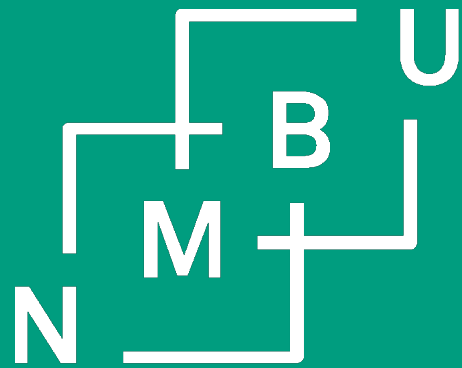




Norwegian University
of Life Sciences

More or better to obtain sustainable livestock production?

H. F. Olsen, H. Møller, S. Samsonstuen, M.T. Knudsen, L. Mogensen, E. Rööf

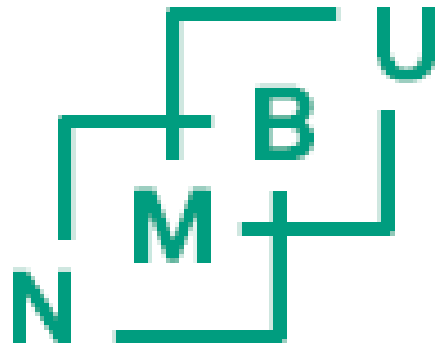
EAAP, session 75, 31st of August 2023

LIVESTOCK – sustainable livestock production

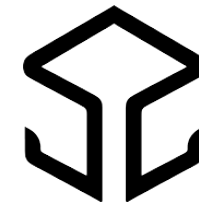
Project period: 2019-2023

Project 285189 – Research Council of Norway

Budget: 935.000 EUR



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Towards 2040

- How can future livestock in Norway production look like in 2040?
- How can we utilize our resources for food production best possible?
- How much can we produce of animal-sourced food?
- What will the environmental impact be?



The three scenarios 2040



Business as usual (BAU)

- Following livestock production trend from current
- Import feed to maximize livestock production
- Feed-food competition

More on domestic resources (MoreProd)

- Maintain livestock production on domestic resources
- No import of feed
- Inevitable feed-food competition (e.g. grain)
- Novel feed ingredients

Better on domestic resources (BetterProd)

- Produce livestock on inedible, domestic resources
- No import of feed
- Minimize feed-food competition
- Novel feed ingredients

