B+LNZ summary analysis of the potential pricing impacts on sheep and beef farms from He Waka Eke Noa levy

June 2022

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Overview

Beef + Lamb New Zealand (B+LNZ) has completed additional analysis of the He Waka Eke Noa Sectoral Impacts Modelling pricing scenarios to better understand the potential economic impacts on sheep and beef farms including distributional impacts across the sector's 8 farm classes.

While B+LNZ strongly supports the recommended Farm Level Levy framework that has been put forward by the He Waka Eke Noa partners, the B+LNZ analysis highlights that a cautious approach needs to be taken to the prices applied to agricultural emissions under the proposed framework.

The analysis also shows the importance of recognising existing sequestration to manage the economic implications of the emissions levy on sheep and beef farming businesses.

B+LNZ was concerned that without this additional context, the results of the He Waka Eke Noa sectoral impact modelling could imply that a price of 35c per kg for methane is needed to meet New Zealand's 2030 emissions targets.

B+LNZ analysis indicates that this price would be extremely damaging to many sheep and beef farmers and would likely see an overshoot in meeting the government's emissions reduction targets and cause unnecessary economic damage.

This was a key B+LNZ driver in the He Waka Eke Noa partnership recommendation of a maximum starting price for methane of 11c/kg CH_4 for the first three years, and for a ceiling to be placed on prices so they do not exceed the prices agriculture would face if it had gone into the Emissions Trading Scheme (ETS).

To create this analysis actual farms from the B+LNZ Sheep and Beef Farm Survey (2019/20 Sheep and Beef Farm Survey 452 farms[1]), which provides a statistically representative sample of commercial sheep and beef farms across the country, were used.

The B+LNZ analysis took two different scenario approaches:

1. Applying methane (CH_4) and nitrous oxide (N_2O) prices used in the sectoral impacts modelling without any recognition of existing sequestration.
2. Applying methane and nitrous oxide prices used in three pricing scenarios with existing He Waka Eke Noa sequestration recognised.

B+LNZ analysis highlights the distributional impacts of pricing scenarios on different sheep and beef farm systems that He Waka Eke Noa sectoral impact modelling does not.

The impacts (on Farm Profit Before Tax; FPbT) are more keenly felt in some farming systems. Given these impacts we would expect to see greater land-use change, and therefore greater reductions in emissions from the sheep and beef sector, at lower emissions prices than He Waka Eke Noa pricing scenarios suggest.

This is because using an "average farm" (as was modelled in the He Waka Eke Noa sectoral impacts modelling) does not reflect the significant diversity across and within the sheep and beef farming sector.

[1] A complete dataset of the B+LNZ Sheep and Beef Farm Survey would be 537 farms in 2019/20. Not all these had sequestration values recorded, thus those that had not yet had their areas of woody vegetation surveyed have been excluded from this dataset.

B+LNZ's analysis indicates that a price of 35c/kg CH_4 which was modelled in the He Waka Eke Noa sectoral analysis would be significantly damaging to many sheep and beef farmers and would likely result in an overshoot in the methane reduction targets.

Without recognition of existing sequestration even an 11c/kg CH_4 price has significant financial implications on sheep and beef farms. With recognition of existing sequestration these are moderated but still impactful for many. At a methane price of 35c/kg CH_4, there will be significant impacts on sheep and beef farmers' profits even if credit for all existing sequestration is included.

While B+LNZ support the modelling done by the Partnership, this additional analysis of the distributional impact across the sheep and beef sector is important to add to the conversation.

B+LNZ appreciates the caveats that have been added to the He Waka Eke Noa Recommendation Report and sector modelling to reflect the additional analysis B+LNZ has done.

The analysis also reinforces B+LNZ's position that agriculture entering the ETS would be even more damaging to sheep and beef farmers (than what has been recommended by the He Waka Eke Noa partners) as our sector is very sensitive to prices.

If agriculture were to enter the ETS, the price of methane would be linked to the carbon price. Carbon prices are modelled to continue to rapidly increase over the coming years and therefore if agriculture were to enter the ETS, we would expect the methane price to rapidly increase which would impact heavily on our sector. It also makes no sense for methane to be linked to the carbon price as methane has separate targets.

Comparing and Contrasting the B+LNZ analysis with the He Waka Eke Noa Modelling

1. Farmer feedback through consultation indicated that the He Waka Eke Noa sheep and beef farm modelling did not reflect the impact of pricing on some farming systems.
2. B+LNZ therefore took a more detailed approach considering eight farm classes (Table 2) that form the basis of B+LNZ's annual Sheep and Beef Farm Survey which covers approximately 530 individual farms. These are real farms rather than model farms.
3. To achieve the in-depth analysis and stratification the analysis was done for the 2019/20 year for individual farms in contrast to the He Waka Eke Noa sectoral impact modelling that took a five-year average (2015/16 to 2019/20) of the averages.
4. **The B+LNZ analysis did not apply any use of incentive payments.** (Noting at this point that low methane sheep genetics is probably the only currently available practical solution available on most sheep and beef farms).
5. The existing sequestration assessment is based on data about on-farm vegetation collected by the Sheep and Beef Farm Survey for individual farms. Though detailed, it may over-estimate the amount eligible for He Waka Eke Noa. The data is based on the first year of gathering sequestration data in the survey and we suspect that post-1990 native vegetation has been over-estimated, as we did not specifically ask farmers in the face-to-face interviews if the land was in bare pasture prior to 1990.
6. Due to an incomplete sequestration dataset this dataset consists of 452 farms across the 8 Farm Classes.[2]

[2] 2019/20 was the first year that sequestration was included in the B+LNZ Sheep and Beef Farm Survey and some farms were not completed in the 2019/20 season. This analysis is based on a subset (452) of the total number of B+LNZ Sheep and Beef Farm Survey farms (537).

7. The B+LNZ analysis has assumed that 100% of eligible native regeneration that is post-1990 will be entered into the He Waka Eke Noa Pricing system by farmers and be rewarded at 100% of the carbon prices that the Climate Change Commission assumed for 2025 ($85/t CO_2) and 2030 ($138/t CO_2, the "ETS price"). This is different from the sectoral impacts case study modelling work which assumed that farmers would receive credit for 75% of the predicted ETS price when recognising He Waka Eke Noa sequestration (i.e. $64/t CO_2 in 2025 and $104/t CO_2 in 2030).
8. Like the He Waka Eke Noa sectoral impact modelling, however, only 10% of estimated mature native vegetation (pre-1990) is assumed to meet the He Waka Eke Noa stock exclusion criteria. Again, however, B+LNZ's analysis is based on farmers receiving 100% of the ETS price, compared to 75% in the sectoral impacts modelling.
9. He Waka Eke Noa sectoral impact analysis used the bottom line metric Economic Farm Surplus (EFS) which is before Interest and Rent payments. Farm Profit before Tax (FPbT) used in the B+LNZ analysis is after Interest and Rent are paid. Interest and Rent are unavoidable expenditure items.

