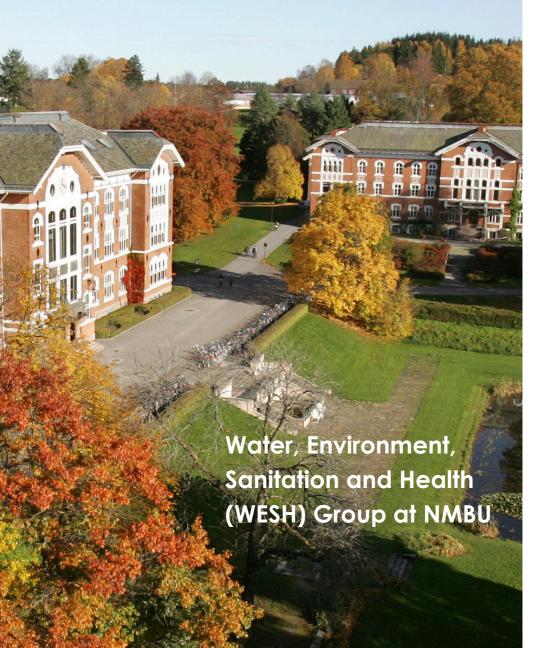


Norwegian University of Life Sciences



Norwegian University of Life Sciences – NMBU.no

Water, Environment, Sanitation and Health (WESH) Group

One of eight universities in Norway and the leading producer of master level graduates in Water and Wastewater technologies. Ranks among the top 400 universities in the World (Times Higher Education Ranking). With 5200 students and 1700 staff members, modern technical, analytical and teaching facilities, and situated just 40 km from Oslo, we are looking for partners for collaboration in Research, Development and Innovation. NMBU has long traditions in international project collaborations including Horizon 2020, EU FP7, Erasmus+ and other European programs.





The WESH group

WESH is one of the most rapidly growing research groups at NMBU. At present, the research and teaching staff comprises of 12 persons with PhDs and 14 PhD students. 30-40 MSc graduates and 40-50 exchange students (master/PhD/PostDoc) from EU, Asia, Africa and Eurasia visit WESH for 1-12 months.

Our strengths

Research competence and capacities of the WESH-members

- Drinking water treatment: coagulation, filtration, membrane processes
- Conventional wastewater treatment: Chemical and biological processes, process optimisation and compact processes
- Decentralised wastewater systems
- Process control- chemical and biological processes
- Process surveillance: virtual sensors, novel sensors, image analysis
- Modelling of transport and treatment processes
- Urban hydrology, sewer transport, overflow management
- Sludge treatment and bio-gas production

Research facilities

- 200m² lab-scale treatment facilities integrated with analytical facilities
- 200m² pilot scale lab facility with continuous access to black, grey and combined domestic wastewater
- Lab- and pilot scale units for coagulation, MBBR/MBR, RO, filtration columns with automatic surveillance and control
- Bio-gas lab 500m² with 20 bioreactors with automatic surveillance and control
- Microscopy centre with LM, CLSM, TEM, SEM, LMDM
- National test field for sewer transport systems (under establishment)
- Access to R&D and pilot/full-scale facilities at water and wastewater treatment plants in Norwegian municipalities from 10 000 pe – 400 000 pe



Dr Vegard Nilsen doing virus transport tests with studnets. Photo: Arve Heistad

Industrial partners – Innovative SMEs

- DOSCON, Norway www.doscon.no research and development in process surveillance and control for water and wastewater treatment
- Ecomotive, Norway www.ecomotive.com research, development and commercialisation of compact and highly resource-saving solutions for water and wastewater
- Ecosoft, Germany-Belgium-Ukraine www.ecosoft.ws global original equipment manufacturer for water treatment based on membrane, sorption and ion exchange processes
- A-Aqua, Norway www.a-aqua.no water and wastewater technology provider for infrastructure development, humanitarian and aid sectors
- CAMBI, Norway www.cambi.com provider of technology for the conversion of sludge to renewable energy and high-quality bio-solids
- Rosim, Norway www.rosim.no surveillance and modelling of sewer systems, mgment of overflows
- Access to R&D and pilot/full-scale facilities at water and wastewater treatment plants in Norwegian municipalities from 10 000 pe – 400 000 pe



Prof. Harsha Ratnaweera and Kaia Bing with the staff of the Solumstrand wastewater treatment plant, Drammen, Norway. Photo: Espen Solli

