Agricultural Mitigation Options and Policies

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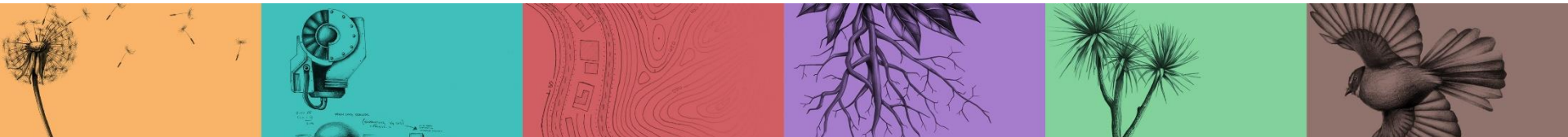
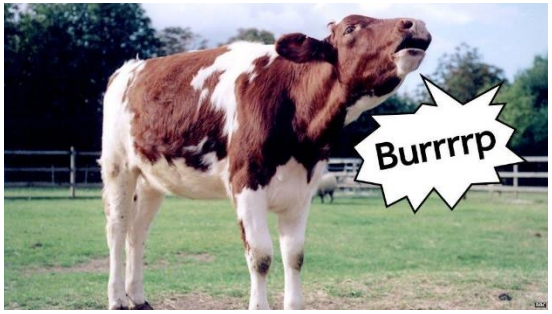
Motu Economic and Public Policy Research

E-Mission Possible Roundtable 2: Mitigation in the Land Sector



Overview



Mitigation options in agriculture

- Technology and new ways of doing things
- Practices already in place – the 'productivity challenge'
- Land use change

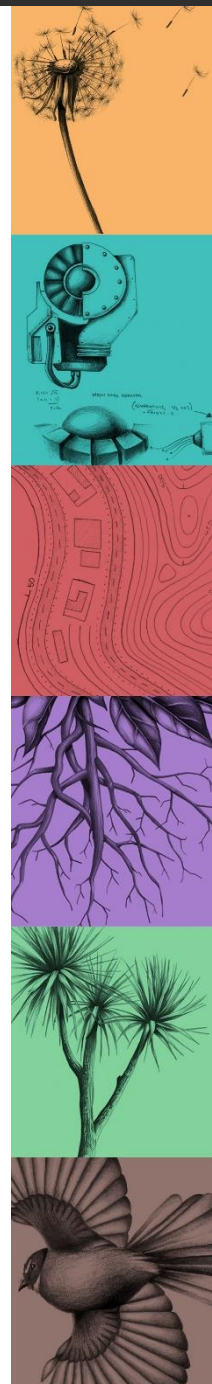
Technology and science are moving

BUT, there are barriers to uptake practices *and* technology

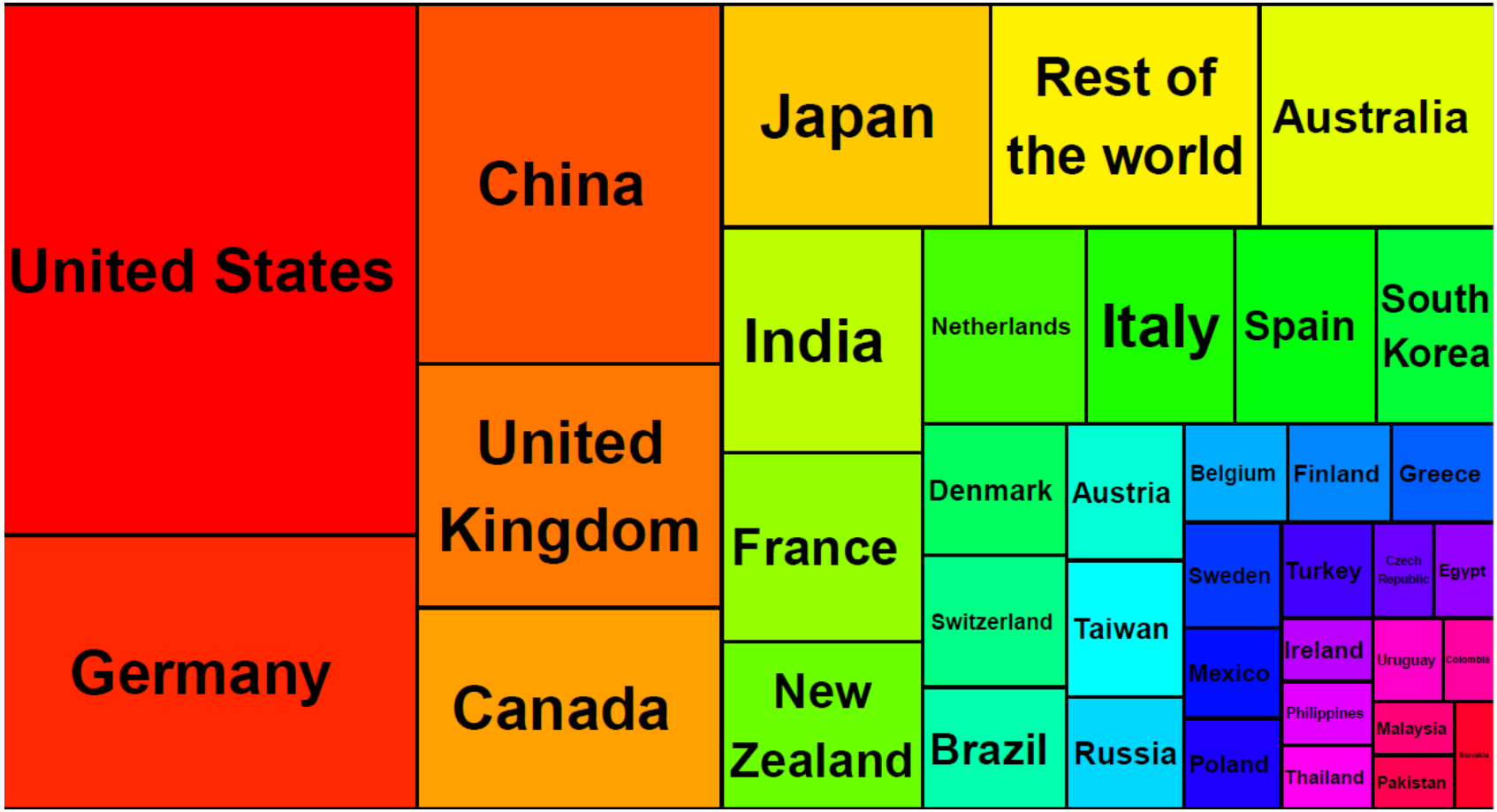
New Zealand research on technology and new practices

