SUSTAINABLE ENERGY WEST

SUSTAINABLE ENERGY PLAN

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SAYAL CONSULTANCY

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*Funded by the Department of Rural and Community Development

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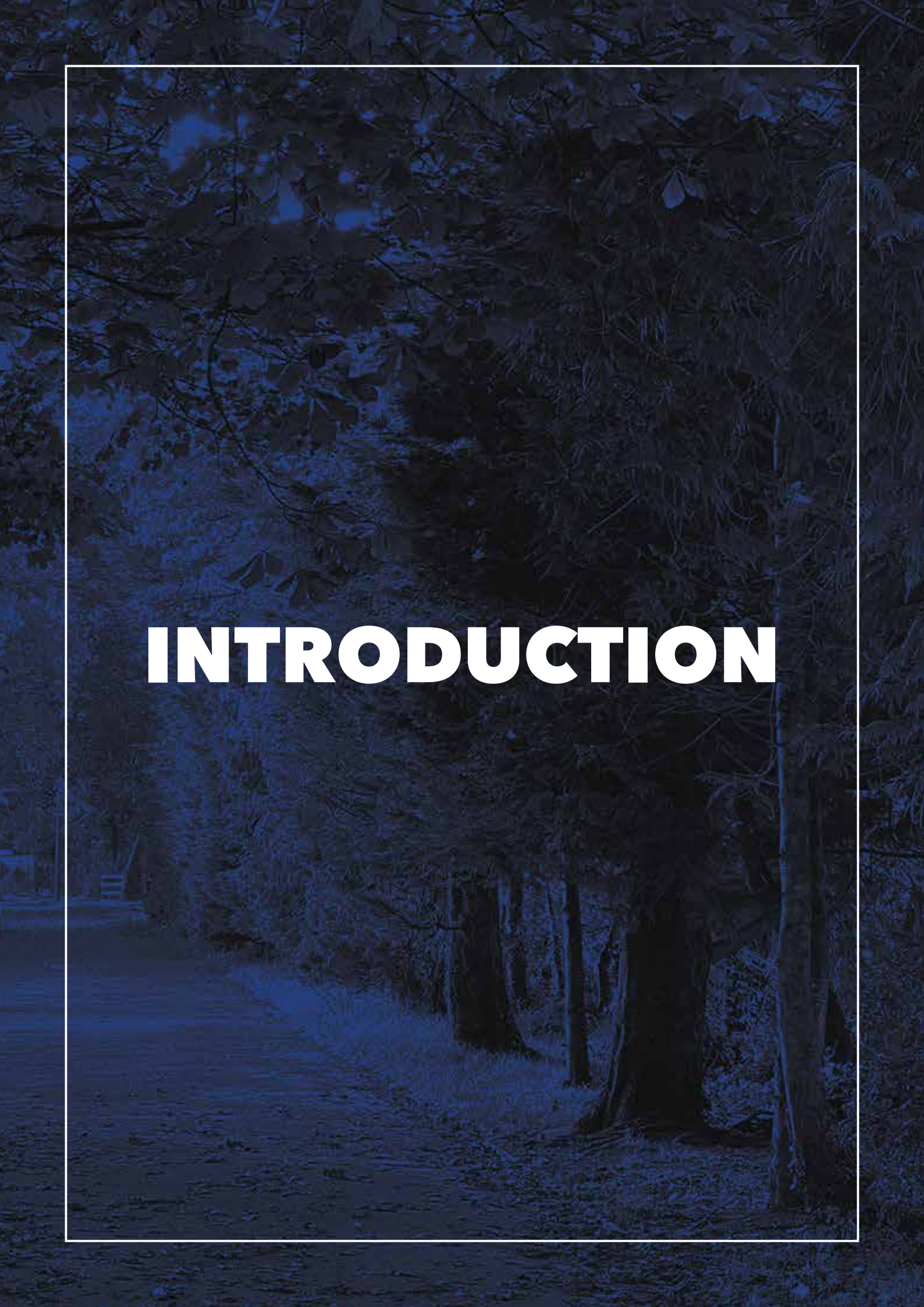

INTRODUCTION

Sustainable Energy West (SEW) is a community group dedicated to playing its part in reducing greenhouse gas emissions and improving the quality of the natural environment in its local area. SEW is based in east Galway (Figure 1.1) and comprises Loughrea (Figure 1.2) and the surrounding communities, including towns such as Woodford (Figure 1.3) and Abbey (Figure 1.4).

According to the 2016 census, SEW has a population of 17,344. About one third – 5,537 people – live in Loughrea town, two-thirds in the surrounding hinterland. There are 6,289 homes in the area.

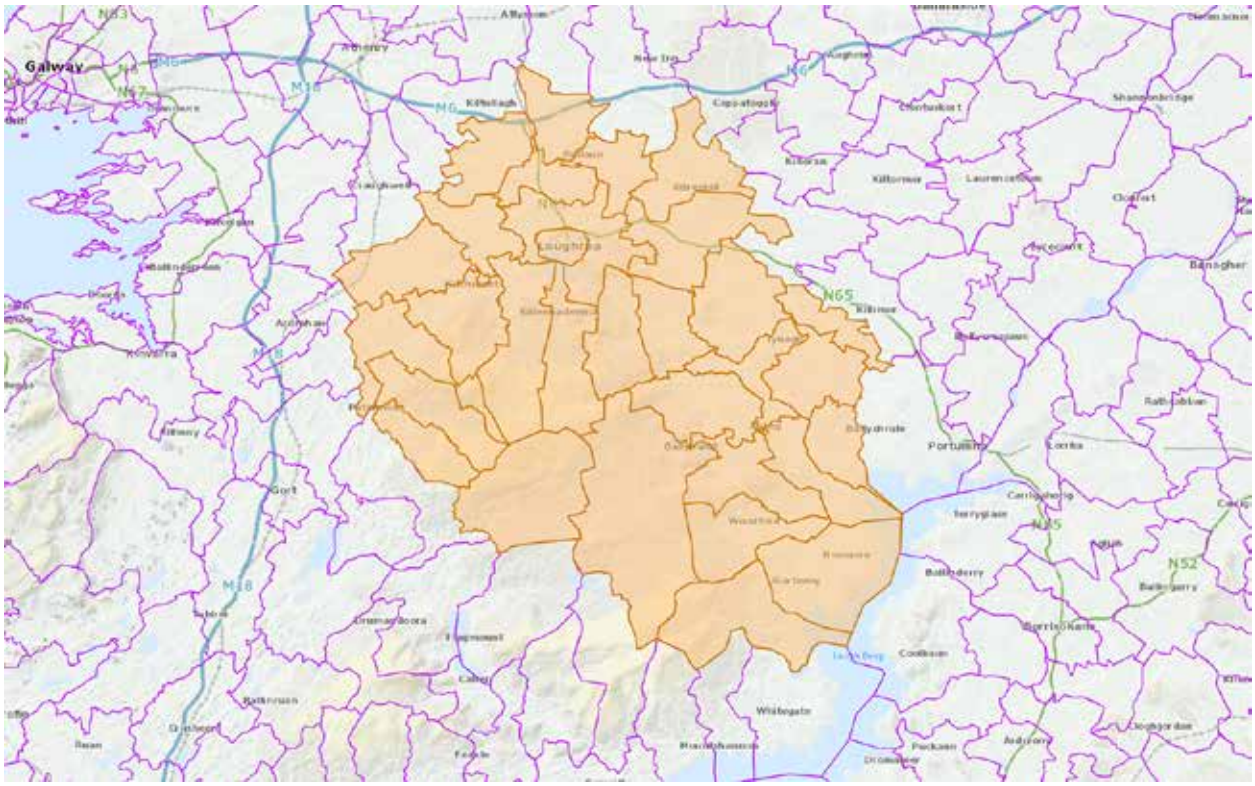

Figure 1.1 Map of the Sustainable Area West (SEW) catchment area in East Galway. Source: Central Statistics Office (CSO).

Figure 1.2. Main Street Loughrea. Photo by Andrew Montague

Figure 1.3 Main Street Woodford. Photo by Sean Crowley

Figure 1.4 Abbey Community Centre. Photo by Sean Crowley

Since its foundation in 2018, SEW has undertaken significant work. It commissioned the creation of an Energy Master Plan for its catchment area. Thirteen audits of community buildings were carried out, with funding from LEADER. SEW has also collaborated and supported diverse projects such as the Loughrea Town Hall restoration, The Walks project and greening the Christmas Lights.

Together with Naomh Breandán Credit Union Ltd. (Figure 1.5), SEW recruited Spatial Planners Andrew Montague and Sean Crowley of Sayal Consultancy to produce this five-year Strategic Plan to map out where best to focus its attention in the coming years to help reduce emissions and improve the local environment.

Figure 1.5 Naomh Breandán Credit Union in Loughrea. Photo by Andrew Montague

CONTEXT FOR THE STRATEGIC PLAN

SEW's focus on a sustainable future is in response to the Climate Crisis and the Biodiversity crisis facing Ireland and the world. The 2021 report of the Intergovernmental Panel on Climate Change states[1]:

> "It is unequivocal that human influence has warmed the atmosphere, ocean and land. Widespread and rapid changes in the atmosphere, ocean, cryosphere and biosphere have occurred."

Global surface temperature was 1.09 (0.95 to 1.20) °C higher in 2011– 2020 than 1850–1900" (Figure 1.6).

1 Intergovernmental Panel on Climate Change (2021) Climate Change 2021, The Physical Science Basis Summary for Policymakers. Available at: https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf

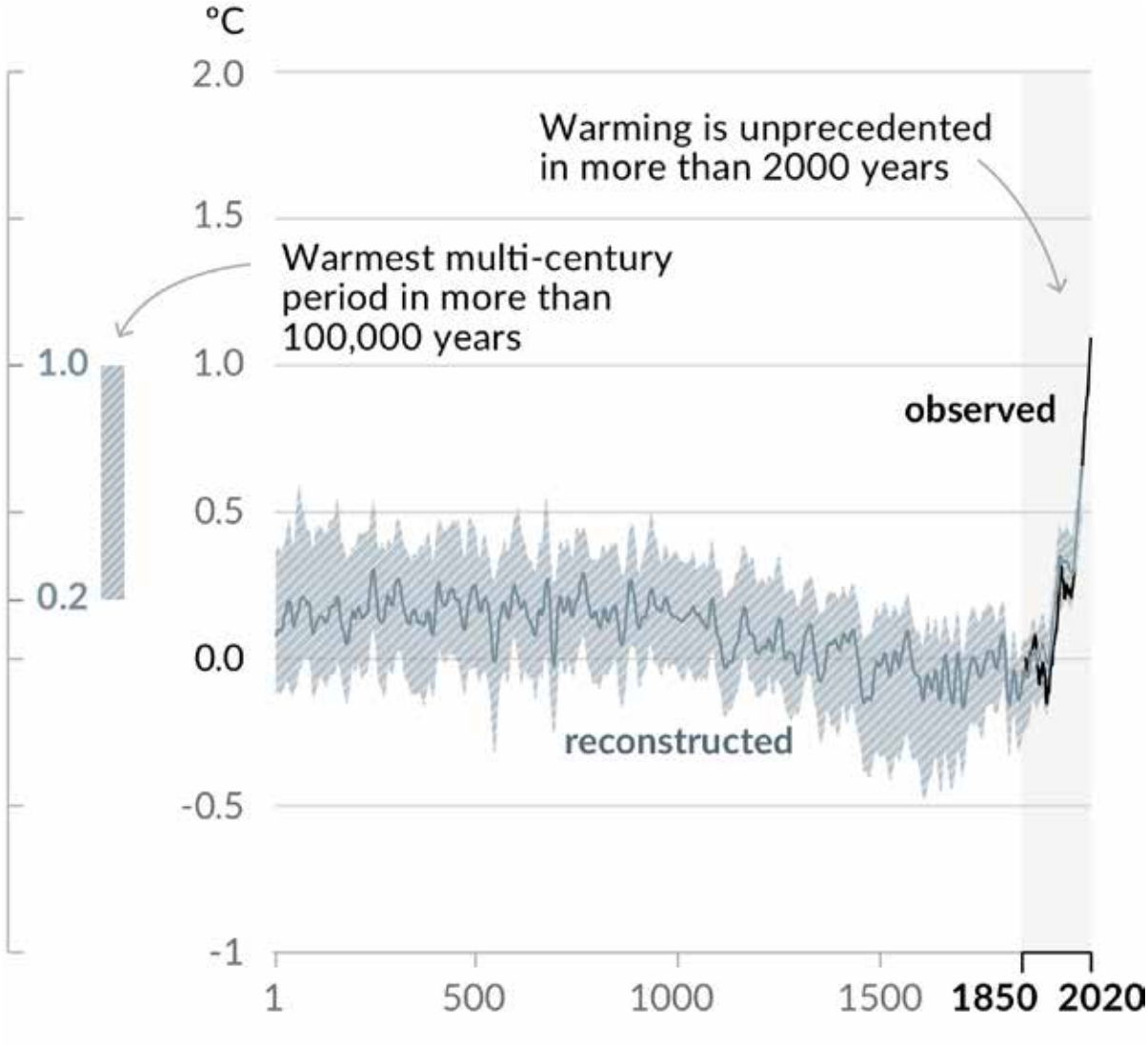

Figure 1.6 Change in global surface temperature (decadal average) as reconstructed (1-2000) and observed (1850-2020). Source IPPC report 2021

> "Globally averaged precipitation over land has likely increased since 1950, with a faster rate of increase since the 1980s (medium confidence). It is likely that human influence contributed to the pattern of observed precipitation changes since the mid-20th century".
>
> "Human influence is very likely the main driver of the global retreat of glaciers since the 1990s".
>
> "Global mean sea level increased by 0.20 m (0.15 to 0.25) between 1901 and 2018"
>
> "Global warming of 1.5°C and 2°C will be exceeded during the 21st century unless deep reductions in CO2 and other greenhouse gas emissions occur in the coming decades."

Climate change is having a significant impact in Ireland. In the SEW area and right across the country, we have seen increases in flooding in recent years (Figure 1.7).

Woodland fires are another challenge. In April 2021, there were two significant fires in Ireland. Over 100 firefighters were needed to get a gorse fire under control in the Mourne Mountains, while in Killarney, thousands of acres of prime national park were lost in the worst fire in 40 years.

Figure 1.7 Flooding in Loughrea, 2015. Photo by Larry Morgan, from Connacht Tribune

The loss of biodiversity is a serious problem across the globe, but is particularly serious here in Ireland. In his testimony to the Joint Oireachtas Committee on Climate Action, the campaign officer at the Irish Wildlife Trust, Pádraic Fogarty stated that Ireland is the most deforested country in the world, with native forests having been reduced from 80% to 2% of the land surface[2]. From 2001-2020, Ireland has had the second-highest level of overfishing in the EU, damaging the sustainability of our marine life[3]. Two-thirds of wild bird species are listed as under conservation concern, while one third of wild bee species are threatened with extinction[4] (Figure 1.8).

Figure 1.8 One-third of wild bee species in Ireland face extinction. Photo by Fabian Keller on Unsplash.com

2 RTE (2021) Biodiversity experts warn ecosystems are 'in collapse' Available at: https://www.rte.ie/news/2021/0504/1213771-joint-committee-on-climate-action-irish-wildlife-trust/

3 Our Fish (2020) Report: 20 Years of EU Overfishing Proves Need for Blue Ambition in Green Deal. Available at: https://our.fish/press/20-years-of-eu-overfishing-proves-need-for-blue-ambition-in-green-deal/

4 BirdWatch Ireland (2021). New report highlights state failure to save biodiversity Available at: https://birdwatchireland.ie/new-report-highlights-state-failure-to-save-biodiversity/

GREENHOUSE GAS EMISSIONS IN IRELAND

Compared to our neighbours, Ireland had the third-highest emissions of greenhouse gases per person in the EU[5] (Figure 1.9). Ireland's total greenhouse gas emissions were 60 million tonnes of CO2 equivalent in 2019[6].

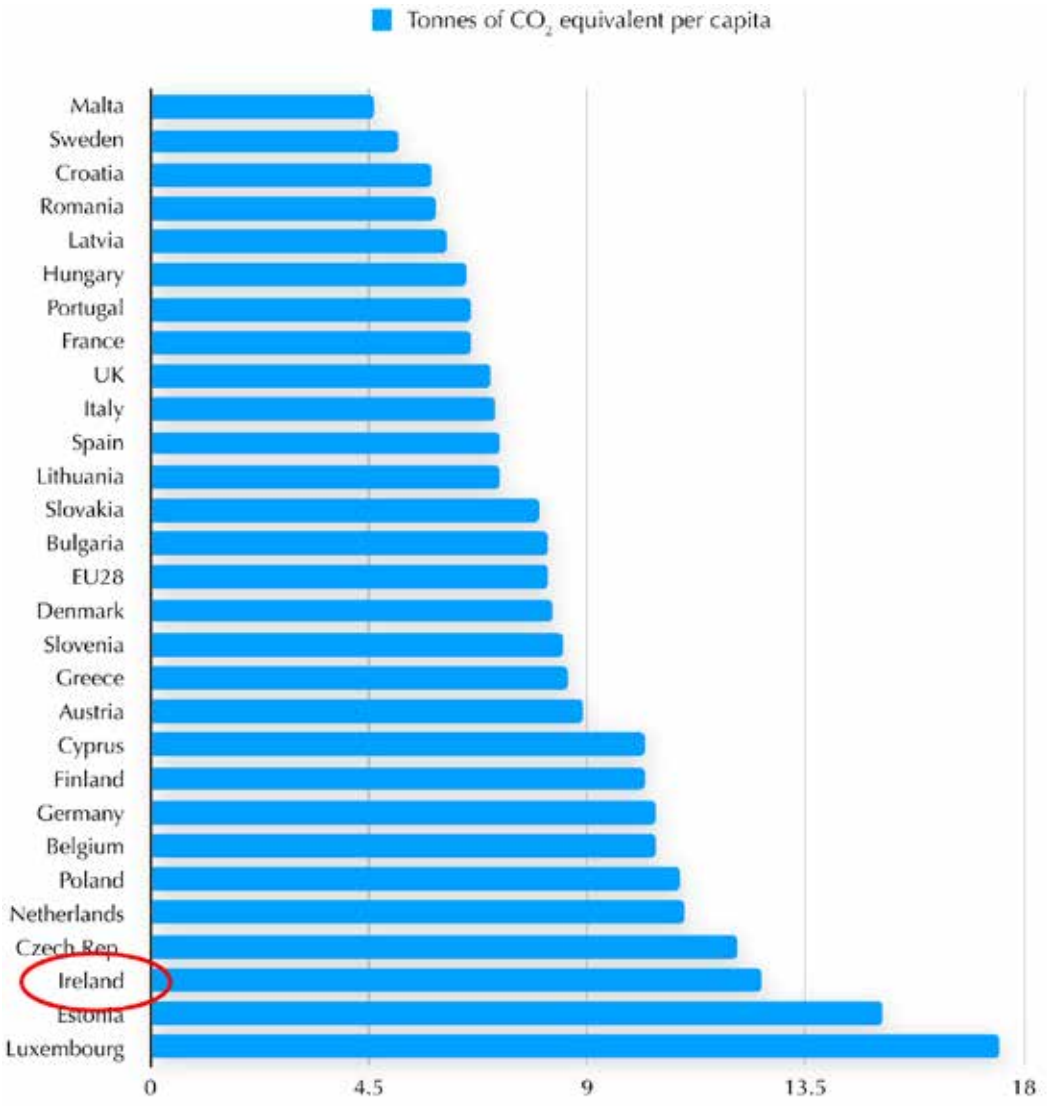

Figure 1.9 In 2018, Ireland had the third highest greenhouse gas emissions per capita in the EU. Source CSO 2020. Graph by Andrew Montague

Agriculture is the biggest source of emissions in Ireland, accounting for 35% of the total. Most of the greenhouse gases released from agriculture are not as a result of energy use, but as a result of methane released by livestock – mostly dairy and beef cattle. There are also significant amounts of greenhouse gas emissions from the fertilisers that are applied to land. Industry is the source of 34% of emissions, Transport 20% and residential emissions account for 11% (Figure 1.10).

