

# Programme 3rd European Sustainable Phosphorus Conference 2018

Helsinki, Finlandia Hall, 11-13 June  
[www.phosphorusplatform.eu/ESPC3](http://www.phosphorusplatform.eu/ESPC3)

HELSINKI  
 11-13 June  
 2018



European Sustainable Phosphorus Conference



| Monday 11 June |   |   |   |  |
|----------------|---|---|---|--|
| Monday 11 June | 9h15 – 10h45  | <b>Opening Plenary</b>  |   |  |
|                |   | Saara Kankaanrinta - Chairman of the Baltic Sea Action Group (BSAG)   |   |  |
|                |   | Jan Vapaavuori - Mayor of Helsinki City   |   |  |
|                |   | Karmenu Vella - European Commissioner for the Environment (video message)   |   |  |
|                |   | Jaana Husu-Kallio - Permanent Secretary at the Ministry of Agriculture and Forestry of Finland - Nutrient circular economy policy of Finland        |   |  |
|                |   | Ludwig Hermann - President European Sustainable Phosphorus Platform (ESPP) - Road from ESPC1 to ESPC3 and conference objectives                     |   |  |
|                |   | Petteri Taalas - Secretary general World Meteorological Organization (WMO) - Climate change, disasters and their impacts on economy and agriculture |   |  |
|                | 10h20   | <b>Success stories</b>  |   |  |
|                |   | Andrea Gysin - Ostara - Struvite phosphorus recovery from sewage works  |   |  |
|                |   | Hannamaija Fontell - Metsä Group / Biolan Oy - From paper pulp mill to garden   |   |  |
|                |   | Kristy Blakeborough-Wesson - SARIA UK - Cat1 animal by-product ashes as fertilisers   |   |  |
|                |   | <b>Questions and discussion</b>   |   |  |
|                | 10h45 - 11h15   | Break   |   |  |
|                | 11h15 – 12h30   | <b>Plenary – Global challenges</b>  |   |  |
|                |   | Will Brownlie - CEH Edinburgh Our Phosphorus Future (UK NERC - UNEP project) and Scientists' Call   |   |  |
|                |   | Elisabeth Bömcke - Fertilizers Europe - Tomorrow's agricultural nutrient management and fertilisation   |   |  |
|                |   | Matt Scholz - Sustainable Phosphorus Alliance - View from the Americas, update on actions, in particular on biosolids and manure                    |   |  |
|                |   | Sirpa Pietikäinen - Member of the European Parliament - European political perspectives for a sustainable phosphorus future                         |   |  |
|                |   | <b>Questions and discussion</b>   |   |  |
| 12h30 – 14h00  | Lunch   |   |   |  |
| 14h00 – 15h30  | <b>Parallel sessions I</b>  |   |   |  |
|                | <b>1. Phosphorus, carbon, nitrogen, climate and food security</b>                         | <b>2. Nutrient circular economy</b>   | <b>3. Nutrients in agriculture and livestock</b>                |  |
| Moderator      | Helena Kahiluoto - Lappeenranta University of Technology, Finland                         | Lassi Linnanen - Lappeenranta University of Technology, Finland   | Oscar Schoumans - Wageningen University & Research, Netherlands |  |
| Rapporteur     | Anders Nättorp - University of Applied Sciences and Arts Northwestern (FHNW), Switzerland | Geneviève Metson - Linköping University, Sweden   | Daniel Frank - German Phosphorus Platform (DPP)                 |  |

