



Climate Smart
Agriculture Initiative
New Zealand



Project Report

“Cambodia livestock climate change response capacity development”

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- Small, medium and large-scale commercial producers including Betagro
- Feed retailers that participated
- Feed producers
- CP Abattoirs
- Provincial Animal Health & Production officials (PDAHP)
- GDAHP
- MAFF
- FAO

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1 Introduction

This report presents the process and outcomes of the “livestock climate change response capacity development” component of the “Cambodia livestock GHG inventory and climate change response capacity development (CaLGICC) project”.

The objectives of the component were to:

1. Strengthen institutional and technical capacities for GHG inventory compilation, management and reporting.
2. Strengthen capacities in the livestock sector to take effective actions in response to climate change.



The beef and pork components of the livestock sector were to be considered, covering operations at a range of scales: smallholder production and particularly, small, medium and large scale commercial production. The outcomes were generated through two visits to Cambodia and

analysis of the adaptive capacity of key sector stakeholders.

The first visit was to get a sense of the climate change risks that the sector would need to adapt to, in order to achieve growth objectives set by the Cambodian Government to meet more domestic demand and eventually export production. The visit also made an assessment of activities that would strengthen the capacity of GDAHP to contribute to the delivery of those growth objectives.

The second visit was to dig deeper into those issues and, in so doing, develop a clearer understanding of:

- Likely climate change impacts that would interfere with the delivery of Government policy for expanding the sector if ineffectively addressed.
- Actions that could address those risks.
- Identify which sector stakeholders make the decisions that affect the delivery of those opportunities to adapt to climate change impacts.
- Their current capability to take effective, climate informed decisions.
- The capabilities they need in the face of the climate risks they face.
- Develop the capability of GDAHP, in particular its ability to enable the sector to manage its climate risks.

The outcomes of that second visit are the basis of this report.

The process was videoed, to record the methodology and its outcomes.



2 Starting conditions

This section describes the “starting conditions” for the project, from which capacity and opportunities for GDAH to address climate risk were built.

2.1 GDAH Embracing Transition

The project took place during an important transition period for GDAH. Cambodia’s leaders see climate change as one of the challenges to economic development (see box 1). They increasingly require the relevant parts government to take responsibility for climate risks that pose a threat to the country. A role has been created within GDAH for that purpose. Whilst the role has been created, there is minimal experience of addressing the climate issues. This project was therefore very timely. The Department team engaged with enthusiasm and professionalism.



A key challenge for the GDAH team is that the policies they are being asked to lead include areas they have little experience of. This is not limited to climate change. The national policy is to scale commercial livestock production to meet domestic demand and to eventually develop a significant export market. This vision is for beef and particularly pork.

Box 1: Ministry of Economy & Finance’s Secretary of State Phan Phalla statement on macroeconomic management and the 2024 Budget Law

National policy targets 60% of production to come from large scale commercial producers (currently 20%). Those producers will provide a market for a significant proportion of the remaining 40%. These large-scale producers are well resourced and have significant internal skills, sometimes more relevant than the GDAH team.

The team, in common with other public servants, have a dedicated and professional senior team whose training took place during the Soviet era. For much of their career, animal health and

Ministry of Economy & Finance’s Secretary of State Phan Phalla statement on macroeconomic management and the 2024 Budget Law

“the Secretary of State also stressed the need to increase vigilance for 2024 in the context of increasing risks and risks, both domestic and foreign, that have been posing threats to sustainability and sustainability. Of Cambodia’s development, such as the rise of regional and global geopolitical tensions, the global economic slowdown, especially in Cambodia’s trading partners, the longer-than-expected tightening of monetary policy, especially the United States and The continued appreciation of the US dollar, which could affect the flow of capital, investment and trade, the continued rise in prices or the high level of energy and commodity prices in the international market, the geographical fragmentation of the economy, are reducing the participation in the current. Globalization, in line with the rise of multi-polar trends and the division of economic and trade bloc, is increasing the negative impact of climate change.”
The Star

production has been focused on smallholders and moderate scale commercial producers. GDAHP were the experts with responsibility for providing direct interventions.



Shortly before the second project visit, the Government set a priority for GDAHP and its parent ministry (Ministry of Agriculture, Fisheries and Food, MAFF) to reduce livestock production costs. This also informed the focus of this exercise: to ascertain the risks of climate change to commercial livestock production costs, and to identify business friendly opportunities to manage those climate threats to costs.

The team are now embracing the new realities of a modern commercialised sector. In assessing climate risks, the GDAHP team were insightful in identifying system level barriers and enablers in this new world. They also recognised that in their traditional roles they rarely had the skills, capacity or authority to address them directly.

GDAHP and the project also identified additional ways of working that can work well in this new world. As they increase their adaptive capacity through this project, they can use their authority as Government servants, and the convening power which that brings, to inform stakeholders of risks and opportunities, as well as connect them with other stakeholders that can help them manage those risks. It is these opportunities that form the recommended priority next actions (see Section 6).

2.2 Adaptive capacity

It is clear to all that the livestock sector is a system of different stakeholders. Sector level resilience therefore requires those stakeholders to individually and collectively act in a way that delivers system level resilience. As the apex regulatory and advisory organisation in the livestock system, GDAHP needs not only the adaptive capacity to address climate change in the activities it has direct responsibility for, but it also needs to offer leadership in the sector towards resilience to changing climate impacts. What GDAHP can achieve through that leadership is affected by the adaptive capacity of the other stakeholders.

- Sector stakeholders taking part in the adaptive capacity assessment
- Smallholder producers for domestic consumption
 - Small, medium and large-scale commercial producers
 - Feed retailers
 - Feed producers
 - Abattoirs
 - Provincial Animal Health & Production officials (PDAHP)
 - GDAHP
 - MAFF
 - FAO

Box 2: Sector stakeholders involved in the adaptive capacity assessment.

In order to understand the level and range of adaptive capacity throughout the sector, representatives of key stakeholder groups (see box 2) completed an online adaptive capacity diagnosis and development assessment using the CaDD framework (www.cadd.global). GDAH had translated the questions and report templates into Khmer, so that participants could enter their answers independently. Smallholders and those less familiar with these sorts of questions had someone working with them to help clarify the questions.



The analysis used indicator activities within a maturity index (see Figure 1; in the CaDD framework the maturity levels are called “Response Levels”) to establish current adaptive capacity, the capacity required to manage the climate risks the participant was vulnerable to; and the most useful next steps to move from current to required adaptive capacity.



Figure 1: A summary of the 6 CaDD Response Levels

2.2.1 Why are the different adaptive capacity levels needed?

In this framework not everybody needs the highest capacity. The capacity required is influenced by the level of climate uncertainty that exists in the organisation's climate risk assessments. The greater the uncertainty, the more likely it is that current business processes are not designed to manage those risks, and the more capacity development is required. Figure 2 below illustrates this point. It shows how possible climate futures become more varied the further we look into the future. We cannot know which future will unfold for a range of reasons (e.g. we do not know what levels of GHG emissions will be made; we are learning more about the science all the time which is telling us more about possible impacts; “non linearities” such as huge sudden jumps in record temperatures as happened in N America in 2022, sudden ice cap loss, major changes in jet stream patterns or collapses in weather creating ocean processes are very difficult to predict, but when they happen can go beyond risk assessment impacts).



A rule of thumb adopted in the ISO14090 Climate Adaptation standard refers to planning for new decisions/actions as follows:

1. If specifications are resilient to the current climate (not something to be assumed), there is probably enough “wobble room” in the specifications to manage climate change over the next 10 years. We refer to these as “simple” issues.
2. If climate resilience specifications will be “locked-in” for 10-20 years, it will need to allow for climate impacts not present when the decision is made. There are, however, a narrow enough range of future options that with the right climate change expertise, there can be reasonable confidence that any climate risk can be managed. These risks will probably be managed through improvements to existing risk management processes. We refer to them as “complicated” issues.
3. If the decision/action will be locked in for more than 20 years, climate risk management must assume that there will be climate impacts that are not foreseen. We refer to these as “complex” issues.



The climate is changing. Uncertainty about how it changes grows the further into the future you plan

UN Climate Report, 2021

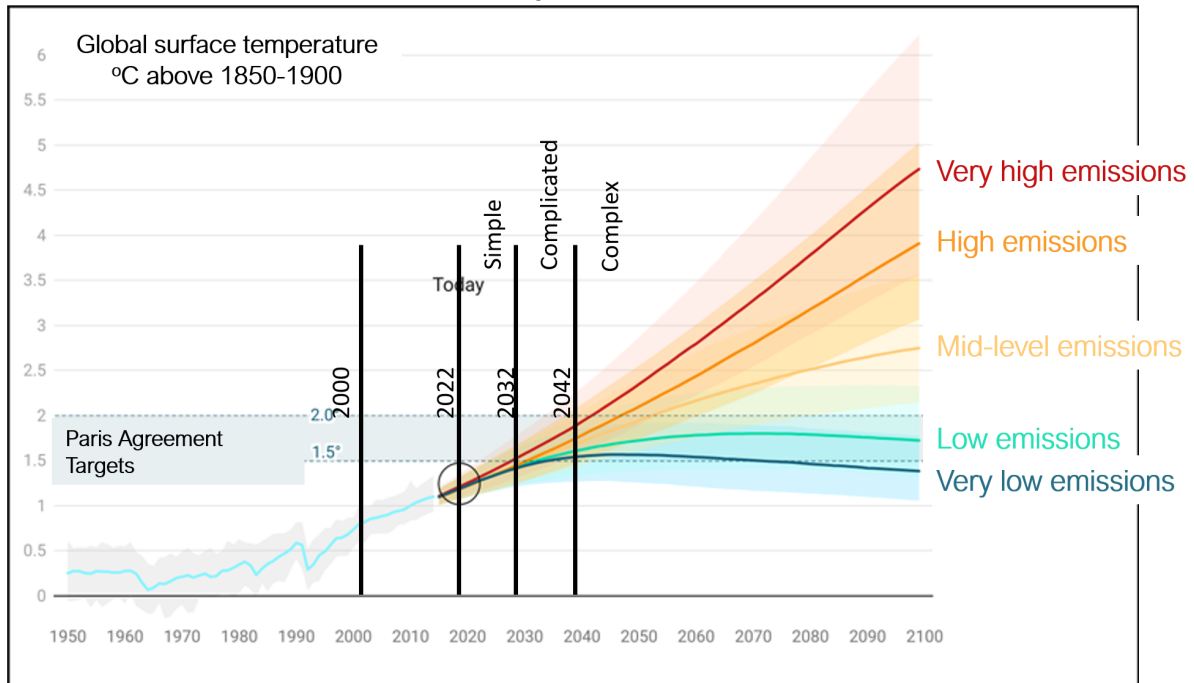


Figure 2: A range of possible climate futures

As Figure 3 shows, you must be able to apply the right level of sophistication to climate risk management. If you can't, you run the risk of either over complicating things and being inefficient, or underestimating climate impacts and being unsuccessful in making your decision/action resilient to climate change. Adaptive capacity includes knowing how to make a proportionate response.

