CLIMATE-RELATED
DISCLOSURE 2023

PĀMU™
FARMS OF
NEW ZEALAND

Preparing for a changing climate

From our Chair and Chief Executive

Pāmu is firmly focused on running a profitable and efficient business with an emphasis on sustainability, innovation and being a safe, responsible employer.

As farming is a biologically based business that is outdoors year round, climate change poses a large, multi-faceted challenge to the performance of Pāmu and Aotearoa New Zealand's pastoral farms. Impacts are being felt by our people, operations and supply chains now, and these impacts are only going to increase in the future. It is crucial we put in place and build appropriate governance, risk and strategy responses.

Pāmu is committed to reducing our climate impact by decreasing our greenhouse gas (GHG) emissions and strengthening climate resilience through adaptation. Our practices are evolving and include a continuing focus on adapting land use for the changing climate, setting a science based reduction target, ensuring climate risk mitigation is embedded in the organisation and responding to market and consumer requirements.

Pāmu has voluntarily committed to producing climate-related disclosures in line with the Financial Sector (Climate-related Disclosures and Other Matters) Amendment Act 2021. Although Pāmu is not required to report using these standards, we believe they provide a strong framework for assessing and incorporating climate risks and opportunities and ensuring the business is set up to respond accordingly.

Like other farmers, Pāmu faces significant challenges in reducing emissions, hence our strong focus on collaborating with others to identify technologies and practices that will enable this to be achieved efficiently. We continue to work with research agencies, suppliers and customers to test and trial novel practices that could help the sector achieve emissions reduction targets.

We are pleased to provide our first climate-related disclosure report and contribute to the growing knowledge base and actions that are helping ensure Aotearoa New Zealand's agriculture continues to thrive.

Dr Warren Parker
Chair

Mark Leslie
Chief Executive

Dr Warren Parker and Mark Leslie

Governance

Governance body oversight

The Pāmu Board of Directors is ultimately responsible for protecting and enhancing the value of our company assets. Climate change is one of the most significant challenges facing society and will raise many risks across the business activities of Pāmu and accordingly is a high priority for the Board in developing the company's strategic response, policy settings and capability (including that of directors) and ensuring monitoring and reporting measures are implemented to confirm its effectiveness.

Effective risk management practices are an important element of governance and decision making at Pāmu. The Board is mindful that an overly conservative stance on risk avoidance can preclude genuine opportunities to improve the business. The Board has ownership over the risk management framework and sets the risk appetite statement (RAS) for Pāmu.

The Audit and Risk Committee assists the Board in discharging its risk management responsibilities. The Committee's role is to review and oversee enterprise risk management, internal controls and processes for identifying strategic risks (including those inherent in opportunities). The Committee provides recommendations on the risk management framework and RAS to the Board.

The Board accesses expertise on climate-related issues from its own internal capability, having members with expertise in climate change mitigation, research and development, and climate change policy, as well as from external sources. Climate change issues, including GHG accounting, and sustainability regularly feature on Board agendas. The Board also assesses its skills and practices relative to best-practice guides for environmental, social and governance reporting, including, for example, from COP27 with respect to the International Sustainability Standards Board, part of the International Financial Reporting Standards.

External sources include ongoing conversations with government organisations (Climate Change Commission, He Waka Eke Noa partnership, Ministry for Primary Industries), offsite forums for management and operational teams, involvement with industry bodies, including Beef + Lamb New Zealand and DairyNZ, and the Pāmu Sustainability Panel (more below).

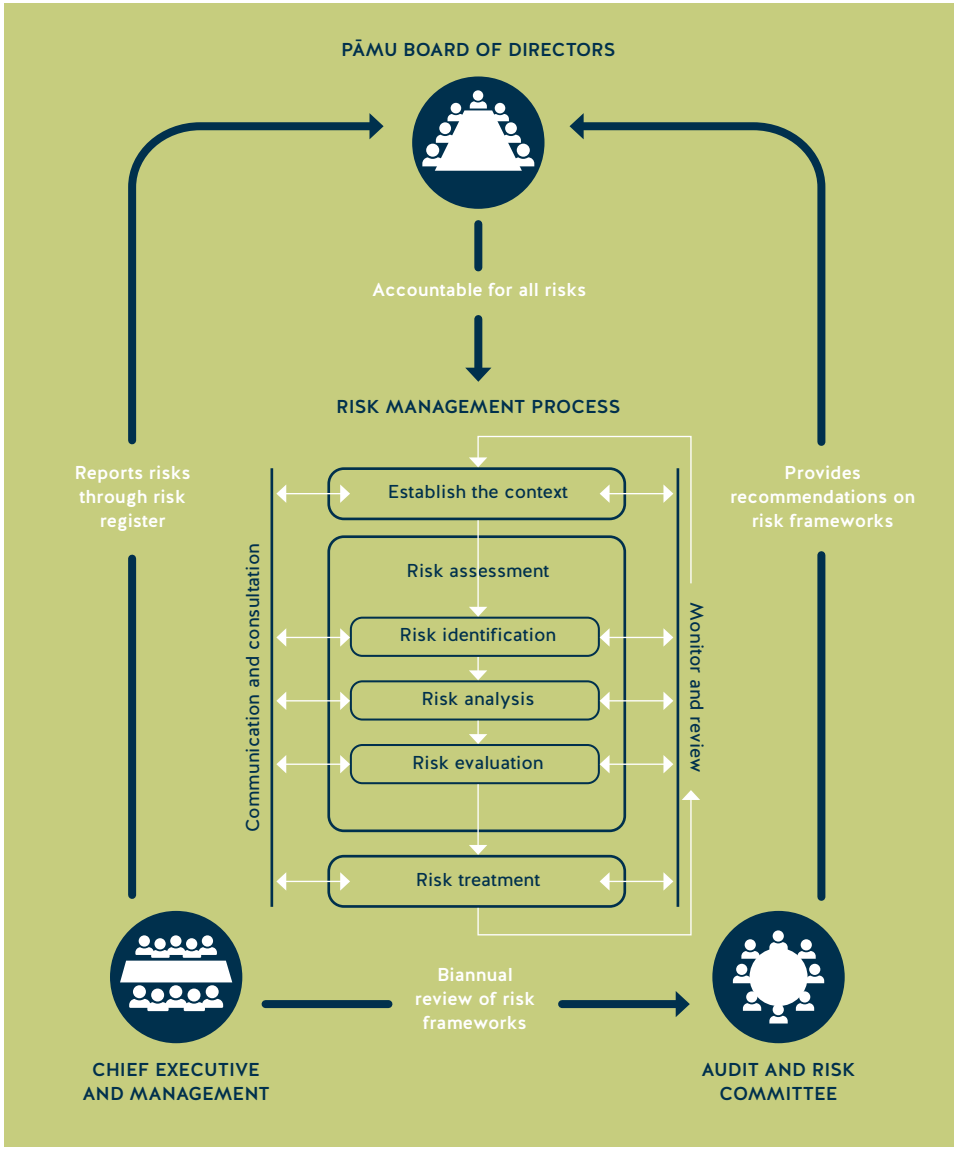


Figure 1: Pāmu risk approach.

