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Hydro Nation Scholars Programme

The Hydro Nation Scholars Programme

Overview of Knowledge Exchange and Impact (KEI) Activities

The Hydro Nation Scholars programme (HNSP) supports PhD students investigating cutting-edge water topics. These studies will help to create new expertise within Scotland and build its international profile. The Scholars programme is part of the Scottish Government's Hydro Nation strategy. The objective of the strategy is to develop the economic, environmental, and social value of Scotland's water resources.

The HNSP has contributed to improving the educational and skill levels of the workforce in Scotland and abroad. A total of 52 scholars from 24 countries have been funded (including six new scholars starting in October 2023), of which 23 have successfully completed their studies and currently working across various areas of academia, policy, and industry, most of them domestically in Scotland and the wider UK. So far, scholars have been registered across 12 different Scottish HEIs (with co-supervision by other research institutes including the James Hutton Institute, British Geological Survey, and UK Centre for Ecology & Hydrology). The PhD projects span a wide range of themes and topics including resource management, socioeconomics and value, governance, climate change, resilience, rural economies and environmental, physical, ecological and hydrological mechanisms, industrial application, and impacts and innovation across the water sector (**Figure 1**).

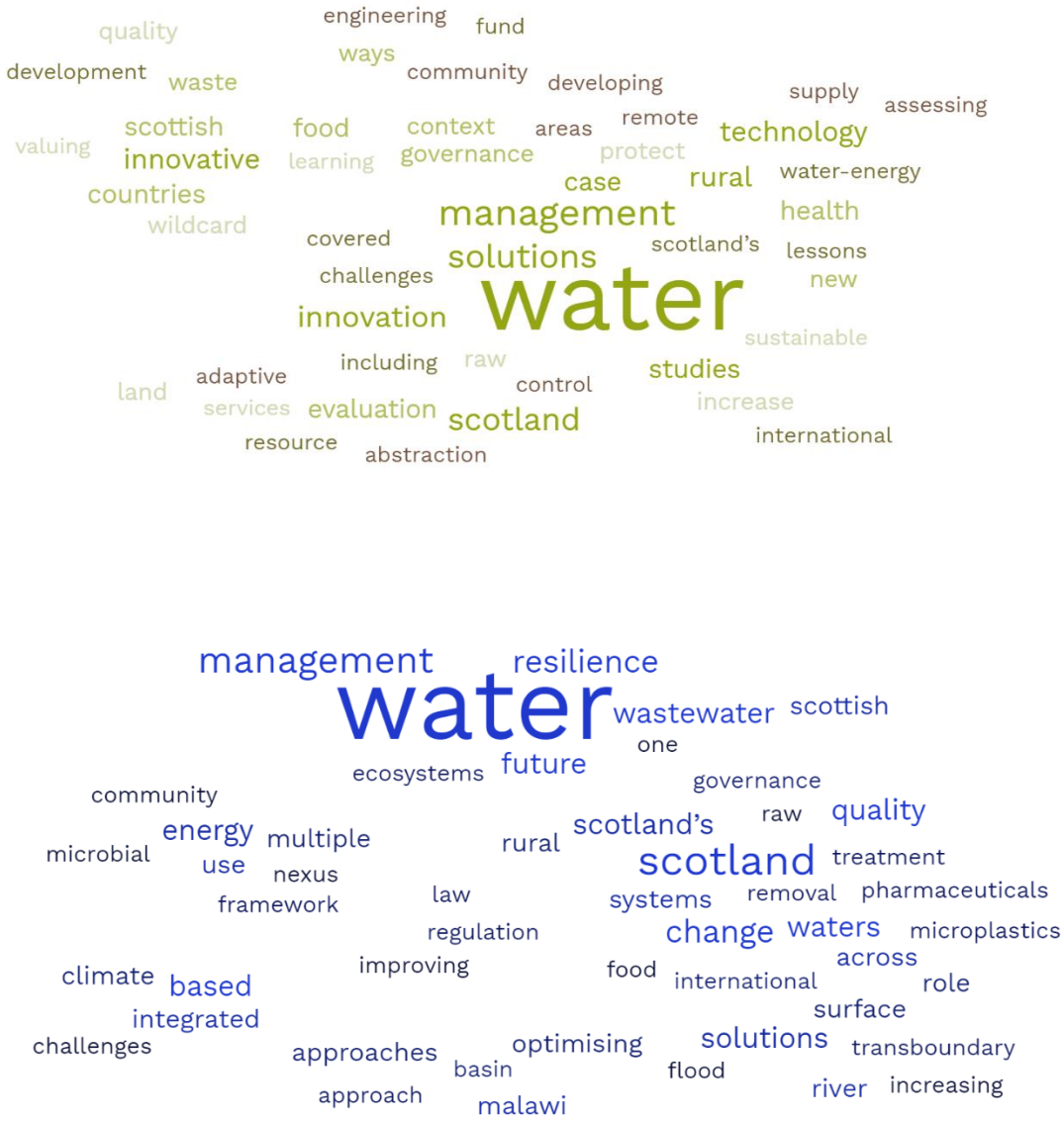

Figure 1 Prominence of words by call theme (top) and thesis title (bottom)

During the year, the Hydro Nation Scholars collaborate with the wider water industry in Scotland and with the key governmental institutions who have responsibility for aspects of water policy, regulation and governance, through participation in Hydro Nation and HNSP events, UK and International conferences, industry events, field visits and research stays. Further, the Hydro Nation Scholars produce numerous knowledge transfer and exchange (KTE) outputs by authoring publications in science journals, book chapters, policy briefs, writing blogs and presenting their work orally and through poster presentations at a wide range of national and international conferences and events. Collectively, the scholars have produced an estimated 56 publications in the past 10 years, and close

to 270 KTE outputs. These contributions are important for sharing of data, experience and expertise, and supporting and encouraging science-policy engagement, as well as serving as conduits for generating impact.

Some examples of the legacy and impact generated from the HNSP Alumni and Scholars include:

Christopher Schultz

