure processing depends on the business model of biogas production. Nutrient recycling should be included. Currently, financial value is allocated for the energy production but not the nutrient fraction. There is also a gap between laboratory and pilot or real scale solutions. Closing this gap demands high risk investments. These investments are to be received from external financing for scaling up from pilot scale to real scale.

Regarding increasing consumer demand on the use of recycled fertilizers in the food sector, the focus should first be on the food industry, rather than on final consumers.

The terminology could be checked since recycled nutrients could also be in mineral form. An option would be to say fertilizers of organic origin or bio-based fertilizers.

6. Improving policy coherence

As a whole, legislation should facilitate recycling of nutrient instead of creating barriers. The importance to monitor the implementation of regulations was also discussed.

It is important to share experiences of best practices, but we should also share information on best available policies to learn from each other.

After the workshop, the work on measures was continued in the HELCOM Agri and Pressure groups based on the suggestions of the workshop.

The "Mission Blue" workshop

The "Mission Blue" workshop was organized on 10 June 2020 by BONUS RETURN and SuMaNu projects. There were forty-nine participants from Germany, Netherlands, Latvia, Poland, Denmark, Finland and Sweden in this online event, representing funding agencies, research, branch organizations, the private sector and regional organizations.

The workshop was testing a mission orientated approach, the mission being Baltic Sea Unaffected by pollution. The aim of the workshop was to create and discuss cross-sectoral system level intervention prototypes for reaching this mission, while overcoming the challenges of the "silo" structures in planning.

The creation of interventions was done by combining different sets of measures. As possible measures, synopses collected by HELCOM from regional stakeholders for the process of updating the Baltic Sea Action Plan were used. These twenty-one measures, among them six synopses by SuMaNu project, were divided into four categories: 1) coordination (C), 2) data (D), 3) eco-technology (E) and 4) policy (P).

Six measures from SuMaNu project were included:

- Improve knowledge transfer between farmers, authorities, and decision makers (coordination, C1)
- Annual field level fertilization planning and nutrient balancing (coordination, C3)
- Integrated and harmonized risk assessment of P losses (data, D1)
- Recycling of nutrients and carbon in agricultural residues by use of anaerobic digestion (eco-technology, E1)
- Incentives to support the use and production of manure-based recycled fertilizers (policy, P1)
- Prohibition on post-harvest application of manure and other organic fertilizers (policy, P2)

Before the workshop, the registered participants were asked to choose the measures they regarded as most relevant, choosing one measure from each of the four groups.

The SuMaNu recommendations were among the most popular selected measures: of six measures with the highest frequency of selection four were SuMaNu recommendations (C1, C3, P1 and P2). Quite high in frequency was also measure D1.

Besides from selecting up to four measures from different categories, participants were asked to prioritize one of them. Again, two most prioritized measures were SuMaNu recommendations (C1 and C3).

In the workshop, five different interventions were designed, each combining four selected measures. The interventions were named as:

- Increase incentives for valuing nutrients, resource recovery and circular nutrient economy
- Improve the integration of farming practices with required nutrient reductions across the BSR
- Surf and turf nutrient capture and reuse
- Reduction of nutrient surpluses and increasing efficiencies in BSR agriculture
- Rebalancing hotspots – cost-efficient routes from fork to farm to fork to...

During the discussion, the impacts of the measures and designed interventions were also discussed. As positive impacts, the following were mentioned:

- further reduced nutrient emissions to the Baltic Sea to meet the HELCOM recommendations
- improved best practices in manure storage, management and spreading on croplands
- improved cooperation between farmers and authorities
- increased use of ecotechnologies to capture and reuse nutrients from agricultural wastes including manure
- increased use of mussel farms to reduce nutrient levels in the coastal and open areas of the Baltic Sea

As possible negative impacts, the following were mentioned:

- increased costs to consumers, farmers and government in order to achieve the lowered emissions
- possible decreases in livestock densities in certain hotspot areas
- resistance among farmers to take on practices (e.g. phosphorus balancing and indices) that may only have impacts at the larger scale and over the long term
- possible disagreement among HELCOM partner countries on the level of change required in order to meet the emission requirements and circularity goals

The full workshop report Mission Blue - Exploring Circular Interventions in the Baltic Sea Region (Barquet, K. et al 2020) is available on the BONUS RETURN website
<https://www.bonusreturn.eu/wp-content/uploads/2020/11/Report-Mission-Blue-Nov-2020.pdf>

EUSBSR Annual Event 2020 workshop "Unlocking the potential of nutrient recycling in the Baltic Sea Region"

The workshop was organized on 30 Sept 2020 by BSR Water and SuMaNu platform projects, in cooperation with Stockholm Environment Institute and Organe Institute. The event was organized as an online zoom event.

The workshop speakers and participants represented a broad variety of different stakeholder groups from agriculture and municipal wastewater management sectors – research, authorities, NGO's, interest organizations, business.

