

# BONUS RETURN

## BONUS RETURN

Reducing Emissions by Turning Nutrients and Carbon into Benefits

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#### Dissemination level

<input checked="" type="checkbox"/>	PU	Public.
<input type="checkbox"/>	PP	Restricted to other project partners.
<input type="checkbox"/>	RE	Restricted to a group specified by the consortium.
<input type="checkbox"/>	CO	Confidential, only for members of the consortium.

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## EXECUTIVE SUMMARY

*Sea of Opportunity* is an 18-minute film produced by BONUS RETURN highlighting solutions in Europe for recovering and reusing nutrients in wastewater and agriculture. This report outlines the objectives, key messages, storyline and outreach strategy for the film.

## 1 INTRODUCTION

The degradation of the Baltic Sea is an ongoing problem, despite investments in measures to reduce external inputs of pollutants and nutrients from both diffuse and point sources. Available technological and management measures to curb eutrophication and pollution flows to the sea have not been adapted adequately to the contexts in which they are being applied. Furthermore, measures are often designed based on single objectives, thereby limiting opportunities for multiple benefits.

In addition, there is a general sense that measures to address the deterioration of the Baltic ecosystem are primarily technologically-driven and lacking broader stakeholder acceptance – the “experts” who define these measures have little engagement with industry, investors, civil society and authorities. This problem is magnified by governance and management, taking place in sectoral silos with poor coordination across sectors.

As a result, research shows that regional institutional diversity is presently a barrier to transboundary cooperation in the Baltic Sea Region (BSR) and that actions to achieve national environmental targets can compromise environmental goals in the BSR (Powell et al. 2013). The regional dimension of environmental degradation in the BSR has historically received weaker recognition in policy development and implementation locally. However, developments in recent years suggest a new trend with growing investments in environmental protection supporting social, economic, and territorial cohesion.

The BSR is an environmentally, politically and economically significant region and like other regions globally, its rapid growth needs to be reconciled with the challenges of sustainable development in a global setting that demands unprecedented reductions in GHG emissions. This poses a truly wicked problem exacerbated by the fact that many of the challenges in the BSR will also magnify in a changing climate. In order to navigate the uncertainties and controversies associated with a transformation towards a good marine environment, BONUS RETURN will enact an innovative trans disciplinary approach for identifying and piloting systemic eco-technologies.

The focus is on eco-technologies that generate co-benefits within other interlinked sectors, and which can be adapted according to geophysical and institutional contexts. More specifically, emphasis is placed on eco-technologies that reconcile the reduction of present and future eutrophication in marine environments with the regional challenges of policy coherence, food security, energy security, and the provision of ecosystem services.

### 1.1 Project Objectives

The **overall** aim of BONUS RETURN is to improve the adaptation and adoption of eco-technologies in the Baltic Sea Region for maximum efficiency and increased co-benefits.

The **specific objectives** of the project can be divided into six categories presented below. These categories are interlinked but for the purpose of providing a step-wise description, the following overview of each category proves useful. BONUS RETURN is:

- 1) **Supporting innovation and market uptake of eco-technologies by:**
  - Contributing to the application and adaptation of eco-technologies in the BSR through an evidence-based review (systematic map) of the developments within this field.