Management's role

Role	Scope
Leadership Team	• Accountable for ensuring the business is identifying, assessing and monitoring climate-related risks and opportunities in accordance with the Pāmu enterprise risk management approach, Risk Management Policy, Sustainability Plan and other relevant business key performance indicators in the Business Plan.
Chief Sustainability and Risk Officer (CSRO)	• Accountable for enterprise risk management and climate-related approach. • Ensures the Board is engaged on risk management and climate-related issues and responses.
Head of Sustainability	• Responsible for managing climate change issues and actions. • Quarterly reporting to the leadership team and biannual reporting to the Board.
Chief Operations Officer	• Drives climate change mitigations and adaptation actions into the business operations.

Sustainability Panel

An external Sustainability Panel was established in 2022.

The role of the Panel is to advise on sustainability issues and topics supporting Pāmu in our purpose of enriching our land, our people and the future of food and fibre for Aotearoa New Zealand. The Panel offers strategic and future-oriented insights and perspectives to the Board and management.

The Panel is made up of six members: two Pāmu Board members and four independent members. It is attended by the CEO, CSRO and Head of Sustainability and reports insights and recommendations to the Board periodically.

The Panel offers Aotearoa New Zealand and international perspectives to:

- constructively challenge
- bring new information, insights or points of view
- provide advice, guidance and feedback
- work with Pāmu to resolve specific issues
- identify risks, opportunities, innovations and emerging best practice
- advocate to and with internal and external stakeholders.

Strategy

Current impacts and financial impacts

Pāmu operations impact climate change directly through agricultural-related emissions, including biogenic methane, nitrous oxide and carbon dioxide, and indirectly through its value chain choices (see the metrics and targets section on page 17). Pāmu operations are impacted by climate change directly through the changing physical climate and indirectly through changing markets, society and policy responses.

Impact of climate change on Pāmu

These impacts of climate change on our farms, people and animals are not evenly distributed. The breadth and diversity of farm types means some are more exposed while others can harness opportunities. Likewise, market and transitional changes from climate change impact Pāmu differently across the dairy, livestock, forestry and horticulture sectors.

Physical impacts

Examples include:

- increasing pests, weeds and disease coming into Northland and existing diseases (such as facial eczema) moving southwards
- climate-related events disrupting infrastructure and access to processors
- increased pasture growth in some regions due to better growing conditions
- heat stress on animals and people
- Cyclone Gabrielle's multiple effects on farm systems, people, animal welfare and supply chain.

Market/regulatory impacts

Examples include:

- government regulations and policy, including the proposal to price agricultural emissions and continuing adjustments to Emissions Trading Scheme (ETS) settings
- new market requirements such as dairy customers required adherence to science-based targets and increased transparency.

Financial impacts

Examples include:

- changes to the use and price of offsets (voluntary and ETS) – carbon sequestration from vegetation can be a valid way for organisations to balance emissions through offsetting and our diverse portfolio and forestry capability provides an ability to continue to participate and sell offsets/NZUs in the ETS and, depending on future markets and regulations, participate in the voluntary credits marketplace
- impacts on operations, access to processors and assets following climatic events
- new customers looking for sustainable products.

Scenario analysis

Initial scenario analysis has been taken from a collaborative sector initiative – the Agricultural Sector Climate Change Scenarios and Adaptation Roadmap led by The Aotearoa Circle. Pāmu was an active participant in this initiative, which developed three scenarios for the sector to use based on data from the Climate Commission – these included warming scenarios of 1.5°C 2°C and 3°C.

The full reports, including more detailed descriptions of the climate scenarios, can be found on The Aotearoa Circle **website**.

Over the coming year, Pāmu will consider how best to incorporate these scenarios into our Climate Transition Plan and add any further scenarios that may be necessary for us to consider responses and changes to the business strategy and risk approach.

Tū-ā-pae, stance in order, step in succession (orderly)

Tū-ā-pae represents a world defined by a smooth transition to net zero CO_2 by 2050. Global warming is limited to 1.5°C through stringent climate policies and innovation. Tū-ā-pae assumes climate policies are introduced immediately and become gradually more stringent as 2050 looms. Both physical and transition risks are relatively subdued. Achieving net zero by 2050 reflects an ambitious mitigation scenario.

Net zero 2050

Tū-ā-hopo, misstep (disorderly)

Tū-ā-hopo represents a world with little policy action until after 2030 after which strong, rapid action is implemented to limit warming to 2°C. In Tū-ā-hopo, countries and territories use fossil-fuel heavy policies to recover from Covid-19, so emissions increase, and nationally determined contributions are not met. It is only after 2030 that new climate change policies are introduced, but not all countries take equal action. Consequently, physical and transition risks are higher. This is a costly and disruptive transition.

Delayed transition

Tū-ā-tapape, faltered step, to fall (hothouse)

Tū-ā-tapape scenario describes a world in which emissions continue to rise unabated as no additional climate policies are introduced. Fossil fuel use continues to increase, and so global CO_2 emissions continue to rise and warming is expected to reach 3°C higher by 2080. The physical impact of climate change is severe. There are irreversible changes such as ice sheet loss and sea level rise. Adapting to climate change has become the priority.

Current policies

Figure 2: Three scenarios based on warming of 1.5°C, 2°C and 3°C. (Source: The Aotearoa Circle)

Climate-related risks and opportunities

Pāmu has divided risk into two types – physical and transition – as defined in the External Reporting Board (XRB) climate standards staff guidance:[1]

Physical risks and opportunities are those resulting from climate change itself, including via temperature, rainfall, storms, extreme events and sea-level rise.

Transition risks and opportunities are those resulting from the economic, regulatory, social, technological and legal responses to climate change.

Significant agri-sector drivers of change and physical/transitional risks were identified through The Aotearoa Circle work and are shown in Figure 3. In parallel, work has been under way to inform our understanding of physical climate risk, vulnerabilities and potential impacts specific to each farm. This climate risk assessment is outlined further in the case study on page 9.

