Ministry for the Environment
Manatū Mō Te Taiao

Our Science Strategy Rautaki Pūtaiao

VALUED AND TRUSTED SCIENCE:
A FRAMEWORK FOR CHANGE

New Zealand Government

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Ministry for the Environment
Manatū Mō Te Taiao

Making Aotearoa New Zealand
the most liveable place in the world

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Message from Vicky Robertson, our Chief Executive

Changing world, changing MfE

The world is changing and the Ministry for the Environment is too. We are focused on delivery of advice and policy, empowering and inspiring all New Zealanders to take positive action .To do more we need to work differently, to go beyond policy and to partner purposefully with others. Our new approach encourages our people to be curious, innovative, courageous, to take action, to lead, and to help others succeed.

How science fits in

Science is a critical foundation for MfE's work, it helps us understand where we are now, why, and what we can do about it. It provides possibilities of new solutions, as well as new risks to be understood and managed.

We produced this Science Strategy knowing that we could do a lot more with our science to support the environmental outcomes we are working towards. Our Science Strategy sets out a vision of "valued and trusted science for environmental stewardship" and shows how our own people, tools and processes contribute, and also highlights the importance of collaborating and communicating with others.

Getting to our vision

We know we won't be able to achieve our vision and goals all at once, and more importantly, we won't be able to achieve them alone. I am looking forward to working with our many partners to collectively improve our access, use and communication of science in the pursuit of making New Zealand the most liveable place in the world.

Ko te manu kai i te miro, nōna te ngahere; ko te manu kai i te mātauranga, nōna te ao.
Seek the berry and the forest is yours; seek the knowledge and the world is yours.

Vicky Robertson
Chief Executive Officer

Message from Alison Collins, our Department Science Advisor

Science is a thread that weaves through all we do at the Ministry. In an organisation as diverse as the Ministry it can be challenging to know where best to invest effort to ensure our people are empowered to use, collaborate and communicate science wisely and credibly.

Our Science Strategy has been built and tested with a wide variety of people in and outside of the Ministry, and has included a review on what is working well and where there is room for improvement. During this process we found we had plenty of good initiatives already underway as well as a few gaps. The value of Our Science Strategy is as a framework to ensure we bring all these initiatives together and build from them to fill these gaps.

I am excited by the opportunity Our Science Strategy presents to propel us forward in our work. I encourage everyone to read, enjoy and most of all bring Our Science Strategy to life!

Alison Collins
Department Science Advisor

About our Science Strategy Rautaki Pūtaiao

What is our Science Strategy?

Our Science Strategy sets out how we want to work with and use science at the Ministry, and creates a framework for change. We hope it will help us share internally and externally our intentions and aspirations for the use of science at the Ministry.

Who is our Science Strategy for?

The Science Strategy is for everyone in the Ministry. This includes those where science currently plays a small or less obvious part in their everyday roles, such as staff in our People and Culture Directorate or our engagement advisors. The Science Strategy also extends beyond our Ministry to our current and future collaborators.

How was our Science Strategy developed?

Our Science Strategy has benefited from internal and external insight. Workshops, interviews and meetings have been used to gain input from people throughout the Ministry. We have also drawn from discussions with external agencies, including central and local government agencies, crown research institutes, and universities.

Why now?

Science is at the heart of our Ministry's strategic direction

Our Strategy on a Page and Performance Improvement Framework assessment (PIF) set out the importance of science and evidence in our work. Our Strategy on a Page aims for purposeful partnerships, broadening our focus out from policy, 'shaping the agenda' and drawing 'insights from data'. The PIF explicitly directs a *"more prominent and visible science leadership role*".

New Zealand's science system is becoming more collaborative

Recent changes to New Zealand's science investment policy and funds encourage a more collaborative approach to how we do science. Science organisations have started new collaborative projects in the National Science Challenges, and central government agencies are beginning to better connect through the Department Science Advisor network. Central government agencies are beginning to collaboratively set out New Zealand's science priorities.

