

Submission: Water Sector Response to the Science System Advisory Group

Introduction

The water sector in New Zealand is a critical intersection of environmental, social, health, engineering, and economic research. Despite its importance, it suffers from a fragmented system and inadequate research support. This submission outlines the necessity of a robust research base for the water sector, the challenges faced by the research sector, the vision for the water sector through 2050, and the opportunities for research to help achieve this vision.

The Need for a Solid Research Base

The water sector's complexity and its intersection with various research areas necessitate a comprehensive and well-supported research base. This is crucial because the multidisciplinary nature of the sector demands an integrated research approach to effectively address its challenges. The current fragmented system leads to siloed efforts and suboptimal outcomes, whereas a unified research framework can drive cohesive and impactful solutions.

Furthermore, water issues, such as potable water safety, have far-reaching societal impacts and long-term implications for public health and economic stability. Investing in a solid research base also ensures the development of skilled graduates and professionals who can innovate and drive advancements in the sector.

For context, some of the challenges facing the sector include risks to potable water supply quality and quantity which are considered New Zealand's most urgent climate risk, according to the Ministry for the Environment (2020). Other climate change risks to water services include stormwater network inundation leading to flooding, water quality deterioration in source and receiving waters, and reduced asset longevity (Cowper-Heays, 2023). Beach closures due to *E. coli* contamination are becoming more common, and models estimated that 45% of rivers were unsuitable for activities like swimming between 2016 and 2020 (Ministry for the Environment, 2012), with wastewater and stormwater discharges being significant contributing factors. Between 2020 and 2021, there were 4,268 reported overflows of untreated wastewater, though this number is likely underreported (Water New Zealand, 2022). Research provides mechanisms for identifying, prioritising and addressing these issues but the water sector is currently not involved in discussions around research funding or allocation.

Challenges Faced by the Research Sector

In response to the pressing challenges confronting the sector in March 2024, more than 20 delegates representing water suppliers, research institutions (comprising Crown Research Institutes and universities), policy analysts, and sector experts gathered for a collaborative

dialogue aimed at addressing the critical issues within the water sector. Through a full day of in-depth discussions, they identified the following priority challenges:

1. **Fragmented System and Lack of Collaboration:** The current setup hinders comprehensive, big-picture thinking necessary for addressing complex water issues. Collaboration between different stakeholders and research entities is inadequate.
2. **Political and Funding Constraints:** Research funding is often short-term and fragmented, which impedes sustained progress and comprehensive data collection while the issues are more often than not enduring (e.g. infrastructure, legacy contaminations).
3. **Data Standardisation and Access:** The lack of standardised data sets and accessible data hampers effective research and policy formulation.
4. **Health Risks from Contaminants:** Uncertainty around the health impacts of contaminants like nitrates and PFAS necessitates robust research to guide policy.
5. **Aging Infrastructure and Investment Needs:** The sector requires significant investment in infrastructure and new technologies to meet contemporary demands.
6. **Climate Change Impact:** The increasing impact of climate change on water quality and availability demands adaptive management strategies.

Vision for the Water Sector Through 2050

Released in July 2023, the document “Towards 2050: Transformation Vision for the Water Sector” synthesised the collective insights of over 500 stakeholders and Water New Zealand members. This comprehensive roadmap outlines the necessary changes for the sector, including the critical role of research in this transformative journey. By 2050, the water sector aims to achieve world-leading status, distinguished by robust international collaboration and continuous innovation. Key elements of this vision include:

1. **Investment and Collaboration:** Sustained investment in research and innovation, alongside strong collaboration between the sector and research organisations, will drive sectoral growth.
2. **Skilled Workforce:** A focus on education and training will ensure a workforce adept with the latest technologies and methodologies.
3. **National Monitoring Programme:** A comprehensive national monitoring program will provide reliable data to inform policy and sectoral practices, driving national economies of scale.
4. **Involvement of Tangata Whenua:** Integrating Mātauranga Māori and ensuring robust pathways for indigenous research will enhance the sector's inclusiveness and innovation.

Overall, we believe there are significant opportunities for research to drive innovation and success across the water sector. Key themes that we identify as essential for developing a high-performing and impactful research platform include:

1. **Increased Collaboration and Data Sharing:** Fostering a collaborative research environment within New Zealand will enhance data sharing and collective problem-solving. This includes developing systems for wider stakeholder involvement in priority setting for research investment.
2. **Interdisciplinary Research Models:** Adopting interdisciplinary approaches to address the multifaceted issues within the water sector comprehensively.
3. **Policy and Evidence Alignment:** Ensuring that scientific research informs policy decisions, leading to evidence-based policymaking.
4. **Research and Innovation for Productivity:** Encouraging research that drives productivity through data sharing, smart infrastructure, and new economic models.
5. **Climate Adaptation Strategies:** Developing adaptive strategies to manage the impacts of climate change on water resources.
6. **Enhanced Funding Mechanisms:** Advocating for increased and more coordinated funding to support long-term research and infrastructure projects.

To address the complex challenges and leverage the opportunities within the water sector, it is imperative to establish a solid research base characterised by collaboration, innovation, and sustained investment. Achieving our collective 2050 vision requires a cohesive approach that integrates diverse research areas, engages all stakeholders, and prioritises long-term, impactful outcomes. By fostering a collaborative research environment and ensuring robust funding and data frameworks, New Zealand can position its water sector as a global leader in sustainability and innovation.

The Submitter: Water New Zealand

Water New Zealand is the country's largest water industry body and provides leadership in the water sector through collaboration, professional development and networking. We represent water management professionals and organisations. As a not-for-profit organisation, we have around 3000 corporate and individual members drawn from all areas of the water management industry including regional councils and territorial authorities, Crown Research Institutes, consultants, suppliers, government agencies and scientists.

Water New Zealand promotes the sustainable management and development of the water environment. This includes the promotion and support of best practice and management of the Three Waters – drinking, waste and stormwater – and we advocate for the sustainability and health of our freshwater environment. This submission has been prepared by Water New Zealand staff on behalf of the water sector. We recognise that there a multitude of challenges and opinions within the sector so have tried to capture the collective vision as informed by previous consultation processes.