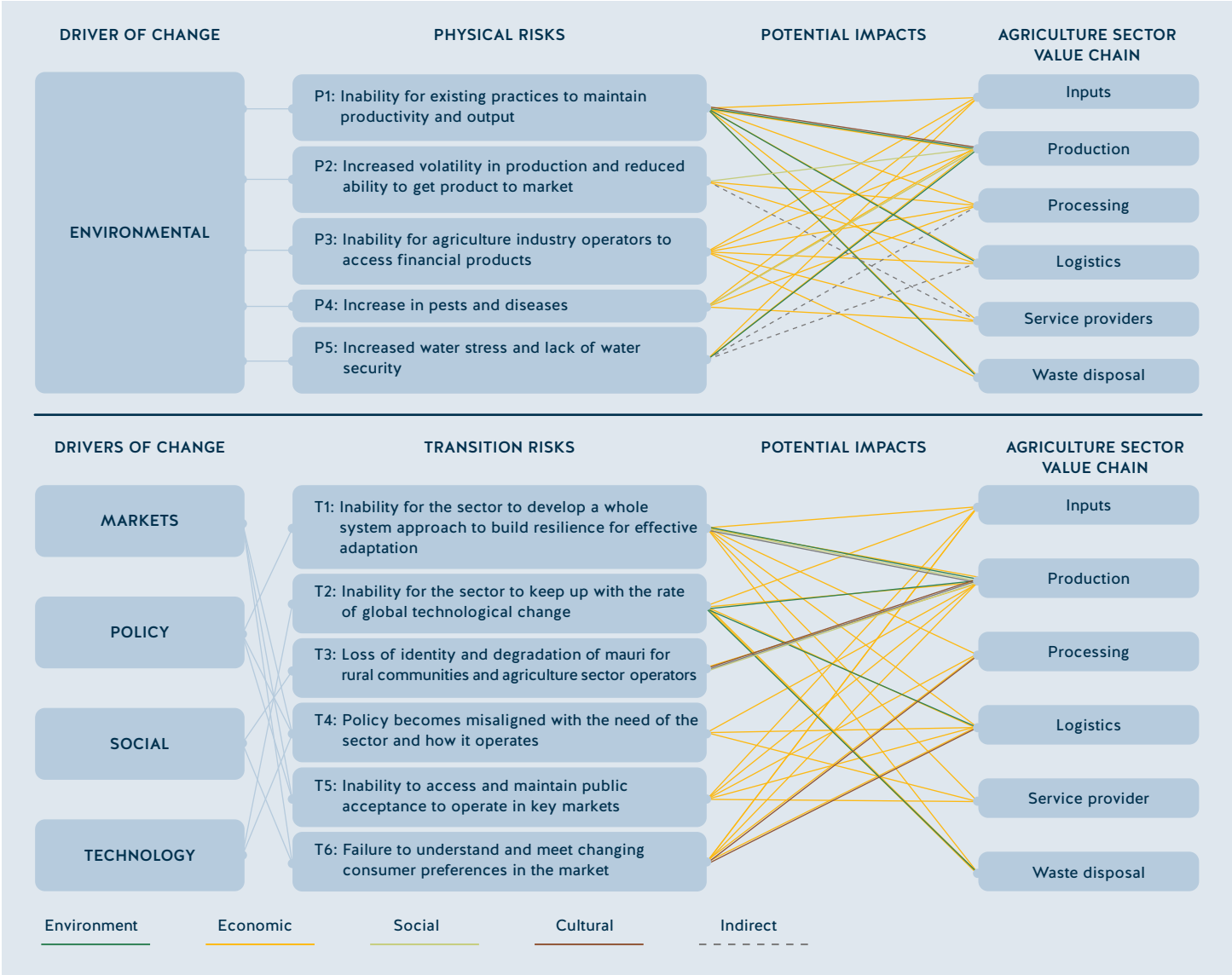


Figure 3: Top agricultural sector risks identified by The Aotearoa Circle workstream. (Source: The Aotearoa Circle)

[1] www.xrb.govt.nz/standards/climate-related-disclosures/resources

Physical risks

Pāmu operations are highly exposed to physical climate risks due to the direct reliance of agricultural production on climate systems. Extreme weather events can cause crop failures, death and injury of livestock or significant reductions in yield. Increased severity and frequency of extreme weather events may result in financial losses at the farm level. Business continuity planning for extreme weather events forms a part of ongoing farm management.

Our geographic spread of farms, coupled with land-use change and more advanced farming systems, is intended to build resilience into the business, making Pāmu less susceptible to climatic effects (drought or flooding) and environmental effects (pest and disease incursion). When an adverse climatic event occurs in one location, the company will often seek to relocate livestock to other Pāmu properties. The geographic spread of our forestry assets offers some mitigation against risks associated with forestry such as fire and disease.

