

HELEN ANN HAMILTON

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CORE SKILLS AND EXPERT AREAS

- Material Flow Analysis
- Life Cycle Assessment
- Circular Bioeconomy
- Socio-economic Metabolism
- Input-output Analysis
- Prospective Analysis
- Resource management
- Plant-availability
- Aquaculture
- Agriculture
- Fisheries
- Food Waste
- Bioenergy
- Omega-3 Fatty Acids
- Phosphorus
- Eutrophication

EDUCATION

- 2012-2017 **Doctorate in Industrial Ecology, Norwegian University of Science and Technology (NTNU), Trondheim, Norway**
- 2010-2012 **Master of Science in Sustainable Technology/Mechanical Engineering, The Royal Institute of Science and Technology (KTH), Stockholm, Sweden**
- 2008-2009 **Bachelor of Science in Chemistry, Lancaster University, Lancaster, United Kingdom**
- 2006-2010 **Bachelor of Science in Chemistry, Texas A&M University (TAMU), College Station, U.S.**

EXPERIENCE

- 2017-current Post-Doctoral Researcher/Project Leader, Industrial Ecology Programme, NTNU, Trondheim, Norway
- 2011-2012 Researcher, *Ecoinvent: The Swiss Centre for Life Cycle Inventories*, Zurich, Switzerland

RESEARCH AND PROJECTS

- 2017-current Nutrients in a circular bioeconomy: Barriers and opportunities for mineral phosphorus independence in Norway (MIND-P) *Role:* Leader group member and Post-doctoral Researcher; Funding agency: Norwegian Research Council (NFR)
• Develop spatially explicit substance flow analysis for phosphorus (P) in Norway.
- 2017-current The Global Long-chain Omega-3 Fatty Acid Cycle; *Role:* Principle researcher, Collaborators: The Marine Ingredients Organisation and The University of Sterling
• Model the global EPA and DHA cycle to identify options for increasing supply.
- 2016-2019 Microbially Produced Raw Materials for Aquafeed (MIRA), *Role:* Researcher; Funding agency: NFR
• Develop material flow model to analyze the resource/energy demands from microbially producing EPA/DHA.

2016-2017	Mineral Intelligence Capacity Analysis (MICA), <i>Role</i> : Researcher; Funding agency: H2020 <ul style="list-style-type: none"> Identify and describe methods and tools for answering stakeholder questions related to supply chain optimization and resource use.
2012-2017	Doctoral thesis: Multi-layer systems approach for assessing the socio-economic metabolism of food, Supervisor: Prof. Daniel B. Müller, Co-supervisor: Prof. Helge Brattebø, NTNU
2015	Visiting Researcher, Integrated material flow analysis – input output analysis for assessing the virtual phosphorus requirement of nations, Supervisor: Prof. Kazuyo Matsubae, Tohoku University, Sendai, Japan
2011-2012	Master's thesis: Refining Ecoinvent's current LCI assumptions for chemical production processes using a reaction grouping approach, Supervisor: Dr. Gregor Wernet, Swiss Federal Laboratories of Material Science and Technology, Ecoinvent, Zürich, Switzerland

SELECTED PUBLICATIONS AND REPORTS

- Hamilton, H.A. et al., 2018. Trade and the role of non-food commodities for global eutrophication. **Nature Sustainability**, 1, 314-321.
- Hamilton, H.A., R. Newton, N. A. Auchterlonie and D.B. Müller, 2019. The Global Long-chain Omega-3 Fatty Acid Balance. **Nature Ecology and Evolution**, *submitted*.
- Hamilton, H.A. and D.B. Müller, 2019. Report: Model and Scenario Development for Microbially Produced Raw Material for Aquafeed.
- Hamilton, H.A. et al., 2017. Recycling potential of secondary phosphorus resources as assessed by integrating substance flow analysis and plant availability. **Science of the Total Environment**, 575, 1546-1555.
- Hamilton, H.A. et al., 2016. Investigating cross-sectoral synergies through integrated aquaculture, fisheries and agriculture phosphorus assessments: A case study of Norway, **Journal of Industrial Ecology**, 20, 867-881.
- Hamilton, H.A., S. Peverill, D.B. Müller and H. Brattebø, 2015. Assessment of Food Waste Prevention and Recycling Strategies Using a Multilayer Systems Approach, **Environmental Science and Technology**, 49, 13937-13945.

