Bioregional Weaving Lab

Deliverable 4.3: Farming, Landscape and Community Typologies Report

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Important notes on this deliverable:

Desk research on the process of developing farming typologies reveals that there are certain key questions to ask when developing a typology. We have responded to each below.

1. ***What is the use and purpose of the typology?***
   The inferred use and purpose of this typology is to help bring dairy farms into the safe and just operating space (SJOS), with regard to sustainability across 4 areas (financial, social, inspirational, and natural).

2. ***What is the method of data collection and typology development?***
   The approach to typologising in this document is qualitative and participatory. Due to time constraints, statistical quantitative methods have not been applied. Yet, we believe that the findings and outcomes of the approach of WP4, would not be attainable from purely quantitative approaches. This deliverable is the product of co-creation with stakeholders in the bioregion since the inception of the 'Activation Phase' until now, including many in-person on-to-one interactions and workshops. The following typology has been iterated inline with the feedback of the stakeholders. The method was also complemented with desk research into methods and outcomes of farming typologies in agri-food projects, and academic research.

3. ***What is the regional and contextual applicability of the typology?***
   The applicable region and context for this typology is two-fold. On a specific-level, it is drawn from and applicable to the Waterford bioregion, the boundaries of this workstream. On a general-level, it holds implications for an Irish national context, on the basis that the same bioregional weaving lab approach is adopted across the diverse bioregions within the country.

4. ***What is the aim of the typology?***
   This typology aims to show that dairy farming types are complex and multi-factorial, and that we must acknowledge the out-of-farm context, by accounting for diversity across all levels from farm, landscape, community, economy, and political environment. We argue that a simple typology of 4-5 archetypes might be counterproductive, as it would reduce dairy farmers to shorthand ideas and ignore the context in which they are situated.

5. ***What policy relevance and implications does it hold?***
   It shows the need for an Implementation Phase which includes instruments that are tailored to the unique 'types' within dairy farming. It is here that WP4 argues for and demonstrates the need for a Bioregional Weaving Lab, or similar infrastructure.

Background desk research on farm typology variables

The accompanying list of categories is based on desk research of both academic literature, and non-academic projects on farm typologies.

It demonstrates the kinds of variables that can be used to delineate dairy farms into separate categories. It shows that typologising can be done based on many different types of variables, and a selection is made on which to include or exclude, to form a typology.

Please see Appendix D for a note on the challenges of using agricultural terminologies in public discourse

Categories of variables
1. Landscape type
   a. Upland
   b. Lowland
2. Farmer socio-demographics
   a. Age
   b. Gender
   c. Family-status / living situation
   d. Education
3. Farm attributes
   a. Mixed or Dairy only?
   b. Herd size
   c. Land area
   d. Manual or AI milking?
   e. Organic?
   f. Intensive / extensive?
   g. Staff?
4. Farm relationships
   a. Cooperative membership
   b. Voluntary group membership
   c. Route to market
   d. Alternative routes to market?
5. social-psychological variables
   a. attitudes,
   b. values,
   c. identity of the farmer
6. business characteristics
   a. (e.g. farm income),
7. knowledge-related variables
   a. (e.g. farmer's problem awareness, sources of information)
8. technology uptake
   a. (e.g. use of digital technologies).
9. What are their needs, goals, and challenges?
10. Particular interest in participating in Implementation Phase?
    a. Monetary interest
    b. Social interest
    c. Educational interest etc..

Farm typology examples

Existing academic literature and organisational projects put forward different typologies of farms, for different purposes. Some are listed below:

- IUCN Approaches to sustainable agriculture
    a. Agroecology
    b. Nature-inclusive agriculture
    c. etc.

- EU Farm Accountancy Data Network (FADN) typology
    a. Type of farming
    b. Economic size class
    c. Region

- H2020 DEMETER Farming Personas:
    a. Innovator
    b. Early adopter
    c. Early majority
    d. Late majority
    e. Laggards

- McFadden & Gorman (2016): Farm household innovation capacity typology
    a. Innovative diversifiers
    b. Non-innovators
    c. Potential innovative diversifiers.

While these examples are valuable, we argue that they may be overly simple, when trying to bring farms into the 'safe and just operating space' for sustainable dairy.

