



SLMACC Review: Survey of Project Leaders and Stakeholders

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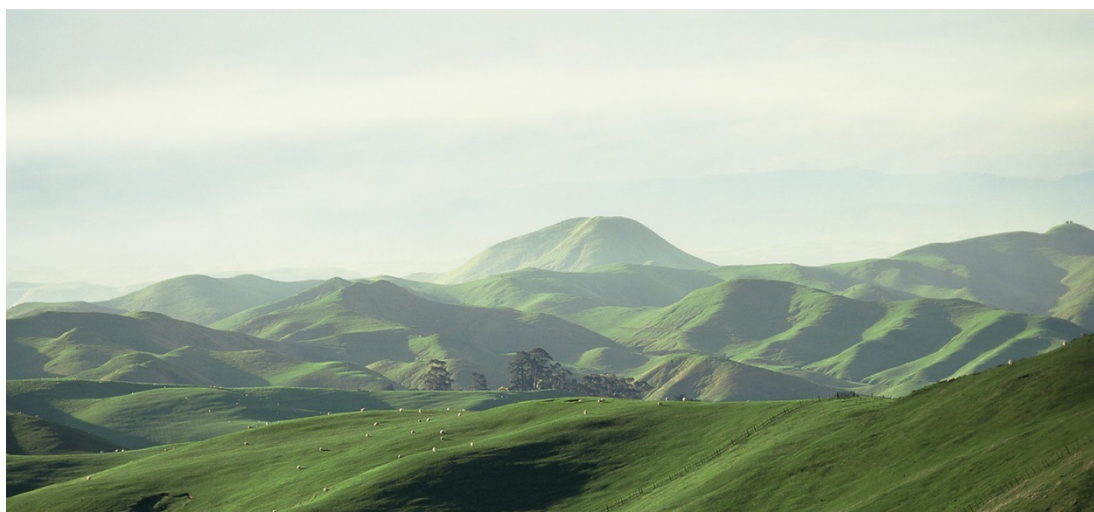
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Penny Payne, Lan Chen, James A. Turner and Helen Percy

May 2018



REPORT FOR THE MINISTRY FOR PRIMARY INDUSTRIES

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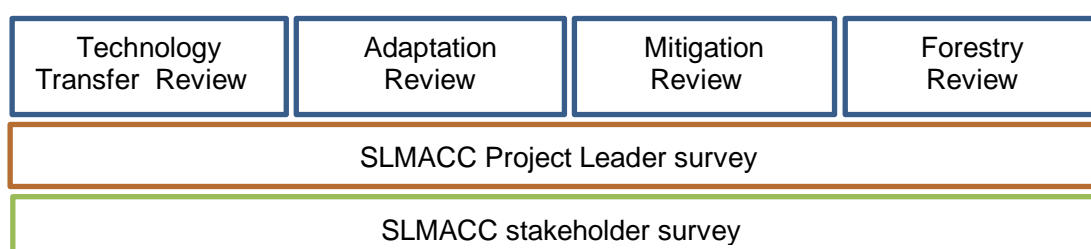
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1. Executive Summary

This is a supplementary report to the SLMACC Review, intended to be read in conjunction with the four main review reports:

- 1) Technology Transfer Review (Payne, Turner and Percy, 2018)
- 2) Adaptation Review (Cradock-Henry, Flood, Buelow, Blackett & Wreford, 2018)
- 3) Mitigation Review (van der Weerden, Jonker, Fleming, Prescott, de Klein & Pacheco, 2018)
- 4) Forestry Review (Dunningham, Grant & Wreford, 2018)

The surveys documented in this report bridge across the four reviews:



This report presents the findings of two surveys:

- 1) Of 37 SLMACC Project Leaders (across the four review topics), to assess the research to date against the criteria developed through the review, including network building, knowledge exchange, uptake and use of the research, and research impacts.
- 2) Of 148 stakeholders of SLMACC research, to assess the research to date against the same criteria. Awareness and use of the SLMACC fund and SLMACC research was also assessed. Stakeholders were next and end users of research related to climate change and sustainable land management, including those related to farming, cropping, horticulture, forestry, food, agriculture, government and industry.

Key findings from the Project Leader survey were:

- Project teams of SLMACC funded research tended to include multiple disciplines (an average of 4).
- Although 60% of Project Leaders reported using monitoring and evaluation (M&E) to adjust their milestones, activities or outcomes during their projects, no monitoring and evaluation tools were identified as being used.
- The most common methods of knowledge exchange of SLMACC research to non-scientific audiences were sharing with advisory groups or communities of practice, or sharing with end-users via meetings, newsletters or websites. Methods targeted at the public were not often used (on less than 25% of projects).

- SLMACC projects to date have been focused heavily on knowledge development (71% of projects) and identifying adaptation opportunities (57% of projects). A minority of SLMACC projects have focused on practice or behaviour change, or working with stakeholders to problem solve (21% and 14% respectively).
- Over half (56%) of SLMACC projects have led to new areas of work to at least some extent (e.g. development of web-based tools), and 80% have assisted in laying the foundations for other research projects or programmes.

Key findings from the stakeholder survey were:

- The majority (60%) of stakeholders who responded to the survey were relatively regular readers and users of climate change research generally, reading or using climate change research at least once per month on average.
- A majority (58%) of stakeholders who responded to the survey were aware of the SLMACC research fund or SLMACC research programme more broadly.
- Of the 58% who were aware of the SLMACC fund or SLMACC research, 72% had used or read SLMACC research, including 72% accessing mitigation related information, and 77% accessing adaptation related information. Approximately 37% had used SLMACC research for a specific purpose, such as policy development.
- Overall usefulness, relevance and quality of SLMACC research was rated as more than moderate (5.1-5.6 out of 7).
- Uses of SLMACC research were focused on information gathering activities (increasing knowledge and informing research) as opposed to actions such as decision making or developing strategies. 'To plan for the future' was the least frequently reported use of SLMACC research (26%). Specific uses included:
 - Use of resources by regional councils and central government for decision making and to understand the implications of policies
 - Use of resources in future land use planning
 - To provide options and advice for future business strategies of Māori incorporations to adapt to climate change
 - Development of MPI strategies
 - Referenced in Land and Water Forum reports
 - Landowners planting trees to offset emissions

2. Background

The SLMACC Review aimed to answer four key evaluation questions:

1. **Outcomes:** To what extent have the desired outcomes been achieved from SLMACC projects to date?
2. **Gaps analysis:** What do we know, not know, and need to know about [climate change topics] in New Zealand's primary industries? What are the knowledge gaps that need to be met?
3. **Barriers and enablers:** What are the key barriers and enablers to stakeholders adopting SLMACC findings and recommendations?
4. **Apply learnings:** What actions are recommended to maximise the future value and usefulness of SLMACC funded research for: i) MPI SLMACC and related funds' design and priorities; ii) Government policy and reporting; iii) Science research, and iv) Primary industry direction and behaviour change.

Each of the four Review groups used different methods to answer these questions, including a literature review, interviews, surveys, and analyses of project outputs. Using these methods, it was not always possible to get all of the necessary information to assess the extent to which the projects had fulfilled the evaluative criteria rubric (see Appendix). As such, the Project Leader and stakeholder surveys presented in this report branch across the Reviews to provide insights at the SLMACC Research Programme level.

Project leader survey

The purpose of the Project Leader survey was to assess the evaluative criteria that were not able to be assessed through information provided in the technical project outputs or project documentation alone.

Stakeholder survey

The purpose of the stakeholder survey was to assess the evaluative criteria that were not able to be assessed through information provided in the project outputs or project documentation; in particular changes in knowledge, attitudes, intent and behaviours as a result of SLMACC projects.

3. Method

Both the Project Leader and stakeholder surveys were hosted on the online survey platform SurveyMonkey®. Responses from participants who responded only to the first question of the survey (i.e. the informed consent question) were excluded from the analysis (12 participants).

3.1 Project Leader survey

The Project Leader survey was sent to all 82 Project Leaders of the 166 SLMACC projects, whether categorised as forestry, adaptation, mitigation or technology transfer. This included nine technology transfer, 18 mitigation, 34 adaptation and 21 forestry Project Leaders. Thirty-seven Project Leaders responded to the survey, yielding a response rate of 45%. Eleven (30.0%) of the listed SLMACC projects were connected to additional SLMACC projects or other ongoing projects (e.g. the project prompted further research).

Mailing lists for each of the review areas were curated by the review area leaders, and either distributed directly by the review Project Leaders, or through the technology transfer review team. The survey remained open for a total duration of eight weeks, with Project Leaders from different review areas responding at different times.

The survey questionnaire was designed to allow each project to be evaluated using the rubric, to assess the extent to which they achieved each of the criteria. The survey questions were constructed through an iterative process of circulation and refinement, among the four review groups and MPI.