|                       |               |  |  |  |
|-----------------------|---------------|--|--|--|
|                       |               | <p><b>Paul Withers</b> - Lancaster University UK - The role of phosphorus in the resilience and sustainability of the UK food system</p> <p><b>Jari Liski</b> - Finnish Meteorological Institute - Finnish Carbon Action pilot project</p> <p><b>Janne Helin</b> - Natural Resources Institute Finland (Luke) - Impacts of global food demand and income growth on phosphorus demand</p> <p><b>Juha Helenius</b> - University of Helsinki - Agroecological symbiosis: food system redesign for bioenergy and recycling</p>   | <p><b>Fabian Kraus</b> - Kompetenzzentrum Wasser Berlin (KWB) - Comparative Life Cycle Assessment of phosphorus recovery from wastewater path and phosphate rock based fertilizer production</p> <p><b>Renske Verhulst</b> - Netherlands Nutrient Platform (NNP) - Transition agenda: a multi-stakeholder approach in the Netherlands</p> <p><b>Mathias Bergman</b> - Baltic Sea Action Group (BSAG) - Breakthrough for nutrient cycling business ecosystem</p> <p><b>Gauthier Boels</b> - Yara - Nutrient circular economy: fertilizer company integration in circular value chains</p> | <p><b>Giuliana D'Imporzano</b> - LIFE-DOP project - Nutrient management best practices in dairy production for Italian cheese</p> <p><b>Sari Luostarinen</b> - Natural Resources Institute Finland (Luke) - Tools to calculate manure quantity and quality and to plan regional manure nutrient recycling in Finland</p> <p><b>Arno Rosemarin</b> - Stockholm Environment Institute (SEI) - PEGaSus project Phosphorus efficiency in pigs and poultry: bridging the gaps in the phosphorus value chain</p> <p><b>Erik Sindhøj</b> - RISE Agrifood and Bioscience - Baltic experience of slurry acidification</p> |
| <b>Monday 11 June</b> | 15h30 – 16h00 | Break  |  |  |
|                       | 16h00 – 17h30 | Parallel session reports & plenary on the R&D agenda   |  |  |
|                       |               | Plenary reports from parallel sessions and discussions   |  |  |
|                       | 16h30         | <p><b>R&amp;D project presentations</b></p> <p><b>Mona Arnold</b> - VTT - Decentralised wastewater treatment with full resource recovery</p> <p><b>Marco Michelotti</b> - Prophos - Phosphorus recovery from fire extinguishers</p> <p><b>Anna Mikola</b> - Aalto University - NP Harvest: Nitrogen &amp; phosphorus recovery with gas permeable membrane</p> <p><b>Markku Ollikainen</b> - University of Helsinki - Gypsum spreading on fields to reduce phosphorus runoff</p> <p><b>Laura Rossi</b> - Helsinki Region Environmental Services Authority (HSY) - RAVITA thinking outside the recovery box</p> <p><b>Geneviève Metson</b> - Linköping University - Optimizing phosphorus recycling through biogas production in Sweden</p> <p><b>Marissa de Boer</b> - University of Amsterdam - Netherlands phosphorus flows and phosphorus recovery potential</p> <p><b>Jaakko Mäkelä</b> - Pasrea Oy - Heat and ammonia recovery from manure composting</p> <p><b>Laura Van Schöll</b> - NMI BV Netherlands - INTERREG ReNu2Farm project</p> |  |  |
|                       |               | Questions and discussion   |  |  |
|                       | 17h30 – 18h30 | Poster session, drinks and Introduction of the Finnish Government Nutrient Recycling Key Projects  |  |  |
|                       | 17h30 – 18h30 | Scientists working meeting on Scientists Call and other actions - led by Will Brownlie - CEH Edinburgh (invited only)  |  |  |
|                       | 19h30         | Leave to walk to networking dinner, Helsinki City Hall (25 minutes walk)   |  |  |

