

The People's Transition

Roscommon farmers

Implementation of Community-Led Development for Climate Justice



November 2023

Acknowledgements

This paper details the application of The People's Transition model for implementing community-led development for climate justice solutions for farmers in Roscommon. The People's Transition model is being applied in communities throughout the island of Ireland between 2022 and 2025. This project has been led by the Think-Tank for Action on Social Change (TASC) and supported by AIB.

TASC is grateful to the people we spoke to directly in this project and those who completed our survey for telling us why farming is important to them and what they believe the future holds for farming in Roscommon. The support and involvement of the Roscommon Integrated Development Company was central to the completion of this report. Thank you to Martina Earley and Tomás Beades for helping us to develop the idea of focusing on the future of farming in Roscommon.

Thanks to Catriona Power of the Wool Hub in MTU Tralee for her assistance in identifying potential opportunities that the use of wool could create for farmers and the environment. Thanks also to James Gaffey of BiOrbic and MTU Tralee for their insight into steps to developing a grass biorefinery. TASC are fortunate to have an advisory committee comprising people from a wide range of backgrounds committed to addressing climate change in a just manner. A particular thank you goes to John Brosnan of ICOS.

The People's Transition for Roscommon farmers has been made possible due to the backing that TASC has received from AIB. This allows us to apply The People's Transition in communities across the island of Ireland. Thanks to Sarah Dempsey and Anne Williamson at AIB for backing this project. Thank you also to the members of AIB branches in Roscommon and Castlerea.

A sincere thank you to Robyn Deasy for creating the fantastic illustrations throughout the report and Nicola Bowes, who designed the front cover of this report.

At TASC, thanks are due to Dr Shana Cohen, Róisín Greaney, John White, Louisa Mackenzie, Rob Keogh, Emmie Voet and Manuela Rosso-Brugnach. The People's Transition for Roscommon Farmers project was managed by Kieran Harrahill.

The Scheme to Support National Organisations is funded by the Government of Ireland through the Department of Rural and Community Development.



Published by:
The Think-tank for Action on Social Change (TASC)
28 Merrion Square North Dublin 2 Ireland
Tel: +353 1 616 9050
Email: contact@tasc.ie
Website: www.tasc.ie
Twitter: @TASCblog

November 2023

Table of Contents

Acknowledgments	2
Executive Summary	4
Key Terms	8
1. Introduction	12
2. Phase I: Mapping phase	16
2.1 Community data	18
3. Phase II: Listening Phase	22
3.1. Community outreach	23
3.2. What we heard?	24
3.2.1. 'It's all we know as a culture in Roscommon'	24
3.2.2. Financial insecurity	26
3.2.3. Structure of value chains	27
3.2.4. 'No retention of young people on the land'	29
3.2.5. 'That's what turns me off biodiversity': Connections between agriculture and the environment	30
3.2.6. Decision-makers and a lack of support for farmers	32
3.3. From community needs to community solutions	33
4. Phase III: Solutions Phase	36
4.1. Solution 1: Wool processing co-operative	37
4.1.1. Policy context	37
4.1.2. Using wool for insulation	39
4.1.3. Benefits	41
4.1.4. Challenges	41
4.1.5. Case studies: Comercial Ovinos S.C.L, Spain and Sheepwool Insulation, Wicklow	42
4.2. Solution 2: Grass biorefinery co-operative	44
4.2.1. Policy context	44
4.2.2. Process of grass biorefinery	45
4.2.3. Benefits	46
4.2.4. Factors to consider	47
4.2.5. Case studies from Ireland and abroad	48
4.3. Just Transition Fund	51
4.4. Other solutions	51
5. Conclusion	54
6. References	58

Executive Summary

Executive Summary

The People's Transition describes a model for participative decision-making that intends to enable a community to benefit from the transition to a zero-carbon society. It aims to design climate solutions that give local people and communities ownership of assets of transition and thus enhance public support for climate action by tackling inequality and raising standards of living.

The Roscommon Farmers' People's Transition began in December 2022. The intention of the project was to listen to, and learn from, the needs and abilities of farmers in County Roscommon and then attempt to design a number of climate solutions that would benefit the community and address a number of the main development priorities of the community.

The project had three phases. The first phase was the Mapping Phase. The mapping phase aimed to build a picture of agriculture in County Roscommon. In addition to demographics and circumstances, the area was studied to understand the distribution of institutions and organisations that play a significant role in the locality.

The mapping phase informed the roll out of the second phase – the Listening Phase. To gather inputs on community needs, priorities and strengths, the TASC team engaged with farmer representative groups, young farmers, and farmers participating in projects linked to sustainability, among others. As the Listening Stage came to an end, a survey was distributed to gather further input and ensure that the emerging picture of the community was correct. Throughout the various groups engaged, a number of common themes emerged. These included the importance of farming to the identity of people in County Roscommon, issues relating to financial insecurity and the structure of value chains, and the sense that farmers are being disproportionately blamed for climate change.

Based on the listening phase, the TASC team worked with experts in an array of fields to identify and substantiate viable climate solutions that would address local needs and build on the community's strengths. The first solution is a wool processing co-operative. This builds upon the cultural significance of sheep production to County Roscommon. Using wool for insulation could help address the lack of income sheep farmers gain from wool while also having climate benefits by improving energy efficiency.

The second solution presented in this report is a grass biorefinery co-operative. The processing of grass could assist in reducing dependence on unsustainable farming practices by creating a new income stream from the growing of grass. Building on examples from outside of Ireland, a grass biorefinery could help to reduce dependence on imported soya and fossil fuels, thereby creating environmental benefits and additional income for farmers.

These solutions should not be considered the only possible collective climate initiatives in which farmers in Roscommon could participate. Others, looking at the same set of needs and priorities, may land on different climate solutions. However, it is hoped that the process, as much as the proposed solutions, provokes thought about how the investment in climate action can address existing development needs rather than perpetuate them.

Key Terms

Key Terms

Climate action

Political, collective and individual action on climate change can take many forms. Climate action means stepped-up efforts to reduce greenhouse gas emissions and strengthen resilience and adaptive capacity to climate-induced impacts, including climate-related hazards in all countries; integrating climate change measures into national policies, strategies and planning; and improving education, awareness-raising and human and institutional capacity with respect to climate change mitigation, adaptation, impact reduction and early warning. There are other challenges that intersect climate action and environmental protection, such as enhancing biodiversity and improving water quality.

Community Wealth

Building Community wealth building or local wealth building is a new people-centred approach to local economic development, which redirects wealth back into the local economy and places control and benefits into the hands of local people. Community wealth building is a response to the contemporary challenges of austerity, financialisation and automation. It seeks to provide resilience where there is risk and local economic security where there is precarity.

Anchor Institution

An anchor institution is one that, alongside its main function, plays a significant and recognised role in a locality by making a strategic contribution to the local economy. Anchor institutions generally have strong ties to the geographic area in which they are based through invested capital, mission and relationship to customers and employees. These institutions tend to operate not-for-profit. It is much simpler for private businesses to move, so there is no guarantee they will continue serving the local community in the long-term. However, there are examples of for-profit organisations playing the role of an anchor institution.

Local Development

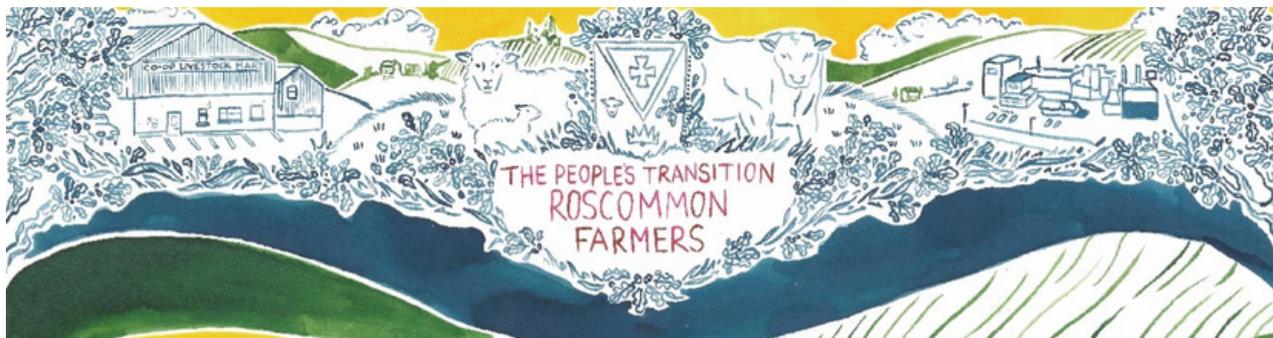
Local development is the identification and use of the resources and endogenous potentialities of a community, neighbourhood, city or equivalent. The local development approach considers the endogenous potentialities of territories. Economic and non-economic factors influence local development processes. Among the non-economic factors, social, cultural, historical, institutional, and geographical aspects can be decisive in the process of local economic development.

Sustainable Development

Sustainable development has been defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Sustainable development calls for concerted efforts towards building an inclusive, sustainable, and resilient future for people and planet. For sustainable development to be achieved, it is crucial to harmonise three core elements: economic growth, social inclusion, and environmental protection. These elements are interconnected, and all are crucial for the well-being of individuals and societies.

1. Introduction

1. Introduction



Tackling climate change requires urged and unprecedented action in communities all around the world. Given the interdependent nature of the crisis, if climate action is to be enduring, then it must be inclusive and equitable, ensuring that its burdens and benefits are shared throughout society. While the importance of inclusive climate policy seems to be widely understood, there are few tried and tested frameworks for the co-creation of climate policy in European communities.

The People's Transition (McCabe, 2020) attempts to address this. It is a participative decision-making model for climate action. It views climate action as an enabler of local development, giving people and communities ownership of the transition to zero-carbon societies. The model, which was developed through extensive consultation with communities and organisations around Ireland, seeks to deliver a bottom-up approach to transition that builds local wealth, enables local ownership of climate action and empowers local people. It aims to tackle inequality and raise standards of living through the delivery of climate solutions, thus proactively building social approval and demand for climate action.

To transfer the People's Transition model into practice, TASC will apply the People's Transition model in communities throughout Ireland over a three-year period. This report deals with a project which focused on farmers in County Roscommon. The undertaking of the People's Transition for Roscommon farmers presents a novel application of the idea of a People's Transition. While the model has previously been applied in communities in cities, towns and villages, the People's Transition for Roscommon farmers is the first time the model has been applied on a countywide scale and with a focus on a particular sector.

Located to the west of the River Shannon, Roscommon is a rural county that relies heavily on the agriculture sector as its primary source of income (Roscommon LEADER Partnership, n.d.). While 73% of the County's population lives in a rural area (outside of aggregate towns), its central location on the island of Ireland means that it is strategically located near urban centres such as Dublin, Galway, Athlone and Sligo (Roscommon County Council, 2020). Roscommon is also included in the Irish Government's EU Just Transition Fund Territory (Government of Ireland, 2022). As part of the European Green Deal, the EU Just Transition Fund will support regions disproportionately impacted by the transition to a greener economy by financing diversification away from pollutant practices.

Within Ireland, measures to support a just transition have focused on the midlands due to the impact a move away from fossil fuels will have on peat production in the area. Roscommon also has the third lowest rate base in the country, resulting in dependence on a low Local Government Fund (National Oversight and Audit Commission, 2021). The average disposable income per head of population in Roscommon in 2020 was estimated to be €20,113 (Northern and Western Regional Assembly, 2022). This was below the State average of €23,615.

The symbolic importance of farming to Roscommon is highlighted by the presence of a sheep on the County's coat of arms and the County's GAA crest. Calls have been made for a change to the current GAA crest as it currently features a black-and-white faced sheep rather than the native Roscommon breed, which is all white (Foxye, 2023). At a nationwide level, the question of how agriculture will adapt to the need for emissions reductions has become a contentious issue over recent years. Emissions from the agriculture sector account for around 33.3% of total national GHG emissions in 2021 (Government of Ireland, 2022). Farming practices also impact Ireland's biodiversity and the health of rivers and waterways. From a social and economic perspective, Hennessey et al. (2018) outline how the meat processing sector employs over 13,000 workers in Ireland while €1.5 billion is spent by cattle farmers on agricultural products. The report by Hennessey et al. (2018) also highlights the importance of beef production at the regional level. 81% of cows in the West of Ireland are classified as suckler cows compared to 22% in the South-West region. In February 2023, the Irish Farmers' Association (IFA) held a sheep farmers' protest in Roscommon to raise awareness of the income crisis facing sheep farmers (Murphy, 2023).