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5 CSO (2020) Environmental Indicators Ireland 2020. Available at https://www.cso.ie/en/releasesandpublications/ep/p-eii/environmentalindicatorsireland2020/greenhousegasesandclimatechange/

6 EPA (2020) Latest Emissions Data. Available at https://www.epa.ie/our-services/monitoring--assessment/climate-change/ghg/latest-emissions-data/

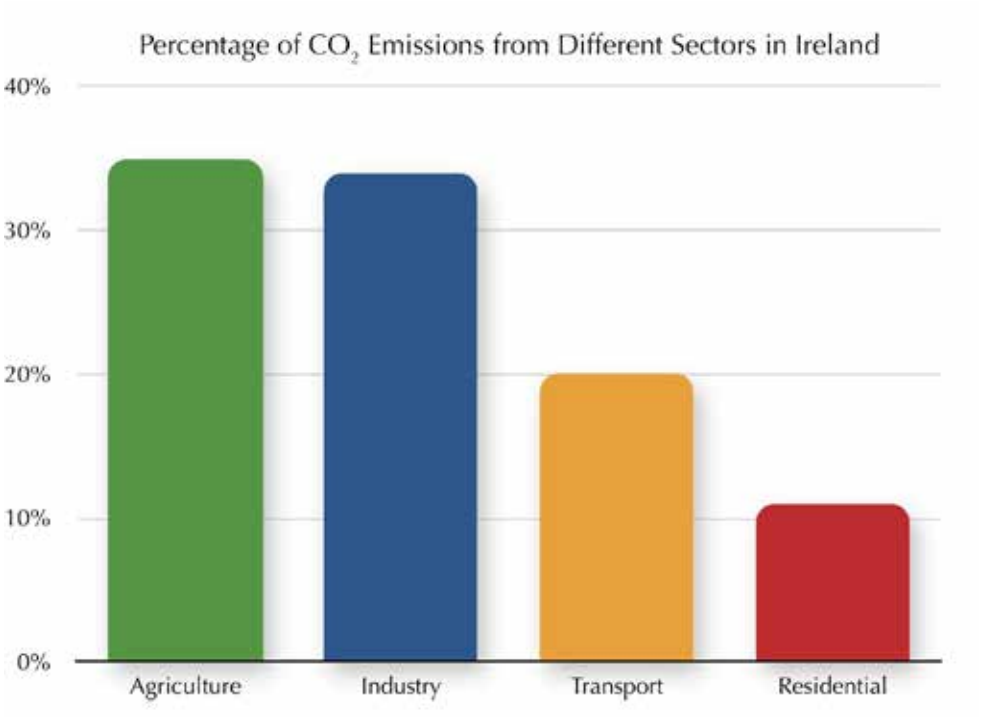


Figure 1.10 The percentage of Ireland's Greenhouse gas emissions from different sectors in 2019. Source EPA 2020. Graph by Andrew Montague

IRELAND'S GREENHOUSE GAS EMISSION COMMITMENTS

The Irish government has committed to reducing Ireland's carbon emissions to net-zero by 2050, and to reduce emissions by at least 7% per year for the next 10 years[7]. This will be particularly challenging for the agriculture sector.

For Ireland to reach its emissions targets, we will need to:

1. Reduce the amount of energy we use.
2. As we reduce the amount of energy that we use, we must generate that energy from renewable sources.
3. Reduce emissions from agriculture as much as possible.
4. Offset remaining agriculture emissions by restoring our bogs and increasing forestry. Bogs are particularly efficient at absorbing CO2.

The changes needed in agriculture to get to net-zero by 2050 will require radical changes in our agricultural practices. The government and all stakeholders working in the agricultural sector will need to work together to come up with a realistic and agreed plan to reach our targets.

7 Government of Ireland (2020) Government publishes new climate law which commits Ireland to net-zero carbon emissions by 2050. Available at: https://www.gov.ie/en/press-release/aecb3-government-publishes-new-climate-law-which-commits-ireland-to-net-zero-carbon-emissions-by-2050/

Meanwhile, for the SEW area, the focus should be on:

1. Reducing the amount of energy used – for example, by insulating homes
2. Generating energy from renewable sources – for example, by installing Solar Photovoltaic (PV) Panels.

ENERGY USE IN SEW COMMUNITY

We've seen that agriculture is the source of 35% of Ireland's greenhouse gas emissions – mostly as a result of methane emissions from livestock. The combustion of fossil fuels, such as oil, coal, peat and natural gas for energy use, is the other major source of greenhouse gas emissions.

According to the Energy Master Plan commissioned by SEW , transport accounted for almost half of all energy used in the SEW area. Energy use in the home accounted for another 20%, Commercial was 17%, Industrial 12% and agriculture accounted for 4% of energy used (Figure 1.11).

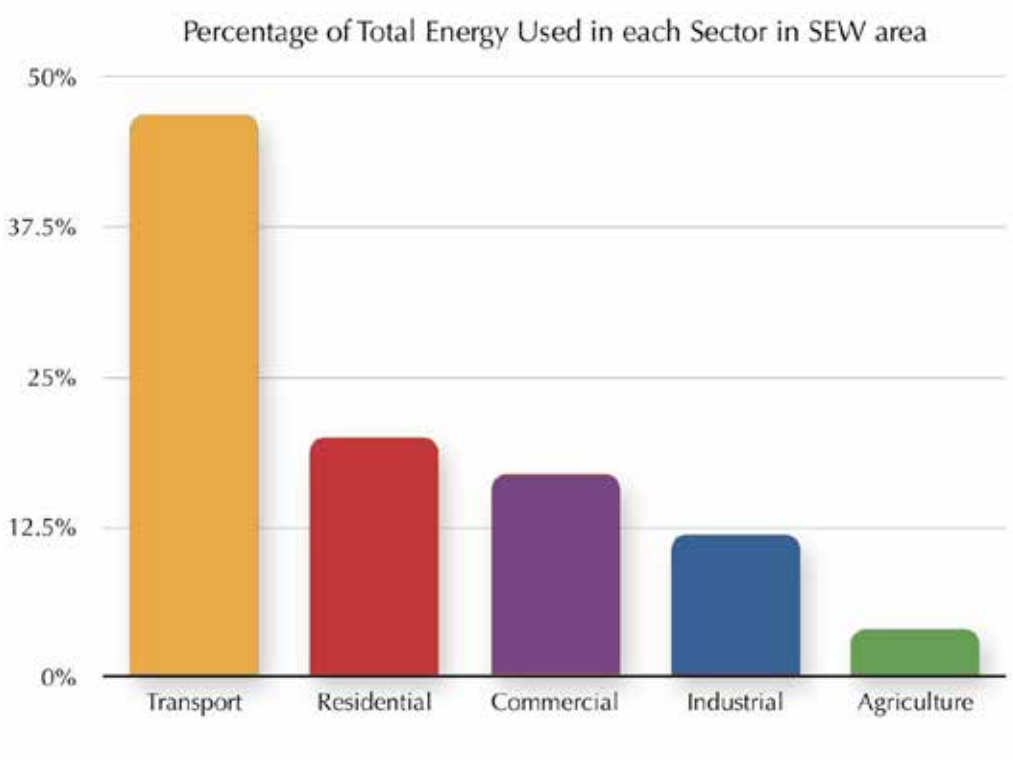
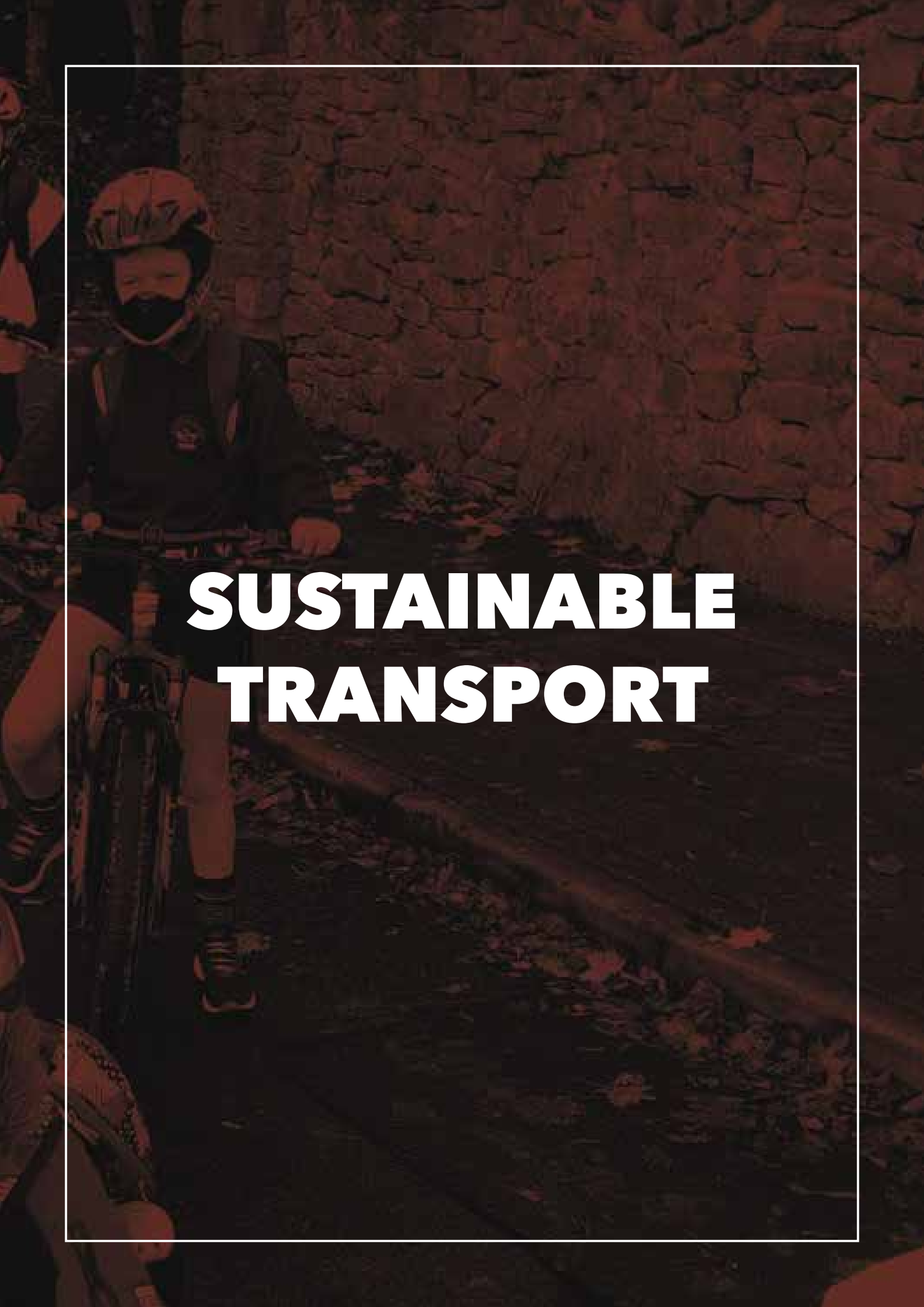


Figure 1.11 Energy Use in the SEW area. Source: Tipperary Energy Agency (2019) Sustainable Energy West, Energy Master Plan. Graph by Andrew Montague

As transport is the largest user of energy in the SEW[8] area, it makes sense to emphasise reducing energy usage in the transport sector, and that will be the subject of the next chapter.

8 Tipperary Energy Agency (2019) Sustainable Energy West, Energy Master Plan. Available from Sustainable Energy West.



SUSTAINABLE TRANSPORT

Almost half of all the energy (47%) in the SEW catchment area is used for transport[9] (Figure 2.1). If the SEW area is going to become a more sustainable community, a lot of effort will need to go into reducing emissions from transport.

Figure 2.1 Traffic in the SEW area accounts for almost half of all energy used. Photo by Andrew Montague

As mentioned in the introductory chapter, the two steps that we need to follow to reduce transport-related CO2 emissions are:

1. Reducing the amount of energy we use for transport;
2. With less energy required, we must provide the energy using renewable sources.

In order to reduce the amount of energy used in transport, there needs to be a shift away from car-based transport to public transport, walking and cycling. For the remaining car-based journeys, we need to shift from vehicles run on fossil fuels to electric vehicles using electricity produced from renewable sources.

9 Tipperary Energy Agency (2019) Sustainable Energy West, Energy Master Plan. Available from Sustainable Energy West.

PUBLIC TRANSPORT

The government has committed to funding the expansion of the local link service[10]. SEW should seek an expansion of the service from Loughrea. In particular, there is a gap in the provision of public transport to the south of Loughrea, as shown in Figure 2.2.

Figure 2.2 Map of Proposed Public Transport in the SEW area, published in October 2021 shows the lack of public transport to the south of Loughrea. Source: National Transport Authority

SEW should also lobby the council to provide a service modelled on the Fingal Community Car service (Figure 2.3). The community car is used to bring people to health appointments, into the local towns and to visit family and friends in nursing homes. The cars are electric, and the drivers are volunteers.

Figure 2.3 Fingal Community Car Service. (Source www.fingal.ie)

10 Department of Rural and Community Development (2021) Our Rural Future – Rural Development Policy 2021-2025 Available at https://assets.gov.ie/132413/433aebac-f12a-4640-8cac-9faf52e5ea1f.pdf

WIDER FOOTPATHS AND SLOWER SPEEDS

To encourage more people to walk and cycle, SEW should lobby the council to widen footpaths in the towns in the SEW area (Figure 2.4). In Loughrea, the council could introduce a one-way system on Main Street, with a contra-flow cycle lane. A one-way system allows for wider footpaths and encourages businesses to open out on to the footpath (Figures 2.5 and 2.6). This will encourage people to come into the town, and importantly, entice them to stay for longer.

Figure 2.4 Narrow footpaths with a lot of poles and street furniture makes the Main Street of Loughrea less attractive to pedestrians with few opportunities to sit outside. Photo by Andrew Montague

Figure 2.5 Where the footpath is wider people are happy to sit outside, even in December. Tigh Darby's, Main Street Loughrea. Photo by Sean Crowley.

Figure 2.6 Blackrock County Dublin changed its layout during the COVID crisis and introduced a one-way Main Street, contra-flow cycle lane and wider footpaths with seating. This could be a template for Loughrea. Photo by Robert Burns, Dun Laoghaire Rathdown County Council.

The council should also introduce lower speed limits. A 30 kph speed limit in all the towns in the SEW area will reduce injuries on the roads and encourage more people to walk and cycle. Adopted by Galway County Council in 2012, the Loughrea Local Area Plan[11] references the Smarter Travel initiative for Loughrea, which proposed lower speed limits in the town centre and the removal or restriction of HGV traffic along the main streets in the town centre.

Removing overhead wires and their associated poles (some are quite rusty) and excessive street signage, can also help make the streets more attractive and pedestrian friendly (Figure 2.7).

Figure 2.7 Removing overhead lines and their sometimes rusty poles would help make the towns in the SEW area more attractive. Photo by Sean Crowley

11 Galway County Council (2012). Loughrea Local Area Plan 2012-2022. Available at: http://www.galway.ie/en/media/Adopted%20Loughrea%20LAP%20Reduced.pdf

CYCLE-BUS

A cycle-bus is one way to promote cycling to school. A cycle-bus is a group of parents or volunteers that cycle with groups of children to school along a set route, at the same time every day. Ten schools in Galway city are served by cycle-buses in different parts of the city[12] (Figure 2.8). The idea is spreading out into the county, with a new cycle-bus in Gort started in 2021. According to Gort's cycle-bus webpage[13], Microsoft are offering funding of €750 to help pay for equipment for new cycle-bus groups.

Figure 2.8. Children and parents cycling to school with the Galway Cycle Bus. Photo from Galway's Cycle-Bus Facebook page.

CYCLE TRAINING

Cycle Training is another way to encourage cycling to school. Cycle Right is the national standard for cycle training[14]. It's aimed at children in 4th, 5th or 6th class in primary school. The programme is part funded by the Department of Transport, Tourism and Sport and the local council. Parents may have to make a contribution to the costs.

12 Galway Bay FM (2021) Galway cycling lobbyists say increase in cycle-buses highlight failure of city transport policy. Available at: https://galwaybayfm.ie/galway-bay-fm-news-desk/galway-cycling-lobbyists-say-increase-in-cycle-buses-highlight-failure-of-city-transport-policy/

13 Gort Cycle Bus (2021) https://www.changex.org/ie/cycle-bus/gort-co-galway-ireland

14 Cycle Right (2021) Cycle Training for All. Available at: https://www.cycleright.ie

The training starts off-road but as the programme progresses, it includes on-road cycle training. As well as improving cycling skills of the children, the programme also gives confidence to the parents to allow their children cycle. In the initial pilot for cycle training in St. Fiachra's School in Beaumont in Dublin, there were 16 children cycling to the school before the training (Figure 2.9). Six weeks after the training, there were 110 cycling to the school[15]. Traffic around the school dropped dramatically. The number of cars dropping children off dropped from 60 every five minutes to 24 every five minutes.

Figure 2.9 Cycle Training in St. Fiachra's School in Beaumont. The number of children cycling to school jumped from 16 before the training to 110 after the training. Photo by Andrew Montague

ELECTRIC BIKES AND CYCLE NETWORK

Electric Bikes are becoming increasingly popular in Ireland[16]. People who buy an electric bike, generally cycle further and more frequently than those who cycle a regular bike[17]. But if people feel the roads are dangerous, they will remain reluctant to cycle. A network of safe cycle routes across the SEW area would encourage people to use their bikes for more of their transport needs.

15-Minute Westport, is an SEAI Sustainable Energy Community[18]. They are proposing a cycle network linking Westport to its surrounding villages and hinterland (Figures 2.10, 2.11 and 2.12). A similar approach in Loughrea would allow hundreds, if not thousands of people, to use their bikes for many of their daily journeys.

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15 Cormac Murphy (2008) Children who halved rush hour congestion. Irish Independent. Available at: https://www.independent.ie/regionals/herald/news/children-who-halved-rush-hour-congestion-27875641.html

16 EchoLive.ie (2021) GreenAer expands to meet demand for e-bikes. Available at: https://www.echolive.ie/business/arid-40272212.html

17 Fyhri, A. And Sundfør, H.B. (2020) Do people who buy e-bikes cycle more? Transportation Research Part D: Transport and Environment, 86, Available at: https://www.sciencedirect.com/science/article/pii/S136192092030609X

18 Connaught Telegraph (2021) Plans to make Westport Ireland's First 15-Minute Town. Available at: https://www.con-telegraph.ie/2021/03/04/plans-to-make-westport-irelands-first-15-minute-town/

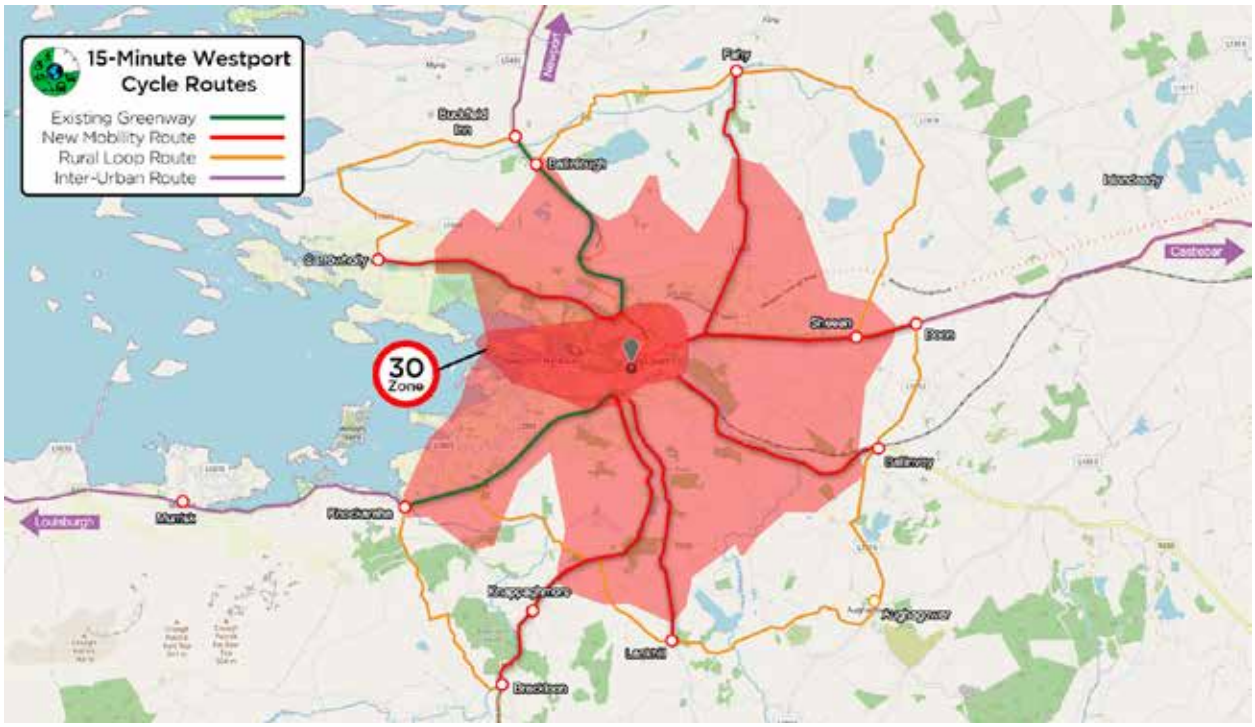

Figure 2.10 Proposed Cycle Network for Westport. Images from 15-Minute Westport Twitter Feed

Figure 2.11 Existing N5 approaching Westport. Image from 15-Minute Westport Twitter Feed

Figure 2.12 How the N5 could look if it was made safe for pedestrians and cyclists. Image from 15-Minute Westport Twitter Feed

In August 2020, Ciarán Cannon TD announced that the government is to allocate €205,000 to resurface and widen the walkway in Corry's Field in Loughrea as part of the government's investment in walking and cycling[19] (Figure 2.13). If the Galway to Athlone cycleway is to come through Loughrea, it is planned to use a widened Corry's Field walkway and cycleway for part of the route. To get the most out of a Corry's Field cycle route, however, it needs to be extended into the centre of Loughrea as a safe cycling route. This would encourage people along the route to cycle into town and allow children to cycle safely to school.