Selected R&D&I projects of the WESH group

- International partnership on membrane processes for research and educational excellence – MEMPREX, Research Council of Norway. €0.8mill, www.memprex.org
- Harmonisation of Water related education, €1.3 mill, www.waterh.eu.
 Funded by ERASMUS+ (2015-2018)
- Recovery and reuse of resources from wastewater and sludge RECOVER, Research council of Norway. €3.5 mill
- Water Harmony: €1.6 mill (www.waterh.net), Funded by Norway SIU (20111-2019)
- IMPREC €0.6 mill, funded by Polish-Norwegian Research Fund (2013-2015)
- Jets Ecomar/Ecomotive: €1 mill (2010-2018)
- WaSo ASIA €2 mill (www.wasproject.org), Funded by NORAD (2014-2019)
- WaSo Arica €2 mill (www.wasproject.org), Funded by NORAD (2014-2019)
- Regnbyge 3M: Holistic management of sewers and WWTPs. €0.8 mill,
 Funded by Norwegian Research Council



Water Magic conference at the Hokkaido university, Japan. Prof Xuejun Bi (QTU, China), Prof Nils Roar Sælthun (UNIS, Spitsbergen), Prof Pierre Berube (UBC, Canada), Prof Harsha Ratnaweera (NMBU) and Prof Katsuki Kimura (HU, Japan). Photo: n.r.sælthun

International collaboration

Prof. Harsha Ratnaweera, Head of research

Dr Arve Heistad, Head, Water and Environment Section

Prof. Oddvar G. Lindholm, Prof. emeritus

Prof. Peder A. Tyvand, Professor

Prof. Lars John Hem, Adjunct professor

Dr Hans Jørgen Overgaard, Researcher

Dr John Morken, Associate professor

Dr Ingun Tryland, Adjunct professor

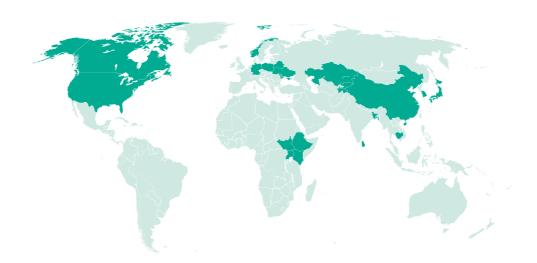
Dr Vegard Nilsen, Postdoctoral fellow

Dr Zakhar Maletskyi, Postdoctoral fellow

Dr Olfa Khelifi, Postdoctoral fellow

Dr Jon Arne Engan, Associate professor

Collaborating universities in 2017: Bangladesh, Belarus, Cambodia, Canada, China, Ethiopia, Germany, Japan, Kazakhstan, Kenya, Kirgizstan, Moldova, Norway, Poland, South Korea, South Sudan, Sri Lanka, Tajikistan, Uganda, Ukraine, USA.



H2020 projects

Excellent Science

PROGRAM NAME	ACRONYM/ PROJECT TITLE
H2020 ERC: Starting grant (coordinator)	MicroDE - Interpreting the irrecoverable microbiota in digestive ecosystems. (2014-2019)
H2020 MSCA-ITN (coordinator)	IMPRESS - Improved production strategies for endangered freshwater species. (2015-2019)
H2020 MSCA-ITN (partner)	PROTECTED: PROTECTion against Endocrine Dis- ruptors; Detection, mixtures, health effects, risk assessment and communication. (2016-2020)
H2020 MSCA-ITN (partner)	OXYTRAIN: Harnessing the power of enzymatic oxygen activation. (2016-2020)
H2020 FET Flagship (partner)	HBP - Human Brain Project. (2015-2023)
H2020 Infrastructure (partner)	ELIXIR - Norwegian ESFRI-node

Societal Challenges

PROGRAM NAME	ACRONYM/ PROJECT TITLE
H2020 SC7: Protecting freedom and security of Europe and its citizens (coordinator)	ICT4COP - Community-Based Policing and Post-Conflict Police. (2015-2019)
H2020 SC2: Food Security, Sustainable Agriculture and Forestry, Marine, Maritime and Inland Water Research and the Bioeconomy (partner)	InnovAfrica - Innovations in Technology, Institutional and Extension Approaches towards Sustainable Agriculture and enhanced Food and Nutritional Security in Africa. (2016-2020)

