

# Exploring farmers' decision-making and behaviours towards adopting circularity in agriculture

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## Background

Agricultural production has become more specialised and less connected. This has increased dependency on synthetic fertilisers and imported feed, contributing to environmental issues, especially greenhouse gas (GHG) emissions. To mitigate the negative environmental externalities associated with intensive and specialised systems, a transition towards more circular approaches is suggested, as conceptualised in Figure 1.

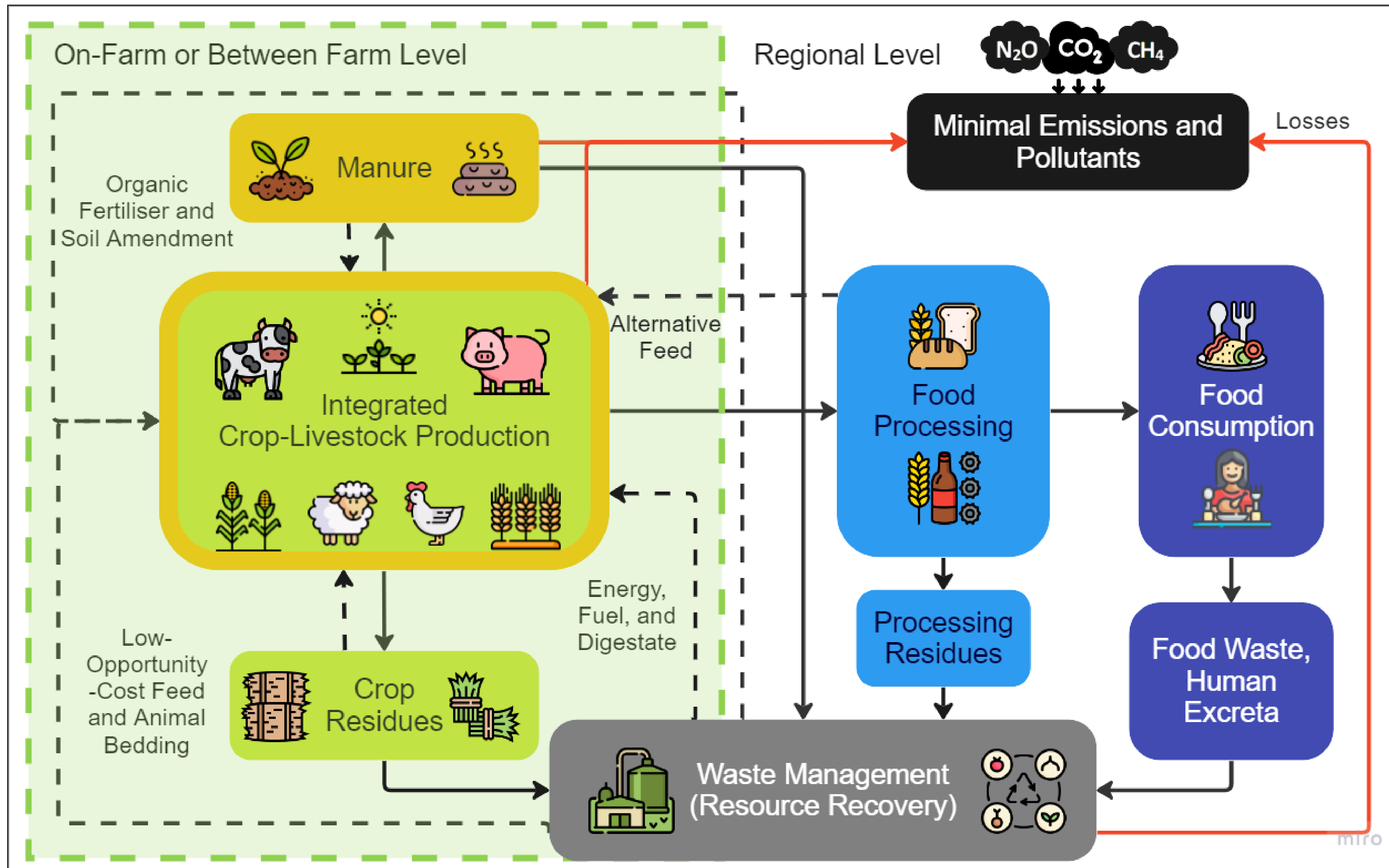


Fig. 1. A circular agricultural system—production, processing and consumption waste and by-products are recovered and reused/recycled as inputs (represented by the dashed lines)

## Circularity in agriculture

- Reduce** - external inputs and losses
- Reuse/Recycle** - waste and by-products
- Regenerate** - natural systems and rural communities

## Circular practices

List of 10 priority practices with the greatest potential to increase circularity. These practices address the 3Rs (Reduce, Reuse/Recycle, Regenerate) of circularity, are currently available for UK farms, but not yet widely adopted.