Figure 2.13 Corry's Field walkway is to be widened and resurfaced and could form part of the Galway to Athlone cycleway. Photo by Andrew Montague

In the public consultation for this new route, SEW should highlight the need for this route to come into the town centre. A safe route into the town centre would encourage demand for similar schemes for other parts of Loughrea and the wider SEW area.

WALKING FACILITIES

As the crow flies, everywhere within Loughrea is within about 1.5 km from the town centre, which is about a 20-30 minute walk (Figure 2.14). If pedestrian facilities are improved and made more attractive within Loughrea and across the SEW area, it will encourage more people to walk and leave their cars behind.

19 Ciarán Cannon (2020) €205,000 for Corry's Field Loughrea. Available at: https://www.facebook.com/photo?fbid=10158573344613917&set=a.467625558916

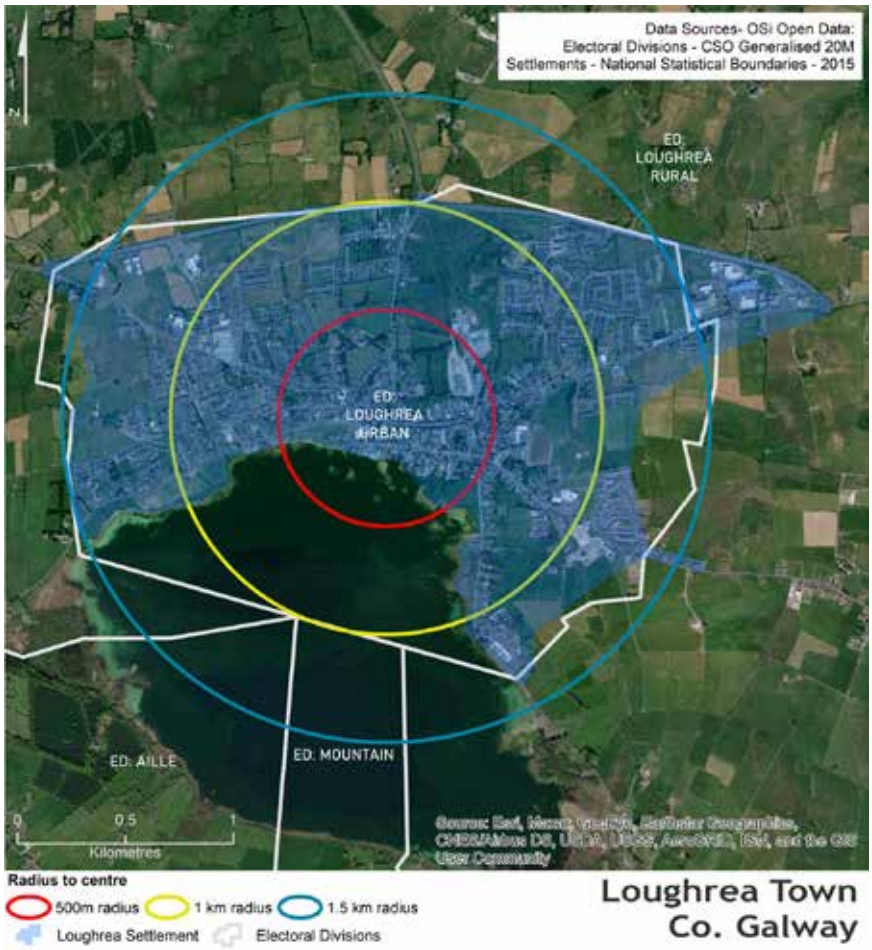

Figure 2.14 Map of Loughrea Town showing a radius of 500m, 1,000m and 1,500m from town centre. Source Odnance Survey Ireland

The SEW should lobby the council to improve walking facilities. For example, there is currently no continuous footpath to the new Gaelscoil or to the new estate, Cottage Hill.

There should also be better walking and cycling facilities between the town centre, Loughrea GAA and the Business Park (Figure 2.15). Many Loughrea residents work in the Business Park, but the lack of safe walking and cycling facilities makes it difficult for people to switch from the car to walking or cycling.

Figure 2.15 The walking and cycling facilities are very poor along the Dublin Road. Murals at the GAA club could make the area more attractive. Photo by Sean Crowley

Introducing some artistic features, landscaping features and tree planting along approach roads, such as the Dublin Road could make them more attractive for pedestrians, and also improve and promote biodiversity. For example, a mural on the Loughrea GAA buildings would brighten the place up, and could be used to promote biodiversity, such as the mural below in Charleville (Figure 2.16).

Figure 2.16 Mural in Charleville promoting local natural heritage. Photo by Sean Crowley

ELECTRIC VEHICLES

Electric vehicles will play a big role in reducing emissions from transport (Figure 2.17). Over their lifetimes, electric cars today emit less than half the greenhouse gases of equivalent fossil-fuel based cars[20]. As we increase the amount of electricity produced from wind and solar, electric vehicles are likely to emit less than ten times the emissions of today's fossil fuel cars.

Figure 2.17 Over their lifetimes, electric cars emit less than half the greenhouse gases of equivalent fossil-fuel based cars. Photo by Sean Crowley

The government have committed to increasing the number of electric vehicles on our roads to over 900,000, and to banning the sale of non-zero emission cars by 2030[21]. They are providing subsidies to reduce the purchase price of electric vehicles, and charging lower rates of Vehicle Registration Tax (VRT) and motor tax. The government will also have to invest in an extensive electric vehicle charging network, if they are to reach their targets.

The SEW can play a small role in this transformation to electric vehicles by lobbying for, and supporting vehicle charging points across the area, and by promoting efforts to switch to electric vehicles on the SEW social media.

20 Hoekstra, A. and Steinbuch, M. (2020) Comparing the lifetime green house gas emissions of electric cars with the emissions of cars using gasoline or diesel. Eindhoven University of Technology. Available at: https://www.avere.org/wp-content/uploads/2020/09/englisch_Studie-EAuto-versus-Verbrenner_CO2.pdf

21 Department of the Environment, Climate and Communications (2019) Climate Action Plan. Available at https://assets.gov.ie/25419/c97cdecddf8c49ab976e773d4e11e515.pdf

KEY RECOMMENDATIONS

- The SEW area is poorly supplied with public transport. SEW should lobby locally and nationally to address this gap in services.
- The government has committed to spending €1 million every day to upgrade walking and cycling routes. SEW should work with Galway County Council to get its share of this funding. It would be particularly helpful to have safe cycling routes right into town centres, and high-quality footpaths throughout the towns, especially to all residential areas and places of employment.
- Work with Galway County Council to ensure there are sufficient electric car charging units spread out across the SEW area.

GREENWAYS

This chapter will examine national greenway policies, and the Galway to Athlone cycleway. While the final decision on the route has still to be decided, we will highlight the potential benefits to the SEW area of being selected as the preferred route of the Galway to Athlone cycleway. Construction of the cycleway is planned for 2024 (Figure 3.1).

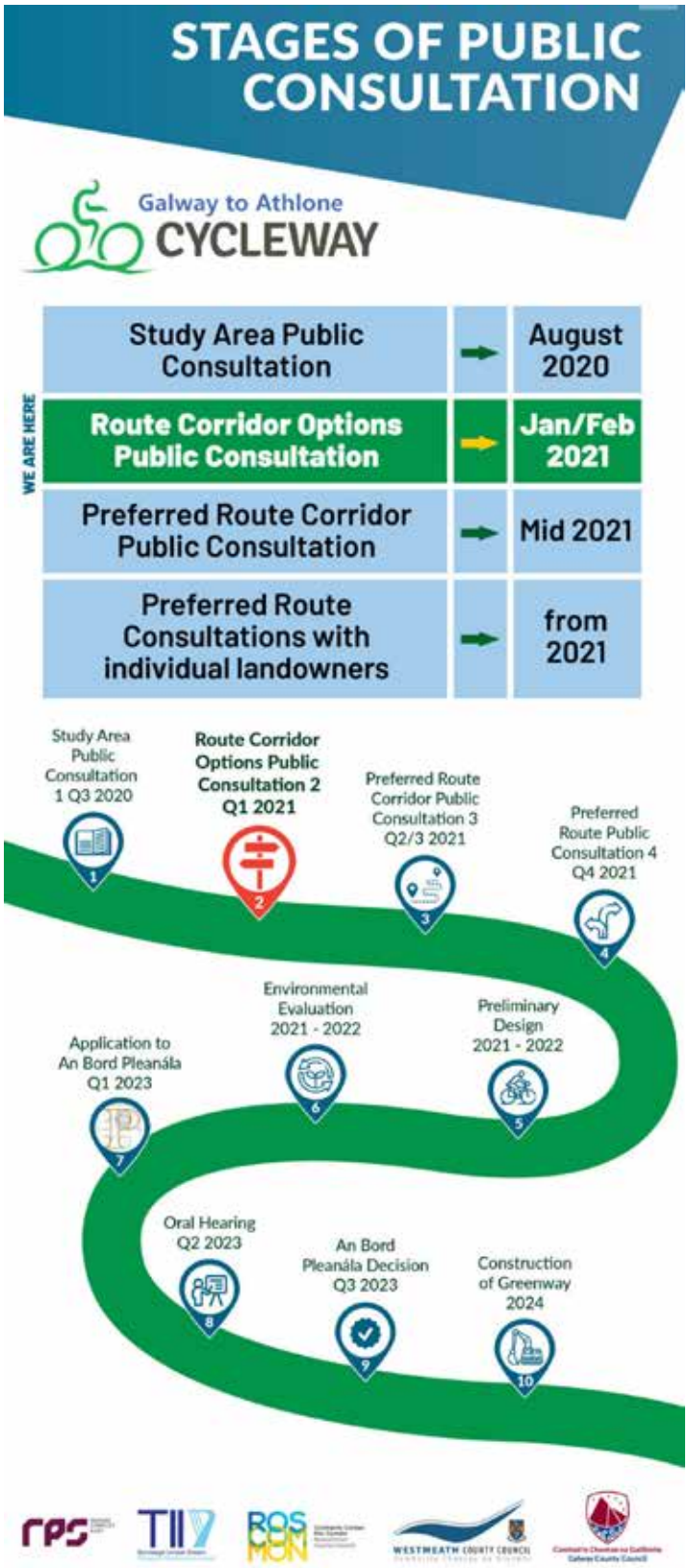

Figure 3.1: Timetable for Galway Athlone Greenway

WHAT ARE GREENWAYS?

The Department of Transport describes Greenways as recreational or pedestrian corridors for non-motorised journeys, developed to enhance both the environment and quality of life of the surrounding area[22] (Figure 3.2). These routes should be user-friendly and low-risk for users of all abilities.

The Department of Transport is developing National and Regional Greenways across Ireland to enhance tourism and to contribute to rural development.

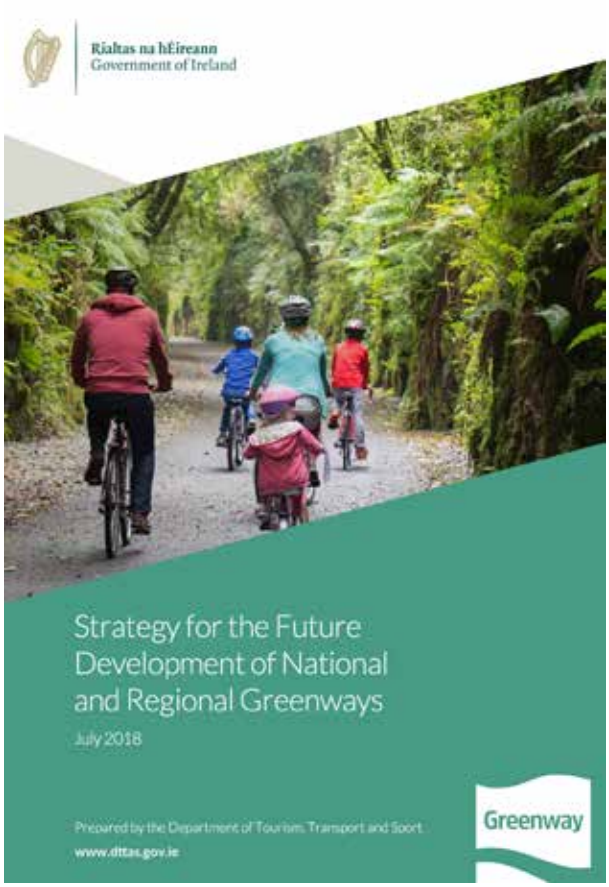

Figure 3.2: Department of Tourism, Transport and Sport, National Strategy on Greenways (2018)

The National Strategy published in 2018 is the overarching framework for the development of these recreational amenities, with an emphasis on the 5 'S's (Figure 3.3):

- Scenic
- Lots to see and do
- Segregated
- Strategic link
- Developed sustainably

22 Department of Tourism, Transport and Sport (2018) Strategy for the Future Development of National and Regional Greenways. Available at: https://assets.gov.ie/10364/abd98a35c61e4de4ba00a341eb7e0d13.pdf

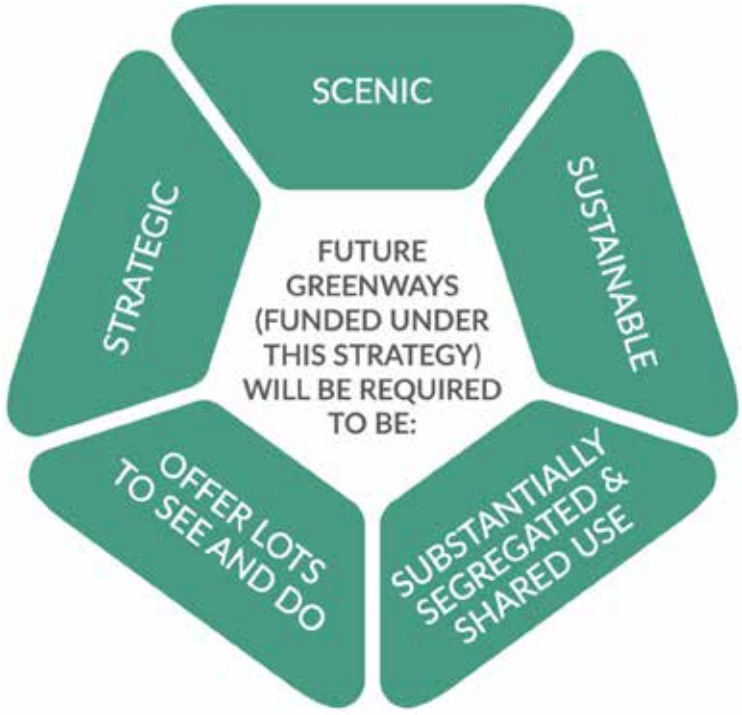

Figure 3.3: Strategic Objectives of Greenways

WHY ARE GREENWAYS IMPORTANT?

The value of local recreational amenities became more evident during the Covid-19 pandemic, when restrictions on movement were in force. For a period, we were all confined to one hour of outdoor exercise within a five-km radius of our homes. These restrictions were particularly tough for communities where there was limited or no safe off-road trails.

The Irish planner and author Conor Skehan argues that improved rural amenities are needed more than ever following the pandemic because remote working is revitalising many smaller rural communities[23]. He describes how users of Greenways get an opportunity to get a close-up experience of the countryside at a slow enough pace to enjoy the local beauty and scenery. The development of new Greenways will require deep community involvement and intensive farm by farm negotiations[24].

Emerging research on greenways in Ireland has shown that there are many benefits, including health and economic benefits. The average spend in the local economy for each greenway user is €47 per day[25].

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23 Conor Skehan (2021) Rural Ireland is finding a path to a prosperous future via greenways. Irish Independent 3rd October 2021. Available at: https://www.independent.ie/opinion/comment/rural-ireland-is-finding-a-path-to-a-prosperous-future-via-greenways-40911015.html

24 Same source as above

25 Richard Manton, Stephen Hynes and Eoghan Clifford (2016) Greenways as a tourism resource: a study of user spending and value. Tourism Planning and Development, February 2016. Available at: https://www.researchgate.net/profile/Richard-Manton/publication/295089671_Greenways_as_a_tourism_resource_a_study_of_user_spending_and_value/links/5a09dfe60f7e9bb949f965e7/Greenways-as-a-tourism-resource-a-study-of-user-spending-and-value.pdf?origin=publicationdetail

Brian Quinn of Fáilte Ireland, states that greenways are[26]:

> "…catalyst projects that have been shown to rejuvenate communities and offer genuine high-value experiences for tourists. The Mayo Greenway cost €7.5 million and the Waterford Greenway cost €20 million. The return on investment was almost immediate".

Research by the Irish Sports Council highlighted the health benefits of greenways[27]:

> "97,000 cases of disease were prevented in Ireland due to physical activity participation in 2019 for a total cost saving over €405m. Diseases prevented include stroke, certain cancers and Type 2 diabetes".

GALWAY TO ATHLONE CYCLEWAY

The Galway to Athlone Cycleway will be part of the Galway to Dublin car-free corridor of approximately 270 km for cyclists and walkers. The majority of the Athlone to Dublin element of the full route is complete (Figure 3.4).

Figure 3.4: Future Galway to Athlone Greenway Outline Route

26 Manchán Magan (2018), The story behind Ireland's greenway success. The Irish Times 20th January 2018. Available at: https://www.irishtimes.com/life-and-style/travel/ireland/the-story-behind-ireland-s-greenway-success-1.3352239

27 Sport Ireland and Sheffield Hallam University (2021) Researching the value of sport in Ireland. Available at: https://www.sportireland.ie/sites/default/files/media/document/2021-09/vos-report-final-19-07-21.pdf

The vision of the Galway to Athlone Cycleway is to create a world-class amenity for pedestrians, cyclists and wheelchair users. It will facilitate the first leg of the international EuroVelo network of long-distance cycle trails (Figure 3.5). This is a network of 17 long-distance cycle routes connecting and uniting the whole European continent. The routes can be used by tourists as well as local people making daily journeys. EuroVelo currently consists of more than 90,000 km of cycling itineraries. The Galway to Dublin route is referred to as the Capitals Route.

Figure 3.5: EuroVelo Cycle Network. Source www.eurovelo.com

Minister for Transport, Eamon Ryan TD, provided funding of €63.5m for greenways in 2021[28]. €8m of this was allocated for the Galway to Athlone greenway.

28 Department of Transport (2020) Funding of €63.5m for Greenways in 2021 confirmed by Ministers Ryan and Naughton. Available at: https://www.gov.ie/en/press-release/e9057-funding-of-635m-for-greenways-in-2021-confirmed-by-ministers-ryan-and-naughton/

The development of this route was first attempted back in 2014. As there was only one route option at the time, there was a feeling that this was being imposed, and there was insufficient support from landowners along the route for the plan. This time around, significantly more attention is being paid to proper consultation with all stakeholders. Following an extensive analysis of land ownership in east Galway, the Department's appointed consultants, RPS, have now arrived at five possible options.

The current selection process has employed an independent Chair to facilitate discussion with landowners. RPS has six Community Liaison Officers on hand to support the consultation process. The five route options that have been shortlisted by planners can be seen on the map in Figure 3.6. Route Four - the yellow route – travels through Athenry, Loughrea, Woodford, Portumna, Eyrecourt and Shannonbridge before reaching Athlone.

