

Stakeholder interviews Finland

Sustainable Biogas
WP5 Analysing usage and disposal possibilities
for sewage-based biomasses

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1. INTRODUCTION

In project Sustainable Biogas, John Nurminen Foundation and Finnish and Latvian biogas associations and environmental authorities cooperate to improve the sustainability of climate-friendly biogas production from the point of view of water protection. The project is financed by the Interreg Central Baltic programme.

One of the project aims is to identify sustainable end uses for sewage sludge -based digestates in Finland and Latvia. Additionally, another aim is to promote the safe use of nutrient-rich digestates from biogas production as recycled fertilisers. Towards these ends, the feasibility of various end-use options for sewage sludge -based digestates will be discussed and elaborated with stakeholders in Finland and in Latvia.

The objective of this report is to create an overview of biogas sector stakeholder views on utilization of sewage sludge and -based digestate. In total, 10 stakeholders in Finland were interviewed relating to their attitudes, views on barriers and enablers, trust in actors, preference for alternative options and future expectations on utilization of sewage sludge (-based digestate) (Table 1). The interviewees included representatives of sewage sludge producers, processors (biogas/composting), end users (agriculture, landscaping), local/regional authorities and national authorities. The results of the interviews are compiled to this report.

In addition to the interviews, the public sentiment towards sewage sludge utilisation was analysed based on media monitoring (Chapter 3).

Table 1. Questions for the interviewees

1. Attitude	What is your general position towards sewage sludge (-based digestate) utilization? Are you in favor, neutral or against sewage sludge (-based digestate) use in a) agriculture b) landscaping?
2. Barriers	What are, from your perspective, the main concerns related to sewage sludge (-based digestate) utilization in a) agriculture b) landscaping?
3. Enablers	Under what conditions would you accept sewage sludge (-based digestate) use in a) agriculture b) landscaping?
4. Trust in actors	Do you think political decision-makers/environmental authorities/agricultural authorities in Finland are capable of handling the challenges of sewage sludge (-based digestate) use in a) agriculture b) landscaping?
5. Preference for alternative options	Do you think there are better alternative options to sewage sludge (-based digestate) use in Finland than agriculture and landscaping?
6. Future expectations	What do you think is the future (5 to 10 years) sewage sludge (-based digestate) use in Finland?

2. RESPONSES BY QUESTION

2.1 Attitude

The interviewees were asked to describe their general opinion about sewage sludge and -based digestate products utilization in agriculture and landscaping.

The way interviewees described their attitude varied. The general attitude towards the circular economy was positive. The importance of nutrient and organic material recycling was brought up often as the main argument to support the utilization of sewage sludge/digestate based products.

In some answers landscaping was considered a slightly better option compared to agriculture. These views were argued by the potential impurities in the digestate and the potential impact on human health if these products are used in food production.

The main difference in answers between stakeholder groups was that the end users and authorities indicated more reservation about utilization of sewage sludge/digestate products due to the potentially harmful substances and safety risks. End users strongly questioned the safety of these products, whereas the authorities emphasized the need to apply the products according to the current regulations.

Another perspective concluded that taking a side to this question is challenging until more knowledge, and systematic as well as comprehensive risk analysis is carried out related to the utilization of sewage sludge/based digestate products.

2.2 Barriers

The second interview question related to the main concerns the stakeholders have towards sewage sludge/based digestate utilization in agriculture and landscaping.

Again, this question resulted in quite varying answers among the stakeholders. The risk of potentially harmful substances in sewage sludge/based digestate was the most mentioned topic. This aspect was considered by every interviewee group except the sewage sludge processors representatives.

POP-substances (Persistent Organic Pollutant), drug residues and flame retardants were mentioned as examples of the potentially harmful substances. A fear was that the general understanding of harmful substances is still too limited. For example, how the substances may act if they alter or combine. Thus, the evaluation of potential risks of these substances is challenging.

Potential heavy metal (Cadmium) particulates and low amount of plant-available nutrients (low soluble form of phosphorus) in the sewage sludge/digestate products were brought up as concerns as well. Similarly, potential nutrient runoff from digestate storages was seen as a risk.

From another perspective, too negative attitudes and not science-based associations linked with the utilization of sewage sludge/digestate based products were seen as a major challenge. With this view, the sewage sludge producers and processors referred to cases in agriculture where some agricultural players and grain buyers have refused to buy grain fertilized by sewage sludge/based digestate products.

