ISLE OF MAN CLIMATE CHANGE PLAN 2022-2027

Approved by Tynwald 18 October 2022
SD2022/65

NET ZERO
ISLE OF MAN

Isle of Man Government
Reiltys Ellan Vannin

CONTENTS

The strategies, policies and proposals set out in this plan comply with the requirements of section 18 (content of climate change plan) of the Climate Change Act 2021. All the strategies, policies and proposals contained in this plan are intended to contribute toward the meeting of the interim targets set under that Act and the meeting of the net zero by 2050 target by either causing, encouraging or enabling the reduction of emissions or the increasing of removals. Where a specific timescale has not be given in relation to a policy or proposal it is expected to take effect during the period of this Plan (2022-2027).

The Council of Ministers have consulted the public on the matters proposed to be contained within the Isle of Man Climate Change Plan 2022-2027 in accordance with section 17(3)(a) of that Act.

If approved by Tynwald, the Isle of Man Climate Change Plan 2022-2027 has effect for five years or until the date on which the next subsequent climate change plan comes into effect, whichever is the earlier date.

Approved by Tynwald: [TBC]

FOREWORD BY CHIEF MINISTER

In 2019, the global climate emergency was officially acknowledged in Tynwald. Since that time the Climate Change Act 2021 has come into effect and work to reduce our Island's emissions of greenhouse gases has continued.

However, since that acknowledgement, we have also experienced challenges unprecedented in living memory and which continue to put pressure on our community. The pandemic, the war in Ukraine and the rapidly developing cost of living crisis have therefore set the scene for this climate change plan.

In the face of these challenges, which demand our immediate attention, we must not lose sight of the threat posed by climate change, which the World Health Organisation has described as the "greatest threat to human health and well-being". Throughout the pandemic I witnessed our community rise to the challenges COVID19 presented and come together to face them bravely and effectively – by adapting, innovating and supporting each other. It is these attributes which will enable our Island to take the bold steps needed towards a sustainable future.

The focus of this Plan is to deliver changes which will help our Island through the cost of living crisis and provide long lasting security and opportunity for sustainable development. For example, by investing in the efficiency of our buildings, we both reduce energy consumption and help struggling households and businesses cope with the current energy price spike.

This is our first statutory climate change plan, which is designed to enable and inform our on-going journey to net zero. Key aspects include work to ensure the future supply of secure, carbon neutral energy for the Island, through the establishment of a second interconnector and an optimised mix of renewables.

The proposals in this Plan represent the first steps of measures that will grow and develop, ensuring our emissions reductions are on-track for net zero by 2050. I am confident that as a nation we can meet this challenge together and take the action needed to limit climate change and protect our community and future generations. The next five years will be pivotal, and I urge everyone to support the delivery of this Plan.

Hon Alfred Cannan MHK
Chief Minister

INTRODUCTION

We are facing a global climate crisis as temperature increases remain on track to cause significant global social, economic and environmental disruption over the next decades, representing a threat to lives and ways of life. Changes in climatic variables, including rising global temperatures, are also accelerating the ecological crisis which is threatening the biodiversity and ecosystems that support and sustain human life.

The impacts of climate change, such as flooding, droughts, extreme weather events and rising sea levels are already affecting lives, locally and globally. Climate change increasingly threatens our ability to maintain a strong and diverse economy and to ensure that our Island is a secure, sustainable, and vibrant place to live. Those impacts will continue to worsen and will affect the lives of our children, grandchildren and generations that follow.

However, it is still within our control to limit those impacts by reducing emissions of greenhouse gases and increasing sequestration.

This Plan aims to set us on course, not only for 2050, but also for our interim targets of 45% reduction by 2035. It will also set us on course to achieve a 35% reduction by 2030.

The actions in this Plan are designed to contribute to those goals while maximising the benefits of change.

As a government we will lead by example, investing wisely in the infrastructure and initiatives needed to achieve net zero. We will take a long-term view, focussed on making sustainable decisions which will deliver an improved quality of life for our community and a reduction in future risks.