What is missing is an assessment of the farms and their context across the 4 returns of sustainability (economic, social, inspirational, and environmental returns), to determine where the farm is not 'sustainable' and where/how the enabling environment is shaping that. When this is done on a context-to-context basis, this can be paired with a typology, like those above, to better decide the kinds of interventions that would best suit the farm(s) in question.

Bioregional Weaving Lab proposed approach to typologising

We want to get dairy farms into the SJOS (inside the doughnut on the right). We know that to do so is not as simple as giving financial incentives to adopt a new technology. In line with this, a simplified typology like those on the previous slide will not suffice.

People are influenced by inspiration first to do holistic integrated sustainability measures and they are influenced by the people around them as much as incentives from government.

Therefore, we need to have knowledge of how a dairy farm is doing across the 4R's, and how entangled it is in other initiatives in the catchment and region, and relate that to their geographical location. In doing so, we need to adopt time horizons which allow for long-term changes in systems and in mindsets. This is the landscape approach.

With these elements accounted for, we can assess the dimension of how ready people are to make changes that will bring them inside the SJOS. This allows for a typologisation which is grounded in a contextual and fluid assessment of dairy farms and their farming families.

The Vision Framework

Bioregional Weaving Lab approach to typologising

The previous slide can be summarised as the following steps to typologising dairy farms (expanded on in forthcoming slides):

1. **4R diagnosis:** Assess the farm and the bioregional context in which it exists (i.e., the 'enabling environment').
    a. Farm level: the Sustainable Farm Index tool can be used to score farms across all four returns on the SJOS framework
    b. Landscape level: a 4R diagnostic tool is currently being developed by Commonland for this purpose. Combined with the Bioregional/Landscape Plan describing the other entangled initiatives and roadmap for combined change.
2. **3 Zone diagnosis:** Assess the physical zone in which the farm exists (included as part of the landscape plan)
    a. Economic
    b. Combined
    c. Natural
3. **Changemaker journey:** typologising the dairy farm based on the extent to which the farmer is a 'changemaker'. Namely, how ready is the farmer to make the change towards 4R sustainability (i.e., be within the SJOS doughnut)?
4. **Transition typology:** typologising based on which impact pathway is most appropriate for farm in question.

Step 1: Dairy Farm 4R diagnosis

On a farm to farm basis: using a tool such as the SFI we can plot a farm on the doughnut.

Landscape level: we can assess the 'enabling environment'. This can be done through the Landscape Plan of a Bioregional Weaving Lab, for instance, and/or the 4R diagnostic tool which assesses the overall state of the 4R in the bioregion.

The Vision Framework

Safe and Just Operating Space for Sustainable Irish Dairy

ECONOMIC CEILING
INSPIRATION CEILING
ENVIRONMENTAL CEILING
SOCIAL CEILING

ECONOMIC FLOOR
INSPIRATION FLOOR
ENVIRONMENTAL FLOOR
SOCIAL FLOOR

Enabling Environment
Enabling Environment
Farm System
Farming Household
Landscape

Metabolic Consulting

THE NEW NORMAL FOR IRISH DAIRY

FOUR PILLARS:

INSPIRATION inspiring new perspectives and mindset shifts

SOCIAL promoting the wellbeing of individual people and

ENVIRONMENTAL preservation and restoration of the natural environment

ECONOMIC ensuring long term economic stability

Key stakeholders:

Farming household: Individuals who share responsibilities and benefits related to dairy production.

Farm system: All activities within the farm boundaries such as production, inputs and ecological processes.

Landscape: The local social, cultural, ecological and economic context in which the farm system operates e.g. the bio-region or the county.