Outdated legislation related to sewage sludge/digestate products in Finland was brought up as another concern. The requirements for these products to be utilized in agriculture and

landscaping were seen insufficiently defined. Unclear legislation was considered to cause difficulties for companies to develop their products.

The scenario where the organic matter and nutrients from sewage sludge/digestate would not be utilized efficiently was brought up as an unwanted development as well. This scenario would also cause increasing amounts of waste. Moreover, the low profitability of the sewage sludge/digestate products was seen as a challenge from the economic perspective.

In general, the interviewees indicated that the sewage sludge/digestate terminology is challenging. Indistinct and inaccurate terminology can create problems in communications and result in misunderstandings.

2.3 Enablers

The stakeholders were asked to describe their views on the conditions which would make the utilization of sewage sludge/digestate products acceptable in agriculture and landscaping.

The stakeholder condition approaches varied considering the existing regulation, technical level improvements in wastewater processes as well as consumer behavior at households.

Most common perspective among the stakeholders was that the utilization of sewage sludge/digestate based products in agriculture and landscaping is acceptable if the existing regulations are followed. One stakeholder emphasized that optimal solutions may vary in different parts of Finland, locally reasonable solutions are needed.

It was pointed out that the quality requirements need to be defined if sewage sludge/digestate based products are used in agriculture and landscaping. It was brought up that the legislation will be renewed soon in Finland.

Another view raised up was that dividing potential end use of sewage sludge -based digestate products only in two categories (agriculture, landscaping) is a narrow approach. Instead, there should be possibility to utilize different kinds of sewage sludge -based digestates in different kinds of agriculture and landscaping, based on comprehensive risk analyses.

On a practical level it was highlighted that wastewater treatment processes need to be developed to remove harmful substances and recycle nutrients more efficiently (especially soluble phosphorus). In addition, it was brought up also that the consumers should have responsibility on their waste and what they put down the drain.

2.4 Trust in actors

The fourth question considered the interviewees trust in decision-makers and authorities' capabilities to handle sewage sludge/digestate based products challenges in Finland. These actors referred to political decision-makers, environmental authorities, and agricultural authorities.

In general, all the stakeholders agreed that the capabilities of different authorities and decision-makers are sufficient to handle the challenges related to sewage sludge/digestate based products utilization in Finland. Slightly less trust on the capability of authorities preparing the new legislation compared to the officers carrying out the daily official duties (e.g. controls) could be seen from the answers.

It is noteworthy, that the sewage sludge processor representatives felt there are differences in environmental authorities' decisions regionally and between operators related to environmental permit processes.

The importance of sufficient and high quality of sewage sludge/digestate related information was risen from many perspectives. For example, end users felt that unknown quality of sludge/digestate creates challenges for good decision making. It was brought up that increasing information makes authorities' work more complicated but can also give them more tools to make better decisions in a long run.

Authorities saw their own group capability to be sufficient to handle the challenges. However, from their side it was brought up that additional knowledge and understanding would be beneficial and promote sewage sludge/digestate sector development. In addition, increased science-based research could drive better legislation. From the challenges perspective, difficulty of prioritization and the risk of intentional disinformation, which aims to influence on decision-makers or authorities, were raised up.

2.5 Preference for alternative options

Preference for alternative utilization options (other than agriculture and landscaping) for sewage sludge/digestate based products was inquired from the interviewees.

The stakeholders had similar kind of thoughts about their preference for alternative options. Current use in agriculture and landscaping were seen as good options. It was highlighted that some (sewage sludge/digestate) products are more suitable for agriculture, whereas some other products for landscaping depending on the raw materials/sources of the sewage sludge/digestate. Some views also specified that more detailed categorization for certain types of agriculture and landscaping could drive more suitable end use for these products.

Only a few completely new end use alternatives (other than agriculture and landscaping) were presented. For example, charcoal produced through pyrolysis, concrete industry applications, and bio-oil development were mentioned as alternative options that have been studied. However, these alternatives were seen as problematic, expensive, and very long-term technologies.

2.6 Future expectations

The interviewees raised up varying aspects relating to the future use and treatment of sewage sludge -based digestate in Finland. Expectations for advanced treatment technology development were positive, and potential technologies such as struvite, pyrolysis, and applications in concrete industry were mentioned as examples.

However, it was often brought up that 5-10 year is very short time window in wastewater treatment sector. For example, wastewater treatment infrastructure planning and investment decisions are very long-term, thus changes in this sector are not happening rapidly. Thus, the common expectation was that the wastewater treatment sector remains more less the same still during the coming 5-10 years.