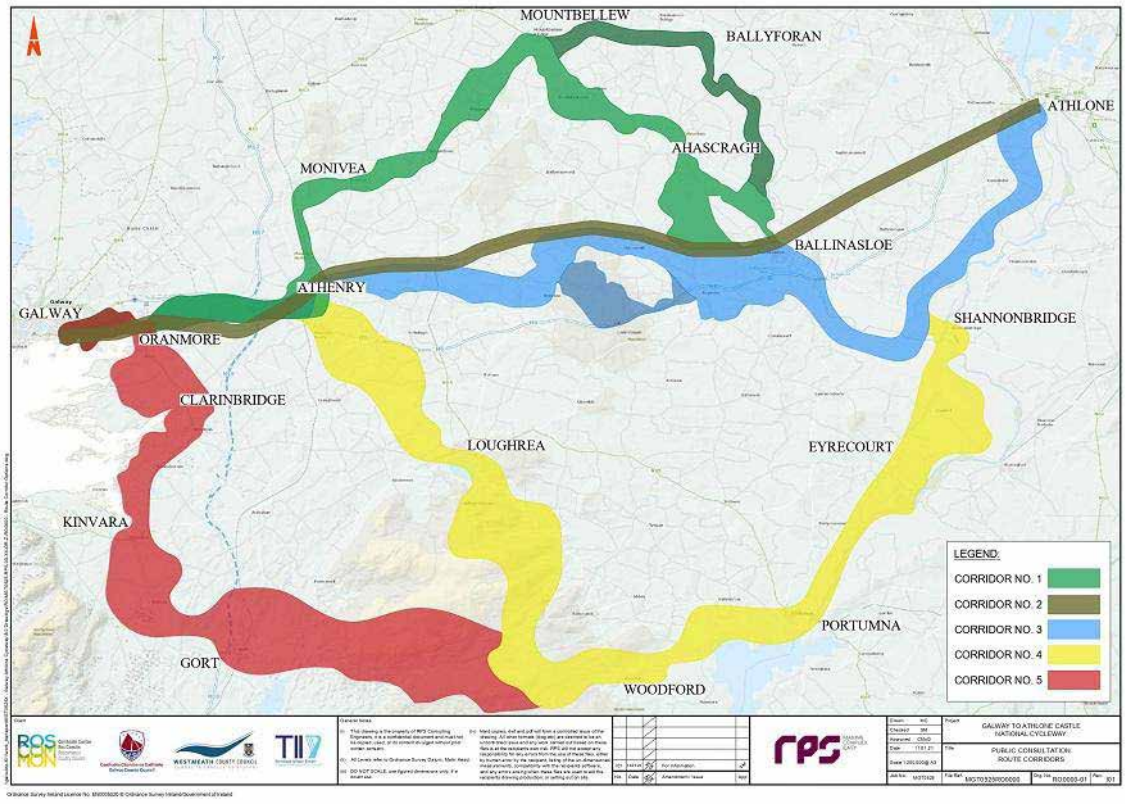


Figure 3.6: Five Shortlisted Routes for Greenway

GALWAY TO ATHLONE – THE RATIONALE FOR THE SELECTION OF ROUTE FOUR, VIA LOUGHREA

The SEW committee prepared a submission as part of the route selection consultation process in early 2021. The key points in their submission supporting Route Four are:

- Loughrea is one of the largest towns in Galway, but has no train line and limited public transport routes (Figure 3.7). Route Four will offer new, smarter travel options to residents.

Figure 3.7 Map of Proposed Public Transport routes in the SEW area, announced in October 2021, shows the lack of public transport to the south of Loughrea. Source National Transport Authority

- The Proposal will encourage modal change from private car to more sustainable forms of transport and will reduce travel related greenhouse gas emissions.
- Route Four has large tracts of state-owned land which will help to maximise the full value of existing infrastructure, including canal towpaths and disused railway lines.
- Route Four includes more towns than any other option, so more towns would benefit economically. Bike hire, hospitality and accommodation businesses will flourish.

29 Sport Ireland (2021) Walking Trails. Available at: https://www.sportireland.ie/outdoors/walking/trails

- Route Four offers great variety of landscapes along the route – the internationally important bird habitat in Lough Rea, the Slieve Aughty mountains, Cloonmoylan and Barroughter bogs and Lough Derg.
- There is a lack of approved walkways in the greater Loughrea area. The map below from Sport Ireland shows the limited extent of looped walks and national linear ways within the study area[29] (Figure 3.8). If implemented, Route Four would help improve this situation.

Figure 3.8: Extent of Approved Walking Trails in East Co. Galway (Source: Sport Ireland)

- The Hymany Way is a linear trail which forms part of the national Beara-Breifne Way, running from Portumna to Shannonbridge. Route Four would connect with this route.
- Many walkers will cover a maximum of 20 to 30 km per day. The towns along Route Four are all nicely spaced out within this range with accommodation available in Athenry, Loughrea, Slieve Aughty[30] and Portumna. Portumna village has an extensive array of accommodation including glamping[31].
- Route Four would compliment significant existing projects under development by Waterways Ireland, who have a goal of developing a Blueway along the full length of the Shannon. Much progress has been achieved at the northern part from Drumshambo to Lanesborough, and design work is well advanced for the southern end on the Clare side of Lough Derg. The Blueway will join together with the proposed Greenway for the part of the route from Portumna to Athlone.

30 Slieve Aughty Centre (2021) https://slieveaughtycentre.com/slieve-aughty-interactive-map/

31 Podumna Urban Glamping Centre (2021) https://podumnavillage.ie

32 Manchán Magan (2018), The story behind Ireland's greenway success. The Irish Times 20th January 2018. Available at: https://www.irishtimes.com/life-and-style/travel/ireland/the-story-behind-ireland-s-greenway-success-1.3352239

LESSONS FROM THE GREAT WESTERN GREENWAY, CO. MAYO

The success of Mayo's 42 km Great Western Greenway (Figures 3.9, 3.10 and 3.11) has encouraged the development of other greenways across the country[32]:

- The Great Eastern Greenway in Carlingford Co. Louth
- The Old Rail Trail Greenway from Mullingar to Athlone
- Waterford's Greenway from Waterford city to Dungarvan.

Figure 3.9 Official Opening Plaque of the Great Western Greenway, 21st April 2018. Photo by Sean Crowley

In its first year, Mayo's Great Western Greenway attracted 80,000 visitors, who spent €7 million. But developing the Greenway required convincing 161 different landowners along the route to allow cyclists and walkers to travel across their land, without any direct payment. Allowing access to their land had the potential to lower the value of their property and could make their day-to-day work more awkward[33].

Figure 3.10: Example of High Quality & High Value Pedestrian Bridge on Great Western Greenway. Photo by Sean Crowley

33 Same source

Mayo's Walking Development Officer, Anna Connor, called to each of these landowners to allay their concerns about security, insurance liability and access issues. She convinced them that this resource could bring significant benefits to their community.

Figure 3.11: Introducing Cultural Heritage Theming: Emigration. Photo by Sean Crowley

THE IMPACT OF THE WATERFORD GREENWAY

In late 2017, Waterford City and County Council commissioned AECOM to conduct a survey of Waterford Greenway users (Figure 3.12). The independent study was carried out by Amárach Research and AECOM. Some key findings included:

- Almost 70% of visitors travelled to Waterford solely to use the Greenway.
- 80% of Greenway visitors who stayed overnight were in paid accommodation.
- Most visitors in paid accommodation stayed for one or two nights.
- A large majority of respondents (70%) mentioned that they liked the scenery and nature along the greenway.
- Over half (51%) mentioned that they liked being away from traffic and the safety of the greenway.
- More than one third of respondents mentioned that the Greenway is peaceful and quiet.
- The Greenway also has clear social benefits, as 18% of people mentioned meeting people along the route.
- 27% of respondents hired or borrowed a bike to travel on the Greenway.
- 91% of respondents were making a return trip on the Greenway.
- The most common trips on the Greenway were local trips taken for exercise, and over a third were for sightseeing.

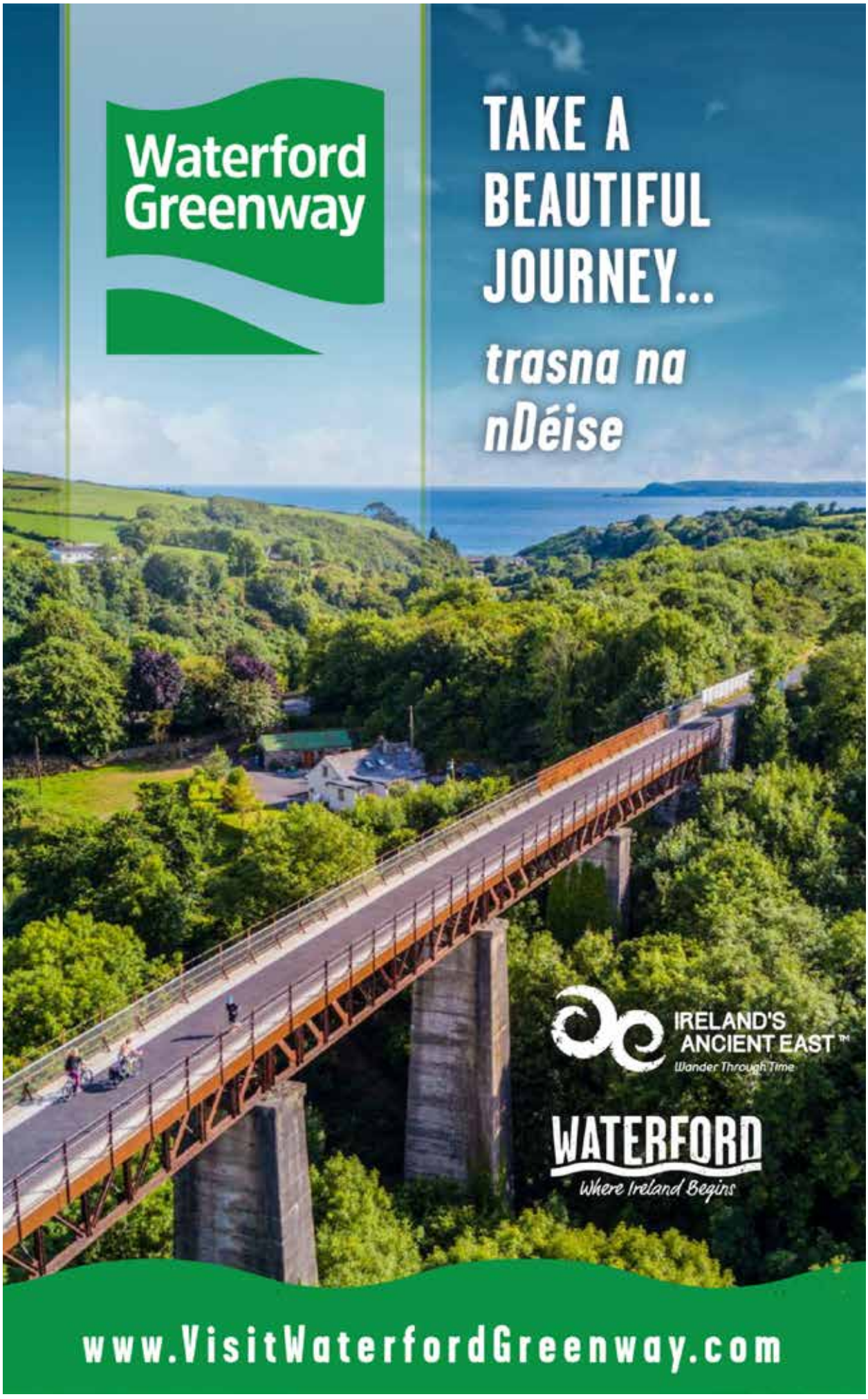


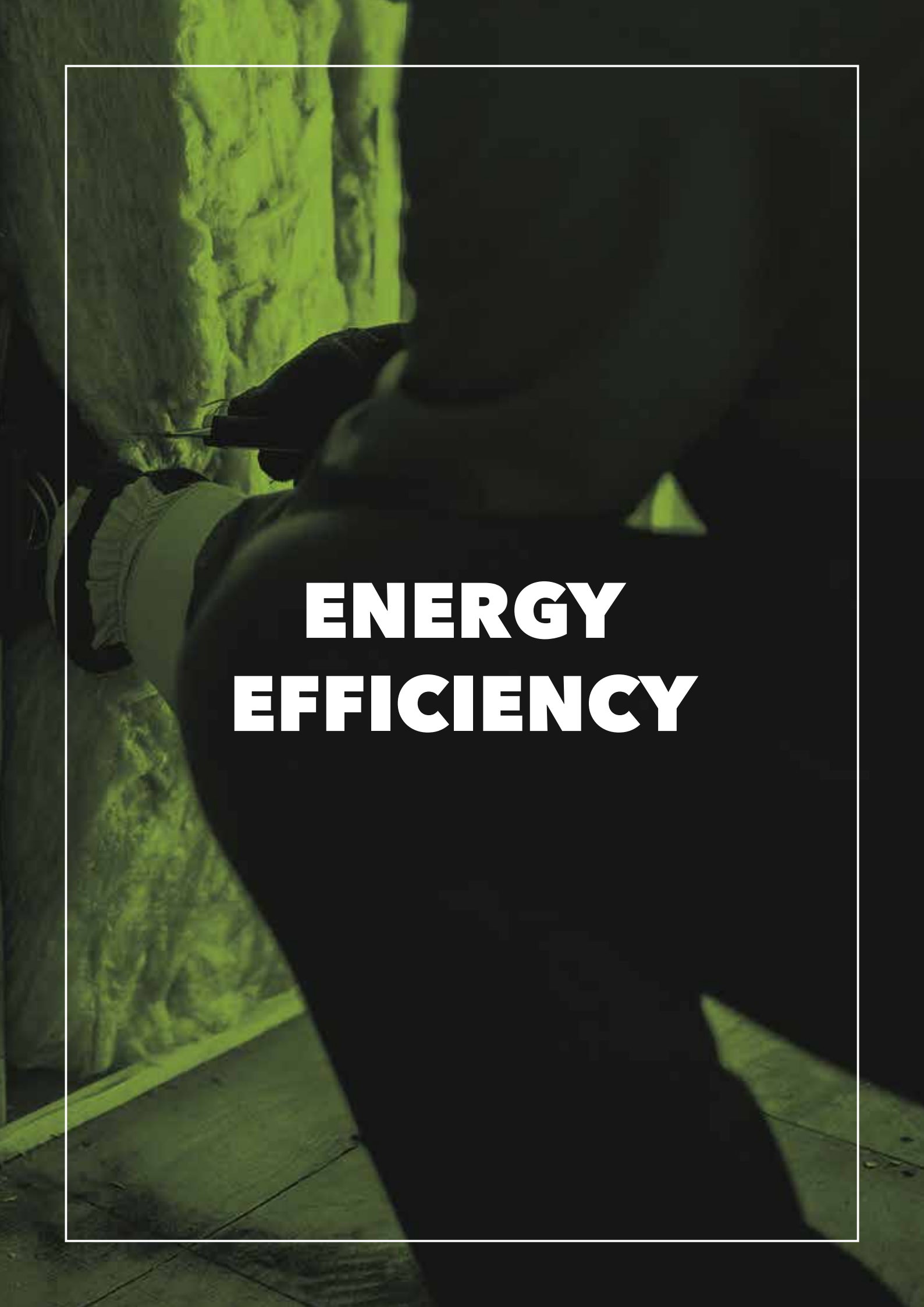
Figure 3.12: Waterford Greenway Marketing Brochure

The impact of the route is best captured by a cyclist who posted the following comment on TripAdvisor in September 2021:

> "Fantastic Resource for Waterford. I cycled the Waterford Greenway last week in both directions. Every section of it was well maintained with great sign posting, KM distance markers, safe crossing junctions, safety signage including emergency numbers and location details, clean tunnels and underpasses and absolutely no divergence with road traffic. All Greenways should be built to this standard. I travelled down from Derry to do this cycle, and I wasn't disappointed".

KEY RECOMMENDATIONS

- SEW made a strong submission in favour of the Route Four option for the Galway to Athlone Cycleway. A follow-up meeting with the RPS consultants would help drive the case home for Route Four.



ENERGY EFFICIENCY

INSULATING HOMES IN THE SEW AREA

Homes account for 20% of the energy used in the SEW area[34]. 74% of the energy used in the average home in Ireland is used to heat the home and provide hot water. The remaining 26% of the energy used in the home is provided by electricity, mainly used for appliances.

There are just over 6,000 homes in the SEW area. Almost 4,000 are heated using an oil central heating system, and another 1,200 are heated by peat [35](Figure 4.1). Both of these fuels release very high levels of CO_2.

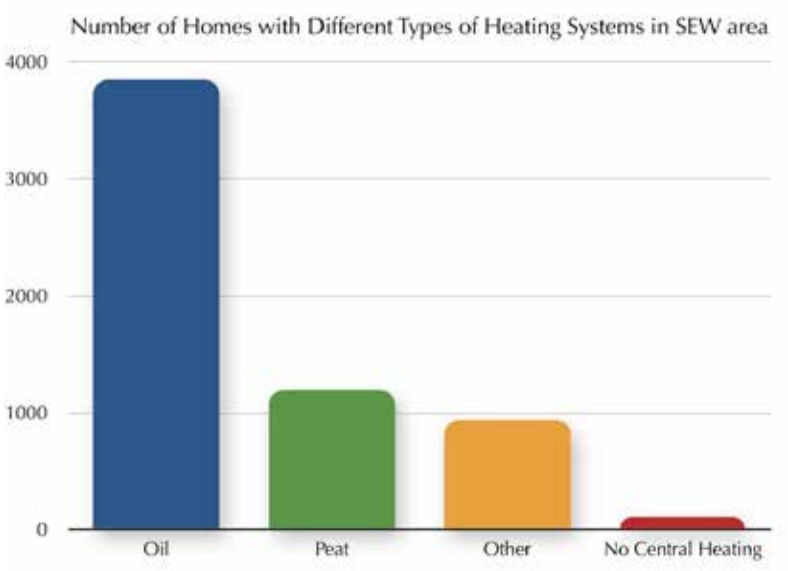


Figure 4.1 Home Heating Systems in SEW. Source Tipperary Energy Agency Report for SEW. Graph by Andrew Montague

In order to reduce emissions from homes, residents will have to:

1. Reduce the amount of energy needed to heat their homes by ensuring their homes are properly insulated
2. Generating energy to heat their homes from renewable sources – for example, by switching from oil and peat systems to electric heat pumps.

The average home in Galway has a Building Energy Rating (BER) of D2[36]. This means it costs about €2,665 per year to keep a typical Galway home comfortably warm. In contrast, a modern A3 rated home would cost as little as €611 to heat (Figure 4.2). Retrofitting all the homes in the SEW area to an A3-rating would save each household an average of €2,000 per year on their heating bills.

34 Tipperary Energy Agency (2019) Sustainable Energy West, Energy Master Plan. Available from Sustainable Energy West.

35 Same source

36 Same source

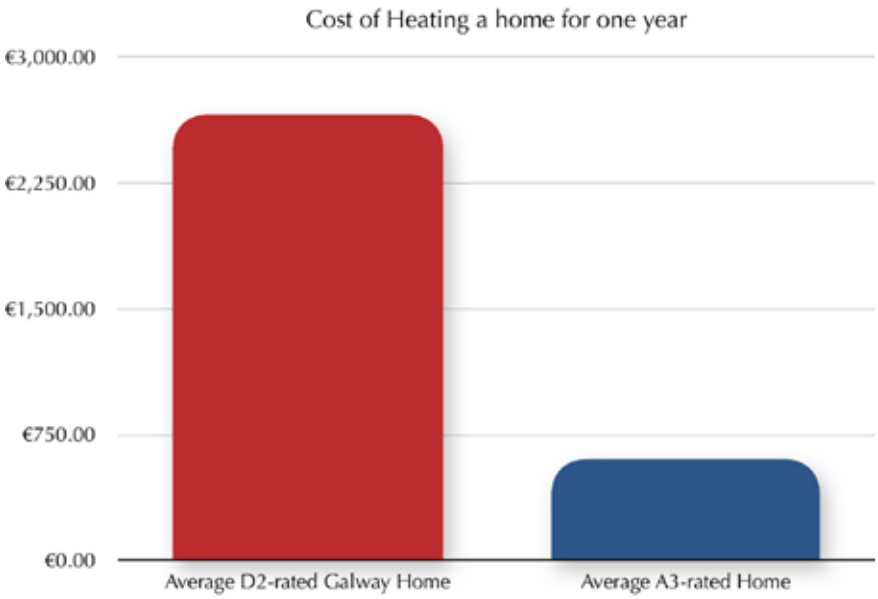


Figure 4.2 Cost of Heating a typical D2-rated home in Galway for one year, compared to a Modern A3-rated home of the same size. Source Tipperary Energy Agency report for SEW. Source Andrew Montague

More modern homes tend to be better insulated than older homes. Using the age of the houses in each electoral district, Tipperary Energy Agency calculated the average cost of heating a home in each electoral district in the SEW area[37]. The estimated costs ranged from €2,277 in Loughrea town up to €3,500 in the Coos electoral district (Figure 4.3).