Key questions in the survey addressed:

- Networks built (size, diversity of organisations and disciplines, capacity and capability building (particularly for early career researchers), endurance)
- Degree of engagement with next and end-users (during design, research and outputs phases)
- Use of monitoring and evaluation
- Knowledge exchange (methods, effectiveness)
- Uptake and use of the research (evidence using examples)
- Impacts of the research (on awareness, knowledge and behaviour change)

3.2 Stakeholder survey

The stakeholder survey was sent to the intended next and end users of SLMACC research; a total of 837 stakeholders, in September and October of 2017. A total of 148 stakeholders responded over a three-week period, achieving a response rate of 17.7%. A majority of participants were from the private sector, local or central government, industry bodies or research institutes (including Crown Research Institutes and Universities). A majority of these participants were existing contacts in mailing lists related to climate change and sustainable land management, from MPI and Manaaki Whenua-Landcare Research. Additional participants relevant to specific review areas or known to the review teams to be relevant stakeholders were added to these lists. This included organisations or individuals related to:

- Climate change (including adaptation, mitigation and forestry)
- Farming
- Growing
- Forestry
- Food (production, processing)
- Agriculture
- Government (local, regional and national)
- Biomarine
- Biosecurity
- Research funding
- Industry
- Research
- Education

For the purpose of this survey, the following definitions were used:

Next-users: The intermediary stakeholder who intends to use the research or technology indirectly, such as for further extension or to inform their work e.g. the rural professional who then utilises the knowledge to educate farmers, or the policy advisor who reads the knowledge to inform the writing of policy.

End-users: The stakeholder who the research or technology is ultimately intended for, who will likely be a direct user e.g. the farmer, who utilises the knowledge to change on-farm practice.

Stakeholders: Any person along the value chain who the research or technology is relevant to e.g. the rural advisor, farmers, growers or foresters, central or local government, etc.

The survey questionnaire was designed to assess the extent to which SLMACC projects collectively achieved the rubric criteria, as well as to provide statistics about awareness

and use of SLMACC research. The survey questions were constructed through an iterative process of circulation and refinement, among the four review groups and MPI. The survey was then piloted with two AgResearch staff who were of a similar demographic to the intended stakeholder audience (non-science but working within the agricultural innovation system).

Key questions in the survey addressed:

- Awareness and usefulness of key SLMACC resources (2-3 key resources per review area)
- Awareness, access and use of the SLMACC fund or research programme
- Examples of how SLMACC research has been used (knowledge, decisions or actions, future-planning, policy)
- Usefulness, relevance, quality of SLMACC research
- Gaps in knowledge and research about SLMACC.

3.3 Survey scales

Participants were asked to rate various factors in each of the surveys, a majority of which were rated using the 1 to 7-point Likert scale (Table 1), where 1 represents ‘Very low extent’ and 7 represents ‘Very high extent’. Participants were also able to select ‘Unsure/Do not know’ if they felt unable to answer. All remaining discussion in this document relating to ratings uses this scale.

Table 1. The 1 to 7-point Likert scale used in the SLMACC Project Leader and stakeholder surveys.

1	2	3	4	5	6	7
Very low extent			Moderate extent			Very high extent

3.4 Data analysis

Data for both surveys was analysed through descriptive analytics calculated by SurveyMonkey®, including frequencies, averages and proportions. Data analyses are recorded under the themes of key topics within the surveys which were constructed, to reflect the agreed evaluative criteria set by the review teams and MPI¹ (e.g. research team, knowledge exchange, awareness and uptake of SLMACC research). Please note that no tests were conducted to assess whether differences between groups or responses were statistically significant.

¹ Captured in the evaluative criteria rubric in the Appendix.

4. Results

4.1 Project Leader Survey Results

4.1.1 Research team

Participants were asked general questions about the composition of their project teams. In regard to the number of researchers, nearly half of all projects had less than five members on the core project team, while a minority had more than ten researchers. In regard to the number of non-researchers in each project, close to half of the projects had less than five on the core project team, while nearly 40% reported having no non-researchers on the team (excluding industry groups or advisory groups). These findings are displayed in Table 2 below.

While moderate sized research teams (5-10 people) were not uncommon, having a moderate number of non-researchers in the core project team was relatively uncommon. That is, over 50% of research teams had more than 5 researchers, while less than 14% of research teams included more than 5 non-researchers.

Table 2. The percentage of SLMACC projects that had various numbers of researchers and non-researchers in the core project team.

Number of researchers in core project team	Percentage of projects
Less than 5	48.6%
5 – 10	42.9%
More than 10	8.6%
Number of non-researchers in core project team	Percentage of projects
0	38.9%
Less than 5	47.2%
5 – 10	8.3%
More than 10	5.6%

Within the wider project team (including stakeholders, advisory and reference group members), the vast majority of individuals were from CRIs, government sector bodies, universities, consultants and industry representatives. The average number of organisations involved in the project teams was 3.6, with a range of one organisation to nine organisations involved.

Projects tended to involve researchers from a wide variety of disciplines, with an average of 4.1 ‘disciplines’ involved, and up to seven different disciplines in the core and wider project team. Here ‘disciplines’ were defined and listed by the Project Leaders themselves, for example including modelling, plant physiology and agronomy. Although

the disciplines listed were primarily biophysical science and mathematics-related disciplines, others mentioned include information technologists, social scientists, and government policy analysts.

In terms of early career researcher involvement, only three projects reported having no early career researchers (ECRs). Categories included Masters or PhD students, Post-docs, Interns and 'Other early career researchers' (<5 years since their last qualification was completed). 'Other ECRs' were most commonly involved (36%), with Post-docs, Interns and Masters or PhD students involved near equally often (11%, 11% and 10% respectively). Of those projects that did involve ECRs, Post-doctoral and Masters Students were involved to a high extent, while Interns and 'Other' early career researchers were involved to a slightly lesser extent (Table 3). Overall, the frequency and extent of involvement of ECRs was high.

Table 3. The average extent of involvement of early career researchers in SLMACC research projects.

Category of early career researcher	Mean rating for extent of involvement
Masters or PhD student(s)	5.90
Post-doc(s)	6.00
Intern(s)	4.82
Other early career researcher(s) (<5 years since last qualification completed)	5.06

4.1.2 Stakeholder engagement

Participants were asked to rate the extent to which the project team engaged with stakeholders and end-users in the following three project phases: the question framing and design, during the course of the research, and in the design of outputs or activities. Overall, the extent of stakeholder/end-user engagement was moderate (4-4.17 out of 7) during all phases of SLMACC projects. The differences between involvement during the project design versus during and at the conclusion of the project appeared minimal (Table 4). Participants were also asked about the extent to which they considered that the network of individuals and/or organisations involved in their SLMACC project had endured beyond the life of the project. The average rating was 4.76 out of 7, with 44% of Project Leaders rating that their project endured to a 'High' or 'Very high extent'.

Table 4. Stakeholder and end user engagement during the key project phases, within SLMACC research projects.

Stage of the project	Mean rating for extent of involvement
The question framing and design	4.17
During the course of the research	4.11
In the design of outputs or activities	4.00

4.1.3 Monitoring and Evaluation

In regard to Monitoring and Evaluation (M&E), 60% of participants reported that they used M&E to adjust their milestones, activities or outcomes. Mechanisms for implementing M&E included reviewing progress towards milestones, reallocating workloads, setting internal milestones, reviewing milestones after initial results and making comparisons against existing data during the life of the project. No tools (e.g. programme logic model) were explicitly mentioned by participants when they referenced the M&E implemented in their projects.

4.1.4 Knowledge exchange, awareness and uptake

Participants were asked about their methods of knowledge exchange of the research generated in their project, both within scientific and non-scientific communities. This included policy, government, industry or community settings, both within and outside of New Zealand.

Table 5 below displays the frequency of use of different methods of knowledge exchange to a scientific audience. Participants reported having presented their research at a conference or workshop within New Zealand close to twice as often as at an international conference or workshop. Over half of participants had presented their research as a journal publication. The most infrequently used method of knowledge exchange was through newsletters or webpages (20%). Close to half of participants had used other methods of knowledge exchange to a scientific audience. These included through reports, theses, informal networking, publication on websites which are not targeted specifically toward a scientific audience, technical papers, web-based tools, and through emails.

Participants were asked to provide specific examples of evidence of uptake and use of their research by the scientific community, if possible (both national and international). A total of 23 (62% of participants) provided specific examples of uptake and use of their research. These included citations in scientific and conference papers (most commonly mentioned), requests for data sharing, requests for reprints, invitations to join project teams and web tools developed and used. Further examples were theses produced as a result of the work done, research being used in the Pastoral Greenhouse Gas Research

Consortium (PGgRC) which provides knowledge and tools for farmers, and research being used in reports and in resources produced for farmers.

Participants were then asked to rate the extent to which each method of knowledge exchange (Table 5) was successful in increasing awareness and knowledge among next- or end-users. ‘Other’ methods were viewed as most successful, while journal publications were close behind. Newsletters and webpages for scientific audiences rated least successful, congruent with rates of use of this method of knowledge exchange.