Case study

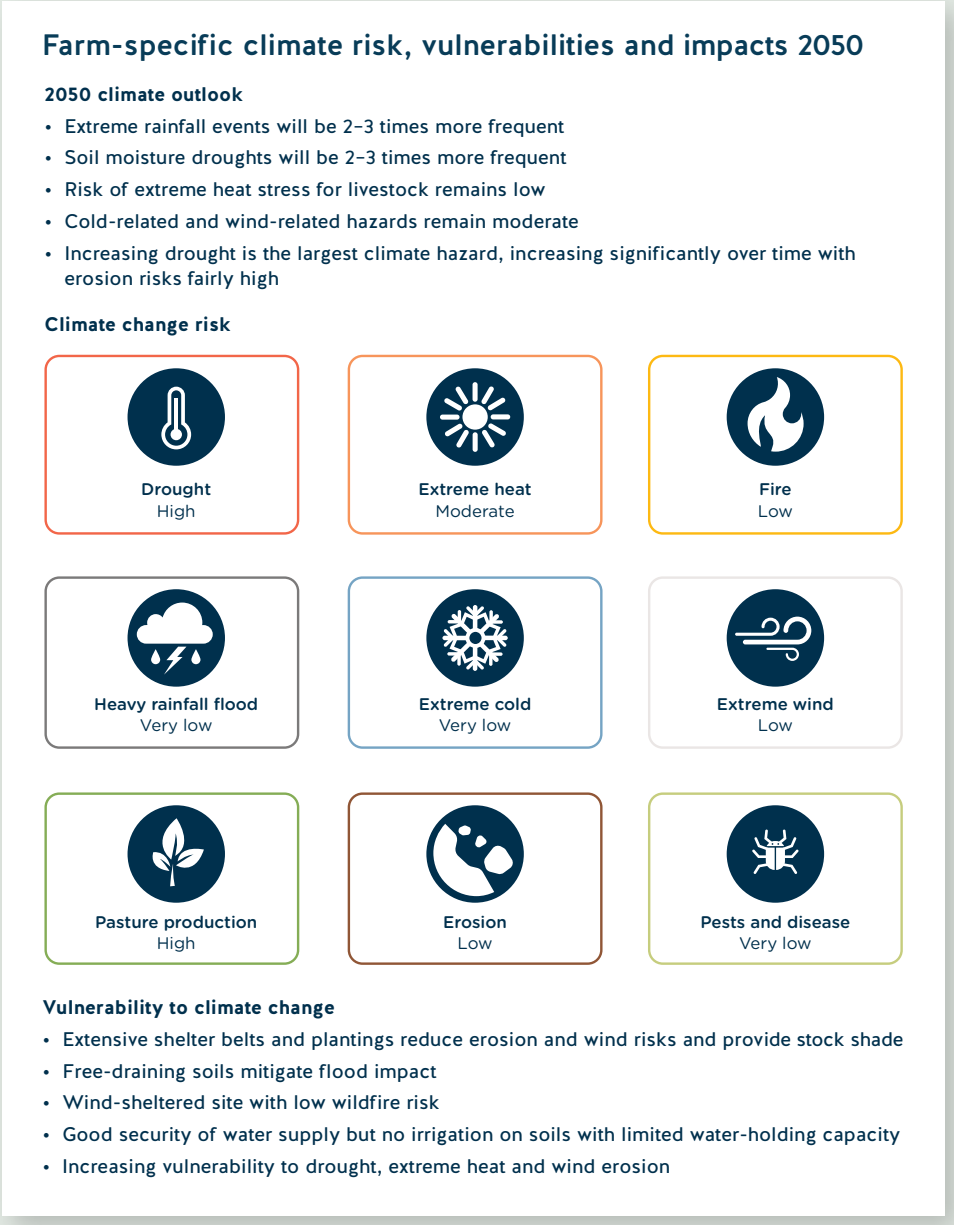
Farm-specific climate risk assessments

Pāmu commissioned data science experts Lynker Analytics and New Zealand experts in extreme weather and climate change to help understand specific farm vulnerabilities. This research highlights the likely land use, production and performance impacts on each farm under climate change using a +1.8°C by 2050 scenario. The study involved characterisation, diagnosis and projection of risks or impacts of environmental change on all farms, systems, land use and infrastructure.

A matrix of risk for each farm along with a technical report outlining data inputs, scientific method, risk analysis and summary data is part of the delivery, and farm data and planning advice has been provided to Pāmu for internal use or ongoing modelling and adaptive planning. An example summary sheet is shown on the right.

In the coming year, this work will be considered in multiple programmes, including integrated farm plans, asset management plans, climate adaptation plans, risk reporting, budgeting and forecasting, health and safety planning and incident management and response planning.

The study has helped identify which farms have greater risks and opportunities from climate change in the near and medium term. These farms will be the initial focus of adaptation planning. Working with managers and farm teams, this is a major step forward in farm-by-farm resilience planning.



Example summary sheet.

Transition impacts

There are challenges in assessing climate-related risks due to uncertainty in the timing and nature of climate transitions. The biggest transition impacts are likely to occur from a failure to adapt fast enough to any physical, market or financial changes resulting from climate change. It will be important for Pāmu to remain cognisant of accelerating changes and monitor their costs and impacts. Continuing to proactively assess and refine governance, strategy and risk responses will help mitigate negative transition impacts.

Opportunities

The physical and transitional impacts of climate change will require more diverse and efficient production processes. This will bring it's own opportunities.

Efficiency and value chain collaboration

We have strong collaborative relationships with our value chain partners, including processors and retailers. We need to maintain a focus on sustainability and efficiency and also ensure our communication is open, action oriented and transparent.

Changing markets

Shifting consumer preferences and demand for low-carbon products also creates an opportunity for diversification. For example, recent ventures into avocados at our Northland operations have seen increased revenue and more appropriate use of land than dairy operations. The changing climate in Northland opens the potential for land-use change to alternative crops. All new horticultural developments are established with flexibility in design to allow for planting of different crops should best land use shift from existing practices.

Sustainability leadership

Given our unique position as a state-owned enterprise (SOE), there is a leadership opportunity for Pāmu in Aotearoa New Zealand's agricultural sector. We were the first SOE to have signed a sustainability-linked loan (SLL) with Westpac, the largest in the agricultural sector. As part of this commitment we are rolling out a Sustainable Farm Performance Programme (SFPP) – a holistic measurement tool to assist our farms with sustainability – identifying risks and opportunities, enabling reflection, shared analysis and planning.

Data tools

Our climate change response will be assisted by the use of digital tools to share information, lower operating costs and lift productivity under way across dairy and livestock operations. Use of these tools also strengthens farm decision making and information sharing with our partners.

Sequestration

Income from forest sequestered carbon credits is an important and growing asset on the company's balance sheet. These are relatively liquid and provide funds for further tree planting and farm improvements that will mitigate climate change impacts.

Pāmu is developing internal expertise in managing its forest carbon portfolio for both mitigation and adaptation purposes. Future work is focusing on the potential to also utilise the voluntary market to reward protection and restoration of native forests (and associated biodiversity) and wetlands.

Pāmu onfarm sequestration can also allow further benefit through the use of removals to meet net emissions reduction targets set through the Science Based Target initiative's forest, land and agricultural (FLAG) guidance. Ongoing work into the role of valuing ecosystems services supports this opportunity.

Anticipated impacts and financial impacts

Existing identified impacts outlined above are expected to increase as climate change impacts become more intense and public sentiment and awareness increases.

Pāmu will undertake more research around anticipated impacts, including financial impacts, in coming years. We expect ongoing financial implications of both reduction and mitigation activities.

Case study

Cyclone Gabrielle – "It was a hell of a thing"

Being outdoors and in remote areas, our people are also impacted by climate change. Cyclone Gabrielle, a climate-related event, significantly impacted our East Coast farms. Strengthening our climate resilience includes a focus on our people.

Like many in the region, Wharekopae Farm was heavily impacted by Cyclone Gabrielle. The following is an extract from Farm Manager Bart Cheetham's address to the Pāmu Farm Managers' Conference.

"*On 13 February this year, we got demolished by Cyclone Gabrielle.*

Me and my team, we were cut off from each other. The two separate farms were isolated from each other because the road was gone. You couldn't go anywhere. All the infrastructure was demoed. We had a parasite outbreak at the same time, and we were desperately trying to get out around on the farm to save lambs.

At the same time, while all that was going on, no one knew whether we were dead or alive. All comms were gone. Everything was down everywhere. I think the nation was largely in a state of shock. We certainly were.

But unbeknownst to us, there was a heap of people working behind the scenes to get to us to make sure we were all right, check in on our welfare, and see what we needed.

It was probably the most humbling experience of my life, really, when the helicopters started rolling in and boxes of food were coming off, generators, gas bottles, and everything else. You'd get one of those plastic bins from Mitre 10 and it had been filled up by people who didn't know you and you didn't know them, and they had thought of everything that we could've possibly needed in that moment. It was incredible. Just trying to acknowledge those people, I still don't even know who was all involved.

It was probably the most humbling experience of my life, really, when the helicopters started rolling in ...