Enabling environment

Actors that have a strong influence on the dairy system and key stakeholders who will also be impacted by the transformation. These include:
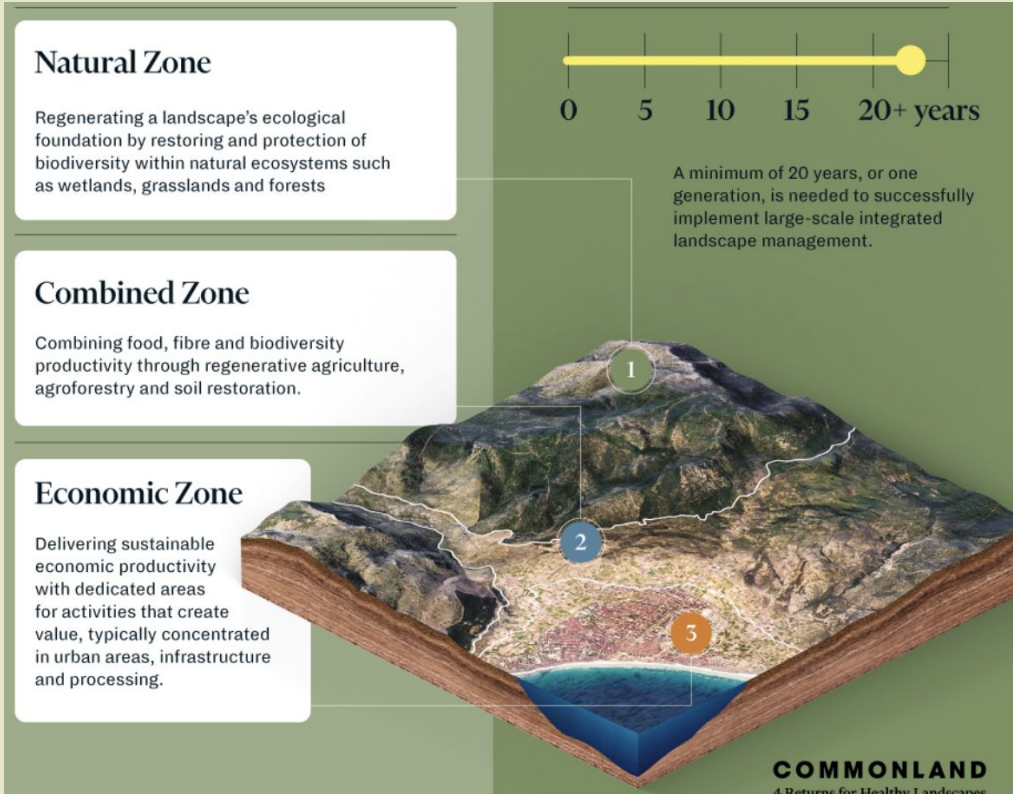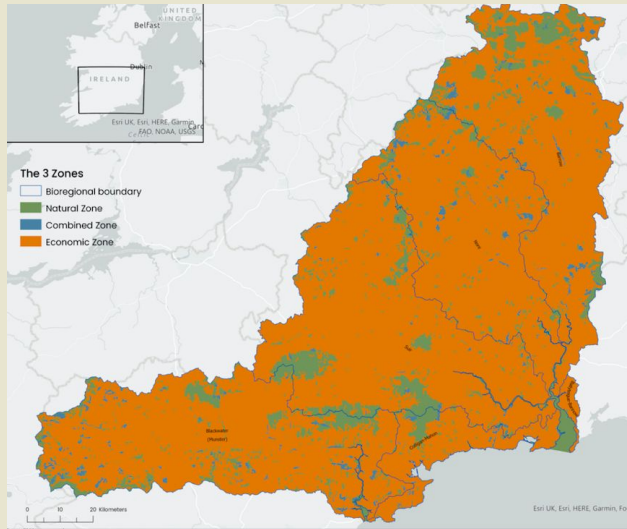- *Political environment*
- *Supply chains actors*
- *Processors*
- *Consumers*

Step 2: The 3 Zones

Next, we situate the dairy farm across space and time. The diagram on the right shows the differences between 3 zones in which a dairy farm might exist, and these are mapped for the Waterford bioregion in the image below.

Interventions to make a dairy farm more sustainable would differ depending on the zone in which it exists, and the time scale of the intervention.

Natural Zone

Regenerating a landscape's ecological foundation by restoring and protection of biodiversity within natural ecosystems such as wetlands, grasslands and forests

Combined Zone

Combining food, fibre and biodiversity productivity through regenerative agriculture, agroforestry and soil restoration.

Economic Zone

Delivering sustainable economic productivity with dedicated areas for activities that create value, typically concentrated in urban areas, infrastructure and processing.

0   5   10   15   20+ years

A minimum of 20 years, or one generation, is needed to successfully implement large-scale integrated landscape management.

