



**Ministry of Business,
Innovation & Employment**

National Science Challenges

Performance Framework Guidance Document (1)

May 2015

Introduction

The National Science Challenges (NSCs) take a strategic approach to the Government's science investment by targeting a series of goals, which, if achieved, will have major and enduring benefits for New Zealand. The 11 Challenges provide an opportunity to align and focus New Zealand's research on large and complex issues by drawing scientists together from different institutions and across disciplines to achieve a common goal through collaboration.

A performance framework for the NSCs has been developed to measure performance for each Challenge and for the NSC policy as a whole. This document provides initial information for Challenge participants about the framework and next steps.

Quick information

- Each Challenge and MBIE will agree on performance indicators to be included in Challenge Programme Agreements.
- Each Challenge will report annually to MBIE in three parts: data against indicators, a narrative annual report, and statistical information. This information will not be required until reporting for the period ending 30 June 2016.
- For the period ending 30 June 2015 Challenges will report to MBIE on their activities for which they received commencement phase funding (reports due to MBIE by 31 July 2015).

About the performance framework

The performance framework aims to measure the extent to which each Challenge is achieving its Challenge objective and, in general, whether the aims of the NSC policy are being met.

The framework was developed by considering overseas examples and indicators already used in the science and innovation system – to reduce the administrative/reporting burden and to make the collection of information efficient and consistent. MBIE set up an external reference group of people involved at various levels in the Challenges and held several meetings to test ideas. MBIE held a workshop with wider Challenge representatives in December 2014 to present the draft framework and allowed time after the meeting for sector feedback.

Parties involved

The **governance body** of each Challenge monitors research projects and programmes and related activities to ensure that they are aligned with the Challenge objective and are on track to be achieved.

MBIE monitors and assesses the performance of each Challenge based on information provided by the Challenge and other information collected by MBIE. MBIE also assesses and evaluates the NSC policy as a whole to test whether the policy intent is being achieved.

Common performance areas

The following seven common performance areas are at the core of the performance framework (refer Appendix 1 for more detail).

Performance area		Key questions
1	Delivery of Challenge objective	To what extent has progress been made towards achievement of the Challenge objective?
2	Science quality	To what extent is the Challenge achieving appropriate and world-leading, ground-breaking science?
3	Best research team collaboration	To what extent is New Zealand’s best research team working on delivering the Challenge objectives?
4	Stakeholder engagement	To what extent is the Challenge engaging with stakeholders and to what extent are stakeholders using the Challenge research results?
5	Māori involvement and mātauranga	To what extent are Māori and mātauranga Māori engaged to achieve the Challenge objective? To what extent is the Challenge addressing the needs and aspirations of Māori?
6	Effective governance and management	To what extent do the right governance and management arrangements exist and work strategically and effectively?
7	Public participation	To what extent is there effective engagement between the Challenge and the public?

These areas cover the delivery of each Challenge objective (performance area 1), while performance areas 2–7 are important principles of NSC policy and contribute to achieving the Challenge objective. Appendix 2 provides the context for the common performance areas.

Outcomes framework

- MBIE will assist each Challenge to develop an outcomes framework (using the outcomes framework template in Appendix 3). The outcomes framework is a strategic governance tool that outlines the problem or opportunity that the Challenge intends to address (the Challenge objective approved by Cabinet) and a pathway to deliver on the Challenge objective including the short-, medium-, and long-term outcomes.
- The outcomes framework should cover all Challenge activities, ie funded through MBIE funding and aligned funding.

Indicators

- Each Challenge will develop specific indicators to measure the delivery of the Challenge objective (performance area 1), and will agree those indicators with MBIE.
- For performance areas 2-7, a small set of indicators common across all Challenges will apply. Some of these indicators will be based on information gathered from surveys that MBIE will carry out. Each Challenge and MBIE may agree on additional indicators as required. Appendix 1 (pink column) shows the common indicators in bold and some examples of other potential indicators that a Challenge may use. A shared approach may be appropriate across related Challenges as they develop their outcomes frameworks and indicators.
- The indicators that are not common may be changed year by year, in agreement with MBIE, to reflect changes as each Challenge progresses.
- The scope of the indicators should cover all Challenge activities, ie funded through MBIE funding and aligned funding.