- Country investment on biological GHG research
  - 2002 – Pastoral Greenhouse Gas Research Consortium
  - 2007 – Sustainable Land Management and Climate Change Research Programme
  - 2009 – NZ Agricultural Greenhouse Gas Research Centre
  - Other sources (NZ Inventory, Global Res Alliance, etc.)

- The science has mainly focused on 5 mitig. clusters
  - Vaccine/inhibitors
  - Low GHG animals
  - Low GHG feeds
  - Plant and soil additives
  - Management practices

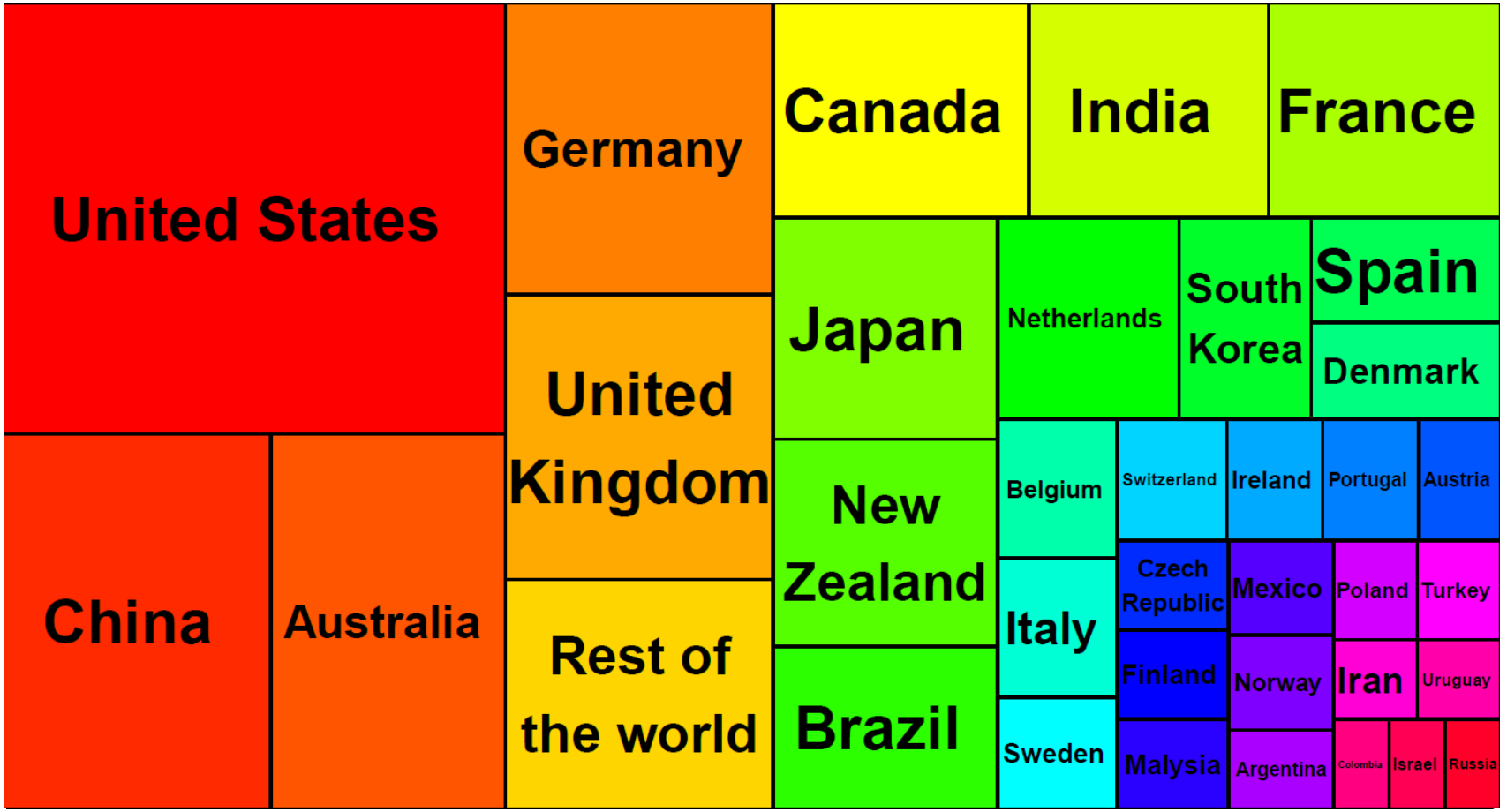


Vaccine and inhibitors (authorship)



Source: Own elaboration based on SCOPUS data (Motu, forthcoming)
Data shows relative number of researchers per country in papers published on this topic