Table 5. Frequency of use and perceived efficacy of different methods of knowledge exchange of SLMACC research, within scientific audiences.

Method of knowledge exchange	Percentage of use to communicate with scientific community (within and/or beyond NZ)	Extent to which method was perceived as successful in building awareness and knowledge among next or end users (MEAN out of 7)	Extent to which method was perceived as successful in building awareness and knowledge among next or end users (MEDIAN out of 7)
Journal publications	54.2%	4.7	5.0
Presentation of research at a conference or workshop within NZ	57.1%	4.7	5.0
Presentation of research at a conference or workshop internationally	31.4%	4.5	4.0
Newsletters or webpages for a scientific audience	20.0%	4.3	4.0
Other	48.6%	5.2	5.0

Note. Participants were able to tick all relevant options.

The same questions related to knowledge exchange with non-scientific audiences (Table 6). Sharing of knowledge with advisory groups or communities of practice was the most common, with over half of the participants using this method. Similarly popular were meetings or exchanges with end-users, while written publications were less common. This indicates a clear use of informal methods of communication with non-scientific groups involved in research projects. Newsletters, social media and general media were rated as the least often used method of knowledge exchange, with less than 25% of projects utilising these methods. This may suggest that communication with the general public as a non-scientific audience is less of a priority for a majority of SLMACC projects. ‘Other’ methods of knowledge exchange mentioned by participants included conferences, reports and informal exchange.

Participants were then asked to rate the extent to which the methods of knowledge exchange increased awareness and knowledge among target next or end users. Meetings or exchange with end-users was rated highest while ‘Other’ methods and policy briefings were second and third most highly rated. This indicates a large gap as both ‘Other’ methods and policy briefings had a low percentage of use although they are considered highly effective. Social media and written publications were considered the two least effective methods, although all methods were rated at least moderately successful at increasing awareness and knowledge exchange among target next- or end-users.

Table 6. Frequency of use and perceived efficacy of different methods of knowledge exchange of SLMACC research, within non-scientific audiences.

Method of knowledge exchange	Percentage of use to communicate with non-scientific community	Extent to which method was perceived as successful in building increased awareness and knowledge among next or end users (MEAN out of 7)	Extent to which method was perceived as successful in building increased awareness and knowledge among next or end users (MEDIAN out of 7)
Written publications	37.9%	4.2	4.0
Newsletters (including electronic)	6.9%	5.0	5.0

Social media	6.9%	4.0	4.0
General media	10.3%	4.3	4.0
Sharing of knowledge with advisory group or community of practice	55.2%	5.1	5.0
Meeting or exchange with end users	48.3%	5.7	6.0
Workshop or participatory event	31.0%	5.1	5.0
Website	20.7%	5.0	6.0
Policy briefings	13.8%	5.3	5.0
Other	24.1%	5.6	7.0

Note. Participants were able to tick all relevant options.

In addition to providing examples about use of their research, participants were asked about generation of specific outputs, including whether any products were commercialised or any guidelines or frameworks produced (Table 7).

Table 7. Frequency with which projects delivered specific outputs, such as guidelines, frameworks or tools*.

Outputs generated through projects	Percentage of participants who generated
Commercialisable product	10.0%
Patent	0.0%
Other intellectual property	30.0%
A decision-making tool	10.0%
Decision-making guidelines	30.0%
Policy recommendations	10.0%
Risk management framework	10.0%

*Participants were only able to choose one option.

Participants were asked to provide evidence of increased awareness, knowledge and/or behaviour change about climate change or sustainable land use as a result of their research, if possible. Examples included discussion on future projects, interviews with farmers who claimed increased knowledge, citations by other projects, to justify decision making, requests for data and increased website activity.

Participants were also asked to provide any evidence of how their research has directly benefited addressing climate change or sustainable land management (e.g. through policy change or changes in practice). Examples included:

- Industry support behind other pollinating species discovered
- Implications for forage plant breeding for future climates
- Contribution toward development of mitigation strategies for methane
- Inhibitor work toward potential technology
- To justify current actions which mitigate greenhouse gas emissions
- To help post-Kyoto climate change agreements
- Use of the developed web-based tool for risk assessments of pests
- Improved New Zealand agricultural greenhouse gas inventory
- To improve estimates of N₂O emissions from dairy farms
- Traits being made available to ram breeders.

4.1.5 Research purpose and beyond the project

Participants were asked about the purpose of their research project (Table 8). A majority of projects aimed to develop new knowledge, and well over half sought to identify opportunities for adaptation. Projects whose purpose was behaviour change were a minority, as were projects which were working with stakeholders to solve a problem. These responses reflect the nature of the SLMACC fund and the request for proposal documentation sent out by MPI.

Table 8. Percentage of SLMACC projects dedicated to each purpose, including knowledge development, reviewing knowledge, changing behaviour, adaptation or problem solving*.

Purpose	Percentage selected
To develop new knowledge	71.4%
To review existing science or knowledge for policy (MPI for example)	28.6%
To review existing science or knowledge for stakeholders	21.4%
To change practices or behaviour for adaptation	21.4%
To identify opportunities for adaptation	57.1%
To work with stakeholders to solve a problem of relevance	14.3%

*Participants could choose as many options as were relevant.

Participants were asked if their research had led to new areas of work (Table 9). Over half (56%) answered 'yes' or 'To some extent'. Those that had led to new areas of work 'To some extent' had done so by being incorporated in other funded projects, contributed to

the funding of further projects, contributed to the career development of PhDs and resulted in web-based tools being developed.

Table 9. Percentage of SLMACC projects that have led to new areas of work.

Has the research in your project led to new areas of work?	Percentage
Yes	25.0%
No	43.8%
To some extent	31.3%

Participants were also asked if their project had laid the foundations for other research projects and programmes (Table 10). Over half answered ‘yes’ or ‘to some extent’. Of those who responded ‘To some extent’, participants explained; projects had contributed but not as major components, the findings had been used as key development materials for new proposals, and findings having influenced other projects in similar topic areas. The projects also provided data for ongoing research, support for current land management strategies, and prompted further ongoing work. A total of one third of projects were connected to other projects or programmes, a further third were ‘To some extent’, and the final third were not.

Table 10. Percentage of SLMACC projects that have laid the foundations for other research projects and programmes.

Has the research laid the foundations for other research projects and programmes?	Percentage
Yes	46.7%
No	20.2%
To some extent	33.3%

Lastly, participants were asked if they would have done anything different given another opportunity to carry out the work. A majority (69%) responded ‘yes’. Areas for improvement were identified as; publishing in a high impact scientific journal, gathering extra funding for follow up workshops with farmer participants, change key participants that influenced communication and extension of reports, create clearer plans with subcontractors before work began, and engage more with end-users. Additional modifications include consulting more with end-users to validate findings, utilising more rigorous methods to validate findings, and relying less on a literature review that produced a large document and didn’t align with their model outputs.

4.2 Stakeholder survey results

4.2.1 Stakeholder demographics

In regard to role, almost half of participants described their role as providing research or science advice, with policy development and strategic advice being the next most common role activities (Figure 2). Providing environmental education, governance and farming/farm management were less common roles identified by participants.

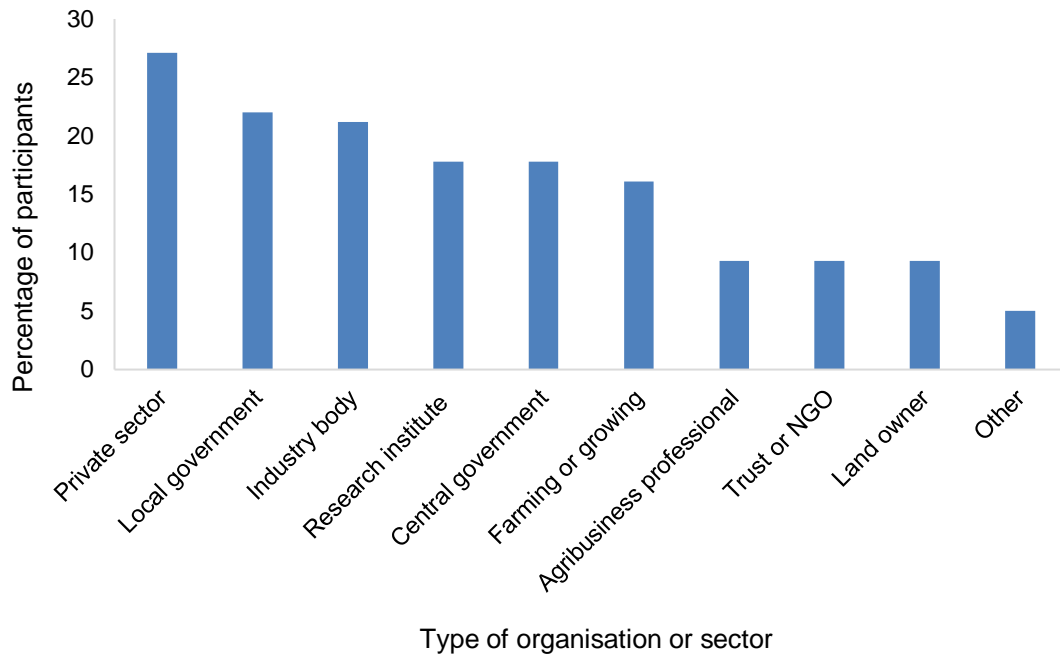


Figure 1. Type of organisations or sector of the stakeholder survey participants.