Annual report

- Each Challenge will provide a narrative annual report addressing each of the seven performance areas. MBIE will develop a report template. Appendix 1 (green column) provides examples of information for the annual report.

Statistical information

- Each Challenge will provide the following statistical information which will add context and will provide information for MBIE's view of the science system as a whole:
 - i. staffing counts
 - ii. financial data (actual and budgeted income and expenditure)
 - iii. output data (publications, patents, new products developed etc)
 - iv. list of Challenge research organisations
 - v. list of users using outputs from the Challenge.

MBIE will provide definitions for these terms. The scope of the statistical information is Challenge funding from MBIE only.

Reporting process

Annual (for the periods from 30 June 2016 to 30 June 2019)

Each Challenge will submit a plan to MBIE by 31 May each year that outlines the Challenge's focus and detailed plans for the coming year. The plan will form the basis of a discussion between the Challenge and MBIE on the focus of future activities.

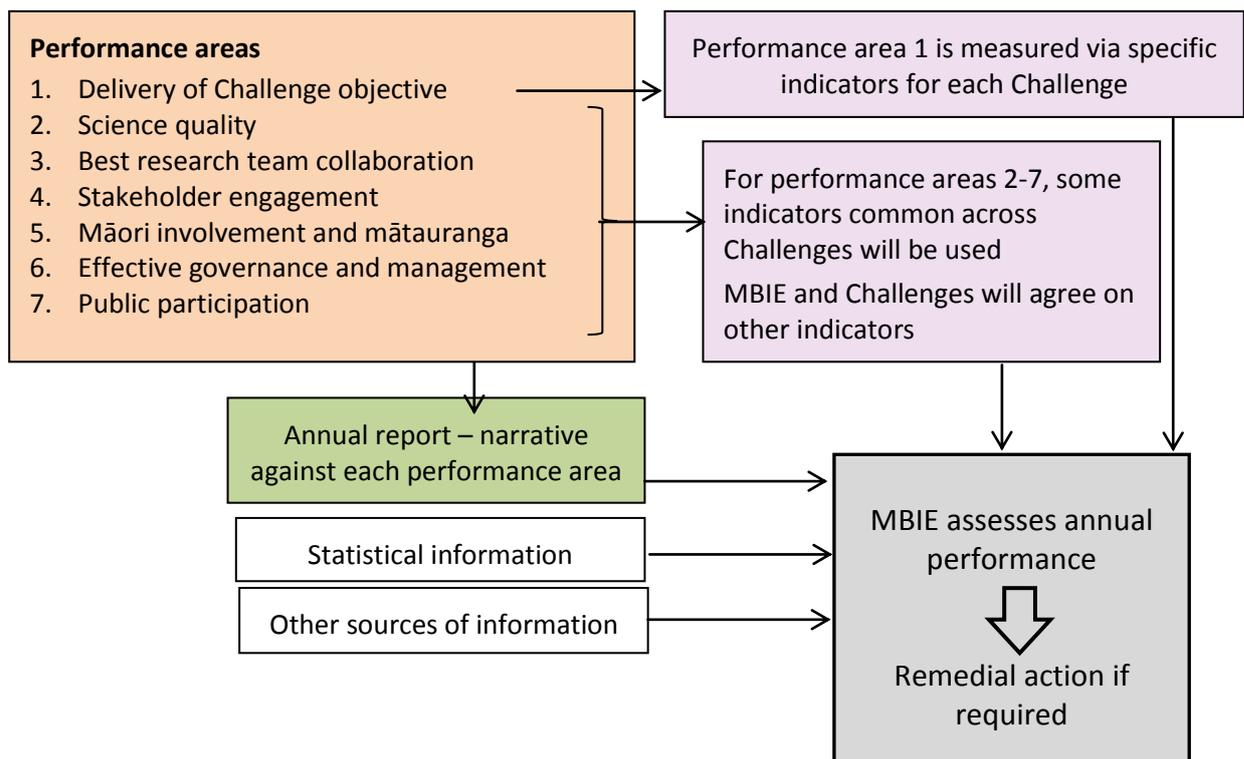
By 31 July each year each Challenge will provide to MBIE, for the year ended 30 June, a narrative annual report, data on the common performance area indicators, and statistical information. This ensures that the reporting package is a mixture of both qualitative and quantitative information covering different dimensions of performance.