New Zealand is rapidly changing

There is growing societal awareness of our complex environmental challenges, and greater acceptability of and demand for management efforts. New technology and science enable

better connection nationally and internationally, greater access to information, as well as more cost-effective tools to understand and manage our environment. On the horizon are more changes for New Zealand, including synthetic agriculture, and new gene technology.

Science contributes to environmental stewardship

Science has a role in informing public debate about the environmental challenges we face today. We rely on science to understand and report on our environment, help prioritise investment and action, and explore, enact, and evaluate management options. For example, science underpins the Ministry's national environmental reporting programme.

Science helps us think about tomorrow, and supports our stewardship role. Science helps us predict the longer-term impacts of the choices that decision-makers take and consider alternative paths. For example, science supports the Ministry's work on sustainable wealth creation and natural capital.

Science will be needed in the future to find new solutions, particularly as the climate changes, our population grows, and our expectations change. Science will provide new technologies, and help us to consider and understand their opportunities and risks. For example, science informs the Ministry's work on waste and alternatives to plastics.

Our definition of science is purposefully broad

In the Science Strategy our definition of science is purposefully broad. Science refers to the data, monitoring, research, reports, scientific methods, and understanding we use to make decisions and give advice. It covers areas such as environmental economics, social and behavioural sciences, and Mātauranga Māori as well as the biophysical sciences.

Mātauranga Māori weaves through our Science Strategy

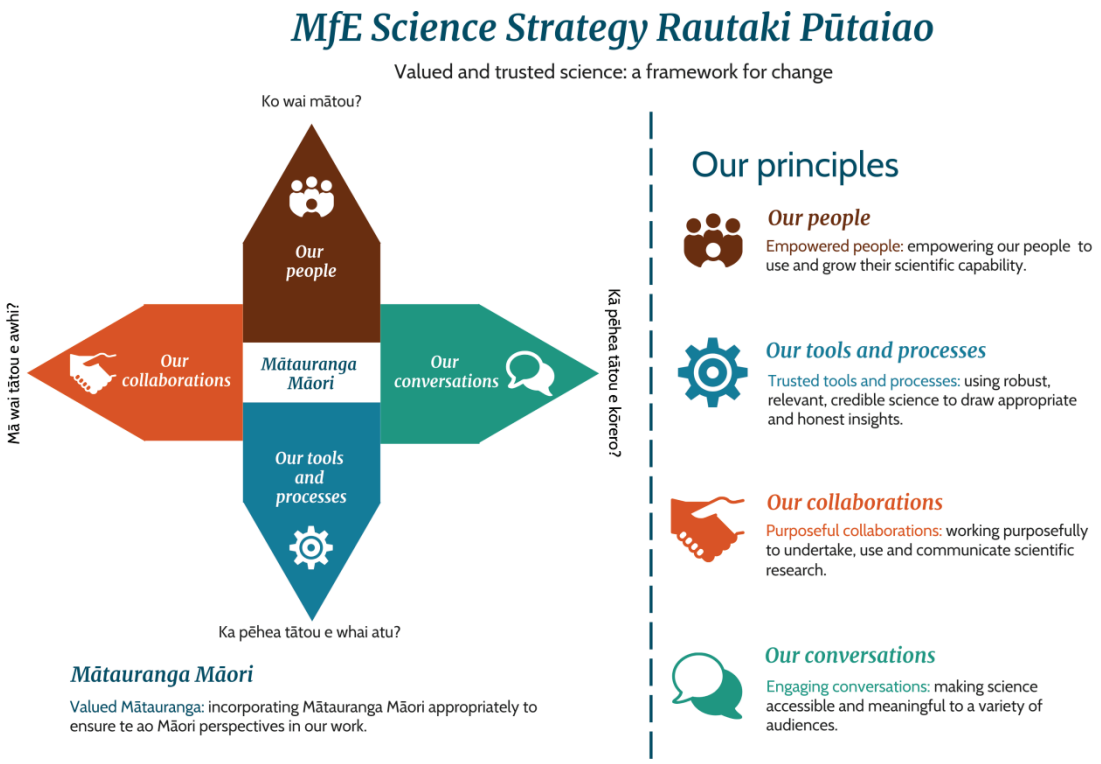
Our environment is a complex and interconnected system, and our work requires a holistic and integrated approach. We are fortunate in New Zealand to have mātauranga, knowledge, built up by Māori over hundreds of years living as part of the environment. Mātauranga can contribute to our advice, policy and reports.