Approach taken to manage climate risk				
		Simple	Complicated	Complex
Risk characteristics (Decision life)	Simple (0-10 years)	Success – tasks done quickly	Inefficient	Inefficient
	Complicated (10-20 years)	Unsuccessful	Success – complicated tasks understood/managed	Inefficient
	Complex (> 20 years)	Unsuccessful	Unsuccessful	Success – complex risks effectively managed

Figure 3: Approaches taken to manage climate risk

The CaDD adaptive capacity metrics identify which maturity (Response Level) of adaptive capacity is appropriate for the sort of risks an organisation must manage (see Figure 4). They also recognise the organisational practices which enable those different types of climate risk to be effectively managed.

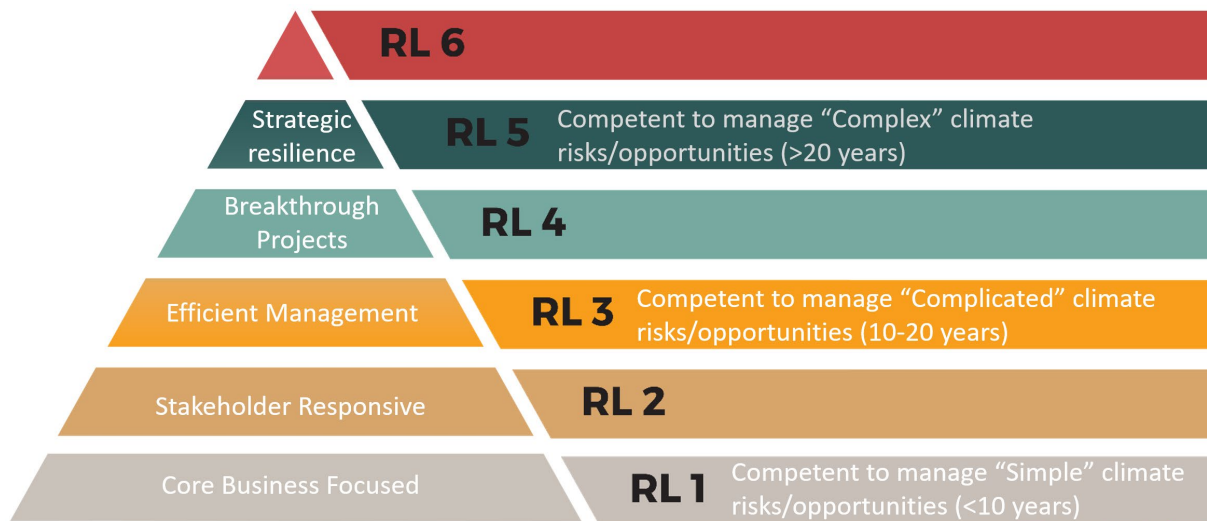


Figure 4: Response Levels appropriate for different levels of climate risk

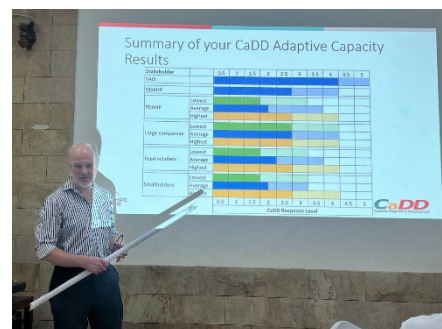
For those only needing to manage “simple” climate risks (climate change up to 10 years ahead) Response Level 1 is adequate. For those needing to manage “complicated” climate risks (10-20 years ahead) Response Level 3 is probably enough. For those having to manage “complex” risk (beyond 20 years ahead), Response Level 5 is required. (Response Level 6 is a stretch target not necessary for most organisations).

CaDD therefore assesses an organisation’s current practices that impact on climate risk management to understand current capacity. It identifies the practices required to manage the climate change risks it faces, and then highlights the gap between current and needed practice. This gap in practices forms the basis of an adaptive capacity development plan.

2.2.2 Livestock sector stakeholder results

Figure 5 below summarises the results of the CaDD analysis on a range of livestock sector stakeholders. Darker shades show current adaptive capacity Response Level whilst the lighter shades show the target Response Level needed to address the type of climate risks the stakeholder faces. For stakeholder groups with more than one respondent, the graph shows “lowest”, “Average” and “highest” scores.

All current scores were predictably low for a sector with little exposure to understanding of climate risk or adaptation to address it. The norm was Response Level 1.5, which is barely a response to changing climate risk, but normal for this stage. Some stakeholders reaching response Levels 2 or 2.5 were either involved in projects that had given them opportunities to consider and even respond to climate risk (e.g. individuals from PDAHP, Feed Retailer and Smallholder groups), or had systems in place that addressed climate risks to some extent but also had low vulnerability (e.g. an abattoir on a hill with operations at night and with livestock on their property for short periods). FAO stood out with its high Response Level 4. This reflected the innovation work it is doing to understand how to develop resilience at sector level. However, it was clear from talking to the FAO representative completing the exercise that capability to address climate risk is sporadic and not yet embedded within its practice.



Each participant received a tailored adaptive capacity development report. The reports include priority actions to move from current to required adaptive capacity. Terms of use mean that these are confidential unless the user gives permission for wider use. Permission was given by GDAHP to share its results. Since the project will not be working with these other stakeholders, permission was not requested. (See Annex 1 for the questions asked through the CaDD analysis and Annex 2 for the resulting automated report.)

Stakeholder		0.5	1	1.5	2	2.5	3	3.5	4	4.5	5
FAO		[Blue bar from 0.5 to 4.5]									
GDAHP		[Blue bar from 0.5 to 1.5]									
PDAHP	Lowest	[Green bar from 0.5 to 1.5]									
	Average	[Blue bar from 0.5 to 2.0]									
	Highest	[Yellow bar from 0.5 to 2.5]									
Large company		[Blue bar from 0.5 to 2.5]									
Feed retailers	Lowest	[Green bar from 0.5 to 1.5]									
	Average	[Blue bar from 0.5 to 2.0]									
	Highest	[Yellow bar from 0.5 to 2.5]									
Smallholders	Lowest	[Green bar from 0.5 to 1.5]									
	Average	[Blue bar from 0.5 to 2.0]									
	Highest	[Yellow bar from 0.5 to 2.5]									
		0.5	1	1.5	2	2.5	3	3.5	4	4.5	5
		CaDD Response Level									

Figure 5: Summary of livestock sector stakeholder adaptive capacity scores

Of particular significance for this project was that whilst GDAHP has a formal role in addressing climate risk in the livestock sector, with an initial Response Level of 1.5, it has started this process with little capability to perform that role. The analysis gave an initial target Response Level of 3 (Response Level 3 requires mainstreaming climate change risk management within the bounds of current processes and systems.) Once that level is achieved, given the long-term climate issues GDAHP needs to consider, it is likely that the long-term target Response Level is 5, with additional processes and systems put in place to provide the capacity to manage long term uncertainty about climate impacts.

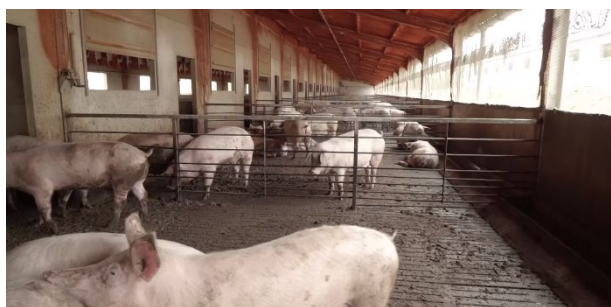
The next section looks at key steps that GDAHP could take to develop its capability and the steps that the project took to do so.



3 Finding out what GDAHP can do next.

GDAHP's CaDD report set out the following priority next steps:

1. Understand the climate change impacts on production costs.
2. Identify decisions/actions that are vulnerable to climate change impacts and those that can manage those impacts.
3. Prioritise impacts and opportunities to address them.
4. Develop a formal action plan to address the identified impacts.
5. Designate staff time and budget for this task.
6. Leadership to recognise and support those in GDAHP that are "champions" for climate adaptation action.
7. Recognise that the plan is a best effort given the available knowledge. Expect lessons to be learned from trying to implement the plan. Put in place processes to learn those lessons and adapt practices to improve capability to address climate change risks to production costs.
8. Identify training and other professional development needs.
9. Identify any additional external stakeholders that have not yet been engaged but who affect the outcome of the adaptation plan.
10. Continue to influence sector wide stakeholders as required to achieve a climate resilient sector in which impacts on production costs are minimised.



