NET ZERO
ISLE OF MAN

Isle of Man Government
Reiltys Ellan Vannin

CONSULTATION ON THE OUTLINE AND PRINCIPLES FOR THE FIRST STATUTORY CLIMATE CHANGE PLAN 2022-2027

Cabinet Office Consultation Paper
July 2021

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INTRODUCTION BY CHIEF MINISTER - HON HOWARD QUAYLE MHK

Two years on from my recognition of the global climate emergency and call for urgent climate action, we have made good progress to ensure that climate change is at the heart of the Isle of Man Government. A new Climate Change Transformation Team has been established in the Cabinet Office and their work is led by the Climate Change Transformation Board, a political board which I chair. Five Ministers sit on the Board and we are advised by Professor James Curran MBE in an independent capacity. Since October 2020, the Climate Change Transformation Team has been working with colleagues across Government to deliver the 60 actions outlined in the Climate Change Action Plan: Phase 1 which was agreed unanimously in Tynwald in January 2020.

The Keyll yn Phobble (the People's Wood) has been planted at Meary Veg and an ambitious project to restore our all-important peatland is underway. The Citizens' Forum has been meeting since October 2020 and informing the development and delivery of climate action.

Important research and analysis are underway to understand the complexities of transitioning our energy, heating and transport systems away from fossil-fuels that will help us map out the next three decades as together we find the best way to reach net zero emissions.

The Climate Change Bill represents an important step forward in our progress towards 2050. Our Government and public bodies now have a legal duty to deliver climate action effectively and we have a framework in place that will ensure that we are making ambitious climate plans and delivering them.

And I am very pleased to make some important commitments for our future path to net zero. It is my intention that we will ban the registration of new fossil fuel vehicles in 2030, in line with the UK. This will clearly signal our direction of travel and assist consumers in moving away from fossil fuel vehicles as soon as possible.

I am also pleased to be able to make a commitment that by 2023 an Energy Performance Certificate will be required when selling or renting out a property, giving home owners an incentive to improve the energy efficiency of their homes and giving tenants more information to choose properties that will be cheaper to heat and more comfortable.

The next five years are going to be particularly challenging as we change our course away from fossil fuels and towards the zero carbon future to which our new Climate Change Bill binds us.

I am committed to making those changes and also to guiding and supporting every person on the Island to be part of those changes and to benefit from the real positives that climate action will offer.

This consultation will inform the first statutory five year Climate Change Plan which we are now obliged by law to bring to Tynwald by April 2022. As such, this plan will be the most significant in setting us on course for net zero.

This consultation is intended to start an Island-wide conversation in the run up to the election on how (and not if) we will face up to this challenge. Now is the time to make the right

INTRODUCTION BY MINISTER FOR POLICY AND REFORM - HON RAY HARMER MHK

We are at a critical moment in history and may be facing our last chance to act on the climate and ecological emergency and to avert potential disaster. To deliver the change that is needed globally and in the Isle of Man, it is imperative that we view climate action and protecting the environment as central to everything we do. The establishment of the Climate Change Transformation Team in Cabinet Office is an important acknowledgement of the central role of climate action across the whole of Government.

We need to move quickly to ensure that we get on track to reach our target of net zero greenhouse gases as soon as possible and certainly by 2050. This consultation document outlines an ambitious programme of work for the next five years and sets down our tentative pathway to 2050.

I am delighted to announce that we have been accepted as a member of the world-leading Under2 Coalition, joining nations and states around the world to commit to ambitious climate action, and to collaborate and share experience in our journey to reach net zero emissions. We are also currently working with the UK on the extension of the Paris Agreement to the Island. This will give us a higher level of international accountability and clearly signals our intention to work as part of a global alliance to keep temperatures below 2°C and ideally below 1.5°C.

We are under no illusion about the challenges we face and the next five years need to see not only significant investment in our net zero future but also a social and cultural shift away from our fossil-fuel reliant society. We must reduce our daily impact on the natural world and adopt a way of life increasingly in harmony with our environment.

The requirements set out in the Climate Change Bill will mean that all Government departments and public bodies will have to ensure that they are doing everything in their power to deliver the Climate Change Plan and help us reach net zero and protect our environment effectively. This will require a new way of thinking across the public service, the private sector and our wider community – indeed for every one of us. We are committed to working in partnership with other public bodies, businesses and the wider community to each do what is in our gift to change for the better.

There are some big decisions ahead. We must decide on our future approach to generating the electricity that powers our Island, how we heat our homes and businesses and how we travel around the Island and further afield. The continued pursuit of fossil fuel exploration has been controversial and presents challenges around the potential revenue that might be generated balanced with the legacy of additional emissions that would come from extraction. We must confront these issues and develop a new Climate Change Plan that will effectively deliver both short term emissions reductions and longer-term changes in our culture and values.

The rewards of making the right decisions will be manifold and it is a real opportunity to shape a fairer society for our community and future generations. Innovation and new ways of thinking will underpin this culture change and I am excited to be leading this work within Government.

PURPOSE

INTRODUCTION AND PURPOSE OF THIS DOCUMENT

Today, we are at the start of a new chapter in the history of the Isle of Man. We have 28 years to transform our Island from fossil fuel reliance to a net zero carbon community. We have made good progress in recent years, putting in place the governance, legislation and resources for change, but now is the time to set our trajectory and accelerate action

DEFA's Climate Challenge Mitigation Strategy 2016-2020 provided an initial pathway to 80% reduction in emissions by 2050. A public consultation by DEFA on a Climate Mitigation Strategy 2020-2030 in 2019 drew responses from over 1,000 individuals and organisations.

In May 2019, the Chief Minister made a commitment for the Island to reach net zero by 2050 and for a Climate Change Bill. A subsequent motion was supported in Tynwald to commission an independent report on achieving net zero by 2050. Prof James Curran was appointed and, supported by a cross-government team of officers, public consultation events and interviews with key stakeholders, he developed the IMPACT report. The report outlined possible routes to net zero by 2050 and the appendices to that report provide detailed background on the challenges and opportunities to reduce emissions and increase removals in a Manx context. The report informed the Council of Ministers' Climate Action Plan: Phase 1 which was agreed in Tynwald in January 2020 and is currently being delivered.

Following the approval of the Council of Ministers' Climate Action Plan Phase 1, development of the Climate Change Bill began. Targeted engagement with key stakeholders was held in February 2020, followed by a full public consultation in July 2020. The Island will shortly be joining the Under2 Coalition, a group of nations and states working towards the Intergovernmental Panel on Climate Change (IPCC) goal of keeping global temperature rise below 2°C, and ideally below 1.5°C, which will give us a global network of partners to learn from and share experience with.

Work is also underway to have the Paris Agreement, the key international agreement on climate change, extended to the Isle of Man. The Paris Agreement has three key strands – climate change mitigation, adaptation and finance. A significant part of the mitigation commitments will be delivered by the Climate Change Bill and the delivery of the current Climate Action Plan, as well as subsequent statutory plans. A likely outcome of the extension is increased external scrutiny of Manx emissions and the effectiveness of efforts to reduce them.

The Climate Change Bill completed its passage through Tynwald in April 2021 and is now awaiting Royal Assent.

When the Bill comes into force, there will be a requirement for there to be a statutory five year Climate Change Plan in operation at all times. The current Council of Ministers' Climate Action Plan will remain in operation until the new plan is agreed, which the new Climate Bill requires to introduced by April 2022. The Bill also requires the establishment of at least one interim target by that date.

The required contents of the Climate Change Plan are set out to some extent in the Climate Change Bill (full details can be found in Appendix 1). The Plan must set out a clear direction of travel on climate change and it must

consider a wide range of underpinning principles, including ensuring a just transition (making the transition away from fossil fuels fair for all, especially the more vulnerable sectors of our society), promotion of the United Nations Sustainable Development Goals, and protection of ecosystems and biodiversity.

The Climate Change Transformation Board agreed to present an update on the Climate Change Plan to Tynwald in July 2021 and to launch a public consultation on the outline and principles of the plan.

Significant work has been undertaken to set strategies for each main segment of emissions and to review and improve the Island's emissions data, which has resulted in a significantly better understanding of our current position.

This document provides an outline for the Isle of Man's first statutory Climate Change Plan (2022-2027) and offers the basis for a comprehensive public consultation during July and August 2021. A general consultation exercise will run alongside targeted engagement with the Citizens' Forum and key stakeholders. Essential research work to inform the final Climate Change Plan will also continue in parallel to the public consultation.

Whilst consultation on the Climate Change Plan will become a statutory requirement once the Bill has come into operation, the approach to consultation is not specified. The Climate Change Transformation Board approved the following process for consultation on the plan:

1. Outline of the plan to go to Tynwald in July 2021.
2. Immediately after consideration in Tynwald, undertake public consultation on the plan.
3. Key areas of research will continue alongside public consultation.
4. Input from Tynwald debate, public consultation and ongoing research work will inform drafting of the full Climate Change Plan in September-October 2021.
5. Acknowledging that there is a national election on 22 September 2021, the full Climate Change Plan will be approved by the new Climate Change Transformation Board once the new administration is in place.
6. Following political approval, a second public consultation on the full Climate Change Plan will begin in late 2021.
7. Using input from the second public consultation, the Climate Change Plan will be finalised and proceed to Tynwald for approval by April 2022.

The full draft of the new Climate Change Plan will include all the sections required by the Climate Change Bill (see Appendix 1) and will also comply with international best practice (see Appendix 2).

UPDATE ON DELIVERY OF CLIMATE CHANGE ACTION PLAN: PHASE ONE

Work on delivering the First Phase Climate Change Action plan began in earnest in October 2020, when the Climate Change Transformation team were officially appointed within the Cabinet Office. The Team consists of six full time and five part time members, who are split between policy development and research, and delivery. The Delivery Team focus on the actions already agreed by Tynwald in January 2020 as well as governance and programme management, whilst the Research Team focus on the inventory datasets and the research needed to create the overall roadmap to 2050 based on the latest robust scientific evidence, and on the development and delivery of the Climate Change Bill

The past eight months have seen us make real progress on our journey to net zero. Our outreach programme began as soon as the team were in post, meeting up virtually and face to face with our many different stakeholders and agreeing project charters together. The project charters form the basis of our programme management and governance framework which underpin the transformation programme and enables the projects to commence.

Highlights on delivery to date include:

- **The progression of the Climate Change Bill through the legislative branches**, enshrining our net zero goal in law and establishing a clear framework for climate action planning and accountability for delivery.
- The **2021/22 budget allocation of an additional £10 million** in funding to help deliver tangible climate action to reduce emissions and increase natural carbon sequestration (storage).
- The **delivery of the future energy scenarios for the Island** to understand how we will reach our target of 75% renewable energy by 2035 and ultimately 100% by 2050. The scenarios revolve around the energy trilemma; security of supply, renewable generation and low cost to consumers, and are outlined for consultation in this document.
- The **planting of 85,000 trees at Meary Veg**. The new woodland will boost carbon capture and create a new amenity for Islanders to connect with nature and boost wellbeing. Once established, this will sequester around 100t CO2 per year.
- The **development of a new, revised Green Living Grant** which will support up to 1,200 home owners to retrofit their homes, making them more energy efficient and increasing the overall energy ratings whilst also installing low carbon heating systems. This is predicted to save around 3,000t CO2/year.
- The **formation of the Citizens' Forum**, a focus group representative of the Manx public set up to inform research and policy regarding Climate Change issues. The group were instrumental in the formation of the principles for the Green Living Grant.

- **Working with Behavioural Change specialists on insights work** (interviews, focus groups and secondary research) to inform our Change and Engagement Strategy which will ensure everyone in the Isle of Man will recognise the implications of climate change, fully understand and contribute to the Island's response, embrace their role in the transition to net zero and are galvanised to take specific concrete actions that deliver emissions reductions.
- Liaising with Government estate managers to **identify opportunities for renewable electricity and heating installations** as and when buildings are undergoing remedial works or plans are being made for capital projects (for example the replacement of roofs to incorporate solar photovoltaic panels, also known as solar PV).
- **Launching and completing the PIN process for 20MW of on-Island low carbon generation** with 41 diverse applications and 6 invitations to interview, which clarified the need for a strategy around the future of energy generation in the Isle of Man.
- Working with UCM and the construction industry on the skills needed to ensure near net zero housing, **identifying and establishing courses to upskill contractors.**
- **Commencing work on a renewable heating strategy** to identify the roadmap to achieve the decarbonisation of heating systems which account for a significant proportion of our greenhouse gas emissions on the Island.
- An **initial peat restoration project has been agreed, funded and started with the first 1,000 acres of restoration**. This will transform some of the most degraded areas of peat from a source of emissions back into one of our most important carbon sinks.
- **Work on a marine carbon strategy to maximise blue carbon** (the carbon stored in marine and coastal ecosystems) is underway and builds on our network of 10 Marine Nature Reserves and inshore fisheries management zones. Blue carbon is an area where we believe the Island could become a global leader in innovative marine management.
- A working group from across Government is working on **developing a specification for commissioning a comprehensive Land Management Plan**. This plan will identify key opportunities and risks around land management for carbon sequestration and for emissions reduction and for climate change adaptation and resilience. This work will ensure that increasing our natural carbon capture is carried out in a manner that maximises carbon sequestration and wider ecosystem benefits and doesn't have unintended consequences that we will regret in future.
- We are at the early stages of the **creation of a local offsetting scheme** whereby residents and businesses can offset their emissions via loca nature-based sequestration schemes, which would be included in our emissions reduction figures.

- DOI have purchased and are now operating **six hybrid buses** around the Island's public transport network.
- We are locating two Departments in shared office space, whilst operating from home and hub locations to reduce travel and property-related emissions and improving productivity and quality of the life for the teams, whilst reducing operating costs (releasing funding for emission reduction projects).
- We are planning our **attendance at this year's COP26** in November, which will include a political delegation. We intend to partner with an organisation in the UK Government's 'blue zone' exhibition area to highlight the Island's commitment and pathway to net zero as well as our UNESCO Biosphere status.
- We have **reviewed and improved the emissions data**, working with the UK's data assessment contractor, to improve our understanding of the sources of emissions and removals in the Isle of Man.
- We have **introduced a prioritisation methodology** so that we principally appraise potential projects on the basis of their net costs per unit of reduction of CO2 emissions, whilst increasingly taking account of the social and economic implications within the costs and benefits calculation.
- **Trials are being prepared to provide local hubs across the Island**, where customers can access the full range of government services, as an important contribution to establishing 20 minute communities.

A VISION FOR 2050

By 2050 we will have reduced greenhouse gas emissions, and we will be left with minimal unavoidable emissions (for example, food production). Renewable electricity will power our homes and our transport. We will live in homes that are warm and easy to heat.

Live in safe and sustainable communities

Our communities will be better designed for living and working locally and with good walking, cycling, and public transport infrastructure. We will not need to drive as much, and the cars that we still drive will be no longer be reliant on fossil fuels. Driverless and or shared vehicles will have become a normal part of life.

Our networks of low travel communities, where almost everything we need is within a short walk, will be well-connected with cycle-ways and public transport for longer journeys.

And whilst our sea and air connections with our neighbours will still be vital to our community, we will have focussed on creating a more global and diverse offering on the Island to replace some of our need to travel, whether that is in business, education, arts and culture or science and innovation.

Fully embrace innovative technologies in our low-carbon lifestyle

We will have embraced new technologies like vertical farming to reduce imported food and maximise our self-sufficiency. Farmers will play a key part in our emissions-free lifestyle, providing low-carbon local food and managing their land to increase carbon sequestration. We may travel less, but we will be more connected than ever with the world as shifts in working and networking made in the COVID-19 pandemic have become the norm.

Enjoy our flourishing biodiversity and healthier ecosystems

We will have changed our landscape and seascape to enhance our natural carbon storage. Our towns and villages will be greener and there will be more trees, allotments, cycle paths, and walkways connecting settlements.

There will be more woodland, and our wetlands, peat and other habitats will be restored and have a higher capacity for carbon sequestration. Biodiversity will be thriving, and we will benefit from healthier ecosystems that can offer us services such as carbon sequestration, natural flood risk management, erosion management, and water quality. Our sea area (over 87% of Manx territory) will be managed for blue carbon, healthy ecosystems, food production, and thriving marine life.

Climate action and nurturing our natural environment will be central to everything we do, and as a result, we will have clear air and seas, even more, beautiful and inspiring surroundings, and increased access to nature for everyone in our community.

Reap the benefits of an economically and environmentally sustainable economy

We will understand the carbon footprint of all the goods and services we use, enabling us to make informed decisions. We will have fully embraced the circular economy concept, and the entire life cycle of goods and services will be well understood and managed to minimise associated emissions.

We will have embraced the economic importance of a healthy environment, and we will have an economy that equitably sustains us.

Be robust and resilient to climate change and other challenges, and feel happier about our secured future

We will be well-adapted and resilient to the challenges associated with a changing climate, prepared for increased storminess, more extremes of weather, including very wet and very dry periods, and rising sea levels. People will also be socially and culturally adapted to living in a changing climate, with different challenges around health, well-being, and our place in the world.

We will have achieved this in a way that has also improved the quality of life for the most vulnerable in our society, promoting warmer, safer homes, better transport links, and flexible work accessible to all.

Leave an environmental legacy that we are proud of for our future generations

We will have invested in economic development that promoted and supported the transition to net zero and protected and restored our ecosystems.

We will have kept pace with the global transition, playing our part in full and avoiding passing the climate burden of our consumption onto other countries. In our areas of strength we will have led and excelled.

The promise of our UNESCO Biosphere designation will have been fully realised and we will be living a comfortable life in harmony with nature.