Our principle is 'valued mātauranga: incorporating Mātauranga Māori appropriately to ensure te ao Māori perspectives are reflected in our work'. We want to be clear about what successful use of mātauranga mō te taiao at the Ministry looks like, so changes to improve the use of science at the Ministry also improve the use of mātauranga.

Our Science Strategy is structured using four themes

We have identified four themes that work together towards our vision of 'valued and trusted science'. Combined, these four themes encompass end-to-end use of science, from the work we do internally, to how we collaborate externally and how we share our science with New Zealanders. These themes are underpinned by both a principle and goals.

- Our people – Ko wai mātou? (Who are we?)
- Our tools and processes – Ka pēhea tātou e whai atu? (How will we do this?)
- Our collaborations – Mā wai tātou e awhi? (Who will help/collaborate with us?)
- Our conversations – Mā te aha tātou e kōrero? (How will we express ourselves?)



Our goals

Our people Ko wai mātou?	Our tools and processes Ka pēhea tātou e whai atu?	Our collaborations Mā wai tātou e awhi?	Our conversations Ka pēhea tātou e kōrero?
• We have general science literacy with specialist capability in priority areas • We grow and develop our peoples' science capability • We make best use of our capability	• We target our science investment and maximise its value through reuse • We have access to the tools and processes we need to use science • We have end-to-end quality assurance processes for our science	• We communicate our science priorities and needs • We collaborate with science and data providers in priority areas • We influence science policy and science investment decisions	• We communicate our science effectively and meaningfully to our various audiences • We make our science available to others • We collaborate with others to communicate our science
Mātauranga Māori	• We are clear about what successful use of mātauranga mō te taiao at the Ministry looks like, and how we can achieve this		

Our people – Ko wai mātou?

Guiding principle

Empowered people: *empowering our people to use and grow their scientific capability.*

Our starting point

Our people have scientific capability in a range of domains that contribute to our advice, policy and reporting. Currently we have environmental domain experts (eg, in climate, marine, and fresh water), data analysts, staff with social and economics skills, and science brokers. However, we tend to rely on one or two people and we have areas which could benefit from more expertise, including mātauranga and science communication. Additionally, we have expertise and skills that are not currently fully utilised, due to working in silos and a lack of visibility of these skills. Our new activity-based working arrangements provide a supportive environment for working collaboratively with others across the Ministry, and we have examples of cross-Ministry projects that draw on a variety of skillsets (eg, Behavioural Insights Group, Natural Capital Project).

Our goals

- We have general science literacy with specialist capability in priority areas
- We grow and develop our peoples' science capability
- We make best use of our capability

More details on our goals

We have general science literacy with specialist capability in priority areas

We work on complex environmental problems that require a variety of skillsets. Our people must have general science literacy and an understanding of where science fits into our work to be able to use science appropriately. Subject matter experts are necessary, as well as knowledge brokers and science communicators who can interpret and translate science. Even when expertise is outsourced, our people must have a general appreciation of science to ensure the science we commission meets our needs.

We grow and develop our people's science capability

We work in challenging areas where there is often rapid progress in science and changing public expectations. Our people must be able to grow and develop their science capability to keep pace with these changes, be ready for emerging issues, and remain engaged and empowered. Our people must be confident in their use of science and be able to communicate this to our audiences to maintain and lift our credibility. To grow and develop our peoples' science capability we must ensure science capability is valued and prioritised in the Ministry.

We make best use of our capability

We have a pool of diverse capability within the Ministry. Our people should feel empowered to work on projects that best use their capabilities. Additionally, the challenges we work on at the Ministry are complex and require a combination of different skills and talents. This may mean we need to bring in capability from multiple science disciplines, including mātauranga, as well as policy, communication, and engagement expertise. This is about embracing our multiple talents, he rau mano, he rau kotahi tangata.