This project addressed the first three of these capacity development steps: impact assessment, identifying decisions that need to be climate informed, and prioritising actions. It also began the implementation planning process, identifying relevant stakeholders and including influencing actions in the adaption planning.

The following sections cover those activities.

4 Impact assessment

The centre piece of this project was a 2 day multi-stakeholder workshop to identify climate change impacts to the sector. It brought together representatives of the key stakeholders that determine delivery of the Government's livestock sector growth strategy, as identified during the first visit (see Box 2).

GDAHP's position in National Government means it's impact on climate resilience in the livestock sector depends on being able to influence numerous other stakeholders. The workshop was

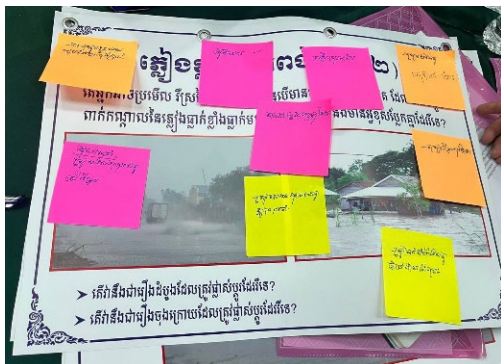


designed to give GDAHP insight into the way the different stakeholders can be impacted and also options for adapting to manage those impacts. These insights would enable GDAHP to identify its role in generating solutions.

Participants were grouped into stakeholder types. Each group was invited to consider the impacts on their activities of: heat, intense rainfall, drought. They considered impacts under both current conditions and high scenario climate change conditions

for 2080. These scenarios were drawn from the World Bank “Climate Risk Country Profile” for Cambodia.¹

With those insights the groups were invited to consider what activities could reduce these impacts.



Since the participants were unfamiliar with climate change and its risks, or complex analytical processes, the approach taken was very simple. Equally each participant has a wealth of experience which is invaluable to understanding complicated systemic risk and impacts. The process was designed to be a conduit for that experience to inform the priority next steps for GDAHP. The methodology is Climate Sense’s early engagement process with experienced stakeholders who have not considered their roles in terms of managing climate change before.

Participants were asked to consider the impacts of extreme events in the current climate and then what would be different under the following scenarios:

1. Double the length of the hot season, and peak temperatures reaching 45°C.
2. Double the probability of drought.
3. 50% increase in the intensity of rain, with rainfall lasting:
 - a. 1 hour
 - b. 5 days.

Participants were then asked to consider what new impacts were likely to happen first, second, third etc. through to the high case scenario.

Most of the risks that are described below are those that are already experienced and add costs to production. Participants considered climate change in terms of more extreme or frequent versions of the climate impacts they already know. This is a good start. It does not however reveal risks that are not yet present but may emerge. That would be useful in future and would require modelling data and analytical capabilities that are not budgeted or necessary at this early stage.

4.1 Risk assessment findings

Workshop participants provided an insightful array of potential climate risks within the sector. They are summarised below. Most impacts apply to all elements of the livestock sector. Where the risks apply more to one part of the sector than another, this is indicated.

4.1.1.1 Heat

This section summarises participant-identified impacts of current climate and doubling the length of the current hot season from 4-8 months:



¹ https://climateknowledgeportal.worldbank.org/sites/default/files/2021-08/15849-WB_Cambodia%20Country%20Profile-WEB.pdf



- 1) Increased electricity costs during extreme events
 - a) Increasing electricity use as cooling equipment works longer and harder (medium & large producers)
 - b) Increasing electricity use (or other fuel) for pumping water to irrigate for rice & fodder (small & medium producers)
- 2) Productivity loss and deaths due to overheating when cooling systems cannot fully cope with the heat. Currently these losses were considered just about tolerable but close to a threshold at which high specification cooling systems might be justifiable (See box 3).
- 3) Increased cooling equipment replacement costs as they break with excess use (medium & large companies)
- 4) “Contract producers” for large commercial companies already experience 10-15% losses in livestock (disease, heat stress etc.). Climate change will increase losses from heat stress and vet costs from increased disease. This will reduce the income of the contract farmer if the “contract buyer”, e.g. CP or Betagro, does not pay more. This threatens 2 scenarios:
 - a) Under current contract terms, contract growers will earn less and so may reduce or stop supplying. This will reduce overall national production.
 - b) Buyers will pay more to contract growers to keep them producing, but production costs will also increase.
- 5) Heat stress during transport, leading to some additional losses and generally stressed meat can slightly increase processing costs for abattoirs. The problem varies with the management by individual drivers (hard to reach stakeholders).
- 6) More disease during extreme events (heat, drought or intense rain) leading to:
 - a) Reduced productivity
 - b) Increased vet costs.

Betagro pig unit has 16,000 fattening piglets per production cycle and average losses of \$56,000 in production potential due to heat stress. If this reaches \$60,000 changes to the cooling system may be considered.

Figure 6: Costs of heat stress

4.1.1.2 More intense rain

This section summarises participant-identified impacts of current climate and 50% increase in rainfall intensity. Durations of intense rain of up to one day and 5 days were considered:

Heavy Rain – Kampong Cham (1)

What happens when the rain is very heavy for a few hours, or a day?



Heavy Rain – Kampong Cham (2)

Can you imagine if the heaviest rain was half as heavy again?
What would be different?



- > would be the first things to change?
- > What would be the last things to change?

- 1) Longer periods of flood or hot weather will reduce the availability of crop residue for grazing and fodder for stall feeding. This will particularly affect costs for small and medium scale producers. There are often production systems that are dependent on grazing local crop residue and fodder ingredients. In these circumstances they will need to either buy in extra feed and increase costs or reduce production. This increased demand may reduce feed availability and push up costs.
- 2) Feed in some packaging gets damp during transit if in cheaper packaging, and eventually gets mouldy. This reduces feed quality and reduces production (farmers stop fattening during the wet season because the feed is mouldy) (small & medium scale producers)

Rain for 5 days – Kampong Cham (1)

What happens when it rains heavily for a week?



Rain for 5 days – Kampong Cham (2)

Can you imagine if the heaviest rain in a week was more than half as heavy again?
What would be different?




- > would be the first things to change?
- > What would be the last things to change?

4.1.1.2.1 Drought

This section summarises participant identified impacts of current climate and doubling the probability of drought:

Drought – Kampong Cham (1)



Drought – Kampong Cham (2)

Can you imagine if the drought twice as often?
What would be different?



- > Would be the first things to change?
- > What would be the last things to change?

- 1) As drought becomes more frequent and intense, the proportion of “good years” reduces and costs increase e.g.
 - a) Current climate:
 - i) Currently drought approx. every 15 years,
 - ii) Each drought takes approx. 3 years to recover (e.g. any loans repaid, damaged infrastructure repaired),
 - iii) Currently 11 “good” years between droughts.
 - b) Future climate (2080):
 - i) If the frequency of droughts doubles to every 7 years (possible by 2080),
 - ii) “good” years between droughts reduce to 3 years (6 out of 15 years),
 - iii) Recovery years increase from 3 to 6 years.
- 2) Water resources:
 - a) Water storage is more likely to be insufficient,
 - b) More resources need to be spent on collecting water.
- 3) Reduced fodder production:
 - a) Less water reduces fodder production and so increases spending on feed, or reduces production, or both.
- 4) Electricity availability
 - a) When electricity is most needed, high demand leads to power cuts and increased impact of:
 - i) heat stress on livestock during hot/dry season power cuts. Large commercial operators have generators which can manage this issue. Medium scale farmers use electric powered cooling systems but do not have this size of generator and so this is a problem, especially in temperatures higher than 25°C for pigs and 28°C for dairy cattle (although dairy isn’t a significant part of the sector in Cambodia).
 - ii) Business interruption for large feed producers (generators do not provide enough power).
- 5) Freezer storage (mass storage for increasing shelf life and controlling price fluctuations to increase business resilience throughout the value chain).
 - a) Are current freezers designed for future peak temperatures and longer periods of higher temperatures that we are already experiencing, e.g. 45°C? It appears unlikely.
 - i) If not, then we can expect increased electricity costs to manage increased heat.
 - ii) Also, increased management and replacement costs because of more pressure on cooling systems.
 - (1) There is a choice here of either continuing with the current freezers and accepting these higher costs or replacing the freezers. Presumably if the freezer motors are having to work harder, then the freezers will have to be replaced sooner than originally planned. This would be an added cost.
 - (2) If replacements manage higher temperatures, the time when they are replaced is an opportunity to build future resilience if the new freezers can operate in the higher temperatures. However, if the new freezers are of the previous specification, the problems will continue.



An overarching finding was that smallholders producing for domestic consumption are relatively resilient as they have other options. However, the added challenges that climate change is likely to bring would be an additional reason for smallholders to leave the land altogether and seek work in

urban areas. Whilst this is the traditional target group for GDAHP, policy has shifted to commercial production and so addressing these issues was considered outside the scope of this project.

5 Decisions that can manage climate risks and GDAHP opportunities to act on them

After the workshop Climate Sense supported the GDAHP team to:

1. Recognise the key climate change risks to production costs in the sector,
2. Identify which actions could manage those risks,
3. Identify which stakeholders had responsibility for those actions.
4. If GDAHP is not directly responsible, what actions GDAHP could take to influence or strengthen the capability of relevant stakeholders to take more climate resilient decisions.



This analysis was designed to increase GDAHP's capacity/capability to manage climate risk in the sector in the following ways:

1. significantly increase its awareness and the evidence it had to justify action, and to identify which agents of change could work to develop adaptive capacity/capability within GDAHP,
2. identify actions that would be effective in managing sector risks including
 - a. those actions GDAHP could take under its own authority
 - b. those actions it could influence
3. strengthen the current capacity/capability of GDAHP to take these actions,
4. identify additional future actions required to develop the required adaptive capacity/capability,
5. provide GDAHP's leadership with an adaptation plan (including capacity development) to take to MAFF and other enablers, e.g. donors, to get the resources that will enable the GDAHP team to play its full role in developing the resilience of production costs in the sector to climate change.