Business Manager Ross Shepherd was the first man on the ground, who arrived in a helicopter. I was away trying to get lambs up to some yards. On the radio, I could hear Ross's voice, and he's an unflappable rooster Ross, but he was clearly quite emotional from what he'd seen. The bridge was gone – it was traumatic up there, and a million slips all the way. He'd obviously done the circuit, been to Parikanapa, Tutamoe and all the other teams.

They dropped off a cell phone that was already preloaded with everything and an InReach so we could talk to the family in Hawke's Bay and find out what was happening there. It probably made it worse if I'm honest, but at least we started to communicate.

Then Mark Leslie our CEO was there the next day with some supplies and a big smile. "What'dya need?" Like, what else could you ask for?!

It was a hell of a thing. That feeling of love and support coming from across the void was remarkable. The fact that Pāmu was just there, just showed up when we needed them. I'm sure that'll carry us a long way in these communities for a long time.

I want to express what it meant to be on the other side of that. I feel I speak for everyone who was involved, it wasn't just us, it was all the teams on the East Coast really, all the families, even the wider community.

Since then, of course, we've had more and more rain. This just seems to be the pattern that we're in at the moment. We are hoping eventually, it'll give up and go back to the West Coast where it belongs."

Cyclones Hale and Gabrielle hit 24 Pāmu farms with losses in pasture, livestock, forestry and infrastructure, mainly in the East Coast region. Around $3 million of costs have been incurred to reinstate infrastructure and repair or replace damaged assets. It will continue to impact our bottom line as we reinstate infrastructure and work to regrass lost pasture, repair or replace damaged fences, clear slips and maintain farm tracks.

Transition plan aspects of strategy

To reduce the risks and impacts of climate change, we expect there will need to be shifts in land use. Pāmu has also initiated a climate change workstream. This has involved the development of an Emissions Reduction and Adaptation Plan. Consideration will be given to the role of climate transition plans once the XRB releases further guidance.

Emissions Reduction and Adaptation Plan

The plan ensures Pāmu has actions in place to reduce our environmental impact as well as meet business, shareholder[2] and customer expectations relating to emissions reduction and climate resilience.

The plan is intended to assist with accelerating work in reducing net emissions, reducing emissions intensity per product and increasing sequestration to achieve the science-based target (currently in draft form) that Pāmu has committed to achieving.

With the understanding that the plan will be dynamic, this first version focuses on existing work that has known co-benefits of emissions reduction and climate resilience and looks to accelerate these. Subsequent versions of this plan may place more of an emphasis on step changes – especially as new understanding, science and opportunities arise.

The plan incorporates Pāmu climate action principles: collaborate, make an impact and embed actions.

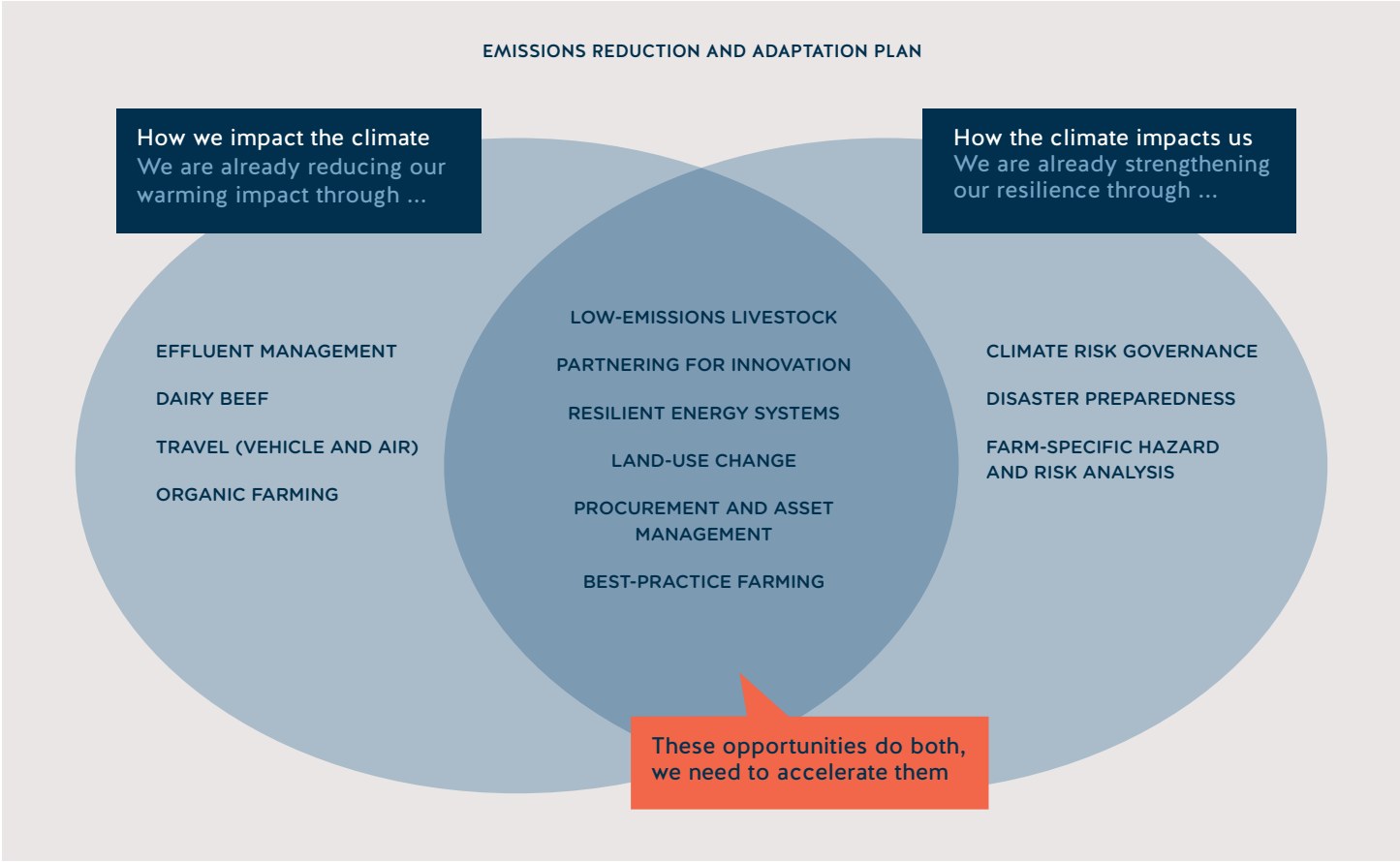


Figure 4: Pāmu Emissions Reduction and Adaptation Plan.

[2] Including Action 13.4.2 of the government's emissions reduction plan requiring Pāmu to accelerate work in emissions reduction and demonstrate sector leadership.

Table 1: Summary of Emissions Reduction and Adaptation Plan initiatives.