Consultation questions

1. Do you feel this is a vision the Isle of Man can live up to?

- ☐ Yes
- ☐ No
- ☐ Not sure

2. Please provide your comments about the Vision

AN EXCITING, THOUGH COMPLEX JOURNEY

Climate action seems so simple – reduce the energy we use, generate all our electricity from renewable sources, move away from fossil fuels in our homes and cars and businesses.

In reality, our lives, our day-to-day routines, and the infrastructure that support them are embedded in fossil fuels and to fully transition to a low carbon society we have to re-think all aspects of that infrastructure and the way we use it. We also need to consider the complex consequences of changing one aspect of that infrastructure on everything else.

We also need to think very carefully about what "net zero" means. To be net zero by 2050 we will ideally have to be able to balance any remaining greenhouse gas emissions with equivalent removal of carbon dioxide from the atmosphere by habitats like woodlands, peat bogs and seagrass beds. If that isn't possible, we will also have to find artificial ways of capturing and storing carbon dioxide. The more emissions we are unable to eradicate, the more expensive it will be to reach net zero. For natural carbon storage we need to make sure that we have healthy, diverse ecosystems that can store the most carbon and also provide us with many other services (known as ecosystem services) such as natural flood risk management, erosion reduction and water quality improvement. These assets take a long time to mature, so we need to make sure we have planned them properly now.

In the Climate Change Bill we have committed to reaching net zero through domestic effort, which means that we are not going to buy carbon offsets in other countries to allow ourselves to continue to produce more emissions. We have made a commitment to balance our own books. It should be noted that this does not mean that we will not be supporting projects that will increase sequestration or reduce emissions in other parts of the world. One of the two themes of our international development partnership funding stream for 2021-23 is climate change and all international development funding must align with UN Sustainable Development Goals. Supporting climate action in developing countries is also a key theme of the Paris Agreement.

Important considerations in developing the 5 year Climate Change Plan

The key components of any five year plan are outlined in the Climate Change Bill (see Appendix 1 for full details). Some elements are required (those that the Bill stipulates the Plan must contain). Others are suggested but not obligatory (those that the Plan may contain). A recent publication on developing a gold standard net zero climate action plan provides a good checklist of contents and it is also proposed that we follow those recommendations (see Appendix 2 for full details).

ESTABLISHING THE BASELINE
UNDERSTANDING OUR EMISSIONS

The Isle of Man's Greenhouse Gas Inventory

Recording and reporting of greenhouse gas emissions is a key part of understanding and responding to climate change. The Isle of Man's greenhouse gas emissions are estimated as part of the UK's reporting to the United Nations Framework Convention on Climate Change (UNFCCC) each year. This 'inventory' of emissions and removals is estimated in line with the Intergovernmental Panel on Climate Change (IPCC) guidance. Crucially, this involves accounting for emissions on a 'production' or 'territorial' basis – that is, emissions are accounted for in the geographical area that they are emitted. For example, the emissions involved in the production of a car in UK would be accounted for in the UK. If that vehicle was sold and driven in the Isle of Man, the emissions associated with the fuel that was being burned would be accounted for in the Isle of Man. This approach is different from the 'consumption' or 'carbon footprint' basis, where emissions are estimated based on end-use.

In the Climate Change Bill it will become a legal requirement to report to Tynwald on emissions on a five yearly basis and to ensure that our emissions reporting aligns with international reporting standards.

Work is ongoing to improve the quality of our emissions data to provide the best possible baseline from which to measure our progress and further details on recent changes to the Isle of Man greenhouse gas inventory can be found in Appendix 3.

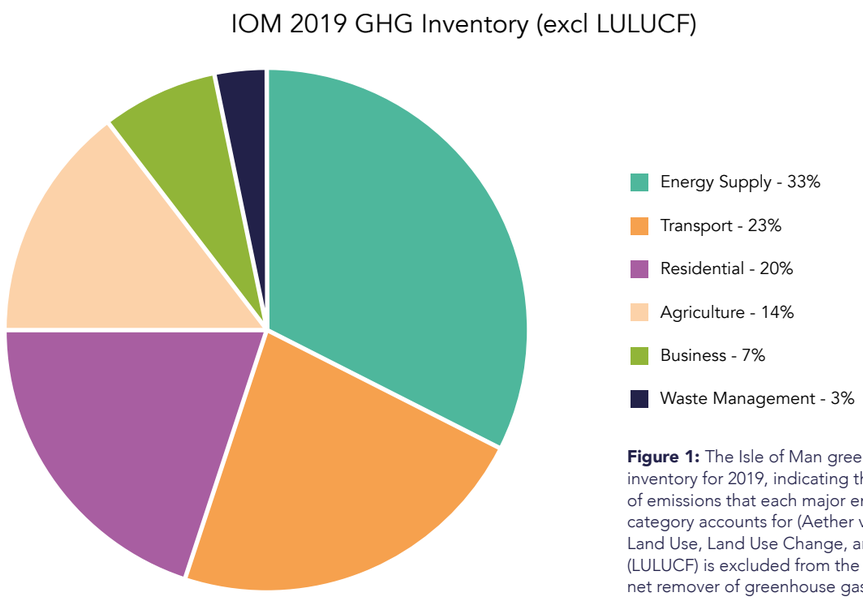


Figure 1: The Isle of Man greenhouse gas inventory for 2019, indicating the percentage of emissions that each major emissions category accounts for (Aether verified data). Land Use, Land Use Change, and Forestry (LULUCF) is excluded from the chart as it is a net remover of greenhouse gases.

Energy Supply

Energy Supply (electricity) makes up the largest proportion of the Island's emissions at 34% of net emissions (237kT CO2e). The majority of these emissions come from the Combined Cycle Gas Turbine (CCGT) at Pulrose, with smaller amounts produced by the Energy from Waste (EfW) plant, and diesel generators. Due to the methodology outlined above, any emissions from electricity which is produced on-Island and exported to the UK is included in the Island's inventory. Conversely, electricity imported from the UK is excluded from the Island's inventory. Data for this section is sourced from Manx Utilities fuel usage volumes, meaning that it is highly reliable.

Transport

Transport makes up 24% of net emissions (164kT CO2e). The largest components of transport emissions are petrol and diesel usage for cars, making up just under 60% of the total. Other large contributors are shipping, aircraft, and HGVs/buses. For travel to/from the UK, half the round-trip aircraft/shipping emissions are allocated to the Isle of Man, and half to the UK. For international travel (e.g. to the Republic of Ireland) these are excluded from the inventory and reported separately. These calculations follow the standard IPCC guidance.

Data for transport emissions is sourced from petrol/diesel volume data for road vehicles. Aviation data is sourced from detailed Civil Aviation Authority data plus the DUKES database. Shipping data is sourced from high-resolution tracking systems for vessel movements.

These sources are considered good estimates, although further refinements to the split of car vs HGV usage could be made with more detailed fleet usage data.

Residential

Residential emissions make up 21% of net emissions (146kT CO2e), the majority of which relates to home heating using oil and gas. These figures have been refined based on more up-to-date volume data for the 2019 inventory, and this revision has been applied to previous years, in line with emissions data protocols. The overall figures are fairly accurate, however further work is required to better allocate gas usage between residential and business sectors.

Agriculture

Agricultural emissions make up 15% of net emissions (105kT CO2e). The largest category of emissions is methane from animal digestion and waste, followed by emissions from land use. This data is sourced from the Isle of Man Agricultural Census and is considered fairly accurate, though there is scope to refine further with the availability of more detailed information on specific Manx farming practices.

Business

Business emissions make up 8% of net emissions (53kT CO2e). Most of these emissions relate to heating commercial buildings with smaller levels of emission from refrigeration and other chemical processes. For heating, the source data is fairly accurate but further work is required to split out commercial gas usage from residential gas usage. Emissions from refrigeration and chemical processes are based on UK levels scaled to the Isle of Man, so there is scope to improve this data through a better understanding of business processes.

Waste Management

Waste Management makes up almost 3% of net emissions (23kT CO2e). The Energy from Waste (EfW) plant is included in Energy Supply, leaving emissions from landfill and sewage.

Industrial Processes

This is a small category that does not appear in the above pie chart as it makes up less than 1% of emissions. This relates solely to nitrous oxide emissions from food consumption.

Land Use, Land Use Change, and Forestry

This category is a net remover of carbon dioxide, therefore it does not appear in the pie chart. The total removals equate to 31kT CO2e which is equivalent to about 3% of net emissions. Data on land use is collated from a range of sources and work is underway to improve this data.

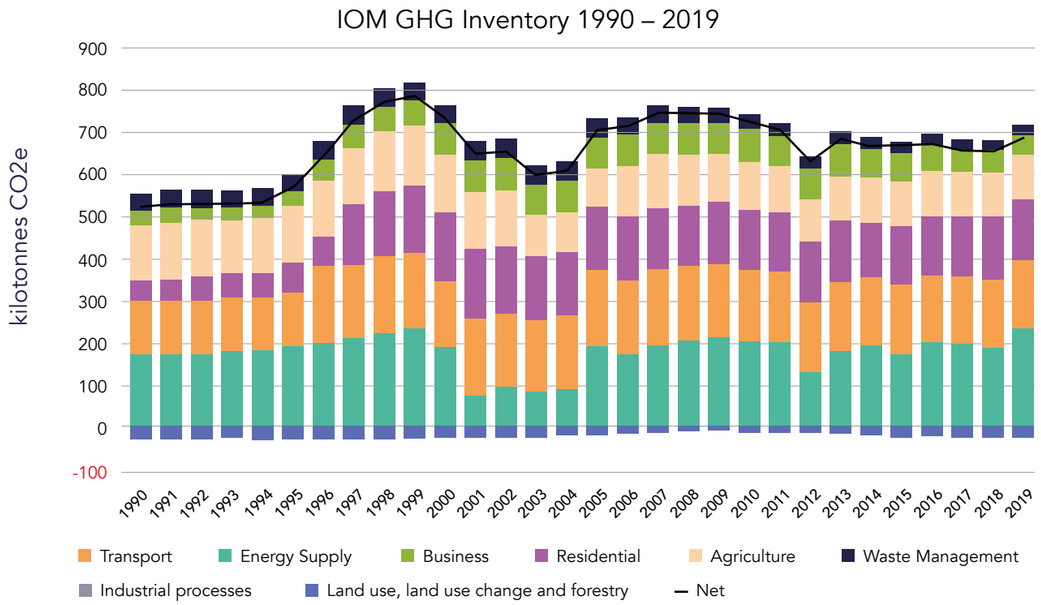


Figure 2: The Isle of Man greenhouse gas (GHG) inventory 1990 to 2019 showing net emissions from all sectors in the Isle of Man

(please note that LULUCF is negative (below the line) as this category is a net remover of carbon).

Figure 3 shows the UK inventory as a comparison. The UK's emissions have steadily fallen since 1990 driven mainly by reductions in emissions from energy supply.

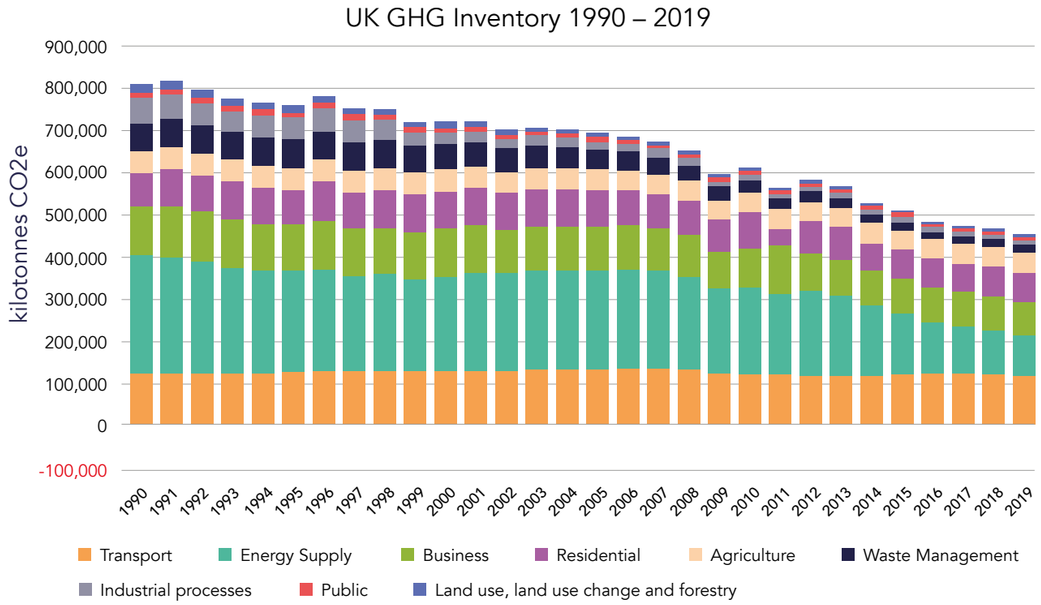


Figure 3: The UK greenhouse gas inventory for all sectors 1990-2019, for comparison.

The UK has made significant progress in comparison to our situation, much of which has been through their long term initiatives to decarbonise their electricity generation.

ECONOMIC & ENVIRONMENTAL ASSESSMENT
PRIORITISING ON EVIDENCE

The climate action required to meet net zero will require big changes to our way of life, and we need to make sure that the decisions we take are based on the best possible information, giving us a full understanding of the costs and implication. In order to properly assess and compare different interventions, a structured approach is required. This should ideally take the form of an economic and environmental appraisal of different policy options in order to determine which provide the greatest benefit to society alongside the lowest costs. Conducting such an appraisal requires quantification of the monetary benefits (and costs) that society as a whole will see as a result of reducing (or increasing) carbon emissions. This can then be set alongside the financial costs (or savings) incurred by the individuals or organisations funding these interventions. It is important to ensure the ecosystem services and the value of biodiversity are a key part of this approach (for example, through natural capital accounting). Wider socio-economic considerations such as security of electricity supply and of the benefits of self-sufficiency can also be included.

Such an approach is essential when comparing different interventions which by their nature, will take place over dramatically different timeframes. This is where 'discounting' is required, in order to account for the fact that benefits (and costs) that are realised far in the future are less valuable to society today than benefits (and costs) that are realised now. For example, a woodland-planting project may take many years to grow and reach its full potential to sequester carbon. There may be some costs now, and further ongoing costs to maintain the woodland. The scheme would continue to provide benefits decades or even hundreds of years into the future. Without having a consistent way to treat these distant benefits and costs, it would be very difficult to compare this woodland project to a short-term project, such as everyone using public transport rather than cars for one day a week. This latter intervention would have immediate benefits and immediate costs, but if it only ran for a year, would have no ongoing impact. The woodland project would have far greater benefit over its lifetime, but that lifetime is far longer. Another example of this is the case of home insulation which not only contributes to reducing emissions but can also save households significant amounts of money and improve their living standards and health. This area is particularly complex and will likely require additional expert advice to ensure that our decisions are made with the best possible information.

It is proposed that as we develop our first statutory Climate Change Plan this systematic approach is adopted.

JUST TRANSITION
MAKING CHANGES FAIRLY

There are a wide range of requirements in the Climate Change Bill which will ensure that the Climate Change Plan takes full account of the impacts of climate action on the most vulnerable as well as those with limited financial resources to take individual actions in our society.

If we can act effectively on climate change, our actions will benefit our own community and the global community as well. Ensuring that we choose climate actions with the widest benefits to the community will also ensure that people's experience of climate action can be positive rather than punitive.

In everything we do, we must fully understand the wider implications for individuals and society and if the full economic and environmental appraisal approach is implemented effectively, then the wide range of potential impacts on people will be fully considered and mitigated.

This does not mean that there will not be difficult decisions, or actions that will impact directly on businesses and individuals, but by giving plenty of notice for new measures and by always considering those least equipped to make big changes, we will protect and support those who are most vulnerable.

Consultation questions

3. How much do you feel you understand about Just Transition - making changes fairly?

- ☐ I am new to the topic
- ☐ I have a basic understanding (e.g. previous reading for general interest)
- ☐ I have a strong understanding (e.g. experience in a professional capacity; higher level or undergraduate study)
- ☐ I have an expert understanding (e.g. postgraduate academic qualification in the field, expert role in a business in this area)

4. Do you think the changes required to reach net zero will disproportionately impact the most vulnerable in society?

- ☐ Yes
- ☐ No
- ☐ Not sure

If you answered 'Yes' – do you think any mitigations are required? Tick all that apply

- ☐ No mitigations required
- ☐ Yes – increased funding / grants / subsidies for vulnerable groups
- ☐ Yes – increased education / outreach for vulnerable groups
- ☐ Yes – something else (please describe below)

Please add your comments

GOVERNANCE
TAKING GOOD DECISIONS

In the past two years there has been a lot of progress to develop climate action as a key workstream for the Isle of Man Government. The work is led by the Climate Change Transformation Board which is chaired by the Chief Minister and includes five ministers, giving the Board the highest level of political support and influence. Climate change has moved from DEFA, where there was a risk that it was seen as a purely environmental concern, to Cabinet Office where it can become part of core Government policy making and leadership.

When the Climate Change Bill is enacted, there will be the need to embed this level of climate leadership across Government and also throughout the public bodies to which the Bill applies.

Guidance will be required to help all public bodies to deliver on climate change and support will be needed for them to ensure that climate change is given the priority required.

The new Climate Change Plan will need clear actions around ensuring that climate mitigation and adaptation is effectively implemented across Government and public bodies. Delivery of the provisions in the Climate Change Bill will need to be a priority, including the development of extensive secondary legislation, some of which is required as soon as possible.

Our imminent membership of the Under2 Coalition will provide a networking opportunity to assist all sections of Government and the wider community in finding the right approaches to tackle climate change. It will also provide us with external frameworks to help develop and deliver climate policy.