- Contributing to the development of emerging eco-technologies that have the capacity to turn nutrients and carbon into benefits (e.g. bio-energy, fertilizers), by providing an encompassing framework and platform for rigorous testing and analysis.
  - Developing decision support systems for sustainable eco-technologies in the BSR.
  - Contributing to better assessment of eco-technology efficiency via integrated and participatory modelling in three catchment areas in Finland, Sweden and Poland.
  - Contributing to methodological innovation on application and adaptation of eco-technologies.
- 2) Reducing knowledge gaps on policy performance, enabling/constraining factors, and costs and benefits of eco-technologies by:**
- Assessing the broader socio-cultural drivers linked to eco-technologies from a historical perspective.
  - Identifying the main gaps in the policy environment constraining the implementation of emerging eco-technologies in the catchments around the Baltic Sea.
  - Informing policy through science on what works where and under which conditions through an evidence-based review (systematic map and systematic reviews) of eco-technologies and the regional economic and institutional structures in which these technologies evolve.
- 3) Providing a framework for improved systematic stakeholder involvement by:**
- Developing methods for improved stakeholder engagement in water management through participatory approaches in the case study areas in Sweden, Finland and Poland.
  - Enacting a co-enquiry process with stakeholders into opportunities for innovations in eco-technologies capable of transforming nutrients and pollutants into benefits for multiple sectors at different scales.
  - Bringing stakeholder values into eco-technology choices to demonstrate needs for adaptation to local contexts and ways for eco-technologies to efficiently contribute to local and regional developments.
  - Disseminating results and facilitating the exchange of learning experiences, first within the three catchment areas, and secondly across a larger network of municipalities in the BSR.
  - Establishing new cooperative networks at case study sites and empowering existing regional networks by providing information, co-organizing events and engaging in dialogues.
- 4) Supporting commercialization of eco-technologies by:**
- Identifying market and institutional opportunities for eco-technologies that (may) contribute to resource recovery and reuse of nutrients, micro-pollutants and micro-plastics (e.g. renewable energy).
  - Identifying potential constraints and opportunities for integration and implementation of eco-technologies using economical models.
  - Facilitating the transfer of eco-technologies contributing to win-win solutions to multiple and interlinked challenges in the BSR.
  - Linking producers of eco-technologies (small and medium enterprises – SMEs), to users (municipalities) by providing interactive platforms of knowledge exchange where both producers and users have access to BONUS RETURN’s envisaged outputs, existing networks, and established methodologies and services.
- 5) Establishing a user-driven knowledge platform and improved technology-user interface by:**
- Developing an open-access database that maps out existing research and implementation of eco-technologies in the BSR. This database will be intuitive, mapped out in an interactive geographical information system (GIS) platform, and easily managed so that practitioners, scientists and policymakers can incorporate it in their practices.

- Developing methodologies that enact the scaling of a systemic mix of eco-technological interventions within the highly diverse contexts that make up the BSR and allows for a deeply interactive medium of knowledge.

## 1.2 Project Structure

BONUS RETURN is structured around six Work Packages that will be implemented in three river basins: The Vantaanjoki river basin in Finland, the Stupia river basin in Poland, and Fyrisån river basin in Sweden.

Work Package 1: Coordination, management, communication and dissemination.

Work Package 2: Integrated Evidence-based review of eco-technologies.

Work Package 3: Sustainability Analyses.

Work Package 4: Environmental Modelling.

Work Package 5: Implementation Support for Eco-technologies.

Work Package 6: Innovative Methods in Stakeholder Engagement.

## 1.3 Deliverable context and objective

The current deliverable D 1.7 is part of Work Package (WP) 1. The objectives of WP 1 are:

1. To ensure the smooth realization of the project, optimizing the organization and timing of activities and resources, so that both scientific and strategic project goals can be fully achieved.
2. To ensure effective cooperation and collaboration between WPs, partners and end users.
3. Ensure quality assurance of process and deliverables.
4. Lead and deliver on effective internal and external communications. External communication includes dissemination, outreach of project deliverables and active use of social media and liaising with traditional media.

## 1.4 Outline of the report

This deliverable summarizes the storyline and structure of the film produced by BONUS RETURN. The report is structured as follows: a summary of key messages, objectives and target audiences; list of interviewees and their respective organizations; a summary of themes from the film's storyline; highlights of the outreach strategy and a list of the production team.

## 2 FILM – SEA OF OPPORTUNITY

The objective of D 1.7 was to produce film(s) to communicate key insights from the project. The project was to produce either an animated film targeting the wider general public or three short films targeting policy makers, investors and wider public.

The strategy chosen for the BONUS RETURN film was to produce two films, one introductory one, and a final longer film which would then be merged into one. *Sea of Opportunity* is therefore an 18-minute film as a result of merging both parts. The film targets policy makers, businesses, investors and the wider public and is set to launch on 30<sup>th</sup> January 2020.

## 2.1 Objectives, key messages and target audiences

**Key message:** circular systems and innovations for nutrient recovery and reuse in the Baltic Sea Region exist and are currently being implemented.

The film focuses on agriculture, wastewater practices and solutions in the market, highlighting existing opportunities, challenges and the need for collaboration to upscale these solutions.