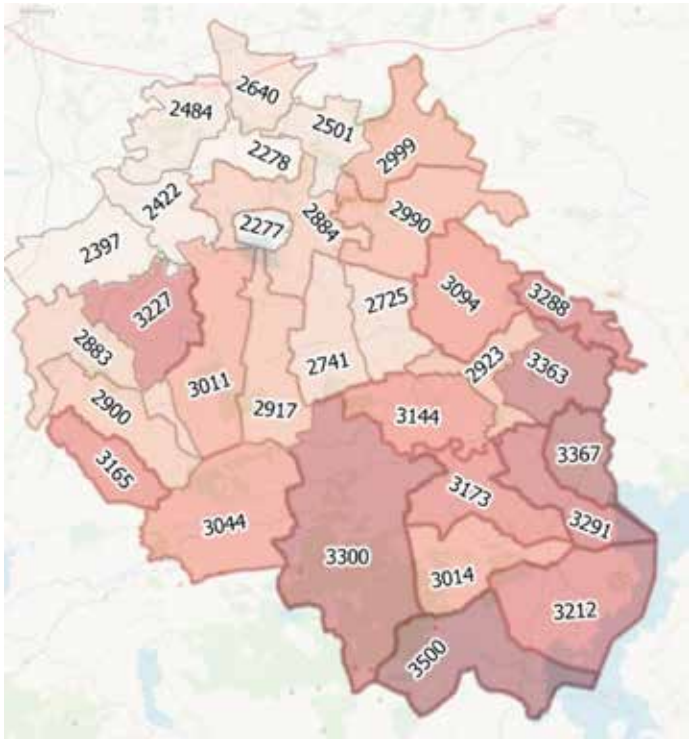


Figure 4.3 The average cost of heating homes in each electoral district in the SEW area. Source Tipperary Energy Agency report for SEW

37 Same source

SWITCHING TO HEAT PUMPS

Homes that have a reasonable amount of insulation installed can switch to a heat pump to provide their home heating (Figure 4.4). A heat pump is a renewable source of energy, as it absorbs heat from the outside air and pumps that heat into the house. Even when temperatures go below zero, there is enough energy in the outside air to heat your home. A heat pump uses energy from electricity to compress the absorbed heat to make it useful for heating your home. For every unit of energy put into the heat pump, a typical home will get three units of heating for the home. This is about three times more heat per unit of energy than a modern, highly efficient gas boiler.

Figure 4.4 Air Source Heat Pump. Photo from Wikimedia

There are, however, significant barriers to the uptake of heat pumps. Among the public, there is low awareness of heat pumps and their benefits[38]. Most people get their information on changing their heating system from local contractors and installers. But there are fewer qualified heat pump installers compared to the number of boiler installers, so the majority of installers may not be fully aware of the benefits of heat pumps. The high up-front cost of heat pumps is also a major barrier holding back their adoption. Few people consider the lower running costs of heat pumps.

Some of these barriers could be overcome by showcasing projects that are carried out with the support of the SEW through social media.

38 Sustainable Energy Authority of Ireland (2020) Encouraging heat pump installations in Ireland. Strategies to maximise heat pump installation and the savings produced. Available at https://www.seai.ie/publications/Heat-Pump-Adoption.-Maximising-Savings..pdf

COMMUNITIES ENERGY GRANT FROM SEAI

The SEAI are offering grants to communities to fund retrofit projects for a range of buildings within the community (Figure 4.5). Up to 50% of the cost of the retrofit scheme can be applied for, and funding of up to €2 million is available under the scheme. The application needs to include at least two of the following types of buildings:

- Home retrofits
- Private sector (non-residential buildings)
- Commercial organisations
- Voluntary organisations
- Community-based organisations
- Public sector non-residential works

Figure 4.5 The SEAI are offering significant grants to support communities in retrofitting homes, community buildings and businesses. Photo by Erik Mclean on Unsplash.com

The SEAI's grant team will support communities to submit their grant application.

The SEW have already gathered information on the retrofit needs of 13 community buildings in the SEW area through the Energy Master Plan report and through previous work. The logical next step would be to bring interested parties together to prepare an application for 2022.

FREE ENERGY EFFICIENCY UPGRADES FOR HOMEOWNERS ON CERTAIN WELFARE PAYMENTS

People who live in their own home, built before 2006, are entitled to a variety of different upgrades if they are in receipt of one of the following welfare payments[39]:

- Fuel Allowance
- Jobseeker's Allowance for over six months and with a child under seven years of age
- Working Family Payment
- One-Parent Family Payment
- Domiciliary Care Allowance
- Carers Allowance and live with the person you are caring for

The free upgrades on offer include:

- Attic Insulation
- Cavity Wall Insulation
- External Wall Insulation
- Internal Wall Insulation
- Other Secondary measures such as lagging jackets, draught proofing and energy-efficient lighting

Upgrades that are recommended occasionally include:

- New heating system
- New windows

SEW could partner with local agencies such as Vincent de Paul to increase awareness of these grants.

39 SEAI (2021) Free energy Upgrades. Available at: https://www.seai.ie/grants/home-energy-grants/free-upgrades-for-eligible-homes/

40 SEAI (2020) Decarbonising your business – where do you start? Available at: https://www.seai.ie/blog/decarbonise-your-business/

ENERGY-EFFICIENT BUSINESS

There are many benefits to business for reducing carbon emissions[40]:

- Businesses can save money by reducing energy usage – particularly as the cost of energy is increasing rapidly at the moment and carbon taxes will go up every year until 2030.
- Businesses can enhance their brand and reputation
- Businesses that act on climate change find it easier to attract and retain staff.

The SEAI provide a range of guides, grants and tax incentives to help business reduce their emissions[41].

One option for business is to use energy performance contracts to help pay for energy efficiency upgrades[42]. This can allow the business to reduce their energy bills without up-front capital costs. The energy contractor carries out the efficiency upgrades in return for a regular payment.

LIGHTING

Switching to LED lights can reduce lighting bills by about 80% a year[43]. Typically, you can save €7 a year for every light bulb changed (Figure 4.6). The Mulranny GreenPlan Sustainable Energy Community organised a lightbulb exchange at their local school[44]. They swapped 150 bulbs at the event.

Figure 4.6 Switching to LED bulbs can save about €7 per year for every light bulb switched. Photo from Electric Ireland Website

41 Same source

42 SEAI, Energy Contracting. Available at: https://www.seai.ie/business-and-public-sector/business-grants-and-supports/energy-contracting/

43 Electric Ireland (2021) Why you should make the Switch to LED light bulbs. Available at: https://www.electricireland.ie/news/article/why-you-should-make-the-switch-to-led-light-bulbs

44 SEAI (2021) Making a Difference in Mulranny. Available at: https://www.seai.ie/blog/a-difference-in-mulranny/

The council should carry out an assessment of Street Lighting across the SEW area to see if there are opportunities to switch to lower energy lights (Figure 4.7).

Figure 4.7 Switching to more energy efficient street lighting could reduce carbon emissions across the SEW area. Photo by Andreas Dress on Unsplash.com

ADDRESSING VACANCY

Building new homes and business premises uses significant energy and material resources. Making use of existing vacant buildings (Figure 4.8) can both reduce greenhouse gas emissions, and help revitalise the towns in the SEW area. According to Census 2016, there are 1,046 vacant homes across the SEW area. Loughrea had 406 vacant homes – a vacancy rate of 20%.

Figure 4.8 Vacant Building on Main Street, Loughrea. Photo by Andrew Montague

In September 2021, the government announced new proposals to deal with vacancy[45]:

- New grants to energy retrofit older vacant homes;
- Financing for councils to purchase and resell 2,500 vacant properties by 2026;
- Reform the Fair Deal scheme to encourage home-owners in longterm care to rent or sell their property;
- Incentives to refurbish and extend vacant properties in towns and villages;
- Grants of up to €200,000 for the refurbishment of protected buildings for residential purposes;
- Change planning regulations to allow conversion of over-the-shop spaces to homes, without planning permission.

As these new funds and regulations come into effect, the SEW should lobby Galway County Council to make full use of these opportunities to tackle vacancy across the SEW area.

NAOMH BREANDÁN CREDIT UNION GREENER HOME LOANS

Including Naomh Breandán, fifteen credit unions in Ireland have collaborated to develop a pilot Credit Union Greener Home Loans scheme[46] (Figure 4.9). The idea behind the scheme is to reduce the bureaucracy for householders by offering a project management service to oversee the energy reduction interventions from start to finish. The innovative scheme involves three parties, the credit union, Energia an energy provider company, and House to Homes – a retrofit company.

Grants of up to 35% are available through the Sustainable Energy Authority of Ireland (SEAI) and up to a further 5% from Energia. The householder can then apply for any funding they need from their local credit union at a competitive rate of 4.9%. A further key advantage of the scheme is that House to Homes will partner with local building contractors, which ensures that local stakeholders can play their part.

45 Government of Ireland (2021) Housing for All, A New Housing Plan for Ireland. pp. 101-115. Available at: https://assets.gov.ie/197237/29edec3e-6664-4e62-86b2-af2e77f2f609.pdf

46 CU Greener Homes (2021) A Warmer Greener Home. Available at: https://cugreenerhomes.ie

Figure 4.9 The Naomh Breandán Credit Union is working with other credit unions to provide affordable loans for home energy upgrades

ENERGY COMMUNITIES TIPPERARY COOPERATIVE

Energy Communities Tipperary have shown how several communities can come together to address sustainability[47] (Figure 4.10). The project was started in 2011 by the Drombane Village Group near Thurles, Co. Tipperary. The group was trying to stimulate economic activity within the parish. They decided to concentrate on energy conservation and efficiency. They estimated that residents of Drombane were spending over €1 million a year on energy at that time. In 2012, 22 homes were upgraded. In 2014, the project scaled up to include four communities and the Energy Communities Tipperary Cooperative (ECTC) was formed in 2015.

Since 2012, ECTC has upgraded over 800 homes and secured over €10 million in investment for Tipperary, with funding from Sustainable Energy Authority of Ireland. The cooperative is managed by a volunteer board of community directors.

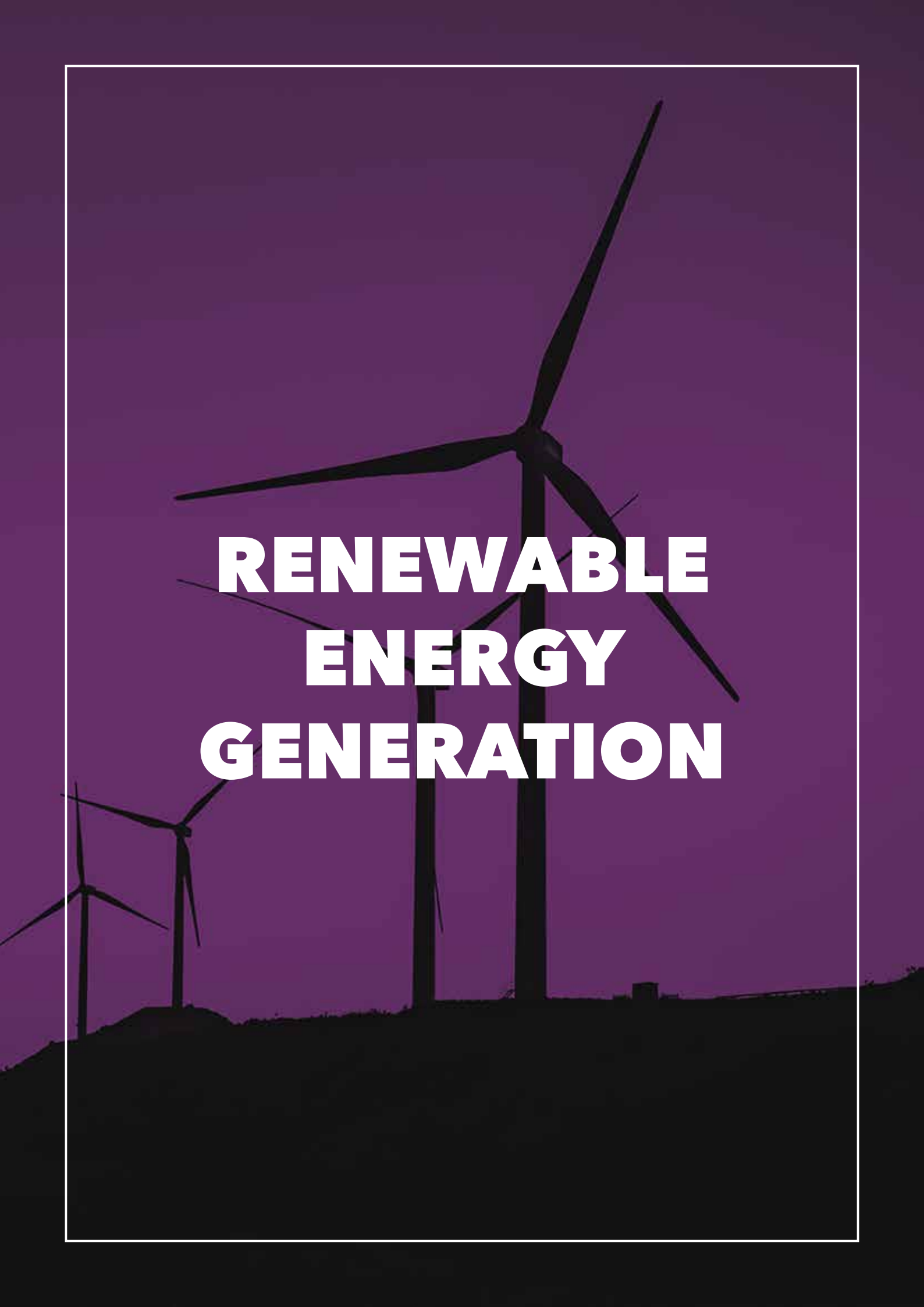
The success of the initial Drombane initiative led to the project receiving the best Community Energy Project at the 2013 Local Authority Members Association Awards.

Figure 4.10 Local communities across Tipperary have come together to retrofit their homes and community buildings. Photo from Energy Communities Tipperary Cooperative website

47 Energy Communities Tipperary Cooperative (2021) Available at: https://energycommunitiestipp.ie

KEY RECOMMENDATIONS

- SEW should partner with other community groups and local businesses to work towards applying for a Communities Energy Grant from the SEAI. SEW has already carried out a significant amount of work towards this goal with its energy assessment of 13 community buildings.
- To encourage more homeowners and community organisations to become involved, SEW could host an energy awareness event, and promote it with a lightbulb swap.
- Galway County Council should identify key vacant buildings across the SEW area that should be brought back into use with new government funding.



RENEWABLE ENERGY GENERATION

SOLAR ELECTRICITY

Energy from the sun can be captured to generate electricity, or to heat water. In this section, we will look at using solar energy to generate electricity using solar photovoltaic (PV) panels (Figure 5.1).

Figure 5.1 Installing 12m2 of rooftop solar PV panels can provide about 25% of the electricity needs of a typical Irish family. Photo by Aldo De La Paz on Unsplash.com

Homeowners can install up to 12 square metres of solar PV panels or solar thermal collectors (see next section) on their roof without planning permission. Businesses can install up to 50 square metres of solar PV panels or solar thermal collectors without planning permission. Each square metre PV panel generates around 130 kWh per year, so a 12 square metre system would generate about 1,500 kWh per year – about a quarter of the electricity needs of a typical Irish home[48].

One of the challenges with solar panels is that the electricity generated is intermittent. There is more electricity generated on sunny summer days, and less on an overcast winter's day. When electricity generation is at its peak, the panels may be producing more electricity than is needed for the household, while at night no electricity will be produced. One way to deal with this variable production is to install a battery system to capture excess electricity. Excess electricity can also be diverted back to the grid. In Ireland, however, there is currently no payment for electricity that is fed into the grid.

Installing a domestic solar panel system costs around €5,000 - €10,000[49]. Grants of up to €2,400 are available from the SEAI and a €600 grant for battery storage is also on offer[50].

48 SEAI (2021), Electricity from Solar. Available at: https://www.seai.ie/technologies/solar-energy/electricity-from-solar/

SOLAR HOT WATER

Solar thermal panels are used to capture energy from the sun to heat water[51] (Figure 5.2). Typical solar thermal systems in Ireland can generate up to 60% of the hot water demand of the home over the year.

Figure 5.2 Solar Thermal Collectors can generate up to 60% of the hot water demand in a home. Photo by Carson Masterson on Unsplash.com

Installing a solar thermal system will cost about €800 - €1,300 per square metre of roof panel, and you will need about 1 – 1.5 square metres per person[52]. A hot water cylinder is needed to store the hot water generated by the solar thermal collectors. The SEAI offer grants of €1,200 to help meet the costs of installing a solar thermal system.

As with solar PV panels, homeowners can install up to 12 square metres of solar PV panels or solar thermal collectors on their roof without planning permission. While businesses can install up to 50 square metres of solar PV panels or solar thermal collectors without planning permission.

49 Bord Gáis Energy (2021) A Beginner's Guide to Solar Energy in Ireland. Available at: https://www.bordgaisenergy.ie/home/solar-energy-guide

50 SEAI (2021) Solar Electricity Grant. Available at: https://www.seai.ie/grants/home-energy-grants/solar-electricity-grant/

51 SEAI (2021) Hot Water from Solar Thermal Collectors. Available at: https://www.seai.ie/technologies/solar-energy/hot-water-from-solar/

52 Kya Delongchamps (2021) The pros, cons and process of installing solar thermal panels. The Irish Examiner. Available at: https://www.irishexaminer.com/property/homeandoutdoors/arid-40340561.html

WIND ENERGY

Wind energy supplied 36% of Ireland's electricity demand in 2020 – more than any other country in the world[53] (Figure 5.3). The government has set a target of supplying 70% of electricity from renewable sources by 2030 – largely by wind[54].

Figure 5.3 Wind energy supplied 36% of the electricity used in Ireland in 2020 – more than any other country in the world. Photo by Zhang Fengsheng on Unsplash.com

Wind is a variable source of electricity, and in the warm summer of 2021, there was often little or no wind[55]. To keep the lights on, and to reach our targets for greenhouse gas emissions, Ireland needs to have non-fossil fuel back-ups for times when the wind doesn't blow. Solar power can play a role, as the sun often shines in settled weather when there is little wind. But there will also be a need for battery storage and low carbon, long-duration energy storage systems such as green hydrogen[56].

The potential for developing wind energy in the SEW area is limited. Galway County Council has published a map showing where wind energy development will be allowed, as an appendix to its development plan[57] (Figure 5.4). The map shows an area in yellow, to the west and south-west of Loughrea, where wind farm development would be open for consideration in the SEW area.