Key Conclusions

1. The He Waka Eke Noa sectoral impacts modelling on sheep and beef "average farms" does not show the significant distributional impacts across the different farm classes.
2. In particular, at the He Waka Eke Noa 2030 scenario price for methane of 35c/kg CH_4, our modelling shows a significantly greater impact on profitability than the He Waka Eke Noa modelling across all farm types.
3. Without existing sequestration and based on 35c/kg CH_4:
    a. FPbT on 3 in 4 farms (77%) would be reduced by 10% or greater; and
    b. FPbT on 1 in 4 farms (25%) would be reduced by 30% or greater.
4. With existing sequestration and based on 35c/kg CH_4:
    a. FPbT on half sheep and beef farms (52%) would be reduced by 10% or greater; and
    b. FPbT on 1 in 7 farms (15%) would be reduced by 30% or greater.
5. Given the greater impact on profitability identified in the B+LNZ analysis, the reduction in emissions from land-use change is likely to be greater across the sector as a whole than estimated by the He Waka Eke Noa "average farms" modelling at the prices modelled.
6. B+LNZ expects that because of the decline in FPbT due specifically to emissions pricing, some landowners are likely to completely exit sheep and beef production, either to fully convert their land to an alternative land use or sell it to someone who will convert it. This is due to the currently high land prices, age and stage of farmers, mental load of regulatory change happening and resulting administrative requirements. Further work should be completed to ground truth these assumptions based on what is currently happening in the rural land market.
7. Of farms where profit is significantly affected but the business does not exit, we expect to see accelerated conversion of large parcels of existing farms to other land uses e.g. carbon farming or forestry and therefore further emissions reductions from that as well.
8. It is incredibly difficult to say at what impact on profit, farmers may make this decision e.g. 10%, 15%, 20%, but the more external and cumulative stressors that are felt by farmers the more likely they are to make the decision to exit the sector. In addition, if they see the impacts of pricing getting worse in the future (for example through the He Waka Eke Noa modelling pricing) there is the risk that this adds further stress and is another motivator for farmers to exit the sector earlier.

9. The importance of both the amount of sequestration recognised, and the price of it, is also crucial to sheep and beef farmers to be able to absorb any increase in the methane price above 11c/kg CH_4.
10. **To conclude; these analyses, show that the He Waka Eke Noa sectoral impact modelling does not capture some of the distributional impacts of pricing scenarios on different sheep and beef farms. The impacts (on FPbT) are more keenly felt on some farms, and given those impacts, we expect to see greater land-use change and therefore greater reductions in emissions from the sheep and beef sector at lower emissions prices than He Waka Eke Noa pricing scenarios suggest.**

Results and Discussion

The He Waka Eke Noa sectoral impacts report modelled three main price scenarios, which we then ran across individual farms in the B+LNZ sheep and beef farm survey.

Scenario 1: Methane 11c/kg CH_4, Nitrous Oxide $4.25/t CO_2-e, Sequestration $85/t CO_2 by 2025

Excluding sequestration:

There would be an average decline of 11% of FPbT. About 1 in 4 farms (23%) would see a reduction in FPbT of 10% or greater (Table 3).

Including sequestration

About 15% of farms would experience a reduction in FPbT of 10% or greater (Table 3). The Farm Class average change in FPbT is between a 10% decrease and 14 percent increase.

Aside from Farm Class 3, most of the other classes would see either zero or a relatively significant average reduction in profit with sequestration (Figure 4).

The impacts at the lower pricing scenario are predominantly on farms with low stocking rates. These extensive sheep and beef farms (see Appendix Four for descriptions) are particularly sensitive to a price on GHG emissions due to their generally low emission profile per hectare with limited ability to reduce that further through uptake of GHG mitigation technologies.

These farm systems have low inputs thus few expenses to remove from their budget (e.g. bought in feed or fertiliser) and relatively low profit. FPbT may increase on a limited number, mainly in Farm Class 3. The number of farms (that increase their profit) will be very small in practice, as our model likely overestimates the sequestration payment as it assumed all eligible He Waka Eke Noa sequestration would be included (and the area of sequestration in our analysis may be overestimated) and sequestration was priced at 100% of the ETS value.

Scenario 2: Methane 17c/kg CH_4, Nitrous Oxide $13.80/t$CO_2$-e, Sequestration $104/t CO_2 by 2030

Without any sequestration:

There would be a decline of between 12% and 27% in FPbT depending on Farm Class.

About 44% would see a reduction in FPbT of 10% or greater.

With sequestration:

The result would see a change in FPbT of between a 18% reduction and a 10% increase, with a limited number of farms having a positive impact on their FPbT (Figure 6). A limited number of farms, particularly in Farm Classes 3 and 4, increase their profit and skew the average results, however, most farms in those farm classes would experience a reduction in profit. The remaining farm classes would see an average reduction in FPbT.

About 1 in 4 farms (24%) would see a reduction of FPbT of 10% or greater (Table 3). Again, there is some uncertainty around how much sequestration farmers would be able to claim for the same caveats mentioned elsewhere.

Scenario 3: Methane 35c/kg CH_4, Nitrous Oxide $13.80/t CO_2-e, Sequestration $138/t CO_2 by 2030

At the 2030 price, all farm classes are significantly impacted by the emissions levy even if sequestration is included (Figure 8).

Without sequestration:

There would be a decline of between 22% and 50% in FPbT depending on Farm Class.

77% of farms would see a reduction in FPbT 10% or greater, and 1 in 4 farms (25%) would see a reduction in FPbT of 30% or greater (Table 3).

With sequestration:

The Farm Class average decline will be between -33% and 0% (no change) in FPbT.

Over half sheep and beef farms (52%) would see an impact of 10% or greater on FPbT and 15% of farms would see a reduction in their FPbT of 30% or greater (Table 3).

These results show the importance of sequestration to reduce the economic implications of the emissions levy on sheep and beef farming businesses, but at a methane price of 35c/kg CH_4, there will still be significant impacts on sheep and beef farmers profit even if all sequestration is included.

Sequestration

There are a small number of farms that could increase their FPbT because of the reward for their sequestration at lower emissions prices. These farms are predominantly extensive farms with low stocking rates.

This increase is due to the assumption that farmers will be rewarded for the sequestration on their farms through the He Waka Eke Noa pricing system. However, there are uncertainties in our calculations and our sequestration numbers may **overestimate** how much farmers will be able to receive.

While our data is based on the estimated age of the native vegetation on farms in our Sheep and Beef Farm Survey, it is highly likely the post-1990 areas could be overestimated. As this vegetation is officially recognised as having a higher sequestration rate, it has a significant impact on the estimated financial contribution that sequestration could make under He Waka Eke Noa.

In addition, Figures 2, 4, 6, 8 show that the addition of sequestration (even at our potentially inflated values) does not result in many sheep and beef farmers significantly increasing their profit (>10% increase), what it does do is reduce the number of farms that have a significant reduction in FPbT (>10% reduction).