With potential climate impacts on livestock production costs identified during the workshop and then summarised during the first of a series of post workshop planning meetings facilitated by the project, the GDAHP team reviewed:

1. who had direct authority to manage the impacts and
2. what capability and opportunity GDAHP had to contribute to the risks being addressed.

Table 1 below summarises the climate risks described above, the sector stakeholders with authority to act on them, whether GDAHP has a formal role, GDAHP's capacity to support change and any options it identified to do so.

In identifying those opportunities, it became clear that in many cases GDAHP might have a legitimate role but does not yet have the skills or resources to take the opportunities it is mandated to. However, there are also a number of instances where its expertise, networks and convening authority could be used to make a significant difference with relatively small amounts of external resource and technical assistance. These are highlighted in the table.

Amongst the range of activities that could be taken, GDAHP and Climate Sense identified some “low hanging fruit” with high potential impact that could be delivered with a relatively small amount of support, or within GDAHP’s current resources. The remainder of the opportunities could form the basis for a larger, better resourced programme. These are described in more detail after Table 1.



Table 1: Climate Change threats to livestock production costs, stakeholders responsible for addressing them & GDAHP roles and opportunities for resolving them

Climate Change cause of increased costs	Affecting Cattle or Pigs or Both?	Which organisation has most responsibility / opportunity for solving the issue	Other responsible organisations	<p>What is GDAHP's current role?</p> <p>How well is it able to implement that role?</p> <p>What opportunities does GDAHP have to help solve the issue?</p>
More electricity costs during extreme events	Mostly pigs	Company		<p>Current role? No formal role</p> <p>Current capability? Already have a campaign on behalf of producers for cheap electricity rates at night.</p> <p>Potential capability With support with funding and technical support, play a convening role in facilitating the enabling environment for insurance policies that cover additional costs and lost production as a result of extreme weather (heat, drought, flood)</p>
Increased losses due to heat stress where cooling systems are unable to manage higher temperatures	Mostly pigs	Company		<p>Current role? No formal role</p> <p>Current capability? Addressing this is a legitimate GDAHP activity under it's responsibility for addressing climate change risks. There are not currently up to date skills within GDAHP to understand the issues and there is low capacity to deliver at scale the important skills it does have .</p>

Climate Change cause of increased costs	Affecting Cattle or Pigs or Both?	Which organisation has most responsibility / opportunity for solving the issue	Other responsible organisations	<p>What is GDAHP's current role?</p> <p>How well is it able to implement that role?</p> <p>What opportunities does GDAHP have to help solve the issue?</p>
				<p>Potential capability? With support with funding and technical support, play a convening role in facilitating the enabling environment for:</p> <ol style="list-style-type: none"> 1. Advising new investors and those replacing equipment on colling systems appropriate temperatures of their expected used life 2. Insurance policies that cover additional costs and lost production as a result of extreme weather (heat, drought, flood).
Increasing electricity use (or other fuel) for pumping water to irrigate for rice & fodder (small & medium producers)	Cattle	<p>Farm owner. They usually have their own water supply.</p> <p>For contract growers they often get support from their private sector contract buyers.</p> <p>Irrigation infrastructure is not a Government issue.</p>		<p>Current role? Technical advice / facilitation on water resource storage and irrigation.</p> <p>Current capability? Addressing this is a legitimate GDAHP activity under its responsibility for addressing climate change risks. There are not currently up to date skills within GDAHP to understand the issues and there is low capacity to deliver its skills at scale.</p> <p>Potential capability?</p>

Climate Change cause of increased costs	Affecting Cattle or Pigs or Both?	Which organisation has most responsibility / opportunity for solving the issue	Other responsible organisations	<p>What is GDAHP's current role?</p> <p>How well is it able to implement that role?</p> <p>What opportunities does GDAHP have to help solve the issue?</p>
				<ol style="list-style-type: none"> 1. A training course and other capacity development e.g. extension services could be implemented. Developing the capability to do this would benefit from additional support. 2. With funding and technical support, GDAHP could play a convening role in facilitating the enabling environment for insurance policies that cover additional costs and lost production as a result of extreme weather (heat, drought, flood).
Increased cooling equipment replacement costs as they break with excess use (medium & large companies)	Pig	Producer companies		<p>No formal role</p> <p>Current capability? Addressing this is a legitimate GDAHP activity under its responsibility for addressing climate change risks. There are not currently up to date skills within GDAHP to understand the issues and there is low capacity to deliver its skills at scale.</p> <p>Potential capability? With support with funding and technical support, GDAHP could play an convening role in facilitating the enabling environment for:</p> <ol style="list-style-type: none"> 1. Advising new investors and those replacing equipment about the specifications of cooling

Climate Change cause of increased costs	Affecting Cattle or Pigs or Both?	Which organisation has most responsibility / opportunity for solving the issue	Other responsible organisations	<p>What is GDAHP's current role?</p> <p>How well is it able to implement that role?</p> <p>What opportunities does GDAHP have to help solve the issue?</p>
				<p>systems that will manage expected increased temperatures over the life equipment. .</p> <p>2. Insurance policies that cover additional costs and lost production, as a result of extreme weather (heat, drought, flood).</p>
<p>"Contract producers" face higher costs. This threatens 2 scenarios:</p> <ol style="list-style-type: none"> 1. Contract suppliers earn less and so may reduce or stop supplying. 2. Buyers pay more to contract growers to keep them producing but increase production costs. 	Pig & cattle	Companies		<p>Current role? No formal role</p> <p>Current capability? Addressing this is a legitimate GDAHP activity under its responsibility for addressing climate change risks. There are not currently up to date skills within GDAHP to understand the issues and there is low capacity to deliver its skills at scale.</p> <p>Potential capability? With support with funding and technical support, GDAHP can play a convening role to facilitate an enabling environment for insurance policies that cover additional costs and lost production as a result of extreme weather (heat, drought, flood).</p>
Heat stress during transport leading to some additional	Pigs and cattle	Transporters	Universities researching heat	<p>Current role? Responsibility for animal health and welfare.</p>

Climate Change cause of increased costs	Affecting Cattle or Pigs or Both?	Which organisation has most responsibility / opportunity for solving the issue	Other responsible organisations	<p>What is GDAHP's current role?</p> <p>How well is it able to implement that role?</p> <p>What opportunities does GDAHP have to help solve the issue?</p>
<p>losses and stressed meat so slightly increasing processing costs for abattoirs. Impact varies with the management by individual drivers (hard to reach stakeholders).</p>			<p>stress impacts and solutions.</p> <p>Increase skills in heat stress management in the sector.</p>	<p>Current capability? GDAHP has issued guidelines and regulations for animal health conditions during transport.</p> <p>This is a formal GDAHP function, but GDAPH does not currently have the capacity to significantly change transporter practice.</p> <p>Potential capability? Support universities to develop curriculum to address this.</p>
<p>More disease during extreme events</p>	<p>Pig and cattle</p>	<p>Farmer,</p> <p>Buyer company paying for vet bills under out-grower contract arrangements.</p> <p>Government as biosecurity regulator.</p>		<p>Current role? GDAHP: responsible for delivering biosecurity regulation.</p> <p>For medium and large producers this is a formal GDAHP function to ensure regulation is applied. GDAHP can regulate this well. The companies pay for their own vaccines.</p> <p>For small producers GDAHP has a strategy for cattle vaccination to keep infections below 5% for 3 diseases (lumber skin, salmonellosis, F&B).</p>

Climate Change cause of increased costs	Affecting Cattle or Pigs or Both?	Which organisation has most responsibility / opportunity for solving the issue	Other responsible organisations	<p>What is GDAHP's current role?</p> <p>How well is it able to implement that role?</p> <p>What opportunities does GDAHP have to help solve the issue?</p>
				<p>GDAHP is responsible for emergency responses to outbreaks of disease and rehabilitation after outbreak, through the village animal health worker network under the Provincial Departments of Animal Health & Production (PDAHP).</p> <p>Current capability? This is a formal GDAHP function but GDAPH does not currently have the capacity to significantly change resilience in a changing climate.</p> <p>Potential capability? With funding and technical support, GDAPH can play a convening role in facilitating the enabling environment for insurance policies that cover additional costs and lost production as a result of extreme weather (heat, drought, flood).</p>
Increased feed costs and consumption when using feed for a longer time due to flood or hot weather reducing grazing and fodder production for those dependent on local crop residues and fodder	Cattle	<p>Farm owner.</p> <p>For contract growers they often get support from their private sector contract buyers.</p>		<p>Current role? Technical advice / facilitation.</p> <p>This is not currently an activity. It is legitimate activity under their responsibility for addressing climate change risks. There is not currently up to date skills to understand the issues and low capacity to deliver.</p>

Climate Change cause of increased costs	Affecting Cattle or Pigs or Both?	Which organisation has most responsibility / opportunity for solving the issue	Other responsible organisations	<p>What is GDAHP's current role?</p> <p>How well is it able to implement that role?</p> <p>What opportunities does GDAHP have to help solve the issue?</p>
<p>ingredients (small & medium scale producers).</p> <p>Also, there is likely to be less feed available due to flood and/or hot weather (small & medium scale producers).</p>				<p>Current capability? This is not currently a GDAHP activity. It is a legitimate activity under its responsibility for addressing climate change risks. There are not currently up to date skills within GDAHP to understand the issues and there is low capacity to deliver its skills at scale.</p> <p>Potential capacity?</p> <ol style="list-style-type: none"> 1. Develop a training course and other capacity development interventions could be developed to enable sector stakeholders to become more resilient to climate change e.g. extension services could be developed. 2. With funding and technical support, GDAHP could play a convening role in facilitating the enabling environment for insurance policies that cover additional costs and lost production as a result of extreme weather (heat, drought, flood).
<p>Mouldy feed in sacks during the wet season leads to increased feed costs and reduced quality and reduced production (farmers stop</p>	<p>Pigs</p>	<p>Producers</p> <p>Transporters</p> <p>Retailers</p>		<p>Current role? GDAHPs has acquired responsibility from MAFF for governance of a certification scheme for feed retailers. To acquire the certificate, they need to attend a</p>