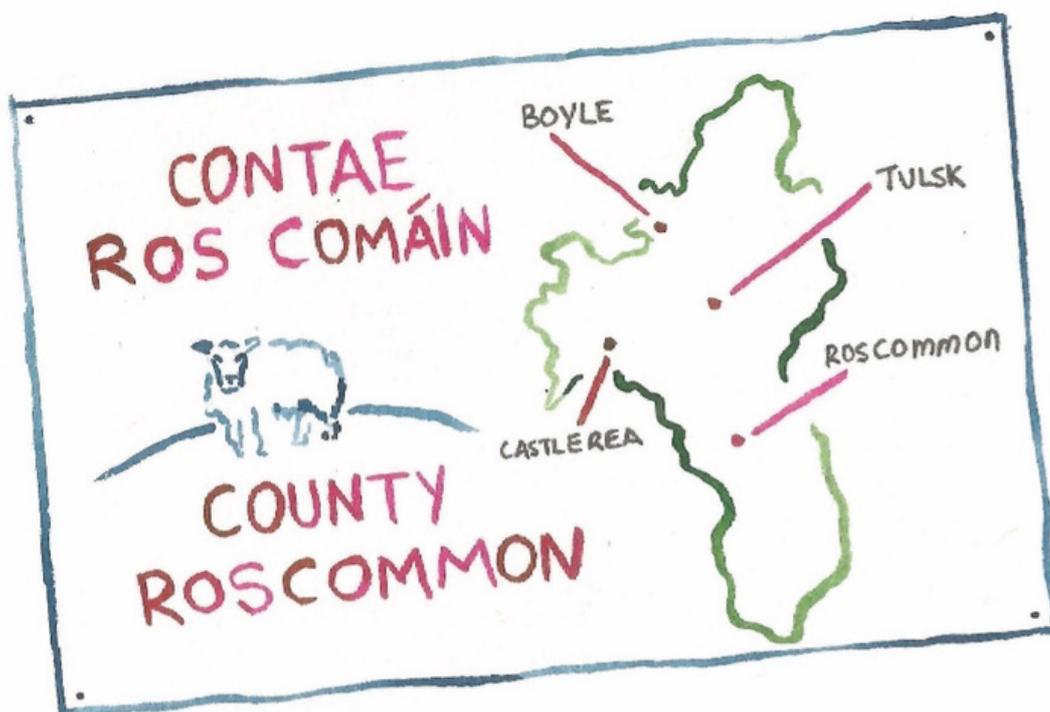
In 2022, the Irish government agreed to cut emissions from agriculture by 25% by 2030 (Department of Agriculture, Food and the Marine, 2022b). Agricultural lobby groups have continued to stress their opposition to the cuts, claiming it will undermine farmers' livelihoods and lead to job losses in rural Ireland (Carroll, 2022). The perception of 'agri-bashing', whereby farmers view themselves as being disproportionately targeted by climate policy and activists, has led to farmer protests against climate policy across countries and continents (Van der Ploeg, 2020; Nugent, 2022; Roach et al., 2022). The importance of developing climate policy in a manner that is co-created with farmers is underpinned by the impact that current policies are having on farmers' mental health. In a study conducted by researchers in the School of Agriculture and Food Science and the School of Psychology at University College Dublin, the top farm stressors were 'Government policies designed to reduce climate change', followed by 'concern over the future of the farm' and then 'outsiders not understanding the nature of farming' (McCormack, 2022).

An important step in achieving a Just Transition is finding new forms of employment for displaced workers, or, in the context of agriculture, new ways of utilising land. This is outlined in the Roscommon County Development Plan, which states that 'to sustain rural communities in the changing economic climate, farm diversification and new employment opportunities will be required' (Roscommon County Council, 2020).

It lists several diversification options: forestry, biofuel and renewable energy, organic farming, and rural tourism. A further challenge facing agriculture is the impact of extreme weather events. Communities across Roscommon have been impacted by flooding. A consequence of frequent flooding is reducing the farming area available to farmers. Flooding places further financial strains on impacted farmers as the reduced land available for farming results in reduced financial support (Shannonside News, 2022).

The project had three phases, leading to the co-creation of solutions that address the needs of the community. First, a mapping phase made use of existing geographical and census data to outline the groups of people that live in the community, giving particular attention to vulnerable groups and identifying challenges and opportunities for climate action. This information was used to design a listening phase, through which the TASC team engaged directly with the community to understand the needs and priorities of different groups and individuals. The solutions identified and researched are a wool processing co-operative and a grass biorefinery co-operative. These specific solutions are designed to meet the need for climate action whilst also being realistic and beneficial for Roscommon farmers. They provide a blueprint for how the People's Transition Model might be applied in a specific context.

This report presents the findings of all three phases in a narrative which aims to take the reader through the People's Transition process to illustrate why it is important to consider climate action from a people or community-centred approach. By listening first and ensuring that all voices are heard, it is hoped that climate action will benefit from greater social approval and thus will be in higher demand.



2. Phase I: Mapping phase

2. Phase I: Mapping phase

The mapping phase aimed to build a picture of the Roscommon farming community, outlining a geographical scope for the project that represents the people who live there. An area was mapped to include the anchor institutions that play a significant role in the locality since they make a strategic contribution to the local economy and society on a long-term basis (McCabe 2020). Identifying key actors and community leaders in various fields allowed for the inclusion of the groups associated with them in the project, helping the TASC team to connect with the community and identify their needs and priorities. As mentioned in the introduction to this study, the People's Transition for Roscommon farmers is unique given that it takes a countywide approach to applying the People's Transition model in contrast to focusing on a specific locality.



There are a number of farming organisations and community organisations with links to agriculture in Roscommon. National organisations with branches in Roscommon include the IFA, Macra (Elphin/Castlerea and South Roscommon) and the Irish Cattle and Sheep Association. A notable aspect of the sale of livestock in the County is that the three marts present in the County are co-operatives. These include Castlerea Co-operative Society Mart, Elphin Co-operative Livestock Mart and Roscommon Co-operative Livestock Mart. Alongside co-operative marts, the Midland & Western Livestock Improvement Society is also located to the North-East of the County, bordering County Leitrim. The town of Strokestown also has an Agricultural & Industrial Show, which has run for 154 years. Teagasc, the Irish agriculture and food development authority has advisory offices in Castlerea and Roscommon. In the area of dairy farming, Aurivo Co-operative has an animal feed and dairy ingredients facility in Ballaghaderreen. The development of Aurivo was initiated by the formation of co-operatives in the 19th century to ensure the sustainability of farming communities in the West of Ireland (Aurivo, n.d.).

Beyond agriculture, a further example of co-operatives in the County is the presence of three group water schemes in Mid Roscommon, Oran Ballintober and Curracreigh. Roscommon Integrated Development Company manages the Rural Support Scheme in the County. This allows low-income farmers to earn supplementary income through employment provided by local community development projects. Roscommon Mens Group also allows rural men to meet and chat in a homely and safe environment. Alongside the countywide focus on development provided by Roscommon Integrated Development Company, organisations focusing on development and social inclusion at the local level are also present within the County. These include the South Roscommon Community Forum and the Rooskey Development & Social Inclusion Group. The Northern and Western regional assembly, one of three regional assemblies in the Republic of Ireland, is also located in Ballaghaderreen. This is responsible for identifying 'regional development objectives and coordinating initiatives that support the delivery and implementation of national planning and economic policy' (Northern and Western Regional Assembly, 2021 p.9)

2.1. Community data

To gain an initial understanding of agriculture in County Roscommon and the population dynamics of the County as a whole, data from the 2020 census of agriculture and the 2016 national census was analysed. It should be noted that national census data was gathered in 2022. As the full set of data from this census is not yet available, data from the 2016 census was used in this study. There are 110 electoral divisions (EDs) in County Roscommon. Electoral divisions (EDs) are the 'smallest administrative areas for which population statistics are published' (Ordnance Survey Ireland, 2018) The starting point for evaluating socioeconomic demographics in the County was analysing data from the Pobal deprivation index. The Pobal deprivation index 'provides a method of measuring the relative affluence or disadvantage of a particular geographical area using data compiled from various censuses' (Pobal, 2017). The index is an essential resource for tackling disadvantage as it supports the identification of the most disadvantaged areas throughout Ireland. 8 EDs, primarily located in the west and north of the County, are classed as disadvantaged. 64 are classed as marginally below average, while 38 are defined as marginally above average. Figure 1 presents a map of County Roscommon using the Pobal Deprivation Index. The presence of disadvantaged areas in the north and west of the County compared to the marginally above-average areas in the south aligns with the quality of land in the County. As discussed in the Issues Paper for the Roscommon County Development Plan 2021-2027, the south of the county 'has traditionally had a stronger industrial base' while northern parts of the County are noted for having 'low output agriculture, fewer employment opportunities and lower service provision'. It is noted, however, that tourism resources in the north could be an opportunity for the County (Roscommon County Council, 2020).

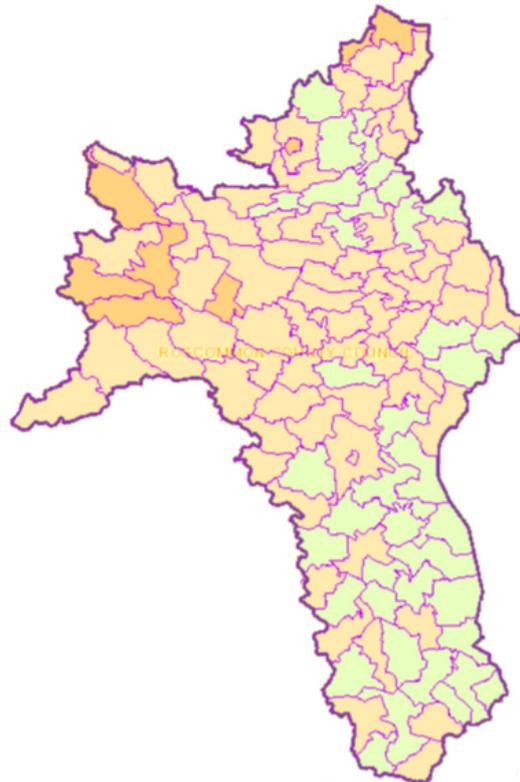


Figure 1: Pobal deprivation index for electoral divisions in County Roscommon. The darker the electoral division, the greater the disadvantage level. Source: Pobal Deprivation Index.

The Pobal deprivation index is beneficial for gaining an initial insight into the level of affluence or disadvantage within a community, as it considers factors such as population growth or decline, unemployment and educational attainment. It does not provide information relating to agriculture, however. The census of agriculture presents a detailed insight into the importance of agriculture in each electoral division in the County. There are a total of 6,088 farm holdings throughout the County. The average size of a holding in the County is just below 28 hectares. The average age of farmers in the County is 58 years old. This ranges from an average age of 53 in Elphin and Rossmore electoral divisions to 66.5 in Tumna North. Sheep and beef farming are overwhelmingly the most common types of agriculture in Roscommon. There are just under 260,000 sheep in the County, alongside almost 218,000 cattle.

While the census of agriculture provides great detail, there are some limitations. For example, total data on the number of dairy cows and level of arable in the County were not included. Only four EDs consisted of dairy farms (Fuerty, Rockhill, Ballydangan, Ballintober). While an article from the Irish Farmers Journal in 2017 states that Roscommon had the third lowest number of dairy cows in Ireland at a level of 7,160, only 1711 were included in the census of agriculture from 2020 (Forde, 2017). Similarly, only one ED (Carnagh) had land used for tillage. The lack of tillage resulted in 99.3% of the farmed area being used for grassland. There are over 28,000 hectares of forestry in the County. This represents 11% of the County's total area (Department of Agriculture, Food and the Marine, 2022a).

Further information on farming conditions in County Roscommon is provided by the Teagasc regional review for Roscommon and Longford in 2021. It notes that between 2020 and 2021, the gross margin per hectare on cattle-rearing farms rose by 5%, with a very small increase in net margin per hectare (Teagasc, 2022). While the price of beef carcass rose by 12%, this was impacted by price increases in fertiliser (+7%), energy costs (+16%) and feed (+20%). A similar picture is painted for the sheep trade as it suffered a modest price decrease in 2021 and much higher production costs. A noted consequence of rises in fertiliser prices is the potential for a reduction in fertiliser usage. This could decrease grass production, increasing the need for animal concentrate feed. At the national level in 2022, the average income for sheep farmers was €16,500, €9,400 for suckler farmers and €18,800 for drystock farmers (Dillon et al., 2023). These figures contrast from the average dairy income which was over €150,000.



Alongside the census of agriculture, general statistics from the national census of 2016 were also used to build a picture of county Roscommon. Roscommon had a population of 64,544. Of this, 27.4% of the population was 19 or younger, while 16.7% was over 65. Roscommon has the highest percentage of people in the 80+ age category in the country at 4.4% (National Oversight and Audit Commission, 2021). 14.4% of the population were also listed as having a disability. In terms of the importance of agriculture to the local economy, 10.6% of the total socioeconomic population were farmers. 6,742 people were classed as farmers, while 353 were as agricultural workers. Regarding education, almost 5% of college students in the County were studying agriculture or veterinary (2,126 out of a total of 43,328 students). A final area evaluated within the census data was housing. Oil, natural gas and liquified petroleum gas was the primary source of central heating for 59% of households, while coal or peat was the main source in 32% of homes. At a geographical level, coal and peat were the main sources of central heating for 29 EDs. 79 EDs used oil, natural gas and liquified petroleum gas as their main energy source. 2 EDs had the same level of coal/peat and oil/natural gas/liquified petroleum gas as their energy source. In terms of electricity, 3.9% of all houses in the County used electricity as the main source of central heating. The use of electricity was most common in the main urban settlements in the County (Ballaghaderreen, Boyle Urban, Roscommon Urban, Castlereagh, Athlone West Rural, Elphin, Strokestown) as well as some more rural EDs (Danesford, Loughglinn, Cloontuskert, Kilcolagh, Crossna, Kilbryan). A total of 244 houses in the County had no central heating, with Ballaghaderreen and Roscommon Urban having more than 10 houses without central heating.

It was clear from an early stage that any suggested solutions emerging from the People's Transition would need to complement, rather than duplicate, existing efforts and that the future success of the proposals from this People's Transition project will rely on the adoption by the strong network of community groups. The mapping phase highlighted information that was the foundation of the listening phase. An understanding of the community dynamics, vulnerable groups and demographic data, allowed TASC to design a listening phase that was inclusive and built on existing community relations and social fabric. This listening phase set out to understand the needs and priorities of the community, thereby taking steps towards identifying suitable community-led climate solutions to meet societal needs.