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53 Wind Energy Ireland (2021) Endgame, A zero-carbon electricity plan for Ireland. Available at: https://windenergyireland.com/images/files/endgame-4-page-a4-report.pdf

54 Government of Ireland (2019) Climate Action Plan 2019, To Tackle Climate Breakdown. p 56. Available at: https://assets.gov.ie/25419/c97cdecddf8c49ab976e773d4e11e515.pdf

55 Stephen Robb (2021) Ireland's wind energy generation plummets during heatwave. Irish Farmers Journal. Available at: https://www.farmersjournal.ie/ireland-s-wind-energy-generation-plummets-during-heatwave-636463

56 Wind Energy Ireland (2021) Endgame, A zero-carbon electricity plan for Ireland. Available at: https://windenergyireland.com/images/files/endgame-4-page-a4-report.pdf

57 Galway County Council (2015) County Galway Wind Energy Strategy. Appendix IV to Galway County Development Plan 2015-2021. Available at: http://www.galway.ie/en/media/GCDP%202015-2021%20Appendix%20IV%20County%20Galway%20Wind%20Energy%20Strategy.pdf

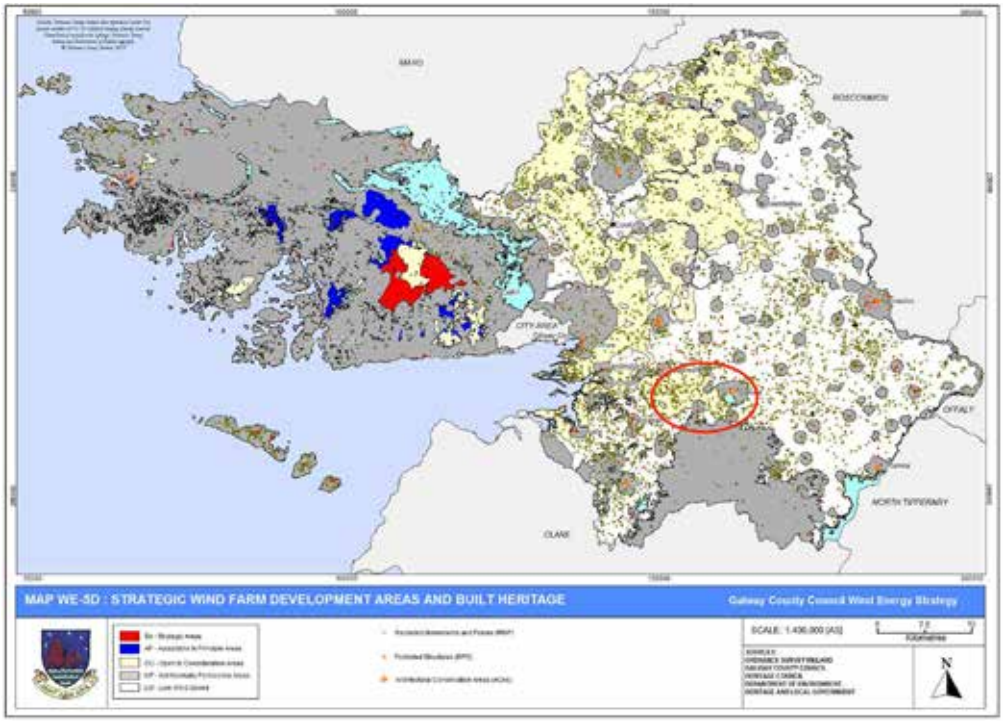


Figure 5.4 In the yellow areas highlighted in the map, to the west and south-west of Loughrea, wind farms are open for consideration. Source Galway County Development Plan, Appendix IV

BIOENERGY AND ANAEROBIC DIGESTION OF FARM WASTE

Bioenergy is a form of renewable energy produced by burning organic materials such as harvest residues, purpose-grown crops, and organic waste from homes, business and farms[58].

Bioenergy, however, is only of benefit to the climate if the materials are sourced sustainably. For example, if plants are burned more quickly than they can be grown, then it's not renewable energy.

Different forms of organic waste can provide fuels to produce bioenergy. For example, wood residue from felling trees, farm waste and organic household waste.

Anaerobic digestion of farm waste is a process of converting slurry and other farm waste into organic fertiliser while collecting the biogas that is released (Figure 5.5). The biogas contains large amounts of methane. Methane causes about 25 times more global warming than carbon dioxide, so collecting the biogas helps to reduce climate change. The biogas that is collected is cleaned up to remove contaminants and can then be used as a renewable fuel to generate heat and electricity[59].

58 SEAI (2020) What is Bioenergy? Available at: https://www.seai.ie/technologies/bioenergy/what-is-bioenergy/

59 SEAI (2020) Anaerobic Digestion for On-farm Uses – Overview. Available at: https://www.seai.ie/publications/Anaerobic%20Digestion%20-%20Overview%20Guide

Figure 5.5 Anaerobic Digestion can be used to convert slurry into organic fertiliser, while the waste gas can be collected and used as a fuel. Picture from Irish Independent

Careful management of on-farm anaerobic digestion is needed, as the methane that is produced is highly flammable and is a potent greenhouse gas. The process also involves working with large amounts of organic material, which can cause serious pollution and even spread disease to workers and livestock if it's not properly managed[60] . Planning permission and a permit or licence is required to set up an anaerobic digestion facility.

Anaerobic digestion is not widely used in Ireland. In 2019, there were just 12 anaerobic digesters producing biogas operating under licence from the Department of Agriculture, Food and the Marine[61]. The capital costs of setting up an anaerobic digestion system are significant[62]. But there is potential in the future for anaerobic digestion to become more widely used.

MICRO-GENERATION

The government has committed to developing a new micro-generation scheme in 2021[63]. The scheme will support the generation of renewable electricity on a small scale, for example from the roof top of a farm building, business, community centre or school.

Critically, the proposed new scheme will allow small producers to export their electricity onto the grid and get payment.

60 Same source

61 Deputy Michael Creed, Minister for Agriculture, Food and the Marine (2019). Reply to Dáil Question from Deputy Eamon Ryan on 26th March 2019. Available at: https://www.oireachtas.ie/en/debates/question/2019-03-26/58/

62 Same source

63 Department of the Environment, Climate and Communications (2021) Micro-generation. Available at: https://www.gov.ie/en/publication/b1fbe-micro-generation/ https://www.gov.ie/en/publication/b1fbe-micro-generation/

COMMUNITY ENABLING FRAMEWORK

The Community Enabling Framework is being set up by the SEAI to support communities to develop community energy. They are developing an Energy Resource Toolkit to provide practical guidance on issues such as technology options, business planning, project development and governance strategy. They will soon publish toolkits to support solar PV projects, wind projects, planning and grid connections[64].

CLAREMORRIS AND WESTERN DISTRICT ENERGY CO-OPERATIVE

The Claremorris and Western District Energy Co-Operative was founded in 2015 to develop community owned renewable energy[65]. With over 50 members, the Co-op is working on a voluntary basis to support other communities in their efforts to develop renewable energy.

The first Renewable Electricity Support Scheme Auction (RESS 1) in Ireland granted support for 82 wind and solar projects, which included seven community projects. Two of these community projects were led by the Claremorris group. The co-op successfully received planning permission for two 5 MWe solar sites – both 100% community owned.

The Claremorris group have worked with 13 other communities in Ireland to promote solar renewable energy and have successfully brought another nine energy co-ops through the grid connection process.

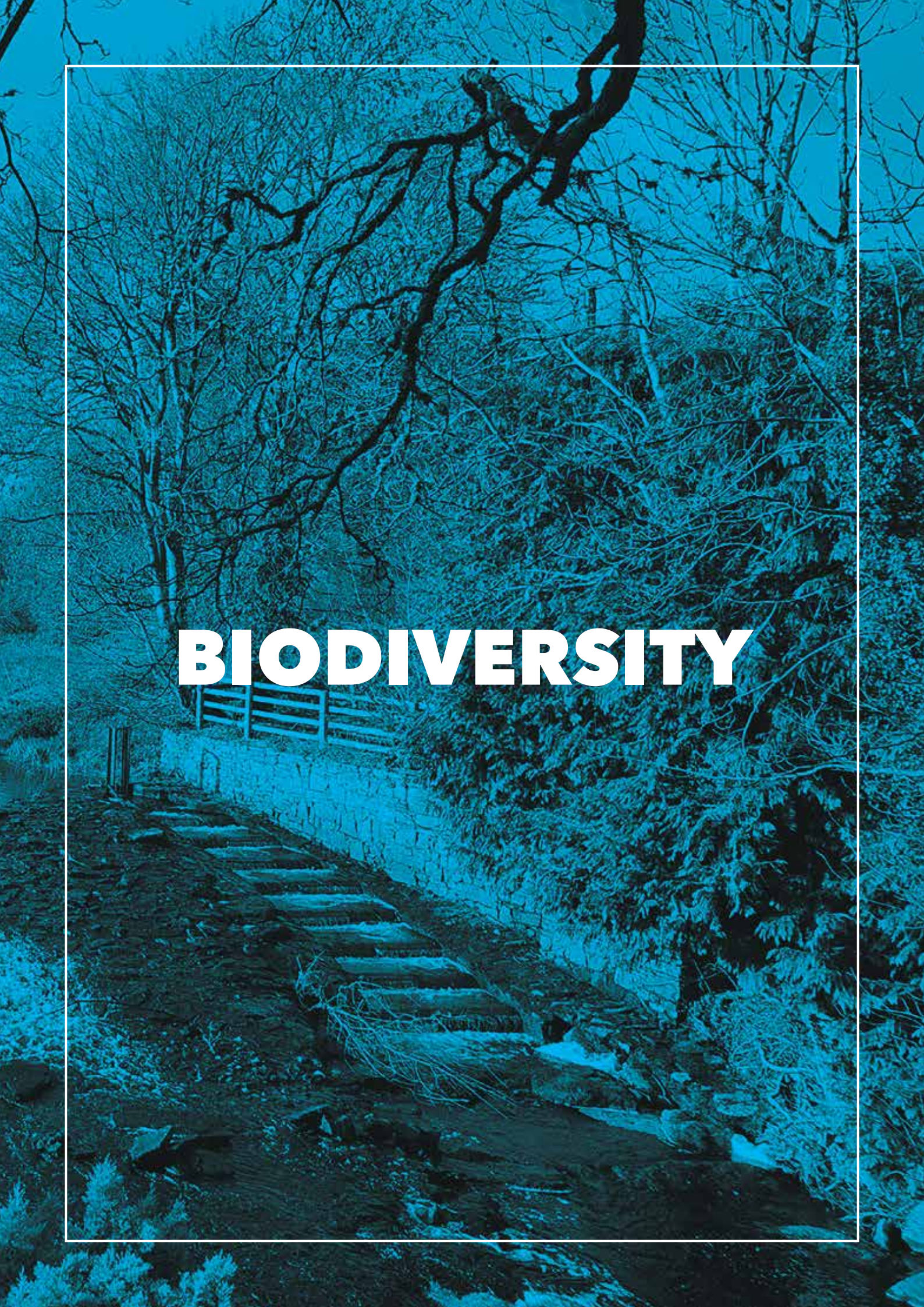
64 SEAI (2021) Community Enabling Framework. Available at: https://www.seai.ie/community-energy/ress/enabling-framework/

65 The Claremorris and Western District Energy Co-Operative (2021) About Us. Available at: https://claremorris-energy-coop.com/about-us/

KEY RECOMMENDATIONS

- Many homeowners, businesses and community groups will get a good return on investment for installing solar electricity and solar hot water systems, especially as electricity and fuel prices spike.
- SEW should consider the feasibility of a community based and owned renewable energy project. If a flagship project is identified, the community energy team could pitch for future support under the Renewable Electricity Support Scheme (RESS)[66]. All community projects looking for support under the new RESS will need to meet pre-qualification criteria, including offering the community an opportunity to invest in and take ownership of a portion of renewable projects in their local area.

66 Department of the Environment, Climate and Communications (2021) Renewable Electricity Support Scheme (RESS). Available at: https://www.gov.ie/en/publication/36d8d2-renewable-electricity-support-scheme/


BIODIVERSITY

INTRODUCTION

Nature plays a vital role in providing food, energy, clean air, fresh water, medicines and a variety of materials fundamental for people's physical well-being (Figure 6.1). Nature also contributes to our psychological well-being, quality of life, and our cultures. Over the course of the pandemic, many people have found solace in nature. And yet, biodiversity across the globe is declining at a faster rate now than at any time in human history[67].

Figure 6.1 High Quality Park in Woodford. Access to nature supports people's physical and mental well-being. Photo by Sean Crowley

The five main drivers of this loss of biodiversity are[68]:

- Changes in land and sea use, such as agricultural expansion;
- Direct exploitation of organisms, including harvesting, logging, hunting and fishing;
- Climate change;
- Pollution;
- Invasion of alien species, associated with increased trade.

67 Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), (2019), Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. IPBES secretariat, Bonn, Germany. 56 pages. Available at: https://ipbes.net/sites/default/files/2020-02/ipbes_global_assessment_report_summary_for_policymakers_en.pdf

68 Same source

There is particular concern about the loss of insects worldwide. Reports from Germany showed a reduction of 75% in total flying insect biomass in protected areas between 1989 and 2016[69]. This loss of insect diversity and abundance will have serious knock-on effects on birds and mammals that rely on insects for food, and on the role that insects play in pollinating plants.

Tracking of bumblebee population trends in Ireland started in 2012. The latest figures available, from 2012 to 2019, show an average annual decline of 4.8%[70].

In Ireland, 85% of EU protected habitats are reported to be in unfavourable status, with 46% declining[71]. Unsuitable grazing practices, abandonment and agricultural pollution are the main drivers of these declines in Ireland. Peatlands, grasslands and marine habitats are in particular decline in Ireland, with 70% of habitats negatively affected by agriculture.

The latest assessment on water quality in Ireland shows a modest improvement in the biological quality of our rivers[72]. Surface waters and groundwaters, however, continue to have problems, particularly from nitrogen and phosphorous from agriculture and waste water discharges.

NATURAL AMENITIES IN THE SEW AREA

The SEW is endowed with a rich variety of the highest quality natural habitats across its area. Of particular note is Lough Rea lake, the Slieve Aughty Mountains and Lough Derg. There are also a range of important bogs such as Barroughter, Sonnagh, Cloonmoylan and Loughatorick.

SPECIAL AREAS OF CONSERVATION (SACS)

The EU Habitats Directive was agreed in 1992 to protect a wide variety of animals, plants and habitat types throughout Europe. Under the directive, protected areas are called Special Areas of Conservation (SAC). There are a wide number of SACs across the SEW area (Figure 6.2):

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69 Hallmann, C.A., Sorg, M., Jongejans, E., Siepel, H., Hofland, N., Schwan, H., et al. (2017) More than 75 percent decline over 27 years in total flying insect biomass in protected areas. PLoS ONE 12(10): e0185809. https://doi.org/10.1371/journal.pone.0185809

70 Biodiversity Ireland (2020). 2020 All-Ireland Bumblebee Monitoring Scheme Newsletter. Available at: https://www.biodiversityireland.ie/wordpress/wp-content/uploads/Bumblebee-Monitoring-Scheme-Newsletter-2020.pdf

71 Biodiversity Working Group (2020). Interim Review of the Implementation of the National Biodiversity Action Plan 2017 -2021. Available at: https://www.npws.ie/sites/default/files/publications/pdf/Interim%20Review%20of%20the%20Implementation%20of%20the%20National%20Biodiversity%20Action%20Plan%202017%20-%202021%20.pdf

72 EPA (2021). Water Quality in 2020. An Indicators Report. Available at: https://www.epa.ie/publications/monitoring--assessment/freshwater--marine/EPA_Water_Quality_2020_indicators-report.pdf

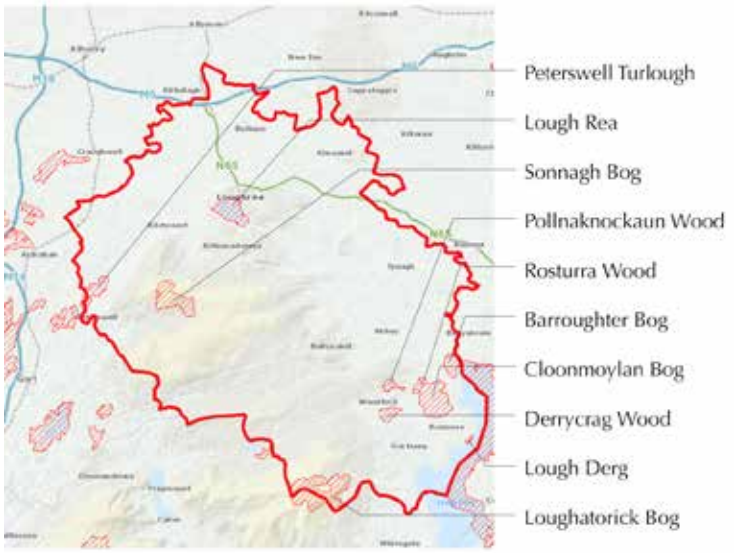

Figure 6.2 Special Areas of Protection within the SEW area. SEW boundary in red. Source: National Parks and Wildlife Service.

SPECIAL PROTECTION AREAS (SPAS)

The 2009 EU Birds Directive aims to protect the 500 wild bird species in Europe. Habitat loss is one of the biggest threats to the conservation of wild birds, so the directive established a network of Special Protection Areas (SPAs) to help preserve species under threat. The SEW area contains three SPAs of European importance: Lough Rea, the Slieve Aughty Mountains and Lough Derg (Figure 6.3).

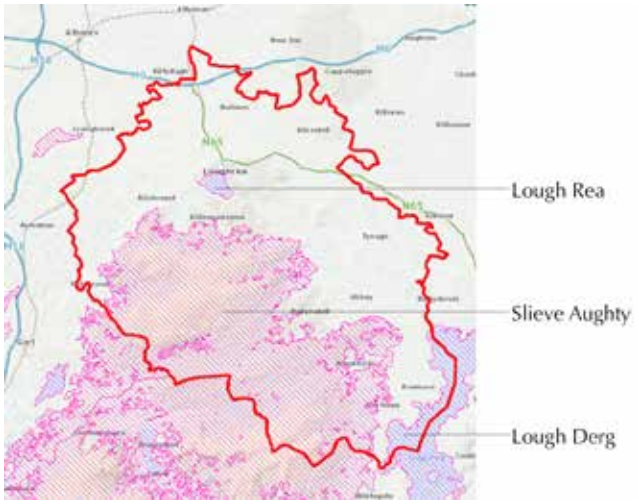

Figure 6.3 Special Protection Areas within the SEW area. SEW boundary in red. Source: National Parks and Wildlife Service

LOUGH REA

Lough Rea is a wonderful and beautiful natural amenity in the heart of the SEW area with enormous value for wildlife, particularly for birds. It is a rare type of hard water lake, with very high water transparency, fed by springs and a stream (Figure 6.4). The underlying geology of the area is Carboniferous limestone. The lake reaches a

maximum depth of 15m[73]. It is designated as a Special Area of Conservation because hard water lakes in good condition are rare in a European context[74].

Figure 6.4 Lough Rea is a rare example in Europe of a hard water lake in good condition. It is of international importance as a habitat for birds.

Lough Rea is of international importance as a habitat for birds[75]. Significant numbers of Shoveler ducks (Figure 6.5) overwinter on the lake, and it is also home to Tufted Duck (Figure 6.6), Coot and a further 10 species of waterfowl. Brown Trout are present in the lake, and rare species of stonewort algae have been recorded in Lough Rea[76]. Otters are present in the lake, and in the summer the lake is teeming with dragonflies, damselflies, butterflies, snails and a wide variety of other species[77].

Figure 6.5 Shoveler Duck. Photo from Birdwatch Ireland

Figure 6.6 Tufted Duck. Photo from Birdwatch Ireland

There is also a variety of wetland habitats around the lake including wet woodland, reed swamp, wet grassland and fen[78].

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73 National Parks and Wildlife Service Report on Lough Rea: https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY000304.pdf

74 Loughrea: Planning for our town & its natural heritage 2013-2016 by Janice Fuller https://dpdgay9x1sxad.cloudfront.net/heritage/wp-content/uploads/sites/6/2015/02/loughrea_bioplan_final.pdf

75 National Parks and Wildlife Service Report on Lough Rea: https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY000304.pdf

76 Same source

77 Loughrea: Planning for our town & its natural heritage 2013-2016 by Janice Fuller https://dpdgay9x1sxad.cloudfront.net/heritage/wp-content/uploads/sites/6/2015/02/loughrea_bioplan_final.pdf

78 Same source

The lake is surrounded by farmed pasture, and it is particularly important that the lake is protected from agricultural run-off[79].

The Loughrea Anglers' Association have undertaken many projects over the years that aim to protect and raise awareness of the high water quality of Lough Rea. They have planted native trees, helped rehabilitate the stream and undertaken environmental education in the local schools. Their members also regularly clean up the Walks, moat, stream and lake edges[80].

APPROACH TO PROTECTING AND ENHANCING BIODIVERSITY IN THE SEW AREA

Protect Existing Natural Habitats Before Focusing on New Habitats

Old habitats such as hedgerows, wetlands, scrub, mature trees (Figure 6.7) and woodland are associated with high levels of fungi, lichen, moss and insects which can develop over hundreds of years. While developing new habitats can be beneficial, protecting existing habitats should be the priority (Leader and Keena, 2020).

Figure 6.7 Mature trees are commonly found in churches, graveyards and other older buildings. This magnificent beech tree is in the grounds of the Carmelite Abbey in Loughrea. Photo by Andrew Montague

79 National Parks and Wildlife Service Report on Lough Rea: https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY000304.pdf

80 Loughrea: Planning for our town & its natural heritage 2013-2016 by Janice Fuller https://dpdgay9x1sxad.cloudfront.net/heritage/wp-content/uploads/sites/6/2015/02/loughrea_bioplan_final.pdf

PLANT NATIVE TREES

Planting trees, particularly native trees, can bring a wide range of benefits to the Sustainable Area West community[81]:

- Trees can reduce air pollution, with important benefits for human health.
- Trees are associated with improved well-being, reduced symptoms of depression, better moods and increased life satisfaction.
- Children do better at school if they have access to nature and have views of trees. Green environments with big trees are related to reduced symptoms of ADD and ADHD.
- Planting trees can lead to increased property values and encourage tourism.
- As temperatures rise due to climate change, trees can play an important role in reducing temperatures in summer by providing shade. They can also cool the air through evapotranspiration.
- Mature trees can play a significant role in reducing carbon emissions as they absorb and store carbon.
- Mature trees play an important role in supporting biodiversity. They provide food and shelter for birds, insects, invertebrates, mammals and plants.
- Trees can help prevent flooding by slowing the flow of water into rivers and waterways in heavy rain. In addition, trees can help reduce pollutants in runoff water.
- Trees can reduce noise pollution.
- Evergreen trees can provide shelter for homes in winter, reducing wind speed and can reduce heat loss by as much as 50%[82].