It is hoped that the Paris Agreement will be extended to the Isle of Man before the Climate Change Plan is completed and this will give us another clear set of principles and requirements to inform climate action. Taking an active role in our participation in international networks and agreements will help Government and whole community make the best-informed decisions, learn from those further along the path to net zero and share our experience.

Active engagement in other important knowledge-sharing networks, for example the specialist sub-groups of the British Irish Council on climate change, energy and other environmental topics, and via our UNESCO Biosphere networks will also be important.

The Isle of Man's greenhouse gas emissions are calculated as part of the UK's reporting to the UNFCCC each year. This 'inventory' of emissions and removals is estimated in line with IPCC guidance.

EMISSIONS

EMISSIONS CATEGORY 1
ENERGY GENERATION

A. TRANSFORMING OUR ELECTRICITY GENERATION

Headline no-regret action: Enable our urgent low carbon transition by undertaking a feasibility study for a new interconnector (or interconnectors) immediately, whilst enabling local investment in economic and reliable renewable generation. The interconnectors will ensure the electricity grid can better cope with future renewable generation. In the Climate Change Plan, the Energy Strategy and an economically viable route to 75% electricity from renewable sources by 2035 and net zero emissions by 2050 will be enabled by this approach.

Current Energy Supply

Energy supply is the largest emissions category for the Isle of Man and accounts for 33% of total emissions.

Currently around 84% of the Island's electricity generated by the Manx Utilities is from imported fossil fuels. Natural gas is imported via a spur in the gas interconnector connecting Scotland and Ireland and diesel is imported at Peel and Douglas. It should be noted that whilst the diesel generators now rarely run they provide emergency back-up capability. The interconnector cable is typically used to import around 9% of our electricity from the UK. Excluding imported fossil fuel-powered generation, our only on-Island energy generation comes from the Hydro Plant in the Sulby Glen and the Energy from Waste Plant.

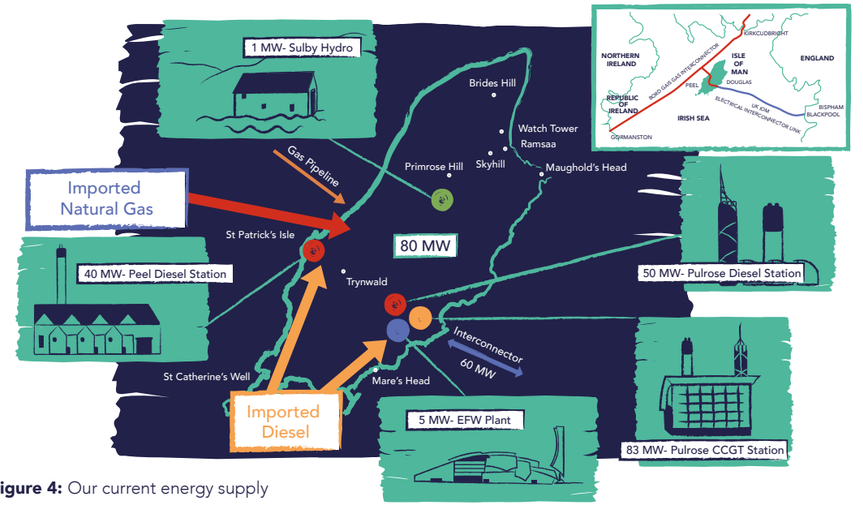


Figure 4: Our current energy supply

Future Energy Scenarios

A study has been undertaken by the international engineering and consultancy services firm Ove Arup to propose possible scenarios that achieve the target of 75% electricity from renewable sources by 2035 and net zero emissions by 2050. The study also considered the most effective way to achieve the emission reduction targets whilst maintaining a secure and affordable energy supply. The consultants began by projecting future electricity demand (see Figure 5) to inform the work.

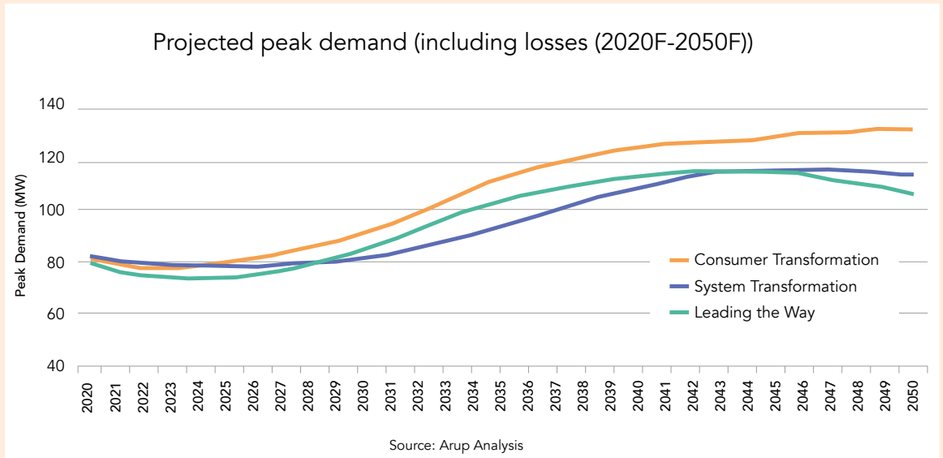


Figure 1: Projected peak demand for electricity up to 2050, modelled by Ove Arup for three different scenarios with different levels of transition to electricity.

Electricity demand is expected to increase with greater future use of electricity in heating (e.g. heat pumps) and transport (e.g. electric vehicles). Peak demand is estimated to increase from around 80MW today up to around 130MW by 2050. Further details on the energy scenarios can be found in the Ove Arup report (Appendix 4 – Arup Executive Summary and accompanying background reading). These scenarios have been costed and will allow the future development of an electrical energy strategy that is secure and progressive for the Isle of Man. The electrical energy strategy will comprise of a mixture of intermittent renewables, dispatchable, and baseload generation.

Dispatchable Generation

Dispatchable generation is flexible plant which can be started and shut down on demand and power output can be varied quickly. This ensures grid frequency remains stable and secure.

Baseload Generation

Baseload generation can be less flexible, but is essential to ensure the transmission network operates within its limits (thus avoiding black-outs) and meets the minimum required electricity demand.

Intermittent Renewables

Intermittent renewables are sources of generation powered by natural resources i.e. wind, tide and solar. The power output (or availability) of these generation units is highly dependent on prevailing weather conditions. The lack of ability to vary power output from intermittent renewables means voltage and frequency (along with many other stabilising factors) cannot be controlled on their own and baseload generation is still required. Over short time scales, storage (e.g. batteries) can temporarily manage some aspects such as the frequency swings by absorbing and releasing power. On a windy, sunny day demand capacity could be met from renewables, with the interconnector providing the baseload stability. However it is possible that there would be periods when renewables are producing more renewable power than required on the Island so excess power is either exported or stored (for example batteries and/or through the production of hydrogen).

Modelling Outputs

The scenarios considered in the Ove Arup report use intermittent renewables, dispatchable, and baseload generation. The scenarios all take account of the need to stabilise generated electricity to ensure fluctuations do not result in grid instability. They also ensure that the break-down of one component would not result in a loss of electrical supply to customers (a black-out).

In all analysis, interconnectors are the most cost-effective source to meet baseload demand. Interconnectors allows us to import renewable electricity from neighbouring jurisdictions and can also be designed to be bi-directional which could allow them to be used for export when local renewables are excess to demand. On-Island generation is sometimes more cost-effective than imported electricity at times of peak demand.

Biofuel can also be used to provide renewable dispatchable generation. The use of biofuel assists in increasing resilience of the electricity system for short periods of time and providing local power generation at peak times when electricity may be expensive or impractical to import.

Impact on emissions

Each of the scenarios will allow the carbon intensity of electricity generation to reach zero emissions before 2050.

Existing assets

The existing Manx Utilities CCGT fossil fuel generating assets will reach the end of their designed life by 2035. An initial carbon reduction can be achieved be moving the role of this equipment from baseload to dispatchable generation plant. Much of the equipment (gas turbines) will be supportable well beyond 2035 and could continue to be used as cost effective biofuel-enabled dispatchable generation plant.

The existing gas turbines also have the capability to support the current plans for the introduction of hydrogen into the UK gas pipeline. The gas turbine suppliers have plans to keep pace with the future introduction of hydrogen with engineering modifications, however, this technology is not yet confirmed or available.

The diesel generators are already past their end-of-design-life, but will be maintained to ensure resilience until at least 2025.

As the diesel generators are decommissioned, it has been identified that additional dispatchable biofuel capable plant and storage capacity will be required to maintain secure supplies in the transition period, as the electrification of heating and transport expands.

Emissions targets

In terms of the Island's formal greenhouse gas inventory which must be reported annually to the UK, greenhouse gas emissions are counted where they are generated rather than consumed, in line with IPCC guidelines. Currently, Section 2(1) of the Electricity Act 1996 states: 'It is the duty of the Authority to develop and maintain an efficient and economical system of electricity supply for the Island.' Manx Utilities exports electricity to the United Kingdom when it is costeffective to do so as part of its economic statutory duty as any additional contributions (extra income less extra costs) from exports offset fixed costs that otherwise have to be borne from local income. In recent years electricity exports have contributed between £3 million and £4 million per year to Manx Utilities' fixed costs, equivalent to around 6% of local electricity sales income. In previous years lower levels of electricity exports have principally been used to ensure higher levels of power station efficiency and reliability.

However, under the new provisions of the Climate Change Bill, Manx Utilities will also be required to act to reduce emissions, so their position on exporting electricity will be influenced by these new provisions. Commercial exports could be stopped and significantly reduce the Island's emissions (by approximately 60,000 tonnes). However, the removal of this income stream could increase local electricity prices to the consumer by up to 6%.

In the Channel Islands interconnectors are used to import low carbon (nuclear and renewables) energy from France which significantly reduces their per capita greenhouse gas emissions compared to the Isle of Man. Similarly, should the Island make an early switch to import a significant proportion of our electricity via our existing 60MW interconnector, rather than continue to generate from fossil fuels, then the Isle of Man would reduce declared emissions immediately. These emissions would be accounted for in the country of production, however, only if the imported power is from new renewable or low carbon sources would global emissions be reduced.

The changes introduced by the Climate Change Bill mean that both Manx Utilities and/or privately owned companies could invest in new generating assets and interconnectors, and they would have to make power purchase decisions based on emissions reduction plans and statutory target rather than purely from the economic perspective required under the Electricity Act.

Should the new assets not be owned and operated by Manx Utilities then the future role of Manx Utilities could change to become that of Network Operator and Supplier, providing grid stability, balancing services and supplying electricity to consumers.

It is proposed that in the Climate Change Plan 2022-2027 we will commit to:

1. Finalising an Energy Strategy to achieve 75% electricity from renewable sources by 2035 and net zero emissions by 2050, acknowledging the energy trilemma of balancing the environment, cost and security of supply.
2. Setting an achievable and equitable target to decrease emissions from energy generation by 2027.
3. Commencing feasibility studies and other preparation for at least one additional interconnector which would allow additional import and export of electricity (required for all possible energy scenarios identified to date).
4. Commence feasibility studies on biofuel-capable dispatchable plant, to replace the aging diesel generators that can be used to maintain security and stability of the Isle of Man electrical system.

5. Reducing commercial export of fossil fuel generated electricity to the UK, to achieve an optimised decrease in emissions.
6. Conduct detailed feasibility studies on the first phase of a new, renewable source of electricity generation baseload.
7. Identifying sustainable local provision of biofuel for electricity generation and home heating, which will also maximise sequestration potential and benefit ecosystems and biodiversity (exploring relative benefits of wood, fuel crops, the use of waste products, appropriate combinations of fuels and other sources).
8. Identifying verified sustainable sources of imported biofuel to inform future decisions on import versus local production.
9. Working with Manx Utilities on the roll out of smart metering to assist in the management of peak demand, helping consumers to be aware of and manage their power usage, enabling the optimisation of the distribution network with the increased electricity demand from the roll out of electrification (e.g. for EVs and heat pumps) and monitor reductions in electricity demand elsewhere.
10. Helping consumers to be aware of their carbon footprint including their contribution from power usage and how they can change their behaviour to reduce this footprint.
11. Continuing to explore and encourage additional renewable electricity generation at all scales, where feasible.
12. Exploring a scenario where the Manx Utilities manage our national grid and supply consumers, whilst the public and private sector work with them to generate our future electricity.
13. Enabling individual residents and businesses to invest in their own generation (such as solar PV), as part of addressing their own consumption needs where it is in-line with the principles of just transition.

Summary of current situation

Electricity is probably the most important sector to decarbonise as emissions reduction from other sectors (especially heating and transport) is dependent on this sector. As the uptake for electric heating and electric vehicles increases, the electricity sector will have to grow to meet demand.

The majority of the Isle of Man's electricity is sourced from fossil fuels, with small amounts of green electricity generated from hydro-electric and imported via the interconnector from the UK. The interconnector also provides a route to export electricity to the UK. Current legislation requires Manx Utilities to optimise its operations to provide the lowest cost solution for its customers. In recent years UK electricity demand and wholesale electricity prices have risen, increasing the amounts of electricity exported from the Isle of Man to the UK. In future, the Climate Change Bill will add in a duty to deliver emissions reductions so future export of electricity will become incompatible with our climate change commitments.

The Future Energy Scenarios Strategy has now been completed and has provided several possible routes to allow the total decarbonisation of electricity by 2050. These scenarios all require interconnection to the UK to provide stability, with varying levels of renewable biomass to reduce costs across peak demands and varying levels of intermittent renewables. Scenarios deploying an increased level of intermittent renewables have both a higher construction cost and a potential higher cost to the bill payer. The scenario with the lowest cost to consumer utilises interconnectors, renewable biomass and low levels of small-scale wind and solar.

Consultation questions:

5. **How much do you feel you understand about Emissions Category 1a - Energy Generation?**
   - ☐ I am new to the topic
   - ☐ I have a basic understanding (e.g. previous reading for general interest)
   - ☐ I have a strong understanding (e.g. experience in a professional capacity; higher level or undergraduate study)
   - ☐ I have an expert understanding (e.g. postgraduate academic qualification in the field, expert role in a business in this area)

6. Security of supply

We currently have an electricity supply system that has a high level of resilience to faults and weather, where peak demand can still be met if the two largest generators are unavailable for use. This gives us a low risk of losing power on the Island and has resulted in the majority of Island residents and businesses having no interruptions for many years.

Having high resilience means there are additional assets to maintain, which results in slightly higher electricity costs to the consumers. Having a lower resilience means the risk of interruption to electricity supplies would be higher, and the duration of interruptions could be longer.

How important to you is this current high level of resilience?

- ☐ Not at all
- ☐ Somewhat important
- ☐ Very important
- ☐ Essential

Would you be willing to accept a somewhat lower level of resilience if it would reduce the cost of electricity?

- ☐ Yes
- ☐ No
- ☐ Not sure

Would you be willing to accept a situation where power usage could be limited during periods of high demand, if it would reduce the cost of electricity? This could mean not being able to use certain energy-intensive appliances in the evening.

- ☐ Yes
- ☐ No
- ☐ Not sure

7. Rapid reduction of emissions

Currently Manx Utilities export electricity generated on the Island (worth around £3.9M net income in 2019) and use this income to help reduce the unit cost of power to consumers.

Should we cease this commercial export of electricity in order to reduce the Isle of Man emissions?

- ☐ Yes
- ☐ No
- ☐ Not sure

Should we rapidly reduce the Isle of Man emissions by import renewable power through the existing interconnector rather than generating our own emissions-intensive power?

- ☐ Yes
- ☐ No
- ☐ Not sure

Would you be willing to accept an increase in your electricity bill in order to reduce the Isle of Man emissions by ceasing export of electricity?

- ☐ Yes
- ☐ No
- ☐ Not sure

If you had the choice, would you opt to pay more for a green electricity tariff to support this emissions reduction action?

- ☐ Yes
- ☐ No
- ☐ Not sure

8. On-island Renewables

From the work that has been carried out by independent engineering and consultancy firm Ove Arup we understand that generating renewable electricity on the Island will be more expensive than importing renewables generated in neighbouring jurisdictions where they can be produced at scale.

How important to you is the local renewable generation of electricity, compared to import?

- ☐ Not at all
- ☐ Somewhat important
- ☐ Very important
- ☐ Essential

Would you be willing to pay more to have renewable generation in the Isle of Man rather than imported?

- ☐ Yes – a lot more
- ☐ Yes – a little more
- ☐ No – I would not be willing to pay more

What is the most important to you (please rank between 1 and 4, with 1 being most important):

- affordability and cost: _____
- green and sustainable electricity: : _____
- resilience of supply (minimising black outs) : _____
- independence of generation (generating our electricity on-Island) : _____

9. On-Island Dispatchable Renewable Generation

When intermittent renewable sources are unavailable, electricity prices can be very high due to a shortfall of dispatchable* (rapid response) capacity. In three of the scenarios it is proposed that dispatchable generation with biofuel* is used. This will allow the Island to generate power at peak periods when intermittent renewables are unavailable, at lower cost than importing from GB. This would also supplement the security and resilience of our Isle of Man electrical system.

Dispatchable energy generation refers to sources of electricity that can be provided on demand.

Biofuel in this context means fuels in solid, liquid or gas form which have been produced directly or indirectly from organic material from a contemporary source.

Would you be supportive of installation of a renewable biofuel dispatchable generation plant?

- ☐ Yes
- ☐ No
- ☐ Not sure

Would you be supportive of importing sustainably-sourced biofuel for use to increase resilience and generate more power locally?

- ☐ Yes
- ☐ No
- ☐ Not sure

Would you be supportive of exporting renewable dispatchable power to the UK in order to subsidise local costs of electricity?