Climate Change cause of increased costs	Affecting Cattle or Pigs or Both?	Which organisation has most responsibility / opportunity for solving the issue	Other responsible organisations	<p>What is GDAHP's current role?</p> <p>How well is it able to implement that role?</p> <p>What opportunities does GDAHP have to help solve the issue?</p>
fattening until the dry season and good quality feed) (small & medium scale producers).				<p>training course on types of feed, standards and storage. Delivery is by PDAHPS.</p> <p>Current capability? This is not currently a GDAHP activity. It is a legitimate activity under its responsibility for addressing climate change risks. There are not currently skills within GDAHP to understand the issues but there is low capacity to deliver its skills at scale.</p> <p>Opportunities to help solve the issue? GDAHP could review and update the curriculum to encourage management of these climate risks.</p> <p>In the meantime GDAHP could encourage PDAHPS to informally visit feed retailers and encourage them to promote the idea to their customers of buying feed in double lined sacks during the wet season.</p> <p>GDAHP will consider regulation regarding packaging standards for feed.</p> <p>GDAHP has limited skills and low capacity to currently do this work.</p>
As drought becomes more frequent and intense, the	Pigs and cattle	Producers		<p>Current role? Work closely with Disaster Authority as part of MAFF.</p>

Climate Change cause of increased costs	Affecting Cattle or Pigs or Both?	Which organisation has most responsibility / opportunity for solving the issue	Other responsible organisations	<p>What is GDAHP's current role?</p> <p>How well is it able to implement that role?</p> <p>What opportunities does GDAHP have to help solve the issue?</p>
proportion of "good years" reduces and costs increase.		<p>Government Disaster Authority</p> <p>Local Authorities</p>		<p>Current capability? Currently, there is limited skill and capacity to take this opportunity.</p> <p>Opportunities to help solve the issue? Under its role to manage climate change risks, GDAHP and PDAFF could work to identify and encourage practices that speed up recovery in the event of drought.</p> <p>This could be done in collaboration with the National Committee for Disaster Management to ensure these activities are part of an integrated disaster management approach.</p>
Water resources:	Cattle and pigs	<p>Ministry of Water Resources and Meteorology</p> <p>MAFF</p> <p>PDAFF</p>		<p>Current role? No formal role</p> <p>Current capability? Currently there is limited skill and capacity to take this opportunity.</p> <p>Opportunities to help solve the issue? Advise new producers on assessing water availability for production requirements.</p>

Climate Change cause of increased costs	Affecting Cattle or Pigs or Both?	Which organisation has most responsibility / opportunity for solving the issue	Other responsible organisations	<p>What is GDAHP's current role?</p> <p>How well is it able to implement that role?</p> <p>What opportunities does GDAHP have to help solve the issue?</p>
Electricity availability		<p>Electricity supply organisation (EDC)</p> <p>Also, farmer has responsibility to request for connection if off grid. They have to pay for it if they are isolated and not supplied by a village system.</p>		<p>Current role? No formal role</p> <p>Current capability? Currently there is limited skill and capacity to take this opportunity.</p>
<p>Freezer storage (mass storage for increasing shelf life and controlling price fluctuations to increasing business resilience throughout the value chain).</p> <ul style="list-style-type: none"> • 	Cattle and pigs	<p>Companies</p> <p>Ministry of Commerce</p> <p>Ministry of Industry</p>		<p>Current role? GDAHP only have responsibility for hygiene in the freezers.</p> <p>Current capability? Currently there is limited skill and capacity to take this opportunity.</p> <p>Opportunities to help solve the issue? There will be opportunities to improve regulation on hygiene standards. This would be an opportunity to add a requirement that freezer storage facilities need to be able to operate in a hotter future climate e.g. with peaks of 45oC or 50oC depending on forecasts at the time.</p>

Climate Change cause of increased costs	Affecting Cattle or Pigs or Both?	Which organisation has most responsibility / opportunity for solving the issue	Other responsible organisations	<p>What is GDAHP's current role?</p> <p>How well is it able to implement that role?</p> <p>What opportunities does GDAHP have to help solve the issue?</p>
Farm design		Producer companies		<p>Current role? No formal role</p> <p>Current capability? Currently there is limited skill and capacity to take this opportunity.</p> <p>Opportunities to help solve the issue? Advise on the specification for new investors or replacing equipment to install equipment suitable for higher temperatures.</p>

6 Next Steps

With the analysis of the opportunities for GDAHP to act, an activity planning process was conducted.

Feasible activities were of three types:

1. Extension and training activities that GDAHP could implement with its current capabilities
2. Those for which its convening power could make a significant contribution, but would depend on significant additional support and skills.
3. More demanding activities that could be the basis of a larger programme.

Each category offered significant returns on investment and contributions to reducing the impact of climate change on livestock production costs. They are summarised as follows.

6.1 GDAHP encourage feed retailers to promote the idea to their customers of buying feed in double lined sacks during the wet season



Some animal feed sacks are not fully waterproof in the wet seasons. Producers can get their feed home and find it mouldy. Other packaging (double lined sacks) is significantly more waterproof and reduces the risk of buying mouldy food. Feed retailers all report this as a problem for their customers. GDAHP will set up a programme to encourage those retailers (and producers) to encourage their customers to buy feed in double lined sacks during the wet season.

GDAHP developed the following Gantt Chart delivery plan:

Responsible	Activity	Comment	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan					
Mr Bunhong	Prepare advice for Provincial Departments of Animal Health and Production's Technical Extension & Legislation Units	Bring together the core GDAHP team to gather their experience to prepare advice	Yellow	Yellow			Mouldy Season											
Mr Bunhong	Develop an engagement programme (who is going to do what when)				Yellow	Yellow												
Mr Bunhong	Implement the engagement programme	Delivered by central team in Provinces around Phnom Penh				Yellow												
Mr Bunhong	Monitor and supervise the engagement						Yellow	Yellow	Yellow	Yellow			Yellow					
Mr Bunhong	Learn lessons to improve during the process						Yellow	Yellow	Yellow	Yellow								
Mr Bunhong	Plan to repeat in future if it is considered useful						Yellow	Yellow	Yellow	Yellow								

Figure 7: Gantt chart for delivery of GDAHP wet season feed packaging advice

6.2 Training activities that GDAHP could implement with its current capabilities

GDAHP identified two training activities that it could implement, largely with its current capacity during 2024-25. These are:

1. Training for household and small-scale commercial operators in cooling techniques for livestock during extreme heat.
2. Efficient water use and fodder production - training for household and small-scale commercial operators.

The objective would be to use the expertise within the GDAHP team to enable smallholders and small commercial operators to increase productivity during extreme heat and so reduce production costs. Whilst there is a wealth of experience in the GDAHP team, they feel there would be value in getting technical support for:

1. refining the technical content that GDAHP can already provide and using it to prepare a training curriculum:

The training curriculum would aim to amplify the value of the expertise within the GDAH team. In so doing, enabling smallholders and small commercial operators to increase animal productivity during extreme heat and so reduce production costs.

2. Efficient water use and fodder production - training for household and small-scale commercial operators

- a. The objective would be to amplify the value of the expertise within the GDAH team to enable smallholders and small commercial operators to increase fodder productivity during extreme heat and so reduce production costs by reducing the need to buy expensive animal feed.



The Gantt chart for implementing these initiatives is provided in Figure 4

Responsibility	Activity	2024												2025				
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May		
GDHAP resource	Identify the responsible person	█																
GDHAP resource	Develop the proposal	█	█	█	█													
GDHAP resource	Get the funds for a TA, ToT and delivery		█	█	█	█	█											
TA	Develop technical content and curriculum								█	█								
TA	Develop ToT and delivery strategy and Quality Control initial delivery										█					█		
GDAH resource	Roll out Training delivery															█	█	

Figure 8: Gantt chart for delivery of GDAH training initiatives

6.3 Activities for which GDAH’s convening power could make a significant contribution, but would depend on significant additional support and skills.

This activity is conceived by Climate Sense. GDAH has been supportive in the idea of exploring it. It’s leadership, networks and convening power are crucial to its viability.

The idea is a small workshop and trade event for the large livestock investors in Cambodia, Thailand, Vietnam and Laos. Most are based in Thailand and some in Vietnam. They invest throughout the region. The objective is to show a business case for adopting climate resilient specifications in building design and cooling equipment. It would also make the case for taking up insurance that covers the additional costs in its own operations during extreme climate events, and the costs of their contracted medium and small-scale producers.

The 1-day event would start with a workshop in the morning. A brief introduction would be made to illustrate the risks climate change poses to profitability over the life of a production unit building (approx. 30 years). The remainder of the morning would be a platform for a range of commercial companies to demonstrate how their products would manage those risks. At this stage, 3 areas would be covered:

- 1. Building design to reduce heat stress during increasing extreme heat over the life of the building

2. Cooling equipment that could be installed during refit of current buildings and specifications for new buildings (this is particularly important for the pig production sector). Increasing resilience also offers opportunities to reduce business risks, costs and GHGs
3. Cold chain requirements from abattoir to point of consumption. Once again, increasing resilience also offers opportunities to reduce business risks, costs and GHGs
4. Insurance that would cover increased production costs during extreme climate events (heat, flood drought). This could cover: production losses due to heat stress and disease, increased vet bills, increased feed costs due to reduced fodder availability (see box 3)

The afternoon would host a small trade show, in which a wider range of businesses, whose products are relevant to managing climate risk, could present their offer to livestock companies.