Revision of fertilizing product regulation in Finland and reforms of waste related directives were emphasized as key aspects defining the future development of sewage sludge - based digestate products. Fertilizing product regulation will define the acceptability of sewage sludge - based digestate as a raw material for fertilizer products. It was also brought up that revised waste directives could demand full traceability of product users for the producers, which would turn producers work impossible.

Stakeholder groups raised up different considerations, but it was probably related to their role and knowledge. However, the views were not contradictory.

3. MEDIA FINDINGS

The discussion on sewage sludge among the general public in Finland was gauged with the help of a media monitoring service (Meltwater). The key words related to sewage sludge utilization returned 59 hits in 2020 and 64 hits in 1-8/2021. Some of the news were reposted, but duplicates have been removed from the total numbers.

The news on sewage sludge were mainly related to press releases by municipalities, water management companies and research projects. Journalists seldom took up any topics by themselves.

The tone of reporting was mostly neutral. Of the total of 123 articles, 94% (116 articles) were written in a neutral tone. 3% (4 articles) were considered as positive, and their topics focused on pilot studies for technology development¹. 2% (3 articles) were considered as negative, and they concerned local disputes e.g. on odor nuisance from sewage sludge processing². Only one article touched upon the topic of food industry's acceptability of sewage sludge utilization³.

All in all, it can be concluded that the topic of sewage sludge utilization in agriculture or landscaping was not heated in 2020-21. There was no remarkable activity around sewage sludge in social media either.

4. CONCLUSIONS

The stakeholders had somewhat consensus on the topics such as trust in actors, preference for alternative utilization options and future expectations.

In general, the stakeholders felt that the authorities and policymakers are capable to handle the challenges related to these topics, although their work was considered difficult. Agriculture and/or landscaping were considered as good or even best utilization options for sewage sludge/digestate based products, and not many other alternatives were presented. 5-10 years period was considered short in wastewater treatment sector and not many changes were expected to happen within this time scale. Upcoming changes in regulation were seen as crucial defining the future development of sewage sludge and digestate utilization.

The quality and safety issues of sewage sludge/digestate based products created the most opposite opinions. Especially the end users were emphasizing the risks of harmful substances and nutrient availability of sewage sludge/digestate based products, whereas the sludge producers and processors were considering that these kinds of associations are too negative.

¹ <https://www.findance.com/uutiset/54151/hsy-ravitatalteenottomenetelmalla-jateveden-ravinteet-ja-hiili-tehokkaasti-kiertoon>, <https://www.hsy.fi/ymparistotieto/tiedotteet/hsy-kehittaa-jatevedenpuhdistusta-viikinmaessa/>, <https://vastuullisuus uutiset.fi/fi/kumppani uutisetsuomeksi/tutkimuksessa-saatiin-monipuolisesti-ratkaisuja-hiilensidontan-tehostamiseen/>

² <https://lansi-savo.fi/uutiset/lahella/6855c819-e60a-409d-b9da-cfde3efcff5e>, <https://www.satakunnankansa.fi/satakunta/art-2000007837836.html>

³ <https://www.tekniikkatalous.fi/uutiset/600-asteen-infrapunasateily-tekee-jatevesilietteesta-lannoitetta-ei-kelpaa-viljanostajille/9d2d54c8-9050-4a4c-b529-f028017ce7ba>

It's noteworthy that mostly the interviewees did not handle the agriculture and landscaping topics as much separately as could have been expected from the given questions. In addition, the views obtained from the authorities represented more their personal opinions than, e.g., any official ministry or agency opinions.

Annex 1. List of interviewees

<u>Stakeholder group</u>	<u>Organisation</u>
Sludge producers	VVY
	HSY
Processors	SBB
	Envor Group
End users	MTK
	Viherympäristöliitto
Authorities	VarELY
	YM
	MMM
	Ruokavirasto

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Climate-friendly biogas may lead to nutrients entering the watercourses if the treatment of digestates and wastewater from biogas plants is not carefully planned. The goal of the Sustainable Biogas project, funded by the EU's Interreg Central Baltic programme, is to promote the sustainability of biogas from a water protection perspective. The project is implemented by the John Nurminen Foundation, the ELY Centre for Southwest Finland, the Finnish Biocycle and Biogas Association, Latvian State Environmental Services, and the Latvian Biogas Association.