The mapping of organisations and facilities within Roscommon gave an idea of some of the places where the community is already meeting and institutions that might be involved in a plan for community-led climate action. More detailed information was gathered from the area using census data. This allowed for an assessment of potentially underrepresented groups so that inequalities in participation could be better addressed during the listening phase. The mapping phase also helped to identify potential barriers that people might face to participate in climate action. On the flip side, opportunities for engaging in climate action were identified, with information collected on resources available to the community that might strengthen the project.

3. Phase II: Listening Phase

3. Phase II: Listening Phase

3.1. Community outreach

The Listening Phase was designed to foster trust, gather knowledge and build capacity whilst identifying community needs and priorities. A communications plan was developed to bring attention to the People's Transition project, increasing engagement in the listening phase and informing the community of the outcomes of the project. To help build awareness of the project, an article on the project was published on Agriland, while an interview on the project was conducted on Shannonside FM. Introductory emails were sent to members of local farm organisations while Roscommon Integrated Development Company helped to connect researchers with farmers participating in the Rural Support Scheme.

The aim of these conversations was, first and foremost, to listen. Each focus group was asked the same questions: why is farming important to County Roscommon, what are the challenges facing farmers, and what support could help farmers overcome these challenges? Listening to the lived experiences of a diverse community allowed the project team to build a picture of the challenges facing farmers in Roscommon. To gather further data, a survey was developed. The survey aimed to check the findings from listening to community members about the key issues identified.

The Listening Phase of the People's Transition for Roscommon Farmers ran from March 2023 to July 2023. In total, 95 people were involved: 50 participated through focus groups and interviews and 45 through survey responses. Focus groups were undertaken with members of farm representative bodies

such as the IFA and Macra and farmers participating in projects such as FarmPEAT and Farming Rathcroaghan, among others. While the survey sample size is relatively small, it provides interesting insights into farmers' perspectives towards community development objectives and climate policy, which could be built upon in the future using a more comprehensive sample.



In terms of the composition of the sample, 65% of participants were aged between 45 and 59, 17% were between 60 and 64, while 15% were between 30 and 44. Regarding gender, 92% were male, and 8% were female. All participants were born in the Republic of Ireland. 95% have lived in Roscommon all of their life, with the remaining 5% having lived in Roscommon for more than 15 years. 72% of participants farm a total area of less than 49 acres (20 hectares). A further 19% farm between 50 and 74 acres (20 to 30 hectares). Regarding education, 75% completed their education at secondary school level, 10% completed education at primary school level, and 15% completed their education at third level.

3.2. What we heard?

3.2.1. 'It's all we know as a culture in Roscommon'

When asked why farming is important to County Roscommon, farmers spoke of the cultural and economic importance that the sector brings to Roscommon. Several people described Roscommon as a 'predominately agricultural county' and an 'agricultural society'. The tradition of sheep farming in the County is underlined by the fact that Roscommon has given its name to a sheep breed. While Roscommon doesn't have as much dairy farming as in the South of Ireland, one dairy farmer described how the sector is vibrant within the County. Farmers also spoke of the social aspect that farming provides Roscommon. One farmer described how mart days in Roscommon town represent a custom, while another farmer spoke of how farmers represent:

'the backbone to community groups in townlands and villages in the county'.

While some people spoke of the importance of farming to Roscommon at a countywide level, others spoke of the importance at an individual level. Several people discussed how farming is integral to people's existence. This is underpinned by the statement that 'it's life, we know no different'. One example of this was the description that farmers live on their place of work. As mentioned by one farmer, while a regular job is 9 to 5, farming is 24/7. Aligned with this was the importance placed on tradition and heritage among farmers. The connections between family, heritage and nature were all referenced by farmers within the survey question asking what they value about farming. Aligned with this is the focus on intergenerational relations, where farming is passed on to the next generation. One farmer spoke of how farming:

'is what we were born into, what we have always done, what we know'.

Several farmers also spoke of the enjoyment they get from farming. As described by one farmer, if the financial aspects of farming were resolved, 'everyone would want to do it'. Some farmers also described how farming is enjoyable 'when things are going right'. This was reflected in the comment by a young farmer that farming is 'good craic until something goes wrong'. People also spoke of the benefits that farming can have for health and well-being. This could be seen in the description that farming represents a type of therapy by being outdoors in the fresh air. One person described farming as a 'new game of golf' in terms of the relaxation it can provide. Aligned with this was the description that farming 'kept the mind occupied' during the COVID-19 pandemic.



Alongside the importance of farming to community life in Roscommon, farmers also spoke of the contribution of agriculture to the local and national economy. Beginning with the national economy, farmers spoke of how agriculture represents 'the heartbeat of rural Ireland' due to the importance of food exports to the national economy. When there is a downturn in the national economy, one young person described how farmers are 'the ones powering through'. This was supported by another farmer who described how 'there would be no economy' without agriculture. The beef sector was identified as a sector that provides employment, while Aurivo Ingredients, located in Ballaghaderreen, was described as a business of a national scale. At the local level, farmers spoke of how finance and support for businesses in the towns of Roscommon comes from the farming community. One farmer spoke of how farmers are the main customers for the local hardware store in Strokestown. This was supported by another farmer who described how agriculture supports 1 in 9 jobs in the County. One young farmer spoke of how selling a few weanlings gives them money to fund a night out. As will be discussed in the following sections, while finances are an important aspect of farming in Roscommon, one farmer noted that:

'Most farmers aren't out to be rich, (they want to) raise a family and have a few pound'.

3.2.2. Financial insecurity

Despite agriculture's economic contribution to Roscommon and the wider rural economy, a consistent talking point among farmers was the income they receive and the financial insecurity of farming. This is illustrated in the comment by one farmer that 'farmers don't feel they're making a liveable income'. This was supported by another farmer who described farmers as being 'asset rich, cash poor'. One survey respondent described how they value the farming lifestyle, but it is 'hard work and unaffordable'. Regarding the impacts of financial insecurity on farmers, one farmer noted that the pace of life and stress caused by the financial conditions of farming becomes 'a burden on a lot of people'. A further point of discussion among farmers was the sense that there were limited options for alternative practices that farmers could participate in. This was seen in comments such as 'What else is in Roscommon?' alongside the view that 'No enterprise will stand on its own in the West of Ireland' as industries have 'all gone into scale'.

Farmers discussed various causes of financial insecurity within the sector. Firstly, the price of farm inputs was described as having increased, particularly in recent years. Similarly, while the grants received by farmers were described as being reduced, farmers spoke of how they have been impacted by inflation in terms of the rising prices of needed inputs. One farmer discussed how farmers' income is the 'same as it was years ago'. However, 'costs have gobbled up the benefits'. 68% of survey respondents described paying bills for heating and electricity as a big challenge to them. This was reiterated by another farmer who described how:

'costs have gone through the roof... prices have not kept pace: fertiliser, machinery, fuel, no matter what side you turn'.

Other costs discussed by farmers include the cost of construction, medicines for animals and insurance prices. Alongside the issue of costs, farmers spoke of the uncertainty of the price they receive for their produce. One farmer described how it was difficult to know what price they would receive next year. Furthermore, one farmer described how:

'Until this time last year, beef was the same price for the 20 years - beef got dear because of the lack of it'.

Some farmers described how there should be a set price and a premium price for Irish produce as it is 'top quality beef'. Despite this, farmers spoke of how Irish beef was a lower value than beef produced in England. While most farmers spoke of the squeeze farmers face between uncertain prices and rising costs, one farmer spoke of a 'less is more' approach to stocking rates. This was based on the view that reducing stock could reduce costs in areas such as contractors and fertilisers and reduce the labour required on the part of farmers. Furthermore, it could help farmers retain the finance they receive from the Single Farm Payment rather than risk losing money if they do not receive an adequate price for their produce.

A final factor relating to the financial insecurity facing farmers in the County, which was a consistent theme among farmers, was the need for off-farm employment. As one young farmer discussed, their parents have always worked off-farm as relying on the income from farming alone *'wouldn't keep the farm afloat'*. This was supported by another farmer who described how *'you couldn't rear a family on farm income'*. Having off-farm employment to support the farm was seen to result in *'too much work and long hours'*.

3.2.3. Structure of value chains

A factor that was referenced by farmers for the financial insecurity they face is the structure of the value chains in which they operate. This is related primarily to the power that processors and retailers have on the prices that farmers receive for their produce. The power of processor-controlled feedlots was described as being the *'biggest challenge for a smaller farmer'*. Feedlots are farms used by 'large beef processing companies' to store livestock released onto the market by beef processors, affecting the prices farmers receive for their produce (Wasley & Kroeker, 2018). Aligned with this was the perspective that farmers are on the receiving end of *'corporate greed'*, which governing bodies have failed to counteract. A perceived consequence of this is that small family farms face a *'serious threat of extinction'*. This was reiterated by one farmer who described how:

'Loads (of farmers) are getting out of suckler farming'.

In terms of the structure of the beef sector, more broadly, one farmer described how farmers *'don't have the leverage of processors'*. In terms of how farmers could resist the power of processors, one farmer described how if processors don't have the raw materials (e.g. beef or lamb), the factories would be forced to shut as they would be unable to generate the product for the market. One farmer also noted how the impact of processor control within agriculture sectors in Ireland was similar to that experienced by farmers in other countries, such as Canada and the United States. They described how an article on cow-calf farming in Canada (the equivalent of suckler farming in Ireland) underlined how the experiences of farmers in the beef sector were the *'same as farming in Roscommon as Alberta'*. Beyond the dynamics of the beef sector, a further challenge that could impact the future of farming is the purchasing of land by companies to offset their carbon emissions. Their ability to purchase land at higher prices means that farmers may be unable to secure land to grow their business.

In contrast to conventional approaches to agriculture, several farmers spoke about the growth of organic beef production. A key challenge to the growth of organic farming was the lack of certainty regarding markets for beef production. As described by one farmer, farmers go into organic farming *'with the best of intentions'*. However, due to the perceived lack of a developed market, the farmer spoke of how organic farmers are forced to sell their cattle alongside non-organic beef in Roscommon Mart. They described how:

'You're slapped in the face for doing something good'.

While there may be uncertainty regarding markets for organic farming, farmers also spoke of the financial benefits and support provided to organic farming. In terms of actions that could help to address issues within the value chain, farmers spoke of how they are currently price takers. What is required is:

'More of a fair market than a handout... a handout will distort the market'.

One identified measure that would address this is the obligation on the part of processors to supply a contract to farmers. This was described as a measure that would provide more balance to the supply chain as farmers would know the price they would receive for producing beef or lamb. Aligned with this was the perception that more competition is needed in the beef sector. One example is that local abattoirs have closed, resulting in '3 barons' controlling the beef market in Ireland. A perceived benefit of having more abattoirs is that it would increase competition for beef. A further recommendation made by farmers was if co-operative systems were *'brought back... to buy and sell products'*. Speaking about the potential for co-operatives to support farmers, one farmer discussed how producers of Achill lamb had previously been *'getting nothing for their stock'*. The creation of a co-operative was viewed as having a positive impact on farmers as it has increased the price they receive for their lamb. The coming together of farmers to create a co-operative was described as a way of promoting produce in Roscommon and creating more opportunities. One suggestion was using a lamb festival held in Roscommon to help promote lamb produced in the County. Rather than taking prices from processors, the creation of co-operatives could help farmers to sell produce themselves. When asked, 'If you are interested in getting involved in community-led and potentially owned or co-owned solutions, please indicate which of the following you are most interested in or intrigued by?' most participants selected a co-operative approach (46% of respondents). 36% selected social enterprise, while 3% selected private ownership.

Farmers also noted that the creation of a co-operative requires additional workload among farmers alongside a number of strong-minded people to lead the co-operative. It would also require other stakeholders, such as shops and restaurants, sources of finance and decision-makers to come together to support its development. Alongside the logistical challenges within developing a co-operative, farmers also noted reasons why farmers might not be interested in participating in a co-op. This included the view that 'farmers like to do their own thing' and 'every farm is different'. This is reflected in the findings from the survey of farmers, as there was an emphasis on 'independence' and 'being your own boss' when asked what farmers currently value about farming. Beyond co-operatives, one farmer spoke of the need for more community-led schemes which people in an area could get behind.

Another factor connected to value chains was food security more broadly. An example of this referenced by farmers was the decline in vegetable growers within Ireland. Again, this was viewed as being caused by retailers' power over the price farmers receive for their produce.

As suggested by one farmer, the time when a potato farmer could be sustainable with a farm of between 20 and 30 acres is 'long gone'. A number of farmers highlighted the view that food has been devalued. Aligned with this was the view that decision-makers have failed to consider food security.

3.2.4. 'No retention of young people on the land'

Aligned with the findings from the census data that the average age of farmers in Roscommon ranged from 53 to 66, farmers spoke of there being little incentive for young people to farm. This was seen in the statement that, for young people, there is a:

'pull away from Rural Ireland... who can blame them'

One young person described how their college friends, who had completed degrees in agriculture, were in Australia or Canada. In support of this was the view that young people are leaving rural areas such as Roscommon to move to bigger cities for work and are not returning to farm. This was described by one farmer who spoke of how younger people would have previously helped on the farm. Now they are staying in Dublin. Aligned with this was the view that there was more help on farms in previous generations as families are now smaller. This has resulted in people, predominately men, farming on their own. Presented reasons for this included the lack of incentives to farm and people not wanting to be tied down to rural Ireland as there are now more opportunity to travel compared to previous generations. Another factor viewed as potentially contributing to the lack of young farmers is the financial insecurity described in previous sections. Due to the limited income and the need to work an off-farm job, one person described how farmers are *'not going to bring kids with you'* if they have to work on their farm late at night.