Initiative	Summary	Core benefits
1. Low-emissions livestock	With Focus Genetics, accelerating methane measurement and feed efficiency work for sheep and beef genetics and improving desirable low emissions and heat tolerance values. For example, the $10.5 million **Sheep of the Future** programme aims to select animals that are better adapted to the changing environment through disease and heat tolerance while maintaining productive performance and lowering emissions.	• Accelerating gross emissions reduction • Sector leadership • Climate resilience
2. Partnering for innovation	Leveraging the size, scale and breadth of Pāmu to facilitate R&D that needs multi-farm testing before broader roll-out. In some cases land-use change to lower emissions will involve commercial partnerships to access intellectual property, expertise and capital. Emissions reduction and climate resilience criteria are in the Pāmu Innovation Strategy.	• Accelerating emissions reduction • Sector partnership
3. Resilient energy systems	Increasing self-sufficiency on farms with micro-generation coupled with less energy use to make farms more resilient and result in lower carbon emissions and ongoing savings in operating expenses. Dwellings still meet workers' and families' needs when normal energy supply is disrupted. This includes lighting, cooking, showering and communications. First step is to identify which locations and infrastructure (electric fences, communication gear, milking sheds) benefit most from this approach (cost/benefit analysis based on electricity tariffs, vulnerability to electricity disruption, solar gain etc.).	• Climate resilience • Staff and animal welfare
4. Land-use change	Continuing to create diversified and resilient income streams and mitigate climate change impacts through land-use change. This involves developing a more nuanced understanding of land class and consideration of the potential for multi-use of land, which may include (but not limited to) different pastoral farming systems, horticulture, production forestry or native forests. Included in this is a stronger consideration of incorporating Nature Based Solutions (where possible) into farming systems. The co-benefits of such an approach include erosion control, freshwater improvements, biodiversity, sequestration etc. As an example of work underway, we are collaborating with other agencies on the **Ecosystem Services Project**, which will measure the benefits of our native ecology in economic terms, driven by the desire to reward landowners and farmers for looking after and improving indigenous ecosystems.	• Climate resilience • Emissions reduction • Sequestration

5. Procurement and asset management	Developing a sustainable procurement policy and integrating climate resilience into asset management. Pāmu is a significant purchaser and manager of assets (such as vehicles, drainage, sheds, bridges, houses etc.) and has an ability to impact emissions through their construction, use and disposal. Assets are often in place for decades so they need to be designed to cope with and help mitigate more extreme and changing climatic events. A sustainable procurement policy will ensure all business purchasing is aligned with business sustainability goals and will positively influence the value chain of Pāmu.	• Climate resilience • Value chain action
6. Best-practice farming	Reduce emissions and improve resilience through improving farm efficiency, including ensuring highest and best land use such as forestry on low-producing pastoral land. Aligning farm-level enterprise resource planning with continuous improvement initiatives will result in a better onfarm understanding of the links between efficiency and GHG reduction as well as introducing the concept of low-GHG outcomes to farm teams. Improve farmer knowledge through a focus on GHG literacy, including use of webinars, case studies and industry resources (such as supplier/customer extension staff).	• Accelerating gross and intensity emissions reduction • Climate resilience • Increasing farmer knowledge

Case study

Land-use change

This is an edited version of an article by Glenys Christian published in *The Orchardist* (September 2023).

Pāmu Chief Executive Mark Leslie sees the day when horticulture might bring in earnings equal to dairying and sheep and beef farming. He believes that could happen as soon as 2030 with the new profit stream coming from a much smaller area of land than its traditional livestock enterprises.

"We're looking at our carbon footprint and we can lower that by using horticulture in the right areas as well as it being a higher value land use," he says.

Pāmu has already planted 70 hectares of avocados on the most suitable soils at its 2,500ha Kapiro Farm in the Bay of Islands, which formerly ran only sheep and beef cattle. Trees are now from one to four years old with some of the older ones producing small commercial quantities.

"We're probably where we want to be with avocados," he says.

By 2030, he believes that 160ha of the property is likely to be growing more horticultural crops. With assessments already carried out on the most suitable land, work is now underway on setting up an initial 6ha block of blueberries. Mark says Pāmu looked across the range of crops such as citrus and kiwifruit, considering consumer insights, profitability and modelling of future climate change before deciding on berries, then narrowing that down to blueberries in tunnels as the first to be planted.

"That was where we saw consumer demand," he says. Helping to extend that to year-round supply to fill the present gaps and satisfy consumer demand is "pretty exciting".

No decision has been made yet on what berry crops to perhaps plant next with raspberries, boysenberries and strawberries all under the microscope.

"A mix of crops will play a clear role in our financial resilience as they won't all have a downturn at the same time."

At present the workers involved are in single figures with more coming on to the property during avocado picking. But that's expected to quickly grow to a team of 50 permanent and seasonal staff with larger numbers in the future.

"We want to provide certainty of work and income," he says. "Rather than seasonal peaks we'd like a good consistent workflow. But our focus now is to get a good operation up and running."

While the horticultural development will see stock numbers reduce slightly on Kapiro, it will still be home to the Pāmu Sheep of the Future programme, looking at breeds that shed their wool rather than needing to be shorn. And with significant Queen Elizabeth II Trust covenanted bush blocks, its ecosystem services work will continue. It's just been announced that it will lead a joint project to measure the economic benefits of native ecology.

When it comes to prospects for horticultural development on other Pāmu farms throughout the country, Mark says class 6 and 7 land obviously won't be suitable.

"But looking at what the climate might be like by 2050, we'll be able to see what makes sense in the future and what pockets of land might be suitable. That's the next phase ..."

Source: *The Orchardist*, vol. 96, no.8 (September 2023), 44–45.

Risk management

Identifying, assessing and managing climate-related risks

Risk management responsibilities are expanded across all levels of management. The Chief Sustainability and Risk Officer is accountable for the enterprise risk management and climate-related approach and ensures the Board is engaged on these issues and responses.

Consideration of climate risk is difficult without knowing the nature of the emerging risk that is being faced, so Pāmu engaged climate scientists at Lynker Analytics to aid this understanding and offer some scenarios that may play out in conjunction with the unique vulnerabilities of specific farms.

While climate change has been identified as a strategic risk for Pāmu, it is not entirely within the control of the organisation itself. When seeking to manage climate risk, Pāmu is in the process of evaluating whether the risks are to be treated as threats or opportunities – this will be different for different farms, and some will see a combination of both. In some cases, the climate risk will represent additional uncertainty that needs to be managed, and an important consideration will be the speed and intensity of change. These are all factors that the Lynker Analytics work is supporting management and the Board to understand.

Pāmu is currently trialling a decision-making tool to drive and embed the consideration of climate change response and adaptation impacts and mitigation when making capital investment decisions. This approach has been initiated by management and supported by the Board.