- ☐ Yes
- ☐ No
- ☐ Not sure

B. HYDROCARBON EXTRACTION

A licence has been issued to a company to explore for hydrocarbons in the Isle of Man territorial seas. Previous studies indicate 90-890 billion cubic feet of natural gas may be present below the seabed. If this deposit was commercially viable and extracted then the Isle of Man would generate fossil fuel revenue for the Isle of Man Government.

However, we estimate that an additional 330,000-3.2M tonnes of CO2 could be released in the Isle of Man (the lower values reflect emissions should the gas be exported and the higher values if it was used locally) if the fuel was exported. These emissions would be released over the 18 years term of the production phase of the licence at approximately 18,000-180,000 tonnes per year (potentially increasing our annual greenhouse gas emissions by up to 25%). So, should exploration lead to production this would generate revenue for the Isle of Man Government but would also dramatically increase the challenge to reach net zero and the costs associated with cutting other emissions or finding other solutions (including additional natural carbon sequestration or artificial carbon capture and storage).

The Oil & Gas Authority estimate that the gas extracted from the UK Continental Shelf has an average emission intensity of 22 kg/CO2e/barrel of oil equivalent. Natural gas can be utilised for the production of "blue hydrogen", which is expected to have some role in the transition to net zero emissions across the British Isles. This involves removing carbon from natural gas to form hydrogen and carbon dioxide. The carbon dioxide must then be captured artificially and stored to avoid emissions. This currently has a high cost of both electricity and storage.

The current advice from the IPCC is not to instigate further extraction of fossil fuels, particularly at new sites and it is therefore proposed that in the Climate Change Plan we commit to ensuring that we issue no further licences for fossil fuel exploration and extraction in Manx territory.

Consultation questions:

13. How much do you feel you understand about Emissions Category 1b - Hydrocarbon Extraction?

- ☐ I am new to the topic
- ☐ I have a basic understanding (e.g. previous reading for general interest)
- ☐ I have a strong understanding (e.g. experience in a professional capacity; higher level or undergraduate study)
- ☐ I have an expert understanding (e.g. postgraduate academic qualification in the field, expert role in a business in this area)

10. On-Island Baseload Generation

The UK and Republic of Ireland have a shortfall of baseload generation assets. Due to this shortfall, UK peak-load prices can be high providing an opportunity for baseload generators to profit. This shortfall currently provides a route for the Isle of Man to supply electricity to the UK through the interconnector, which helps to keep the local cost of electricity from increasing.

Are you supportive of generating excess electricity from carbon neutral baseload generating plant for export to the UK, which would subsidise local costs of electricity?

- ☐ Yes
- ☐ No
- ☐ Not sure

11. Structure and ownership of our electrical system

Manx Utilities is a vertically integrated electricity utility. This means that it controls the operation of its own generation assets, networks and customer supply. Manx Utilities is able to operate its assets in an economic and secure manner in order to always meet the Island's demand for electricity.

If generation assets were owned and operated by private companies, Manx Utilities would take on the role of Grid Operator and would have to establish a sophisticated system of services in order to ensure that the costs of operating the system were fairly distributed between the generators and that there was always sufficient supply available to meet demand.

Are you supportive of private company ownership of new assets?

- ☐ Yes
- ☐ No
- ☐ Not sure

12. Please provide any further comments on the proposals around Energy Generation

14. **Would you be supportive of a ban on any future hydrocarbon exploration and extraction licences in Manx territory?**

- ☐ Yes
- ☐ No
- ☐ Not sure

15. **Please provide any further comments on the proposals around Hydrocarbon Extraction**

EMISSIONS CATEGORY 2
TRANSPORT

Headline target: In the Climate Change Plan specific targets to reduce emissions associated with transport by 2027 will be informed by ongoing work by the Department of Infrastructure, CCTT and the Transport Strategy. Any action to reduce transport emissions should be informed by the well-established sustainable travel hierarchy.

Transport accounted for 22% of the Island's emissions in 2019, making it our second largest emissions category after electricity generation.

A well-known approach to thinking about reducing emissions associated with transport is the green transport hierarchy whereby active travel like walking and cycling is prioritised, followed by public transport, taxis, car shares and finally private cars. As an island community, air and sea travel are a necessary part of our life and the emissions associated with travel to the UK is split between the Isle of Man and UK. Therefore, we believe that it is important that off-Island travel emissions are considered as part of the five year plan.

However, the economic and community importance to the Island community with an active tourist industry and business centre, air and sea travel need to be considered differently to domestic air travel in the UK for example, where there are viable, lower carbon alternatives.

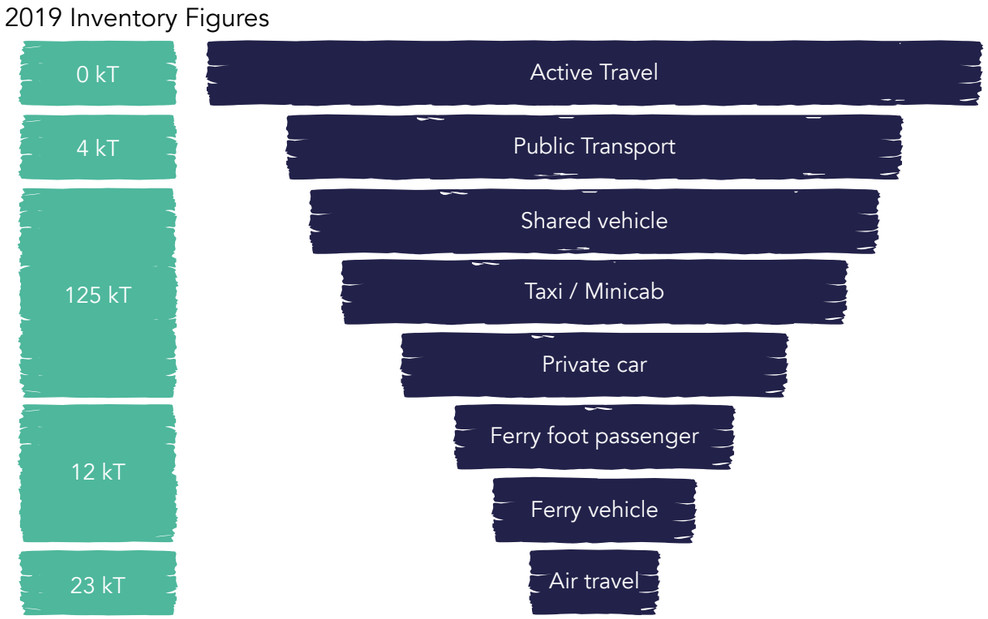


Figure 6: An example of the green transport hierarchy for the Isle of Man, showing the relative carbon contribution of different modes of travel from the 2019 emissions inventory

Right at the top of this hierarchy is reducing the need to travel. Planning policy in the Strategic Plan already supports walkable communities and access to public transport, but there are many new and existing residential areas which are not within walking distance of basic amenities such as schools, nurseries, shops, GP surgeries and workplaces. Creating more low-travel communities where people can access their main needs within a short walk (or other accessible means of travel) of their home (and encouraging those who could already do so to change their behaviour) could dramatically reduce the need to travel and could also enhance community cohesion and inclusivity for more members of our society. Some of our smaller towns like Ramsey, Peel and Castletown already have the essential ingredients for this, but a culture of car dependency means that many journeys are still by car. Approaches to strengthen planning policy are likely to be needed to support lower travel communities and lifestyles and to ensure where this is not possible that there is excellent access to walking and cycle routes, public transport and alternatives to individual car use will be necessary in future. Swapping our fossil fuel cars to electric vehicles or other carbon neutral options may also have wider co-benefits for our individual health and well-being and for a more equitable future.

A lot of work has already been led by the Department of Infrastructure (DOI) to promote active travel (walking and cycling), public transport and to ensure access for those with disabilities. Manx Utilities are continuing to roll out more electric vehicle charging points. Possibilities are also being explored around moving to biofuels for some fossil fuel vehicles. The development of driverless vehicles is likely to be a significant disruptive force to public transport and models of vehicle ownership. Before new emissions targets and action are established for the transport sector, strategic work is required to consider options for how the Island's transport networks will transition to a net zero future (which will be informed by the Future Energy Scenarios and Transport Strategy work).

By autumn 2021 we will have built on previous and on-going work by DOI around sustainable travel and we will have commissioned additional research to consider these issues and provide a path forward toward the decarbonisation of transport.

A ban will be implemented for registering new fossil fuel cars in the Isle of Man in 2030 (in line with the same commitment in the UK). In the Climate Change Plan appropriate dates will also be announced for banning the registration of second-hand fossil fuel cars and hybrid vehicles, and the ongoing use of existing registered fossil fuel cars, to help support a shift away from these vehicles well in advance of a ban coming into force.

Summary of the current situation:

The Isle of Man has a good public transport system that serves the main towns and villages very well. Facilities for active travel, like cycling routes and bicycle storage are improving all the time. However, it is acknowledged that the use of private fossil fuel vehicles is important to many people and of particular importance to those in rural areas. Alternatives to fossil fuel vehicles (for example electric or biofuel vehicles) will be an essential part of the transition. Encouraging people to begin to move away from fossil fuel vehicles, supporting viable alternatives and putting in place the necessary bans needs to begin as soon as possible. A holistic Transport Strategy is underway to look at the best approach for the Island to reduce the emissions associated with travel and this will inform the additional targets that will be set in the five year plan. Off-Island travel is essential for our community, both in terms of residents leaving the Island and visitors arriving. It also contributes significantly to our national emissions inventory and reductions in these emissions will be needed.

It is proposed that in the Climate Change Plan 2022-2027 we will commit to:

1. Banning the registration of new fossil fuel cars and light vans in 2030, followed by Hybrids from 2035, and considering if these bans could be brought forwards to commence within the duration of this plan, which ends in 2027.
2. Setting indicative dates for banning the routine use of fossil fuel vehicles to allow an equitable transition and to encourage uptake of alternatives.
3. Monitoring the heavy goods vehicle development to ensure appropriate uptake as the technology develops.
4. Building on extensive work already undertaken by DOI we will continue to transform on-Island transport away from fossil fuel car use and towards lower carbon alternatives.
5. Reducing the need to travel by supporting the development of more communities where services and amenities are available within easy walking distance (and ensuring that all new developments are fully served with facilities to reduce the need to travel, and options for active travel and public transport).
6. Ensuring that planning policy promotes low travel communities, active travel, public transport and electric vehicle charging infrastructure.
7. Promoting and supporting flexible working which reduces the need to travel whilst considering how town centres can still remain vibrant and attractive in support of the overall quality of life.
8. Promoting and supporting local provision of Government services in communities.

9. Promoting and supporting the development of hot desk spaces, digital infrastructure and other facilities for remote working in our communities.
10. Supporting the continued uptake of walking and cycling to work and for other necessary journeys, improving infrastructure, extent of cycle routes and safety.
11. Supporting the continued uptake of public transport by continuing to invest in low carbon buses, options for bus lanes, more frequent and faster bus routes, improving information and access and incentivising new users to switch to public transport.
12. Exploring the role of carbon taxes and vehicle road tax in changing travel behaviour, for example with escalations in tax on high emission cars and continuation of low tax on near zero cars, for a further period of the transition.
13. Continuing to build the infrastructure and access for electric vehicles and other low carbon alternatives to fossil-fuel vehicles, working to rapidly decrease the numbers and mileage of fossil fuel vehicles on our roads.
14. Exploring more innovative transport provision such as community car and bicycle share schemes and options for vehicle travel off-Island.
15. Considering the role for electric scooters as an alternative to car use (and consider the potential impact on pedestrians).
16. Considering disincentives to driving, including taxing of parking spaces and working with local authorities and DOI to increase parking charges whilst making park and ride options, and alternatives to driving cheaper, more convenient and more accessible to all transport users (including the elderly, disabled users and families with young children/prams), whilst balancing the need to service the town centre businesses with residents and tourists.
17. Exploring the emissions benefits of converting office space in Douglas into sustainable town-centre housing in conjunction with the new Manx Development Corporation to increase demand for services without the need for travel.
18. Exploring the use of biofuels in fossil fuel vehicles as an interim measure.
19. Promoting lower carbon off-Island travel (such as ferry and rail as a lower carbon substitute for flying and driving) and seeking to reduce the overall off Island travel in the long term.
20. Promoting strengthening of facilities and infrastructure for digital connectivity, networking and re-creating on Island opportunities and experiences for which, pre-COVID, we frequently travelled off-Island.

Consultation questions:

16. How much do you feel you understand about Emissions Category 2 - Transport?

- ☐ I am new to the topic
- ☐ I have a basic understanding (e.g. previous reading for general interest)
- ☐ I have a strong understanding (e.g. experience in a professional capacity; higher level or undergraduate study)
- ☐ I have an expert understanding (e.g. postgraduate academic qualification in the field, expert role in a business in this area)

17. Do you agree with the proposed commitments (points 1-20) in the extract above?

- ☐ Yes
- ☐ No

If no please highlight which actions you do not support and why

18. Acknowledging that travel to and from the Island by air or sea is likely to remain an essential part of our Island life, what measures do you think we could take to reduce these emissions?

Add your comments below

19. What improvements to facilities on the Isle of Man could reduce your need for off-Island business travel? Tick all that apply.

- ☐ None – I will always need to continue to travel for business as much as I did pre-COVID
- ☐ Better access to video and web conferencing tools and facilities
- ☐ Better internet connection at home or at work
- ☐ Better opportunities for in person conferences and networking on-Island
- ☐ More training and education opportunities

Anything else? Please also explain why you ticked yes to any of the above

20. Leisure travel: what improvements to facilities on the Isle of Man could reduce your need to travel off-Island for leisure purposes? Tick all that apply.

- ☐ None – I will always need to continue to travel for leisure as much as I did pre-COVID
- ☐ Better internet connection at home or in public places
- ☐ More leisure facilities & activities
- ☐ More family-friendly activities
- ☐ More shopping options
- ☐ More vibrant arts scene
- ☐ Better opportunities for sporting events
- ☐ More training and education opportunities

Anything else? Please also explain why you ticked yes to any of the above

21. What would help you opt to take the ferry and train instead of flying or taking a car:

- ☐ More information about the carbon footprint of different travel options
- ☐ Online booking option for ferry and train combinations
- ☐ Approval from employer for additional travel time for business travel
- ☐ Good access to wifi and working spaces on the ferry and train
- ☐ Better rail connectivity at ferry terminals
- ☐ Better information about services
- ☐ Better facilities for families
- ☐ Better facilities for disabled travellers
- ☐ More frequent sailings
- ☐ A carbon tax on travel that reflects the relative carbon footprint in the ticket price

Anything else? Please give details

EMISSIONS CATEGORY 3
ENERGY USE IN BULDINGS

Headline no regret action: Roll out and accelerate delivery of the new Green Living Grant and between 2022 and 2027, supporting households and businesses to significantly accelerate delivery of domestic and business building energy efficiency and phasing out of fossil fuel heating (an ambitious percentage reduction target will be set in the Climate Change Plan, informed by the Renewable Heating Strategy and other ongoing work).

The emissions from residential buildings accounted for 20% of net Isle of Man greenhouse gas emissions in 2019, the third biggest emissions category. When taking emissions from heating commercial buildings into account, it becomes the second-largest emission category. This is through heating and hot water systems which are still almost entirely fossil fuel based.

Our society has evolved into a carbon-intensive one and whilst we've known about saving energy for decades and the energy efficiency of many traditional household appliances like fridges and washing machines have improved, our lives are more dependent on other electronic devices (particularly phones and computers). Building standards for new houses are continually improving but a recent survey of house condition on the Isle of Man has also revealed that we have done little to improve the energy efficiency of our older homes. It is often quoted that around 80% of the buildings that will be in place in 2050 are already built, so retrofitting (adapting our current buildings) is going to be an essential part of cutting the emissions from homes and other properties.

Key challenges around improving home energy efficiency and moving away from fossil fuels is determining what the most effective measures are for each home and who is going to pay for the potentially expensive work that is required. The Green Living Grant (due to be launched in the autumn) will begin to address some of these challenges but it is acknowledged that a much wider scheme will be needed to deliver the scale of emissions reductions that are required.

We are currently reliant on fossil fuel gas and oil for our home heating, with a very small number of homes currently using heat pump technology or other solely electric heating options.

Work to develop the Renewable Heating strategy is underway. This strategy is due to be delivered in winter 2021. This strategy will provide recommendations on the best mix of technologies that will enable home and business heating to reach net zero greenhouse gas emissions. This will include consideration of:

- District heating schemes, such as large-scale biomass and geothermal projects and smaller scale projects to use waste heat (e.g. from data centres)
- Carbon neutral gas over existing or upgraded networks (hydrogen gas and biomethane)
- Individual small-scale renewables such as solar thermal heating and biomass boilers

- Electrical solutions such as air- and ground-source heat pumps

In addition to new technological solutions, the strategy will consider the role of transition fuels such as blended biofuels in the journey to net zero. It is likely that the work will identify a combination of solutions, tailored to property types.

- For properties with high efficiency, or requiring minimal insulation improvements, electrical heating (e.g. ground source heat pumps, air source heat pumps, water-source heat pumps, waste-heat recovery systems) are likely to be the most cost-effective route for consumers.
- For properties with medium efficiency, or requiring greater insulation improvements, hybrid heating involving electric heating in tandem with biofuels is likely to be the most cost-effective route.
- For properties with low efficiency, or requiring very high levels of insulation improvements, biofuels are likely to provide the best route to transition.

A key part of the strategy will be identifying technology that works in the Isle of Man context and suits the unique nature of the Island's mix of buildings and high proportion of traditional and historic buildings. Consideration of the energy efficiency upgrades that will be required will be a central part of the proposed solution.