How will we realise our goals?

We will work with our Department Science Advisor

We will work with our Department Science Advisor to explore our science priorities, and help develop a culture where science is valued and used.

We will work with our People and Culture Directorate

We will work with People and Culture and consider our recruitment, retention, training and development processes. We will also consider how to make our existing capability visible and how we support our internal collaborations and connections.

We will continue to seek feedback and support ongoing initiatives from across the Ministry

We will continue to seek feedback from throughout the Ministry on how we use and value science capability, better connect, and build on existing initiatives and communities of practice.

Links to our other strategies

- **Policy plus**: we harness our diversity. Our policy plus focus means we harness our diverse perspectives and the skills of our workforce.
- **Our 'Edge' behaviour**: we are curious – he rōpū hou, he rōpū tangata. We ask the questions that enable us to develop insight, know more, and learn. We ask these questions with respect and actively listen, using the answers to shape and grow our thinking.
- **The Performance Improvement Framework**: improving our back office efficiency. Retaining our people, workforce planning to align capability with the future needs of a modern knowledge-based organisation.

Our tools and processes – *Ka pēhea tātou e whai atu?*

Guiding principle

Trusted tools and processes: *using robust, relevant, credible science to draw appropriate and honest insights.*

Our starting point

We commission, use, analyse and synthesise science in our advice, policy and reporting but often in a fragmented way. Currently we use a range of science, information and data, with our people using a variety of tools and processes depending on their purpose and team. The varying approaches can make it hard for our people and projects to connect together on shared environmental outcomes, and for us to be confident in the quality of the science. Additionally there are concerns about the adequacy of our tools and processes for managing and storing our science, information and data. We do not have consistent and standardised processes for quality assurance of the science in our work. The variation in approach and lack of clarity around processes can create risks around our credibility, integrity and reputation.

Our goals

- We target our science investment and maximise its value through reuse
- We have access to the tools and processes we need to use science
- We have end-to-end quality assurance processes for our science

More details on our goals

We target our science investment and maximise its value through reuse

We have limited resources and need to target our science investments. Focusing our science on agreed priority areas will make a difference where it matters most and ensure science is available for multiple purposes. Any science commissioned, analysed, and reported on for one purpose needs to be considered in the context of wider Ministry work and outcomes. Additionally, science operates on long time scales, and for our enduring priorities there is significant value in committing to ongoing data collection and research.

We have access to the tools and processes we need to use science

Our tools and processes are critical for ensuring confidence and trust in our use of science. We need the right tools to be able to store, analyse, and communicate science, for example, tools to explore large datasets, or draw insight from satellite data. Increasingly critical are those tools that help with the transparency, reproducibility and efficiency of our work, such as code

based tools. Additionally, we need processes to ensure consistent and appropriate use of these tools; this is particularly relevant for mātauranga.

We have end-to-end quality assurance processes for our science

We work under pressure, and often to tight deadlines which can put pressure on our quality assurance. We need standard end-to-end quality assurance processes to help us use science appropriately and effectively, and enable New Zealanders to be confident in our work. These quality assurance processes should consider what science is used, where it came from, and provide clarity on how it was analysed and used in our work.

How will we realise our goals?

We will work with our Department Science Advisor

We will work with our Department Science Advisor to develop a culture where science is supported by robust tools and processes.

We will work with our Information Directorate

We will work with the Information Directorate and consider our science investments, analysis, tools and processes, and enduring core environmental indicators.

We will work with our Quality Advice Community

We will work with our Quality Advice Community to explore commissioning, guidance material, and quality assurance processes for using science at the Ministry.