Note. Participants were able to choose as many categories as were relevant.

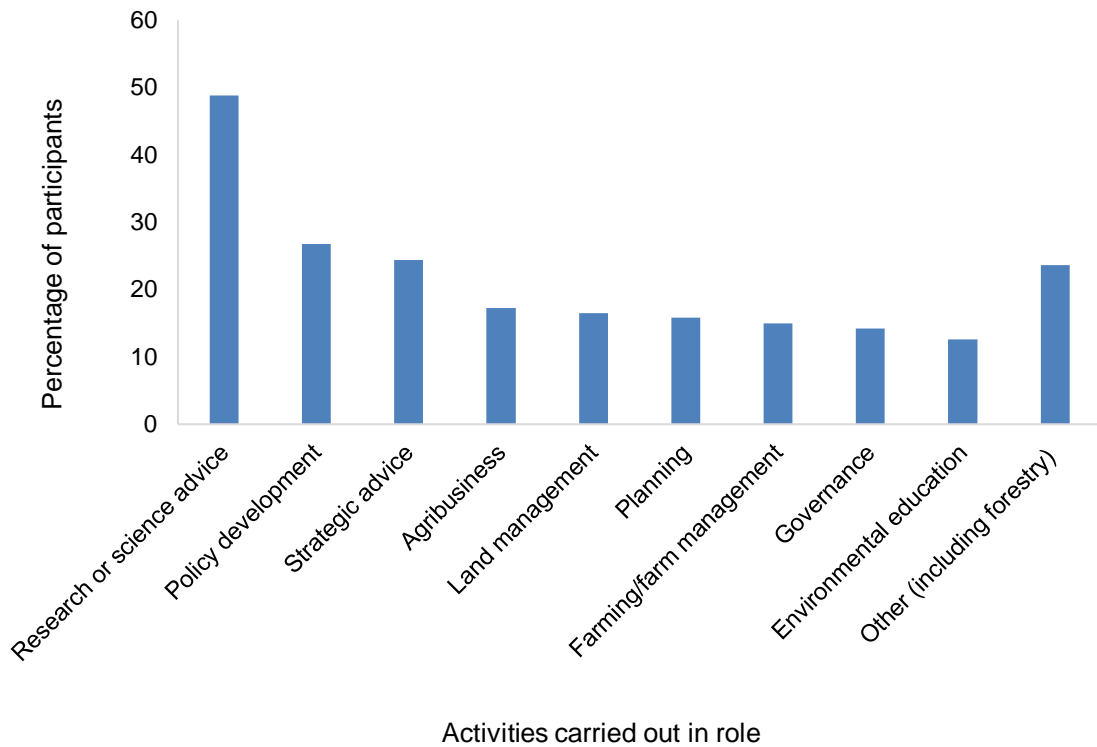


Figure 2. Activities carried out by the stakeholder survey participants.

Note: Participants were able to choose as many categories as were relevant.

4.2.2 Stakeholder knowledge and use of climate change resources

There was a wide variance in the frequency with which participants read or used climate change research, ranging from daily to every few years (Figure 3). A majority (60%) of participants read or used climate change related material at least once a month on average, while only 15% read or used climate change related material once a year, or once every few years.

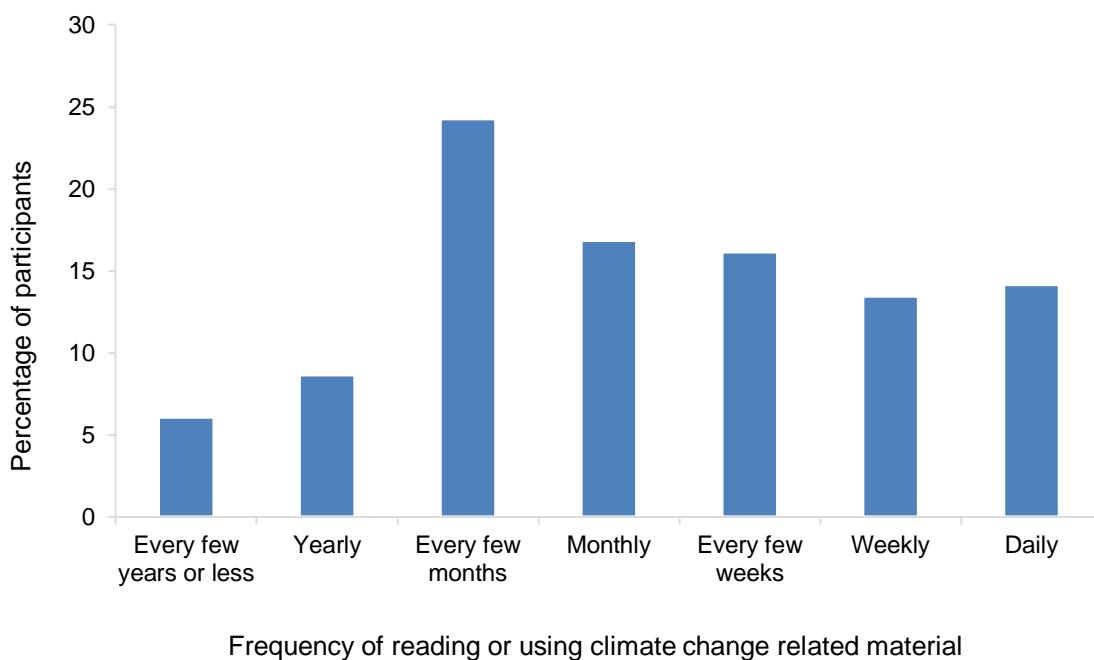


Figure 3. Frequency with which stakeholder survey participants read or used climate change related research.

Participants were then given a list of key SLMACC resources in each research area (technology transfer, adaptation, mitigation and forestry), and asked about their awareness and use of these resources. The purpose of this question was to:

- a) Assess knowledge about and use of key SLMACC resources in each research area; and
- b) Assist participants in recognising these key resources in the climate change area as SLMACC.

As all of these resources were not explicitly marked as SLMACC funded, ensuring accurate attribution of their funding source was critical.

Awareness levels of resources was clearly highest for the two adaptation-related resources that had approximately 19% greater awareness relative to the next resource (the extension handbook). Awareness levels were lowest for the ‘Report on “Improved estimates of the effect of climate change on NZ fire danger”’, and the Climate Cloud website (Figure 4). There were moderate levels of awareness around the mitigation projects, while awareness around forestry resources in particular appeared lower than for the other research areas (see letters in Figure 4, corresponding to research areas). However, it should be remembered that there were non-forestry respondents to the survey who would not necessarily have a high awareness of specific forestry-related resources. No data was collected on the primary sector that each respondent was most closely

aligned to, so it is not possible to say to what extent the proportion of non-forestry respondents influenced this finding.