Once the Renewable Heating Strategy is delivered, work will begin on implementing the recommendations and undertaking additional feasibility studies as required. The Strategy will inform specific targets on energy efficiency and home heating in the Climate Change Plan and will allow us to adapt and improve the Green Living Grant to cut emissions whilst avoiding unintended consequences (the Green Living Grant will be reviewed after one year of operation, seeking to further enhance its effectiveness).

A key area of work linked to the delivery of renewable heating and energy efficiency is upskilling the construction sector, and the associated trades which are essential in helping home-owners transition to lower carbon living. Existing contractors will need support to become accredited in installation and maintenance of new technologies such as heat pumps and the options for retrofitting all types of homes for maximum energy efficiency. A key challenge for the Government and the Manx industry will be to ensure that measures are appropriate for the large number of traditional and historic buildings that will need to be adapted. The Climate Change Transformation Team is already working closely with University College Isle of Man and Construction Isle of Man to put this training in place and support the industry to develop the appropriately skilled workforce that will be needed.

Putting the right measures in place in terms of planning policy will also be important.

Providing incentives is one way to help move our society towards a greener future. Regulation is another important strand. In the UK, the EU and many other countries around the world a requirement has been in place for many years for buildings to be assessed for their energy efficiency before they are sold or rented out. An Energy Performance Certificate is issued which clearly explains how the property compares to others in the same category and indicates areas for improvement. Minimum standards are also set for rental properties. This measure helps to improve the quality of buildings and reduce the emissions they produce. Improving standards in the private rental sector also has benefits to the tenants in terms of being cheaper to heat and healthier to live in. A similar approach will underpin the delivery of the Green Living Grant, providing support for households to gain their initial Manx equivalent of an Energy Performance Certificate, which will give them guidance on the work needed to improve energy efficiency.

It is proposed that in the Climate Change Plan 2022-2027 we will commit to:

1. Concluding and implementing the Renewable Heating Strategy, which will inform most of the following commitments.
2. Commencing a public engagement campaign promoting energy efficiency in homes and businesses, to improve confidence to make change.
3. Significantly reducing residential energy use by 2027, through energy efficiency and home heating initiatives, supported by the Green Living Grant scheme. Support for this will be focussed on the homes and individuals most in need.
4. Ensuring that all initiatives seek to ensure a just transition.
5. Introducing changes to our Planning Policy to ensure that future planning application decisions contribute to the emissions reduction initiatives across all segments, either through changes to the Strategic Plan or a National Policy Directive.
6. Implementing the agreed ban on the installation of fossil fuel boilers in new build houses in 2025 and consider bringing this forward to 2023 subject to this conclusion.
7. Taking a decision and announcing dates for the banning of the replacement and eventually use of existing fossil fuels for heating, which will be informed by the ongoing Renewable Heating Strategy. This will give plenty of time for home-owners and industry to adjust and to encourage early uptake of alternative technologies or appropriate hybrid technologies.
8. Acknowledging clear signalling of these proposals will support a just transition and contributes to reductions in emissions by 2027 through changing boiler replacement behaviours.

9. Working with DfE, UCM, Construction Isle of Man and the wider industry to upskill and reskill the sector in skills needed to achieve our net zero goals.
10. Bringing forward proposals to further improve Building Regulations for new builds by setting the standards to AECB (Association for Environment Conscious Building) equivalent levels within the next year (achieving 97% energy efficiency in new builds).
11. Implementing a requirement for Energy Performance Certificates or equivalent when selling or renting out a property by the end of 2023.
12. Implementing an appropriate minimum Energy Performance Certificate standard for rental properties.
13. Exploring the use of biofuels to replace fossil fuel oils in home heating.
14. Exploring low carbon alternatives to fossil fuel gas in home heating.
15. Proposing a pilot scheme for whole house retrofit and whole street/terrace approaches (to rapidly decrease emissions from homes and take advantage of cost savings and other benefits of tackling multiple properties together).
16. Exploring adoption of smart-heating technologies to promote energy efficiency of heating solutions.
17. Undertaking a retrofit programme for most significant public buildings by 2027.
18. Bringing in bans on sale and burning of coal, peat and wet wood, during the period of this plan.
19. Banning the sale of low efficiency household appliances.
20. Banning the sale of conventional light bulbs.

Summary of current situation

Emissions from space and hot water heating are gradually decreasing. Primarily this is due to efficiency improvements and insulation, however the gradual uptake of electric heating (e.g. air source and ground source heat pumps) are now starting to play an important role.

The majority of heating on the island is produced from fossil fuels – either natural gas or oil. As space heating requirements vary dramatically depending on building fabric and insulation and there is a diverse mix of properties on island, this is one of the hardest sectors to transition. There is also unlikely to be one single solution for all properties on the Isle of Man. The Green Living Grant, which has already been launched, will play a small but important part in this reduction, particularly by increasing energy efficiency.

The Renewable Heating Strategy is also underway to provide routes for improving building fabrics to reduce space and water heating requirements, as well as to provide routes for the decarbonisation of heating.

The results of the strategy will be published towards the end of 2021 and will inform the Climate Change Plan.

Consultation questions:

22. How much do you feel you understand about Emissions Category 3 - Energy Use in Buildings?

- ☐ I am new to the topic
- ☐ I have a basic understanding (e.g. previous reading for general interest)
- ☐ I have a strong understanding (e.g. experience in a professional capacity; higher level or undergraduate study)
- ☐ I have an expert understanding (e.g. postgraduate academic qualification in the field, expert role in a business in this area)

23. Do you agree with the potential actions (points 1-20 in the extract above) as a way to cut emissions associated with homes and other buildings?

- ☐ Yes
- ☐ No

If no please highlight which actions you do not support and why

What additional measures to cut residential emissions do you think need to be included in the Climate Change Plan for 2022-2027?

24. Which of the below do you think is most important for driving energy improvements in the Island's residential and commercial properties?

- ☐ Improved information and advice
- ☐ Reduced cost of improvement works
- ☐ Legislation to force improvements
- ☐ Other (please specify below)

If other, please specify

If you support the use of legislation to force improvements, which legislative measures would you support [tick all that apply]

- ☐ Compulsory Energy Performance Certificates for all properties at point of sale or rental, to help new occupants understand the further work required.
- ☐ Increased obligations to address energy efficiency as part of planning applications.
- ☐ Requirement for AECB Silver rating for new buildings (or equivalent energy efficiency rating)
- ☐ Other energy efficiency standards for new builds – please give details

If other, please specify

EMISSIONS CATEGORY 4
AGRICULTURE

Headline no regret action: Continue to work with the agriculture industry to identify key sources of agricultural emissions and develop action plans to reduce them. An ambitious percentage reduction target for emissions from this sector will be set in the Climate Change Plan, informed by further research and consultation.

Farmers are the main custodians of our countryside, with farmland accounting for a large proportion of our land area. In 2019 it is estimated that agriculture accounted for 14% of the Isle of Man's net greenhouse gas emissions, making it the fourth largest emissions category. The majority of agricultural emissions come from livestock (methane) followed by soil treatment.

In the work to support the IMPACT report it was estimated that Manx agricultural emissions could be reduced by over 28% using relatively low impact activities such as reducing soil tillage and soil compaction, planting cover crops, measures to increase soil biodiversity, changes to fertiliser use and adapting livestock feed.

The Manx National Farmers' Union (MNFU) is already investigating the sources of agricultural emissions (co-funded by DEFA) and taking proactive measures to reduce those emissions and to increase sequestration. They are also keen to further explore the possibilities for promoting opportunities for renewable electricity generation on a farm scale. This work needs to continue and to provide a better picture of areas of opportunity to reduce emissions.

The new Agri-Environment Scheme, launched earlier this year, rewards farmers for measures which increase carbon sequestration, improve ecosystems and enhance biodiversity. It will be important to work with the agriculture industry and DEFA to regularly monitor, and review, how effective this scheme is in bringing about positive outcomes for climate and ecosystems.

In recent years there has been a big push towards increased Manx food production and self-sufficiency. In addition to the benefits to the local economy, increasing local consumption also has emission reduction benefits. Food produced in the Isle of Man but exported to the UK is accounted for in our emissions, as are the emissions associated with shipping of food imports, so there are likely to be emissions benefits of increased local production and consumption.

As with all areas of climate change, giving people the tools to make the best low emissions choices is key. The MNFU is being proactive in engaging with experts on emissions reduction, and one option would be to establish a pilot scheme or demonstration farm to showcase best practice in reducing the emissions associated with meat and dairy production and to best use the farm estate for sequestration and to promote ecosystem services and biodiversity.

Recent work by the IPCC has emphasised the value of plant-based diets and advised on the reduction of meat consumption. Recent FAO reports have clearly demonstrated that production systems in different regions of the world achieve very different levels of emission per unit of food, with for example food produced in the US typically having significantly higher carbon footprints than food produced in the EU. This gives strength to the perceptions that that Manx agricultural techniques are conducive to lower emissions associated with the production of meat, in comparison with meat produced on a more industrial scale and imported.

More research is required to verify this. Nonetheless, given global messaging around the emissions associated with meat, it is likely that meat consumption will slowly decline. Fully understanding the emissions associated with Manx-produced meat and making comparisons with alternatives will help inform consumers and ensure appropriate future policy in this area.

It is proposed that in the Climate Change Plan 2022-2027 we will commit to:

1. Working with farmers to reduce agricultural emissions (target to be included in the plan).
2. Working with the industry to improve understanding of low emission farming techniques and opportunities for maximising sequestration in natural habitats
3. Assessing the effectiveness of the Agri-Environment Scheme and other support schemes to deliver emissions reductions, enhance sequestration and protect biodiversity, and if necessary work with DEFA and the industry to adapt schemes to improve outcomes for climate and nature.
4. Working with the industry to establish a range of low carbon demonstration farms to showcase best practice in emissions reduction, increased sequestration and improvement to ecosystems and biodiversity.
5. Continuing to promote more local consumption of locally produced foods (and highlight the imported foods with the highest emissions), and explore options to decrease imported foods and decrease exports where there are benefits (considering emissions and wider environmental impact, economic and food security).
6. Labelling locally-produced foods to inform consumers of carbon footprint and help consumers to make low emissions choices.
7. Consider restricting or banning the use of some fertilizers and pesticides and/or develop local guidance to reduce emissions and enhance biodiversity.

Summary of current situation

Globally, food production is estimated to account for between 21 and 37% of emissions. These emissions are associated with agricultural practices and with food waste in the supply chain. In the Isle of Man work is underway to identify the main sources of emissions and how they could be reduced. Whilst efforts to reduce our national greenhouse gas inventory will focus on reducing emissions associated with farming practices and maximising opportunities for sequestration, we also need to think about the impact of our consumer behaviour on agricultural emissions internationally, aligning with the climate justice principle enshrined the Climate Change Bill.

Consultation questions:

25. How much do you feel you understand about Emissions Category 4 Agriculture?

- ☐ I am new to the topic
- ☐ I have a basic understanding (e.g. previous reading for general interest)
- ☐ I have a strong understanding (e.g. experience in a professional capacity; higher level or undergraduate study)
- ☐ I have an expert understanding (e.g. postgraduate academic qualification in the field, expert role in a business in this area)

26. Do you agree with the potential actions described above to cut the emissions associated with agriculture?

- ☐ Yes
- ☐ No

If no please highlight which actions you do not support and why

What additional measures to cut agricultural emissions do you think need to be included in the Climate Change Plan for 2022-2027?

27. What would influence you to buy food with a lower carbon footprint?

- ☐ Local food labelling displaying carbon footprint information
- ☐ Initiatives to extend food shelf life, to reduce food waste
- ☐ Promotion of a diet lower in red meat and dairy consumption in line with World Health Organisation and IPCC advice
- ☐ Other – please give details below

EMISSIONS CATEGORY 5
BUSINESS

Headline no regret action: We will work with local businesses to understand their emissions and give them the tools and support to reduce their emissions. An ambitious percentage reduction target will be developed with the business community and set in the five year plan.

The emissions associated with business accounted for 7% of our total emissions in 2019. Key emissions associated with business include heating and cooling premises and products, but more work is required to understand business emissions and how they can be effectively reduced.

Many local businesses are already taking a proactive approach to assessing and reducing their emissions. For example, the Isle of Man Chamber of Commerce has a Climate Change Programme to work with Government on finding climate solutions and assist the business community in delivering on climate change. Many businesses are also signed up as Biosphere Partners and work to support the delivery of the United Nations Sustainable Development Goals.

The increasing commitment to Environment, Sustainability and Governance (ESG) by local businesses means we may need to initially import extra renewable energy to meet their ESG commitments, whilst local sources are expanded.

The current work to develop a long term economic strategy for the Island is exploring the scope for the economic development of the green finance sector and if this offers economic opportunity, it is likely that the Island's climate change initiatives will be expected to provide a clear reputational contribution to the credibility of these initiatives.

It is proposed that in the Climate Change Plan 2022-2027 we will commit to:

1. Identifying the largest sources of business emissions and work with their producers to reduce these significantly (target to be established).
2. Exploring regulation and incentivization to increase energy efficiency of commercial heating and cooling equipment.
3. Providing local businesses with clear guidance and training to promote emissions reduction and protection of carbon sequestration and other ecosystem services.
4. Encouraging businesses to undertake carbon audit to inform their responses.
5. Developing an online toolkit to support businesses in their efforts to reduce emissions
6. Introducing an initially voluntary disclosure process for business emissions in parallel with global trends on this aspect.
7. Implementing a local offsetting scheme for businesses to offset through local investment in emissions reduction or carbon sequestration projects on the Island.
8. Providing renewable electricity to assist with ESG requirements.
9. Developing mechanisms to recognise excellence in emissions reduction in the business community, for example via the UNESCO Biosphere Isle of Man partnership programme.

Summary of current situation

Business emissions make an important contribution to our overall emissions. Whilst many businesses are already engaged in emissions-reducing activities, there is the need to accelerate the reduction of those emissions. Government will play a key role in assisting businesses to reduce their emissions, particularly via the transition to renewable energy. Businesses will also be able to benefit from enhanced commitments to high standards in Environment, Sustainability and Governance (ESG), particularly in the context of the UNESCO Biosphere Reserve designation.

Consultation questions:

28. How much do you feel you understand about Emissions Category 5 - Business?

- ☐ I am new to the topic
- ☐ I have a basic understanding (e.g. previous reading for general interest)
- ☐ I have a strong understanding (e.g. experience in a professional capacity; higher level or undergraduate study)
- ☐ I have an expert understanding (e.g. postgraduate academic qualification in the field, expert role in a business in this area)

29. Do you agree with the proposed commitments (points 1-9) in the extract above?

- ☐ Yes
- ☐ No

If no please highlight which actions you do not support and why

What additional measures to cut business emissions do you think should be included in this Climate Change Plan?

30. Which initiatives do you think would help businesses achieve reductions in emissions and increases in carbon sequestration:

- ☐ Better information to clarify what individual businesses should do.
- ☐ Training to provide the skills to undertake necessary work.
- ☐ Legislation to require businesses to prioritise cuts in emissions.
- ☐ Schemes that highlight or reward emissions reductions e.g. Gold Biosphere partner status

Other – please give details below

EMISSIONS CATEGORY 6
WASTE MANAGEMENT

Headline no regret action: Informed by a full waste management and emissions reduction strategy, we will reduce all forms of waste, promoting the concepts of reduce-re-use-recycle to cut waste at source, move away from the concept of single-use items and promote recycling wherever possible. A circular economy approach will also focus on reducing the production of waste and planning for the whole life cycle of goods produced and used in the Isle of Man. An ambitious target for reducing emissions associated with waste will be set in the Climate Change Plan.

Waste management accounted for 3% of net emissions in 2019, with a further 3% associated with the use of the Energy from Waste plant (which are included under electricity production emissions). The majority of emissions under the Waste Management category relate to the degradation of historic landfill waste. We need to understand more about the sources of these emissions and how we can reduce them.

Recycling is known to be an issue of concern to the public and perceived failings around Island recycling (e.g. limited kerb-side collection and clarity about best recycling options for different items) have been strongly linked to engagement and confidence on other environmental issues, especially climate change.

The Climate Change Bill enables the introduction of legislation to ban single use plastic items, in line with commitments in the 2019 Community Plastics Plan. Subject to further work and public consultation the following single-use items will be banned: plates, plastic carrier bags, stirrers, straws (with necessary exceptions i.e. medical use), cutlery, polystyrene food containers, polystyrene cups, plastic stemmed cotton buds, balloon sticks and oxo-degradable plastics. It is also proposed that the manufacture, sale and distribution of rinse-off personal care products that contain plastic micro beads will be banned.

We also need to re-visit the potential to generate energy from a wider range of waste products and the need to reduce the emissions associated with the waste sector.

We must also ensure that we understand the waste and circular economy implications of new initiatives – for example how we will recycle or otherwise dispose of electric vehicle batteries.

Finally, changing behaviour away from high consumption of over-packaged and disposable goods to a ‘reduce – re-use – recycle’ approach will be essential. A circular economy bill was proposed by James Curran in the IMPACT report and further work is required on this topic.

The issues of food and plastic waste are often viewed from the perspective of environmental damage, however, they are also significant climate change issues, involving products with significant carbon footprints not being fully utilised and as such deserve further effort.