Low GHG animals - genetics



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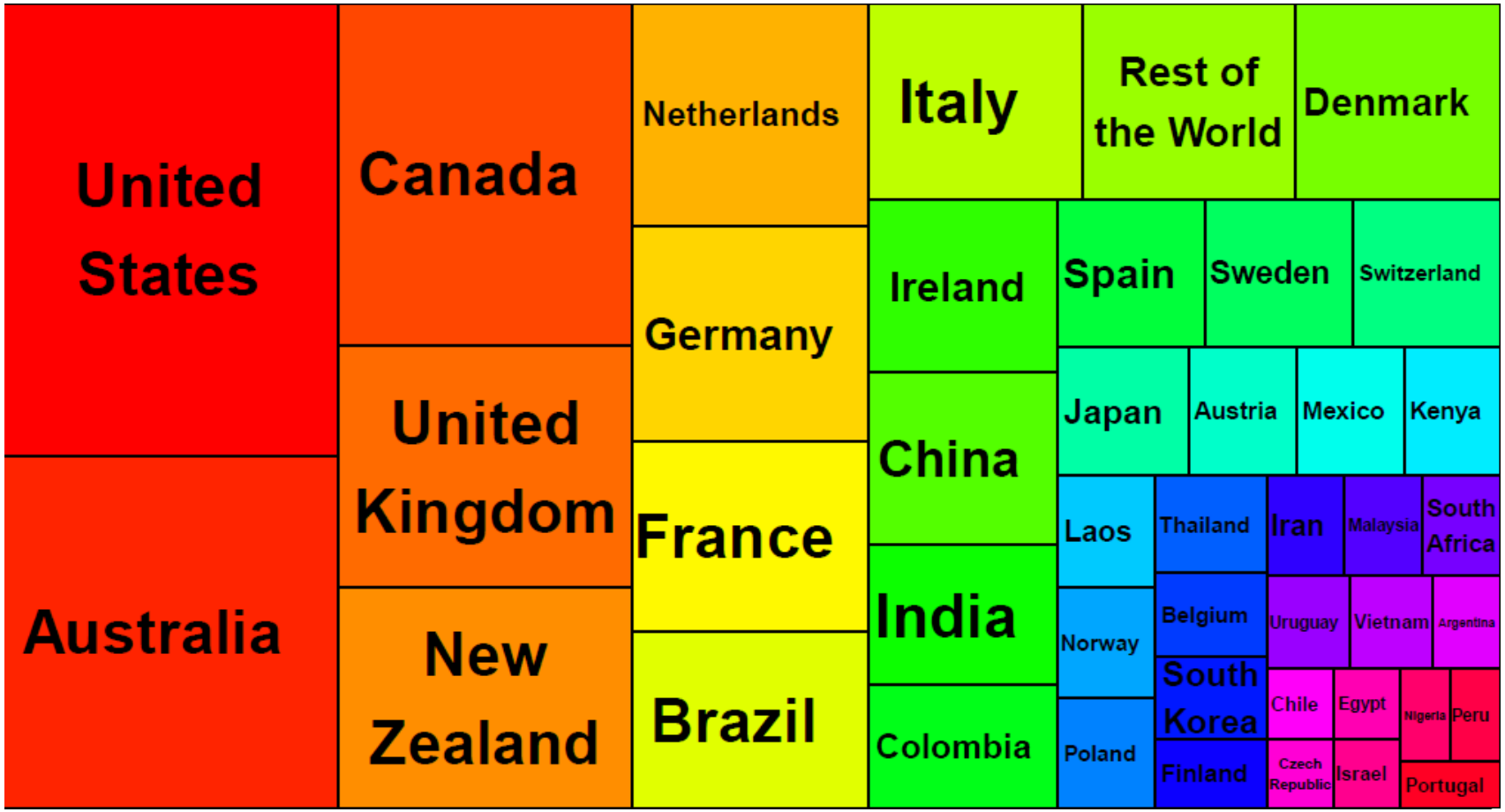
Low GHG feed