PROPOSALS

- Nutrients in a circular bioeconomy: Barriers and opportunities for mineral phosphorus independence in Norway (MIND-P), Role: Lead Author with Daniel Müller, Funding Agency: NFR, Status: *Awarded*
- New Value Creation based on Global Circular Material Streams (NEWMAT), Role: Contributing Author, Funding Agency: NFR, Status: *Awarded*
- Measuring, Designing and Evaluating Eco-Intensified European Aquaculture Systems, Role: Lead Author, Funding Agency: H2020, Status: Waiting List, Score: 10
- Sustainability of the education – economy relationship (SEER), Role: Contributor, Funding Agency: NFR, Status: Declined

TEACHING AND ADVISING

- 2012-current Co-supervisor for 1 PhD student and 8 masters students within Industrial Ecology at NTNU
- 2012-current Lecturer in Material Flow Analysis (MFA) and Introduction to Industrial Ecology (IE); Examiner in PhD MFA course, Responsible for course development (content, exercises, etc.) for Introduction to IE and MFA

SCIENTIFIC MEETINGS: ORGANIZATION, COMMITTEES AND PRESENTATIONS

- 2019 Scientific Committee and Speaker, 13th Conference of the Socio-economic Metabolism Section of the International Society for Industrial Ecology (ISIE-SEM), Berlin, Germany
- 2018 Invited Speaker, Gordon Research Conference (GRC) and Seminar (GRS), Les Diablerets, Switzerland, Title GRC: The Global Long-chain Omega-3 Fatty Acid Cycle, Title GRS: Trade and the role of non-food commodities for global eutrophication
- 2018 Meeting organizer and Speaker, MIRA/Aur-Omega GMO Ethics Workshop, NTNU, Title: Supply of EPA/DHA
- 2017 Speaker, 11th Society and Materials Conference (SAM 11), NTNU, Title: Estimating the recycling potential of secondary phosphorus resources by integrating substance flow analysis and plant-availability
- 2016 Invited Speaker, Gordon Research Seminar, Vermont, U.S., Title: Assessment of Food Waste Prevention and Recycling Strategies Using a Multilayer Systems Approach
- 2016 Scientific Committee, Conference Chair and Speaker, Nordic Phosphorus Conference, Malmö, Sweden
- 2016 Scientific Committee, Academic Coordinator for European Policy Event, Industrial Ecology: Science, the environment and the circular economy, Brussels, Belgium

AWARDS AND SCHOLARSHIPS

- 2018 Best Scientific Poster Prize, Gordon Research Conference, Les Diablerets, Switzerland
- 2017 Nominated for Tom Graedel Prize, Investigating Cross-Sectoral Synergies through Integrated Aquaculture, Agriculture and Fisheries; The Journal of Industrial Ecology
- 2015 Best Publication Award: Investigating Cross-Sectoral Synergies through Integrated Aquaculture, Agriculture and Fisheries, Industrial Ecology Programme, NTNU
- 2009 George C. Bauer Scholarship
- 2008 American Chemical Society Outstanding Leadership Award

POPULAR SCIENCE COMMUNICATION

- Clothing, furniture play a role in ocean and freshwater pollution. geminiresearchnews.com, 2018
- møtNTNU, Why biogas from food waste is BAD!
<https://www.youtube.com/watch?v=OaQNKNWoUdQ&feature=youtu.be>, 2015
- So there's this thing called Industrial Ecology. NTNU TechZone Blog,
<https://www.ntnutechzone.no/en/2015/10/so-theres-this-thing-called-industrial-ecology/> 2015

REFERENCES

- Professor Daniel Beat Müller, NTNU, email: daniel.mueller@ntnu.no, tlf: +47 91897755
- Professor Kazuyo Matsubae, Tohoku University, email: matsubae@m.tohoku.ac.jp, tlf: +81 9055287818