Blue Marble Micro has been created by a consortium of the world's largest insurance companies to serve the needs of developing and middle income economies. It already provides products covering the range of needs identified in Cambodia. These products are available in India, Argentina and Kyrgyzstan. They would be ready to attend an event described here. On the basis of market research findings they would be ready to develop products and partnerships with local finance companies to deliver it if conditions are right.

<https://bluemarblemicro.com/>

Box 3: Blue Marble Micro insurance livestock sector activities

The venue for the event may be Bangkok, given the predominance of investors based in Thailand. Possibly also Hanoi or Ho Chi Min city if it was considered that Vietnamese investors would be a significant enough community to have a separate event.

The intention here is to recruit the power of business sales teams to the promotion of specifications and risk transfer options that reduce climate change risks to livestock production costs. The incentive for them would be the prospect of more valuable sales. Part of the initiative would include training for



Picture: 1: Large pig production unit cooling system

these sales teams to be able to develop the right messages. This would also be a potential platform for New Zealand companies to join local suppliers in offering solutions, e.g. to provide approaches highlighted in the [NZ Ministry of Primary Industries 2023 paper on Heat Stress](#) that will cover the range of temperatures Cambodia needs to plan for.

Market testing would be required to check the efficacy of such an initiative. A professional event organiser would need to be included in implementation costs if the event(s) went ahead. The cost benefit of such an initiative is likely to be significant. Costs would be significantly less than an extension project designed to have the same reach.

Climate Sense would like to explore the idea of developing NZ support for the initiative. If that is not an option NZ would like to explore, Climate Sense would promote the idea to other donors.

6.4 Activities for a larger programme

Many of the opportunities in Table 1 will remain unaddressed by the actions above. They are beyond the scope of this project and capacity of GDAH as things stand. Yet the insights in Table 1 form the basis of a powerful larger project. We would invite the NZ Government to consider either developing its own support programme, or formulating an approach which promotes the idea with other potential

donors e.g. ADB, World Bank, EU. Climate Sense and GDAH would be happy to support either approach.

7 Further information

For further information please contact:

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Annex 1: GDAHP's CaDD Questions and Answers

This annex presents the questions that the CaDD adaptive capacity tool asked GDAHP and the answers given. It should be noted that each organisation that completes this assessment is likely to be asked different questions. Each question is selected by the software based on the preceding answer.

GDAHP- Review Details:

To what extent do you feel GDAHP is at risk from climate change impacts ? These might be floods, drought, landslips, extreme heat, etc.

Moderately

What risk do climate change impacts pose to the wider network (e.g. suppliers, customers, clients, partners, etc.) for GDAHP to deliver its responsibilities?

To a small extent, but not much

Does GDAHP take any decisions that have any, or all, of the following properties:

- 1. decision outcomes are intended to last ten years or more beyond the point at which the decision has been taken (this refers to upcoming decisions, as well as buildings, machinery, infrastructure, or other long-term assets you currently own or use)**
- 2. decision outcomes affect other parts of GDAHP and/or its assets' resilience to climatic changes (*nb this includes natural capital such as habitats*)**
- 3. decision outcomes affect GDAHP's external stakeholders and/or their assets' resilience to climatic changes (*nb. this also includes natural capital such as habitats*)**

From time to time, including within the next five years

Have you undertaken a dedicated process to identify and / or document the decisions described in the previous question?

Please note: A reminder of the descriptions of the decisions from the previous question can be found in the help text of this question

No

Does GDAHP influence or support other organisations' (internal or external) decisions about climate change, development and sustainability? (e.g. other departments / business units / working groups of GDAHP, or external clients, businesses, customers, government bodies, service users, suppliers, industry bodies, etc.)

GDAHP has no obligation to support and influence other organisations' decisions about climate change and sustainability, but is already doing this regardless

In your view, which one of the following statements best describes the status of GDAHP's programme on climate change adaptation? (where you are responding as a business unit / function of your organisation - e.g. a department, or a working group, please remember to answer the question on behalf of the business unit, and not the organisation as a whole)

Moving ahead of the field

To what extent has GDAHP assessed the risks that may arise from a changing climate?

We have not assessed risks and have no plans to do so

Does GDAHP have climate change adaptation 'champions' (those who are driving actions and/or mainstreaming climate change into planning and decision-making)?

- please note that their roles can be formally or informally recognised (e.g. they do not need to have 'adaptation to climate change' in their job title or description), but that they should work within GDAHP. For those answering these questions on behalf of a business unit / function of a larger organisation, your answer should be about the change-agents in your business unit / function -

We have only a few champions of climate change adaptation in some relevant parts of the organisation

Does GDAHP engage in any action-focussed learning processes on adaptation to climate change (please see help text for clarification on what we mean by "action-focussed learning")?

- if your business unit (e.g. department) supports others to do this work, please provide details in the comments box -

Yes, and these are closely linked to our core business (I)

Are climate change impacts addressed in GDAHP's formal action planning?

In some, but not all relevant action plans (PI)

Has GDAHP incorporated procedures to embed climate change adaptation into its mainstream management processes?

We are planning to (PNI)

Is 'adaptation to climate change' considered in GDAHP's procurement decisions?

We are already planning to check for climate change resilience in our procurement processes, but have not yet started doing so (PNI)

Does GDAHP have designated budgets and/or staff time allocated to designing and delivering actions on climate change adaptation?

For some, not all, actions

You have indicated that GDAHP have adaptation 'champions' , to what extent are their roles formally recognised?

GDAHP climate change resilience champions have an official role

How are 'adaptation to climate change' champions' deployed in your organisation?

*Raising Awareness about climate change adaptation with senior leadership,
Building networks with external organisations and stakeholders,
Building networks with internal stakeholders within GDAHP,
Driving breakthroughs in performance in major projects,
Closely involved in senior leadership discussions of climate change implications for core strategy*

What has motivated, or might realistically motivate, action to prepare for climate change impacts in GDAHP?

*Recent experiences of costly extreme weather, Gaining competitive advantage,
Protecting organisation operations and service provision from disruption from climate change impacts,
Promoting sustainable development and / or environmental protection*

Has GDAHP developed a prioritised list of actions that will improve protection against climate change related risks, or to exploit any opportunities?

We have only managed to prioritise 'action' for some areas of our responsibility

What were / are the sources of evidence used by GDAHP to carry out review of climate change impacts?

*Limited review of evidence (e.g. from media, Internet or non- specialist sources), Review of climate risk narratives and / or infographics,
Participated in climate change training/workshop delivered by climate scientists, In-depth review undertaken by external expert / organisation (e.g. National Met Office) , Guidance provided by another part of the organisation*

To what extent is available expertise proportionate to the risks that need to be managed? (either internal or external experts)

Expertise is available to address some of the relevant risks in some relevant departments

What processes does GDAHP use to select the external people and organisations to engage with on climate change adaptation and related activities?

Major external stakeholders - e.g. water companies, national government strategic business units, Search to identify people or organisations that need to be involved in co-developing responses

Do GDAHP's learning processes specifically tackle constraints (sometimes called barriers) to delivering actions that build resilience to climate change?

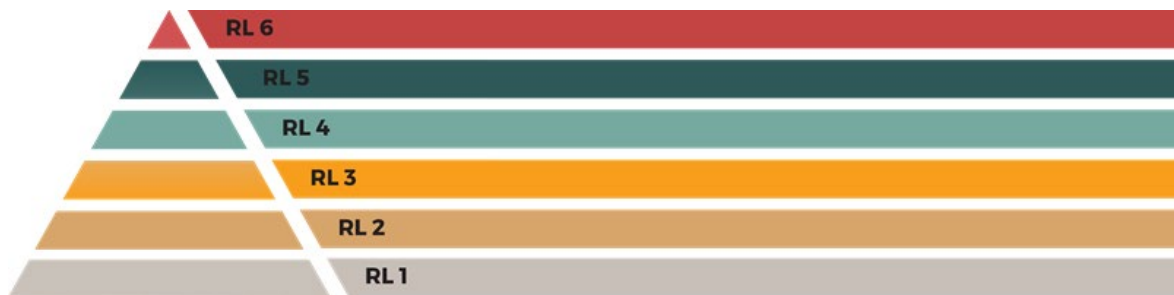
Yes, we look at constraints to some, but by no means all, of our climate change resilience activities

Has GDAHP established training or similar processes to help employees develop their performance on climate adaptation?

No

Annex 2: GDAHP adaptive capacity development report

Generated by Dr Mon Solomi, GDAHP, database: Cambodia23-Physical, ref: RL1/RL2-T3



CaDD Explorer Report: Your Adaptive Capacity Status

How to use this report

The actions identified by this report are produced by processing the answers and comments you provided when completing your CaDD Explorer. The actions are designed to support GDAHP in:

- Creating an internal review of GDAHP's current activities
- Recognizing key elements of your current climate change adaptive capacity and the maturity of response to climate risk it provides you with
- Identifying the target level of maturity of response in your journey to manage the characteristics of climate change risk that affect your current and future climate vulnerable decisions
- Providing guidance on the actions that will effectively move GDAHP in phases from its current level of capacity towards its target levels of adaptive capacity.
- Providing a benchmark against which to monitor your progress as implementation of the activities unfolds (e.g. to learn and reprioritize if required)
- To identify next phases of activity and efficiently progress towards your Target Response Level

Introduction

Thank you very much for completing your online CaDD Explorer questionnaire. This report has been produced from the answers you have provided. The following short report provides valuable insight into the level of capacity that GDAHP currently has, the level that it needs (as a product of the decisions you take and influence) and gives guidance on the kinds of things GDAHP can do to improve your capacity. In other words, it provides guidance on how to move from your current level of capacity to your required level of capacity. A brief overview of the CaDD Maturity Framework that has been used for this analysis can be found in the appendix at the end of this document. Further information can also be found at www.cadd.global.