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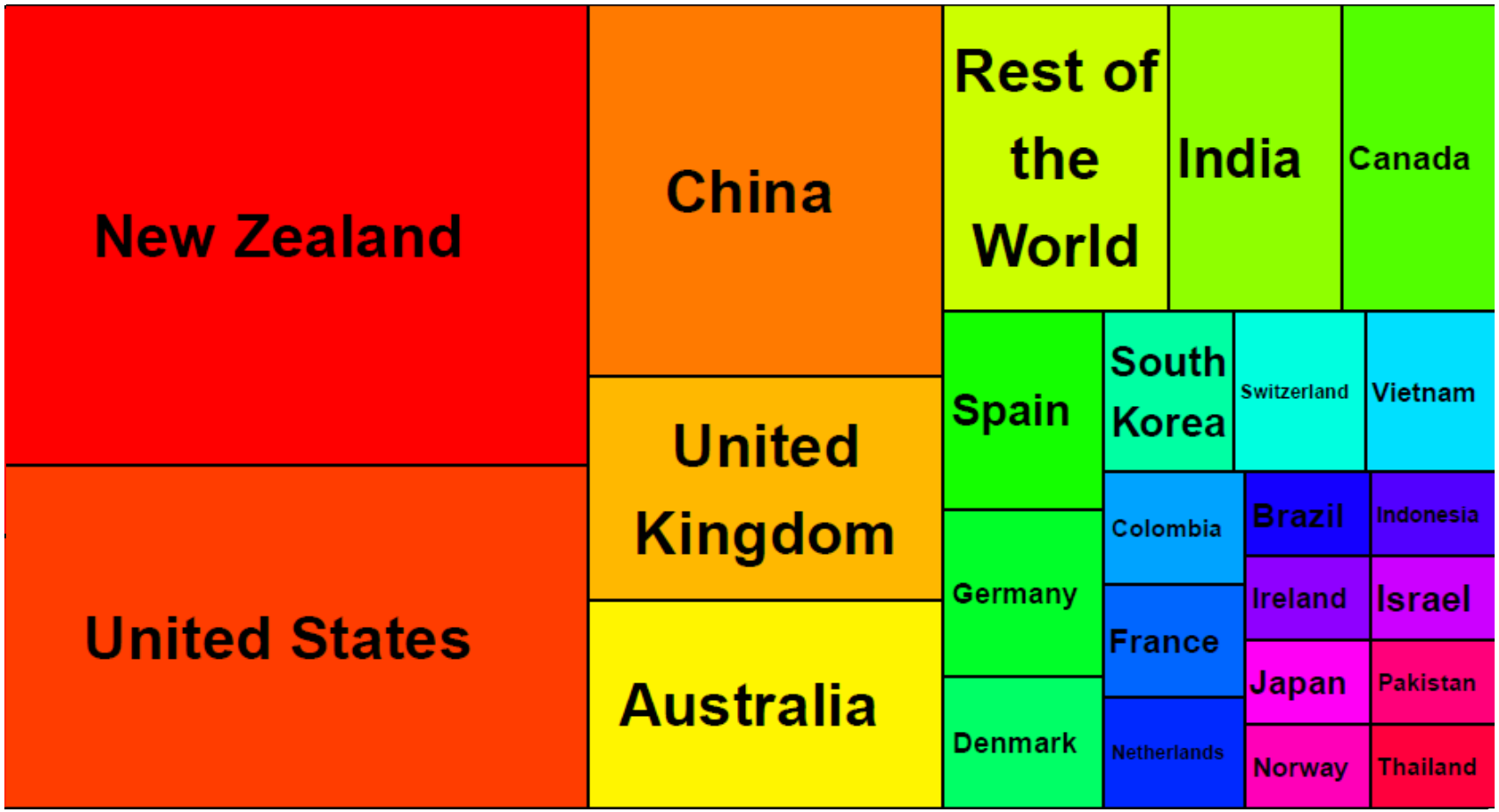
Plant and soil additives



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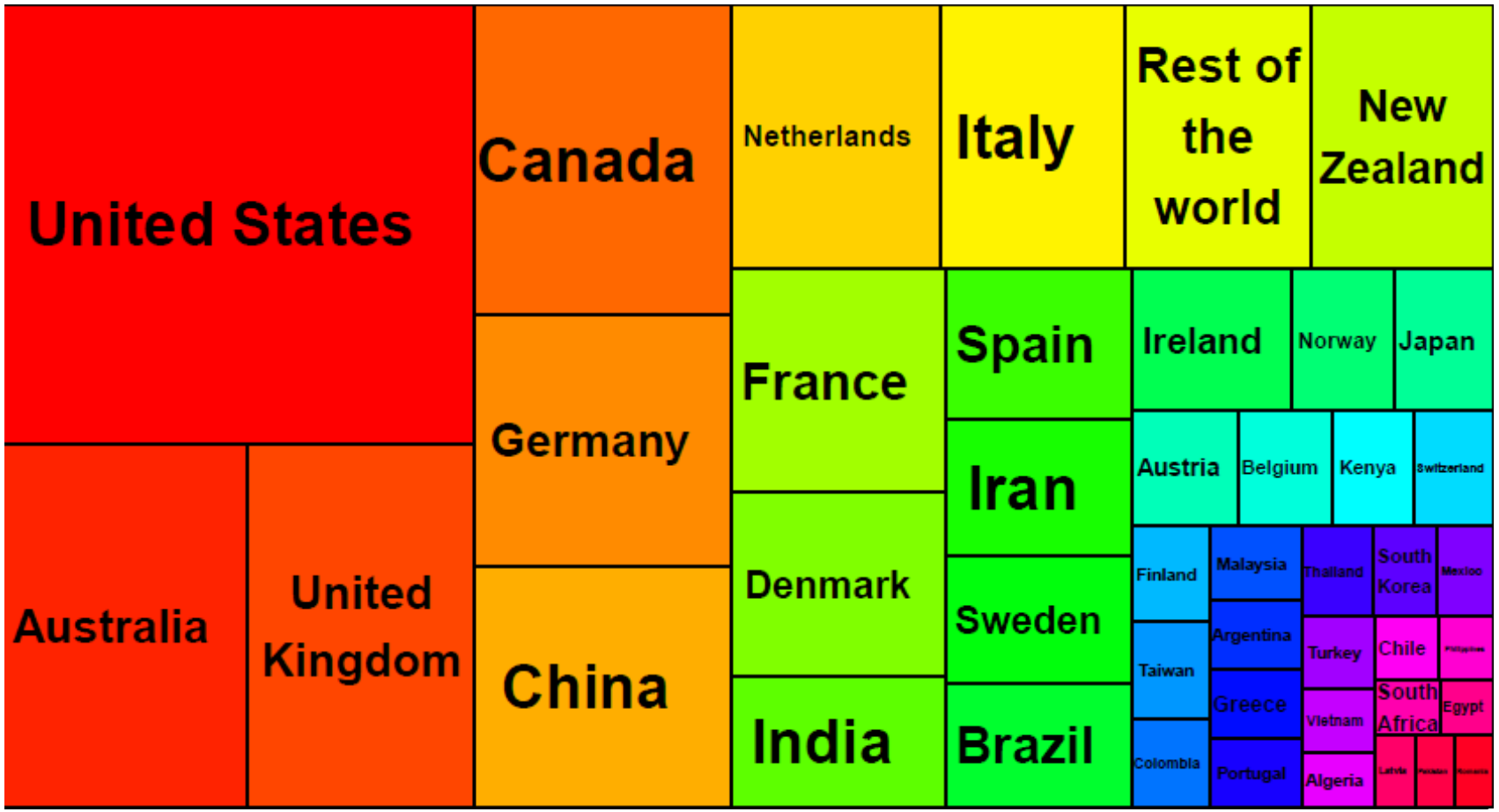
Management practices