Links to our other strategies

- **Policy plus:** we problem solve. Our policy plus focus means we problem solve in many ways: non-regulatory interventions, visual tools, and more.
- **Our 'Edge' behaviour:** we are innovative – ka pū te ruha, ka hao te rangatahi. We introduce new ways of doing our work to deliver change and are receptive to others' new ways of working that may benefit us. Our fresh thinking means we challenge the *status quo* and add value.
- **The Performance Impact Framework:** data collection with purpose. Creating a comprehensive National Environmental Monitoring Network and database of environmental indicators.

Our collaborations – Mā wai tātou e awhi?

Guiding principle

Purposeful collaborations: *working purposefully with others to undertake, use and communicate scientific research.*

Our starting point

We collaborate across the science community with science funders and science and data providers. The nature of these relationships varies. Generally there are many strong one to one relationships with crown research institutes and central and local government. However, these individual relationships can lack coordination and are not always mirrored at an organisational level. In other areas of potential collaboration (eg, universities, iwi and the business sector) we are not always aware of the value of collaboration, nor how to connect. A significant step forward has been developing the Conservation and Environment Science Roadmap providing a long-term and clear view of the science New Zealand needs, helping us to partner purposefully.

Our goals

- We communicate our science priorities and needs
- We collaborate with science and data providers in priority areas
- We influence science policy and science investment decisions

More detail on our goals

We communicate our science priorities and needs

We work on a diverse variety of complex issues, which can benefit from the insights of a range of relevant sciences including mātauranga. Our resources are finite, so we need to prioritise to ensure New Zealand funds the most valuable science. Clear science priorities and needs will help us shape the agenda and work with others in areas of mutual benefit and overlapping interest. Our collaborators must be confident in our science priorities to understand how their work can contribute to our environmental outcomes.

We collaborate with science and data providers in priority areas

Our collaborations are critical for our access to the right science, datasets, infrastructure and expertise we need to deliver on environmental outcomes. New Zealand has a wealth of both nationally and internationally respected scientists and science for us to draw from. In our priority areas we must consider moving to more purposeful and enduring collaborations, underpinned by our mutual interests, and our long-term environmental outcomes.

We influence science policy and science investment decisions

We rely on New Zealand's science funding system to support our underpinning science infrastructure, undertake mission-led and curiosity-driven research, as well as maintain and grow the science expertise we require. Our Ministry must influence the science system in a deliberate and strategic way. This will ensure our priorities and needs are visible and supported, and that we shape the research agenda to support today's advice, policy and reporting, as well as for future or emerging issues.

How will we realise our goals?

We will work with our Department Science Advisor

We will work with our Department Science Advisor to identify areas of mutual benefit where our science priorities align with our collaborators.

We will work with our Engagement and Procurement teams

We will work with our Engagement and Procurement teams and consider how we structure and coordinate our engagement and collaborations, particularly as they get more complex.

We will continue to seek feedback and support ongoing initiatives

We will seek feedback from our collaborators on how we engage and support existing ongoing initiatives that are working.

Links to our other strategies

- **Policy plus:** we shape the agenda and broker for the system. Our policy plus focus means we actively shape the agenda. We see the whole system and play a brokering role.
- **Partnering with purpose:** we work with others. We are clear about what we bring to the table, and the results we seek. We partner with Māori and iwi. We engage early. We work to inspire people to action and results.
- **Our 'Edge' behaviour:** we lead – mā whero, mā pango, ka oti ai te mahi. We inspire and influence others to act in the service of positive change and we lead from wherever we are in the organisation.
- **The Performance Improvement Framework:** connected and engaged. Mobilising collective effort with aligned organisations.

Our conversations – Kā pēhea tātou e kōrero?

Guiding principle

Engaging conversations: *making science accessible and meaningful to a variety of audiences.*

Our starting point

We communicate the science in our advice, policy and reports to a broad variety of audiences. Currently our conversations are primarily supported through written content and data made available online. Although there is increasing focus on more visual approaches, we have limited access to design software and capability. For example, many of our one pagers and visual content are developed in and constrained by MS Powerpoint. We publish some of our data on the MfE Data Service, and our reports on our website. The extent of sharing of information varies by team, and we lack a strategy and consistent processes for publishing scientific data and information. However, there is increasing recognition of the importance of science communications, and a new cross-ministry group was recently established to champion and support effective science communication throughout the Ministry. Additionally, some of our conversations benefit from collaborations, for example, we collaborate with Local Government New Zealand on the LAWA website.