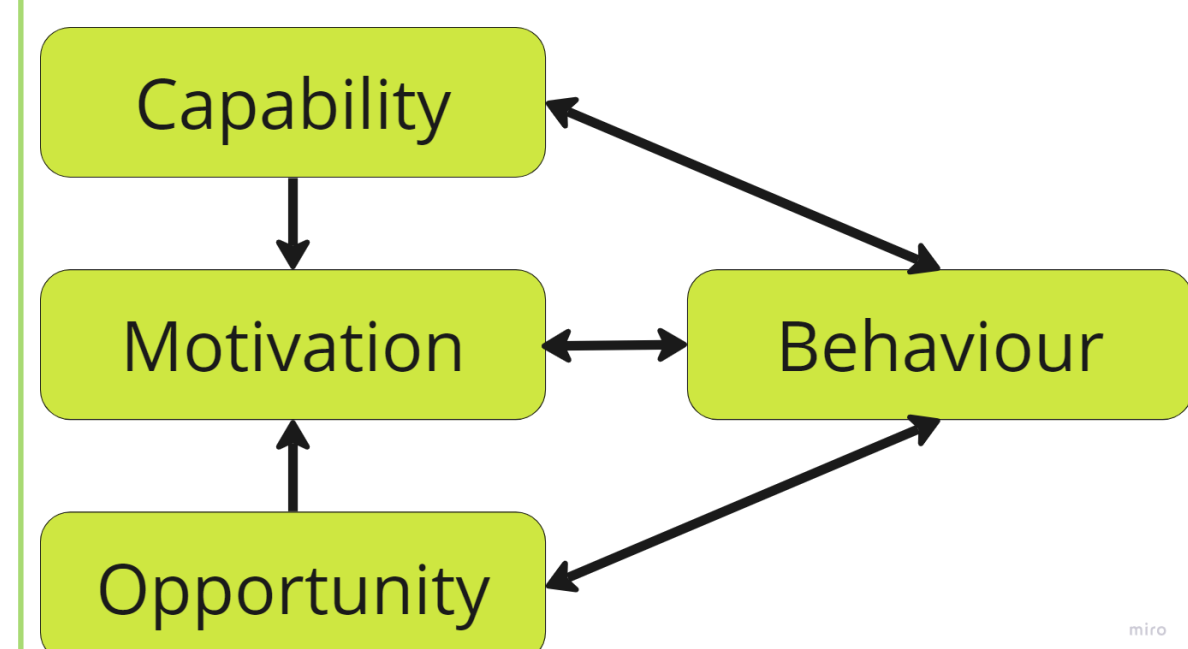
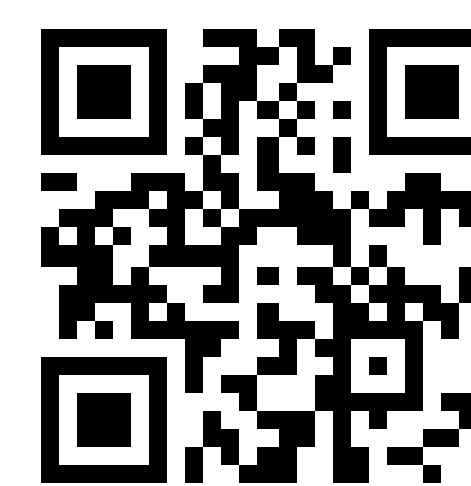
1. Mixed crop-livestock farming
2. Recycle biosolids
3. Water resource management and wastewater treatment
4. Sharing, swapping, and contracting labour, machinery, and resources
5. Anaerobic digestion (AD)
6. Cover crops
7. Renewable energy generation
8. Composting of organic by-products and waste
9. Solid-liquid separation of livestock slurry
10. Alternative feed ingredients

## Research aims

- Uncover farmer, industry, and policy perspectives and understandings of circularity
- Understand the barriers and opportunities for adoption and out-scaling of circular practices
- Identify and develop ways to support farmers to adopt more circular practices

## Methods

Semi-structured workshops and 1-2-1 interviews are being conducted online with farmers (~30), as well as industry and policy representatives (~15), to uncover the barriers, opportunities, and routes to support adoption, related to the prioritised list of 10 circular practices. An animation video was created to introduce Circular Agriculture to stakeholders. Scan the QR code to watch the animation:



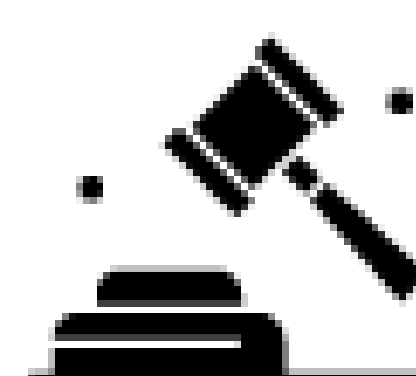
The COM-B model (Figure 2) will be used as a framework for gaining insights into farmers' decision-making.