Your Target: Response Level 3

From the answers you have provided through the online CaDD Explorer tool, we can see you have said that GDAHP is “moving ahead of the field” in developing your response to climate change impacts. We are delighted that you feel you are making good progress and that you are aware of the momentum of the work in GDAHP.

While you are clearly engaging with the climate change adaptation agenda, we are sure you are aware that there remains much still to do. We hope you will use this momentum to achieve your goals. CaDD takes your view of your current status into consideration when processing your results, and have set you a short-term target of achieving CaDD Response Level 3 (RL3). Please read on for an overview of what this means for GDAHP.

When selecting your target Response Level (RL), we have also taken into consideration the types of decisions you make and influence, and any requirements you may have for delivering sustainability with stakeholders.

While CaDD Response Level 3 is a very efficient level to be operating at, in the longer- term, you may need to review your target in the future (e.g. if you take any decisions with lifespans that last decades). However, we have set this target (RL3) for now, as any future capacity development will need to be built upon your existing strengths, which over time will develop into a solid foundation of RL3. We would expect GDAHP to wish to review it’s capacity status again in the future, and to set a higher target if you are taking and/or influencing decisions with consequences that last decades into the future, or you are managing assets and/or resources that are intended to be around for decades to come.

A description of your ‘Target Response Level’ is given in the section “How to Progress” (below).

GDAHPS Adaptive Capacity Profile



Current Capacity Level

Your CaDD Explorer responses tell us a lot about the level of capacity GDAHPS has. They provide us with enough information to make a meaningful estimate of your current CaDD Response Level. We then use this conclusion to assess your existing capacity (Current Response Level) against your required capacity level (Target Response Level). This allows us to review the most appropriate things GDAHPS could be doing to bridge any gap between these two positions - and so tailor the following guidance to GDAHPS's context. By ensuring that recommendations build upon your current response level (what GDAHPS already does well) we ensure that our CaDD guidance is aimed at progressing your capacity in a way that builds upon your existing strengths.

Your capacity is currently strong at: **Response Level 1 - 'Business as Usual'**

We are pleased to inform you that GDAHPS has already begun implementing some work at: **Response Level 2 - 'Stakeholder Responsive'**

Description of Response Level 1: 'Business as Usual'

Organisations at Response Level 1 (RL1) look at climate change adaptation through a short-term lens and often do not yet recognise that it has much relevance to them at all. This lack of engagement may not matter much when decisions are very short term or do not have consequences that may be affected by the impacts of climate change. However longer term decisions, and those with complex stakeholder structures, typically need access to higher levels of capacity than this. Many organisations are involved in decisions that have consequences for decades (e.g. service delivery, emergency response options, buildings, infrastructure, other fixed assets), and action on climate change is therefore needed. This current level of capacity is not sufficient to deal with this type of decision.

Organisations (or business units of organisations) at this level need to find new ways of working to make sure they are considering climate change appropriately. Due to likely resourcing issues, it is common that organisations (or business units) at this level will need to work in partnership with other organisations (or business units) to be able to grow their capacity.

How to Progress

As your Target Level is RL3, and you are currently between RL1 and RL2, GDAHP will have to first strengthen your capacity at Response Level 2: 'Stakeholder Responsive'. GDAHP will need to be strong at RL2 before moving on to focus resources on becoming proficient at your target of Response Level 3: 'Efficient management'.

Description of Response Level 2: 'Stakeholder Responsive'

Organisations at this level recognise the need to understand and comply with an often complex and rapidly changing set of conditions (e.g. policies, regulations and financial instruments) - while keeping up to date with stakeholder demands. These kinds of responses are often characterised by well-publicised communications that demonstrate that they have listened to and met stakeholder demands. At this response level, many people in the organisation, if not all, recognise that climate change is happening.

However, few have a clear understanding of how it applies to them, either in terms of their contribution to the problem or the likely impacts on their roles. Most decision-makers do not know enough about the issue to say how it will directly affect them, their decisions and/or areas of responsibility - other than in the most general terms. Climate information is not being actively considered or integrated in decision-making processes. Direct stakeholder pressures (from national government, regulators, financiers, customers, NGOs and civil society organisations, for example) have been recognised and registered. Usually this is done by a department or unit who is directly responsible for responding to these demands.

Moving Between the Response Levels

The types of things that can help GDAH take these actions to move from RL1 to RL2 include:

- Ensuring “taking action” on climate change adaptation is a requirement for being included in all programme or project proposals (e.g. financial incentives).
- Raising awareness of cost-saving development actions that indirectly build climate resilience (e.g. ‘no regrets’ solutions).
- Increasing awareness, including at senior management levels, about the need to consider climate change and how it may exacerbate other risks and have long-term cost implications, affecting the ability to meet development objectives.
- Training on basic climate science to build understanding of current climate variability, future climate change projections and the sources, formats, scales and uncertainties of climate information.
- Information about the ‘enabling environment’: where, and to whom, they can go for help and support e.g. local and international experts on climate impacts, adaptation and climate finance.
- A deeper analysis of organisation capacity, and the development and implementation of capacity building action plans. (please see www.cadd.global/deepdive).
- Good practice and inspiring examples of what other organisations are doing on climate change adaptation.

GDAHP's Next Steps

Please also see the annex for further descriptions of activity at each response level. This can also help you understand where to prioritise efforts.

The following section provides a list of the next steps that we recommend you start to implement, continue to develop, or continue to implement. These are specific to GDAHP and are produced from the answers you provided during your online CaDD Explorer review. These recommendations are as accurate as the answers you provided. We therefore invite you to use your own discretion when prioritising your plans of action based on these findings.

Each of the next step listed is allocated a corresponding CaDD Response Level. This is to help you prioritise implementation. You may find that some of the suggested next steps are higher than your target level. This is rare, but if you see any, then this a product of the fact that the CaDD system has identified some higher-level actions that would benefit your programme of activity, but that there are not enough of them to increase your overall target at this stage.

You may also have some steps that are below your current response level. These are steps that we have identified that will help reinforce your current response level and provide a more robust programme of activity in GDAHP.

We highly recommend that you prioritise the steps which are below and at your current response level. These should be undertaken before moving onto the actions that are above your current level (i.e. before focussing resources on reaching your target).

Climate vulnerable decisions

- Conduct a review to identify the decisions that affect the vulnerability of the organisation and key stakeholders to climate change risk over the life of its assets, investments and services
- Document those decisions
- Draw on the findings to develop adaptation plans, stakeholder engagement and adaptation practice to support mainstreaming into existing decision processes

(Once you are fully implementing this step it will contribute to your strengths at Response Level 3)

Risk Assessment

- Scope current and climate changed risks up to 10 years ahead
- Develop and implement a plan to address them

(Once you are fully implementing this step it will contribute to your strengths at Response Level 3)

Prioritisation

- Review remaining areas where action is needed and amend priorities accordingly
- Identify gaps and update plans accordingly
- Implement the plans
- Include a review process to update plans in the light of implementation experience and as new understanding about impacts and risks emerges

(Once you are fully implementing this step it will contribute to your strengths at Response Level 3)

Climate impacts addressed in formal action planning

- Assess which plans need to be developed to enable proportionate management of the organisation's climate change impact over the lifetime of the organisation's climate change vulnerable decisions
- Identify what impact management needs to be added to which plan
- Make those additions to the relevant plans

(Once you are fully implementing this step it will contribute to your strengths at Response Level 3)

Designated staff time and budget

- Identify any gaps in human resources that are needed to continue to match the roles and responsibilities required to deliver ongoing adaptation actions
- Identify the necessary actions to provide proportionate staffing to deliver ongoing adaptation actions
- Develop and implement a plan to fill these human resource gaps

(Once you are fully implementing this step it will contribute to your strengths at Response Level 3)

Mainstream procedures to address extreme weather and climate adaptation

- Review current management processes
- Identify gaps where additional processes would enable more effective and proportionate adaptation and update management processes to enable those outcomes

(This activity currently forms part of your strength at Response Level 3)

Climate change resilient procurement

- Complete development of plans to create procurement procedures that protect, or at least insure against, extreme weather
- Implement those plans
- Establish regular reviews of climate resilience offered by procurement processes and update as required

(Once you are fully implementing this step it will contribute to your strengths at Response Level 3)

Recognising Agents of Change

- Review plans for the recognition of champions to ensure they are in proportion with adaptation needs
- Develop and implement a plan to address any gaps in capability
- Develop a succession plan to reduce disruption when individual champions move on

(Once you are fully implementing this step it will contribute to your strengths at Response Level 3)

Action-focused learning & learning to tackle constraints (sometimes called barriers) to delivering resilience to climate change

- Get clear about what you want to learn (have you a process for identifying learning questions and/or knowing where gaps in knowledge are)
- Identify what is known and what can be collected around specific questions/themes (including internal knowledge, expertise and experience and external knowledge, expertise, and experience)
- Identify and make available the resources (time, human, financial, expert) space and structures/processes to contextualize and make sense of relevant knowledge (tacit and

explicit) that are proportionate to the level of risk, motivations and requirements to address the constraints to managing those risks

- Identify opportunities to apply knowledge
- Provide appropriate support for/structures/processes for incorporation of this learning-based action into operational plans
- Create effective processes to support for reflection on this action and for identifying opportunities for replicability in other areas of the company or further enquiry/revision and further improvement
- Enable relevant staff to confidently locate external information on climate risk and have shared internal platforms capture and store this and information about internal adaptation processes.