| Tuesday 12 June |            |  |   |  |
|-----------------|------------|--|---|--|
| 9h00 – 10h30    |            | Opening plenary - Addressing eutrophication and restoration  |   |  |
|                 |            | Jonathan Trent - Adjunct Professor University of California - UpCycle Systems and the future of farming  |   |  |
|                 |            | Tabea Stötter - Rhine Commission - 50 years of restoration   |   |  |
|                 |            | Dmitry Frank-Kamenetsky - HELCOM - From nutrient removal to nutrient recovery in the Baltic Sea  |   |  |
|                 |            | Pavel Misiga - European Commission, DG Research - EU R&D relating to nutrients, where we are today and where the future might go   |   |  |
| 10h05           |            | <p><b>Success stories:</b></p> <p><b>Tomasz Wojciechowski</b> - GWDA Poland - Compost in Poland</p> <p><b>Yariv Cohen</b> - Easymining - Ash2Phos: clean commercial phosphorus products from sewage sludge ash</p> <p><b>Juuso Joona</b> - Soilfood - Fertilisers and soil improvers from forestry and food industry side streams</p> <p><b>Thijs Wolbrink</b> - Nijhuis Industries - Ammonia recovery from anaerobic digestion</p> <p><b>Outi Grönfors</b> - Kemira - Energy efficient phosphorus recovery solution at wastewater treatment plants</p>  |   |  |
|                 |            | Questions and discussion   |   |  |
| 10h30-11h00     |            | Break  |   |  |
| 11h00-12h30     |            | Parallel sessions II   |   |  |
|                 |            | 4. Ecological nutrient restoration, nutrient recovery from sediments and run-off water   | 5. Technologies for nutrient recovery from waste waters   | 6. Policy tools for sustainable use of nutrients   |
| Tuesday 12 June | Moderator  | John McGrath - Queen's University Belfast  | Pertti Keskitalo - Ramboll Global Water, Finland  | Beatrice Garske - University of Rostock & Martin Verbeek - Twente Mineral Valley NL  |
|                 | Rapporteur | Stephen Hinton - Swedish Sustainable Economy Foundation (TSSEF)  | Paula Lindell - Finnish Water Utilities Association   | Chris Thornton - European Sustainable Phosphorus Platform (ESPP)   |
|                 |            | <p><b>Leon Korving</b> - Wetsus - Phosphorus removal from diluted sources such as agricultural run-off and sewage effluent</p> <p><b>Esa Salminen</b> - Vahanen Environment - Speeding up the ecological recovery of the Baltic Sea by engineering (EUTROPH 6)</p> <p><b>Anne-Mari Ventelä</b> - Pyhäjärvi-instituutti - Commercial fishery is removing efficiently phosphorus from Lake Säkylän Pyhäjärvi</p> <p><b>Bengt Simonsson</b> - Techmarket - Nutrient retrieval from top sediment: a circular economy framework</p> <p><b>Linda Kumblad</b> - Baltic Sea 2020 - Remediation of Björnöfjärden: a eutrophic bay in the Baltic Sea</p> | <p><b>Anders Finnson</b> - Svenskt Vatten (Swedish Water &amp; Wastewater Association) - Swedish strategy for recycling of wastewater resources and EU's waste and recycling hierarchy</p> <p><b>Christian Kabbe</b> - Isle Utilities - From discussion to implementation: the impact of nutrient recovery targets and legal obligations on practical implementation</p> <p><b>Mindaugas Šilininkas</b> - Pageldyniu Plantacija: - Nutrient from municipal water treatment sludge recycling into biomass in Lithuania: experience and prospects</p> <p><b>Esa Nikunen</b> - City of Helsinki - BEST project (Better Efficiency for Industrial Sewage Treatment)</p> | <p><b>Arabel Amann</b> - TU Vienna - Strategies towards a sustainable phosphorus management in Austria</p> <p><b>Stefan Russel</b> - European Environmental Foundation - Development, implementation and management of nutrient circular economy in Poland</p> <p><b>Herman Walthaus</b> - Netherlands Ministry of Infrastructure and Water Management - Towards a circular production of biomass and food in the Netherlands</p> <p><b>Jessica Stubenrauch</b> - Leipzig and Leibniz Science Campus Phosphorus Research Rostock - Sustainable Phosphorus Governance from a cross-national perspective</p> |
| 12h30-14h00     | Lunch      |  |   |  |

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| <b>14h00-15h15</b> | <b>Parallel session reports &amp; plenary</b>  |
|                    | <b>Plenary reports from parallel sessions and discussions</b>  |
| <b>14h30</b>       | <b>Success stories</b><br><b>Zouhayr Arbib</b> - Micro-algae & bacteria phosphorus recovery ponds since 2011<br><b>Miira Jääskeläinen</b> - Eko Harden - Electrokinetic oxidation and dewatering of sediments in Töölö Bay<br><b>Rob de Ruiter</b> - Ecophos - Status of phosphorus recovery and low-grade rock processing site under construction, Dunkerque, France<br><b>Marco Bonetti</b> - European Commission DG Environment - Status of the Consultative Communication on the Sustainable Use of Phosphorus |
|                    | <b>Questions and discussion</b>  |
| <b>15h15-15h45</b> | <b>Break</b>   |
| <b>15h45-17h00</b> | <b>Final plenary</b>   |
|                    | <b>Final panel discussion</b>  |
|                    | <b>Conference conclusions by the European Sustainable Phosphorus Platform (ESPP) and Baltic Sea Action Group (BSAG)</b>  |