While the number of young people farming was described as limited, Macra was identified as a good outlet for young farmers as they are *'all in the same boat'*. While speaking positively about Macra, one older farmer spoke of how young people don't have pride in farming as there is a 'dejected feeling' within farming as *'no matter what they do, there are speed ramps'* in terms of challenges coming from regulation or the wider structure of the sector. A broader topic referenced regarding retaining young people in agriculture was succession. On the one hand, there was the view that on many farms, no child is willing to take over control of the farm. On the other, there was the view that older farmers were reluctant to give control of the farm to the next generation. One perceived reason for this was the importance of being a farmer, as described in section 3.2.1. As noted by one farmer, there might be a sense of fear as being a farmer is viewed as being *'the fabric of your being'*. This may lead farmers to ask themselves, *'what am I going to do'* if they are no longer farming? Aligned with this was the view that land is not being passed over to the younger generation at an early enough age. As one person described, if a farm lacks investment and people inherit it in their 50s or 60s, it is hard to invest in the farm at that age compared to people in their 30s or early 40s.

Broader issues relating to living in rural Ireland were also discussed. These include issues with the provision of services such as transport and accident and emergency services. 77% of survey participants considered improving transport links a high priority, while 67% described improving local services as a high priority. Another issue raised was the view that there is growing isolation among middle-aged to older people, such as people who are not married, people whose partners may be sick or whose children have moved to Galway or Dublin. When asked whether the statement 'I feel lonely/excluded from my neighbours or the community' reflects their experience, 20% of respondents stated that it was a big challenge to them compared to 30% who stated less of a challenge to them, while 50% said that it was not a challenge to them.

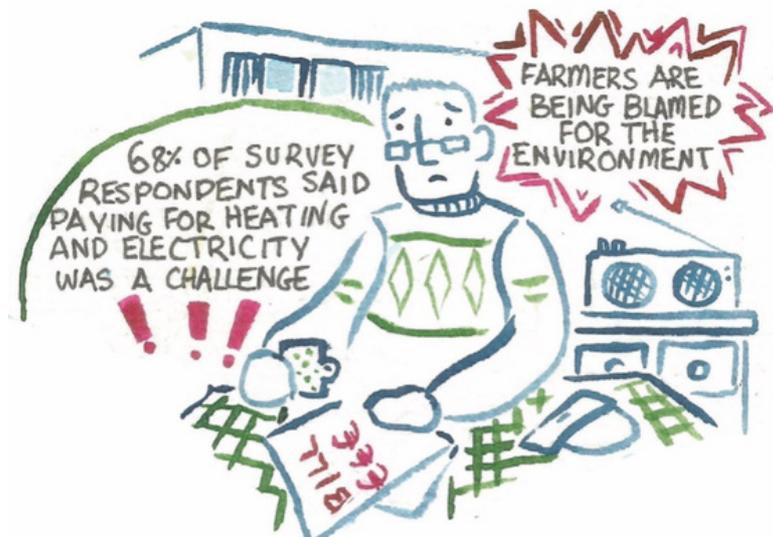
3.2.5. 'That's what turns me off biodiversity': Connections between agriculture and the environment

Alongside the primary focus on income, another consistent theme within the accounts of farmers has been the focus on agriculture in discussions on emissions and the environment. This ranged from the perception that farmers are '*destroying the whole world*' to another, which suggested that everyone is '*blaming the farmers for the environment*'. This led to the perception that farmers' '*sense of purpose and pride*' was being pushed down. One aspect of conversations with farmers on the topic of climate is the sense that they are being disproportionately blamed within conversations on the climate. At the same time, the contribution of other organisations and sectors is not emphasised. In the area of energy, one farmer spoke of how:

'Data centres are using as much energy as farmers in the West of Ireland.'

They did, however, describe farmers' potential role in providing carbon credits to data centres. While carbon credits could provide a new income stream for farmers, farmers spoke of a lack of information from decision-makers about how eligible they would be for credits and the potential that farmers are told they are using too much carbon. One farmer spoke of the hypocrisy among decision-makers in the area of climate. One example of this was the importation of biomass from Brazil following the recent closure of peat production in the nearby Ferbane and Lanesborough Bord na Móna plants. This led to the comment, '*that's what turns me off biodiversity*'. Proposed policy measures were also raised, which may impact farmers' perceptions of climate policy. The idea of introducing wolves was referenced, while another presented the view that policies sought to convert rural areas into a '*giant eco-park*'. The potential for greenways to fragment farmers' holdings was also mentioned. Other examples of sectors spoken of by farmers were the level of emissions coming from the aviation sector and the energy requirements of Multinational Companies. The diversity of agriculture was also referenced in terms of the impacts that varying sectors have on emission creation. One farmer presented the view that dairy farming has a greater impact on emission creation. However, all farmers are '*getting the blame*'.

While conversations on the climate focused primarily on the sense that farmers were being blamed, other viewpoints were also present. One example of this was the questioning of how the model of agriculture is currently operating. This could be seen in comments such as *'why are we making all this food... thrashing our environment'* and *'water and soil quality is being degraded all the time'*. Another farmer spoke of how climate change is *'going to move faster than people think'* with a small temperature rise potentially making a massive difference. The impact of weather on farming was referenced by one farmer who spoke of how farming against the elements is the biggest challenge. Regarding findings from the survey, when presented with the statement, *'I am worried about how climate change will affect my family's future'*, 34% stated that it was a big challenge to them, 25% said that it was less of a challenge to them while 41% said that it was not a challenge to them. 29% of respondents also stated that being worried about the local environment (flooding, pollution, air quality) was a big challenge for them compared to 31% who stated that it was not a challenge for them.



Alongside the issues of climate change and environmental protection, farmers also spoke of impacts relating to land use change and the potential for farm diversification. In the area of land use change, and aligned with previous topics discussed in this section, farmers spoke of the loss of small farmers in recent years. One reason for this was the increased income that landholders would receive for renting land compared to continuing to farm. The growth of the more viable dairy sector has made it more difficult for suckler or sheep farmers to rent land due to the increased prices being paid to dairy farmers. This could be seen in the comment that there is *'no chance for the smaller farmer'* to rent land. In the area of farm diversification, one focus group spoke of the opportunities to utilise wool in new ways due to the presence of intensive sheep farming in the South of the County. As described by one farmer, while wool produced in Roscommon is *'top end quality'*, it is currently a liability to shear, whereas it should be an additional income stream. Referring to New Zealand, another country where agriculture is an integral part of the rural economy, one person spoke of how shoes and surfboards are made of wool. The example of using wool for insulation in Wales was also referenced. Aligned with this is the finding that 91% of survey respondents strongly agreed (43%) or agreed (48%) with the statement that there should be a greater emphasis on traditional local industries and long-term resilience.

The potential for solar farms to provide new income streams was also suggested. Difficulties with developing this included the need for a connection to the national grid and potential complications surrounding inheritance. To support the creation of new income streams, one farmer spoke of the need for 'well thought out schemes'. In a focus group in Taughmaconnell in the South of the County, community members described the benefits of sustainability and biodiversity protection initiatives.

Taking the example of protecting water quality, while this was described as a different type of farming, it was seen as something that would bring 'pride back into the area'. As suggested by one person, placing a monetary value on turloughs and waterways via the payment of ecosystem services would emphasise local biodiversity. Another type of farm diversification considered was the growth of biogas. One farmer did, however, describe the need for caution relating to biogas as undertaking its development in an intensive fashion was viewed as something that would be unsustainable due to its impacts on soil and water.



3.2.6. Decision-makers and a lack of support for farmers

A final predominant theme spoken of by farmers was government policies. Speaking at a broad level, one farmer spoke of how farmers are 'challenged by EU institutions, government inaction, nature restoration, CAP funding' alongside the issues of an ageing farming population and finding it difficult to retain young people in farming. In terms of policymaking, one perspective was the view that decisions made were disincentivising farming. This was based on the comment that funding has moved from being 'all about food production' towards becoming 'dependent on subsidies'. Aligned with this was the comment that it doesn't make sense that people 'get more for closing land than having sheep on'. In support of this was the view of one farmer who spoke of how the dependence on subsidies doesn't encourage young people to want to farm. This led them to claim 'I'm as well to live in Athlone' rather than continue farming. Alongside the impacts that dependence on subsidies has on younger farmers, one older farmer spoke of how the dependence on subsidies for farming alongside the broader role of decision-makers in agriculture frustrates the farmer 'over and over again... as you get older, you say why bother'. From a practical perspective, farmers spoke of negative aspects of their relations with decision-makers, which impact trust. One example is delays in the payment of subsidies, which impact farmers' cash flow. One farmer spoke of how schemes in the past had not been thought through properly. One example was supporting the growing miscanthus and willow, which failed due to a lack of markets. The level of trust towards decision-makers was evident in the survey findings. When asked, 'what stakeholders do you think should be involved in identifying, developing and delivering potential solutions?', local citizens and local community development organisations were selected by 64% of respondents.

This contrasts with County Councils selected by 44% and the National Government selected by just 29%. Similarly, the business sector received support from 20% of respondents.

Alongside issues surrounding the dependence on subsidies, a wider theme discussed was the lack of support provided to farmers. One example of this referenced by farmers was the lack of a local Department of Agriculture, Food and the Marine branch that could provide support. Farmers in Tulsk spoke of how their nearest Department office was in Cavan. Similarly, ringing a government office could mean being held on the phone for a considerable time. This led to a sense that farmers are *'disposable'*. Aligned with this was the view that there is *'no one there (to support you) if no payment is coming'*. Alongside the lack of support experienced by farmers is the extent of paperwork required to abide by regulations. As discussed by one farmer, regulations *'give you sleepless nights'*. A similar sentiment was shared regarding inspections. An example of this was the sense that audits from bodies such as Bord Bia were becoming *'harder and harder to pass'* regarding the need for more detail in areas such as fertiliser and what percentage of soya was included within the animal feed. Aligned with the perception that there is a lack of support for farmers, one farmer spoke of how *'when there's a problem, you're penalised, you're left with the problem'*. To qualify for support, farmers spoke of the need for a planner to address the bureaucracy involved. It was noted, however, that the cost of planners is also increasing. Beyond farming topics, people also spoke of difficulties regarding access to planning permission. Half of the survey respondents stated that getting planning permission for somewhere to live or a community project was a big challenge.

3.3. From community needs to community solutions.

Building upon what was learned during the Mapping and Listening phases, the TASC team worked with several stakeholders to flesh out solutions for climate action that address community needs and priorities. Understandably, not all needs identified could be addressed through community-led climate action, so it was necessary to hone in on several pertinent issues. It must be stressed that this is not an exact science, and others, looking at the same needs and priorities, may land on different climate solutions. However, it is hoped that the process, as much as the proposed solutions, provokes thought about how the investment in climate action can address existing development needs rather than perpetuate them.

The engagement process with farmers in Roscommon shone a light on several issues that interlink with climate action. At the forefront of this was the need to address the immediate challenges facing farmers, primarily the lack of income from sectors such as beef and lamb production, alongside the perception that climate policy is a driver of the challenges facing farmers.

As opposed to climate action being viewed as coming from distant decision-makers, which makes life more difficult, engaging with farmers in Roscommon underlines the need for actions to enhance farmers' quality of life. One example would be providing new income streams that can support wider climate goals, such as supporting energy efficiency and reducing dependence on imports of energy and farm inputs. By adopting an intentionally inclusive approach and foregrounding groups whose voices are not often heard, the People's Transition for Roscommon farmers has sought to enable the creation of solutions grounded in expanding the capabilities of community members. In this way, the project hopes to be a catalyst for community-led local development in a way that works for Roscommon. Fundamentally, climate action based on rights, equity and dignity is most likely to proactively build social approval.

4. Phase III: Solutions Phase

4. Phase III: Solutions Phase

Having completed the mapping and listening phase, the TASC team worked with relevant experts to identify potential solutions for the community that would both accelerate climate action, address local needs and priorities, and build community wealth. The team settled on developing two concepts: a wool processing co-operative and a grass biorefinery co-operative. The focus on wool ties in with the cultural importance of sheep farming to the County, as shown by the presence of a sheep on the County's coat of arms. Alongside creating new income streams for wool, its use within insulation could have environmental benefits by improving energy efficiency within homes. The second solution focuses on the biorefining of grass. This can create new income streams from grass by reducing dependence on imported soya for animal feed and securing new forms of fertiliser and energy. These solutions should not be considered the only possible collective climate initiatives that could be undertaken for Roscommon farmers, they were just two initiatives that the team felt would be feasible and implementable.

4.1 Solution 1: Wool processing co-operative

4.1.1. Policy context

Alongside the challenges farmers face regarding increases in input costs, a further cost facing sheep farmers is the cost of shearing sheep. While Irish wool had traditionally been used for carpets and clothing, there has been a decline in the price that farmers receive for wool, resulting in wool becoming a liability rather than an asset. As described by one farmer in an interview with the Wicklow People newspaper, 'If you're lucky enough to find someone to take it, you might get 20 cents per kilo, but it costs the farmer 40 to 45 cents a kilo for the shearer to remove it from the sheep' (Mac Raghnaill, 2023). Wool prices in Northern Ireland are also described as being downbeat (Halleron, 2023).