MBIE will assess the performance information provided by each Challenge and other knowledge gained from its regular interaction with each Challenge's governance group and leadership team and any other information that it may collect, for example through stakeholder interviews.

MBIE expects a Challenge governance group to take remedial action if a Challenge is not reaching expectations. Where a change event arises, funding may be suspended.

The process is summarised below.

Summary of the annual assessment process



Review and evaluations

Mid-way review

Initial Challenge programme agreements for each Challenge are up to 30 June 2019. Before this point, MBIE will review each Challenge and evaluate the NSC policy as a whole. MBIE will develop a terms of reference for the mid-way reviews which will take place during 2018. It is likely that the reviews will be undertaken by independent external parties and will look at various aspects of each

Challenge. MBIE is aware that some Challenges may wish to undertake their own reviews at the same time. MBIE will try, where possible, to work with the Challenges on joint reviews where there is overlap.

Also during the mid-way review MBIE will evaluate the NSC policy as a whole to determine to what extent the Challenges have achieved the higher-lever policy goals.

Based on the results of the mid-way review, MBIE will make recommendations for funding allocations in the second funding period (1 July 2019 - 30 June 2024) and any suggested policy changes. MBIE's recommendations will also be influenced by other factors such as scientific developments and factors that may have emerged on the national scene. The outcomes of the reviews may affect the continuation of Challenges, the focus of Challenges, or the amount of funding for Challenges in the second funding period.

End of ten years

MBIE evaluate the impacts of the NSC policy at the end of the Challenges (30 June 2024).

Ad hoc reviews, audits, or evaluation

Besides the scheduled reviews outlined above, MBIE may choose to carry out ad hoc reviews of a Challenge or group of Challenges. MBIE may also audit a Challenge when it considers it necessary.

Next steps

1. Reporting for the period ending 30 June 2015

Challenges that received commencement phase funding in 2014/15 will need to submit a brief report by 31 July 2015 to cover at least the following items:

- amount of funding received from MBIE
- amount of expenditure
- description of broad breakdown of expenditure
- brief summary of Challenge activities during the year, including major deliverables.

To submit a report: create a client report in the MBIE portal, type the information into the text box, and submit. For further information, please call 0800 693 778 or e-mail investmentemailaccount@mbie.govt.nz.

2. Development of indicators

Once the Science Board approves full funding for each Challenge, MBIE will start discussions about the content of the Challenge Programme Agreement (CPA). The CPA will include information on reporting, including a list of the indicators agreed for the seven performance areas and statistical information to be provided.

The MBIE lead contact will contact each Challenge to arrange discussions on the indicators. Challenges should involve the right personnel in such discussions with MBIE and could include, for example, those who have experience with performance measurement and who are familiar with the planned Challenge deliverables.

Consistency is preferable in the nature of agreed indicators across Challenges. However, this may not be possible given that each Challenge is at a different stage and will be in discussions with MBIE at different times. MBIE staff members will share information on indicators as they are being developed as a form of internal moderation, to ensure that MBIE staff members are taking a consistent approach when agreeing indicators with Challenges.

3. Further guidance information

MBIE will provide a further guidance document on the reporting processes outlined below.

4. Forward-looking reports due by 31 May (first report due by 31 May 2016)

MBIE will provide a template for these reports.

5. Reporting for the period ending 30 June (first report due by 31 July 2016)

All Challenges will need to report to MBIE by 31 July on their activities for the year ending 30 June. This will include a narrative annual report, statistical information, and data on each agreed indicator.