Next Steps

As part of ongoing input into He Waka Eke Noa further refinement of this analysis, including the below, will add to the usefulness for He Waka Eke Noa's ongoing decision making.

- Apply the same He Waka Eke Noa pricing and sequestration rebates to the individual farms using their 5-year average FPbT and emissions values. There are over 300 individual farms that meet the criteria of having 5 years of continuous data. This data set is superior to the use of "average farms" and allows for a more nuanced understanding of the potential implications of the impact of different pricing scenarios.
- Use the analysis to assess the impact on the total area of sheep and beef farms that are no longer profitable, the reduction in total stock units and the reduction in methane emissions.
- Complete macro-economic analysis assessing the flow-on impacts of a decline in stock units and meat/wool production as well as potential increase in forest/carbon forestry.
- Include 'scrub' in the sequestration analysis. Note that it was excluded from this analysis given the challenge associated with estimating a sequestration factor as well as ensuring the minimum requirement of 'stock exclusion' was met. Including 'scrub' could significantly change the impact of an emissions price on those farm classes with large areas of scrub on their land.
- Complete an investigation of land use change that has recently occurred, as well as farmers' intentions to have a better social science understanding of whole farm change vs. partial farm change. This can rely on the 1-year delayed data of on-farm land use change and conversion from Orme and Associates but may require additional work to assess land use change intensions.

Appendix One: Impact on FPbT by percentage across all Farm Classes in the B+LNZ Sheep and Beef Farm Survey

Figure 1: Percentage change in Farm Profit before Tax for 452 New Zealand Sheep and Beef farms after applying an emissions levy using the He Waka Eke Noa modelled 2025 (11c/kg CH_4) and 2030 (35c/kg CH_4) prices

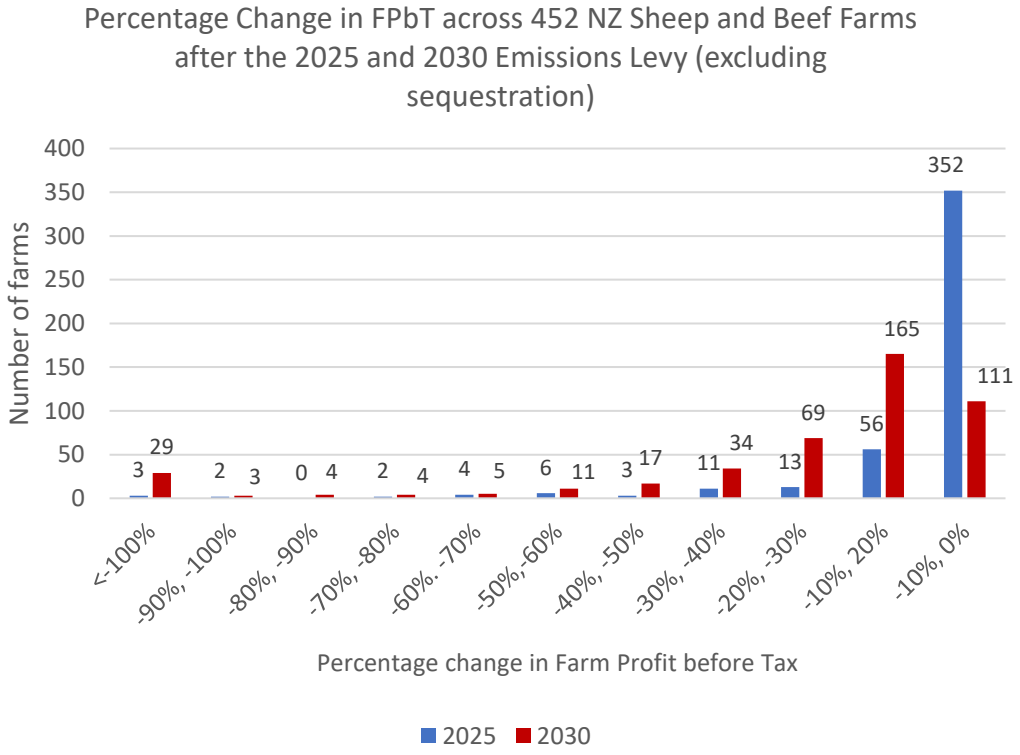
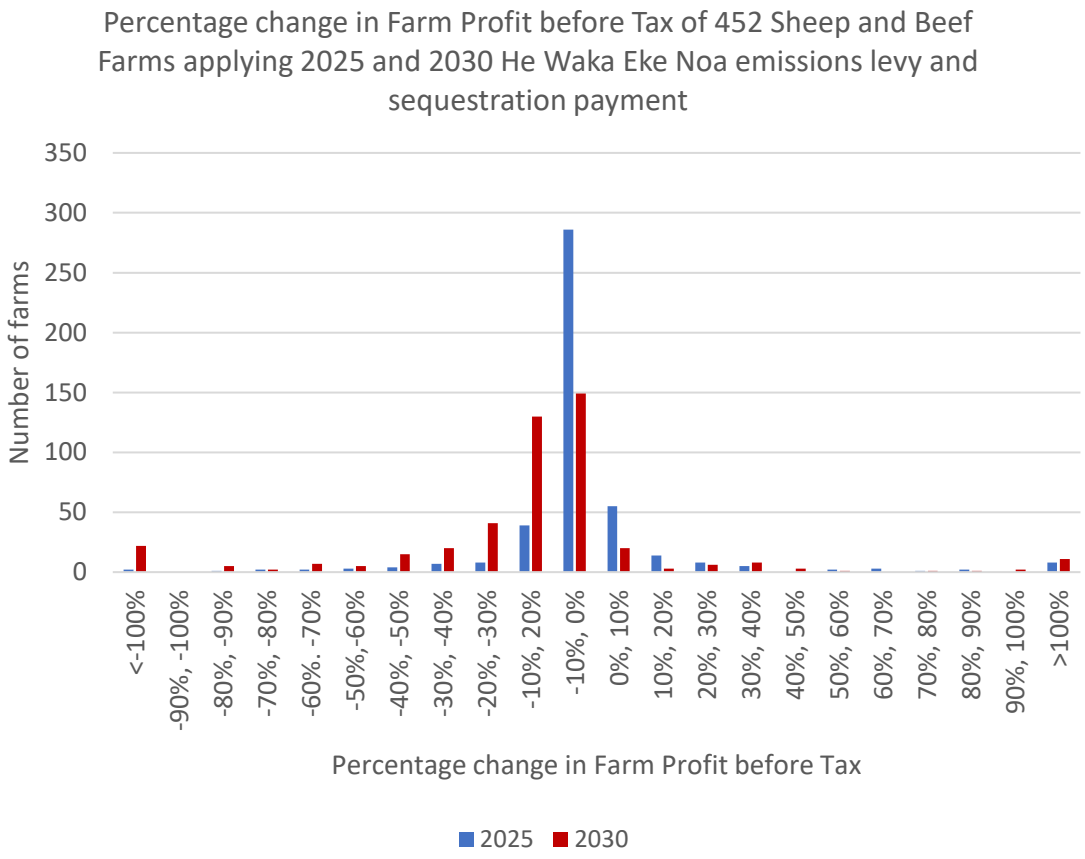


Figure 2: Percentage change in Farm Profit before Tax for 452 New Zealand Sheep and Beef farms after applying an emissions levy and sequestration payment using the He Waka Eke Noa modelled 2025 (11c/kg CH_4) and 2030 (35c/kg CH_4) prices.