In July 2022, the Department of Agriculture, Food and the Marine (2022c) published a 'Review of Market Opportunities for Irish Grown Wool Based Products'. This review consists of an analysis of the market outlook for Irish Grown Wool based on current trends and emerging consumer demands. The market outlook for Irish Grown Wool appears positive, with increasing consumer demand observed over the last two years. This growth can be attributed to factors such as the rising popularity of online Business to Consumer (B2C) sales, the appeal of natural fibres for health and sustainability reasons, and the increasing push for environmentally friendly and bio-based products. A SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis of Irish Wool within the report details several topics that farmers in Roscommon raised alongside factors that relate to climate action. Beginning with strengths, Irish Grown Wool is described as holding cultural significance to Irish heritage. It is also widely seen as a sustainable and renewable bio-fibre, appealing to environmentally conscious consumers alongside the perception that it has a low carbon footprint due to grassland carbon sequestration. Ireland's steady sheep population could also ensure a reliable supply of wool.

In terms of the current weaknesses, the report emphasises the structure of the value chain in terms of limited bargaining power among farmers, a lack of value being received by farmers, and a dependence on subsidies. Due to limited competitive wool-buying operations in Ireland, farmers are 'price takers' rather than 'price makers' (Department of Agriculture, Food and the Marine, 2022c). The report also states that declining wool presentation quality has increased farmers' labour costs and lower farm gate prices.

In terms of the opportunities new wool markets could provide for the sector, increasing co-operation among farmers, potentially in the form of co-operatives, could lead to better returns for farmers producing wool. Government support of bio-based materials could also assist in reducing dependence on products that cause damage to the environment. The report also emphasises the potential for improved marketing and brand promotion of Irish wool.

In terms of threats, the report identifies apathy towards wool because it is undervalued and underutilised by farmers due to its lack of sustainable income. The fluctuating price of wool and lambs is also highlighted alongside the potential for a shortage of skills in handling and processing wool, among other threats.

The report notes several areas where wool could be used, including as a fertiliser and peat replacer, textiles and packaging, medical devices and cosmetics. Wool's properties also make it suitable for insulation, green roofs, and concrete applications in construction.

4.1.2. Using wool for insulation



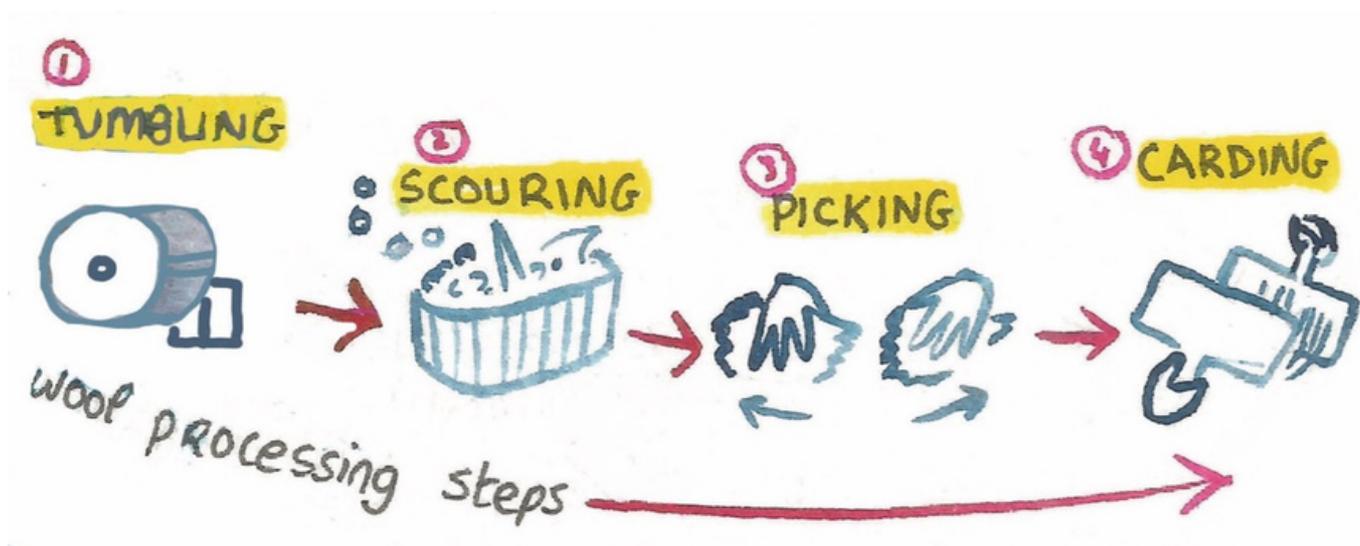
While the accounts of farmers stressed the emphasis placed on the impact of agriculture on the environment, another area where changes could assist in reducing emissions in Ireland while also enhancing the quality of life for communities is improving the energy efficiency of buildings. One way of achieving this is by improving insulation within homes. As described in the People's Transition report for Phibsborough in Dublin, old houses that are not insulated to modern standards are less energy efficient (McCabe, 2021). A consequence is needing more fuel to stay warm in winter. This is also relevant to the 32% of homes in Roscommon where coal or peat was the primary energy source, alongside the 244 houses in the County with no central heating. 59% of homes in the County used oil, natural gas or liquified petroleum gas.

The Government's Climate Action Plan for 2023 outlines the aim of retrofitting 500,000 homes by 2030 (Government of Ireland, 2022). At the local government level, one area where Local Authorities can support reductions in emissions is by retrofitting social housing. Within the Government's Housing for All plan, Local Authorities will retrofit '36,500 Local Authority homes to a B2/cost optimal Building Energy Rating (BER) by 2030' (Government of Ireland, 2021 p.29). Alongside the benefits that retrofitting could have for reducing emissions in the residential sector, it could create new opportunities for employment and farm incomes. Beginning with employment, a report from the Expert Group on Future Skills Needs (2021) in Ireland describes how there would be a demand for approximately 4,500 jobs in insulation and airtightness works per year up to 2030. Regarding farm incomes, the report also states that considering the environmental impacts of retrofitting projects may support the development of new industries around bio-sourced material to replace imported insulation products. One example of this is the use of sheep's wool for insulation. In 2021, the Irish Farmers' Association called upon the Government to investigate the potential for the production of sheep wool insulation in Ireland (Ryan, 2021).

Sheep wool is a bio-product that can act as an alternative to current insulating materials (Corcadden et al., 2014). Wool has excellent insulation properties, providing effective thermal regulation. It naturally traps air within its fibres, creating a layer of insulation that helps retain heat in cold environments and dissipate heat in warm conditions.

This makes wool a sustainable choice for building insulation, reducing the need for artificial heating or cooling. This underlines the relevance of wool insulation to various buildings, such as eco-friendly homes and animal sheds. Wool insulation is made from sheep wool fibres that are either mechanically held together or bonded using 5% and 20% recycled polyester adhesive to form insulating batts, rolls and ropes. It can be installed on the buildings' walls, roofs, and floors.

Wool has several physical attributes that make it attractive as a raw material for insulation use. These include its strength, fire resistance, and ability to absorb water (Corscadden et al., 2014). Alongside these natural properties, the cleanliness of wool can also influence its quality as a form of insulation. Corscadden et al. (2014) describe five processing steps in wool insulation manufacturing. The first step is tumbling, where wool is mechanically rotated so that loose debris falls from the fleece. This is followed by scouring. Scouring cleans wool from contaminants such as grease, dirt and manure (Mansour et al., 2014). Cleaning wool can also reduce the likelihood of processing difficulties, which may be caused by large entanglements of wool or debris disrupting machinery (Mansour et al., 2014). Within scouring, wool is washed in hot, soapy water to remove dirt, grease and dry plant matter from the fleece. In 2020, the Irish Cattle and Sheep Farmers Association (ICSA) called for an evaluation of the feasibility of a scouring plant for Irish wool (Cassidy, 2020). They outline how this could create green jobs while providing financial benefits to sheep farmers. One of the major impediments to the scouring process is the management of grit and containments that are picked up during the washing process. The filtration and treatment of this water is described as expensive (Enright, 2020). The washing of wool is followed by picking where wool fibres are separated. The fourth step is carding, where wool fibres are 'combed' in the same direction. The final step is wet felting, where moisture and friction matts wool fibres to create a dense material (Corscadden et al., 2014).



4.1.3. Benefits

There are a number of benefits to using wool as a form of insulation. As mentioned previously, it is fire resistant as wool fibres do not support combustion (Zach et al., 2012). In terms of installation, wool generally does not irritate skin, eyes or respiratory tract (Zach et al., 2012). This means that protective clothing is not needed for its installation compared to fibreglass installation. Wool is viewed as being a renewable resource. The average sheep produces approximately 4.5kg of raw wool each year that must be sheared for the animal's health (International Wool Textile Organisation, 2023). Using wool for insulation would create new markets for wool, producing new income streams for sheep farmers. Wool insulation is defined as being one of the 'best quality, purest, cleanest, and the most environmentally friendly insulation materials in the world' (Siligardi et al., 2017). The thermal insulation properties of wool can contribute to energy savings in buildings. For this reason, wool insulation can help reduce energy use, thereby reducing emission creation (Patnaik et al., 2015).

4.1.4. Challenges

Alongside the benefits that wool insulation could create from an environmental perspective and at a community development level, a number of factors would have to be addressed. The first relates to the cost and the sustainability of processing wool insulation. Wool insulation tends to be more expensive than conventional insulating material. The manufacturing process consists of three major costs: labour, material and electricity. As wool processing uses multiple equipment, a larger amount of wool would be required to make the manufacturing at such a scale sustainable over the long term (Corscadden et al., 2014). Regarding potential environmental risks, the amount of water required during the scouring process and wastewater management must also be considered to ensure that this does not contaminate local waterways. A further factor relating to safety is the presence of wool dust in the air in processing facilities. Wool dust is classified as a potential allergen that can cause irritation to the airways and eyes (Mansour et al., 2014). For this reason, adequate personal protection equipment would be required for workers processing wool.

A further potential challenge of developing a wool processing co-operative is farmers' lack of experience in working collaboratively. While there are co-operative livestock marts within County Roscommon, there are few examples of wool co-operatives. Co-operatives differ from standard companies or corporations as their priority is the greater good (Ji, 2016; Borkin, 2019; Vlačić & Štromajer, 2020). While some farmers who participated in the engagement process spoke of the benefits of co-operative models, others described the individualistic nature of farming. Therefore, support would be needed to establish a co-operative and provide support to ensure the long-term sustainability of the co-operative.

One example of a potential source of support is the Irish Co-operative Organisation Society (ICOS). ICOS supports commercial co-operative businesses and enterprises across multiple sections of the Irish economy. Its members include co-operatives focusing on agriculture, education, and bioeconomy activities.

One example of a co-operative in Ireland focusing on wool is the Galway Wool Co-op. The co-op was formed in January 2021 with the aim of reversing the decline of the dual-purpose Galway purebred population (National Rural Network, 2022). The co-op now consists of 70 pedigree registered Galway Sheep flocks throughout Ireland, with the herd sizes of farmers ranging from 5 to 80 sheep. A positive impact of creating the co-operative has been the formation of a connection with Donegal Yarn. It sells directly to weavers and knitters from its spinning mill in Kilcar in Co. Donegal. Donegal Yarn agreed to purchase wool at a price of between €2 to €2.50 per kg. This exceeds the average market price of 20c per kg (National Rural Network, 2022).

4.1.5. Case studies: Comercial Ovinos S.C.L, Spain and Sheepwool Insulation, Wicklow

A potential model to follow in developing a wool processing co-operative is Comercial Ovinos S.C.L, located in Spain. Established in December 2021, Comercial Ovinos S.C.L is a regional centre for collecting, storing, classifying, washing and combing sheep wool belonging to co-operative members (Comercial Ovinos, 2018). Similar to Roscommon, sheep production represents an important economic sector in the region of Extremadura in Spain (Gallardo Vázquez & Castilla Polo, 2012). The co-operative consists of 1.35 million merino sheep and more than 2,500 farmers from the regions of Extremadura and Andalusia in Spain. The average annual production exceeds 3.5 million kilos of dirty or greasy wool, representing approximately 30% of the merino wool production in Spain. The main activity of the processing facility is the processing and marketing of wool. The bales of classified and pressed wool are stored in warehouses for sale to external customers who are centres of treatments for subsequent washing, typing and styling (Calderón, 2010). Members of the co-operative fully control the centre as it offers its members the shearing of the sheep, the collection of the wool on the farm and its packaging. The co-op has a system of payment based on the quality of wool.

The facility is based in Villanueva de la Serena, which has a population of approximately 25,000 and is centrally located within the wool-producing region. The facility was built on a 7-hectare site that was sold by the local town council, located 4.5 km from the town centre (Calderón, 2010). The facility is 70,500 square metres and is located near a water supply and well served by road. The facility was built for €1.6 million. As of 2023, records show that Comercial Ovinos has between 5 and 25 employees and report sales of between €6 and €30 million (Universia, n.d.).

When the facility was established, there were initially four goals. The first was undertaking a quality assessment of wool to identify how wool production could be improved, support training among farmers and develop a commercialisation plan. This was followed by constructing a regional storage, classification and pressing centre for the wool. The third and fourth goals were installing a wool washing unit and a wool carding and combing unit (Calderón, 2010). The project was funded by the local government's Department for the Economy, Industry and Commerce.