## Wednesday 13 June

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| <b>8h30 – 15h00</b> | <p><b>Site visits will be arranged at three locations, which are:</b></p> <ol style="list-style-type: none"> <li><b>1. Kemira Research Center in Espoo</b></li> <li><b>2. Yara Kotkaniemi Research Station</b></li> <li><b>3. Helsinki Region Environmental Services HSY sewage works – RAVITA process.</b></li> </ol> <p>The visits will start on Wednesday around 09h00 and will end by 15h00. The conference participants will receive more information on the sites and will be able to choose, which of them to visit.</p> |
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## Posters presented at ESPC3

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| <ul style="list-style-type: none"> <li>- <b>Using Phospho-gypsum to Reclaim Saline-Sodic Soils in Sinai Peninsula, Egypt</b><br/>Abdelmonem Amer - Faculty of Agriculture, Menoufia University</li> <li>- <b>Clay soil structure improvement and lime filters – engineered solutions to control phosphorus leakage</b><br/>Anne-Mari Aurola - Nordkalk Corporation</li> <li>- <b>Development of a method to track the organic phosphate compound ‘phytate’ during wastewater treatment</b><br/>Niall Bradshaw - University of Sheffield UK</li> <li>- <b>Evaluation of soil microfungi as efficient plant growth-promoting organisms for P mobilization for Glycine max</b><br/>Andrea Ceci - University of Rome, Italy</li> <li>- <b>Phosphorus Elimination and Recovery from Wastewater and Process Water with Reusable Nanocomposite Magnetic Particles</b></li> </ul> | <ul style="list-style-type: none"> <li>- <b>Decentralized wastewater treatment with full resource recovery - is it worth while?</b><br/>Hanna Kyllönen - VTT Technical Research Centre of Finland</li> <li>- <b>Manure phosphorus surplus from fur animal production in Ostrobothnia, Finland</b><br/>Johanna Laakso - Natural Resources Institute Finland</li> <li>- <b>Feeds and soil improvers from vegetable by-products</b><br/>Lehto Marja - Natural Resources Institute Finland</li> <li>- <b>Farmers looking for more efficient use of poultry manure</b><br/>Sari Luostarinen - Natural Resources Institute Finland</li> <li>- <b>Phosphorus Vulnerability Index (PVI) as a tool for Phosphorus security</b><br/>Madhuri Nanda - Teri School of Advanced studies</li> <li>- <b>Improving phosphorus availability and reducing emissions through soil health – experiences from 24 test fields</b></li> </ul> |
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| <p>Asya Drenkova-Tuhtan - Tallinn University of Technology, University of Stuttgart</p> <ul style="list-style-type: none"> <li>- <b>Czech Phosphorus Platform - first steps</b><br/>Duras Jindrich - Povodí Vltavy, Státní Podnik</li> <li>- <b>Characterisation and remineralisation of phosphorus from manure and microalgae</b><br/>Trine Eggen - NIBIO (Norwegian Institute of Bioeconomy Research)</li> <li>- <b>Closing the loop on phosphorus</b><br/>Erik Elting - Nedmag BV, The Netherlands</li> <li>- <b>Nutrient Recycle in Urban Platform</b><br/>Leena Erälinna - Brahea Centre, University of Turku</li> <li>- <b>Growth with organic side streams from agriculture – MOSKU</b><br/>Hannamaija Fontell - Biolan Ltd</li> <li>- <b>Sustainable Soil-P-Management in Environmental and Agricultural Law</b><br/>Beatrice Garske - University of Rostock</li> <li>- <b>Investigating the impacts of a dairy processing plant on a river catchment</b><br/>Rupert Goddard - University of Plymouth</li> <li>- <b>Flash mixing for struvite precipitation - laboratory scale case study</b><br/>Noora Haatanen - South-Eastern Finland University of Applied Sciences</li> <li>- <b>Nutrients recovery from wastewaters by using microalgae</b><br/>Jussi Huotari - University of Helsinki</li> <li>- <b>The impact of biochars prepared from brewery wastes on phosphorus availability and growth of maize</b><br/>Ioanna Manolikaki and Evan Diamadopoulos - Technical University of Crete, Chania</li> <li>- <b>Pasrea composting system with heat and ammonia reclamation for animal shelters</b><br/>Jaakko Mäkelä - Pasrea Oy</li> <li>- <b>Demo plant – concept for nutrient recycling</b><br/>Jani Isokääntä - SFTec Oy and Sakari Kiviniemi, Rakeistus Oy</li> <li>- <b>Soil phosphorus saturation as a risk assessment of phosphorus loss from agricultural soils</b><br/>Beata Jurga - The Institute of Soil Science and Plant Cultivation, State Research Institute IUNG-PIB</li> <li>- <b>Consumption of Estonian phosphorite</b><br/>Kadriann Tamm - Laboratory of Inorganic Materials, Department of Materials</li> </ul> | <p>Tuomas Mattila - Helsinki University Ruralia Institute</p> <ul style="list-style-type: none"> <li>- <b>Recovery of concentrated fertilizer product from biogas plant reject water</b><br/>Kristian Melin - VTT Technical Research Centre of Finland</li> <li>- <b>From field to forests: Financial and environmental benefits of recycled nutrients within sustainable plantation forestry</b><br/>Mirja Mikkilä - Lappeenranta University of Technology</li> <li>- <b>NPHarvest – Phosphorus recovery with lime and nitrogen recovery with gas-permeable membrane</b><br/>Anna Mikola - Aalto University</li> <li>- <b>Phosphorus new resources and limitations in Agriculture</b><br/>Kakha Nadiradze - Association for Farmers Rights Defense, AFRD</li> <li>- <b>Enhancement of nutrient recycling and phosphorus balancing by a local BioCycle (BioKierto) model</b><br/>Jarkko Nummela - Häme University of Applied Sciences (HAMK), Finland</li> <li>- <b>Switzerland - current status and plans for the first national implementation of mineral phosphorus recovery</b><br/>Anders Nättorp - School of Life Sciences, FHNW</li> <li>- <b>Gypsum spreading on fields to reduce phosphorus runoff</b><br/>Markku Ollikainen - University of Helsinki</li> <li>- <b>Pyrolysis as a method for improved phosphorus recycling of fur animal manure</b><br/>Minna Sarvi and Sari Luostarinen - Natural Resources Institute Finland</li> <li>- <b>SYSTEMIC research project</b><br/>Oscar Schoumans - Wageningen University</li> <li>- <b>Baltic Sea Nodularia spumigena contributes to methylphosphonate degradation and methane liberation</b><br/>Jonna Teikari - University of Helsinki</li> <li>- <b>Nutrient neutral municipality</b><br/>Sanna Tikander - Centre for Economic Development, Transport and the Environment (ELY) for Southwest Finland</li> <li>- <b>Restoring nutrient cycles in food systems – a regional perspective</b><br/>Bernou Van der Wiel - Rhine-Waal University of Applied Science</li> <li>- <b>The content of phosphorus in the soil in the Czech Republic</b><br/>Elizaveta Watzlová - Research Institute of Agricultural Engineering</li> <li>- <b>Nutrient recovery with source separation of urine - environmental</b></li> </ul> |
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and Environmental Technology, Tallinn University of Technology