Appendix Two: Impact of HWEN pricing scenarios on FPbT by Farm Class

*Figure 3: The reduction in Farm Profit before Tax of 452 sheep and beef farms after applying the **$0.11/kg** methane scenario emissions levy pricing **(without sequestration)***

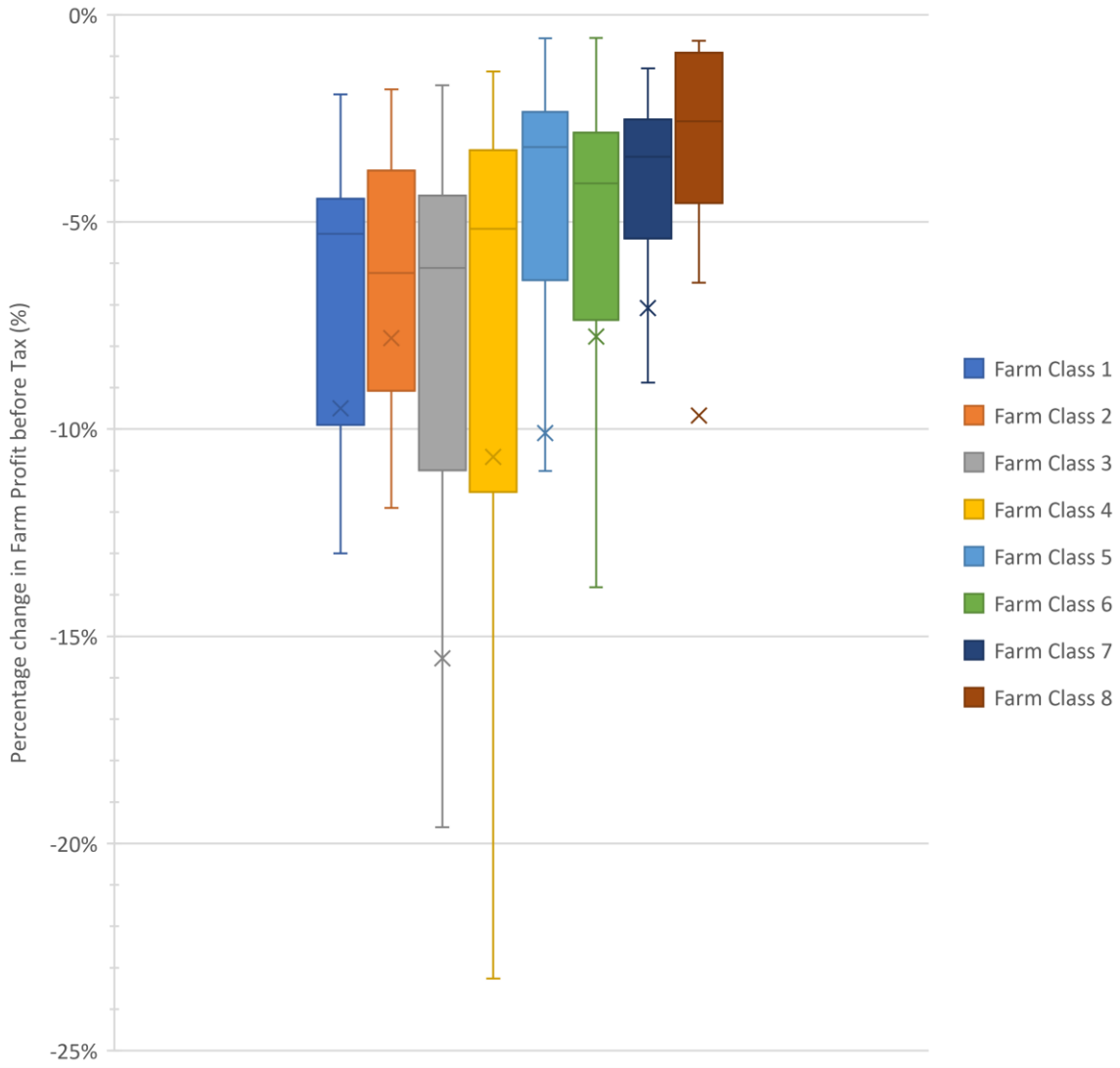


*Figure 4: The reduction in Farm Profit before Tax of 452 sheep and beef farms after applying the **11c/kg CH_4** scenario emissions levy pricing **(with sequestration)***