It is proposed that in the Climate Change Plan 2022-2027 we will commit to:

1. Reviewing waste management across the Island and developing a more efficient and proactive approach.
2. Quantifying emissions benefits of various waste management and recycling options and developing a clear emissions-based approach to recycling.
3. Developing a circular economy strategy to reduce waste and consider the full life cycle of products and considering the need for a Circular Economy Bill.
4. Working across all of the Island to reduce food waste and reduced the wasted emissions which they represent.
5. Ensuring full implementation of the Government and Community Plastics Plans and new plastics legislation.
6. Developing a plan for the safe recycling, storage and disposal of material associated with the transition to net zero, in particular electric vehicle batteries and other storage solutions.

Summary of current situation

Waste represents an important emissions category which requires further research and analysis to understand the key challenges and opportunities. Further work on waste management and promoting the circular economy is required. Good progress has been made on reducing the use of single-use plastics, which will reduce waste.

Consultation questions:

31. How much do you feel you understand about Emissions Category 6 - Waste Management?

- ☐ I am new to the topic
- ☐ I have a basic understanding (e.g. previous reading for general interest)
- ☐ I have a strong understanding (e.g. experience in a professional capacity; higher level or undergraduate study)
- ☐ I have an expert understanding (e.g. postgraduate academic qualification in the field, expert role in a business in this area)

32. Do you agree with the potential actions described above to reduce emissions from waste?

- ☐ Yes
- ☐ No

If no please highlight which actions you do not support and why

What additional measures to reduce emissions from waste services do you think need to be included in the Climate Change Plan for 2022-2027?

EMISSIONS CATEGORY 7
EMISSIONS REMOVAL

A. OUR NATURAL ENVIRONMENT:
CARBON RETENTION, SEQUESTRATION AND BIODIVERSITY

Headline no-regret action: Accelerate appropriate woodland planting, peatland restoration, protection and expansion of wetlands, saltmarshes, semi-natural habitats and other important carbon stores, and work to develop a strategic Land Management Plan to maximise carbon sequestration and minimise emissions associated with habitat loss and degradation.

Prioritise the ecological emergency and action on ecosystems and biodiversity loss alongside climate action, which will assist in delivery of both climate change mitigation (through increased natural carbon storage) and climate change adaptation (increasing our resilience to flooding, coastal inundation etc).

Reaching net zero greenhouse gas emissions by 2050 will depend on an effective, long term programme of land use management for carbon sequestration that is well underway by the end of this Climate Change Plan period. As a UNESCO Biosphere Reserve, the Isle of Man is in a unique position to champion to protection of our natural environment in support of climate goals and to contribute to global biodiversity goals.

A land-use and land-use change and forestry (LULUCF) project is underway and due to report by early 2022. This project will quantify the estimated total terrestrial carbon exchange occurring on the Island's land area. A framework from which to accurately track land use change and the associated changes in emissions will also be completed.

A Strategic Land Management Plan will have been commissioned and the first stage completed by winter 2021. We will have undertaken a combined review of current policies, strategies and legislation, financial mechanisms and incentives with an analysis of sectoral plans, key stakeholders and decision-making processes with identification of conflicting areas across different land use sectors will have been undertaken.

By late 2023 we will have produced an integrated plan that will provide the guidelines for land use and land use change across the Isle of Man, in line with the Government's goal to achieve net-zero greenhouse gas emissions by 2050. We will have undertaken a detailed feasibility study with projections for the production of biomass given the required generation outlined in the Energy Strategy.

It is now widely accepted that we are living in a time of rapid depletion and degradation of ecosystems and biodiversity. Rates of extinction are accelerating and the past two decades have seen unprecedented loss of habitats around the world. The Isle of Man has not yet formally acknowledged the ecological emergency or outlined its response, but the first statutory Climate Change Plan would be an opportunity to do so. Not only is the protection and restoration of biodiversity in our own interests because of the all the services provided to us by the natural world, it is also necessary to support climate action and to leave a better planet to our children and grandchildren.

The Climate Change Bill introduces a requirement for Government and public bodies to consider ecosystems and biodiversity. It is essential that we engage and educate public bodies, businesses and the wider public in the vital importance of ecosystems and biodiversity to our existence and practical approaches to protecting them.

It is proposed that in the Climate Change Plan 2022-2027 we will commit to:

1. Formally acknowledging the ecosystem and biodiversity crisis locally and globally and prioritising action on ecosystems alongside climate action.
2. Effectively protecting and restoring 30% of our land area by 2030 (in line with the recent commitment by G7 countries)
3. Continuing accelerated planting of appropriate woodland and restoration of peatland.
4. Developing a new Ecosystems and Biodiversity Bill to halt biodiversity loss and promote restoration of nature and ecosystems which are essential for climate change mitigation and adaptation.
5. Completing a strategic Land Management Strategy to enhance natural carbon storage, sustain and enhance ecosystem services and protect and restore biodiversity.
6. Increasing investment in the delivery of the current Biodiversity Strategy.
7. Banning the sale of peat compost in 2022.
8. Investing in the protection and restoration of wetlands, saltmarshes, semi-natural grassland and other semi-natural habitats and other carbon-storing habitats to enhance carbon storage, climate change adaptation benefits and biodiversity.
9. Ensuring that planning policy (whether in the new Strategic Plan or earlier in National Policy Directives) and site designation proactively protects carbon sinks from damaging development, whilst encouraging their improvement with net biodiversity gain.
10. Ensuring that education and engagement on natural carbon sequestration and the ecological emergency is integrated into climate change awareness campaigns.
11. Considering a green national service opportunity for young people and others to develop green skills and knowledge and build capacity for our low carbon future.
12. Assisting government departments and public bodies to deliver their statutory commitment to ecosystems and biodiversity.
13. Restarting and enhancing the Wildlife Grants Scheme to provide small grants for community groups to protect and restore biodiversity and enhance natural carbon sequestration.

14. Undertaking a rapid appraisal of the Area of Special Scientific Interest and National Nature Reserve network to how to enhance our effectiveness in protecting biodiversity and sequestering carbon.
15. Exploring a pilot rewilding project to demonstrate the ecosystems and climate potential of restoring natural ecosystems.

Summary of current situation

Protection and restoration of ecosystems and biodiversity are now acknowledged as key elements for climate action, supporting both emissions removals and also adaptation and resilience. Embedding ecosystems and biodiversity in our climate action plan will help us reach our net zero target and bring diverse co-benefits.

Consultation questions:

33. How much do you feel you understand about Emissions Category 7a - Removals?

- ☐ I am new to the topic
- ☐ I have a basic understanding (e.g. previous reading for general interest)
- ☐ I have a strong understanding (e.g. experience in a professional capacity; higher level or undergraduate study)
- ☐ I have an expert understanding (e.g. postgraduate academic qualification in the field, expert role in a business in this area)

34. Do you agree with the proposed commitments (points 1-15 in the extract above) to increase natural carbon sequestration and reverse ecosystem and biodiversity loss?

- ☐ Yes
- ☐ No
- ☐ Not sure

If no please highlight which actions you do not support and why

What additional measures to increase natural carbon sequestration and reverse ecosystem and biodiversity loss do you think need to be included in the Climate Change Plan for 2022-2027?

35. **How can we respond most effectively to the ecological emergency (please order the below in terms of priority between 1 and 4, with 1 being highest priority)**

- ☐ Introducing a new Ecosystems and Biodiversity Bill to provide a higher level of protection to our habitats and species: _____
- ☐ Increasing the resources available for government to deliver ecosystems and biodiversity, including for restoration, enforcement and community involvement: _____
- ☐ Supporting local organisations, communities, environmental NGOs and schools to carry out biodiversity, conservation and restoration projects: _____
- ☐ Accelerating work on Biodiversity Action Plans for threatened and declining species and habitats and ensure that implementation can be funded: _____

EMISSIONS CATEGORY 7
EMISSIONS REMOVAL

B. BLUE CARBON

OCEAN BASED CLIMATE SOLUTIONS

Headline target: Build on our science-based fisheries management and network of highly protected Marine Nature Reserves to maximise blue carbon (marine sequestration) and become a world leader in ocean-climate solutions.

Globally, the potential for the ocean to mitigate climate change has been increasingly recognised. Developments in emissions accounting and inventories mean that the carbon stored in marine ecosystems are starting to be used to offset emissions using the same approach as woodland planting on land. Recent scientific developments have also revealed the high level of emissions that could be associated with damaging fishing methods. There is a strong climate imperative to protect our marine environment and use only the most sustainable fishing methods. Whilst there is currently limited scope to use marine carbon sequestration in our formal emissions inventory, this is likely to change in the near future and blue carbon has great potential, particularly because marine habitats make up over 87% of Manx territory. With our network of ten Marine Nature Reserves effectively protecting over 10% of our waters and our science-based management approach to fisheries we are ideally placed to develop our blue carbon potential.

In Manx waters, estimates have indicated that blue carbon resources may sequester as much as 200,000 tonnes/ CO_2e per year, or around 27% of annual island emissions. Well-managed Marine Nature Reserves will boost this potential, as will a commitment to manage our fisheries with climate change in mind. It is proposed that in the Climate Change Plan 2022-2027 we will commit to:

1. Developing an ambitious blue carbon project which could realise multiple benefits for climate change, biodiversity, fisheries, recreation, tourism and well-being.
2. Building on our science-based fisheries management and network of effective Marine Nature Reserves to promote marine carbon sequestration and reduction of marine emissions.
3. Joining nations around the world in effectively protecting 30% of our territorial sea by 2030 (in line with the recent commitment by G7 countries) and instigating restoration of our marine ecosystems, supporting sustainable fisheries and ecosystem services.
4. Exploring opportunities to restore degraded marine habitats such as mud habitat, oyster reefs and horse mussel reefs to enhance biodiversity, ecosystem services and carbon sequestration.

5. Continuing our involvement in other international fora – e.g. the UNESCO Biosphere islands and coastal network where the IOM is leading collaboration on blue carbon.
6. Working with the fishing and wider maritime industries to explore scope to reduce emissions from vessels.
7. Exploring the scope for low emissions/high sequestration aquaculture projects e.g. for seaweed or bivalves that could promote lower carbon diets and sustainable use of the marine environment.

Summary of current situation

The Isle of Man has established a reputation for science-based fisheries management and implementation of effective Marine Nature Reserves. Building on this we will ensure that we maximise the potential for ocean-climate solutions, and develop the potential to lead in this area, as marine emissions and removals are expected to become more integral to international emissions reporting.

Consultation questions:

36. How much do you feel you understand about Emissions Category 7b - Blue Carbon (Ocean-based climate solutions)?

- ☐ I am new to the topic
- ☐ I have a basic understanding (e.g. previous reading for general interest)
- ☐ I have a strong understanding (e.g. experience in a professional capacity; higher level or undergraduate study)
- ☐ I have an expert understanding (e.g. postgraduate academic qualification in the field, expert role in a business in this area)

37. Do you agree with the potential actions described above to increase marine carbon sequestration and reduce emissions?

- ☐ Yes
- ☐ No
- ☐ Not sure

If no please highlight which actions you do not support and why

What additional measures to increase marine carbon sequestration and reduce emissions do you think need to be included in the Climate Change Plan for 2022-2027?

THE FUTURE /WORKING TOGETHER

ADAPTATION AND RESILIENCE

Whilst the current Climate Change Plan focusses on climate change mitigation (reducing emissions and increasing natural carbon storage), the new plan is proposed to outline the approach to climate change adaptation (preparing for and dealing with the impacts of climate change).

Further work is needed to consider how to effectively integrate adaptation and resilience into the new plan. In the IMPACT report James Curran proposed a Climate Change Adaptation Bill to go through Tynwald in 2023.

The current Adaptation Strategy was agreed in Tynwald in 2015 and focuses on the flood management, preparation for new human, animal and plant health challenges and increasing public awareness of the need to address and adapt to the implications of climate change.

Adaptation is one of the three main themes of the Paris Agreement and if the Agreement is extended to the Isle of Man in the near future, more focus on adaptation, locally and globally will be required.

The Paris Agreement goal on adaptation is

- to enhance adaptive capacity and resilience;
- to reduce vulnerability, with a view to contributing to sustainable development

DOI is currently undertaking a wide range of physical and infrastructure adaptation work and are leading on flooding and coastal erosion. Building our natural resilience is supported by DEFA's work in ecosystem protection, forestry and marine conservation.

Some initiatives have begun to address wider challenges around adaptation, for example the climate change course offered by University College Isle of Man which offers tools for individuals to understand and respond to climate change and the adaptation that will be required.

The UK Climate Change Committee recently published a report on UK climate adaptation and many of the issues raised will be useful in informing the Isle of Man's adaptation planning. In the UK situation, 8 key risk areas were identified for short term action:

1. Risks to the viability and diversity of terrestrial and freshwater ecosystems from multiple hazards.
2. Risks to soil health from increased flooding and drought.
3. Risks to natural carbon stores and sequestration from multiple hazards, leading to increased emissions.
4. Risks to crops, livestock and commercial trees from multiple climate hazards.
5. Risks to supply of food, goods and vital services due to climate-related collapse of supply chains and distribution networks.
6. Risks to people and the economy from climate-related failure of the power system.
7. Risks to human health, wellbeing and productivity from increased exposure to heat in homes and other buildings.
8. Multiple risks from climate change impacts overseas.

Summary of current situation:

Action to prepare and respond to climate change is an essential part of climate action and it is acknowledged that properly implemented adaptation will minimise the risks and maximise the opportunities from climate change.

Early action, implemented before impacts occur, will reduce vulnerability to current climatic variability, and build in resilience for decisions that have long lifetimes e.g. restoring damaged habitats.

Substantial climate adaptation is already underway, but it is often not explicitly linked to climate change. An Adaptation Strategy is in place but is becoming outdated and could be replaced by a new National Adaptation Plan which could look more widely at adaptation and our domestic and international commitments in this area. A more holistic climate change assessment (as recommended by the UK CCC) would also help to identify the interaction between mitigation and adaptation.

It is proposed that in the Climate Change Plan 2022-2027 we will commit to:

1. Developing and consulting on a new National Adaptation Plan.
2. Developing and consultation on a national climate change risk assessment considering the interlinkages between climate change adaptation and mitigation.
3. Communicating more effectively on climate change adaptation and what it means for the Isle of Man and internationally.
4. Actively engaging in international efforts to enhance adaptive capacity and reduce vulnerability.
5. Exploring how adaptation measures can be integrated into all sectoral policies to ensure good adaptation planning and risk assessment.
6. Ensuring that our ecosystem and biodiversity policies and practices are fully aligned with climate change adaptation and resilience.

Consultation questions:

38. How much do you feel you understand about Adaption and Resilience?

- ☐ I am new to the topic
- ☐ I have a basic understanding (e.g. previous reading for general interest)
- ☐ I have a strong understanding (e.g. experience in a professional capacity; higher level or undergraduate study)
- ☐ I have an expert understanding (e.g. postgraduate academic qualification in the field, expert role in a business in this area)

39. How do you think adaptation should be captured in the Climate Change Plan?

40. Do you support the proposal for a national adaptation plan?

- ☐ Yes
- ☐ No
- ☐ Not sure

41. How do you think the Isle of Man can contribute to international adaptation initiatives?

42. Do you think a Climate Change Adaptation Bill is required?

- ☐ Yes
- ☐ No
- ☐ Not sure

COMMUNITY ENGAGEMENT

Headline no regret action: Everyone in the Isle of Man will recognise the implications of climate and ecological crisis, fully understand and contribute to the Island's response, embrace their role in the transition to net zero and the recovery of ecosystems and will be galvanised to take actions that deliver emissions reductions.

The path to net zero will be a challenging journey for all of us. We will need to change all aspects of our life, from how we heat our homes to how we travel. We will need to make difficult choices about how we raise the significant funding required to cut emissions and how we spend climate change budgets in the most effective and equitable way.

To deliver climate action effectively Government will need to engage with all sectors of society on a wide range of often highly complex issues. To date, we know that public engagement has been limited and inadequate to fully inform this work and this will change, both as we develop the first statutory Climate Action Plan and in the first five year delivery period. The following outlines the emerging approach to community engagement which will be refined and included in the Climate Change Plan

Our Objectives:

People are aware of the actions that the Isle of Man Government is taking to address climate change and biodiversity loss and how it relates to their lives

- People understand the Island's climate and ecosystems targets and the actions and policies which will be required to reach them and the progress of these actions.
- To engage our community in the journey to net zero by 2050 by facilitating meaningful climate conversations with people – particularly those not currently engaged on the topic.
- Support trusted messengers to increase climate, ecological and ocean literacy.
- People can find, analyse and understand the data which will help them make informed choices on how to play their part in the journey to net zero and ecological recovery.

Encouraging adoption of low carbon lifestyles

- Work with stakeholders so that taking action on the climate and ecological crisis is normalised and encouraged in communities to ensure the Island achieves net zero.
- To help our stakeholders understand the need to change, using information, engagement and communications activity and through opportunities to participate.
- To create conversations in person and online which trigger positive action around zero carbon living and wider environmental protection.
- To work with partners to help people and organisations make connections to nature and biodiversity and act to protect and restore ecosystems.