Building on his PhD research studying values and water governance in Brazil, Christopher has been involved in two major water policy-related research projects since graduating. First, he worked for the FutureDAMS consortium, based at the University of Cambridge (2018-2021), where he studied the history, legacy and impacts of the World Commission on Dams (1998-2000), a global science-policy interface. He also led the development of a global survey on valuing water as well as several other research and impact activities for the Government of the Netherlands' Valuing Water Initiative (2020-2023) with two of his former Hydro Nation PhD supervisors as collaborators. The conceptual framework for valuing water that Christopher developed for his PhD thesis now features in the Global Water Partnership's IWRM toolbox. Christopher is now a Lecturer in the School of Geography and Sustainable Development at the University of St Andrews (since 2022).

Nandan Mukherjee

Nandan was awarded the UN 2019 Risk Award at the UNDRR Global Forum for Disaster Risk Reduction in Geneva, for developing the concept of floating homes in Bangladesh which allow families to survive natural disasters while producing food, water, and energy. The award led to the University receiving the accompanying €100,000 prize that is being used to bring the project to scale in the flood prone river basins and deltas of Bangladesh in collaboration with the UNESCO Centre for Water Law, Policy and Science at the University of Dundee, where he is the Climate Change and Adaptation lead.

Maricela Blair

Maricela's PhD project increased awareness of an emerging area of water research as one of the first studies on microplastics pollution in wastewater treatment systems in Scotland. Her review paper was accepted for publication without revisions and has been accessed over 16k times. As a Scholar, Maricela participated in the Hydro Nation Forum, and after completing her studies Maricela has since worked at the science-policy interface with the Honduran Government and currently is the Hydro Nation Policy Officer for the Hydro Nation International Centre, supporting in the delivery of the Hydro Nation strategy.

Robert Sakic Trogrlic

Robert's PhD project was the first scholar-led project based in Malawi, on the role of local knowledge in community-based disaster risk reduction. Robert has continued his work in disaster and climate risk as a climate and resilience officer with Practical Action, an international development NGO, as a postdoctoral researcher at King's College London's Department of Geography in the UK, and currently as part of the Systemic Risk and Resilience (SYRR) Research Group of the IIASA Advancing Systems Analysis (ASA) Program. He is also a former vice president of the Water Youth Network (WYN), where he co-founded the Disaster Risk Reduction Team.

Lydia Niemi

Lydia has carried on her expertise from her PhD project to work as a researcher and co-coordinator of the One Health Breakthrough Partnership - a cross-sector group addressing pharmaceutical pollution through knowledge exchange, research and innovation, and policy engagement. While still a scholar, a video on Lydia's PhD research was made by the Scottish Policy and Research Exchange as part of an initiative to connect researchers and policymakers in Scotland, and to facilitate knowledge exchange, increase research impact and improve policy outcomes. Lydia met with representatives from the Scottish Parliament Information Centre (SPICe), and wrote a blog published by SPICe on pharmaceutical pollution in the environment and the significance to current policy in Scotland.