This information will be entered through the MBIE portal. MBIE will provide a suggested template for the annual report and information on how to submit the other information.

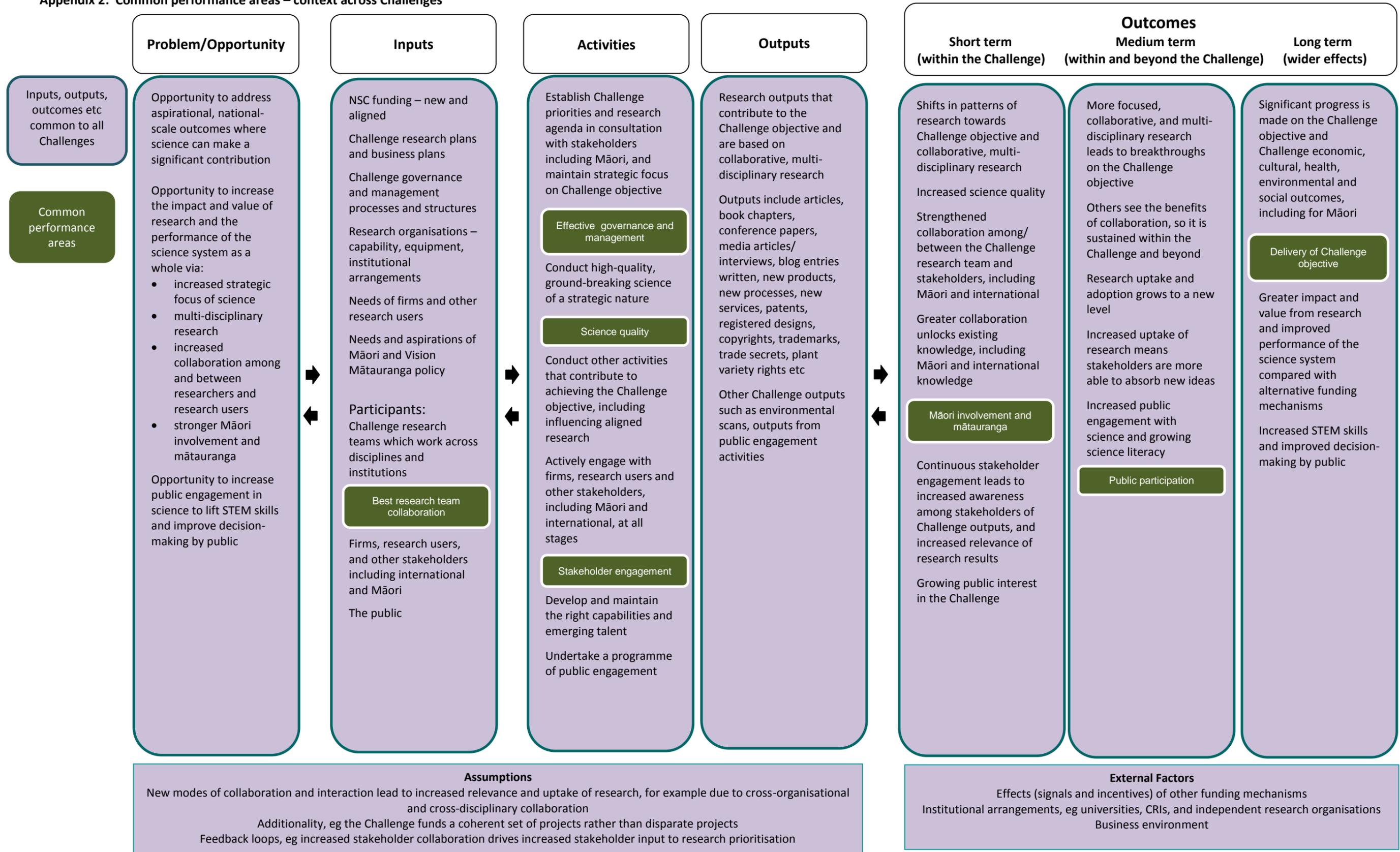
Appendix 1: Common performance areas

- Each Challenge will be assessed annually on the basis of the following seven performance areas.
- To tell its performance story, each Challenge will report through a mix of indicators and content of annual reports.
- For performance areas 2-7 some indicators (in bold in pink column) will be common across all Challenges. The Challenges will collect (and provide MBIE with) the data for some of these common indicators; MBIE will collect the data for other common indicators where a co-ordinated approach is sensible.