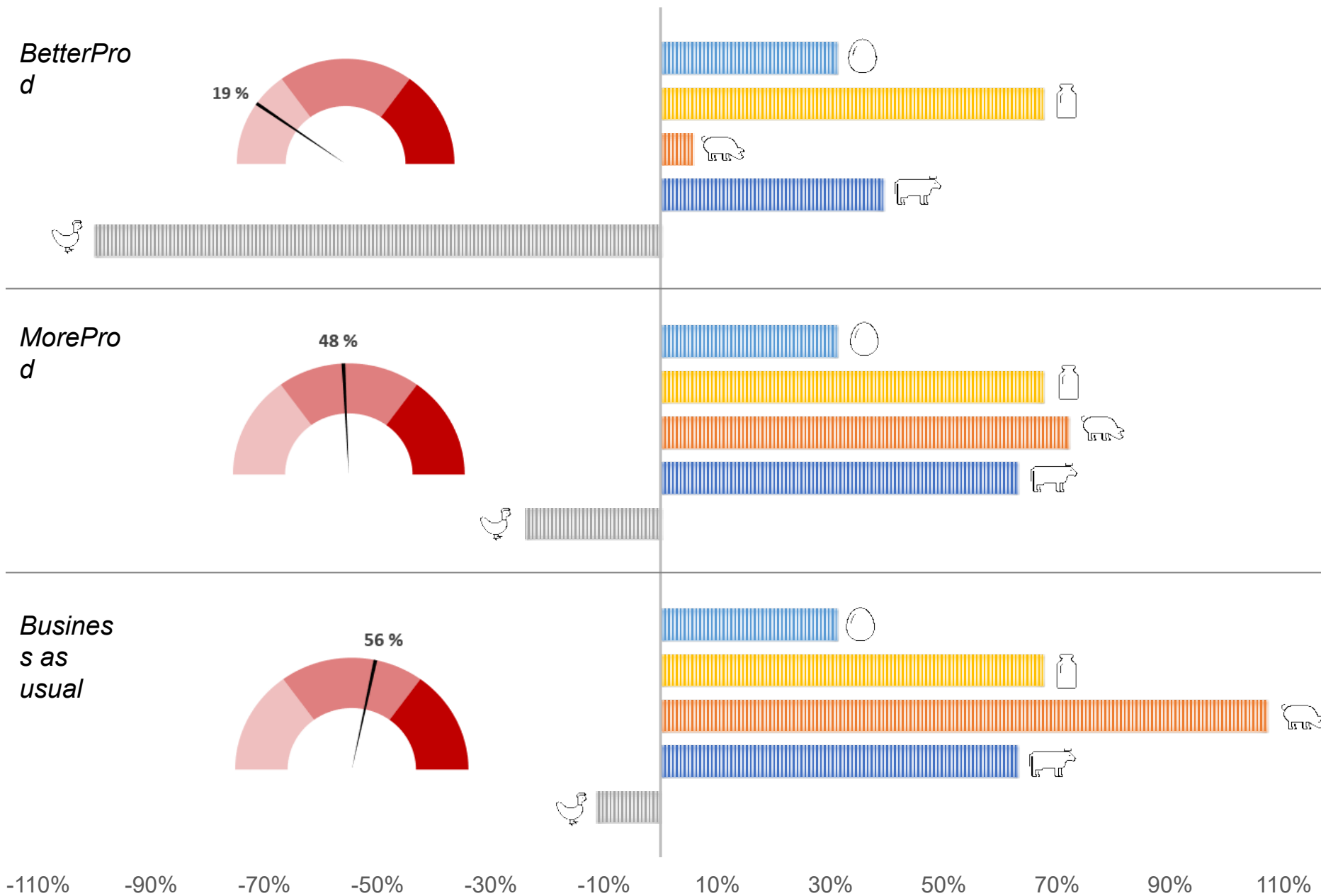