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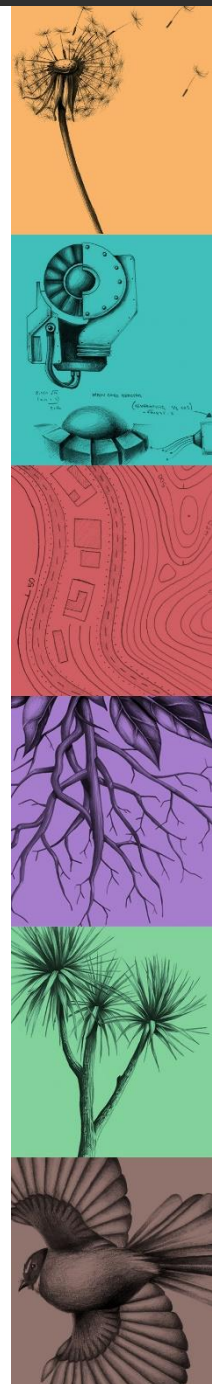
The 'productivity' challenge

- (Some) Mitigation practices have been in place for some years – e.g.
  - 'Breeding worth' animals (improving genetics) and lowering stocking rates
  - Applying nitrogen (fertiliser or effluent) to dry soil

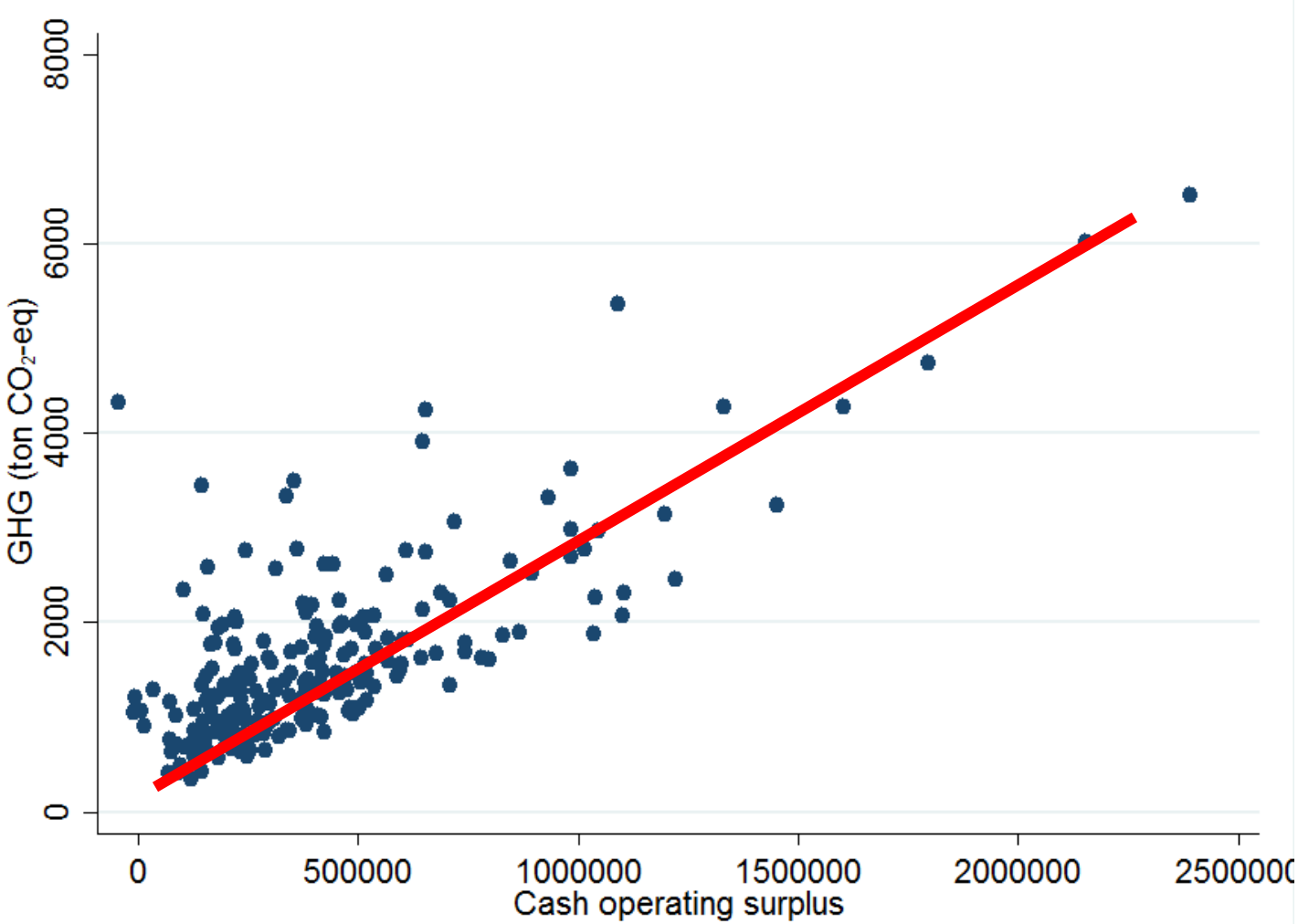
- But, not all implemented to achieve their full potential – many are aware of these and use them in the field, but to different degrees

- Is this an issue of profitability / costs ?