It is proposed that in the Climate Change Plan 2022-2027 we will commit to:

1. Making climate change part of the conversation, in person and online – using key communications channels we will ensure that everyone is aware of the work we are doing to get to net zero, challenges and opportunities and how they can play their part in emissions reductions and ecosystem recovery.
2. Reviewing and developing the function of the Citizens' Forum and decide on the role of this body and other similar approaches to engaging the public.
3. Exploring other approaches to engaging and learning from representatives of the community and also specialists and interest groups.
4. Quantifying current levels of engagement and climate and ecosystems action and identify priority areas for future action, to support our community to transition to net zero (commissioning large scale surveys in 2022 & 2027 to measure change).
5. Establishing a climate change and environment community fund to finance small to medium projects to empower local communities to learn about climate change, take action and assist in the delivery of the five year Climate Change Plan.
6. Being transparent in our emissions reporting and our delivery of ecosystem protection, developing interactive dashboards to inform the public, businesses and other organisations, and assist their decision making.
7. Improving provision of climate action (particularly energy efficiency) advice online and via other means.
8. Increasing climate change education in Government, other public bodies, schools, University College Isle of Man and across business and in the community, developing a range of courses to give people the tools to act as individuals or on behalf of their organisations.
9. Supporting a team of climate change engagement officers in Government, public bodies, businesses and the community to work with organisations to engage and mobilise communities.
10. Working with partner organisations to promote the visual, cultural and heritage aspects of climate change and explore innovative engagement through culture, heritage and the arts.
11. Working with UNESCO Biosphere Isle of Man to mainstream climate action in our community and to deliver Biosphere objectives, UN Sustainable Development Goals, and maintain this high-profile international designation.
12. Developing and implementing appropriate carbon taxes to discourage carbon-intensive practices and promote low carbon operation (and contribute to funding climate action).
13. Establishing methods to encourage businesses to consider, and take action to actively contribute towards reducing their carbon footprint and supporting the overall direction and goals for the Island.
14. Establishing methods to make the climate and ecological implications of large national and smaller personal decisions easier to understand, to inform better decision-making for our environment.
15. Exploring the scope for improved labelling regarding product carbon footprints and carbon tax as a means to positively influence consumer behaviour.

Consultation questions:

43. How much do you feel you understand about Community Engagement?

- ☐ I am new to the topic
- ☐ I have a basic understanding (e.g. previous reading for general interest)
- ☐ I have a strong understanding (e.g. experience in a professional capacity; higher level or undergraduate study)
- ☐ I have an expert understanding (e.g. postgraduate academic qualification in the field, expert role in a business in this area)

44. Do you agree with potential actions on community engagement (points 1-15) in the extract above?

- ☐ Yes
- ☐ No
- ☐ Not sure

What additional measures do you think need to be included in the Climate Change Plan for 2022-2027?

What additional measures do you think need to be included in the Climate Change Plan for 2022-2027?

FUNDING, TAXATION AND FINANCE

The transition to net zero will involve significant investment from both the public and private sector, and directly by individuals. It should also be acknowledged that many climate actions will bring wider economic, social and environmental benefits to society (for example from improvements to air quality) and many will also generate significant savings (for example energy efficiency measures). Professor Curran's IMPACT report estimated that a budget in excess of £25m per year would be required to achieve Net Zero by 2050, increasing to £50m if the target is to be achieved earlier (this is in line with global estimates around national investment in climate action). Work is currently underway to understand these costs and the appropriate mechanisms by which funding can be raised.

There will be financial implications for Government taxation as society moves towards net zero – for example vehicle taxes and fuel duties – and taxation policy will need to adapt in order to produce the necessary funding for climate change mitigation as well as other Government funding priorities. In the current Programme for Government there is a target for a long term climate change funding strategy to be completed by February 2022 which would enable the commitment to the statutory Climate Change Plan.

Many countries are implementing, or have already implemented, policies to ensure that the societal and environmental cost of carbon emissions are accounted for in a market context. Global initiatives include:

- Carbon taxes for industry – where high-carbon emitters pay taxes on the amount of carbon they or their products produce, which makes the products less attractive to consumers and stimulates innovation to reduce carbon consumption and raises funds to support other emission reduction investments;
- Cap-and-trade schemes – where a Cap or set quota of carbon 'permits' are auctioned or sold for a given year. Businesses can then trade these permits in line with the amount of carbon they expect to emit which incentivises investment to reduce emissions. Over time the Cap is reduced;
- Direct taxes on inputs which create significant emissions, such as energy and fuel duty; and
- Development incentives – where funding methods are aligned to drive investment in green initiatives.

A recent report by the OECD (https://www.oecd.org/tax/tax-policy/tax-policy-and-climate-change-imf-oecd-g20-report-april-2021.pdf) highlights the importance of these types of initiatives in reducing emissions and the scope to raise significant funds for re-investment. They conclude that global carbon pricing will need to increase to $25-75/t CO2e by 2030 to enable the level of global investment required. Further work is required to consider the scope for implementation of Carbon Tax on Island.

Care is required to consider and address the social impact of these types of initiatives to ensure that the climate change transition takes place in a fair and equitable way. This is particularly important when considering taxation policy.

Other areas of relevance for carbon related taxation include measures to incentivise change, such as levels of food waste in the hospitality/food production & supply chain or to influence purchasing decisions such as higher levels of VAT or vehicle tax at the point of initial purchase.

The policy decisions around the Island's carbon taxation policies will be of critical importance to the overall economic strategy, currently underway. Decisions made now could make significant differences to the attractiveness of the Island to businesses and residents, and to the scope to fund ambitious climate action.

It is proposed that in the Climate Change Plan 2022-2027 we will commit to:

1. In parallel with the Island's developing Economic Strategy, further research and consultation to inform the development and implementation of appropriate carbon taxation within the plan period, including identifying how any revenue-raising taxation may be used to assist in funding our transition and influence changes in behaviour around emissions.
2. Investigating the potential for Government reserve funds and pensions to be invested in low-carbon and carbon-neutral industries and projects that benefit the Island.
3. Exploring how purchasing decisions can be better informed by making the products carbon footprint more influential in that decision, either through direct tax or more explicit labelling. This could reflect the production methods and or the degree to which the product has been designed for longer life, scope to refurbish and future recyclability.

4. Continuing with the development of an effective local offsetting scheme (currently underway and due to be trialled in 2022) to facilitate investment in climate action in the Isle of Man.
5. Working with Finance Isle of Man to explore and develop opportunities for the Isle of Man finance sector in the area of green finance.
6. Exploring a requirement for businesses to publish their emissions data and undertake local offsetting by 2026, to enable and inform investor decisions.
7. Investigating the feasibility of setting annual carbon allowances e.g. for energy providers, linked to carbon taxation or other penalties for exceeding the set allowances.

Summary of current situation

Funding the transition to net zero is a complex topic and one which will need to address over the next five years. The ongoing strategy work will help us understand potential costs of different transition options, and taking a full economic appraisal approach to climate policy decisions will ensure that co-benefits of climate action, as well as costs, are fully considered. It is likely that big steps in our transition, for example changing the way we generate our electricity or upgrading our buildings to reduce heating emissions, will have large costs associated with them. The method by which these investments are funded still needs to be determined.

Taxation and imposing financial penalties have a role in both revenue generation and influencing behaviour of individuals and organisations. It should also be acknowledged that transition will lead to significant reductions in some revenue streams, particularly those associated with duty on fossil fuels and this shortfall will have to be addressed.

Government financial support for climate action will also be key, whether through lending, or providing grants to those least able to pay. We acknowledge that we are at an early stage in considering these questions and we will continue to build on the research in this area to make sure that we make decisions that are effective from a climate perspective and appropriate and feasible from a financial perspective.

Ultimately, we will all be funding the transition, whether via Government taxes or private sector charges for utilities etc., but whatever the mechanism we also have a commitment to a just transition and need to consider how the most vulnerable can be supported, especially in the shorter term.

Consultation questions:

45. How much do you feel you understand about Funding, Taxation and Finance?

- ☐ I am new to the topic
- ☐ I have a basic understanding (e.g. previous reading for general interest)
- ☐ I have a strong understanding (e.g. experience in a professional capacity; higher level or undergraduate study)
- ☐ I have an expert understanding (e.g. postgraduate academic qualification in the field, expert role in a business in this area)

46. Do you agree with the potential actions described above (points 1-7 in the extract above) to increase funding available for climate action and change behaviour?

- ☐ Yes
- ☐ No
- ☐ Not sure

If no please highlight which actions you do not support and why

47. To what extent should Government provide funding for climate change transitions, given this could entail increased borrowing / increased revenue-raising?

- ☐ All funding via Government
- ☐ Majority funding via Government
- ☐ Equal split of Government / Private sector funding
- ☐ Majority private funding
- ☐ All private funding
- ☐ Not sure
- ☐ Other

48. Would you support the principle of using tax mechanisms to make carbon-intensive activities less attractive (e.g. carbon taxes)?

- ☐ Yes
- ☐ No
- ☐ Not sure

49. Do you believe that any revenue-raising around carbon taxes / dis-incentives should be ring-fenced for climate change projects?

- ☐ Yes
- ☐ No
- ☐ Not sure

50. Do you support a requirement for businesses to calculate and disclose their emissions data?

- ☐ Yes
- ☐ No
- ☐ Not sure

51. If you are a business operator, would you be willing to voluntarily offset your emissions through funding local offsetting projects (which could either be emissions-reducing or enhancing carbon storage)?

- ☐ Yes
- ☐ No
- ☐ Not sure

SETTING INTERIM TARGET(S)

Headline no regret action: Further research and consultation on appropriate interim targets will be informed by the outputs of the Future Energy Scenarios work and other ongoing research. At least one interim target must be set as part of the Climate Change Plan.

Our ultimate goal has already been set – in 2019 the Chief Minister made a commitment to net zero by 2050 (in line with IPCC recommendations) and the new Climate Change Bill enshrines that target in law. This target brings us in the line with the UK, France, New Zealand, Denmark and other countries internationally which have set a statutory target for net zero by 2050. As our pathway to net zero becomes clearer we may be able to bring forward that date, and the Bill makes provision for this. It is important to note that it is recommended that climate change targets should be achievable and equitable. Setting overly ambitious targets accompanied by strong regulation would accelerate action, but this may be at the expense of a just transition, and may have an unacceptably adverse impact on the lives of the most vulnerable people in our community.

We also have a commitment to set at least one statutory interim goal, though could set more, between now and 2050.

In his independent report, Prof James Curran proposed two possible interim targets:

1. A "higher ambition" target of 45% reductions in emissions (on 2010 baseline) by 2030 – this would require a high level of investment and would comply with the IPCC aim to keep global temperature increases to below 2 degrees and ideally to 1.5 degrees, which was predicted to require £52m per annum investment.
2. A "lower ambition" targets of 25% reductions in emissions (on 2010 baseline) by 2030 – this still represent significant investment and change but would delay our alignment with the IPCC trajectory, whilst still allowing the achievement of net zero by 2050 and this was predicted to require £26m per annum investment.

In the Phase 1 Climate Change Plan agreed in 2020 a goal for electricity generation was set – to generate 75% of electricity from renewable sources by 2035. The Energy Strategy work has been informed by this goal and the ultimate goal of net zero by 2050. Specialist research and analysis to inform the Energy Strategy has shown that by 2035 it should be possible to generate close to 100% of electricity from zero carbon sources. Having 100% of electricity generated from zero carbon sources would also dramatically reduce the carbon emissions associated with heating our homes and travelling around the Island in electric vehicles, so our overall emissions could decrease by up to 35% by 2035.

Some preliminary modelling that has been carried out alongside the Energy Strategy research has indicated that even if we move to 100% renewable electricity by 2035,

significant additional changes to transport, home heating and agricultural emissions would still be required to reach a 45% reduction in emissions. More detailed analysis will be available to inform the final decision on the interim target.

Additional specialist research into options for reducing emissions from home heating and transport, and ensuring a just transition, is underway and will be needed to inform one or more interim targets which are ambitious, and in line with our international and statutory commitments and also achievable and equitable.

Another consideration is what we plan to do when we reach net zero by 2050. Options include maintaining that balance of emissions and sequestration at zero, or continuing to work to further reduce emissions and increase sequestrationand create an emissions credit that can offset continuing emissions elsewhere. This is obviously a long way off, but international good practices recommends thinking about this now, and integrating these intentions into the long term roadmap as it evolves.

Summary of the current situation:

Two possible pathways to net zero were identified in the Curran report. We do not feel that we currently have the evidence and insight to set an interim target for consideration in this consultation. Ongoing research into energy generation, transport, heating of buildings, funding the climate action and achieving a just transition is needed to inform interim targets that put us on the path to net zero whilst protecting the vulnerable and ensuring we do not make decisions that we later regret (and which could potentially lead to higher cumulative emissions, no global benefit to emissions reduction or other unintended consequences).

The main option identified so far to allow early emission reduction is through a rapid shift to renewable energy generation, involving substantial capital projects along the lines being considered in the Ove Arup report. Earlier substantial reductions would most likely require the purchase of imported electricity to reduce local production emissions in advance of our new technology being in place.

Consultation questions:

52. How much do you feel you understand about Setting Interim Targets?

- ☐ I am new to the topic
- ☐ I have a basic understanding (e.g. previous reading for general interest)
- ☐ I have a strong understanding (e.g. experience in a professional capacity; higher level or undergraduate study)
- ☐ I have an expert understanding (e.g. postgraduate academic qualification in the field, expert role in a business in this area)

53. Additional research is required to inform a decision on an ambitious, yet equitable and achievable statutory interim target which will be consulted on later in the year. Which approach to setting the interim target(s) would you prefer:

- ☐ Focus on making rapid progress in emissions reduction in the short term, and base interim targets accordingly
- ☐ Set our interim target at 45% reduction by 2030 to align with the higher ambition pathway in the Curran IMPACT report.
- ☐ Set our interim target at 25% reduction by 2030 to align with the lower ambition pathway in the Curran IMPACT report.
- ☐ Use the ongoing research to develop a long term plan for reaching net zero emissions by 2050 and set appropriate interim targets that align with these key pieces of work.
- ☐ Not sure – await further research findings
- ☐ Another option – please give details

54. Whilst we have an overall target for net zero greenhouse gas emissions by 2050, we have not yet considered our plans for post-2050. Should we aspire to:

- ☐ Reach net zero greenhouse gas emissions by 2050 and maintaining this balance, or
- ☐ Continue to reduce remaining emissions and increase sequestration beyond 2050, in effect, going carbon-negative and making a greater contribution to mitigating climate change.

LONG TERM PATHWAY TO NET ZERO

Informed by the Energy Strategy, the Heating Strategy, the Transport Strategy and other key pieces of work, the pathway to net zero will be a key element of the final plan. Prof James Curran set out an indicative roadmap in his IMPACT report and with the outcomes of the ongoing strategies, in particular the Future Energy Scenarios work and the Renewable Heating Strategy, we will be able to set out key milestones on our pathway to net zero.

It should be acknowledged that there will always be a high level of uncertainty around the long term road map, although this uncertainty will decrease as technologies develop and the implications of and learning from approaches of our neighbours become clearer.

Good practice indicates that this is something we need to start thinking about and planning for now. This will be particularly important to inform the planning of sequestration projects, in particular those with a limited duration (e.g. monoculture forestry).

Based on the strategy work outlined above, an initial pathway to net zero will be presented in the five year plan.

NEXT STEPS

This consultation will be available to respond to digitally on the Consultation Hub.

In addition to this, it is anticipated that during the 6 week consultation period consultation events will be held to enable understanding and feedback from key stakeholders.

APPENDIX 1: RELEVANT SECTIONS OF THE CLIMATE CHANGE BILL SETTING OUT DETAILS ON THE CONTENTS OF THE CLIMATE CHANGE PLAN

17 Climate change plan

1. On the coming into operation of this section, the Isle of Man Government Action Plan continues to have effect as if it were a climate change plan and remains in operation until 1 April 2022.

2. The Council of Ministers must ensure that there is a climate change plan in effect at all times after 1 April 2022.

3. Before a climate change plan, or any amendment to a climate change plan, takes effect

- **a.** in the case of a climate change plan, the public must be consulted on the matters that are proposed to be contained in it;
- **b.** in the case of an amendment to a climate change plan that relates to a matter that has not been consulted upon under paragraph (a), any person (or representative of such a person) to whom the amendment relates, and any other person that the Council of Ministers considers appropriate to consult, must be consulted on the proposed amendment; and
- **c.** the climate change plan or the amendment, as the case may be, must be laid before Tynwald for approval.

4. A climate change plan, or any amendment to such a plan, that is laid under subsection (3)(c)

- **a.** must come into force no later than 1 April that next occurs after it is approved; and
- **b.** remains in effect for 5 years or until the date on which the next subsequent climate change plan comes into effect, whichever is the earlier date.

5. An amendment to a climate change plan does not have the effect of extending the period that the plan remains in force.

18 Content of climate change plan

1. A climate change plan **must** include —

- **a.** the Council of Ministers' proposals and policies for reducing the Isle of Man's emissions and increasing Isle of Man removals, having regard to the net zero emissions target;
- **b.** the Council of Ministers' proposals and policies for meeting interim targets (if any) during the plan period;
- **c.** the timescales over which the proposals and policies mentioned in paragraphs (a) and (b) are expected to take effect; and
- **d.** an assessment of the progress towards implementing proposals and policies, being —
  - **i.** in the case of the first such plan, those set out in the Isle of Man Government Action Plan; and
  - **ii.** in the case of each subsequent plan, those set out in the immediately preceding climate change plan and in proposals for compensating or changing domestic effort, during the plan period, where it is reported that an interim target set previously has not been met.

2. A climate change plan **may** include proposals and policies in relation to —

- **a.** energy generation and supply;
- **b.** transport (including international aviation and shipping);
- **c.** business and industry;
- **d.** residential and public buildings;
- **e.** waste management;
- **f.** land use, land use change and forestry;
- **g.** use of the Island's territorial waters and sea bed;
- **h.** agriculture;
- **i.** changes to proposals and policies made in previous plans;
- **j.** carbon sequestration; and
- **k.** any other proposal or policy that the Council of Ministers considers appropriate.