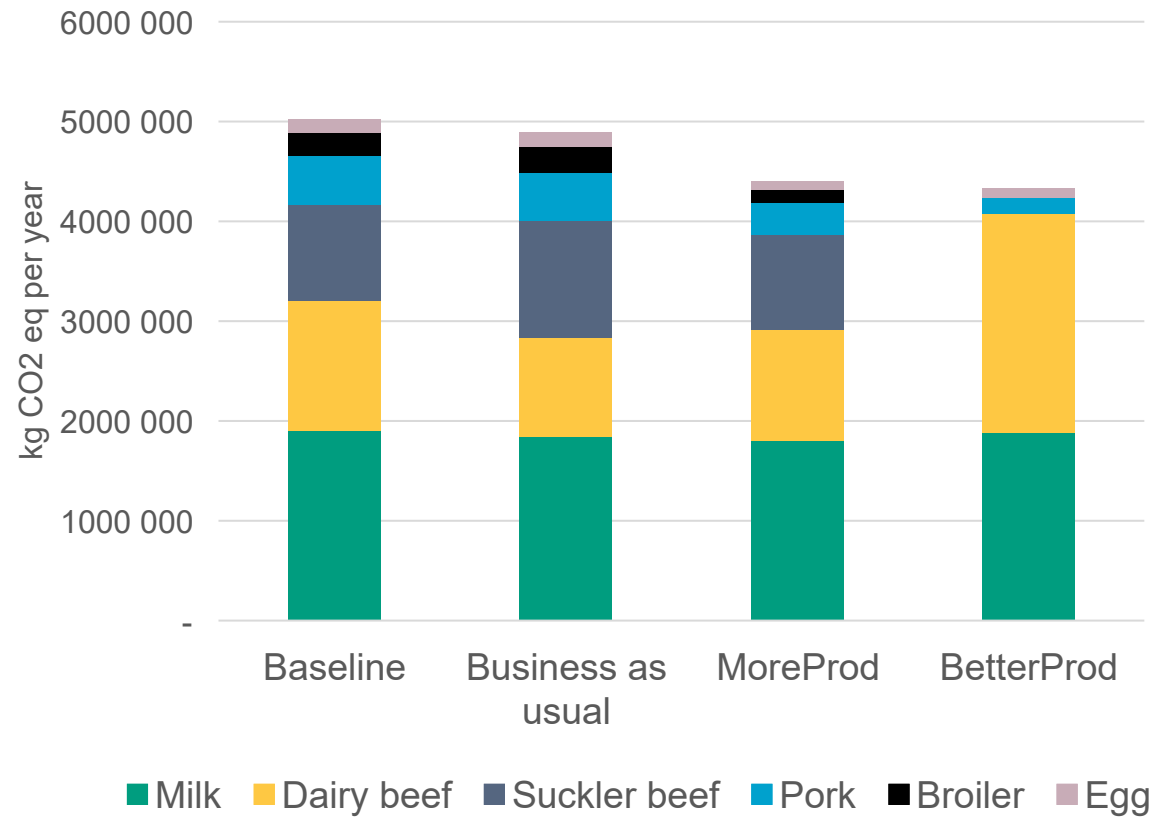