Alongside the positives the wool processing facility can have, there are notable challenges or difficulties. The first is the potential lack of leaders in terms of people experienced in co-operative structures or wool processing. Secondly, there is no guarantee that wool will be profitable unless a clear market is found for wool (Calderón, 2010). Aligned with this is the need to ensure that the wool co-op would ensure that sheep farmers move from being 'price takers' to 'price makers'. While the site in Spain had planned to invest in a wool washing unit and install a wool carding and combing unit, this did not happen. There were several stated reasons for this. This included the cost of building such units (approximately €7 million) alongside competition from other nations. The cost incurred was described as a factor that could result in the facility becoming uncompetitive, thereby impacting the long-term sustainability.

Located in Rathdrum in Co. Wicklow, Sheepwool Insulation produces 'thermal and acoustic insulation products made from 100% natural sheep's wool' (Sheepwool Insulation, 2023). Founded in 2002, its website highlights how it has provided insulation to various buildings, including housing developments, hotels, churches, industrial buildings and government buildings, among others. The company sells a range of products. 5kg of loose wool is sold for €52.25 (€64.27 including VAT). The price of wool for insulation (sold in 3 rows) ranges from €104.19 for comfort rolls to €138.88 for premium rolls. The types of rolls sold differ in terms of density and thermal conductivity. Beyond the use of wool for insulation, pure wool slippers, window and door fillers and cylinder jackets are also sold.

4.2. Solution 2: Grass biorefinery co-operative

4.2.1. Policy context

The European Green Deal aims to make Europe carbon neutral by 2050. This requires changes to agriculture, the consumption of energy and how products are made and consumed. The energy sector is responsible for 75% of the total greenhouse emissions in the EU (Ravindran et al., 2022). To reduce dependence on pollutant forms of energy and dependence on energy from outside the EU, the Renewable Energy Directive (2009/28/EC) sought to increase the level of renewable energy used within the EU. As well as increasing the level of solar, wind and hydro energy used, using biomass such as crops or agricultural waste could assist in reducing dependence on imported fossil fuels (Parajuli et al., 2017). Given the large areas of grassland and the volume of manure and slurries produced within Ireland, these sources of biomass could assist in supporting a transition to more renewable forms of energy and create new opportunities for rural areas. Out of 5 million hectares of land used for agriculture in Ireland, 3.7 million were grassland (Ravindran et al., 2022). Ravindran et al. (2022) highlight findings from Gas Networks Ireland that Ireland has 'the highest potential for biogas/biomethane production per capita in Europe'. They also note that a report published by KPMG suggested that replacing natural gas with biogas obtained using Anaerobic Digestion can reduce carbon emissions by 93%. The development of biorefineries could also assist in reducing emission levels created in the Irish agricultural sector (Ravindran et al., 2022). The Irish Government's Climate Action Plan for 2023 includes the expansion of the biomethane sector through anaerobic digestion as an action that can support farm diversification. In a study conducted in 2011, O'Keeffe et al. highlight how using grasslands in new ways could help address low-family farm incomes and address environmental policies such as the Nitrates Directive. The development of grass biorefinery could also assist in addressing several Sustainable Development Goals such as SDG7 (affordable and clean energy), SDG8 (decent work and economic growth) and SDG13 (climate action) (Ravindran et al., 2022).



4.2.2. Process of grass biorefinery

A green biorefinery is a concept where grass is processed to produce feed, materials and energy (Timmer et al., 2020). This process can support the creation of new business models that farmers can participate in by producing protein products, value-added co-products and renewable energy (Gaffey et al., 2023; Ravindran et al., 2022). Over the past two decades, several pilot and demonstration grass biorefinery plants have emerged across Europe (Schwarz et al., 2016; Yilmaz Balaman et al., 2023). A number of companies have also developed industry-led commercial facilities (Gaffey et al., 2023). Participants in these developments include farmers and co-operatives, industry and regional government partners.

Byproducts from grass biorefinery come about in two forms: press cake and brown juice (Khoshnevisan et al., 2023). Press cake represents grass after the protein, in the form of a liquid (brown juice), has been extracted. Press cake can be used for cattle feed, to produce biogas via an anaerobic digester, and to provide building insulation materials (O'Keeffe et al., 2011). Figure 2 illustrates outputs from the biorefinery of grass.

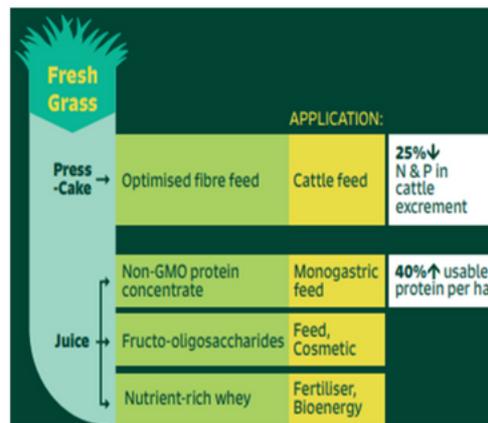


Figure 2: Outputs of grass biorefinery process. Source: Biorefinery Glas, 2019.

Referring to a study focusing on feeding press cake to Holstein Friesian dairy cows in the Netherlands, Gaffey et al. (2023) outline how cows that were fed press cake excreted 33% less Nitrogen and Phosphorus compared to conventional grass. Similarly, a study in Ireland found that replacing grass silage with press cake in Holstein Friesian dairy cow diets did not negatively impact milk yield and quality. However, it lowered milk fat and milk solids yields (Gaffey et al., 2023). This highlights the potential benefits feeding press cake could have for cattle in reducing emission creation.

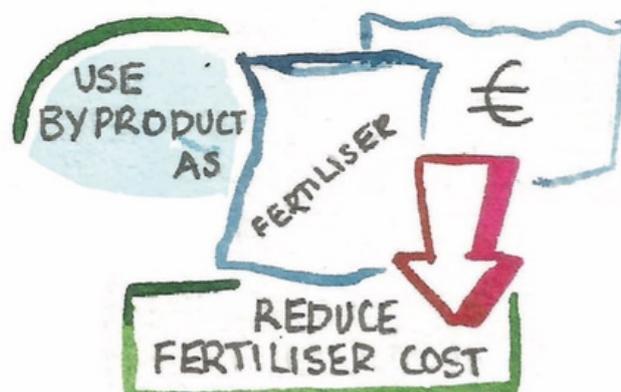
The processing of grass can take place using either fresh grass or in silage form (Gaffey et al., 2023). The paper by Grisso et al. (2013) describes three stages of grass biorefinery. The first is farmgate operations in terms of the production and harvesting of grass. The second focuses on the delivery and transportation of grass from the field to the processing facility. The final stage is operating the receiving facility (the biorefinery). The biorefinery process begins by chopping grass before separating it into brown juice and press cake (Schwarz et al., 2016).

Referring to a study focusing on feeding press cake to Holstein Friesian dairy cows in the Netherlands, Gaffey et al. (2023) outline how cows that were fed press cake excreted 33% less Nitrogen and Phosphorus compared to conventional grass. Similarly, a study in Ireland found that replacing grass silage with press cake in Holstein Friesian dairy cow diets did not negatively impact milk yield and quality. However, it lowered milk fat and milk solids yields (Gaffey et al., 2023). This highlights the potential benefits feeding press cake could have for cattle in reducing emission creation.

The processing of grass can take place using either fresh grass or in silage form (Gaffey et al., 2023). The paper by Grisso et al. (2013) describes three stages of grass biorefinery. The first is farmgate operations in terms of the production and harvesting of grass. The second focuses on the delivery and transportation of grass from the field to the processing facility. The final stage is operating the receiving facility (the biorefinery). The biorefinery process begins by chopping grass before separating it into brown juice and press cake (Schwarz et al., 2016). e transport costs cannot be counterbalanced by the gains made from processing grass, resulting in biorefineries being economically unviable.

4.2.3. Benefits

Developing grass biorefineries could help overcome farmers' challenges and create environmental benefits for the agricultural sector. One of the main benefits of using grass in new ways is that it can help reduce the level of soy protein imported. By using locally available resources, countries in Europe could become feed protein self-sufficient (Khoshnevisan et al., 2023). Alongside reducing dependence on imported soya, the production of biogas from grass biorefineries could assist in reducing dependence on fossil fuels and other environmentally detrimental products, namely fossil-based plastics (Ravindran et al., 2022). Alongside grass, other plants could be used in green biorefineries, such as sugar beet leaves. In terms of actions that would need to be taken to build support among farmers, O'Connor et al. (2021) highlight that a lack of information regarding the technology and investment costs were identified as the bottlenecks for Anaerobic Digestion installation on farms. These factors could also be relevant for grass biorefinery. The study by O'Connor et al. (2021) also highlights that approximately 60% of cattle farmers who participated in a survey on the uptake of Anaerobic Digestion were interested in adopting a co-operative business scheme to install and operate anaerobic digestors on their farms.



4.2.4. Factors to consider

Several factors require consideration if grass biorefineries are to be developed in a manner that is environmentally, socially and economically sustainable. The first relates to ensuring that the supply of grass needed for a biorefinery is sustainable. If there is a lack of grass to supply biorefineries, there will be a continued reliance on imported soya. Furthermore, the revenue generated may not be enough to cover the costs relating to the construction and operation of biorefineries. The quality of grass in terms of the level of dry matter present alongside protein and fibre components will also impact the level of processing undertaken (Gaffey et al., 2023). A further logistical factor is how the grass is baled. Square bales are described as easier to transport, while round bales are described as having lower storage costs (Grisso et al., 2013).

Using balers represents an additional cost that the development of grass biorefineries faces beyond constructing a refinery facility. In terms of the role of farmers within the grass biorefinery process, a critical aspect is ensuring that fair contracts are provided to farmers for the supply of grass (Grisso et al., 2013). Furthermore, for grass biorefineries to thrive, farmers must view the required changes to their land use positively. Referring to developments in Sweden, Yilmaz Balaman et al. (2023) note that new payment opportunities may incentivise farmers to produce grass for biorefineries compared to more conventional land uses.

A final factor of immense importance when considering the value of developing grass biorefineries is its impact on environmental sustainability and biodiversity protection. As Odgaard et al. (2019) note, the growth of grass biorefineries requires the evaluation of how to create new uses for grass without damaging existing ecological systems. This requires an evaluation of what are the inputs that are needed to support the processing of grass. Additional stresses must not be placed on soil and water as this could negatively impact the well-being of ecosystems and local communities (Timmer et al., 2020). It is also important that the processing of grass does not lead to additional pressures in terms of increasing the use of chemical fertilisers to enhance grass growth. Other potential causes of pollution from the refinery process include using diesel fuels and natural gas in transporting and processing biomass (Khoshnevisan et al., 2023). Incorporating silage effluent into combined slurries that are spread on fields after being harvested is one action that can help limit the level of waste produced through the biorefinery process. Combining this with the digestate produced from biorefining grass could also help to reduce fertiliser prices facing farmers (O'Keeffe et al., 2011). It is important to ensure that suitable analysis, such as undertaking a Life Cycle Assessment, is conducted to understand the potential impacts of grass biorefineries to ensure that a perceived sustainability solution does not cause further degradation.

While grass biorefineries could help to address issues relating to the excessive importation of soy proteins, technological solutions alone will not be enough to meet climate targets. While a recent report from the Intergovernmental Panel on Climate Change (2023) includes technological innovation alongside social and international cooperation, ecosystem stewardship and inclusive governance as important actions for building climate resilience, it also notes that technological innovation could create new trade-offs. These include an overdependence on foreign knowledge and providers, an extension of existing social inequalities and greater environmental impacts. Other actions will be needed alongside novel technologies, such as grass biorefineries, to ensure that more sustainable approaches to agriculture are achieved (Timmer et al., 2020). The study by Timmer et al. (2020 pp.19-20) bluntly states that 'no actions other than diet changes have such high benefits with such low costs'. This again highlights the importance of a just transition for farmers whereby support measures offset reductions in the consumption of produce such as beef and dairy to ensure that farmers are not left worse off by changes caused by actions relating to climate change.

4.2.5. Case studies from Ireland and abroad

Examples of grass biorefinery sites that could be replicated in Roscommon are BioRefine in Denmark and Biowert in Germany. Established in 2020, BioRefine was created by the three Danish agricultural companies DLG, Danish Agro, and DLF, to create a protein source for animal fodder from grass that is better for the environment compared to current forms of protein used in animal feed (NIRAS, 2021). Upon beginning operations in August 2021, 35 new job positions were created in the processing of grass. By its second season in 2022, BioRefine was running at its total annual capacity of 10,000 tons, drawing grass from 3,000 hectares (7,400 acres) (Werblow, 2023). The ambition of Biorefine is to reduce the level of soy feed imported into Denmark by developing a greener, locally produced and more sustainable alternative (Food Nation Denmark, n.d.). The protein developed from grass also represents an alternative to Genetically Modified Organisms (GMOs) (Werblow, 2023).

Referencing the introduction of a carbon tax in Denmark, an article in New Zealand Farm Life (2022) highlights how the processing of grass can have environmental benefits in reducing dependence on imported soy and reducing the amount of nitrogen leaching into sensitive water sources. As of 2021, Denmark imported approximately 1.6-1.7 million tons of non-ecological soy yearly (NIRAS, 2021). Alongside providing an alternative to soy feed for monogastric animals, Biorefine produces several byproducts, such as biogas and fertilisers developed from the brown juice which is left over from the processing of grass (NIRAS, 2021). BioRefine also aims to use plant fibres to produce other outputs such as packaging, egg cartons, and bio textiles (New Zealand Farm Life, 2022).