Tree planting must be planned carefully to ensure appropriate trees are chosen. The job doesn't end when the trees are planted. There must be a plan to manage the trees, otherwise many will wither and die before reaching maturity. Involving the community is essential for the success of any tree planting projects[83].

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81 Turner-Skoff, JB, Cavender, N. The benefits of trees for livable and sustainable communities. Plants, People, Planet. 2019; 1: 323– 335. Available at: https://nph.onlinelibrary.wiley.com/doi/10.1002/ppp3.39

82 https://verde.ie/blog-post/environmental-benefits-of-planting-trees/

83 Turner-Skoff, JB, Cavender, N. The benefits of trees for livable and sustainable communities. Plants, People, Planet. 2019; 1: 323– 335. Available at: https://nph.onlinelibrary.wiley.com/doi/10.1002/ppp3.39

Planting native trees is a great way to improve the biodiversity in the SEW area. Native trees are more likely to support a wider variety of native insects, mites, lichens and mosses. For example, research from the UK, shows that the native Oak tree supports over 400 species of insects and mites, and 324 different species of lichens. The non-native rhododendron doesn't support any insects or mites[84].

SEW should work with Galway County Council, the Tidy Towns Committees across the SEW area, schools and other supportive organisations to identify suitable sites and plan for the planting and maintenance of native trees. There is plenty of scope for tree planting around the Loughrea bypass and across all the towns in the SEW area.

Kilrush Tidy Towns Committee planted one tree per child in their town, and every year they plant new trees for every child entering junior infants.

IDENTIFY AND CREATE WILDLIFE CORRIDORS

Many common habitats are linear in nature, such as hedgerows, old stone walls, streams, rivers and wetlands. These linear habitats are particularly important as they are corridors for movement for many forms of wildlife[85].

Monaghan Tidy Towns committee developed a "Dispersed Urban Orchard" for Pollinators plan for their town. They commissioned a local ecologist to survey 24 habitats in the town. They then devised a plan to connect the most important habitats (Figure 6.8). The committee sourced fruit trees from SeedSavers and advertised them as "Fruit Trees for a Fiver" for residents of the town who committed to planting the trees, and who gave their address. They were then able to map the planted fruit trees and the connections between the habitats around the town[86].

Figure 6.8 Monaghan Town Dispersed Urban Orchard. The green dots are where the fruit trees have been planted (Source: All-Irelantd Pollinator Plan)

84 Countrysideinfo.co.uk. The value of different tree species for insects and lichens. Available at: http://www.countrysideinfo.co.uk/woodland_manage/tree_value.htm

85 Leader, A. & Keena, C. (2020) The New Teagasc Biodiversity Management Practice Index (BMPI) is Showing Farmers How Well They Score on Biodiversity Management Practices. Teagasc. Environment Discussion Groups. Today's Farm. November-December 2020. Available at: https://www.teagasc.ie/media/website/publications/2020/Environment---Discussion-Groups--Buzzing-about-biodiversity.pdf

86 All-Ireland Pollinator Plan (2020). Monaghan's 'Dispersed Urban Orchard' for Pollinators. Available at: https://pollinators.ie/monaghans-dispersed-urban-orchard-for-pollinators/

PROTECT AND ENHANCE HABITATS FOR POLLINATORS

With one third of bee species under threat of extinction in Ireland, we must work to reverse these trends and support pollinators to thrive and survive. A new All-Ireland Pollinator Plan 2021-2025 was published in March 2021[87].

One key way to support pollinators is to reduce grass cutting where possible, on public lands, in private gardens, and on farmland. The video, 'Creating Meadows for Biodiversity'[88] describes two techniques for managing grassland. The first is for short-flowering meadow, where mowing is reduced to every 4-6 weeks. This allows clover, dandelions and other flowers to grow, which provides food to pollinators. A long-flowering meadow is mowed just once per year, in September, and the cuttings are removed (Figure 6.9).

Figure 6.9 Long-flowering meadow on public land in Dublin that would previously have been kept short. Photo by Andrew Montague

There is no need to sow wild-flower seeds on these meadows. The wild-flowers will grow naturally. Planting yellow-rattle in the first year, however, can help other wild flowers to grow.

87 National Biodiversity Data Centre (2021) All-Ireland Pollinator Plan 2021-2025. Available at: https://pollinators.ie/wp-content/uploads/2021/03/All-Ireland-Pollinator-Plan-2021-2025-WEB.pdf

88 National Biodiversity Data Centre (2020) Creating Meadows for Biodiversity. Available at: https://www.youtube.com/watch?v=DE4eRwX6cuc

PROTECT OUR BUILT HERITAGE

Mature trees and grasslands are often found at heritage sites, such as graveyards and old churches[89]. The Walks in Loughrea are a good example (Figure 6.10). The annual Loughrea Medieval Festival has been very successful in highlighting the rich built and cultural heritage in the area.

Figure 6.10 The Walks, Loughrea with mature trees. Photo by Andrew Montague

INVOLVE THE COMMUNITY

There are a number of active Tidy Towns Committees across the SEW area, including Loughrea, Abbey and Woodford – all doing great work for their community, and for biodiversity by creating natural amenities, protecting and enhancing natural habitats, and raising awareness of the value of biodiversity.

The Abbey Tidy Towns committee has developed a permaculture garden, set up a wildlife sanctuary and completed a cleanup of the river.

The Woodford Tidy Towns committee has put a lot of emphasis on biodiversity, planting extra pollinator flowers, protecting hedgerows and mowing grass less frequently.

The Loughrea Tidy Towns committee has identified Corry's Field as a site to focus on. They are also working on signage for birds on the lake.

Loughrea developed a Biodiversity Action Plan for 2013-2016, and a new Biodiversity plan is being prepared in 2021. An essential part of developing the plan, is involving the local community and raising awareness about biodiversity. The plan will help to coordinate action among local groups, individuals statutory bodies and other organisations[90].

89 Fuller, J. (2013), Loughrea: Planning for our town & its natural heritage. 2013-2016. Available at: https://loughreatidytowns.files.wordpress.com/2013/10/loughrea_bioplan_final.pdf

90 Same source

PROMOTE CITIZEN SCIENCE PROJECTS

One way to encourage residents to get involved in promoting biodiversity is to encourage people to help track changes in their environment. Community groups, schools and individuals can easily carry out Flower-Insect Timed Counts (FIT Count) (Figure 6.11). All that is needed is to watch a 50 cm x 50 cm patch of ground for 10 minutes, count how many insects visit, and submit the data online[91].

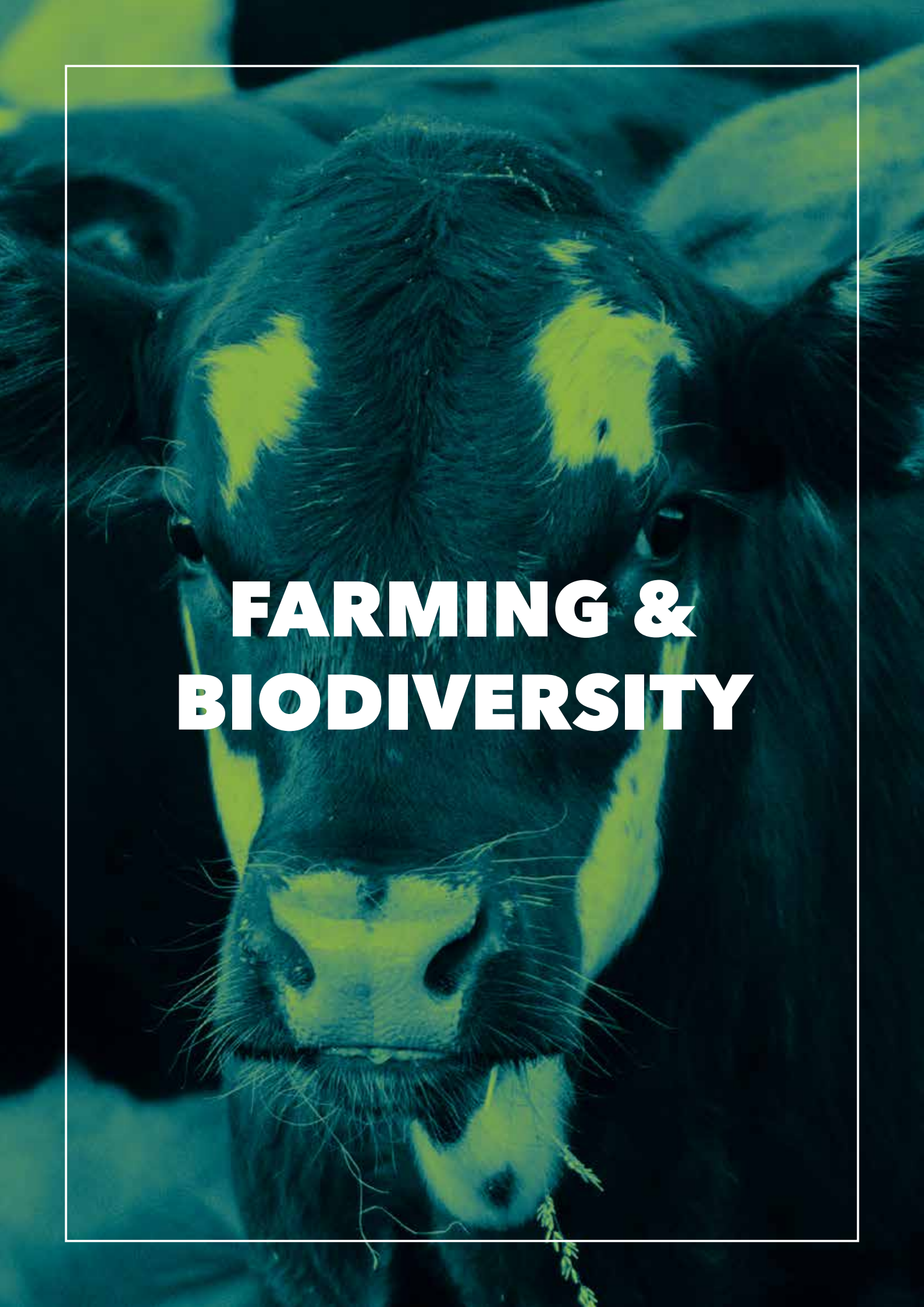
A good time to carry out a FIT Count could be before and after any changes are introduced into an area to improve biodiversity.

Figure 6.11 A Flower Insect Timed Count (FIT Count) involves counting the insects on a 50cm x 50cm patch of ground for 10 minutes and uploading the results to Biodiversity Ireland's website. Source Pollinators.ie

KEY RECOMMENDATIONS

- Support and work with other community groups that are promoting biodiversity in the area, such as the Tidy Towns Committees and the Loughrea Anglers Association.
- Plant native trees across the SEW with support from the community.
- Galway County Council should look for opportunities to reduce grass mowing in public places.
- Feed into the development of the new Biodiversity Plan for Loughrea.

91 All-Ireland Pollinator Plan (2021) Flower-Insect Timed Count (FIT Count). Available at: https://pollinators.ie/record-pollinators/fit-count/



FARMING & BIODIVERSITY

OVERVIEW

Biodiversity is shaped by, and dependent on agriculture. The global decline in biodiversity was profiled in the United Nations (UN) Report 2018 'Global Assessment on Biodiversity and Ecosystems services' and in the Living Planet Report of 2020.

The more recent 2021 Report by the UN Intergovernmental Panel on Climate Change (IPCC) is the starkest warning yet of the widespread rapid change taking place. The UN Secretary General Antonio Guterres stated:

> "[the evidence] is irrefutable: greenhouse gas emissions are choking our planet and placing billions of people in danger. Global heating is affecting every region on Earth, with many of the changes becoming irreversible. We must act now to avert a climate catastrophe".

A number of the above reports refer to human impact on the environment in the past half century, resulting in the earth's biodiversity suffering a catastrophic decline, unprecedented in human history (Figure 7.1).

Figure 7.1: Sixth Assessment Report, Intergovernmental Panel on Climate Change, 2021

Over the last 40 years, efforts have been made to halt the decline in biodiversity, such as the Ramsar Convention, Bern Convention and the EU's Habitats Directive. These programmes, however, have had limited success. Changes in agricultural policy have also tried to reverse these declines.

In Ireland, surveys show that about 12-14% of the farm area of grassland farms are maintained in a semi-natural habitat. On intensive grassland farms, however, the amount of semi-natural habitat is lower at 6-10%[92].

92 Frank O'Mara, Karl G. Richards, Laurence Shalloo, Trevor Donnellan, John A. Finn, and Gary Lanigan (2021) Sustainability of ruminant livestock production in Ireland. Journal of Animal Frontiers. 2021 Jul; 11(4): 32–43. Published online 2021 Sep 6. Available at: https://academic.oup.com/af/article/11/4/32/6364962

LAND USE ACTIVITY

It is estimated that some 67.6% of the land cover in Ireland is devoted to agricultural activity[93]. As can be seen from the aerial image below, much of the land in the SEW area is devoted to agriculture (Figure 7.2).

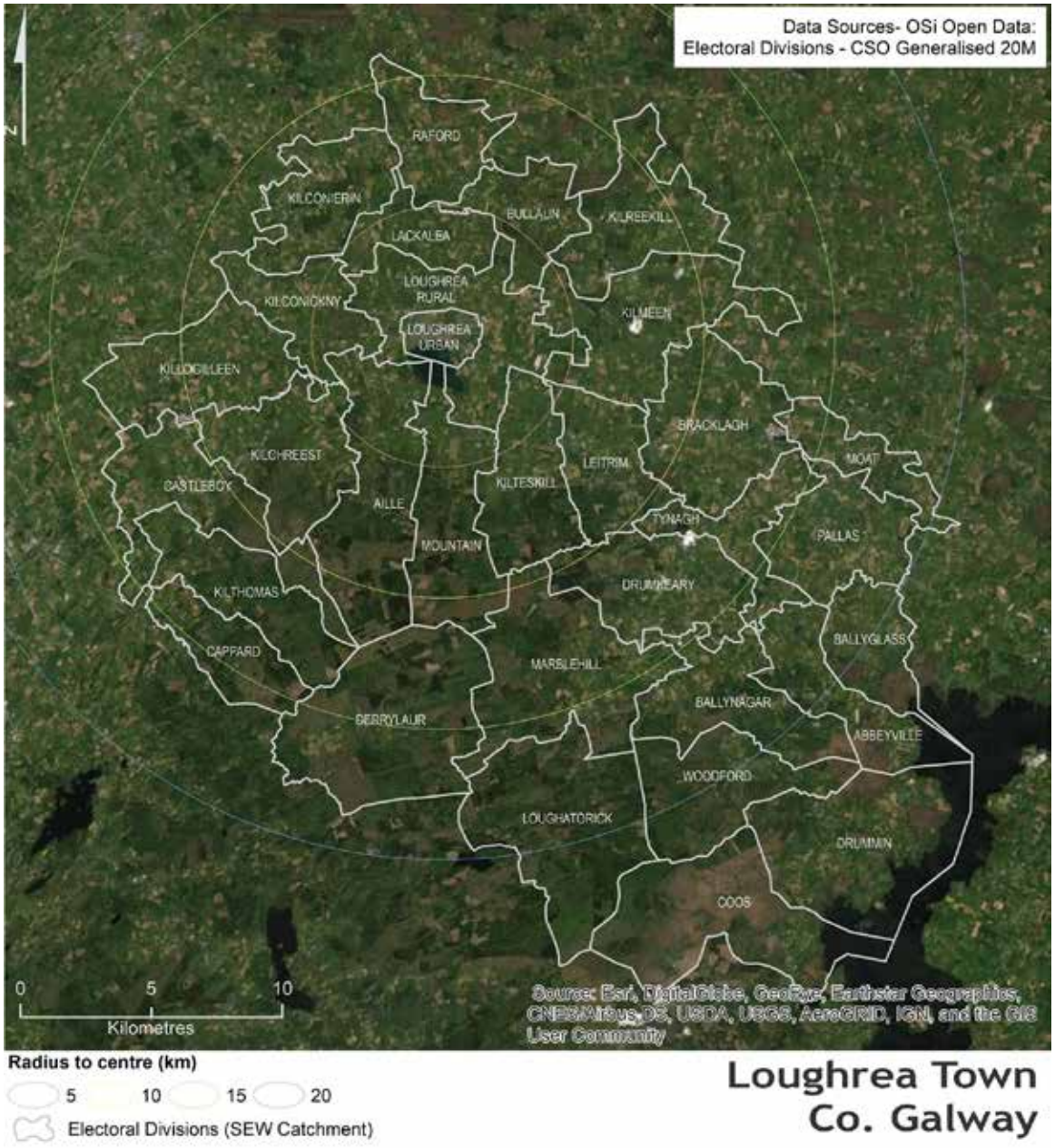


Figure 7.2: Aerial View of the SEW Area

The Agricultural Census of 2010 has identified a total of 1,478 farms in the Loughrea and district area covering an area of 39,804 hectares with over 100,000 livestock (Table 1). The average farm size in Ireland is 32.4 ha[94]. This is significantly larger than the average farm size in the SEW area of 25.8 ha.

93 Environmental Protection Agency (2021) Land use and land cover. Available at: https://www.epa.ie/our-services/monitoring--assessment/assessment/irelands-environment/land--soil/current-trends-land-and-soil/

94 Central Statistics Office (2016) Farm Structure Survey 2016. Available at: https://www.cso.ie/en/releasesandpublications/ep/p-fss/farmstructuresurvey2016/kf/

Electoral Division	Number of Farms	Total Area Farmed (Ha)	Total Livestock (Cattle, sheep and horses)	Average livestock per farm
Abbeyville	41	1280	2437	59.4
Aille	50	1429	2941	58.8
Ballyglass	37	973	2338	63.2
Ballynagar	41	1126	2209	53.9
Bracklagh	82	2197	6572	80.1
Bullaun	36	1019	3088	85.8
Cappard	18	403	508	28.2
Castleboy	57	1396	3982	69.9
Coos	31	544	1015	32.7
Derrylaur	26	640	607	23.3
Drumkeary	78	1681	3866	49.6
Drummin	62	2129	4415	71.2
Kilchreest	53	1328	3378	63.7
Kilconickny	38	941	2104	55.4
Kilconierin	50	1509	4022	80.4
Killogilleen	75	2164	6796	90.6
Kilmeen	91	2617	8660	95.2
Kilreekill	54	1800	8976	166.2
Kilteskill	40	1144	2711	67.8
Kilthomas	26	685	1361	52.3
Lackalea	40	1176	3821	95.5
Leitrim	46	1162	2908	63.2
Loughrea Rural	79	2090	4506	57.0
Marblehill/ Loughatorick	76	1988	1826	24.0
Moat	30	956	2581	86.0
Mountain	27	720	932	34.5
Pallas	71	1775	4081	57.5
Raford	45	1191	3423	76.1
Tynagh	48	1190	3582	74.6
Woodford	30	551	487	16.2
Total	**1478**	**39804**	**100133**	**67.7**

Table 1: Breakdown of Farms and Livestock by Electoral Division. Forestry data is not available at ED level. Source Agricultural Census 2010.

In 2016, there were 137,500 farms in Ireland. More than half (52.7%) were located in the Border, Midland and Western (BMW) region[95]. Farms in the Southern and Eastern (SE) region were 41.3% larger than those in the BMW region, with an average farm size of 38.3 hectares compared to 27.1 hectares for farms in BMW.

The results of the Census of Agriculture 2020 are due to be published shortly, where some expansion in dairying enterprises in the Loughrea area is expected. This is mainly due to the removal of milk quotas in 2015.

SOILS AND ROCK FORMATION

Soil can be considered as a non-renewable natural resource because it develops over very long timescales. Soils are formed by the interaction of factors such as parent material, climate, vegetation and human action. The principal soil types around Loughrea include:

- Made/built land
- Deep, well-drained, mineral
- Shallow, well-drained, mineral
- Poorly drained mineral
- Poorly drained mineral soil with peaty topsoil
- Reed swamp/marsh.