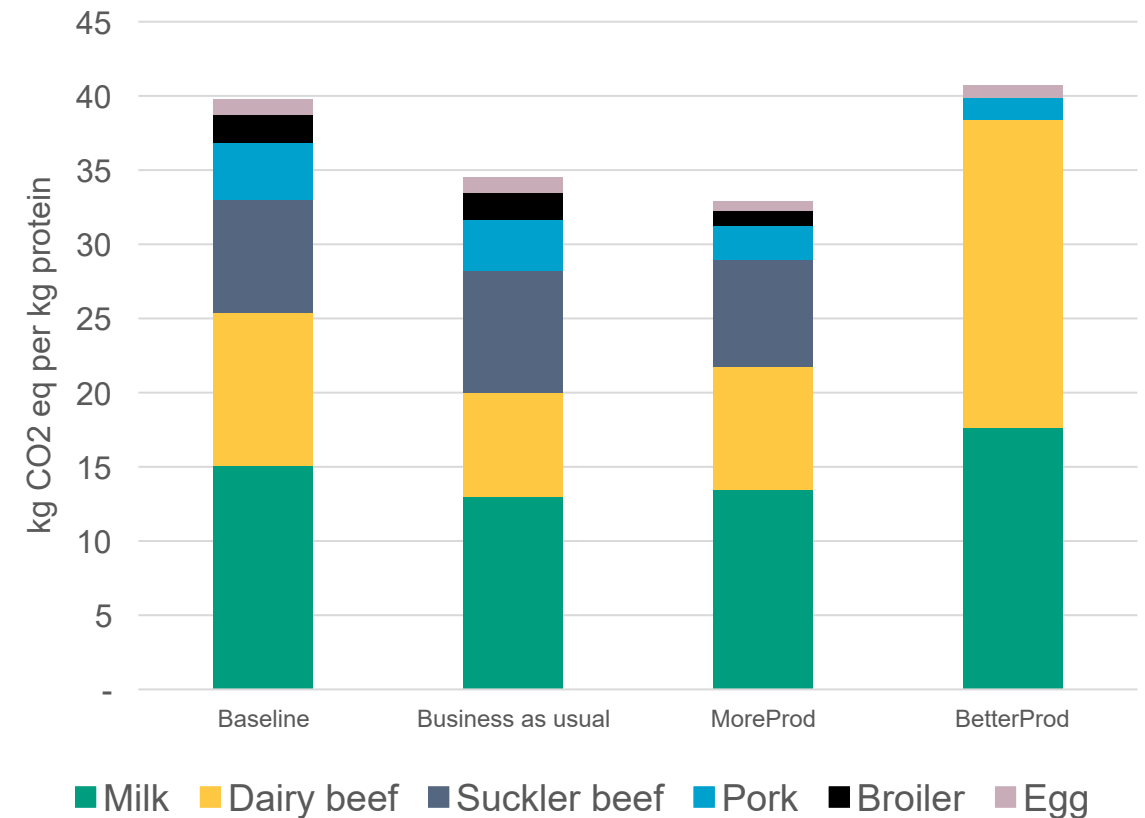
Figure 1: Deviation in total production of animal-sourced food (in %) compared to recommended intake for the Norwegian population in 2040 (NNR, 2023; SSB, 2020) (red scale to the left), and deviation specified for eggs, milk, pork, beef, and chicken.