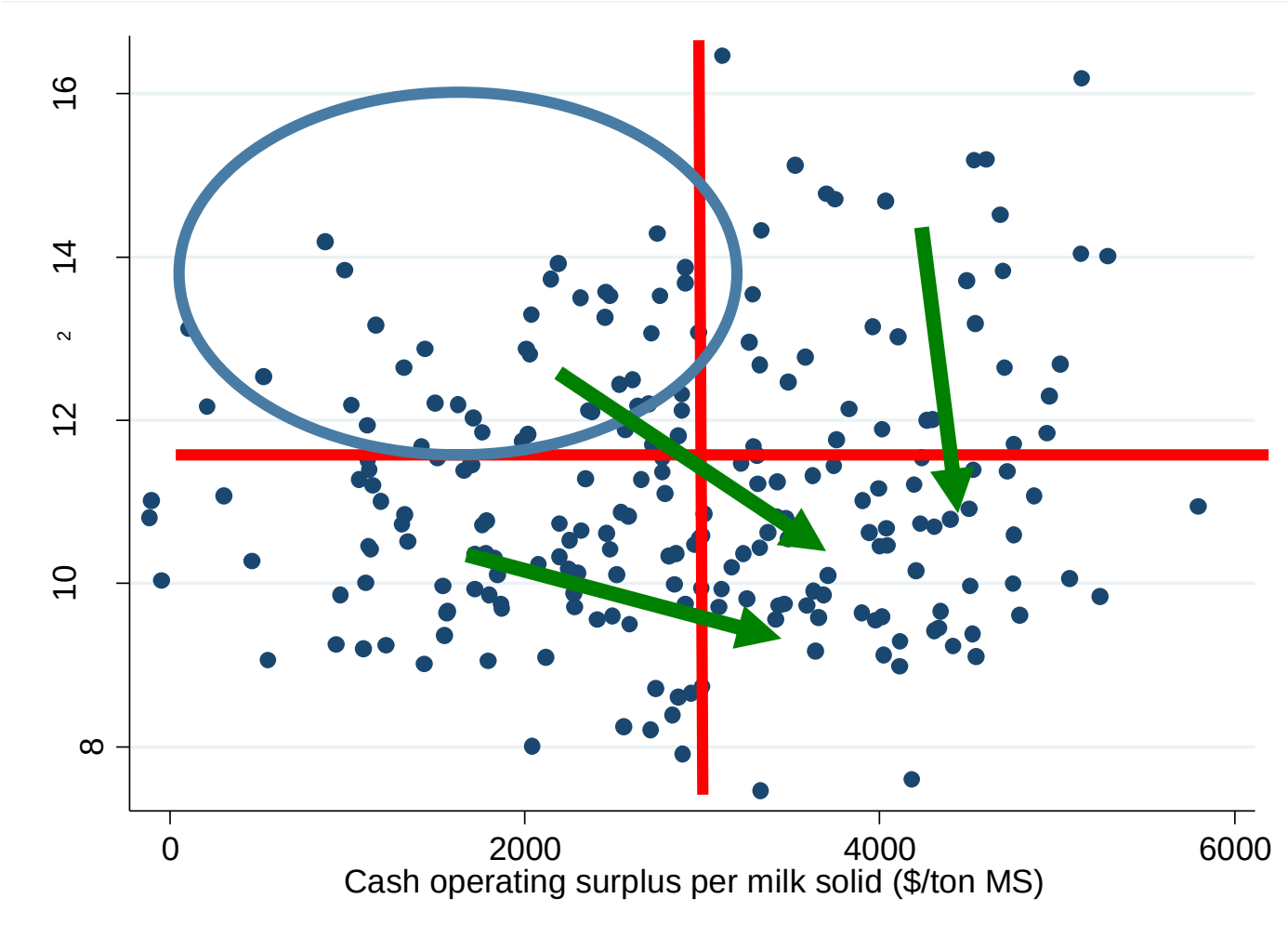
Total profit and GHG are linked

(Dairy data)