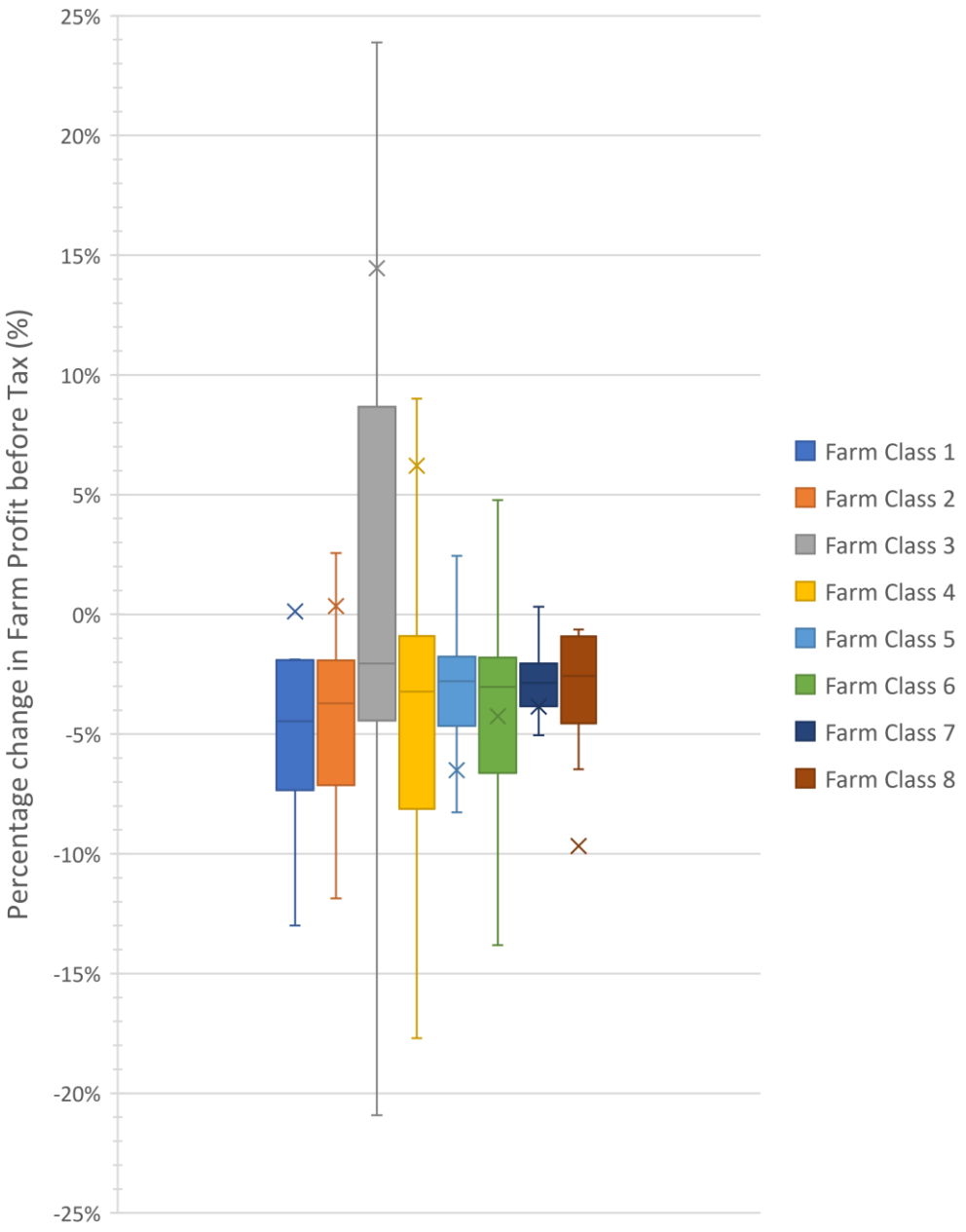


*Figure 5: The reduction in Farm Profit before Tax of 452 sheep and beef farms after applying the **17c/kg CH_4** scenario emissions levy pricing **(without sequestration)***

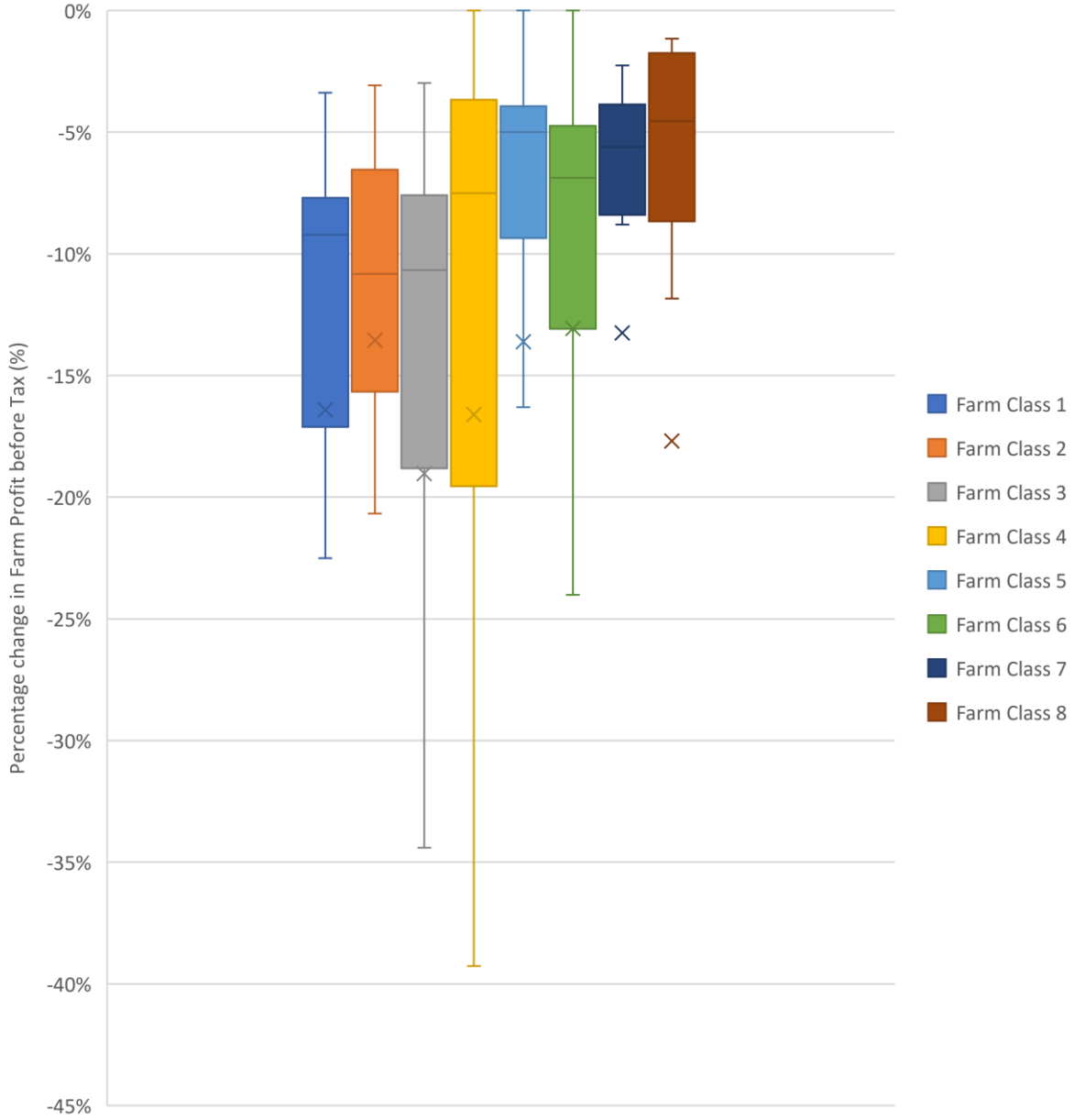


*Figure 6: The reduction in Farm Profit before Tax of 452 sheep and beef farms after applying the **17c/kg CH_4** scenario emissions levy pricing **(with sequestration)***