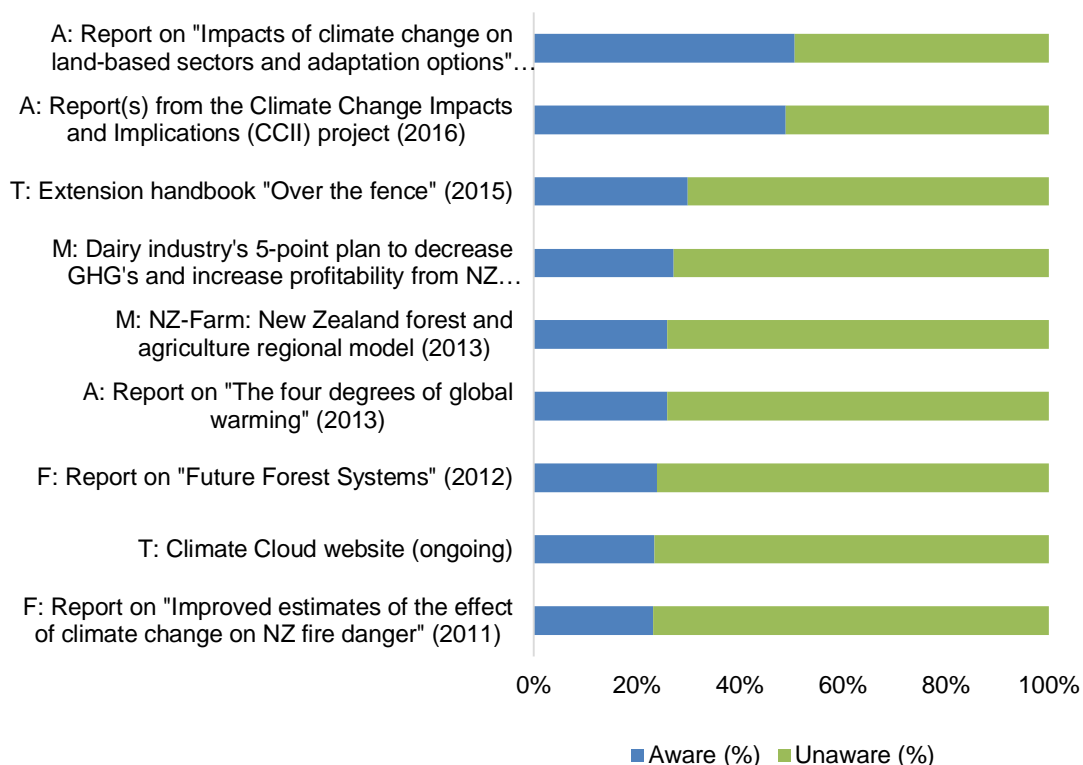


Figure 4. Level of stakeholder awareness about key resources produced through the SLMACC research programme. A=adaptation, M=mitigation, F=forestry and T=technology transfer, indicating which research area the resource was generated from.

For resources participants were aware of, they were then asked whether they had used the resource. A majority of those who were aware of the resource had indeed used the resource; between 71 and 91% (Figure 5). Consistent with base levels of awareness, use of adaptation resources and the technology transfer Extension Handbook (Over the Fence) were highest, while use of mitigation resources and the Climate Cloud were lowest.

For these resources participants had used, they were then asked to rate the usefulness of the resource. All resources scored between 5 and 5.84 out of 7, indicating moderate to high usefulness ratings for all key SLMACC resources (Table 11).

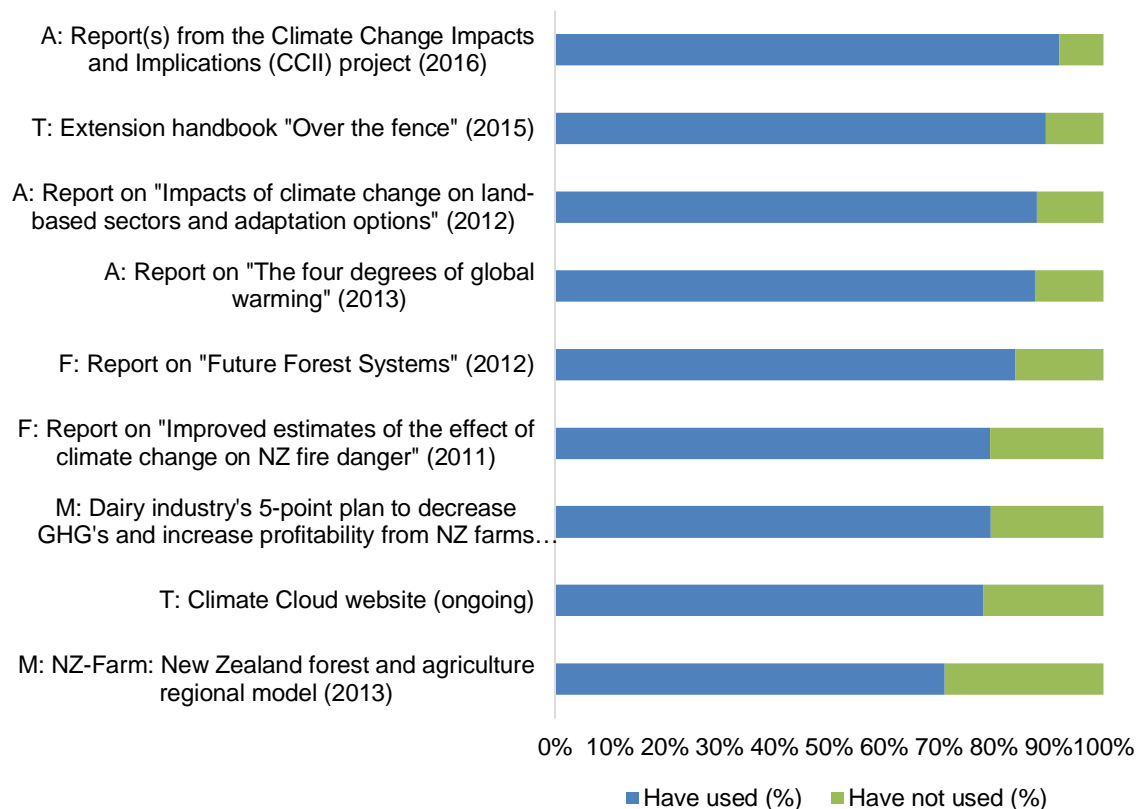


Figure 5. Level of stakeholder use of key resources they are aware of within the SLMACC research programme. Note. A=adaptation, M=mitigation, F=forestry and T=technology transfer, indicating which research area the resource was generated from.

Table 11. Stakeholder ratings of the usefulness of key SLMACC resources that they had used. Note. A=adaptation, M=mitigation, F=forestry and T=technology transfer, indicating which research area the resource was generated from.

SLMACC Resource Title	Mean rating for usefulness
T: Climate Cloud website www.climatecloud (ongoing)	5.72
T: Extension Handbook "Over the fence" (2015)	5.76
A: Report on "Impacts of climate change on land-based sectors and adaptation options" (2012)	5.57
A: Report on "The four degrees of global warming" (2013)	5.32
M: Dairy Industry's 5-point plan to decrease GHGs and increase profitability from NZ farms (2017)	5.44
A: Report(s) from the Climate Change Impacts and Implications (CCII) project (2016)	5.84
M: NZ-Farm: New Zealand forest and agriculture regional model (2013)	5.23

F: Report on “Future Forest Systems” (2012)	5.23
F: Report on “Improved estimates of the effect of climate change on NZ fire danger” (2011)	5.00

4.2.3 Stakeholder awareness and use of SLMACC research

Following these questions regarding key resources, participants were then informed/reminded that the resources were generated through the SLMACC research programme, to ensure attribution to the programme. Participants were then asked if they were aware of the SLMACC research programme, or the SLMACC fund. A majority were aware of the programme (Table 12). Of those who were aware of the SLMACC programme, a majority had also accessed, read or used SLMACC research, or been involved in SLMACC research, at some point in the past 10 years.

Table 12. Stakeholder awareness levels of the SLMACC research programme.

	Yes	No
Are you aware of the SLMACC research programme?	58%	42%
Given you are aware of the SLMACC research programme, have you accessed, read, used or been or been involved in SLMACC in the past 10 years?	72%	28%

Of those who had used or been involved in the SLMACC research programme, most participants had accessed information on climate change adaptation or mitigation (Table 13).

Table 13. The nature of stakeholder’s use of or involvement in the SLMACC research programme.

How participants were involved in their SLMACC research programme	Percentage of those who responded
Part of an application group for SLMACC funding	31.6%
Part of a SLMACC project team or advisory group	28.1%
Access information on climate change mitigations (including presentations, workshops, reading written or electronic information)	71.9%
Access information on adaptation to climate change (including presentations, workshops or reading written or electronic information)	77.2%

Used SLMACC information for a specific purpose (e.g. policy development)	36.8%
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For participants who had accessed SLMACC research, they were asked which access method they had used, whether by attending an event (presentation, conference or workshop), and/or by reading information, whether as a hard-copy or online. Nearly all participants had read information, while more than one quarter had also attended an event (Table 14). Participants were then asked to select how they had used SLMACC research (Figure 6). Uses tended to focus around information gathering (to increase knowledge; 61% of participants), and indirect uses such as informing policy or research (45% of participants). Uses were less focused around direct actions, such as to make decisions or develop policies (both 35%). Planning for the future was the least chosen use of SLMACC research (26%), despite the aforementioned high use of adaptation related research.