Our goals

- We communicate effectively and meaningfully to our various audiences
- We make our science available to others
- We collaborate with others to communicate our science

More details on our goals

We communicate our science effectively and meaningfully to our various audiences

We work towards environmental outcomes that are important to New Zealanders, which can impact people's lives. Our conversations need to include clear and concise science, and be delivered in a way that is meaningful to our audiences. With rapidly advancing technologies possibilities, expectations and conversations are changing. We must keep up with these changes so our science communications are engaging and relevant. Our conversations should be considered throughout our work and not left until the end.

We make our science available to others

We are not alone in working towards environmental outcomes for New Zealand, and we want to enable others to contribute to improving our environmental stewardship. The science that

underpins our conversations should be available so New Zealanders trust our work, are inspired to take informed action, and build from our work. Some of our work may be sensitive in nature, and may require careful communication. We must be strategic and have clear processes about what science we share, and how we share it.

We collaborate with others to communicate our science

Our conversations can benefit when we collaborate with others, and combine our strengths and networks. Support for making our science accessible and meaningful to our audiences without compromising scientific accuracy is increasingly critical. In some circumstances science and data providers can help us communicate the science in a clear, accurate and trustworthy way. Effective collaboration can also expand our audience and amplify our conversations.

How will we realise our goals?

We will work with our Department Science Advisor

We will work with our Department Science Advisor to develop a culture where our conversations are considered throughout our work rather than at the end.

We will work with our Communications and Engagement Directorate, and our Information Directorate

We will work with our Communications and Engagement Directorate, and our Information Directorate to explore improvements to the processes, tools, and platforms supporting our conversations.

We will continue to seek feedback from our various audiences

We will seek feedback from our various audiences on their experiences with our conversations.

Links to our other strategies

- **Policy plus:** we advise with impact. Our policy plus focus means we use storytelling, insights from data, real life examples, and the views of end-users.
- **Partnering with purpose**: we work with others. We are clear about what we bring to the table, and the results we seek. We partner with Māori and iwi. We engage early. We work to inspire people to action and results.
- **Our 'Edge' behaviour:** we help others succeed – he toa takitini. We work as one organisation to achieve our purpose. We all create a culture in which people want to do their best and we learn from each other. We broker relationships and make it practical and workable for others to make good environmental and economic decisions.
- **The Performance Impact Framework:** managing meaning. Transforming how we communicate science. Focus on creativity, storytelling and dialogue to move beyond transmitting data.

Next steps

How will we implement this Science Strategy?

Everyone at the Ministry has a role to play in delivering this strategy. We intend that it will be adopted and implemented across the Ministry and recognised by our stakeholders and collaborators. To achieve this we will develop an implementation plan that aligns and builds on current and existing tools, processes, frameworks, initiatives, and communities of practice. We will also ensure the Science Strategy connects, complements and reinforces other Ministry strategies.

Our Science Strategy provides a framework for change, and all teams will have a part in implementing it. There will also be significant roles for some including:

- **Our people:** People and Culture and Communications.
- **Our tools and processes:** Quality of Advice Community, Data Stewardship Project, Information Services, Communications, the Science Communication Group, and our science-focused teams.
- **Our collaborations:** Science Panel, Data Stewardship Project, Data Directors Forum, Engagement team, and Procurement and Legal teams.
- **Our conversations:** Communications, Data Service Project, and Science Communication Group.

Additionally, there will be considerable work required to support Mātauranga Māori and to ensure mātauranga is considered in the four themes. Mana Taiao will be involved in scoping and coordinating this work.

Governance, coordination and support for implementation will be provided from the Science Stewardship team, with our Department Science Advisor acting as ambassador for change. Progress will be monitored and reported on quarterly. The relevance of this Science Strategy will be checked annually, and it will be refreshed as required.