The event was addressing the recognized critical challenges in nutrient recycling in the BSR:

- Unsustainable use of manure and fertilizers in agriculture
- Surplus of nutrients in intensive livestock production areas and
- Lack of implemented solutions to recycle nutrients from wastewaters

The workshop was based on results from Interreg platform projects SuMaNu and BSR Water, as well as the BONUS RETURN project with the aim to find solutions and overcome the barriers for implementing nutrient recycling from urban and agricultural sources.

An important part of the workshop was also the planning process. First, the discussion points raising from the project results were discussed in the two projects separately. As the following step, the project representatives considered together which topics to choose from the initial project proposals, looking for possible discussion points with joint interest. As possible discussion points of joint relevance for both BSR Water and SuMaNu projects, the following were recognized:

- The sustainable use of nutrients on farm level and the appropriate technologies should be promoted, this being relevant for manure nutrients as well as recycled nutrients from different sources
- Measures aiming at formulation of nutrient recycling strategy, taking into account all nutrient-rich biomasses, including manure and wastewaters, and national and local conditions, also including soil P status and under/oversupply of P
- Safety issues, being relevant for both manures and wastewaters
- The need for knowledge transfer between different actor groups and regions, being relevant for both agricultural and wastewater sectors, regarding the sustainable use of recycled nutrients

In the end, three discussion points for the group discussions were formulated:

Group A: How to incentivize supply and demand of recycled organic fertilizers

Group B: Cooperation towards sustainable phosphorus strategy in the BSR

Group C: Reducing pollutants in sewage sludge and ensuring the safety of recovered nutrients

In the event, three presentations were given in the opening plenary as introduction to the workshop topics: “Nutrient recycling potential in wastewater sector”, by Taavo Tenno, University of Tartu, “Nutrient recycling in agricultural sector – why, what, how”, by Minna Sarvi, Luke and “Key barriers and opportunities in nutrient recycling” by Arno Rosemarin, Stockholm Environment Institute.

After the opening presentations, the workshop participants were divided in the discussion groups, following their expressed preferences by workshop registration. As the results of the group discussion, the following was concluded:

There was wide consensus on the fact that nutrient management and, in particular, nutrient recycling needs a stronger push using a range of policy tools a.o.: a. regulatory instruments to increase the minimum standard of manure and sewage sludge management b. economic instruments to create a market and demand for circular nutrients, c. communication instruments to reach farmers and consumers.

In addition, following recommendations were developed as an outcome of the workshop:

1. Unification of policy regulation on the management and use of phosphorus (P) in agriculture, considering all P sources and taking soil P into account.
2. Make safe P recovery and recycling from sewage sludge an obligation after a transition period of 10 years. Increase cooperation between WWTP's to establish joint sludge treatment and P-recycling business models.
3. Create economic incentives and support mechanisms to produce recycled fertilizers and for farmers to substitute mineral fertilizers with recycled fertilizers.
4. Launch cross-sectorial communication programs involving farmers, advisors, food industry and consumers dealing with issues related to the development and use of recycled fertilizer products and how circular solutions are linked to sustainability.
5. Based on the model of the energy sector, require blending a percentage of recycled nutrients in mineral fertilizer products.

The results of the workshop were presented to the main plenary of EUSBSR Annual Forum.

The main workshop results are summarized in a video (<https://www.youtube.com/watch?v=n7FRVfL4aFg>) and more information is available here: <https://balticsumanu.eu/materials-from-the-workshop-unlocking-the-nutrient-recycling-potential-in-the-baltic-sea-region/> and <https://www.bsrwater.eu/news/eusbsr-nutrient-recycling>).

Annex 1

The Baltic Sea Regional Nutrient Recycling Strategy

DRAFT VISION

Nutrients are managed sustainably in all HELCOM countries, securing the productivity of agriculture through efficient use of nutrients and cost effective nutrient recycling, minimizing nutrient loss to the Baltic Sea environment.

DRAFT OBJECTIVES

Objectives and sub-objectives

Baltic Sea region as a model area for nutrient recycling

- Increasing nutrient use efficiency
- Increasing the circulation of the available nutrient resources in the region and reducing nutrient inflows to the region
- Utilizing nutrient rich organic residues originating from areas with high nutrient surplus and accumulation for production of fertilizer products

Reducing environmental impacts

- Reducing nutrient load to the Baltic Sea
- Reducing greenhouse gas emissions
- Improving soil quality

Utilizing appropriate solutions to recycle nutrients for the specific conditions preventing contamination of the environment.

Safe nutrient recycling

- Minimizing the risks for humans posed by contamination
- Minimizing the risks for ecosystems/biota/environment etc. posed by contamination

Knowledge exchange and awareness raising

- Promoting new research and technological development
- Facilitating knowledge transfer and information exchange on nutrient recycling across the region
- Cooperating with other regions and global organizations to exchange information on the most up-to-date knowledge and techniques
- Raising awareness of the benefits of nutrient recycling
- Promoting holistic view of food production

Creating business opportunities

- Encouraging new business models with cross-sectoral cooperation
- Improving the economic viability of nutrient recycling

Improving policy coherence

- Increasing sectoral cooperation to improve policy coherence
- Enhancing legal framework to facilitate nutrient recycling



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