Table 14. Stakeholder methods of accessing SLMACC research

Method of accessing SLMACC research	Percentage of those who responded
Attended presentations, conferences or workshops	29.0%
Read information (including electronic)	96.8%

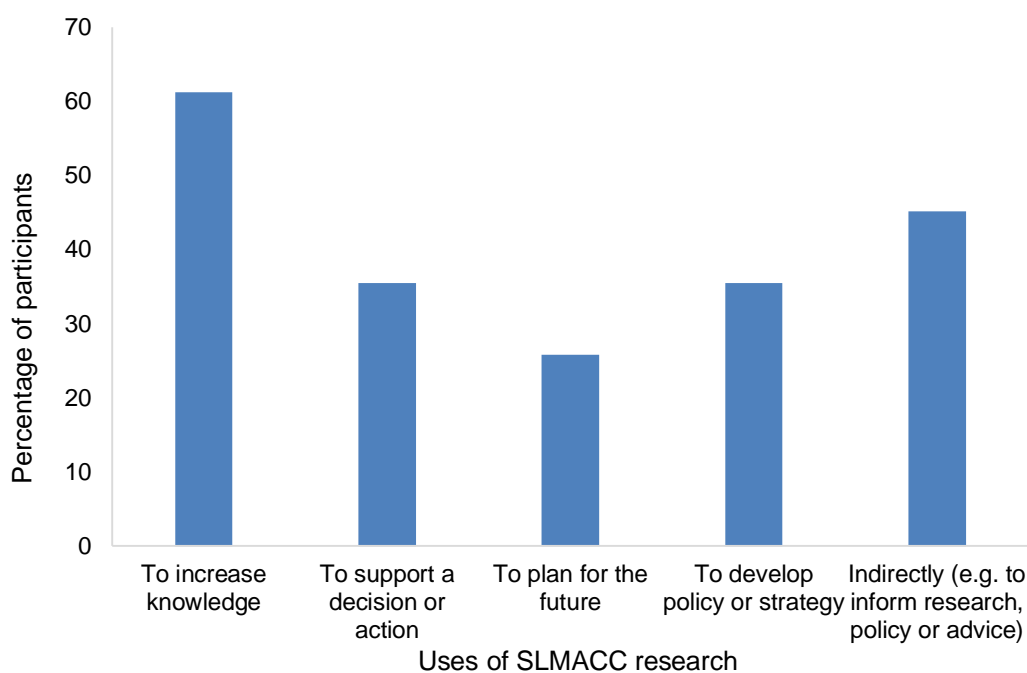


Figure 6. Percentage of stakeholders using SLMACC research for various uses.

Note. Participants could select as many categories as were relevant.

Participants were then asked to provide an example of how they had used SLMACC research, to achieve one of the above aims. A total of 22 participants provided written answers, of the 31 participants who had stated their broad use of the category (Figure 6). Examples included; for research (PhD, science), to increase individual understanding, as justification for decision making (investments, priorities) and for risk assessments. Additional examples included to inform discussion, to include in resources developed (such as brochures, presentations, guidance material), to understand the type of SLMACC research being undertaken by certain groups, and to undertake reviews of SLMACC research in certain topic areas.

Participants were then asked to provide an example where *other* people or organisations had used SLMACC research to achieve the above aims. A total of 20 participants provided examples. These included:

- Use of resources by regional councils and central government for decision making and to understand the implications of policies
- Use of resources in future land use planning
- To provide options and advice for future business strategies of Māori incorporations to adapt to climate change
- Development of MPI strategies
- Referenced in Land and Water Forum reports
- Resources used in project proposals
- Landowners planting trees to offset emissions
- GlobeNZ used resources to inform scenarios
- Resources used to inform workshops with farmers on climate change
- To upskill farm consultants
- Used in the national greenhouse gas inventory

Participants were then asked to provide examples of where SLMACC research had resulted in changes in awareness, knowledge or behaviour in themselves or others. A total of 23 participants provided examples. These included:

- Using the NZ-FARM model example to inform decisions, increase awareness and knowledge
- Resources used in climate change workshops for farmers
- Helping to increase individual understanding
- Increase in awareness of Māori land values
- Used as teaching resources for international postgraduate students

- Helping to inform and develop policy
- Increasing use of various species on farms and changes in communication with farmers
- Understanding of realistic timeframes and probable mitigation development
- Training for farm consultants
- Fertiliser industry's use of urease inhibitors

These examples vary in specificity, which limits further analysis, however they indicate a large breadth of uses, among a large range of stakeholders (including farm consultants, farmers, primary industries, Māori, commercial bodies).

Finally, participants were asked to rate SLMACC research in terms of usefulness, relevance and quality (Table 15). Ratings were highly similar, with usefulness slightly lower than relevance and quality. A majority of participants who had used SLMACC research were able to make these ratings, suggesting sufficient familiarity with the research material.

Table 15. Stakeholder's ratings of the usefulness, relevance and quality of SLMACC research.

	Mean rating	Percentage of those who answered who selected "Unsure or do not know"
Usefulness	5.2	6.1%
Relevance	5.6	4.1%
Quality	5.6	8.2%

4.2.4 Stakeholder perceptions of SLMACC

A broader question was asked in regard to research area; participants were asked to rate the extent to which they believe the SLMACC programme has contributed to expanding science and research in New Zealand, in mitigation, adaptation, forestry and technology transfer. The perceived contribution of SLMACC research toward the areas of mitigation, adaptation and forestry were rated as above moderate, while contributions to technology transfer were perceived as moderate. However, notably a significant proportion of participants were unsure about making these ratings, particularly for forestry (42%). This suggests that participants have not read enough research in these areas to be comfortable making a judgement about their contributions to New Zealand research and science (Table 16).

Table 16. Stakeholder’s ratings of perceived contributions of SLMACC research to four key research areas within the SLMACC research programme.

Contribution of SLMACC research to key research areas	Mean rating	Percentage of those who answered who selected “Unsure or do not know”
Mitigation	4.7	19.7%
Adaptation	4.8	20.0%
Forestry	4.8	41.5%
Technology transfer	4.0	31.8%

Stakeholder perceptions of SLMACC research gaps

At the conclusion of the survey, participants were asked if there were any topics regarding climate change or sustainable land management they would like more information about. Over half (59%) of participants responded ‘yes’. There were a total of 66 topics that participants mentioned as needed; these are included in the appendices. General comments are also included in the appendices.

5. Discussion

The following discussion is based on the results from the Project Leader and stakeholder surveys. These surveys utilised a limited sample size, and therefore these findings may not be representative of all SLMACC projects which have been undertaken.

5.1 SLMACC Project Leader Survey

Overall, SLMACC projects utilised relatively small project teams, however these teams demonstrated good disciplinary coverage, and utilisation of non-researchers (in over half of all projects). The moderate stakeholder engagement throughout the research framing, execution, and design of project outputs and outcomes was positive, given the majority of SLMACC projects focus on basic science, where achieving stakeholder engagement has not always been a priority. The proportion of SLMACC projects including early career research (ECRs) suggests that SLMACC projects have been important for providing capability-building opportunities.

It appeared the SLMACC projects were highly useful for building research networks, with between one third and half of project leaders indicating the team endured to a 'high' or 'very high' extent, beyond the project. SLMACC projects have also contributed to a legacy of more science projects, with over half of project leaders noting their project had led to or contributed to new work.

Monitoring and evaluation (M&E) was reported as being used more often than not in SLMACC projects, however, no project leader named specific tools they had utilised for M&E. It appeared that M&E was conceptualised by some project leaders as generally tracking project progress, rather than undertaking formal embedded M&E processes. This is evidenced by project leader's comments that they included M&E but "not in any formal sense", and M&E as "hold[ing] regular project meetings". This suggests that further training about best practice M&E may be needed among project teams to ensure it is rigorous, consistent, and provides evidence of contribution to impacts.

Comments from project leaders also suggested that when M&E did occur, it was predominantly focused on accountability and project management around milestone delivery, rather than monitoring progress towards outcomes and impacts. For example, one project leader said; "we set internal project milestones and monitored progress against these". Comments also suggested that project leaders conceptualised M&E as 'within the project, for the project'; not considering that post-project learnings may be useful to inform future research projects. For example, one "[was] a very short project with only one key activity, so [there was] no opportunity to adjust trials during course of [the]

project”. Another project leader remarked that “the milestones agreed to during the early stages of the project were appropriate for its completion”. This suggests that the project leaders are not considering the value of summative or impact evaluation, which is a critical component of M&E.

In regard to knowledge exchange, the methods which were seen as most successful were also those which were most utilised, for both scientific and non-scientific audiences. For scientific audiences this focused on presentations and publications within NZ, while for non-scientific audiences advisory groups and communities of practice were utilised. One gap included policy briefings, which were seen as highly successful at building increased knowledge and awareness among non-scientific audiences, but were not frequently utilised. A further gap was with use of newsletters and websites, which were seen as successful with the non-scientific community, but were being used infrequently. Interestingly, newsletters and webpages were seen as the least successful at building knowledge and awareness among the science community and were accordingly utilised infrequently. Together, these findings suggest that websites such as Climate Cloud could be better targeted at the non-scientific community than the scientific community.

Finally, the focus of the SLMACC fund to date has been to generate new knowledge, with a minority of projects focused on behaviour change or working on stakeholder solutions. Findings from the Technology Transfer Review Report suggest more projects need to be targeted at behaviour change options (i.e. for mitigation or adaptation) as opposed to raising awareness of climate change and the associated risks (Payne, Turner & Percy, 2018).

5.2 Stakeholder survey

The stakeholders who completed the survey had a varied history of engaging with climate change research, some reading or using research every few years, others daily. In addition, a wide variety of sectors were represented. This suggests this sample is representative to at least some degree, regarding the use, usefulness and perceptions of SLMACC research.