Victoria Porley

Victoria Porley was awarded the Young Water Engineer Award at IWA UK YWP in 2019 for a presentation on drinking water purification in India. Victoria currently works as a Water Scientist at Intelligent Growth Solutions applying the knowledge and expertise on water sampling and analysis gained during her PhD studies to investigate how the chemical composition of water influences the properties of plants, and how to use this knowledge for optimising crop growth.

Kerr Adams

Kerr's PhD research aimed to support future policy by engaging key stakeholders and inform policy makers by developing water scenarios to explore future water pressures and trade-offs. Kerr's research took a participatory approach at the science-policy interface where he interviewed 27 stakeholders associated with freshwater environments in Scotland to identify knowledge gaps on how Scotland can become a resilient Hydro Nation. His project continued to apply participatory approaches to address identified knowledge gaps, developing decision-support tool to investigate the impacts of future change on catchment scale systems and inform the identification of collaborative management action to increase resilience. He has presented his findings of stakeholder perspectives in blogs, a policy brief, and at World Water Day 2023, where he led a roundtable discussion with panellists from SEPA, Scottish Water, Scottish Government, and Academia, including the launch of a video example from SEPA and Scottish Water's One Planet Choices decision-making method to highlight the need for partnership working and the ways it can be achieved in Scotland. Kerr was also a panel member on the second panel discussion in the AquaNOW Audiences series in 2019 on the topic "The Future Of Water Stewardship". The discussion took place ahead of the Alliance for Water Stewardship (AWS) Global Water Stewardship Forum that same year in Edinburgh. Currently, Kerr works in academia as a Research Scientist at the James Hutton Institute continuing to apply systems-based modelling methods to investigate future water issues in Scotland, and with the Hydro Nation International Centre to support international partnership working in Malawi.

Kirsty Holstead

Kirsty Holstead acted as an expert contributor and reviewer for Westminster's Parliamentary Office for Science and Technology (POST) at Westminster. Kirsty provided and reviewed evidence for a policy note for the Environment, Food and Rural Affairs Committee relating to community involvement in natural mitigation of flood risk management. She was one of 18 experts chosen in the UK. Her research on farmers' perspectives of natural flood management as well as organisational barriers to flood management in Scotland were cited in the final note. Kirsty is joining the AQUACONNECT project working on water governance and innovation at the University of Wageningen.

Julius Cesar Alejandre

Julze has been recognised for his outstanding contribution to developing and proposing policy recommendations in the field of One Health and Planetary Health, specifically on upstream interventions to reduce pharmaceutical pollution. He is currently in his last year of studies where he works on the development of Scotland's first Blue-Green Prescribing Programme for primary mental healthcare. Julze has a huge interest in translating evidence to policy and practice, and in integrating environmental considerations in health promotion and health policy making. He has contributed to health-related policy development in Scotland such as the consultation on social prescribing by the Scottish Parliament's Health, Social Care and Sport Committee. During his academic studies, Julze was awarded a policy fellowship by Scotland's Centre of Expertise for Waters; a parliamentary internship post at the House of Lords of the UK Parliament; and a research grant for developing nature-based public health interventions in the UK from the British Council.

Sydney Byrns

Sydney is one of two current scholars conducting research in Malawi. Her PhD project involves detailed stakeholder mapping of the actors in the water governance system, as well as facilitating multilevel dialogue to overcome misalignments in policy and practice. In addition to piloting resolutions from dialogue in Malawi, the findings from this study will also help to inform wider Scotland-Malawi partnership activities through the Hydro Nation International Centre.

Donald Robertson

Donald's transdisciplinary PhD project focuses on the use of data for water resources management in Malawi, with a particular focus on novel sources of data such as citizen science. Donald's work will continue to develop understanding of how decision makers interact with and utilise data and importantly, how this aligns with advancements in the scientific data fields. Donald, in a similar vein to Sydney Byrns' research, builds on and further supports the Scotland-Malawi partnership activities through the Hydro Nation International Centre, engaging with a range of stakeholders across the water sector from academia, government, NGOs, and the private sector.