In terms of the different roles of groups involved in grass biorefinery, contracted farmers are responsible for producing the grass needed for refining, while Biorefine is responsible for harvesting and transporting the cut grass.

The processing of grass begins within eight hours of harvesting as delay results in a loss of nutrients within grass (New Zealand Farm Life, 2022). Farmers are paid based on previously negotiated contracts. 5 to 6 cuts occur over a 6-month season (Werblow, 2023). The grass used in the plant is sourced within 30 km of the plant. When production is at full speed, Biorefine intends to have a continuous operation that runs 24 hours a day, 5-7 days a week, from May to October (Biorefine, n.d.).

In Germany, the first Biowert grass biorefinery began operation in 2007 (IEA Bioenergy, 2019). Biowert highlights the potential for grass biorefinery to provide an alternative to petroleum-based plastic. Its website highlights how, within the EU alone, around 26 million tons of plastic waste are generated each year (Biowert, n.d.). By refining locally produced grass, Biowert produces three products: grass fibre insulation, natural fibre-reinforced plastic and fertiliser made from digestate (IEA Bioenergy, 2019). The brown juice from biorefining grass is mixed with other produce, such as local food waste, to produce biogas (IEA Bioenergy, 2019). This provides the energy needed to run the processing facility with excess electricity exported to the electricity grid. Wastewater from the processing of grass is reused as a slurry, while local farmers use the liquid biofertiliser. This allows for a circular economy, thereby minimising the waste produced during the grass biorefinery process (IEA Bioenergy, 2019). Biowert outlines a number of benefits which the plastic it produces has.

Firstly, it is lightweight, durable and dimensionally stable. It can also be dyed, printed and painted and is free of harmful substances. Similarly, its fertiliser is beneficial for maintaining long-term soil fertility, and no fossil fuels are used for its production. This can help reduce dependence on oil and gas imports while supporting farm diversification (Biowert, n.d.). Within Ireland, an example of a grass biorefinery initiative was the Biorefinery Glas Operational Group. This was a European Innovation Partnership for Agriculture Productivity and Sustainability (EIP-AGRI). EIP-AGRI aims to support agriculture in Europe to become more 'resource-efficient, economically viable, productive, competitive, low emission, climate-friendly and resilient' (Giarè & Vagnozzi, 2021). These projects are collaborative in nature, whereby different groups such as researchers, agricultural advisors, agri-businesses and farmers come together to address challenges that are relevant to farmers. The Biorefinery Glas initiative was a small-scale farmer-led green biorefinery project that focused on supporting farmer diversification into the circular bioeconomy. The project sought to evaluate the viability of a grass-based bioeconomy in Ireland by using a small-scale mobile biorefinery on farms. Figure 3 depicts the machine used.



Figure 3: Press cake following the biorefinery of grass. Source: National Rural Network, 2021.

Irish policy documents referenced the benefits that the biorefining of grass could have for both beef and dairy farms (Department of Business, Enterprise and Innovation, 2019a; Government of Ireland, 2019a). This is relevant to the environmental impacts of dairy farming and the low-income levels in beef farming. To apply a small-scale grass biorefinery on working farms, dairy farmers were selected to provide grass and demonstrate the biorefinery. The Biorefinery Glas project consisted of five project partners: Barryroe Co-operative, a farmer-owned dairy co-operative located in West Cork; Carbery Group, an agri-food manufacturer which comprises four dairy co-operatives including Barryroe Co-operative; Munster Technological University; University College Dublin and Grassa, a Dutch biorefinery technology provider who had developed the small-scale biorefinery employed on the participating farms to evaluate the potential applicability of a grass-based biorefinery. The potential benefits of grass biorefinery would be its ability to provide an alternative feed source for monogastric animals (mammals with a single-chamber stomach), thereby reducing dependence on imported soya.

The Biorefinery Glas project began in 2019 and concluded with a presentation of results in February 2021. Participating farmers spoke of the potential for the biorefinery of grass to 'make agriculture exciting again' and for it to be a 'game changer for farmers in different places', particularly farmers operating in the beef sector (Harrahill, 2022; Harrahill et al., 2022). They also noted the need for logistical factors to be considered in terms of the energy usage required to refine grass and how press cake (grass with protein removed) would be delivered to farmers.

4.3. Just Transition Fund

In terms of potential sources of funding for the two solutions detailed in this report, the Just Transition Fund referenced in section 1 has allocated €20 million to initiatives focusing on the bioeconomy (€10 million is available in 2023 and 2024; the deadline for funding for 2023 closed in October) (O'Donnell, 2023). This fund intends to offer 'the opportunity to support close collaboration between stakeholders along the entire bio-based value chain, including SMEs, research performing organisations, universities, local authorities, clusters, primary producers, bioprocessing industries, and consumer brands' (Department of Agriculture, Food and the Marine, 2023). The fund also seeks the active involvement of local actors such as NGOs, local and regional authorities, community, and local action groups.

4.4. Other solutions

Alongside the solutions described in this report, there are other areas where farmers could be supported. One example could be the development of a co-operatively owned mobile abattoir. This could provide farmers with the opportunity to sell directly to consumers, thereby reducing the influence of processors and retailers over the price farmers receive for their produce. In 2020, the Scottish Government released a report on the viability and sustainability of mobile abattoirs (Menzie et al., 2020). In comparing a mobile abattoir that travels to individual farms and a unit that would be 'docked' in a specific location, such as a mart, the docked approach was viewed as identified as more financially viable. The benefits of a mobile abattoir include improvements in animal welfare by reducing haulage distances and new opportunities for local businesses. In terms of the price of a mobile abattoir, the report highlights that the capital cost would be between £800,000 and £900,000 (app. €920,000 to €1.03m). It also notes that if 40% of the capital cost were covered with grant funding, the payback period would be 7 to 9 years. This would require private investment to cover the rest of the costs. Alongside the capital costs, waste management, meat hygiene inspections, and the cost of staffing mobile units were also identified as important. The creation of a co-operatively owned mobile abattoir could also support the coming together of farmers to sell their produce collectively, thereby enhancing the bargaining power farmers hold and creating an opportunity to market beef and lamb produced locally in Roscommon that consists of minimum inputs.

In terms of other land-use options beyond beef, lamb and dairy production, food security and the decline of vegetable production in Ireland were referenced by farmers. For this reason, identifying ways of creating new markets for growing vegetables could assist in supporting a transition to more sustainable forms of agriculture that provide farmers with a viable income. Given the similarities between the production of vegetables and beef and lamb in terms of the influences which retailers hold over the price producers receive, to be successful, growers would likely need to sell directly to consumers to maximise their value. Following the application of the People's Transition in Phibsborough in Dublin, Bohemian football club, through its climate cooperative, began a 'community supported agriculture' programme. From June until December, fresh, organic vegetables are delivered to the club's grounds weekly, where fans can pick up reasonably priced produce (SportsandDev, 2023).

5. Conclusion

5. Conclusion

The model described in *The People's Transition: Community-led Development for Climate Justice* aims to systematically include people and communities in the design, implementation and ownership of climate action such that communities would begin to see the benefits of sustainable development in their lives and thus would support a rapid deep decarbonisation push towards zero-emission societies. It also recognises that the public investment in climate action, if directed towards community-led initiatives, could provide an enormous boost for local development across Ireland and could address issues of inequality that exist on the island.

But theory is one thing, and practice is another. Thanks to AIB's backing, TASC has engaged with a diverse group of farmers in Roscommon to understand what they appreciate most about farming and what they see as the primary challenges they face. This is the first time the People's Transition model has been applied in a manner that focuses on an entire county and a single sector. The focus of this project on the future of farming in a rural county is timely due to the growing focus on the relationship between agriculture and the environment. It is apparent that there is a growing narrative of opposition between climate activists and farmers within Ireland and other countries. This is not new within an international context, given that similar divides have existed between environmentalists and businesses operating in fossil fuel sectors. This underlines the necessity of identifying actions that can assist in addressing the immediate challenges identified by farmers within the engagement phase, namely the lack of a viable income within many sectors of agriculture, structures which provide farmers with limited power compared to processors and retailers alongside the lack of support for farmers. By developing solutions that can enhance the quality of life for farmers, climate action can have a positive impact by creating new opportunities rather than something that is seen as something that solely seeks to penalise farmers, reduce their ability to make decisions and worsen their ability to make a living.

The solutions detailed within this report seek to address these challenges by creating new income streams for farmers while also having environmental benefits, such as enhancing energy efficiency in the case of using wool for insulation alongside reducing dependence on imported soya and fossil fuels in the case of grass biorefinery. By taking a co-operative approach to ownership, these initiatives could support the process of community wealth building whereby the revenue raised can be channelled towards developing community-owned amenities which address other challenges facing community members. This can ensure that climate action aimed provides tangible benefits for communities and highlight the benefits of a just transition.

In terms of next steps, while the three phases of the People's Transition model have been completed, this is not the end of TASC's connection with Roscommon.

Upon the publication of this report, TASC will continue to engage with community members to identify actions that can help to support the development of the solutions proposed in this report. We hope that the solutions outlined in this research serve as a blueprint or a catalyst for community members in Roscommon and for communities across the island of Ireland to engage in community-led climate action and seek to build community wealth through responses to climate change.

6. References

6. References

- Aurivo, n.d. *Our co-op*. [Online] Available at: <https://www.aurivo.ie/our-co-op/> [Accessed 2023 January 2023].
- Biorefine, n.d. *Fra frø til græs til grønt protein*. [Online] [Accessed 18 September 2023].
- Biorefinery Glas, 2019. *Biorefinery Glas Brochure*. [Online] [Accessed 18 September 2023].
- Biowert, n.d. *AgriPlast*. [Online] Available at: <https://biowert.com/en/agriplast/> [Accessed 19 September 2023].
- Borkin, S., 2019. *Platform co-operatives—solving the capital conundrum*, London: NESTA.
- Calderón, M., 2010. No por mucho madrugar amanece más temprano = Dawn doesn't come any sooner just because we rise early. *Datatextil*, Volume 22, pp. 74-85.
- Carroll, R., 2022. *Ireland targets 25% cut in agriculture emissions but farmers voice anger*. [Online] Available at: <https://www.theguardian.com/world/2022/jul/29/ireland-targets-25-cut-agriculture-emissions-farmers-anger> [Accessed 28 January 2023].
- Cassidy, B., 2020. *Feasibility of scouring plant for Irish wool to be explored*. [Online] Available at: <https://www.farmersjournal.ie/feasibility-of-scouring-plant-for-irish-wool-to-be-explored-571868> [Accessed 29 August 2023].
- Central Statistics Office, 2017. *Press Statement Census 2016 Results Profile 3 - An Age Profile of Ireland*. [Online] Available at: <https://www.cso.ie/en/csolatestnews/pressreleases/2017pressreleases/presstatementcensus2016resultsprofile3-anageprofileofireland/#:~:text=In%20Census%202016%2C%2037.2%25%20were,the%2025%2D44%20age%20group> [Accessed 3 October 2022].
- Comercial Ovinos, 2018. *Quiénes somos*. [Online] Available at: <http://www.comercialovinos.com/> [Accessed 23 August 2023].
- Corscadden, K. W., Biggs, J. N. & Stiles, D. K., 2014. Sheep's wool insulation : A sustainable alternative use for a renewable resource?. *Resources, Conservation and Recycling*, Volume 86, pp. 9-15.
- Department of Agriculture, Food and the Marine, 2022a. *Forest Statistics Ireland 2020*, Dublin: Department of Agriculture, Food and the Marine.
- Department of Agriculture, Food and the Marine, 2022b. *Pathway to 51% reduction in economy-wide emissions agreed - McConalogue confirms 25% reduction in agricultural emissions*. [Online] Available at: <https://www.gov.ie/en/press-release/40b39-pathway-to-51-reduction-in-economy-wide-emissions-agreed-mcconalogue-confirms-25-reduction-in-agricultural-emissions/> [Accessed 28 January 2023].
- Department of Agriculture, Food and the Marine, 2022c. *Review of Market Opportunities for Irish-Grown Wool-Based Products*, Dublin: Department of Agriculture, Food and the Marine.
- Department of Agriculture, Food and the Marine, 2023. *2023 Bioeconomy Demonstration Initiative – EU Just Transition Fund*. [Online] Available at: <https://www.gov.ie/en/publication/deb47-2023-bioeconomy-demonstration-initiative-eu-just-transition-fund/> [Accessed 11 September 2023].

Dillon, E., Donnellan, T., Moran, B. & Lennon, J., 2023. *Teagasc National Farm Survey 2022: Preliminary results*, Athenry: Teagasc.

Enright, S., 2020. *Covid fleeces 'forgotten' wool industry*. [Online] Available at: <https://www.anglocelt.ie/2020/07/29/covid-fleeces-forgotten-wool-industry/> [Accessed 29 August 2023].

Expert Group on Future Skills Needs, 2021. *Skills for Zero Carbon: The Demand for Renewable Energy, Residential Retrofit and Electric Vehicle Deployment Skills to 2030*, Dublin: Expert Group on Future Skills Needs.

Food Nation Denmark, n.d. *Northern Europe's largest production of green proteins has opened*. [Online] Available at: <https://foodnationdenmark.com/news/northern-europes-largest-production-of-green-proteins-has-opened/> [Accessed 18 September 2023].

Forde, A., 2017. *Map: how many dairy cows are there in each county in Ireland?*. [Online] Available at: <https://www.farmersjournal.ie/map-how-many-dairy-cows-are-there-in-each-county-in-ireland-321070> [Accessed 28 January 2023].