Climate change

Tonnes CO₂ eq. per year

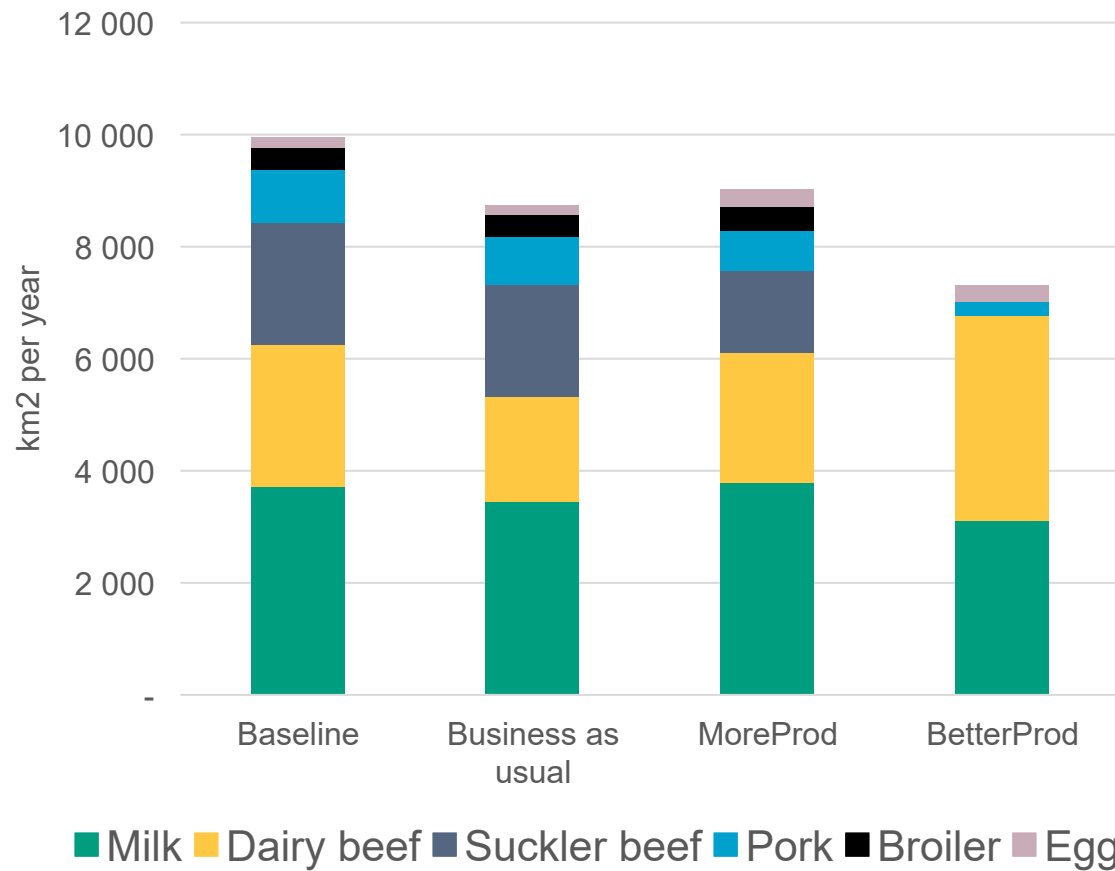


Kg CO₂ eq. per kg protein produced

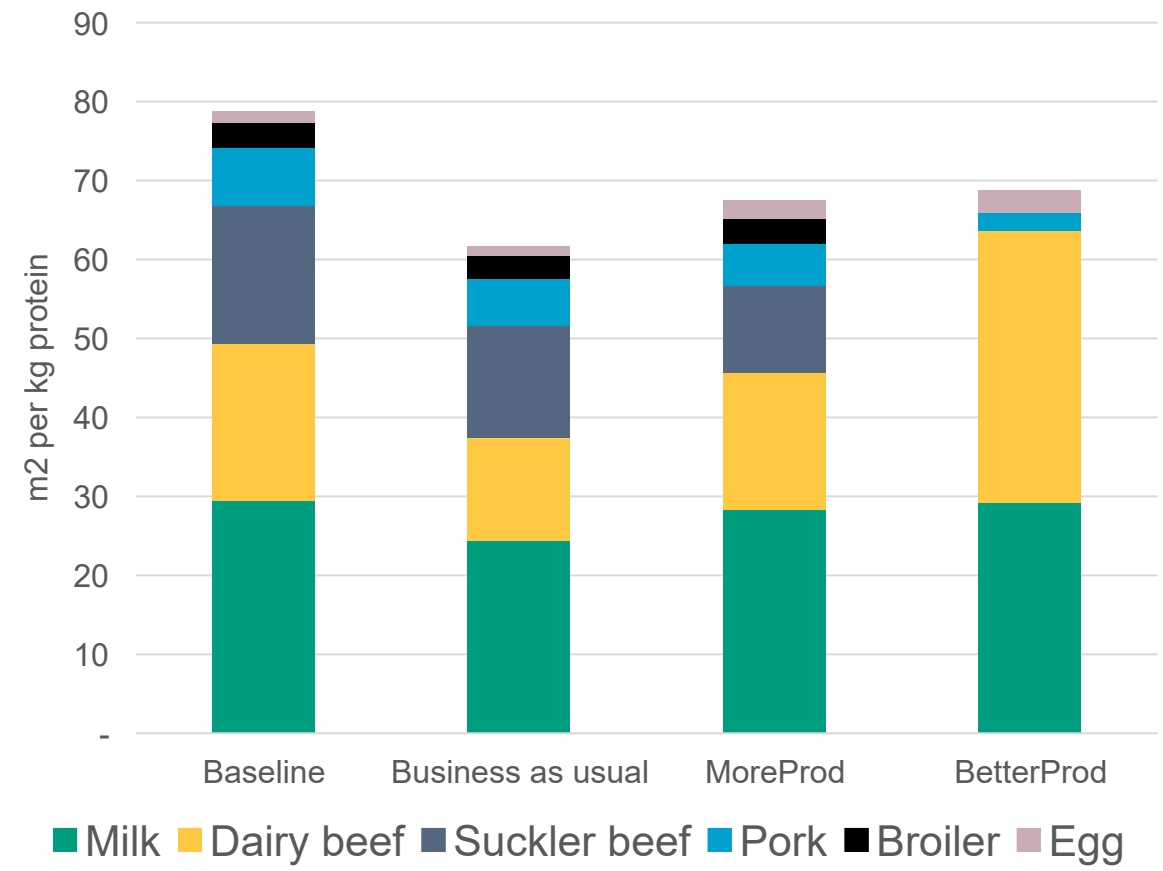


Land occupation

Km² per year (excluding outfield)