The **objectives** of the film are:

1. To communicate selected key insights from the BONUS RETURN project.
2. To highlight the importance of collaboration between various sectors involved in the circularity cycle.
3. To raise awareness of existing innovative circular solutions for nutrient recovery and reuse in the Baltic Sea Region. This is done by showcasing: *Ravita*, *TerraNova* and *Aquacare*, three innovations receiving pre-commercialization support as a result of winning a competition held by the project.
4. Make recommendations on what is needed for implementation of innovations in wastewater and agricultural sectors in the Baltic Sea Region.

The target **audiences** of the film are: policymakers, investors, businesses and general public.

The film features the three case study rivers in the project: Vantaanjoki in Finland, Fyris in Sweden and Slupia in Poland, and is shot in the following **locations**:

- Sweden – Stockholm; Uppsala; Knivsta; Lövsta; Hölö.
- Finland – Helsinki
- Poland – Slupsk; Gdansk.

## 3 INTERVIEWEES

The film is comprised of stakeholders in the Baltic Sea who share a responsibility in linking municipal and farm waste systems to agriculture through innovation and policy. We also highlight the work that BONUS RETURN has done by involving project partners and connecting their work to the broader context of the circular economy of nutrients in the three countries.

The interviewees are the main storytellers. As it's a scripted film, questions were formulated and sent to the interviewees in advance to give them time to prepare their answers before each film production day.

Name	Organization/Project
Prashanth Kumar	Aquacare
Laura Rossi	Ravita
Malte Liljestråle	TerraNova
Sten Stenbeck	RISE Research Institutes of Sweden
Sirkka Tattari	Finnish Environment Institute – SYKE
Tomasz Okruszko	Warsaw University of Life Sciences – WULS
Jon Wessling	Federation of Swedish Farmers – LRF



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Mats Johansson	EcoLoop
Jakob Granit	Swedish Agency for Marine and Water Management
Andrzej Wójtowicz	Slupsk Waterworks
Karina Barquet	Stockholm Environment Institute

## 4 THE STORY

*Sea of Opportunity* is a film fostering the need for efficient, feasible circular solutions to close the loop on nutrient recycling thus maintaining a sustainable agriculture. By showcasing innovations that recover and reuse phosphorus and nitrogen to reduce eutrophication in the Baltic Sea, it highlights how innovations combined with agriculture and wastewater practices need policy mechanisms that could improve market opportunities and eventually contribute to a healthier, sustainable Baltic Sea.