Integration with overall risk management

In regard to climate change risks, in the previous period, Pāmu has:

- adopted a transition and physical risk register to the Enterprise Risk Framework
- committed to further refining methods to assess climate risks and develop climate adaptation/resilience metrics
- added climate change impact dimension to our business case template documents to ensure capital evaluation prior to capital expenditure approval
- as part of a broader review of our enterprise risk management system, explored how climate change can be embedded in our risk identification process (rather than being treated as a stand-alone item) – this may mean it can be captured as a secondary risk and aggregated to achieve a more comprehensive view.

Metrics and targets

Metric categories

The use of climate-related metrics should inform and be informed by the governance, strategy and risk management process at Pāmu. Although emissions metrics are well defined, further work is required to develop adaptation metrics, and this will be undertaken for the next reporting period.

Several sector-specific metrics are used internally through a sustainability scorecard, which includes the progress of farm-specific reduction and adaptation planning.

Executive remuneration is linked to achievement of climate goals. This is managed through performance metrics linked to business KPIs (as set out in the **Statement of Corporate Intent**) and through the company scorecard.

Targets

Pāmu is establishing a science-based decarbonisation target aligned to the scale of reduction required to keep the global temperature increase to 1.5°C above pre-industrial temperatures. The target will follow the Science Based Targets initiative (SBTi) forest, land and agriculture (FLAG) guidance. Science-based targets are increasingly used by organisations in the value chain. Although they will be extremely challenging to meet, they do provide a clear indication of the necessary scale of ambition. The FLAG target is a net emissions target allowing onfarm sequestration to be used, which forms an important part of future sequestration policy.

Both organisational and intensity measures are anticipated to be set using a 2020 baseline. These targets will be reported when they are confirmed. This commitment forms part of our sustainability-linked loan requirements.

GHG emissions

Pāmu organisational emissions (FY21 onwards) are verified against ISO 14064-1. The results are verified by Toitū Envirocare. An operational approach is taken and GWP100 values are used.

For reporting purposes, the scope of the emissions boundary is Landcorp Farming Limited and Landcorp Holdings Limited (a subsidiary holding certain farms pending settlement of historical Treaty of Waitangi claims). Other subsidiaries and joint venture interests are excluded from the scope of disclosure, as shown in Figure 5.

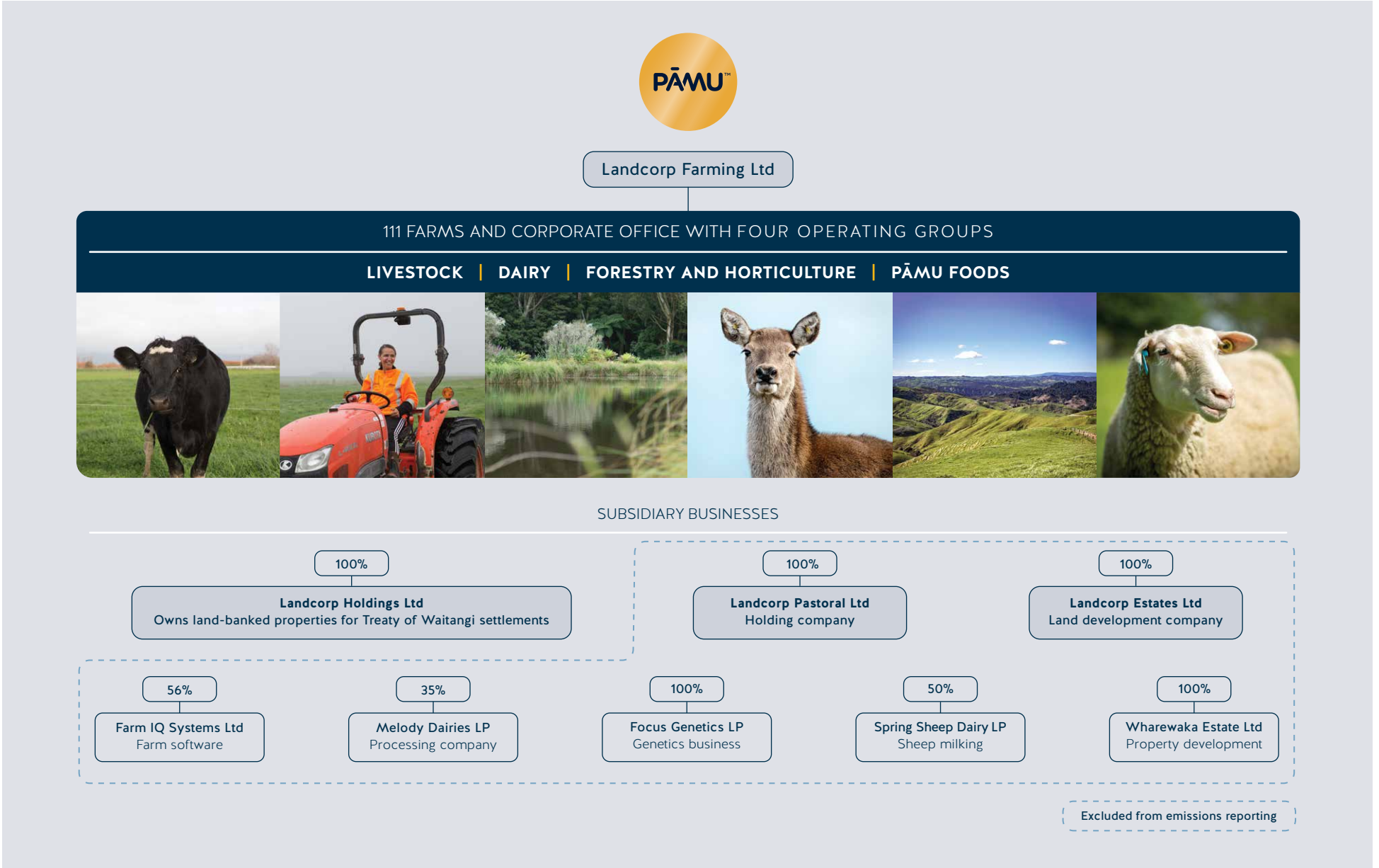


Figure 5: Pāmu Group structure and key strategic interests.

Assurance of GHG emissions

Scope 1, 2 and 3 emissions (reflected at Categories 1–6)

Category	FY22 All measured emissions (tCO_2e)
Category 1: Direct emissions	660,793.77
Category 2: Indirect emissions from imported energy	1,623.75
Category 3: Indirect emissions from transportation	1,636.91
Category 4: Indirect emissions from products used by organisation	44,295.87
Category 5: Indirect emissions associated with the use of products from the organisation	0.00
Category 6: Indirect emissions from other sources	0.00
Total direct emissions	**660,739.77**
Total indirect emissions	**47,556.52**
Total gross emissions	**708,350.30**
Category 1 direct removals	0.00
Certified renewable electricity certificates	0.00
Purchased emission reductions	0.00
Total net emissions	**708,350.30**

Pāmu GHG emissions analysis

The Pāmu GHG profile reflects the agricultural basis of the organisation. Over 90% of emissions are considered within direct control (Scope 1). This is reflected in the breakdown of gas types with 68% methane (CH_4), followed by 22% nitrous oxide (N_2O) and 10% carbon dioxide (CO_2) reflected as tCO_2e.