COMMONLAND
4 Returns for Healthy Landscapes

The 3 Zones
Bioregional boundary
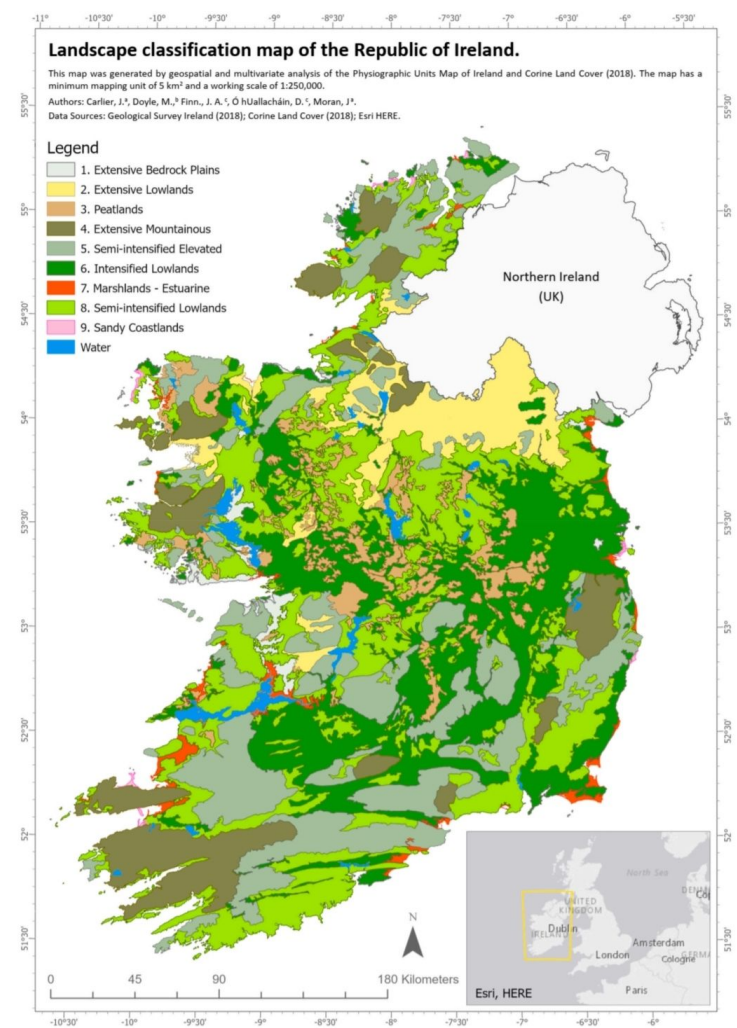Natural Zone
Combined Zone
Economic Zone

The purpose of Step 2, is to account for the context in which the dairy farm exists. The 3 Zones are a useful classification for this, as the 'zones' capture the relationship between neighbouring landscapes and therefore joined up catchments and ecosystems in the bioregion.