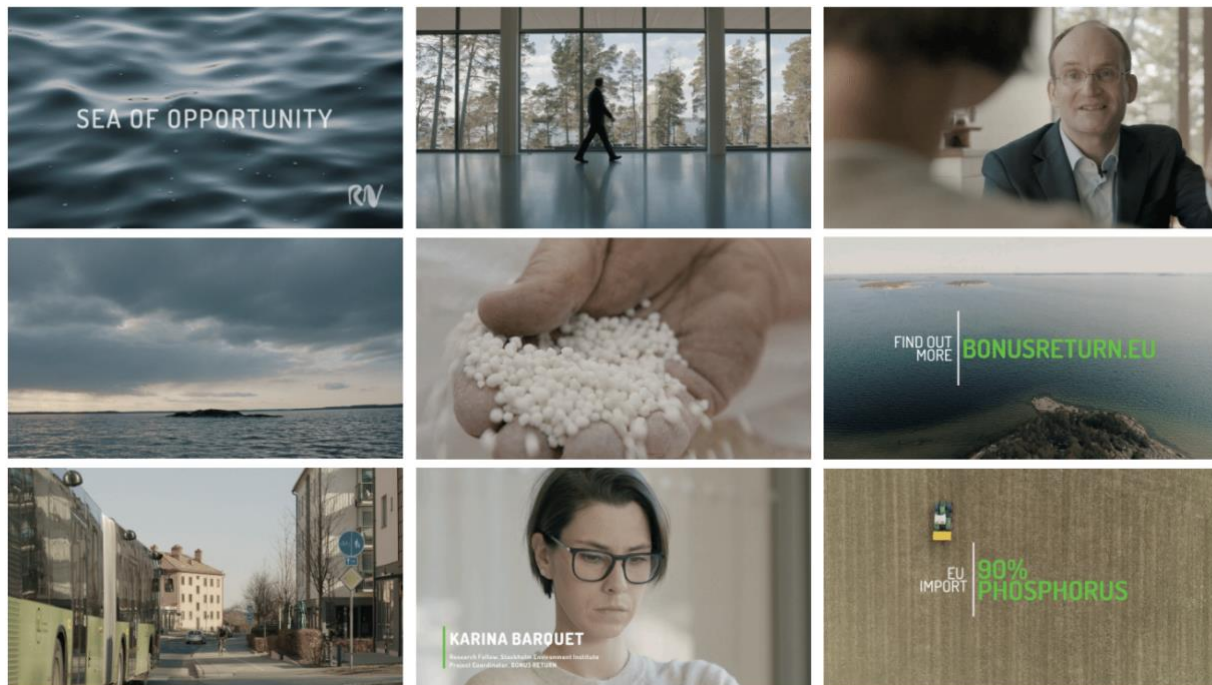


Figure 1: Selected scenes from the first part of the film (see appendix 1)

The following is a summary of the themes featured in the film.

### Nutrient recovery and reuse

Surplus nitrogen and phosphorus in soils due to overuse of fertilizer and manure in agriculture leads to excess nutrients in the sea, causing eutrophication. The same can be said for wastewater effluents containing nutrients. On land, these nutrients are essential for maintaining a sustainable agriculture. These solutions for reuse have the potential to decrease dependency on imports of mineral fertilizers for food production, thus decreasing the losses of nutrients to the soil and receiving waters. This ultimately results in an improved ecological status of the Baltic Sea.

The film highlights the work BONUS RETURN is doing which includes testing solutions to capture and reuse excess nutrients to promote nutrient recycling. The project does this by carrying out testbeds and identifying opportunities to connect policy with innovation and markets for commercialization.

## Catchment areas

The film highlights BONUS RETURN's modelling of the fate of nutrients and highlights an innovative technique developed by SYKE in Finland which allows for more frequent monitoring of nutrient flows.

## Innovation

The three innovators in the project: Aquacare, TerraNova and Ravita, are featured in the film. They represent practical solutions for nutrient recovery and reuse that could be implemented in the Baltic Sea Region, and together with project partners, RISE Research Institutes of Sweden, discuss the bottlenecks hindering innovations to scale up and gain access to markets.

- **Ravita, Finland:** focuses on direct nutrient recovery from the wastewater stream.
- **Aquacare, Netherlands:** recovers phosphorus before it reaches the sea and converts it to a concentrated phosphorus-containing liquid that is reused as a fertilizer in agriculture.
- **TerraNova, Germany:** developed a technology that turns sewage sludge from wastewater treatment plants into a product that is used as fertilizer in agriculture.

Piloting these three technologies in the Baltic Sea region is crucial to test their upscaling potential and provide evidence that they work in real environments, thus increasing their technological readiness levels.

## Cities

The film highlights how EU legislations on agriculture and wastewater have an effect on local cities and the important actions needed to ensure more circular innovations and practices are upscaled. Cities in the film are represented by Slupsk Waterworks.

## Wastewater

The wastewater sector in the EU is featured from the perspective of an ongoing investigation in Sweden into a possible ban on sewage sludge spreading in agriculture. The film highlights the implications this legislation might have on large and small cities as well as on future solutions for nutrient recovery. A ban on raw sewage sludge use in Sweden for instance, could have a major impact on strategies for the wastewater sector as costs may increase, and the new rules might lead to the rise of additional treatment and extraction technologies. This perspective is represented by Mr. Mats Johansson of Ecoloop.

## Agriculture

The newly updated EU Fertilising Products regulations ensures that only fertilizers meeting high quality and safety requirements can be sold freely across the EU.

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These new rules will boost the production and use of phosphate fertilizers with low cadmium content and will provide a greater choice to farmers oriented towards more environment-friendly agriculture. This will in turn lead to a larger market for innovative solutions and redesign of systems to recycle nutrients to further minimize unwanted substances and even climate impact.