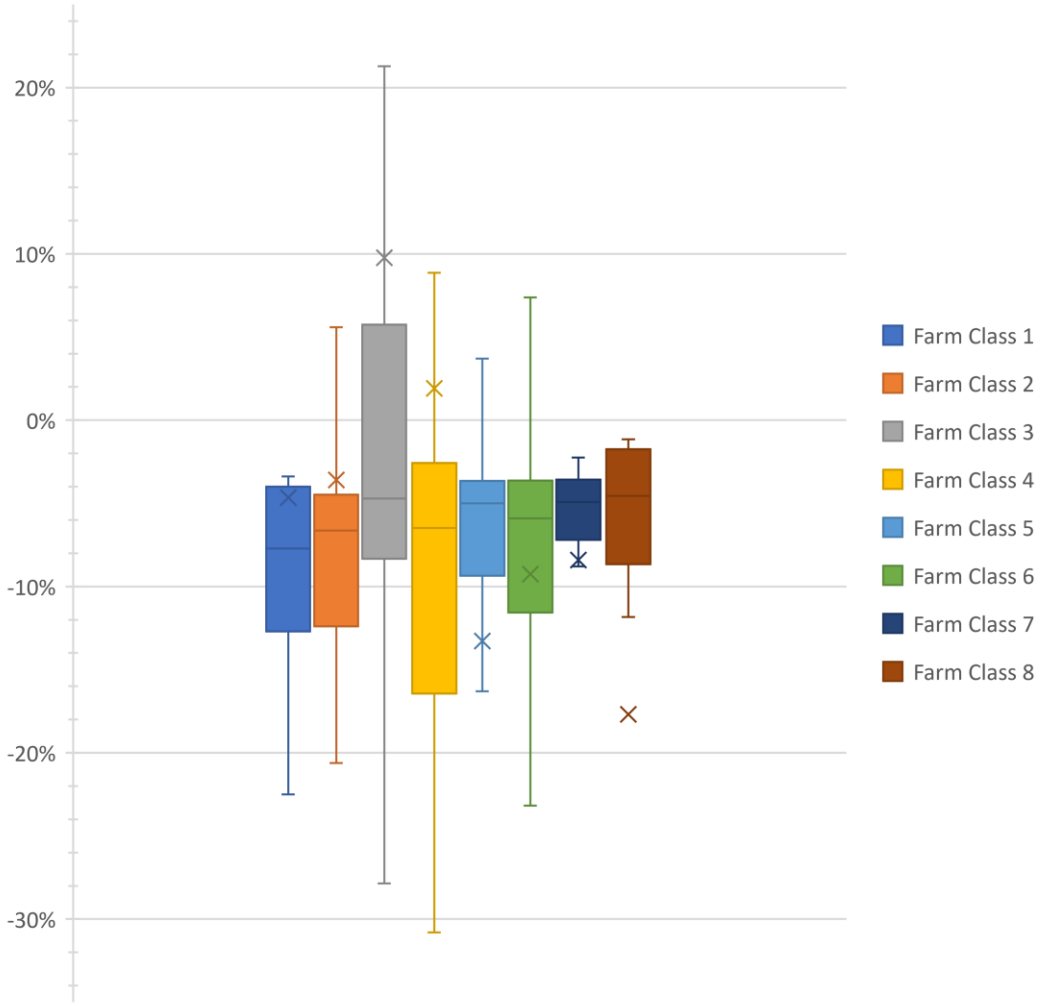


Figure 7: The reduction in Farm Profit before Tax of 452 sheep and beef farms after applying the ***35c/kg CH_4*** *scenario emissions levy pricing* ***(without sequestration)***

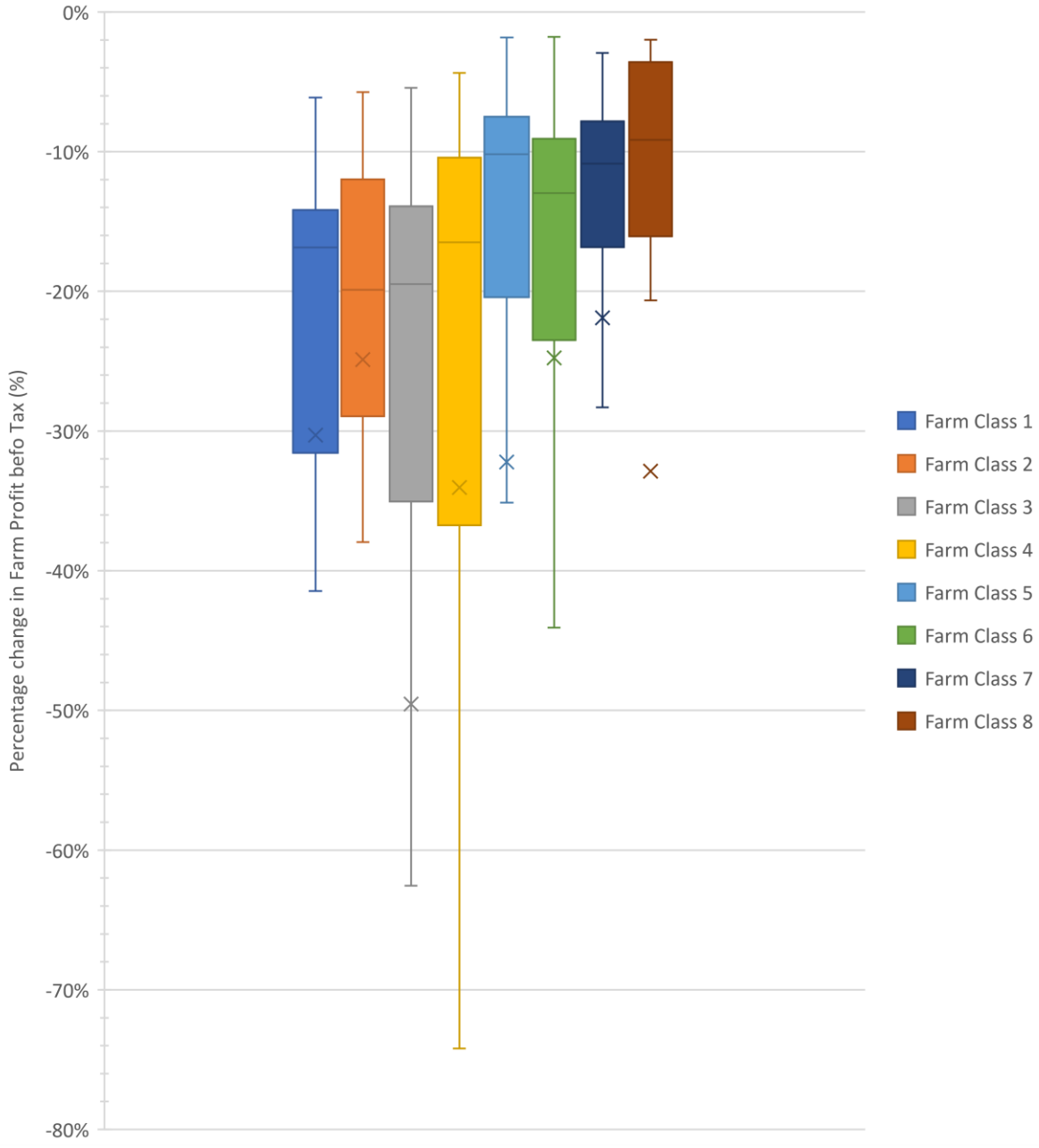
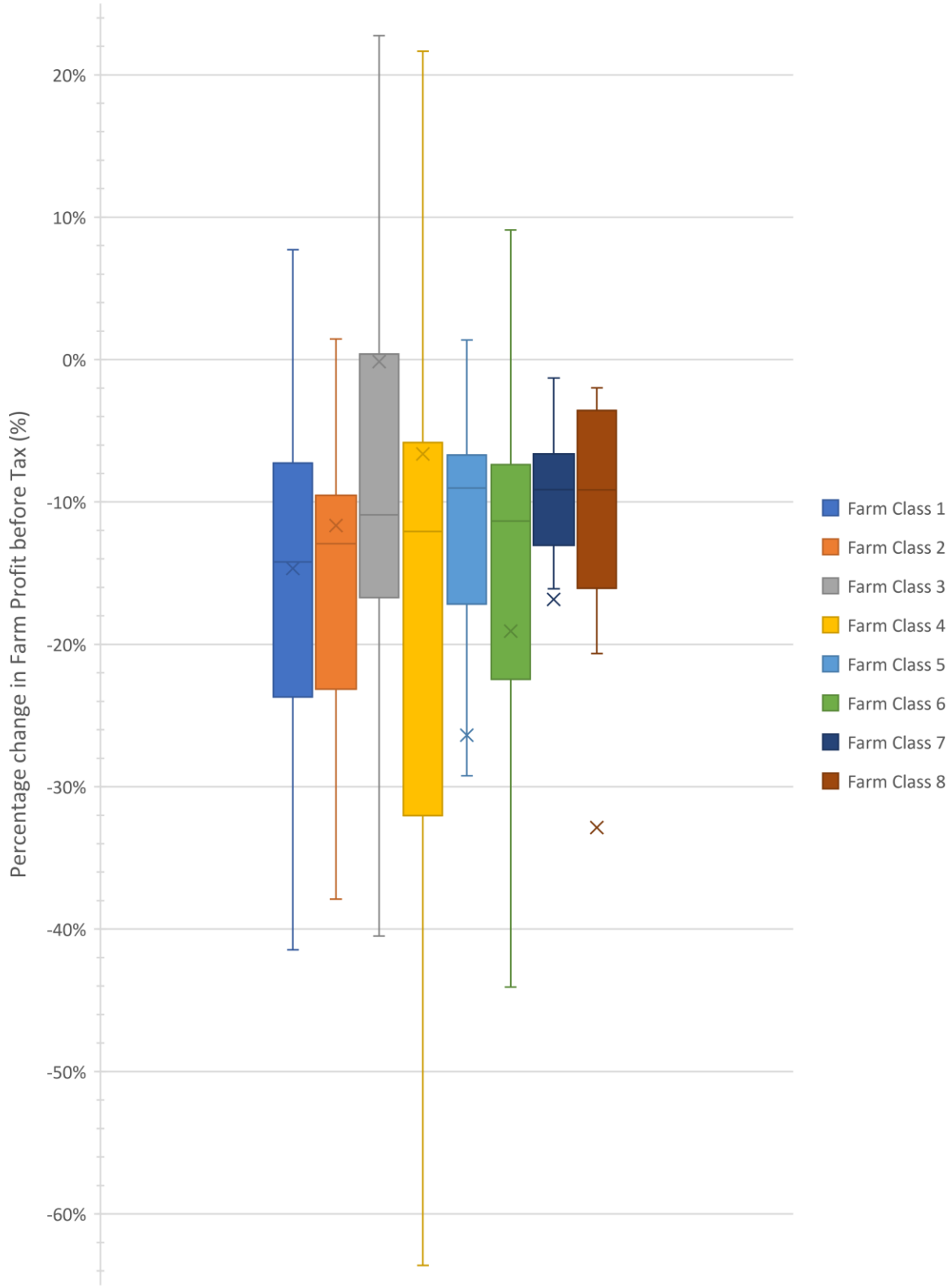