The 3 Zones framework can also incorporate a landscape classification, such as in the image to the right. Here, environmental characteristics are used to delineate 9 types of landscape.
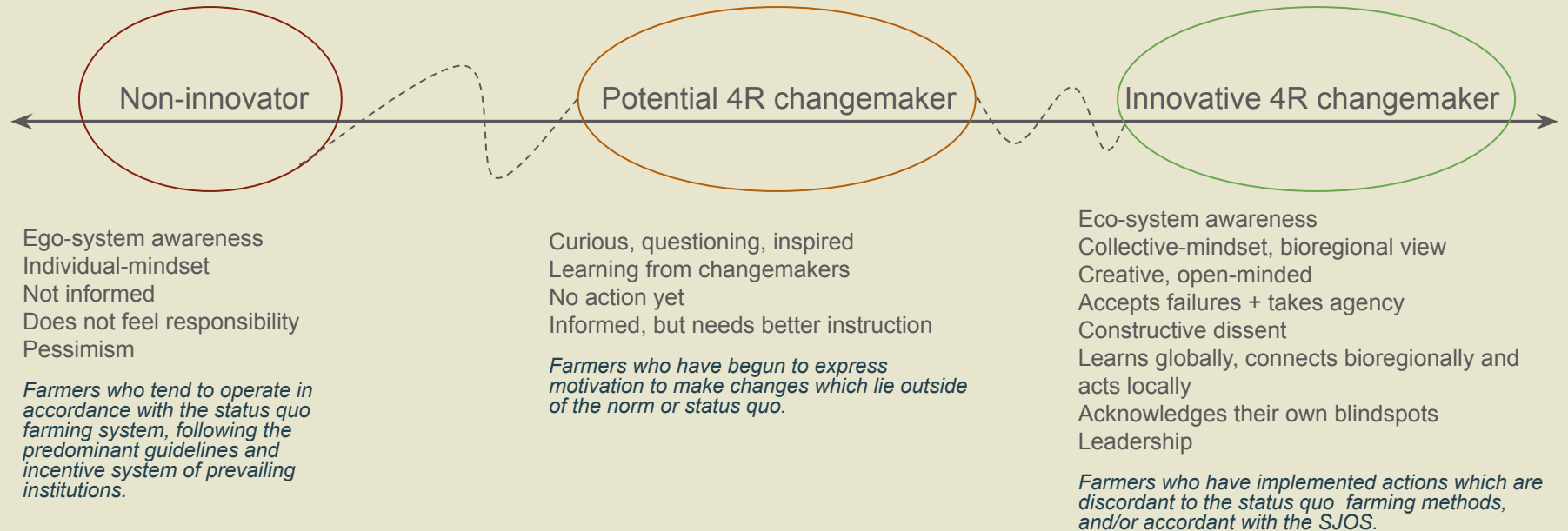
This is important because any instrument that tries to bring dairy farms into the SJOS, must account for the natural environmental characteristics of the farms.

For example, the map shows that the Waterford bioregion contains marshlands and extensive mountainous landscapes. Certain farming practices, like fertiliser spreading, will lead to different outcomes for each, because their hydrological properties differ. This is important for determining what is sustainable farming, across the four returns, for different farms in different landscapes.

Landscape classification map of the Republic of Ireland.

This map was generated by geospatial and multivariate analysis of the Physiographic Units Map of Ireland and Corine Land Cover (2018). The map has a minimum mapping unit of 5 km² and a working scale of 1:250,000.

Authors: Carlier, J.ᵃ, Doyle, M.ᵇ Finn., J. A. ᶜ, Ó hUallacháin, D. ᶜ, Moran, Jᵃ.

Data Sources: Geological Survey Ireland (2018); Corine Land Cover (2018); Esri HERE.

Legend
- 1. Extensive Bedrock Plains
- 2. Extensive Lowlands
- 3. Peatlands
- 4. Extensive Mountainous
- 5. Semi-intensified Elevated
- 6. Intensified Lowlands
- 7. Marshlands - Estuarine
- 8. Semi-intensified Lowlands
- 9. Sandy Coastlands
- Water

Source: Journal of Environmental management (Carlier, et al., 2021)

Step 3: Changemaker Journey

Here, we typologise dairy farmers / the farming household, based on their changemaker journey. This is inspired by theory within the BWL collective, Ashoka's Changemaker Index (see Appendix A), and academic literature (e.g., McFadden & Gorman, 2016). As well as the Diffusion of Innovations model by Rogers (1962) (see Appendix B). The changemaker journey typology accounts for the fluidity needed when describing the character of a farmer. Overtime, farmers may move from one end to another, in a non-linear way (there are a multitude of pathways in this journey).

Non-innovator

Ego-system awareness
Individual-mindset
Not informed
Does not feel responsibility
Pessimism

Farmers who tend to operate in accordance with the status quo farming system, following the predominant guidelines and incentive system of prevailing institutions.

Potential 4R changemaker

Curious, questioning, inspired
Learning from changemakers
No action yet
Informed, but needs better instruction

Farmers who have begun to express motivation to make changes which lie outside of the norm or status quo.

Innovative 4R changemaker

Eco-system awareness
Collective-mindset, bioregional view
Creative, open-minded
Accepts failures + takes agency
Constructive dissent
Learns globally, connects bioregionally and acts locally
Acknowledges their own blindspots
Leadership

Farmers who have implemented actions which are discordant to the status quo farming methods, and/or accordant with the SJOS.

Step 4: Transition Typology

The graph on the top-right shows the 4 'impact pathways' which emerged from Workshop 1 of WP4, as the key areas of leverage and intervention, needed to deliver returns across all four areas for sustainable dairy.