The film makes the case for a possibility of more efficient use of animal manure to fill the gap if sewage sludge spreading on croplands is banned in Sweden. In addition, the need to increase food production will force us to adopt nutrient recycling technologies. This perspective is represented by the Federation of Swedish Farmers (LRF).

## Policy

Dr. Jakob Granit, Director General of the Swedish Agency for Marine and Water Management, provides a perspective of the current status of the Baltic Sea and highlights the need to restore our environment from damages caused by overloading of nutrients.

He emphasizes his agency's continuous commitment to collaborate with other agencies across the EU working on a similar goal to incentivize market-based mechanisms for reusing nutrients in the Baltic Sea region.



Figure 2: Selected 'behind the scenes' images from film production



## 5 FILM PROMOTION & OUTREACH

Film production began in the second year, with the first part of the film launched on 12th May 2019.

The film was promoted on the following platforms:

- YouTube
- BONUS RETURN website
- Stockholm Environment Institute's website
- BONUS projects website
- BONUS newsletter
- BONUS RETURN newsletter
- Social media: Twitter, LinkedIn and Facebook
- Project-related events: regional exchange and learning, Gdansk (16 May 2019), Sludge seminar in Gävle, Sweden on 12 June 2019 and Almedalen, Sweden on 2<sup>nd</sup> July 2019.
- Other events: 'Sea and Water forum' in Gothenburg, Sweden from 4<sup>th</sup> to 5<sup>th</sup> June 2019, organized by the Swedish Agency for Marine and Water Management.

There will be a film screening to launch the full 18-minute film at an event in Stockholm on 30<sup>th</sup> January 2020. The film will also be launched online on the same day and the primary host will be the SEI YouTube channel. All online distribution will use this link. The outreach plan includes:

- Film screening at launch event. Key stakeholders in the Baltic Sea Region will be present, as well as project partners, government representatives and interviewees in the film or their representatives.
- Websites: BONUS RETURN website, BONUS projects page, SEI website, all partner websites, all interviewees' organization websites.
- Social media: Twitter, Facebook and/or LinkedIn accounts of project partners, as well as organizations represented in the film.
- Short film version for social media: A short 30-second clip is also produced which intends to draw attention to the longer film and support promotion of the launch. Promotion of the film launch will run between 8<sup>th</sup> to 29<sup>th</sup> January 2020.
- Other events: BONUS RETURN's final regional exchange and learning; BONUS RETURN's final closing event.
- Other platforms: BONUS RETURN newsletter, BONUS newsletter, etc.

The online promotion will be a collaboration between the project partners, organizations represented in the film, and other selected organizations. To achieve the communication goal of reaching a wider audience, a **media kit** will be shared with the following groups/ representatives:

- All partners: RISE, SYKE, WULS, UU and UCPH for distribution on their websites, networks and online communication channels.
- Organizations represented in the film: Slupsk Waterworks, Swedish Agency for Marine and Water Management, Ravita/HSY, Aquacare, TerraNova, Ecoloop and the Federation of Swedish Farmers (LRF).

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- Other selected organizations include: Race For The Baltic, BONUS, the European Sustainable Phosphorus platform (ESPP), *Cirkulation* (a Nordic magazine focusing on water and wastewater), etc.

This media kit will include: YouTube link to the film, sample prepared tweets, quotes from key people in the film, link to a feature article linked to the film, a press release, and policy briefs produced in the project with additional information on issues raised in the film.

## 6 FILM PRODUCTION TEAM

Production Manager	Brenda Ochola, Stockholm Environment Institute
Project Coordinator	Karina Barquet, Stockholm Environment Institute
Content advisor/ Senior expert	Arno Rosemarin, Stockholm Environment Institute
Story editor	Caspar Trimmer, Stockholm Environment Institute
Story editor	Tom Gill, Stockholm Environment Institute
Director/Producer	Kristofer Samuelsson
Director of Photography/Editor	Conny Fridh
Voice over artist	Sally Kennedy

## 7 APPENDIX

Appendix 1: [First part of film](#)

## 8 REFERENCES

Powell N, Osbeck M, Larsen RK, Andersson K, Schwartz G, Davis M: **The Common Agricultural Policy Post-2013: Could Reforms Make Baltic Sea Region Farms More Sustainable?** In: *SEI and Baltic COMPASS Policy Brief*. 2013.