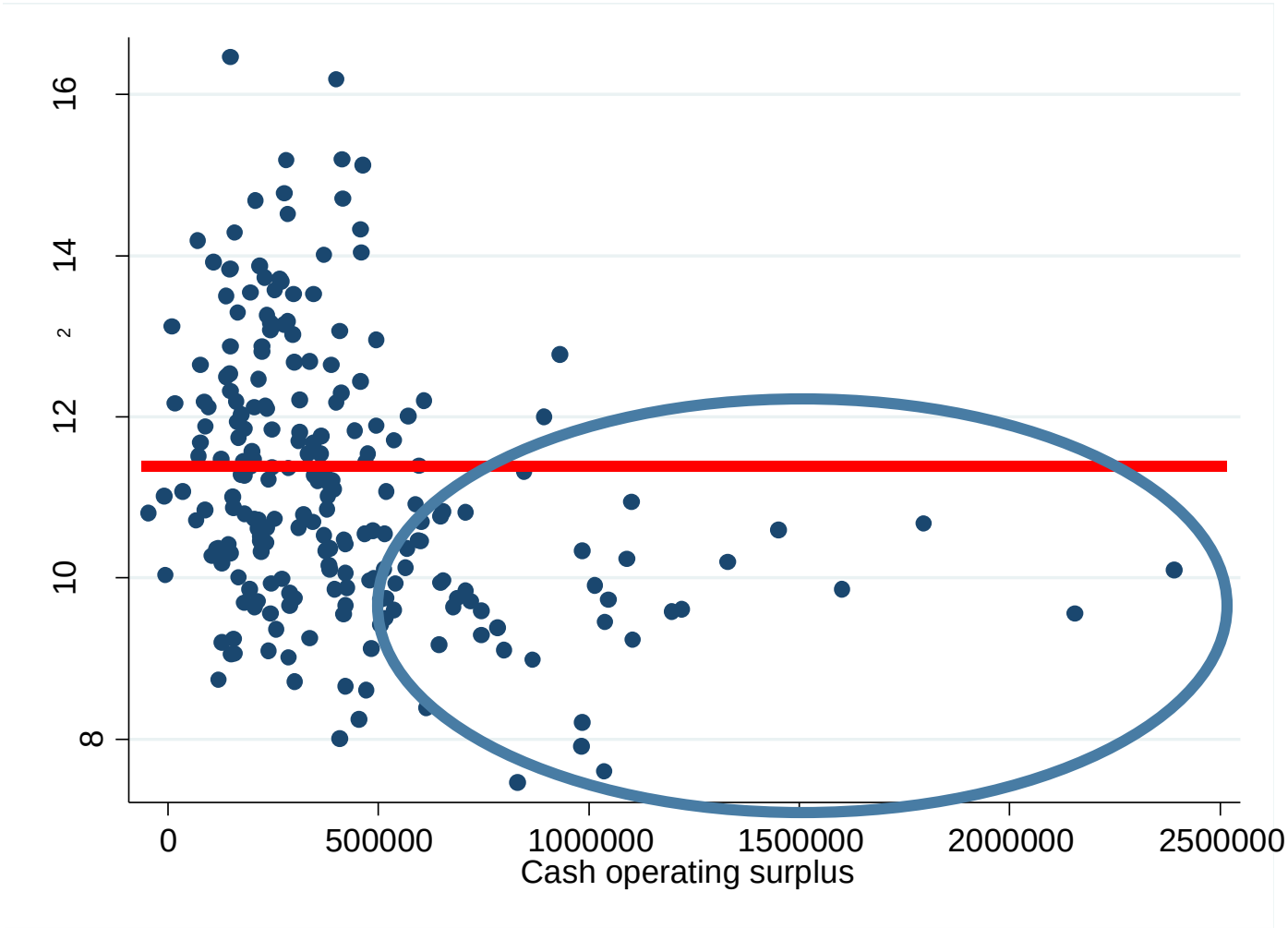
Source: Own elaboration using NZ Monitor Farm Data (Motu, 2017)

But GHG intensity and profit are not (values per tonne of milk solids)



Source: Own elaboration using NZ Monitor Farm Data (Motu, 2017)

And what about 'GHG intensity' vs. total profit?



Source: Own elaboration using NZ Monitor Farm Data (Motu, 2017)

The 'productivity' challenge

- Typology of barriers to adopt some of these practices

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ECONOMIC AND PUBLIC POLICY RESEARCH

BARRIERS TO ADOPTION OF NO-COST OPTIONS FOR MITIGATION OF AGRICULTURAL EMISSIONS: A TYPOLOGY

Motu Note #24
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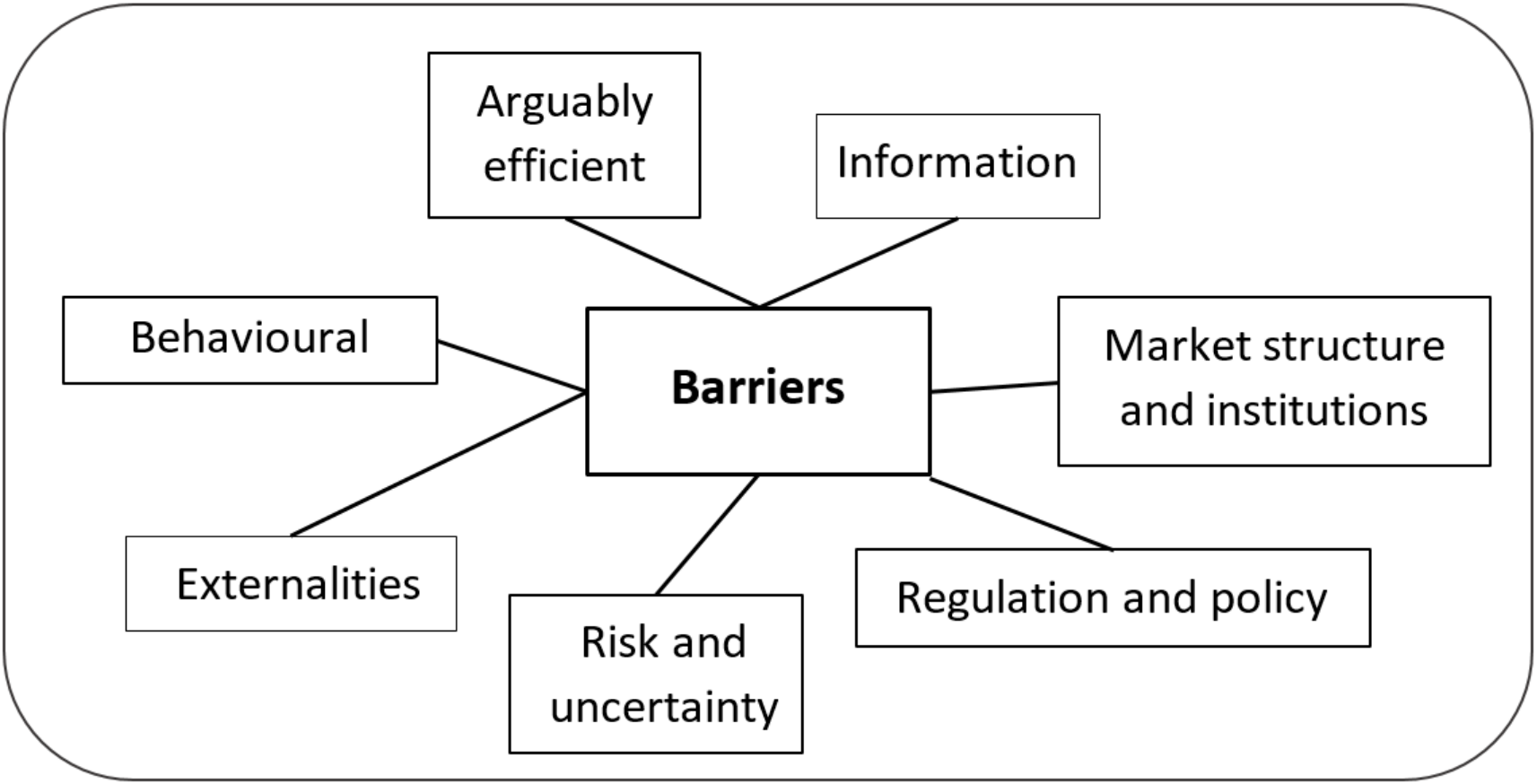
INTRODUCTION