The bottom right shows an example of how we can typologise based on where a farm is in terms of its transition from start to end point, toward a certain vision. Based on this method: dairy farm 'X' may benefit more from Pathway 1 (Education), than dairy farm 'Y' and we can typologise by asking *which of these areas drives Farmer X or Y?*

WP4 demonstrates the importance of a local hub or infrastructure of support, such as the BWL, to facilitate the transition journey, because of the need for building trust and relationships on a landscape scale. This is in line with the recommendations of NESC (2023), *'Just Transition in Agriculture and Land Use'*.

1) Education and communication ecosystem

2) Routes to market - (less 'middlemen' / shorter value chains)

3) Food and health system awareness

4) Holistic, bioregional farming

Transition pathways towards reduced reliance on synthetic pesticides

Starting point

Farm 1

Farm 2

Farm 3

Farm 4

Farm 5

Increase efficiency and reduce use of damaging and scarce inputs

Substitute conventional practices and inputs with agroecological alternatives

Redesign based on ecological processes and socio-technical innovations

Reconnect and redistribute

Rebuild the food system for sustainable and equitable human wellbeing outcomes

Vision 2
Synthetic pesticide free agriculture in 2040

Vision 1

Example Case studies
Shorthand analysis based on real case studies

Farmer A: academic professor using a relative's dairy farm as a test and demonstration farm for university students of agricultural studies to learn about more sustainable ways of dairy farming. Diversity in income streams keeps him within the SJOS for financial returns.

4R diagnosis

- **Inspiration: inside SJOS**
- **Social: outside SJOS**
- **Natural: inside SJOS**
- **Financial: inside SJOS**

Zone: Combined

Changemaker journey: innovative changemaker

Transition typology: Holistic, bioregional farming (4)

This example farmer is outside the SJOS on the social R due to challenges faced in building community within his water catchment, and in outreach to other dairy farmers. Here, a local **BWL** support structure will be pivotal for building relationships between the farmer and a nearby Multi-education Ecopark and with production facilities.

Farmer B: close to retirement age, has been dairy farming for his whole life (with conventional methods). He faces challenges with succession and the financial risk of transitioning to farming practices which are more sustainable. He is inspired by his neighbour (Farmer A), whose farm impacts his awareness greatly. But he lacks the right incentive structure and capacity to implement new ways of farming.

4R diagnosis

- **Inspiration: inside SJOS**
- **Social: outside SJOS**
- **Natural: outside SJOS**
- **Financial: outside SJOS**

Zone: Economic

Changemaker journey: potential changemaker

Transition typology: Education (1) , and Holistic, bioregional farming (4)

This example farmer might benefit most from an incentive structure that minimises risk in the transition of the farm toward practices which are more sustainable. For example, this might mean matching him with a local person who has greater risk-capacity and is seeking land for sustainable dairy farming.

References

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Appendix A: Ashoka's Changemaker Index (CMI)

The image on the right displays a portion of Ashoka's online CMI assessment tool. The tool asks questions to assess the degree of an individual's changemaking skills, from empathy, innovativeness and team-work.

A similar tool could be made that is tailored to Irish dairy farmers, to place them on the 'journey' presented in Step 3 (see Slide 9).

	Not at all like me	Not much like me	Somewhat like me	Mostly like me	Very much like me
I adapt how I do things in light of new information.*	○	○	○	◉	○
I listen to perspectives other than my own. *	○	○	○	◉	○
I strongly feel called to address problems affecting other people and/or the planet.*	○	○	○	◉	○
My purpose is to create meaningful social changes to benefit others or society. *	○	○	○	◉	○

Appendix B: Diffusion of innovations model

The Diffusion of Innovations model by Rogers et al. (2019) has been adapted to the context of farming and environmentalism. The example on the right shows its application to the topic of climate change. Another example is the Horizon 2020 project, DEMETER, which used the model in forming their Farming Personas.