Performance area	Key questions	Indicators and other information Common indicators across Challenges are shown in bold	Information (narrative) to include in annual reports
1. Delivery of Challenge objective	<p>To what extent has progress been made towards achievement of the Challenge objective?</p> <p>a) Challenge activities focus on and contribute to achieving the Challenge objective</p> <p>b) Challenge consortium has a clear pathway to achieve the Challenge objective</p> <p>c) Challenge programme delivers science and outputs that contribute to the Challenge objective</p> <p>d) Challenge is making significant progress towards its objective</p>	<p>Challenge-specific indicators agreed between MBIE and each Challenge, based on the Challenge's outcomes framework</p>	<p>Progress made to date against each specific indicator</p> <p>Major highlights (ie achievement or not)</p> <p>Reasons for falling behind in any area and remedial action taken</p> <p>Any future risks of non-delivery and mitigation action</p>
The areas below are assessed within the context of achieving the Challenge objective			
2. Science quality	<p>To what extent is the Challenge achieving appropriate and world-leading, ground-breaking science?</p> <p>a) The Challenge delivers high-quality, ground-breaking science of a strategic nature</p>	<p>Mean citation score for journals in which the Challenge has published (bibliometric analysis undertaken by MBIE based on publications data provided by the Challenge)</p> <p>Field-weighted citation index of Challenge publications (bibliometric analysis undertaken by MBIE based on publications data provided by the Challenge)</p> <p>The number of publications in peer reviewed journals with an impact factor >2 (or field-specific equivalent) per \$1 million invested per annum</p> <p>Share of world's top 10% most cited publications attributed to Challenge researchers</p>	<p>Major science/research highlights</p> <p>What science quality reviews have been undertaken</p> <p>Achievements (eg evidence of peer recognition such as awards etc)</p> <p>Rationale for selection of journals for publications</p> <p>Quality control and assurance processes applied</p> <p>Steps taken to improve quality</p> <p>Any quality failures – and remedial steps taken</p> <p>Role/input from science advisory group (if this exists)</p> <p>Any emerging risks to science quality</p>
3. Best research team collaboration	<p>To what extent is New Zealand's best research team working on delivering the Challenge objectives?</p> <p>a) Research team works together across disciplines and member institutions (relationships are built that did not exist previously) and draws on and aligns capabilities and resources outside the Challenge</p> <p>b) Research team has the right capability, gaps are filled, and Challenge tests itself with new ideas, approaches, and mechanisms</p> <p>c) Emerging talent has opportunities (in research or leadership roles)</p> <p>d) International science expertise is used where appropriate</p>	<p>% of publications by collaboration type (New Zealand institutions, international) on a 12-month rolling average (bibliometric analysis undertaken by MBIE based on publications data provided by the Challenge)</p> <p>Effectiveness of research team, eg science leadership, skill mix (biennial survey conducted by MBIE)</p>	<p>What teams are working across organisations, disciplines</p> <p>Evidence of linkages with international research partners, eg MOUs, agreements entered into</p> <p>Contestable process – what processes were run, what were results, new parties brought into the research</p> <p>What has been done for early-career researchers</p> <p>Risks associated with capability and competencies (personnel and other, eg equipment) – action taken to address risks, fill gaps</p>