H2020 SC2: Food Security, Sustainable Agriculture and Forestry, Marine, Maritime and Inland Water Research and the Bioeconomy (partner)	EUCLEG - Breeding forage and grain legumes to increase EU's and China's protein self-sufficiency. (2016-2020)
H2020 Euratom (partner)	CONCERT - European Concerted Programme on Radiation Protection Research. (2015-2020)

7FP projects

PROGRAM NAME	ACRONYM/ PROJECT TITLE
7RP MSCA-ITN (coordinator)	NORA - Nitrous Oxide Research Alliance Training Network. (2013-2016)
7RP Food, Agriculture and Fisheries, Biotechnology (partner)	EUROLEGUME - Enhancing of legumes growing in Europe through sustainable cropping for protein supply for food and feed. (2014-2017)
7RP Food, Agriculture and Fisheries, Biotechnology (partner)	FISHBOOST - Improving European aquaculture by advancing selective breeding to the next level for the six main finfish species. (2014-2017)
7RP Food, Agriculture and Fisheries, Biotechnology (partner)	Targetfish - Targeted disease prophylaxis in european fish farming. (2014-2017)
7RP Nanosciences (partner)	NANoREG - A common European approach to the regulatory testing of nanomaterials. (2013-2016)
7RP Nanosciences (partner)	NANOREM - Taking Nanotechnological Remediation Processes from Lab Scale to End User Applications for the Restoration of a Clean Environment. (2013-2017)

7RP Food, Agriculture and Fisheries, Biotechnology (partner)	FORMIT - FORest management strategies to enhance the MITigation potential of European forests (2012-2016)
7RP Food, Agriculture and Fisheries, Biotechnology (partner)	Waste2Go - Development and verification of an innovative full life sustainable approach to the valorisation of municipal solid waste into industrial feedstocks. (2012-2016)

ERASMUS, COST Actions, ERA-net and JPI projects

PROGRAM NAME	ACRONYM/ PROJECT TITLE
JPI Water	ABAWARE - Advanced biotechnology for intensive - freshwater aquaculture wastewater reuse (2017-)
ERA-NET Cofund BiodivERsA3 (partner)	OSCAR - Optimizing the configuration of woody riparian buffer strips along rivers to enhance biodiversity and ecosystem services (2017 -)
ERA-NET SUMFOREST (partner)	POLYFLORES - Decision making support for forest ecosystem services in Europe - value assessment, synergy effects and trade-offs (2017 -)
ERA-NET SUMFOREST (partner)	REFORM - Mixed species forest management. Lowering risk, increasing resilience (2017 -)
ERAMSUS + (coordinator)	Harmonising water related graduate education. (2015-2018)
ERAMSUS + (coordinator)	Landscape Education for Democracy. (2015-2018)
COST Actions (coordinator)	Synergy for preventing damaging behaviour in group housed pigs and chickens. (2016-2020)
COST Actions (coordinator)	EURO-FBP - A European Network for Foodborne Parasites. (2015-2019)
ERASMUS (partner)	EUCX-1 NEAT. (2014-2016)

COST Actions (partner)	NEUBIAS - A new Network of European Biolmage Analysts to advance life science imaging. (2016-2020)
ERA-net ANIHWA (partner)	iMBDatA - Integrated EU Mobile Broiler Data ? Optimising Broiler Chicken Management, Health and Welfare through use of integrated EU data. (2016-2019)
ERA-net ANIHWA (partner)	MRSA_BACTERIOPHAGES - Bacteriophages as alternative to antimicrobial treatments of bovine mastitis caused by methicillin-resistant staphylococci (MRS), with emphasis on methicillin-resistant Staphylococcus aureus (MRSA). (2016-2019)
ERA-net ANIHWA (partner)	SOUNDWEL - Toward a tool for farmers to evaluate welfare states of pigs: measuring vocal indicators of emotions. (2016-2019)
ERA-net (partner)	ChitoTex - Development and production of new insect chitosan and chitosan based functional coatings for yarns and textile fabrics. (2015-2018)
ERA-net (partner)	EfectaWheat - An Effector- and Genomics-Assisted Pipeline for Necrotrophic Pathogen Resistance Breeding in Wheat. (2015-2017)
ERA-net (partner)	ANTHOPLUS - ANTHOcyanin production PLatform Using Suspension cultures. (2014-2017)
ERA-net (partner)	SUSDIET - Implementing sustainable diets in Europe. (2014-2017)
JPI-Urban Europe (partner)	Simscity Value Cap - Simulations for Innovative Mechanisms for the Selforganizing City: testing new tools for Value Capturing. (2014-2018)



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Project secretary

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