This model may be useful for the Implementation Phase of the Dairy Deep Demo Flagship, if used in conjunction with other steps suggested in this report. By using this model, it may become clear that current agri-environmental instruments are targeting or supporting one group more than others.
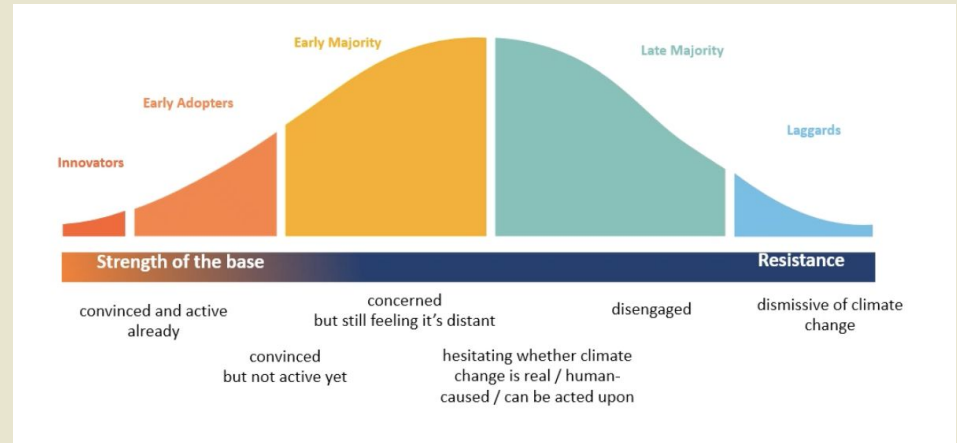
Source: Olga Shirobokova, Ashoka

Appendix C: Additional example case studies

Farmer C: conventional dairy farmer who has founded a nation-wide organic dairy cooperative, to deliver economic return and decentralised organisation to organic dairy farms.

4R diagnosis

- **Inspiration: inside SJOS**
- **Social: inside SJOS**
- **Natural: outside SJOS**
- **Financial: inside SJOS**

Zone: Combined

Changemaker journey: innovative diversifier

Transition typology: Food nutrition awareness and science (3)

Farmer D: extensive dairy farmer creating innovative projects towards greater space for nature on dairy farms across the country.

4R diagnosis

- **Inspiration: inside SJOS**
- **Social: inside SJOS**
- **Natural: inside SJOS**
- **Financial: outside SJOS**

Zone: Combined

Changemaker journey: innovative diversifier

Transition typology: Routes to market (2)

Farmer E: a regenerative mixed farm (from outside the bioregion) using agroecology and permaculture principles. Decentralised, direct route to market. Social media presence and farm-to-farm education. Social farming and eco-tourism. Diverse income streams.

4R diagnosis

- **Inspiration: inside SJOS**
- **Social: outside SJOS**
- **Natural: inside SJOS**
- **Financial: inside SJOS**

Zone: Combined

Changemaker journey: innovative diversifier

Transition typology: (2) and (3)

Appendix D: Challenges of terminologies

Current discourse around the role of agriculture in environmental issues features the use of certain terminologies which aim to capture or reflect certain types of farming practices and their associated environmental impacts. The challenge is that there is often a lack of consensus or alliance in our understandings of the most popular terms (e.g., 'regenerative', 'sustainable', 'organic', 'conventional').

For example, in this report we have used the term 'conventional' to help in describing the changemaker journey typology. It is important to note that the term is not meant to be a proxy for 'bad' farming, as is sometimes presumed. Here, it is used to reflect the way in which some farmers adopt or innovate new practices which diverge from the 'convention', or the 'normal practices'. This is not meant to be a value judgement or a simplification, as we also acknowledge that certain farmers might display different behaviours which align with both ends of the changemaker journey typology.

Sumberg & Giller (2022) provide a critical analysis of the framing of 'alternative' versus 'conventional' farming in public discourse, and show that the latter term is often used in an overly-simplistic way that ultimately homogenises diverse farming practices and their environmental outcomes. They propose a more productive approach of explicitly analysing certain farming systems' sustainability outcomes. We align with this finding, and this report aims to reiterate the importance of that approach by showing that a simple persona typology would not be effective, and potentially harmful. Instead, the SFI and other tools can be used to provide a more analytical approach that does not reduce farmers to certain labels.

This is a challenge that has also emerged in the workshops of WP4, there is a lack of a term for farming which delivers across all four pillars, as many commonly used terms for this do not suffice, lack consensus or have been co-opted/greenwashed, according to stakeholders (e.g., 'sustainable' or 'regenerative'). The term '***Farming with Nature***' seems to be most suitable and has demonstrated most consensus yet.