- **From forest to field**  
Kauppila Raimo - Yara Suomi Oy, Finland
- **Inhibition of phytase activity by polyphenol-rich extracts from sorghum, in relation to phosphorus sustainability**, Theofilos Kempapidis - University of Sheffield, UK
- **Palopuro Agroecological Symbiosis – integrating biogas production into nutrient recycling**  
Kari Koppelmäki - University of Helsinki
- **Innovations for Phosphate Recovery at Wetsus**  
Leon Korving - Wetsus
- **Understanding the soil-like behaviour of secondary P-source - a necessity prior to agricultural use**  
Vaclavkova Sarka - Institute of Chemical Process CAS, Czech Republic

#### benefits and fertilizer potential

Eeva-Liisa Viskari - Tampere University of Applied Sciences

- **Distribution based quantitative contaminant risk assessment - comparing primary and secondary phosphate-fertilizer application**  
Malte Zamzow - Kompetenzzentrum Wasser Berlin
- **PAKU – from municipal sludge to contaminant free fertilizer**  
Salmimies Riina - Endev Oy
- **Fertilizer concentrate out of biogas plant residue**  
Eeva-Liisa Juvonen - Häme University of Applied Sciences (HAMK), Finland
- **Optimizing the phosphorus cycle in the sugar beet production process**  
Ana. A Robles-Aguilar - Institute für Bio- und Geowissenschaften, IBG-2: Plant Sciences, Jülich, Germany

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