Performance area	Key questions	Indicators and other information Common indicators across Challenges are shown in bold	Information (narrative) to include in annual reports
4. Stakeholder engagement	<p>To what extent is the Challenge engaging with stakeholders and to what extent are stakeholders using the Challenge research results?</p> <p>a) Stakeholders inform and influence Challenge priorities and research agenda b) Stakeholders take up and use research results c) Challenge influences activities and investments of external stakeholders</p>	<p>Satisfaction among stakeholders with research priority setting (biennial survey conducted by MBIE)</p> <p>Satisfaction among stakeholders with knowledge exchange and technology development (biennial survey conducted by MBIE)</p> <p>Growth in number of stakeholders reporting significant improvements to their operations as a result of Challenge-generated knowledge and technology</p> <p>\$ value of stakeholder research aligned with Challenge</p> <p>Adoption rate, ie % of industry or target market that adopts research outputs</p>	<p>What has been achieved with key stakeholders, eg:</p> <ul style="list-style-type: none"> - who are the key stakeholders? - agreements, MoUs entered into - plans for knowledge exchange and technology development - how research is being used and strategies for uptake - other arrangements, eg joint board meetings, staff secondments etc - co-funding and non-cash support, external revenue earned - future stakeholder engagement plans <p>Relationship issues and risks - how resolved, emerging</p> <p>Role/input from stakeholder advisory group (if this exists)</p>
5. Māori involvement and mātauranga	<p>To what extent are Māori and mātauranga Māori engaged to achieve the Challenge objective? To what extent is the Challenge addressing the needs and aspirations of Māori?</p> <p>a) Māori are involved in the Challenge or at least add influence - where appropriate - as researchers, stakeholders, governance entity members, advisors b) Challenge research unlocks knowledge, resources, and potential of Māori c) Mātauranga Māori is used in the Challenge research, where appropriate</p>	<p>Satisfaction among Māori stakeholders with their influence on, engagement with, and value received from the Challenge (biennial survey conducted by MBIE)</p> <p>\$ value of research and related activities that 1) specifically target Māori needs and aspirations and 2) employ mātauranga Māori</p>	<p>As per Stakeholder Engagement above (Māori as a stakeholder subset)</p> <p>How mātauranga Māori has been embedded across the Challenge</p> <p>Informal arrangements, eg discussions held with iwi, hui, seminars</p> <p>Research projects achieved/under way using Māori resources, mātauranga</p> <p>Activities of Māori advisory group (if this exists), Māori involvement at other levels</p>
6. Effective governance and management	<p>To what extent do the right governance and management arrangements exist and work strategically and effectively?</p> <p>a) Governance entity ensures that Challenge research portfolio maintains strategic focus on Challenge objective b) Effective processes are in place (such as performance reporting and monitoring, financial management, audit) c) Governance entity operates effectively d) Governance and management processes for the Challenge complement other governance and management processes elsewhere in the science system</p>	<p>Qualitative assessment of governance processes</p>	<p>Evidence of the quality of the Challenge's strategic leadership and overall approach</p> <p>Significant changes in governance and management arrangements</p> <p>Results of any reviews of governance group performance</p> <p>Results of any Challenge reviews, audits carried out</p> <p>Results of environmental scanning and any actions taken (eg changes to strategic plans, direction, priorities)</p> <p>Major risks identified – mitigation action implemented or under way</p> <p>Governance group's monitoring of project/milestone delivery (ie headline results of Challenge's own reporting and monitoring)</p>
7. Public participation	<p>To what extent is there effective engagement between the Challenge and the public?</p> <p>a) Challenge undertakes an appropriate programme of public engagement b) Members of the public are involved in the Challenge where appropriate, and engaged in the aspirations of the Challenge</p>	<p>Index of public attitudinal and behavioural engagement in science (regular (possibly triennial) survey conducted by MBIE)</p> <p>Number of articles related to the Challenge in the popular press and measure of presence in social media</p> <p>Awareness and understanding among target audiences of the learnings from the Challenge</p>	<p>Major activities undertaken – details of activity, target group, participation, results etc</p> <p>Upcoming events</p> <p>Risks – how resolved, emerging risks</p>

Appendix 2: Common performance areas – context across Challenges



Appendix 3: Outcomes Framework Template

The outcomes framework aims to assist the Challenge in identify the main steps to achieve the Challenge objective and the Challenge-specific indicators which the Challenge will monitor for common performance area 1.