Purpose

This typology is intended as background for assessing the existence and significance of barriers to adoption of no-cost mitigation options in agriculture. It is based on a literature review, including the extensive literature on barriers to technology adoption more generally. Its purpose is to identify and categorise possible or potential barriers that might exist, based either on theoretical considerations or analogies to barriers observed in other contexts. Possible barriers are included here whether or not we have identified any evidence of their existence in agriculture, in order to describe the potential universe of barriers that might be investigated in future research.

Why are farmers not lowering emissions if it's profitable?

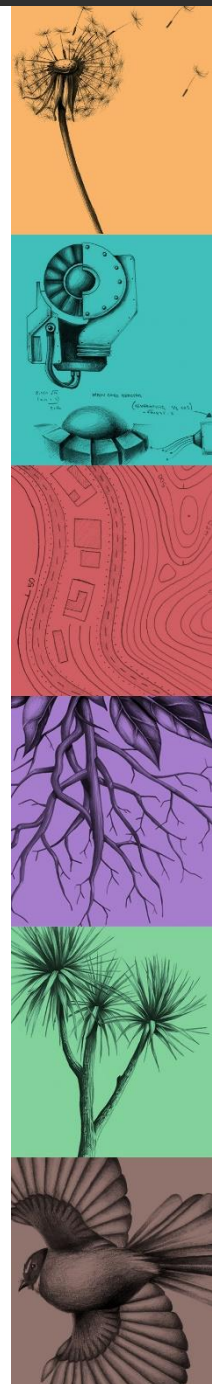


Source: Own elaboration, based on Jaffe (2017)

Why are farmers not lowering emissions if it's profitable?

Behavioural

- First-cost bias
- Salience bias
- Loss aversion
- *Inadequate managerial capability*
- *Social norms/prestige and standard practice*
- Habitual behaviour
- Trust/credibility



Behavioural barriers

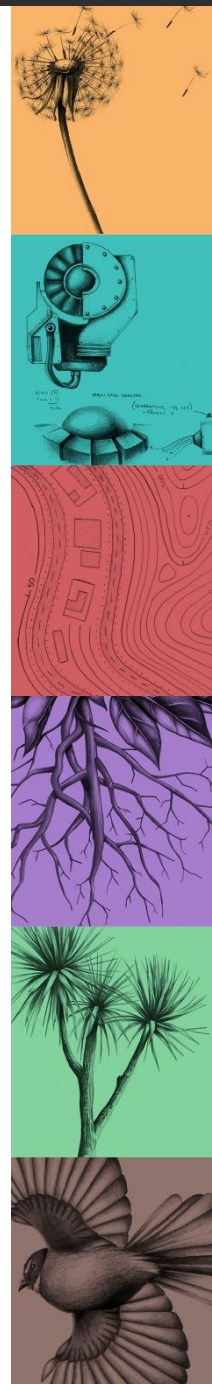
You drop your cow numbers, and you grow the same amount of pasture, pasture's going to waste, that's money going down the drain. Unless you harvest it. You can harvest it, but that's a cost.

So you've got to have a very, very good farm manager.

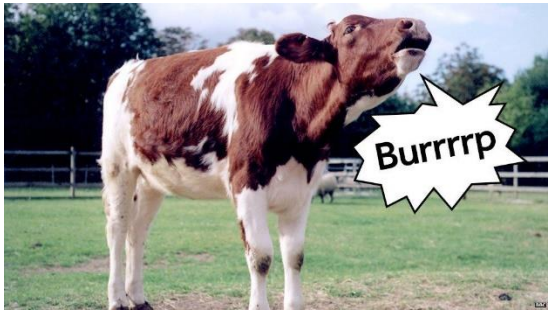
Farm manager about *reducing stocking rate*

There's a lot of farmers round here putting 2, 3, 4 hectares of their dairy farm into kiwifruit. But they're not knowledgeable, so who's going to look after it for them? You know, at the end of the day it's the dairy farmer that's setting up the kiwifruit…

Farmer in Bay of Plenty district



Key points



- NZ is a world leader in technology and science of agricultural GHG mitigation
- But technology is worthless if adoption is low
- We need a better understanding of barriers to adoption and policies to overcome them
- Farm level data is key
    - Outputs and profits / Inputs and labour / Agricultural practices
    - Socio-economic characteristics (including social capital)
    - OVERSEER (GHG emissions data!) linked to all these