Foxe, K., 2023. *Roscommon GAA has 'wrong sheep' on county crest*. [Online] Available at: <https://www.independent.ie/irish-news/roscommon-gaa-has-wrong-sheep-on-county-crest/a682870245.html> [Accessed 29 August 2023].

Gaffey, J. et al., 2023. Green Biorefinery systems for the production of climate-smart sustainable products from grasses, legumes and green crop residues. *Biotechnology Advances*, Volume 66, p. 108168.

Gallardo Vázquez, D. & Castilla Polo, F., 2012. *Marco de trabajo para la actuación social en sociedades cooperativas responsables*. San Sebastián, XIV Jornadas de Investigadores en Economía Social y Cooperativa.

Giarè, F. & Vagnozzi, A., 2021. Governance's effects on innovation processes: the experience of EIP AGRI's Operational Groups (OGs) in Italy. *Italian Review of Agricultural Economics*, 76(3), p. 41–52.

Government of Ireland, 2020. *Programme for Government: Our Shared Future*, Dublin: Government of Ireland.

Government of Ireland, 2021. *Housing for All: A new Housing Plan for Ireland*, Dublin: Government of Ireland.

Government of Ireland, 2022. *Climate Action Plan 2023*, Dublin: Government of Ireland.

Grisso, R., McCullough, D., Cundiff, J. & Judd, J., 2013. Harvest schedule to fill storage for year-round delivery of grasses to biorefinery. *Biomass and bioenergy*, 55, pp., Volume 55, pp. 331–338.

Halleron, R., 2023. *NI wool prices remain downbeat – British Wool director*. [Online] Available at: <https://www.agriland.ie/farming-news/ni-wool-prices-remain-downbeat/> [Accessed 29 August 2023].

Harrhill, K., 2022. *Make Agriculture Exciting Again: How The Bioeconomy can Help Farmers and The Environment*. [Online] Available at: <https://www.tasc.ie/blog/2022/10/18/make-agriculture-exciting-again/> [Accessed 18 September 2023].

Harrhill, K., Macken-Walsh, Á., O'Neill, E. & Lennon, M., 2022. An Analysis of Irish Dairy Farmers' Participation in the Bioeconomy: Exploring Power and Knowledge Dynamics in a Multi-Actor EIP-AGRI Operational Group. *Sustainability*, 14(19), p. 12098.

- Hennessey, T., Doran, J., Bogue, J. and Repar, L., 2018. *The Economic and Societal Importance of the Irish Suckler Beef Sector*, Cork: Cork University Business School.
- IEA Bioenergy, 2019. *BIOGAS IN SOCIETY – Biowert grass biorefinery – Biobased plastics, Germany*, Paris: IEA.
- Intergovernmental Panel on Climate Change, 2023. *CLIMATE CHANGE 2023 Synthesis Report: Summary for Policymakers*, Geneva: Intergovernmental Panel on Climate Change.
- International Wool Textile Organisation, 2023. Sheep. [Online] Available at: <https://iwto.org/sheep/#:~:text=Quick%20Wool%20%26%20Sheep%20Facts,to%20cover%20one%20large%20sofa>. [Accessed 29 August 2023].
- Ji, M., 2016. Revolution or Reform? Union-Worker Cooperative Relations in the United States and Korea. *Labor Studies Journal*, 41(4), pp. 355-376.
- Khoshnevisan, B. et al., 2023. Using the product environmental footprint to strengthen the green market for sustainable feed ingredients; Lessons from a green biomass biorefinery in Denmark. *Science of the Total Environment*, Volume 877, p. 162858.
- Mac Raghnaill, E., 2023. *Wicklow sheep farmer hasn't sold wool in four years - 'It's gone from extra income to an added cost'*. [Online] Available at: <https://www.independent.ie/regionals/wicklow/west-wicklow-news/wicklow-sheep-farmer-hasnt-sold-wool-in-four-years-its-gone-from-extra-income-to-an-added-cost/a1389987139.html> [Accessed 29 August 2023].
- Mansour, E., Loxton, C., Elias, R. M. & Ormondroyd, G. A., 2014. Assessment of health implications related to processing and use of natural wool insulation products. *Environment international*, Volume 73, pp. 402-412.
- McCabe, S., 2021. *The People's Transition - Phibsborough*, Dublin: TASC.
- McCormack, C., 2022. *Climate policies have the biggest impact on farmers' mental health*. [Online] Available at: <https://www.independent.ie/business/farming/news/climate-policies-have-the-biggest-impact-on-farmers-mental-health-41898058.html> [Accessed 2 March 2023].
- Menzies, B., D. Wood, and M. Dimambro. 2020. *Assessing the Viability and Sustainability of Mobile Abattoirs in Scotland*. Edinburgh: Scottish Government.
- Murphy, B., 2023. *Sheep farmer protest kicks off in Roscommon*. [Online] Available at: <https://www.farmersjournal.ie/sheep-farmer-protest-kicks-off-in-roscommon-749176> [Accessed 29 August 2023].
- National Oversight and Audit Commission , 2021. *Roscommon County Council Scrutiny Report*, s.l.: National Oversight and Audit Commission.
- National Rural Network, 2021. *EIP-AGRI and the Bioeconomy – Day 1*. [Online] Available at: <https://www.nationalruralnetwork.ie/eip-agri/eip-agri-news/eip-agri-and-the-bioeconomy-day-1/> [Accessed 18 September 2023].
- National Rural Network, 2022. *The Galway Wool Co-op – An Inspiring Roadmap for the Native Irish Wool Industry*. [Online] Available at: <https://www.nationalruralnetwork.ie/leader/leader-case-studies/the-galway-wool-co-op-an-inspiring-roadmap-for-the-native-irish-wool-industry/> [Accessed 25 August 2023].
- New Zealand Farm Life, 2022. *Extracting Protein from Grass*. [Online] Available at: <https://nzfarmlife.co.nz/extracting-protein-from-grass> [Accessed 18 September 2023].

NIRAS, 2021. *BioRefine opens new plant for production of grass protein*. [Online] Available at: <https://www.niras.com/projects/biorefine-opens-new-plant-for-production-of-grass-protein/> [Accessed 18 September 2023].

Northern and Western Regional Assembly, 2021. *Regional Spatial and Economic Strategy 2020-2032*, Ballaghaderreen: Northern and Western Regional Assembly.

Northern and Western Regional Assembly, 2022. *LECP Briefing Note for Roscommon County Council*, s.l.: Northern and Western Regional Assembly.

Nugent, C., 2022. Farmer Protests in the Netherlands Show Just How Messy the Climate Transition Will Be. [Online] Available at: <https://time.com/6201951/dutch-farmers-protestsclimate-action/> [Accessed 11 February 2023].

O'Connor, S. et al., 2021. An Investigation of the Potential Adoption of Anaerobic Digestion for Energy Production in Irish Farms. *Environments*, 8(2), p. 8.

O'Keeffe, S. et al., 2011. Green biorefinery (GBR) scenarios for a two-cut silage system: Investigating the impacts of sward botanical composition, N fertilisation rate and biomass availability on GBR profitability and price offered to farmers. *Biomass and Bioenergy*, 35(11), p. 469.

Odgaard, M., Knudsen, M., Hermansen, J. & Dalgaard, T., 2019. Targeted grassland production—A Danish case study on multiple benefits from converting cereal to grasslands for green biorefinery. *Journal of cleaner production*, Volume 223, pp. pp.917-927.

O'Donnell, C., 2023. *Bioeconomy funding initiative worth €10 million for midlands*. [Online] Available at: <https://www.agriland.ie/farming-news/bioeconomy-funding-initiative-worth-e10-million-for-midlands/#:~:text=The%20Bioeconomy%20Demonstration%20Initiative%20is,the%20EU%20Just%20Transition%20Fund> [Accessed 11 September 2023].

Ordnance Survey Ireland, 2018. *Local Electoral Area Boundary Committee No. 1 Report 2018*, Dublin: Government of Ireland.

Parajuli, R. et al., 2017. Environmental life cycle assessments of producing maize, grass-clover, ryegrass and winter wheat straw for biorefinery. *Journal of Cleaner Production*, Volume 142, pp. 3859-3871.

Patnaik, A. et al., 2015. Thermal and sound insulation materials from waste wool and recycled polyester fibers and their biodegradation studies. *Energy and Buildings*, Volume 92, pp. 161-169.

Pobal, 2017. *Launch of 2016 Pobal HP Deprivation Index*. [Online] Available at: <https://www.pobal.ie/launch-of-2016-pobal-hp-deprivation-index/#:~:text=Percentage%20data%20for%20the%20area,analysis%20through%20the%20geo profiling%20viewer> [Accessed 1 November 2022].

Pobal, n.d. *Deprivation Indices*. [Online] Available at: <https://maps.pobal.ie/WebApps/DeprivationIndices/index.html> [Accessed 12 October 2022].

Ravindran, R. et al., 2022. Biogas, biomethane and digestate potential of by-products from green biorefinery systems. *Clean Technologies*, 4(1), pp. 35-50.

Roach, A., Withers, T., Skerritt, J. & de Sousa, A., 2022. Rebel Farmers Are Pushing Back on Climate Action. This is Why. [Online] Available at: <https://www.bloomberg.com/news/features/2022-12-09/netherlands-plan-to-cut-emissions-from-cows-sparks-farmers-revolt> [Accessed 11 February 2023].

- Roscommon County Council, 2020. *Roscommon County Development Plan 2021-2027*, s.l.: Roscommon County Council.
- Roscommon County Council, 2020. *Roscommon County Development Plan 2021-2027: Issues Paper*, s.l.: Roscommon County Council.
- Roscommon LEADER Partnership, n.d. *Rural Men's Group*. [Online] Available at: <https://www.rosleaderpartnership.ie/?pagid=rural-mens-group> [Accessed 28 January 2023].
- Ryan, R., 2021. *Wool as insulation should be mandatory in all public buildings and homes - IFA*. [Online] Available at: <https://www.irishexaminer.com/farming/arid-40369481.html> [Accessed 24 August 2023].
- Schwarz, D. et al., 2016. Integrated biorefinery concept for grass silage using a combination of adapted pulping methods for advanced saccharification and extraction of lignin.. *Bioresource Technology*, Volume 216, pp. pp.462-470.
- Shannonside News, 2022. *Lough Funshinagh flooding causing major economic damage to local farmers*. [Online] Available at: <https://www.shannonside.ie/news/lough-funshinagh-flooding-causing-major-economic-damage-to-farmers-206871> [Accessed 28 January 2023].
- Sheepwool Insulation, 2023. *Sheepwool Insulation*. Accessed September 22, 2023. <https://www.sheepwoolinsulation.com/>.
- Siligardi, C., Miselli, P., Francia, E. & Gualtieri, M. L., 2017. Temperature-induced microstructural changes of fiber-reinforced silica aerogel (FRAB) and rock wool thermal insulation materials: A comparative study. *Energy and Buildings*, Volume 138, pp. 80-87.
- SportsandDev, 2023. *What role can sport play in the fight for climate justice?* April 12. Accessed September 22, 2023. <https://www.sportanddev.org/latest/news/what-role-can-sport-play-fight-climate-justice>.
- Teagasc, 2022. *Regional review '21: Teagasc Roscommon Longford Advisory Region*, s.l.: Teagasc.
- Timma, L., Dace, E., Kristensen, T. & Knudsen, M. T., 2020. Dynamic sustainability assessment tool: case study of green biorefineries in Danish agriculture. *Sustainability*, 12(18), p. 7389.
- Universia, n.d. *Comercial Ovinos S.c.l.* [Online] Available at: <https://guiaempresas.universia.es/COMERCIAL-OVINOS-SCL.html> [Accessed 23 August 2023].
- Van der Ploeg, J. D., 2020. Farmers' upheaval, climate crisis and populism. *The Journal of Peasant Studies*, 47(3), pp. 589-605.
- Vlačič, P. & Štromajer, J., 2020. Taxi Cooperatives as an Alternative to Uber. *Lex Localis- Journal of Local Self-Government*, 18(3), pp. 449-467.
- Wasley, A., and H. Kroeker. 2018. *Revealed: Industrial-scale beef farming comes to the UK*. Accessed July 31, 2023. <https://www.thebureauinvestigates.com/stories/2018-05-29/inside-britains-new-intensive-agriculture-sector-beef-lots>.
- Werblow, S., 2023. *Beyond Hay*. [Online] Available at: <https://www.deere.com/en/publications/the-furrow/2023/march-2023/beyond-hay/> [Accessed 18 September 2023].

Yilmaz Balaman, S., Berndes, G., Cederberg, C. & Rosenqvist, H., 2023. Towards multifunctional landscapes coupling low carbon feed and bioenergy production with restorative agriculture: Economic deployment potential of grass-based biorefineries. *Biofuels, Bioproducts and Biorefining*, 17(3), pp. pp.523-536.

Zach, J., Korjenic, A., Petránek, V. H. J. & Bednar, T., 2012. Performance evaluation and research of alternative thermal insulations based on sheep wool. *Energy and Buildings*, Volume 49, pp. 246-253.

The People's Transition describes a model for participative decision-making that is intended to enable a community to benefit from the transition to a zero-carbon society. It aims to design climate solutions that give local people and communities ownership of the assets of transition and enhance public support for climate action by tackling inequality and raising standards of living. This report details the application of the People's Transition model for farmers in Roscommon.



Rialtas na hÉireann
Government of Ireland



TASC receives support under the Scheme to Support National Organisations (SSNO) which is funded by the Government of Ireland through the Department of Rural and Community Development.