Fig 2. The COM-B model (adapted from Michie et al., 2011)

## Implications of findings

Results will be co-assessed with other CircAgric-GHG project results associated with the technological and environmental-climate aspects of circularity, to prioritise circular practices. Results could recommend institutional changes and policy developments to support greater adoption and out-scaling of circularity in the agri-food sector as a potential strategy for GHG mitigation.

This research is contributing to the CircAgric-GHG project, which is looking at circularity within and between farming systems across an agro-ecological gradient from Norway, through Ireland, the UK, Germany, Spain, Italy, and Kenya to South Africa.



## Acknowledgements

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## Preliminary results

Barriers, opportunities, and routes to support the adoption of circularity, as discussed in the workshops, are being analysed. In Figure 3 below, key factors relating to the institutional framework for the UK are shown.

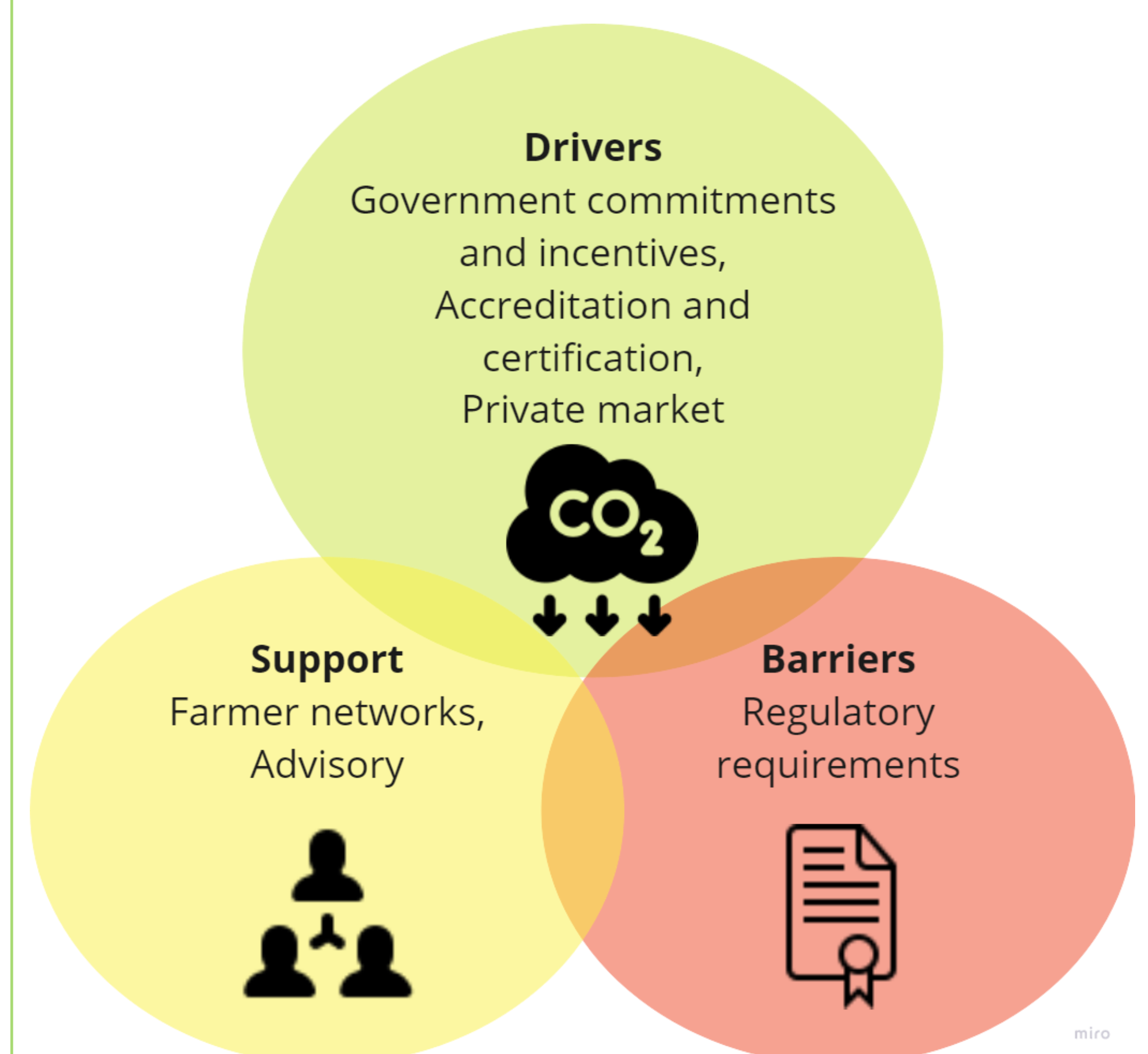


Fig 3. Key factors influencing the adoption, or otherwise, of circularity relating to the institutional framework for the UK

## Reference

Michie, S., Van Stralen, M.M. and West, R., 2011. The behaviour change wheel: a new method for characterising and designing behaviour change interventions. *Implementation Science*, 6(1), pp.1-12.