(Once you are fully implementing this step it will contribute to your strengths at Response Level 3)

Training

- Review opportunities to update the training programme to support learning requirements as knowledge needs change

(This activity currently forms part of your strength at Response Level 3)

External Influence

- Review the stakeholders not previously identified that:
 - affect the options available for climate vulnerable decisions
 - are impacted by the organisation's adaptation actions, particularly those at risk of harm
- Develop and implement a proportionate engagement plan for stakeholders for the organisation's climate vulnerable decisions

(Once you are fully implementing this step it will contribute to your strengths at Response Level 4)

Influencing or supporting other organisations

- Continue to review the scope and coherence of support to others, and update as required

(Once you have fully engaged to be able to manage systemic, uncertain and emergent risk with relevant stakeholder, this activity it will contribute to your strengths at Response Level 4)

Description of Response Level 3: 'Efficient Management'

Organisations at this level begin to take responsibility for their own climate change adaptation programmes. They begin to put in place operational processes, quantify and prioritise issues related to climate change, and design and deliver effective management programmes for climate change adaptation. The 'business case' for acting on climate change becomes much clearer.

At this level, leaders have made some well-informed official statements on climate change. They have approved (or are in the process of approving) a strategy or policy which requires continuous improvement on climate change issues and have authorised a programme of action to reach this aim. Importantly, this shows people that taking action on climate change does not conflict with the organisation's development goals and priorities.

At RL3, high level information on climate trends informs actions, however there are still barriers to interpreting and using more detailed climate information in adaptation decision-making.

The authority to take action on climate change is clearly delegated to specific people, probably quite a long way down the organisation, but leaders may begin to get personally involved. For example, leaders may read and comment on periodic climate change adaptation reports or make a speech in favour of taking action on climate change.

The types of things that can help GDAH take these actions to move from RL2 to RL3 include:

- Awareness-raising initiatives focusing on the need to consider climate change and how it may exacerbate other risks, affecting the ability to meet the organisation's responsibilities, goals and objectives
- Building 'receptivity', particularly in senior management and senior decision-makers, to the value of climate information in decision-making
- Guidance on how to recognise which decisions the organisation is taking that need to take account of climate change impacts.
- Training on how to access and use climate science and what other information is available (variables, time horizons, spatial scales)
- Information about where people can go for help and support (which organisations, resources, financial services, etc)
- Good practice and inspiring examples of what other organisations are doing
- Advice on training and professionalization
- Professional standards
- Benchmarking programmes
- Mentoring and training of climate change champions
- Invitations to participate in scenarios and implications exercises
- Awareness raising / knowledge sharing events targeted at senior managers and decision-makers.
- A deeper analysis of organisation capacity, and the development and implementation of capacity building action plans. (please see www.cadd.global/deepdive)

Appendix 1: What is CaDD Explorer?

CaDD™ is an acronym for 'Capacity Diagnosis & Development'. CaDD Explorer™ is a web-based tool for measuring and providing tailored guidance on an organisation's capability to manage climate change risks and opportunities. The CaDD analysis uses a suite of proven metrics to this.

The CaDD metrics have been developed through work with over 2000 organisations over the past decade. It has been extensively peer reviewed by a number of external expert organisations and comes very highly recommended.

CaDD Explorer uses a maturity index to report both the current level of capacity (Response Level) GDAHP has to address your climate change challenges and the Response Level you will need to be operating effectively manage these challenges into the future. CaDD recognises six measurable response levels. Capacity increases with each Response Level (RL). Each Response Level can only become robust if it is built upon the solid foundation of the Response Level below it. Not all organisations need to be able to operate at higher levels, though many do. It is essential to establish which level GDAHP is already working at and / or the level of response you will need, as different response levels benefit from very different types of action and support.



Fig 1. Six CaDD Response Levels

This CaDD Explorer report indicates which types of action will most effectively move GDAHP from its current Response Level to its Required Response Level.

Reactive: Early activity (Response Level 2)

Strategic decisions	Decision making is reactive to either recent extreme weather events or the requirements of key stakeholders to show that climate change risks are being managed. There is limited awareness of the kinds of climate impacts that could be expected to disrupt organisational practices on a number of levels (staff, operations, supply chains). Awareness grows as adaptation practice grows.
Expertise & knowledge	Organisations are starting to develop systems to identify the skills needed to act on climate change. Also starting to identify trusted sources of information (people, websites, organisations) and support networks. Key people are strengthening their understanding of the issue and can identify who has relevant expertise to support the organisation.
Leadership & governance	Leaders are starting to acknowledge that climate change has relevance to organisational practices. There may be approval of general policy statements which enable others in the organisation to act on climate issues, and general discussion of climate change at the organisation's highest level, but policy is at an early stage.
Roles & responsibilities	Growing awareness of the many ways in which the organisation might be affected by a changing climate and the consequences of this for different areas of the organisation e.g. HR, investment, asset maintenance, operations, supply chains. Starting to respond, informed by similar organisations, regulations or external guidance.
Resources	As awareness of the impact of a changing climate on the organisational activities across the business grows there is increased sense of the scale of the human and financial resource needed to address it adequately.
Working with others	Organisations respond to external drivers to engage with climate change e.g., through stakeholder requests or legal requirements. Organisations follow stated guidelines or stakeholder. At this level organisations are yet to understand in depth how their organisational practice will be impacted by climate change.
Continuous Learning	Learning focuses on core business activities. Improving climate change knowledge and practice is considered as a good thing, but there are no systems in place to make it happen. People who want to undertake training in this area have to organise it themselves and do it in their own time, and may even need to fund it themselves.

Proactive: Mainstreaming (Response Level 3)

Strategic decisions	Organisations become pro-active in managing their climate risks. "Climate change resilience becomes an integral consideration in all relevant 'business as usual' decisions. They understand that this enhances the likelihood of climate vulnerable decisions achieving their objectives in a cost effective way. They also recognise the "decision points" are time sensitive moments when adaptation can be made efficiently.
Expertise & knowledge	Managers formally identify the skills and expertise they need to deal with climate change issues in basic operations. There are systems in place to acquire or develop the expertise needed, either by training staff or by hiring it in, where necessary. There may be some blind spots in knowledge and the risk of failing to realise the long-term negative consequences of some decisions
Leadership & governance	Leaders are beginning to treat climate change as a mainstream activity e.g. by setting targets, by delegating authority and agreeing a programme of action. Staff feel confident that they would be backed up if acting in line with these. Activity is usually delegated away from senior staff but leaders engage in periodic reviews and are visible in supporting action both within the organisation and more widely.
Roles & responsibilities	Organisations develop formal roles and responsibilities across the organisation tailored to specific parts of the business. The need for coordination and a comprehensive plans of action is recognised as well as a role to ensure continuous improvement of action plans and convening staff to revisit, reflect and revise the plan over time based on experience.
Resources	Financial and human resources are target towards ensuring that climate change resilience is being appropriately factored into all aspects of business as usual. There is recognition that actions being implemented will require resources to be diverted from other areas of business to ensure the risks from climate change impacts is integral to resource plans.
Working with others	Organisations recognise the value of collaborating with key people across all relevant business units. It systematically identifies stakeholders and communicates with them before taking decisions. The organisation follows established patterns of good practice, for instance, by following stakeholder engagement codes, which make it easy for stakeholders to express an opinion.
Continuous Learning	Organisations are committed to reviewing practice to improve future performance. Project results are measured against intentions and there is a willingness to learn from experts and to assess performance through benchmarking. A process of feedback and auditing takes place after a project has been completed.

Innovation: Advanced (Response Level 4 & 5)

Strategic decisions	<p>Decisions need to consider direct and indirect consequences of climate change impacts. Organisations at this level of capacity innovate to find the new ways of working. Once those lessons are learned they become mainstreamed. In doing so they recognise that they will need to keep innovating their decision making process as climate risks and opportunities change over time.</p>
Expertise & knowledge	<p>Organisations recognise the need to reassess practice in a changing climate and look for people/ organisations able to disrupt existing practice and seek innovative alternatives. They routinely apply expert knowledge in major decisions, and understand expertise limitations and 'unknown unknowns'. A variety of cutting-edge expertise is essential for organisational planning. As some decisions are irreversible, expertise is sought early.</p>
Leadership & governance	<p>High-level managers are aware of how climate change will impact staff, core activities and business continuity. They take steps to improve their personal knowledge of climate change and identify where the current responses fall short. Exploration and innovation is encouraged. Leaders advocate breakthrough projects and may coordinate action outside the boundaries of their organisation.</p>
Roles & responsibilities	<p>In addition to activity and previous levels, there is clear coordination of activity on climate change across all levels of the organisation. With recognition of the critical importance of climate change to the sustainability of the organisation roles and responsibilities are resourced and supported through e.g. ongoing professional development. Internal fora for peer knowledge sharing is also supported and recognised.</p>
Resources	<p>At this high level of capacity, there is recognition that "business as usual" activities are not going to be enough. Resources are therefore targeted not only to ensure that business as usual activities are fully resourced, but that new learning on how to do different things is resourced. A bias towards innovation is increasingly recognised as necessary.</p>
Working with others	<p>Networks of stakeholders are developed to act together and to innovate on issues of common concern - often over years. Engagement processes are creative and tailored to suit the respective capacity and culture of stakeholder groups. Organisations understand that success depends upon the capacity of other actors in its network. It therefore increasingly works to develop partners' capacity to act.</p>
Continuous Learning	<p>Increasing focus on learning-by-doing, rapid feedback and leading edge practice to accelerate innovation. Organisations systematically confront internal factors limiting change. Staff are encouraged to think critically about existing practices, test out and share new ideas. Learning is captured and communicated effectively across the organisation with learning systems that apply across organisational boundaries.</p>