Somewhat unsurprisingly, resources which stakeholders were more aware of were also those resources which were used more. This suggests that there may be variance in the degree of demand for the resources, with people more interested in some areas (adaptation, for example). This notion is supported by access statistics provided for resources held on the Climate Cloud, with adaptation resources again being the most frequently accessed (Brown et al., 2017). Interestingly however, when rating usefulness

of resources, stakeholders rated Climate Cloud as most useful of all resources, while it has the second lowest rate of awareness and use. This suggests that the Climate Cloud needs to be further publicised, and the user interface may need updating, to make it more accessible to users.

Use of SLMACC research by stakeholders who responded to the survey suggested a major focus on requiring material about mitigation and adaptation to climate change. Nevertheless, when considering the behaviour change chain, stakeholders tended to focus on information gathering and indirect uses for the material (e.g. policy development) rather than planning for the future. This may be due to the fact that the majority of respondents are next rather than end users (e.g. local government, industry, research). Further research is needed among end user populations (i.e. farmers, growers and foresters) to determine whether SLMACC research is being used predominantly for information gathering, or to inform decision making. Finally, there may be a need to create a stronger brand for, or recognition of, the SLMACC research programme. This is evidenced by the need to name SLMACC projects in the stakeholder survey and attribute them to the fund, as opposed to assuming recognition of the fund name.

“Given my appalling ignorance, an introduction to what has been and is being done by SLMACC with links to papers and publications would be really useful”.

Stakeholder of SLMACC research

6. Limitations

It is critical to note that the results in this document were taken from a survey which did not include Project Leaders of all SLMACC projects, or all SLMACC stakeholders. As such, the results may not be generalisable to all SLMACC projects. In addition, some SLMACC projects were conducted up to ten years ago, and this must be considered when interpreting the results of the survey, in particular of Project Leaders' accounts of their projects. We understand that some Project Leaders may have referenced past documents to check their answers, while others may have relied on memory. As such, these results should be interpreted as indicative rather than conclusive.

7. Acknowledgements

This research was funded through the Sustainable Land Management and Climate Change fund (SLMACC), under the SLMACC Review.

8. References

Brown, M., Dunningham, A. & Horita, A. (2017). Climate Cloud Hosting Progress Report: December to June 2017. Hamilton, NZ: AgResearch Ltd.

9. Appendices

Please see below for a copy of the SLMACC evaluative criteria rubric and qualitative comments from survey participants.

9.1 SLMACC Review Evaluative Criteria Rubric	Rating
SCIENCE CAPACITY AND CAPABILITY ENHANCEMENT	
Builds capacity for NZ to research climate change and sustainable land use, at all levels	
Improves capability and skills amongst emerging or early career researchers	
INFLUENCE ON SCIENCE	
Promotes collaboration among research providers, and/or between different disciplines	
Generates high quality research related to climate change or sustainable land use, which is credible and legitimate (e.g. citations, impact factor) with relevant stakeholders (e.g. International Panel on Climate Change)	
Utilises robust, best practice research methods (poor may use random or unexplainable method and excellent may use novel methods or techniques, sound results)	
Result in uptake and use of research within science community (excellent would result in strong uptake and use of research within science community)	
ENGAGEMENT AND NETWORKS (if applicable)	
Builds collaborative networks of key stakeholders and/or end-users (poor may include homogenous networks which disperse following project and excellent networks are heterogeneous (e.g. different epistemologies, type of expertise, values) and enduring)	
Uses participatory research process appropriate to level of engagement needed to achieve outcomes (based on MPI Extension Framework). e.g. where end users have opportunity to shape research approach, sources of knowledge and outcomes	
Uses structure or processes to guide stakeholder engagement (poor may have no clear processes for stakeholder engagement and excellent may use processes like a community of practice)	
Practices action learning (if applicable)	
LEARNING, AWARENESS AND KNOWLEDGE GAIN AMONG END USERS	
Generates new knowledge about climate change or sustainable land use	
Promotes knowledge exchange (particularly dissemination of research findings)	
Builds increased awareness and knowledge about climate change or sustainable land use practices	
Promotes practice or behaviour change among intended end or next user groups	
USABILITY OF RESEARCH FOR END USERS	
Generates specific, usable, fit for purpose knowledge and research for policy and trade/negotiation, research, science and stakeholder communities	
Aligns research with the needs of next or end users of the research, and is responsive to next or end user needs and knowledge gaps (poor may lack alignment and excellent may involve iterative research to meet user needs)	
Acknowledges context and effects of the research knowledge or recommendations on the broader climate system or topic area	
Creates accessible, available outputs	
INFLUENCE ON STAKEHOLDERS AND IMPACT FOR NZ	

[How the research is designed and delivered] **maximises how wide-reaching the research influence is** (inter/national, across relevant sectors and functions, e.g., policy, industry and community attitudes and behaviours)

Results in uptake and use of research by stakeholder groups (policy, government, industry or community)

Influences stakeholders positively in their awareness/ consideration of decision-making, and/or action around climate change or sustainable land use (e.g. policy, government, industry or community)

Achieves significant direct impacts or benefits for NZ (poor would be no impact, good incremental, excellent would be wide ranging or more immediate impact)

Achieves significant direct spill-over impacts or benefits for NZ (poor would be no impact, good incremental, excellent would be wide ranging or immediate impact)

9.2 Qualitative data

9.2.1 Stakeholder perceptions of gaps in SLMACC research (verbatim)

- Any further dairy industry related research undertaken.
- Coastal and marine environments - currently not a focus but it could/should be.
- Changing land use scenarios adjusting to climate change
- Contaminant loading predictions to freshwater from changing rainfall patterns
- Research on emission reduction/elimination and carbon capture with the agricultural sector (given the 350 focus on research in the energy and transport sectors).
- Predicted impacts on species distributions, life history traits and phenology
- Why are farm tree belts excluded from inclusion as an offsetting biological emissions measure? (My farms included multiple tree lines that are two trees abreast and extend to long distances). The metrics on native tree restoration versus exotics are unattractive as an offsetting biological emissions. Native restoration positives need championing. What research is available to support particular native trees (eg Black Beech) over Radiata pine or Douglas fir?
- Synergies (or not) between climate and other ecosystem services in terms of land management/use options.
- Actual projects we should be doing on farm
- I would like to know about the general effects that climate change will have on the primary sector productivity in different parts of NZ. E.g. will there be some benefits in places due to different weather patterns?
- Carbon sequestration opportunities and strategies. Clean tech and carbon neutral opportunities on public lands e.g. EV charging stations in regional and national parks; sustainability of facilities and parks operations. Adapting to pest plant and animal species proliferation in changing climate conditions.
- Sustainable land management
- Potential impacts on Biosecurity and food assurance (safety, integrity, quality)
- Impact of scenarios on proposed climate change adaptations to producer and industry resilience
- Impacts of climate change on biodiversity and pest management
- Climate change, what can farmers do to reduce total emissions that will not reduce profitability

- I would like to better understand nutrient loss from a blueberry orchard
- Given my appalling ignorance, an introduction to what has been and is being done by SLMACC with links to papers and publications would be really useful.
- The implications/impacts of land use and management on local micro-climates under climate change scenarios. Quantification of change in GHG production resulting from a shift from current Ag practices to sustainable land use management
- Improving operation efficiencies/ methods to reduce carbon emissions
- Changes to the LUC scheme.
- Risk modelling and assessment
- Adaptation and how we are tracking globally on this. Extension activities. And the benefits of this research. What benefits have been realised to date? What difference has this fund made? What is the value of this research compared to other climate change funds. In a general sense I would like to know more about how climate change and sustainable land use might impact on food exports globally and how this might flow onto certifications, e.g. Certified Sustainable Land/water/resource use.
- MPI and the primary sector includes Fisheries and aquaculture and the marine environment in general
- Warming temperatures impact on horticulture growing regions and pest/disease prevalence Opportunities of warmer climates (as a good thing)
- Specific impacts of climate change on freshwater and coastal ecosystems
- I am aware of most activity but I need to keep up to date
- Plant pollinator interactions
- ETS and Forestry
- Impacts of land management practices on estuarian water quality. Adverse effect of pine forest industry on aquaculture (sedimentation) and way to improve the situation.
- Creative land use options for hill country Integration of woody vegetation into pastoral hill country systems
- Topics on viticulture
- Quantified emission reduction projection data from land use change. Models that capture and value the co-benefits of emission reduction
- Impacts of climate change on future groundwater levels