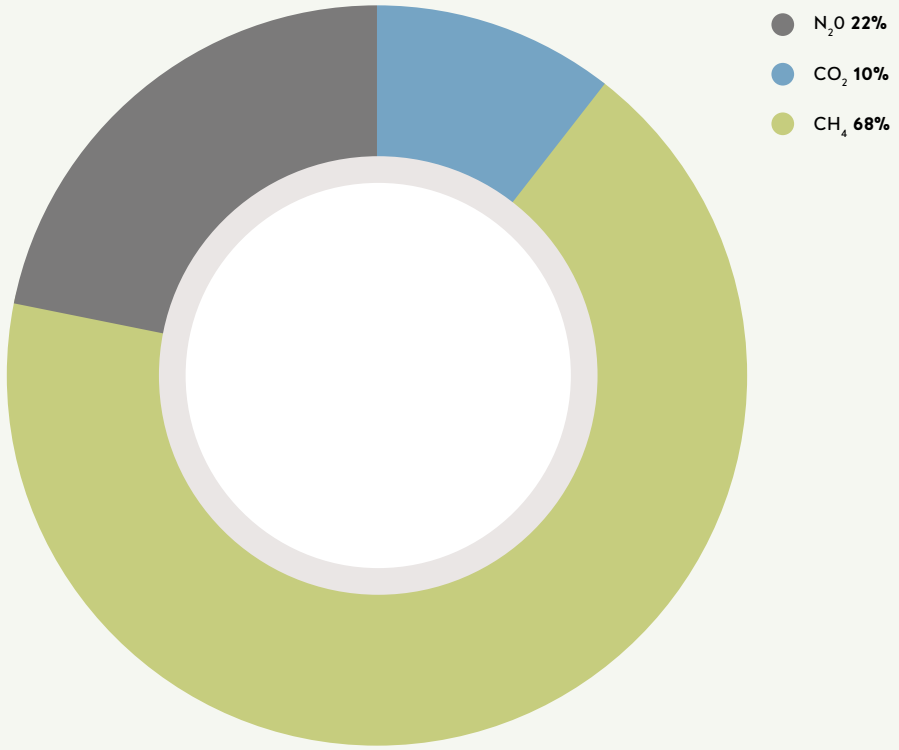


Figure 6: Representation of gas types (tCO_2e).

Further information is shown in Figure 7.

Pāmu GHG profile

Current emissions sources

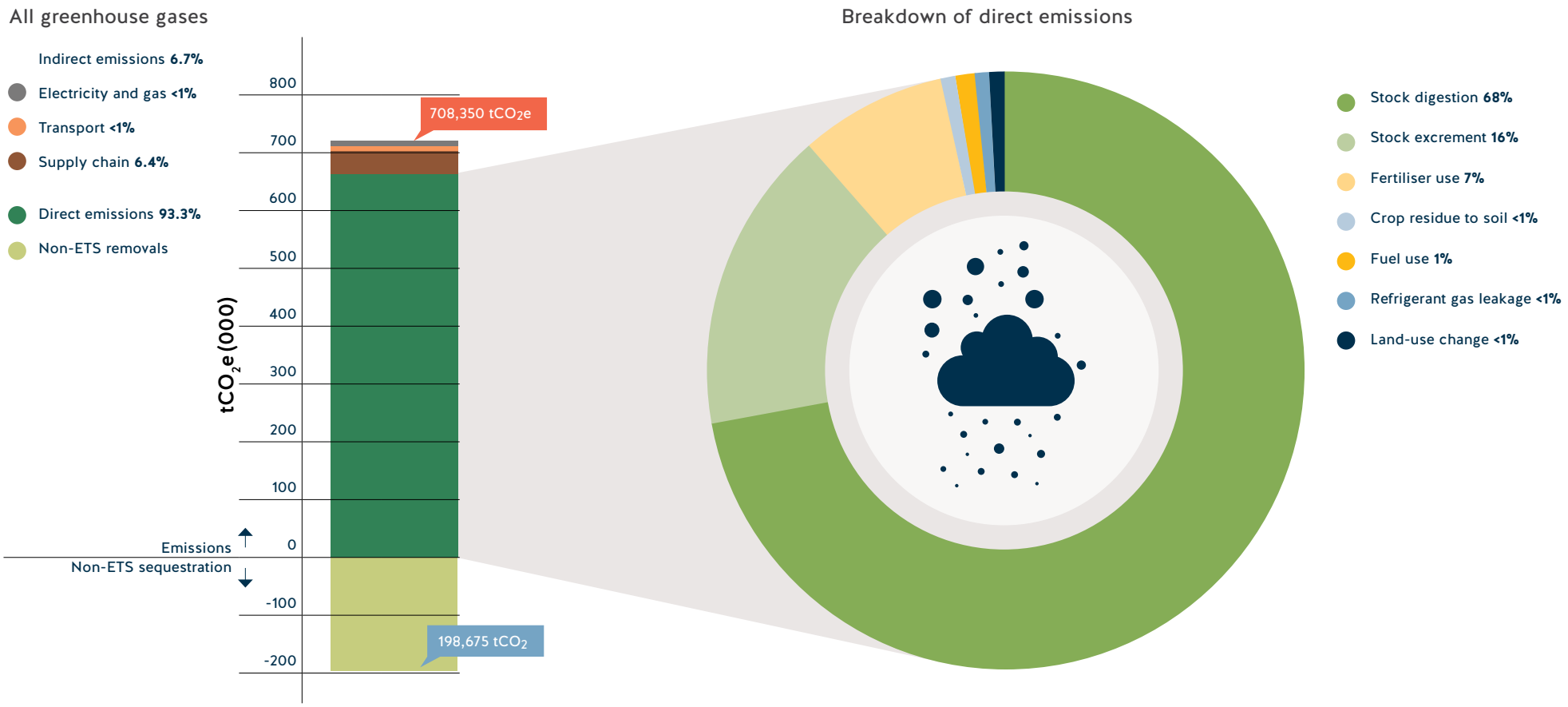


Figure 7: Pāmu GHG profile FY22.

Historical performance

Pāmu GHG emissions have been verified against ISO 14064-1 since FY21. This includes farming and corporate emissions.

Table 2: Total GHG emissions.

Year	FY22	FY21	FY20
Total ha	363,488	364,538	365,627
tCO_2e	708,350	722,237	747,798

Results are published in the Integrated Report annually. More information is available **here**.

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Information contained in this Climate-related Disclosure is current as at 29 September 2023.

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