3. A climate change plan **must** explain how the proposals and policies set out in the plan are expected to affect —

- **a.** the Isle of Man economy, including —
  - **i.** competitiveness of particular sectors;
  - **ii.** businesses; and
  - **iii.** jobs and employment opportunities;
- **b.** fiscal circumstances, in particular the likely impact of policies and proposals on taxation, public spending and public borrowing;
- **c.** policies or proposals on public health;
- **d.** energy policy, in particular the likely impact of the net zero emissions target, or an interim target, on energy supplies, the renewable energy sector and the carbon and energy intensity of the Isle of Man economy; and
- **e.** environmental considerations and, in particular, the likely impact of the net zero emissions target or an interim target on biodiversity, ecosystems and ecosystem services.

4. A climate change plan **may** also set out the Council of Ministers' proposals and policies regarding —

- **a.** the respective contributions towards meeting the net zero target or any interim targets that must be made by particular sectors of the Isle of Man economy; and
- **b.** how the respective contributions towards meeting the net zero target or any interim targets by particular sectors of the Isle of Man economy may be achieved.

5. Each climate change plan **must**—

- **a.** have regard to the just transition principles and the climate justice principle; and
- **b.** explain the extent to which it takes account of those principles.

6. The plan must explain how the implementation of the plan is expected to contribute to sustainable development, where applicable, including the achievement of the United Nations sustainable development goals.

7. In this section, the "plan period" means the period beginning with the date on which the climate change plan comes into force and ending 5 years after that date (unless another climate change plan takes effect before the end of that period). The Council of Ministers may by regulations amend this section to —

- **a.** amend the matters that must or may be contained in a climate change plan; or
- **b.** amend the plan period.

19 Annual progress report

1. The Council of Ministers must lay an annual progress report before Tynwald, no later than July each calendar year, which includes the information described in subsection (2) in relation to the financial year ending on the 31 March last occurring before the laying of the annual progress report ("reporting period").

2. A Minister must, at the sitting at which an annual progress report is laid or the next subsequent sitting, move that the report be received by Tynwald.

3. The annual progress report must contain a statement on the following matters —

- **a.** progress, relevant to the reporting period, in relation to the current climate change plan;
- **b.** any changes to the plan made during the reporting period or proposals to change the plan and the reasons for those changes;
- **c.** the way the just transition principles and the climate justice principle have been implemented;
- **d.** the extent to which biodiversity, ecosystems and ecosystem services have been enhanced, protected or otherwise affected during the period; and
- **e.** the extent to which the actions have contributed to sustainable development, including the achievement of the United Nations sustainable development goals.

4. The annual progress report may contain details of the following matters —

- **a.** any new sources of emissions identified during the reporting period;
- **b.** any perceived or actual barriers to emissions reductions;
- **c.** if an action has not been completed by the date specified in the plan for that action, or is unlikely to be completed by the date specified for it, the reason for the non-completion and the proposals for completing the action;
- **d.** any unforeseen consequences, arising from the actions that have been identified during the reporting period and any action that has been taken or is planned to be taken to address them;
- **e.** the extent to which the regulation and order making powers under the Act have been used during the reporting period;
- **f.** any actions undertaken which are not in the plan but which have or will contribute to emissions reduction;
- **g.** information relating to research conducted or scientific advice received over the reporting period;
- **h.** any other information the Council of Ministers considers appropriate.

5. The Council of Ministers may by regulations amend this section to amend the matters that must be contained in the annual progress report.

20 5-yearly emissions report

1. Subject to subsection (2), the Council of Ministers must report to Tynwald in respect of every 5 year period, beginning with the coming into operation of this section, on the progress towards the net zero emissions target in that period.

2. If an interim target has been set —

- **a.** if the interim target date occurs before the end of a 5-yearly reporting period, the Council of Ministers must report to Tynwald in respect of the period between the last report and the interim target date on the progress towards the net zero emissions target (and, in the case of an interim target date occurring within 5 years of the coming into operation of this section, the report must be in respect of the period beginning with the coming into operation of this section and the interim target date);
- **b.** if the interim target date occurs on a date that is later than the end of the 5-yearly reporting period, the Council of Ministers must report to Tynwald in respect of the 5 yearly reporting period.

3. A report referred to in subsection (1) or (2) must be laid before Tynwald no later than 2 years after the end of the 5-yearly reporting period and a Minister must, at the sitting at which it is laid or the next subsequent sitting, move that the report be received by Tynwald.

4. A 5-yearly report must state in relation to the net Isle of Man emissions—

- **a.** the baseline;
- **b.** the amount of net Isle of Man emissions for the reporting period and each individual year of the reporting period;
- **c.** the percentage by which the amount of net Isle of Man emissions for each year of the 5-yearly reporting period is lower or higher than the baseline;
- **d.** the mean average percentage by which the amount of net Isle of Man emissions for all years in the 5-yearly reporting period is lower or higher than the baseline; the percentage by which the amount of net Isle of Man emissions in the 5-yearly reporting period is lower or higher than the amount for each preceding reporting period;
- **e.** whether the reduction (if any) in emissions achieved during the 5-yearly reporting period contributes sufficiently towards meeting the net zero emissions target and any interim targets, having regard to the information contained in the report (and any report for a previous period).

5. The Council of Ministers must use current international carbon reporting practice for the purposes of assessing and reporting on the matters referred to in subsection (4).

6. If the methods used to determine net Isle of Man emissions change and that change is such as to require adjustment of an amount for any earlier reporting period, the report must —

a. specify the adjustment required and state the adjusted amount; and

b. explain why the adjustment is required.

7. An adjustment of an amount for an earlier 5-yearly reporting period, in so far as reasonably practicable, must be made in accordance with current international carbon reporting practice.

8. The 5-yearly report may contain such other information as the Council of Ministers considers appropriate.

9. Where no interim target following the period to which the 5-yearly report relates has been set the report may include a recommendation in relation to the setting of future interim targets and the amount of such targets.

10. If a recommendation referred to in subsection (9) is made, the reasons for the recommendation must be included in the report.

11. The recommendation of a target under subsection (9) creates no duty for the target to be set at that level or at all.

12. In this section "5-yearly reporting period" means the period in subsection (2)(a) or (b), as the case may be.

13. The Council of Ministers may by regulations amend this section to —

a. amend the contents of the 5-yearly report; or

b. amend the 5-yearly reporting period to a shorter period.

APPENDIX 2: PROPOSED CONTENTS OF CLIMATE CHANGE PLAN

In the statutory 5 year Climate Change Plan we propose to follow this checklist for rigorous and clear net zero plans (from Rogelj et al 2021). Full details can be found: https://www.nature.com/articles/d41586-021-00662-3

(I) Scope

1.1 Define the global climate or temperature goal that the individual net-zero target contributes to.

1.2 Define by when net-zero is intended to be achieved.

1.3 Define the emissions that are covered by the individual net-zero target.

1.4 Define which emissions metric is used to aggregate greenhouse gas emissions to assess net-zero.

1.5. Define the boundaries or scope of the emissions covered by the net-zero target.

1.6 Describe the expected contribution of direct CO2 removals and/or offsets to achieve the net zero target.

1.7 Clarify how direct CO2 removal and/or offset options included in the net-zero target will deliver.

(II) Adequacy and fairness

II.1 Justify how your target is fair and adequate contribution to the global climate goal.

(III) Long term roadmap

III.1 Describe the trajectory and implementation plan to reach the net-zero target

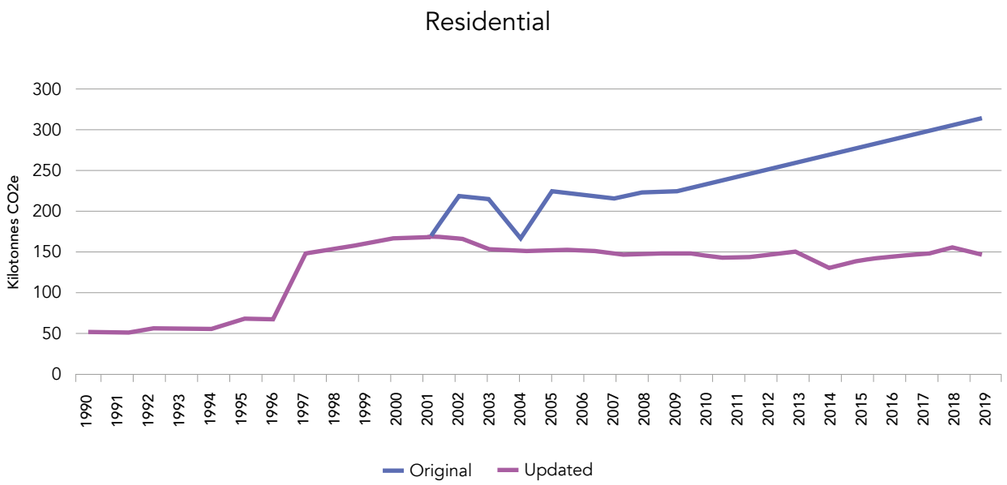
[An indicative roadmap will be provided in the Climate Change Plan]

APPENDIX 3: IMPROVING THE QUALITY OF OUR GREENHOUSE GAS EMISSIONS DATA

As part of our work to improve our evidence base and develop a robust baseline for measuring future emissions reductions, a review of the inventory data identified an issue with the emission figures for heating. This deficiency was due to an historic data gap whereby, rather than using actual data on heating fuel usage, an estimate was made based on historical trends.

In addition, a minor update was made to 2004 figures. A spike was present in the historic data due to missing data on Natural Gas usage around the time of the Natural Gas switchover. This has now been smoothed to better reflect the historic trend.

The data has now been updated and verified by the consultants Aether who process our emissions data on behalf of the UK government. The update to this heating data has made a significant impact on the residential and business categories of the inventory.



App. 3: Figure 1: Emissions in the residential category 1990-2019 as initially calculated (Original) and from the revised data (Updated).

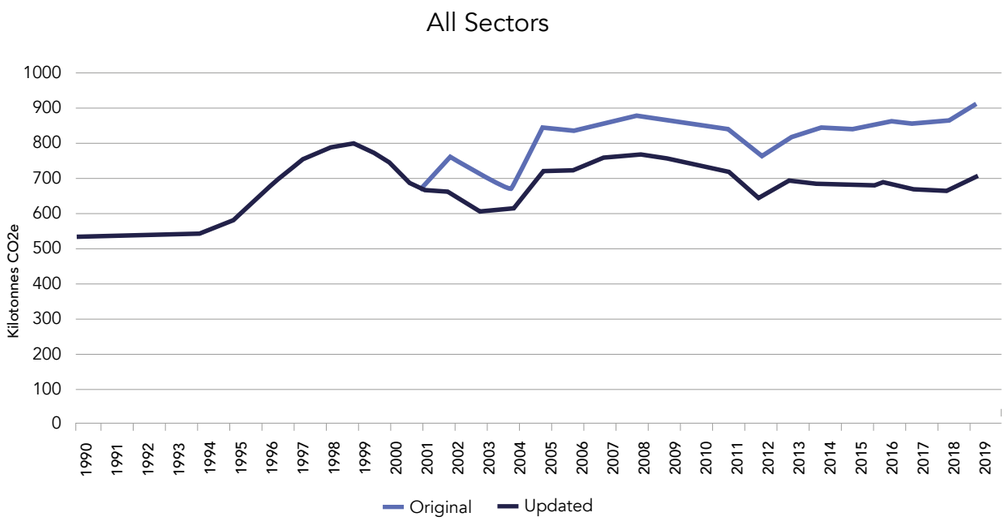
The overall impact is a reduction in estimated residential emissions (in 2019) of 53%. Significantly, the trend from the late 1990s onward has changed from a steady annual increase (based on historic increases) to a plateau.

Around 60% of emissions associated with businesses relate to fuel combustion and this data has also been updated. The other 40% of business emissions (largely from refrigeration and chemical processes) are unaffected by this update.

App. 3: Figure 2: Emissions from business from 1990-2019 showing the original and updated data

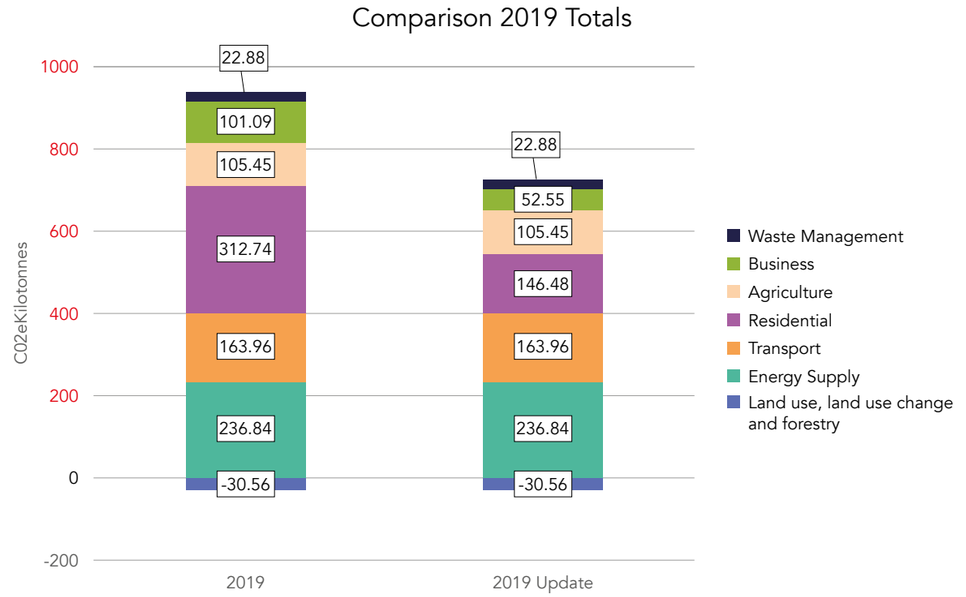
Overall, business emissions are estimated at 48% lower than the original 2019 inventory. Further work is required to allocate gas usage to businesses, which would not change overall emissions for the Island, but would re-balance some emissions from the residential category to the Business category.

The overall impact of the update is to reduce estimated 2019 emissions by 24%. The profile is now flatter or showing a gradual decline versus the previous version of the inventory which showed an increase.

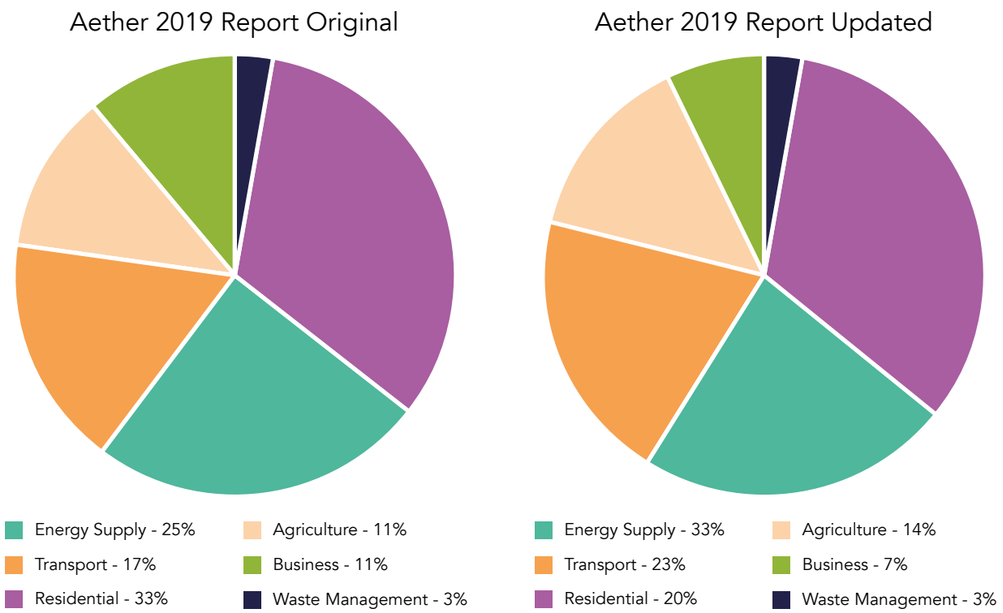


App. 3: Figure 3: total Isle of Man greenhouse gas emissions 1990-2019 showing the original inventory data and update inventory data

Due to the change outlined above, the overall proportional split of inventory categories has changed somewhat as shown in Figures 4 and 5. As a result of the residential and business emissions being reduced, the proportion of the total has fallen somewhat, which has meant other categories such as Energy Supply and Transport are now more prominent. Significantly, residential emissions are no longer the largest category of emissions, having fallen to become the third-largest category. Overall emissions are lower than previously estimated.



App. 3: Figure 4: a comparison of the contributions of main emissions categories in the original Aether data received (left) and the revised verified data (right)



App. 3: Figure 5: a comparison of the proportional splits of main emissions categories in the previous Aether data received (left) and the revised verified data (right) (please note: removals from land use are negative and therefore not shown in the above pie charts, which relate only to emissions).

Concluding remarks regarding revised emission data

The new data provides a better understanding of the opportunities and issues we face, however, whilst the overall emission estimate is now lower, the scale of the task is no different, as we have committed to achieve net zero.

The methodology recommended by IPCC is likely to continue to evolve as scientific understanding continues to develop. As a result, whilst these figures will no doubt continue to be revised in future, they do now provide a strong understanding of our situation and should be relied on to prioritise our actions. For example, while residential emissions have been recalculated and are now understood to be lower than previously thought, decarbonising home heating remains a key challenge which will take time to address and that work must start now to ensure net zero by 2050.

Overall, the new data provides significantly more confidence on where and in what order to address our emissions and provides a better understanding for policymakers.

APPENDIX 4: ARUP ISLE OF MAN FUTURE ENERGY SCENARIOS DRAFT EXECUTIVE SUMMARY AND THE FUTURE ENERGY SCENARIOS BACKGROUND READING DOCUMENT.

These two documents were published on or before Friday 16 July 2021 and should be read together to ensure full context for the Arup work.

See here for details **www.netzero.im**

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