- How to build resilience into forests to help counter the impacts of climate change
- Return frequencies of severe weather events- rain/wind/drought
- Regional impacts on primary productivity and erosion
- climate change impacts on waterways and coastlines
- I would like to see how this information is being used in a practical way. The information from mitigation and adaptation for example, how will it help industry make decisions and investments in the future? Case studies would be good. Practical examples are also useful for generating discussion and can be used for monitoring purposes.
- Water and sustainable farming practices Farming and ecosystem services - beyond the obvious Alternative farming practices to dairy; What has been suggested and what is their effectiveness (and the real costs vs benefits) Invasive species management on the farm....that is, what incentivizes a farmer to control pests. Agroforestry
- Farm development - when developing the farm, how to do so with minimal environmental footprint. Fencing waterways is common knowledge, but what are the next steps?
- Good practice guides for land management factoring in effects of climate change and extreme weather events on primary industries over all landscapes.
- Adaptation strategies and behaviours are still skinny. We need better regionally-based adaption strategy development - this requires first some more detailed likely scenario planning to stimulate and lead adaptation strategy development
- Why are key farming leaders so backward in climate change and well behind many farmers?
- Decision support tools, Adaptation/mitigation options to climate change impacts for land owners
- Future farming business models how these could tie in with premium consumers
- All of them!!! Please organise the MPI website/climate cloud so it is accessible, searchable and relevant. I would like to continue to see interdisciplinary work and a focus on the behaviour change needs.
- Predicted changes in sediment loss rates, spring flows and saline intrusion risk

- More forestry
- Whole farm context especially where the context of water quality mitigations and there synergy is illustrated
- Climate change impacts - on land use, biodiversity, and human activity/habits/health.
- social / economic vulnerabilities of climate change on communities
- More simplified versions of the final reports. More relevant case studies
- as noted above more co-production research and also monitoring of uptake
- Worsening vulnerabilities for productive value (eg. soil moisture deficit effects from allocative insecurities (irrigation water access restrictions in droughts) and water efficiency opportunities for different production systems; climo-terrain pestiness risk profiling and climo-terrain flood risk profiling at regional (1:50K) resolutions, and production system redesign opportunities
- What NZ Dairy is doing about developing a sustainable system
- The impact of climate change on nutrient loss from farm land and consequent impacts in terms of water quality
- Adaptation of traditional NZ farming systems and practices
- mitigation and adaption using forage plants
- Farm modelling tools e.g. OVERSEER Life Cycle Assessment, Product Category Rules, Environmental Product Declaration harmonisation
- severity of storms
- Adoption of Regenerative Farming Systems
- effect of geoengineering on NZ climate and primary sector
- Would be interested when science has found a solution to animal GHG pollution I rely on advice from our internal environmental sustainability team. However this team has not had a strategic role and tends to operate by choice in operational matters eg. Community projects.
- Soil erosion linked to extreme events and mitigation of erosion.

9.2.2 Stakeholder additional general comments (verbatim)

- It is great to see any research being undertaken in this area and particularly with regard to the dairy industry and how we are to find ways to mitigate and adapt in our changing business environment. A focus needs to be on education and knowledge dissemination for any research to be valuable and the benefits maximised. It is great to see there is a focus on dissemination through this research programme.

- NZ needs to stop talking and start doing
- Absolutely vital to continue
- This is an area examined within Drawdown (agroforestry) that would garner 350 and public support. As a wider part of your research thought of apportioning some of your budget to advertise this research would be of great value (esp with pressure to include agriculture within the ETS). Greater dissemination and transparency lends accreditation and perhaps budget leverage to SLMACC research.
- No
- My concerns relate to the comparative merits of Native Restoration versus Exotics as noted above. We need to be sure of the numbers. Also coverage of trees in ETS need to include farm tree shelter belts, especially in regions like Canterbury, North Otago and the Rangitikei
- It is necessary research as we have so many gaps in our knowledge around both mitigation and adaptation efforts
- How sustainable is merino sheep farming in comparison to other farming systems?
- I hope that more work is done to communicate the findings of this research with industry. Industry are the best placed to action the research, so it is important that they are on board with it.
- Despite not having an active engagement in the area I understand its significance and the need for a focus on it. The impacts on Biosecurity and food are of interest to me and I will investigate the information sources provided, thank you.
- Overall the research area provides a good focus point for climate change and land use change research
- You don't seem to list any of the Motu research programme outputs or activities here - is there a reason why not? We had a major multi-year SLMACC programme with an Agricultural emissions dialogue and numerous research outputs.
- I generally have not as yet needed to access scientific information for pest management or policy development purposes - but realistically should be.
- No
- very important area of research for an agricultural nation
- We have to be prepared for when agriculture is included in the ETS

- I think this research needs to be combined with all of MPI's Climate Change activities and managed as one overall climate change scheme in order to optimise the value we get from meeting our climate change goals.
- No
- Marine related research and particularly fisheries research and climate change/variability is not adequately funded by MPI
- Why are they grouped together? Sustainable land mgmt is definitely useful now and in the future - that's where investment should go. The climate change stuff may or may not be helpful in future - it's more a risk mitigation approach
- Future research in land and water management (including coastal waters) will need to include climate impacts and specifically address the inclusion of climate change in environmental and economic models
- Continued research, analysis and summary of findings is critical for New Zealand's credibility in climate change negotiations. SLMACC has provided an excellent resource for informing policy
- We need greater research in this area.
- Hasn't enough research been done? The Government needs to stop using the excuse of 'more research needed' to delay policy decisions.
- The research that is undertaken needs to be accessible and usable
- No
- All research should be centered around how the data can be made 'real' and used to support emission reduction and adaptation activity. Use stakeholder engagement to promote the reports to target sectors once they have been released
- The reports are not well advertised
- Public awareness is growing. Planning is difficult given the uncertainties of various scenarios
- Thanks for doing it
- It's not well communicated
- Communication of science and research is important. There needs to be better access for stakeholders to this information. There is a wealth of it, and it is excellent but I suspect for many "non-scientists" quite overwhelming. I would like to see more research in the areas of ecosystem based mitigation (perhaps I haven't seen this) as well as wetlands and ecological restoration.

- Need to bring agriculture into the ETS - how can farmers help? Many in an urban environment do not know what farmers are doing. Many still think that farmers are still using the same old damaging practices they used a generation or so ago. This has changed but how do we inform those in cities as to what farmers are now doing - we even saw this "discussion" re water in the election. It was used as a big divide between those in the rural sector compared to the urbanites.
- Its fundamental to decision-making
- Govt ETS policy has enabled land users to throttle back on the urgency which should be being applied
- There is a disconnect between policy advice and political will to do anything. MPI almost totally ignores forestry, despite it being one of the top three export industry earners. Perverse incentives (e.g. grand-parenting of nitrate pollution, pre-89/post-90 land dichotomy) discourage new forest planting which would be advantageous to NZ making its Paris Agreement commitments.
- How do we change the minds of recalcitrant farming leaders and some of their politician friends
- I would love to be exposed more to the research surrounding Climate change, it does not seem to be getting out there as well as it could/should be/
- Not much use sorry - not entirely sure why I was on the list for this one!
- You have made me aware of significant research which I will make sure to read now.
- Needs to tie climate research on farm in with future business models involving industry/commercial entities in the discussion. They can't be discussed in isolation as farmers need a new business model to change.
- SLMACC is my absolute favourite research fund. The findings from SLMACC inspired me to move to NZ and I tend to find that whatever NZ climate change mitigation/adaptation research I find online (that is actually useful) is connected to some SLMACC research programme or another. I think there needs to be a lot better management of previous work and results and better coordination between old and new work. Last but not least, please continue the focus on social science work.
- Sustainable land management would appear to be a national priority. Soil and land is a precious finite resource.

- Economics and local politics will drive water quality as the priority but future export markets will drive carbon so we need to ensure the short term farmer actions are synergistic
- Would be really useful to see how we can best use different types of land for different purposes. With the idea in mind of building resilience (e.g. reducing sediment run off)
- Most of it is too far away from application, adaptation and resilience.
- Needs more money given Climate Change in the Primary Industries is a big topic/concern
- All SLMACC research needs to be well socialised and results debated with users and studies done of how the information is being used.
- Co-development of mitigation and adaptation pathways from the NZ catchment futures perspective able to be tuned geospatially needs more work
- I would like to see a great deal more action, research is important, but a lot could be done with no additional research.
- MPI's investment in SLMACC means that NZ is in a better position in terms of having the knowledge and understanding that informs NZ global contribution and domestic targets. It is a very unusual in that the evidence base development has preceded the policy response - a model for other policy areas?
- Deeply concerned at the level of business and political involvement in climate change and land management. It's much bigger than that.
- Life cycle thinking approach necessary. - It is also important to have up-to-date data for benchmarking so potential impacts (and trends) can be identified and mitigated over time.
- All climate change should be in one portfolio - avoid duplicate facilitate collaboration
- A small part of the overall picture. People and cities generate more GHG pollution but animal/rural are required to provide the solution
- There seems to be a disconnect between research and the operations of local government
- My main interest is coastal hazards so have a slightly different focus
- NZ is locally generally locally relevant but my interest is in the global phenomenon than the local impact
- No, it is not pressing short/medium term issue for our organisation