*Figure 8: The reduction in Farm Profit before Tax of 452 sheep and beef farms after applying the **35c/kg CH_4** scenario emissions levy pricing **(with sequestration)***



Appendix Three: Assumptions used for B+LNZ analysis

1. Data Set for base scenario
    a. B+LNZ Sheep and Beef Farm Survey data for 2019/20 for farms that have had sequestration measured (452 farms).
    b. Includes leased farms, which are considered to have a sequestration value of zero as because it is assumed that sequestration rebates will go to the landowner and not the farmer leasing the land.

2. Sequestration values
    a. Mature Native (pre-1990) uses 1.83 t CO_2-e/ha/yr[3]
    b. Regenerating Native (post 1990) uses 6.5 t CO_2-e/ha/yr[4]
    c. Commercial Manuka uses 1.723 t CO_2-e/ha/yr[4]
    d. Scrub (including non-commercial manuka) uses 1.723 t CO_2-e/ha/yr[5]
    e. No areas below 1ha were included in this analysis or measured as part of the Sheep and Beef Farm Survey data used in this analysis.
    f. The values for Mature and Regenerating Native are the same as used in the He Waka Eke Noa sectorial modelling but differ from those used in the B+LNZ GHG Calculator.

3. Woody vegetation included or excluded in this analysis for sequestration rebate is:
    a. Mature Native, for which it is assumed that 10% of total amount on each farm meets the He Waka Eke Noa stock-exclusion criteria.
    b. All Regenerating Native is included.
    c. All Commercial Manuka is included.
    d. Exotics are excluded as this is not included in the He Waka Eke Noa recommendation.
    e. 'Riparian' vegetation and perennial crops are excluded as the survey does not collect this data.

4. Prices used were the same as the He Waka Eke Noa Sectoral Impacts modelling but no discount on sequestration

Table 1: Methane, nitrous oxide and sequestration prices used for the different B+LNZ scenarios

Scenario		Pricing[5]	Sequestration
			($/t CO_2)
1	**2025**	Methane \$110/t CH_4, Nitrous Oxide \$4.25/t CO_2-e	\$85
2	**2030**	Methane \$170/t CH_4, Nitrous Oxide \$13.80/t CO_2-e	\$104
3	**2030**	Methane \$350/t CH_4, Nitrous Oxide \$13.80/t CO_2-e	\$138

[3] He Waka Eke Noa Agricultural emissions pricing options consultation document Feb 2022. Page 23 https://hewakaekenoa.nz/wp-content/uploads/2022/01/Consultation-Document_Final-1.pdf
[4] B+LNZ Sheep and Beef Farm Survey sequestration value
[5] Ref (He Waka Eke Noa, 2022)

Appendix Four: Sheep and Beef Farm Classes

Table 2: Farm Class descriptions

Farm Class Number	Farm Class Description	Extensive or Intensive	Stock units (approximate)
Farm Class 1	South Island High Country	Extensive	<3
Farm Class 2	South Island Hill Country	Extensive	2-7
Farm Class 3	North Island Hard Hill Country	Extensive	6-10
Farm Class 4	North Island Hill Country	Extensive	7-13
Farm Class 5	North Island Finishing	Intensive	8-15
Farm Class 6	South Island Finishing-Breeding	Intensive	6 to >12
Farm Class 7	South Island Finishing	Intensive	10-14
Farm Class 8	South Island Mixed Cropping and Finishing	Intensive	