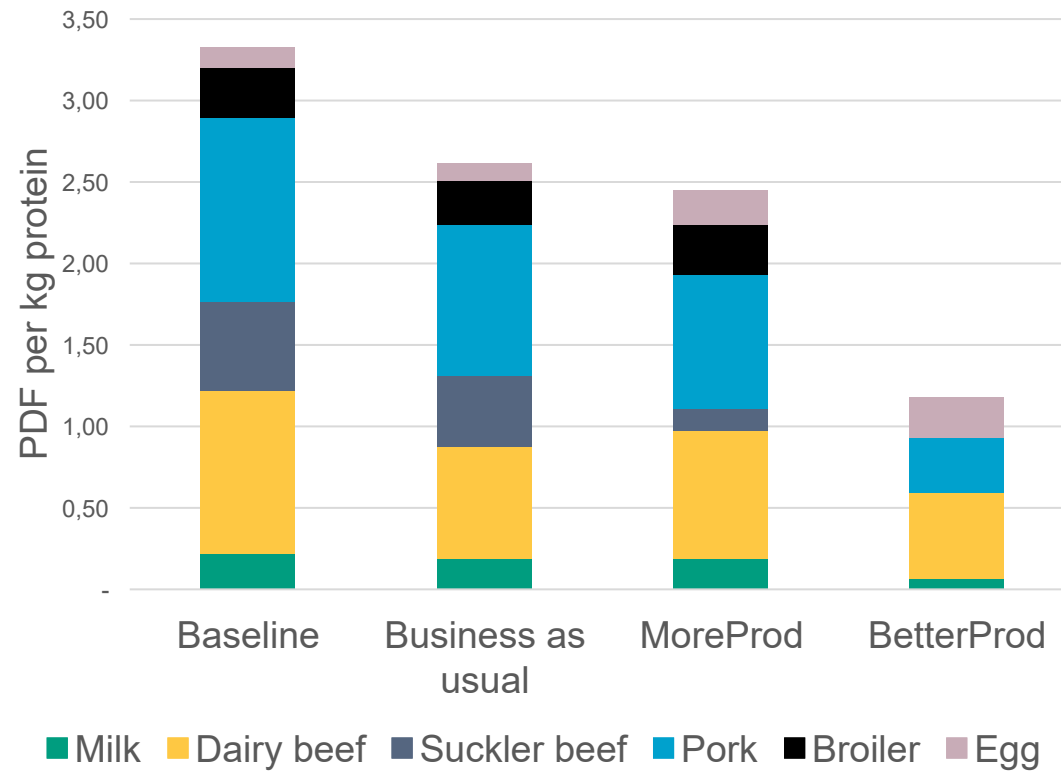


M² per kg protein (excluding outfield)

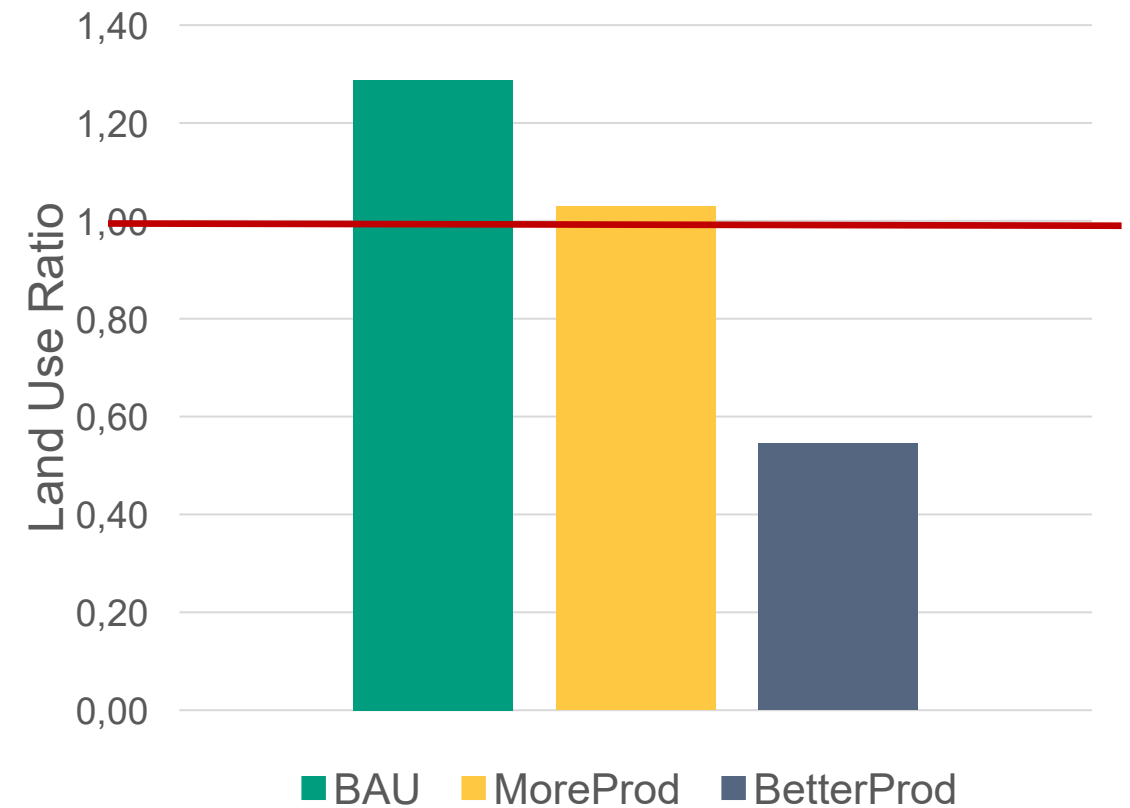


Biodiversity and land use efficiency

Biodiversity loss (PDF) per kg protein
(excl. outfield) (Knudsen et al., 2017)



Land Use Ratio (Van Zanten et al., 2016)



Conclusions

By developing a more circular livestock production system in Norway, we can:

- Produce enough animal-sourced food to cover the needs of the population, but maybe not the preferences
- Reduce the feed food competition
- Reduce the loss of biodiversity
- Trade-off: climate change

Thanks for the attention!