The basic rock formation of County Galway varies between the eastern and western half of the County. The bedrock geology to the east of Lough Corrib is mainly limestone, laid in the carboniferous period, around 280 to 345 million years ago. The bedrock around Loughrea is Carboniferous Limestone[96].

GREEN STRATEGIES

The 2014 Common Agricultural Policy made attempts to tackle the biodiversity crisis with several schemes. For example, Ecological Focus Areas require that 5% of arable land must be farmed in a way that is beneficial for the environment.

Since 1994, it has been compulsory for each EU member state to have agri-environment schemes. These are the primary mechanisms through which farmers are financially rewarded for farming in an environmentally friendly manner.

95 Same source

96 Minogue and Associates for Galway County Council (2012) Strategic Environmental Assessment Final Environmental Report of Draft Loughrea Local Area Plan 2012 – 2018 Non-Technical Summary. Available at: http://www.galway.ie/en/media/Loughrea%20LAP%20SEA%20Non%20Technical%20Summary%202012.pdf

Since agri-environment schemes were first introduced, they have gone through several revisions, with each one increasing the emphasis on proactive measures to protect and improve the environment. The first schemes were the Rural Environment Protection Schemes (REPS); the Agri-Environment Options Scheme (AEOS) was introduced in 2010 (AEOS 1, 2 and 3). The current scheme is referred to as the Green Low Carbon Agri-Environment (GLAS) which is due to finish at the end of 2022.

Evaluations of these policies by the European Court of Auditors were critical of the initiatives, which they found had very limited impacts on farming practices. The EU Framework for Wild Pollinators, for example, had little effect in halting their decline according to the Court of Auditors.

A new pilot Environmental scheme called Results-Based Environment-Agri Programme (REAP) was introduced for the period up to the end of 2022. REAP pays farmers to maintain and improve the environmental conditions of their land.

Farmers will designate between 2 ha and 10 ha of land for the scheme, which will be scored in year one to establish its environmental condition. Farmers will work to improve the environmental score in year two. The focus will be on improving existing habitats rather than the creation of new habitats. Payments will be based on the environmental scores in year two[97].

New Policies and strategies are being developed to improve the environment with the EU Green Deal. The EU's Biodiversity Strategy 2030[98] and the EU's Farm to Fork Strategy[99], which were launched on the same day in 2021 have significant synergies.

The new policies aim to reverse the decline in pollinators, by reducing chemical pesticides' usage by 50%. There are also proposals to have 10% of agricultural land designated as high diversity landscapes. Changes include:

1. Plans to address the lack of habitat mapping. There is no current national scale inventory, save for Special Areas of Conservation (SACs) and Special Protected Areas (SPAs). SACs and SPAs represent only 14% of land area, therefore 86% is unmapped.
2. Need to be cognisant of setting habitat areas and rewarding those with more habitat areas.

97 Teagasc (2021) Results-Based Environment-Agri Pilot Project. Available at: https://www.teagasc.ie/environment/schemes--regulations/reap/

98 European Commission (2021) Biodiversity strategy for 2030. Available at: https://ec.europa.eu/environment/strategy/biodiversity-strategy-2030_en

99 European Commission (2021) Farm to Fork strategy. Available at: https://ec.europa.eu/food/horizontal-topics/farm-fork-strategy_en

Work is underway to map high nature value areas by Teagasc and Galway Mayo Institute of Technology using indicators such as soil maps, stocking densities and hedgerow and watercourse maps. Furthermore, the Environmental Protection Agency and the Ordnance Survey of Ireland are due to publish a national land cover map which will allow changes to be tracked. The mapping of forestry, however, still needs to be incorporated.

The recent Programme for Government[100] (Figure 7.3) seeks to have a baseline biodiversity survey on every farm. High-quality satellite imagery and drone footage is currently being trialled in the National Farm Survey with the support of the EU Smart Agri Hubs. The contribution of ecologists is essential to the success of this project.

Figure 7.3: New Programme for Government, June 2020

The Department of Agriculture, Food and the Marine will soon submit the new Common Agriculture Plan (CAP) to the EU, which will cover the period 2023 to 2029. It is expected that results-based criteria will feature within the new CAP, where the learnings from projects such as REAP can be applied.

LEARNING FROM GOOD PRACTICE

Multi Stakeholder Initiative: BRIDE Project

Most intensively managed farmland throughout Ireland has had relatively low participation rates in agri-environment schemes and associated wildlife options. Nevertheless, it is this farmland that is most frequently represented in Quality Assurance and Sustainability Schemes and is most likely to require a customised plan to maintain and enhance farmland wildlife habitats.

100 Department of Taoiseach (2020) Programme for Government, Our Shared Future. Available at: https://www.gov.ie/en/publication/7e05d-programme-for-government-our-shared-future/

Biodiversity Regeneration in a Dairying Environment (BRIDE) is taking a results-based approach to conserve, enhance and restore habitats in lowland intensive farmland in the River Bride Valley, Co. Cork, which constitutes part of the River Blackwater Special Area of Conservation[101].

The BRIDE project will assess the wildlife priorities on fifty participating farms and, together with the farmers, will identify priority actions for habitat and wildlife conservation. The project will recommend actions to improve wildlife habitats and species and will measure the impact of the actions. Farmer payments will be based on the extent to which wildlife targets are achieved. Thus, the project will implement results-based payments.

An important aim will be to use the BRIDE project to showcase and communicate lessons learned to the agri-food industry. Communication of the results of the project can help improve national awareness of the options to maintain and enhance biodiversity within intensively managed farmland.

BIODIVERSITY MANAGEMENT PLANS

One of the activities of the BRIDE project will be the production of Biodiversity Management Plans (BMP) in consultation with participating farmers. These plans will be used to identify priority actions for the maintenance and enhancement of farmland wildlife. Actions that will target farmland habitats will include:

- Hedgerow management
- Retention of winter stubble on cereal farms
- Skylark plots
- Riparian buffer strips
- Creation of permanent ponds
- Conservation of existing farm habitats and native woodlands
- Nest-box and bat-box installation
- Rodent control
- Control of invasive species
- Monitoring the diversity of vegetation types, plants, bird, bats and pollinators
- Use of baseline and ongoing surveys.

101 Bride Project (2021) Biodiversity Regeneration in a Dairying Environment (BRIDE). Farming with Nature. Available at: https://www.thebrideproject.ie

WILD WORK

A community-based initiative such as Wild Work[102] (Figure 7. 4) should be explored for the SEW area. Wild Work is focused on biodiversity and was set up by South East Cork area Development (SECAD), the local development company for the area.

Examples of recent work includes education and awareness sessions, developing community-based biodiversity action plans, habitat mapping, sowing wildflowers and distribution of seed packs.

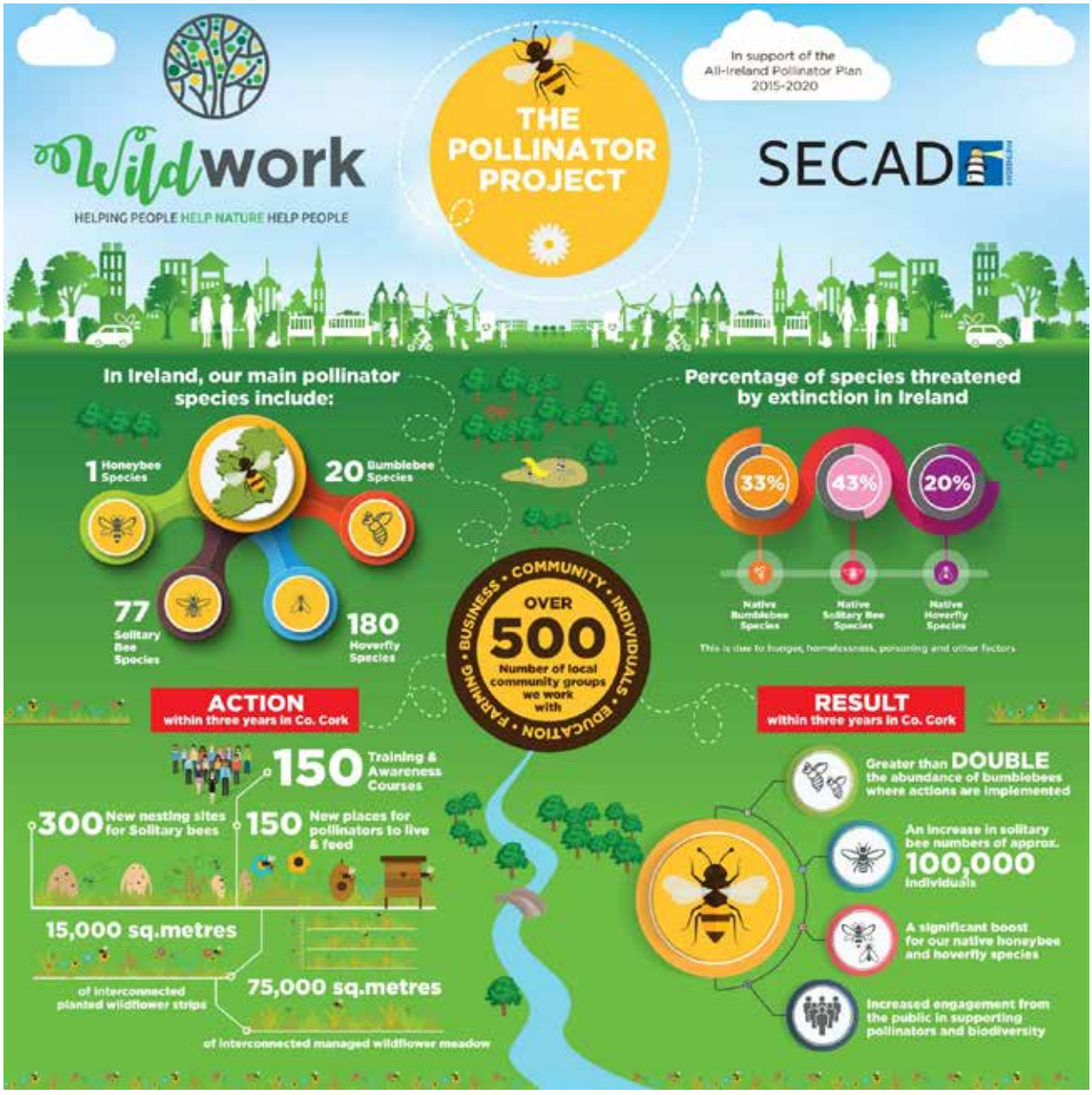


Figure 7.4: Wild Work, based in Middleton, Co. Cork

Glenilen Farm in Drimoleague, Co. Cork completed a Biodiversity Plan with help from Wild Work. Actions include planting wildflower beds and the creation of pollinator habitats.

102 http://www.wildwork.ie

HEDGEROW MAINTENANCE

Sustainable Energy West could also encourage hedgerow maintenance courses that promote best practice in hedgerow management. This can include a programme to encourage hedge laying, coppicing or correct use of machine flail cutting.

Hedge laying is the art of cutting hedgerow stems partly through, near ground level so that they will bend without breaking and will continue to grow (Image 7. 5). The laid stems are arranged to form a stock proof barrier. New growth comes from the cut stump rejuvenating the hedge and thickening up the base.

Figure 7.5: Hedge laying in Progress. Source: Irish Farmers Journal 2017

Coppicing rejuvenates old plants and provides an opportunity to gap up the hedge without restricting light to the new plants.

THE ROLE OF AGRICULTURAL COOPERATIVES

In April 2021, Glanbia launched their Pure Food and Pure Planet initiative[103] which is a commitment to reduce carbon in their operations and supply chains. Their plan is to reduce greenhouse gas emissions in their manufacturing sites by 30% by 2030 and, by working with farmers, to reduce carbon emissions by 25% on their dairy supply chain by the same date.

103 Glanbia (2021) Pure Food + Pure Planet Strategy. Available at: https://www.glanbia.com/sustainability/pure-food-pure-planet-strategy

Centenary Co-op (Thurles) have adopted a similar approach (Figure 7. 6).

Figure 7.6: Tipperary Fresh Milk

The German PRO WEIDELAND Label[104] (Figure 7.7) provides another good example of an initiative that Agricultural Cooperatives operating in the SEW area should be encouraged to follow. Farmers are compensated in the region of between one and four cents per litre for producing milk from meadow grass lands. There are currently 26 dairy products, made using pasture milk, that are entitled to use the PRO WEIDELAND label.

Figure 7.7: German Pro Weideland Model

It must be recognised that as a small special interest group, Sustainable Energy West may not be in a position to develop such initiatives by themselves. They can, however, share learning from demonstration projects and advocate for local implementation with the support of key partners such as farming organisations and landowners.

104 Pro Weideland (2021) Products. Available at: https://proweideland.eu/en/products/

THE GOLDEN MILE

Historically, Irish Hedgerows were reputed to be of high quality in comparison to our international neighbours. Since the 1970s, however, significant miles of hedgerow have been removed to cater for large machinery, farm modernisation and enlargement. This has been accelerated by European Union policies as farmers have been encouraged to become more productive. What remains of our hedgerows is often low quality and poorly maintained.

Littering has also become a major concern. While urban areas benefit from the presence of highly effective organisations such as Tidy Towns committees, rural areas, unfortunately, often lack these active groups.

A good model of practice has been The Golden Mile Initiative, which was first piloted back in 2000 by the then rural development company Tipperary LEADER Group. The aim was to foster a greater appreciation and regard for rural landscapes, with a particular reference to the preservation and careful maintenance of hedgerows. The initiative was intended to compliment the National Tidy Towns competition. Community groups were encouraged to select one mile of rural hedgerow and carry out upgrades through planting, hedge laying and coppicing, leading to improvements in the biodiversity of the selected areas. Through the competitive element of the Tidy Towns competition, strong community ownership was fostered.

While the initiative was not rolled out nationally, this model is worth considering for the SEW area. The selected mile does not necessarily need to be on the public roadway. With the support of landowners, internal farm hedgerows could be considered for a demonstration project.

KEY RECOMMENDATIONS

SEW members and their partners have a key role to play in promoting local projects to complement national and EU initiatives.

Ireland was one of the first countries to declare a Climate and Biodiversity Emergency, and the government introduced the National Biodiversity Plan, 2017-2021. With the expected new agri environmental payments linked to results-based improvements, there should finally be a marked improvement in habitat quality and biodiversity.

- Include local farms as part of local application for energy upgrades to SEAI. Simple measures can be taken to increase the energy efficiency of dairy farms for example:

1. Check thermostat accuracy in bulk tanks

2. Insulate all pipes and hot water storage tanks in milking parlor
3. Install Energy Monitoring Equipment
4. Install Retrofit Variable Speed Drive (VSD) on vacuum pumps
5. Install 4.5 kWp Solar PV System and battery configuration or 6kW Wind Turbine
6. Install Air Source Heat Pump to replace oil boiler

CONCLUSIONS AND RECOMMENDATIONS

From analysis and discussion to action

This report has examined a number of key areas as part of this Sustainable Environment Plan. These include Transport, Cycleways, Energy Efficiency, Renewable Energy, Biodiversity and Farming.

The recommendations should be seen as a way of moving the community forward, and of creating momentum in each area. It will not be possible to do everything at once – therefore people and groups within the community should seek to find a sponsor for action in each of the areas.

The table below divides the next steps into short-term, medium-term and long-term actions.

A short local discussion process, either online, or in person should help in identifying the most important actions for the community, and to confirm the natural or most motivated sponsor organisations for each.

Following the discussion, the community should next select a number of key actions, for an implementation plan. Each key action should include detail on lead organisation, resources required, and other partners.

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SHORT-TERM ACTIONS

ACTIONS	THEME	LEAD ORGANISATION	RESOURCES REQUIRED	PARTNERS
Training & Awareness Initiatives	Energy Efficiency	SEW	Meeting Room Venues Virtual Meeting Facilities Publicity through traditional distribution channels and Social Media	Galway Rural Development Co. Galway Co. Co. SEAI
Creation of Dedi-cated Local Ener-gy Team or sub-committee of SEW	Renewable Energy	SEW	Advice from SEAI Mentors / Other Community based energy companies	Galway Rural Development Co. Galway Co. Co. Community Energy Cooperatives
Continue to advo-cate for Route Four Option, via Loughrea for the Galway to Ath-lone Cycleway	Sustainable Transport	SEW Loughrea Chamber of Commerce	Support from advocates and Representative Bodies such as Local & National Elected Representatives	Galway Rural Development Co. Galway Co. Co.
Information Dis-semination/ Awareness Raising Initiative e.g. - Wild Work - Golden Mile type initiative	Biodiversity	SEW Galway Rural Development Co.	Support from Heritage & Tidy Town Groups Core staffing funding from Galway Rural Development for an Ecologist e.g. LEADER	Galway Rural Development Co. Galway Co. Co.
Feed into development of new Biodiversity Plan for Loughrea	Biodiversity	SEW Local Interest Groups e.g. Loughrea Anglers Association	Support from Heritage & Tidy Town Groups for implementation	Galway Co. Council Biodiversity Officer Loughrea Tidy Towns

MEDIUM-TERM ACTIONS

ACTIONS	THEME	LEAD ORGANISATION	RESOURCES REQUIRED	PARTNERS
Build on SEW Energy Plan:	Energy Efficiency	SEW/Local Energy Team	Financial Support for Project Management/ Administration support from labour market programmes e.g. Tús, Rural Social Scheme or Community Employment Programme	Galway Rural Development Co. Galway Co. Co.
Provide Advice and Support for Microgeneration Projects	Renewable Energy	SEW/Local Energy Team	Support from Community Energy Cooperatives	Galway Rural Development Co. Galway Co. Co.
Lobby for expansion of local link Community Car Initiative	Sustainable Transport	Galway Local Link	Trained local volunteer drivers Electric Vehicles	Galway Rural Development Co. Galway Co. Co.
Explore feasibility of Partnership Project with Farmers, e.g., Farm Level Biodi-versity Plans	Biodiversity	Teagasc	Support from Farm Representative Groups	Farm Discussion Groups Local Authority Waters and Communities Office
Plant native trees	Biodiversity	Tidy Towns Land owners	Resources to purchase trees Volunteers to support upkeep and maintenance	Galway Co. Co.
Reduce grass mowing in public areas and support more wildflower meadows	Biodiversity	Galway Co. Co. Tidy Towns	Buy in from council and local community	Galway Co. Co.
Include local farms as part of local application for energy upgrades to SEAI	Renewable Energy	SEW/Local Energy Team	Advice from SEAI Mentors Other Community based energy companies	Teagasc Farm Representative Groups SEAI

LONG-TERM ACTIONS

ACTIONS	THEME	LEAD ORGANISATION	RESOURCES REQUIRED	PARTNERS
Retrofit Project: Partner with other community groups and interested residents to apply for Communities Energy Grant from SEAI	Energy Efficiency	SEW/Local Energy Team	Advice from SEAI Mentors Financial Support for Project Management and Administration	SEAI Galway Rural Development Co. Galway Co. Co.
Maximise use of the Credit Union Greener Homes Loan Initiative	Energy Efficiency	SEW Naomh Breandán Credit Union	Publicity through traditional distribution channels and Social Media	SEAI Galway Co. Co.
Support low-income households to apply for Energy Up-grades	Energy Efficiency	SEW/Local Energy Team	Publicity & marketing campaign to raise awareness of available interventions Support from community leaders to identify householders on the fuel allowance scheme e.g. members of St Vincent de Paul	Galway Rural Development Co. Galway Co. Co., Community Energy Cooperatives Key Community Leaders
Undertake feasibility of community owned renewable energy project	Renewable Energy	SEW/Local Energy Team	Feasibility Funding / Advice from SEAI Mentors / Other Community based energy companies	Farm Representative Organisations / Land owners / Community organisations
Improve Cycling and Walking facilities	Sustainable Transport	Cycling & walking groups Community Leaders Elected Representatives	Smarter Travel Funding / Capital Funding from Department of Transport via Galway Co. Co.	Galway Co. Co. Parents Associations Community Representative Groups
Explore the EU Funded LIFE Project with key stakeholders e.g., Pasture Milk Label	Biodiversity	SEW Farm Representative Groups	Clear Vision required from communities of interest	Teagasc Farm Discussion Groups Galway Co. Co.

FINAL REMARKS

The SEW steering group has shown a significant commitment to improving their local environment through their work with the Sustainable Energy Communities Programme, and their commissioning of this Sustainable Environment Plan.

The actions outlined in this report are not within the gift of any one body or organisation in the community. Realising the vision will require multiple individuals and organisations working together.

SEW should advocate for the necessary resources and personnel from their local government to help move this forward, working beside and for the local community and voluntary bodies.

Local government in Ireland often leans heavily on local community and voluntary groups. Therefore it is important that through a process of prioritisation, the community moves forward with those actions that are within its capacities.