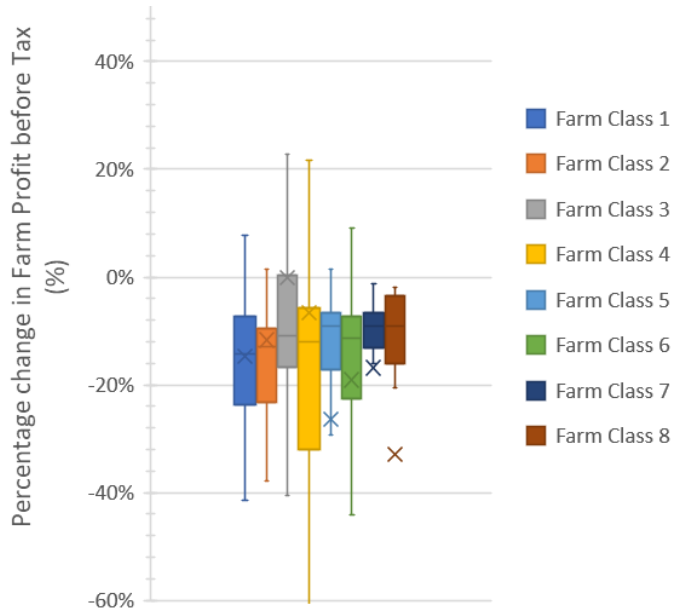
Class 1 - South Island high country	Extensive run country at high altitude carrying fine wool sheep, with wool as the main source of revenue. Located mainly in Marlborough, Canterbury and Otago.
Class 2 - South Island hill country	Mainly mid-micron wool sheep mostly carrying between two and seven stock units per hectare. Three quarters of the stock units wintered are sheep and one quarter beef cattle.
Class 3 - North Island hard hill country	Steep hill country or low fertility soils with most farms carrying six to 10 stock units per hectare. While some stock are finished a significant proportion are sold in store condition.
Class 4 - North Island hill country	Easier hill country or higher fertility soils than Class 3. Mostly carrying between seven and 13 stock units per hectare. A high proportion of sale stock sold is in forward store or prime condition.
Class 5 - North Island intensive finishing	Easy contour farmland with the potential for high production. Mostly carrying between eight and 15 stock units per hectare. A high proportion of stock is sent to slaughter and replacements are often bought in.
Class 6 - South Island finishing-breeding	A more extensive type of finishing farm, also encompassing some irrigation units and frequently with some cash cropping. Carrying capacity ranges from six to 11 stock units per hectare on dryland farms and over 12 stock units per hectare on irrigated units. Mainly in Canterbury and Otago. This is the dominant farm class in the South Island.
Class 7 - South Island intensive finishing	High producing grassland farms carrying about 10 to 14 stock units per hectare, with some cash crop. Located mainly in Southland, South and West Otago.
Class 8 - South Island mixed cropping and finishing	Located mainly on the Canterbury Plains. A high proportion of their revenue is derived from grain and small seed production as well as stock finishing.

Appendix Five: Additional Tables

Table 3: Percentage of farms resulting in a reduction in Farm Profit Before Tax of ≥10%, ≥20% or ≥30%, for three different pricing scenarios, and for emissions levy only or levy + sequestration

	2025 – Scenario 1 (11c/kg CH_4)					
	Emissions only			With sequestration		
	≥10%	≥20%	≥30%	≥10%	≥20%	≥30%
Farm Class 1	24%	12%	6%	18%	6%	6%
Farm Class 2	15%	8%	3%	13%	8%	3%
Farm Class 3	30%	13%	7%	10%	5%	2%
Farm Class 4	29%	12%	10%	22%	8%	7%
Farm Class 5	13%	5%	5%	11%	5%	5%
Farm Class 6	17%	6%	3%	14%	3%	2%
Farm Class 7	7%	7%	4%	7%	7%	4%
Farm Class 8	13%	13%	13%	13%	13%	13%
Weighted Average	**22%**	**10%**	**7%**	**15%**	**6%**	**5%**
	2030 – Scenario 2 (17c/kg CH_4)					
	Without Sequestration			With Sequestration		
	≥10%	≥20%	≥30%	≥10%	≥20%	≥30%
Farm Class 1	41%	18%	12%	29%	12%	12%
Farm Class 2	55%	10%	8%	33%	10%	8%
Farm Class 3	59%	23%	14%	17%	10%	14%
Farm Class 4	47%	26%	13%	29%	17%	13%
Farm Class 5	29%	11%	5%	18%	7%	5%
Farm Class 6	36%	13%	6%	30%	9%	6%
Farm Class 7	21%	7%	7%	11%	7%	7%
Farm Class 8	20%	13%	13%	20%	13%	13%
Weighted Average	**44%**	**18%**	**10%**	**24%**	**12%**	**10%**
	2030 – Scenario 3 (35 c/kg CH_4)					
	Without Sequestration			With Sequestration		
	≥10%	≥20%	≥30%	≥10%	≥20%	≥30%
Farm Class 1	88%	41%	24%	71%	29%	18%
Farm Class 2	93%	50%	20%	73%	33%	13%
Farm Class 3	97%	49%	33%	43%	15%	11%
Farm Class 4	80%	44%	31%	55%	30%	23%
Farm Class 5	54%	27%	14%	45%	20%	11%
Farm Class 6	67%	33%	17%	52%	28%	14%
Farm Class 7	61%	21%	7%	50%	11%	7%
Farm Class 8	47%	20%	13%	47%	20%	13%
Weighted Average	**77%**	**39%**	**24%**	**52%**	**24%**	**15%**

Appendix Six: How to read a box and whisker graph



The 'x' is the mean point in the data (the average value), while the line in the middle of the box is the median value – the point at which half the farms are below and half are above.

Where the mean and median values are very different there are some large outliers in the dataset.

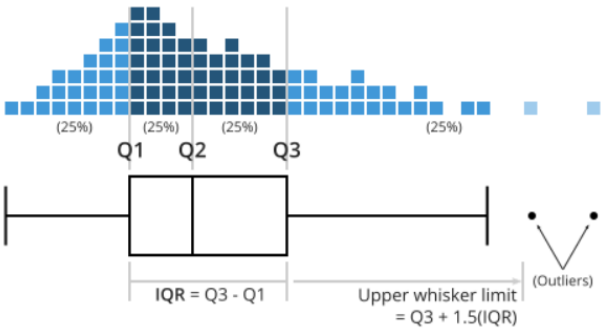
The bottom of the box is the 25th percentile – 25% of farms will have a value below this point and 75% a value above it.

The top of the box is the 75% percentile – 75% of farmers will have a value below this point and 25% will have a value above it.

So, half the farms are in the range represented by the box with one quarter above and one quarter below.

"Outliers" are those that lie more than 1.5 times the interquartile range - the range between the top and bottom of the box.

The bottom of a whisker is the minimum value and the top of the whisker is the maximum value (excluding any outliers).



References

He Waka Eke Noa, Feb 2022. He Waka Eke Noa Agricultural Emissions pricing options. https://hewakaekenoa.nz/wp-content/uploads/2022/01/Consultation-Document_Final-1.pdf Pricing options table on Page 22 (2030), second pricing options table on page 23(2025).