Also included in this Plan are support areas which will ensure our actions are delivered in ways which nurture a healthy, happy and well-informed population; a robust and prosperous economy; plentiful job and development opportunities; and a thriving natural environment.

The Climate Change Act 2021 sets out requirements for content that must be included in this Plan, including how the policies and proposals contained in the Plan are expected to affect various economic, social and environmental factors. The appendices to this Plan explain those requirements and how they have been met.

Plan mission: To put the Island on-track to reach our interim targets and net zero emissions by 2050 at the latest.

2050 vision: Our Island is one we feel proud to pass on to future generations. We have clean energy, air and water; biodiverse green spaces which maximise carbon storage; and we live in neighbourhoods that foster emission free travel. We have good jobs in sustainable businesses and plenty of opportunities for working and learning. The wellbeing and quality of life of our community is at the heart of everything we do.

PART 1 – OUR EMISSIONS

THE CHALLENGE

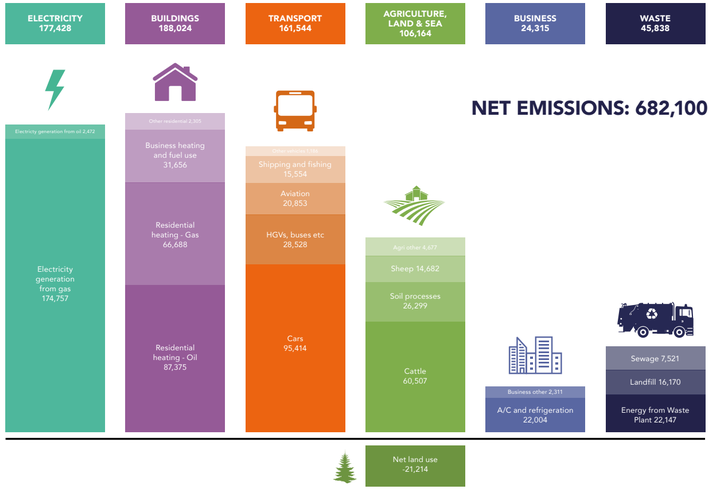
Since 2005 the Island's total emissions have remained at a similar level. We need to reduce our emissions significantly within this plan period to put ourselves on track for achieving net zero greenhouse gas emissions by 2050. The adjacent chart shows the Island's greenhouse gas emissions for the baseline year (2018). Globally emissions dipped during the pandemic but are now returning to, and in many cases surpassing, pre-pandemic levels.

This Plan sets out the strategies, policies and proposals for reducing emissions and increasing removals (sequestration/ natural carbon capture).

THE APPROACH

Alongside key actions, this Plan assigns target emission reductions across the six emission areas shown in the adjacent chart, along with an increase in removals from net land use. The way these reductions are delivered will be determined by strategies, which will be developed and delivered by the relevant government departments, in conjunction with key stakeholders. This is an essential part of our journey to net zero.

Fossil fuels and other high emitting practices are embedded in every part of modern life: in our homes and jobs, the food we eat, the products we use and the way we travel. Therefore, the changes needed to transition to a net zero society will be wide ranging. By preparing and delivering strategies, linked to per sector emission reduction targets, we can accurately monitor progress to ensure that we are on track to meet our climate goals, while ensuring that change is well managed, evidence based and informed by meaningful engagement with those who will be affected.



2018 data, as per 2020 IOM GHG Inventory

The IOM GHG inventory separates emissions into reporting areas as defined by the IPCC for the UNFCCC.

For the purposes of this Plan the emissions data is separated into policy areas, to best show the emission areas which will be affected by the strategies set out in this Plan.

Emissions and percentages rounded to nearest whole number. Emissions figures are in tonnes of CO2 equivalent.

Not to scale.

For more information on the IOM GHG Inventory see Appendix 7, to view IOM emission data visit **https://netzero.im/resources/data/**

THE INTERIM TARGETS

The strategies, policies and proposals contained within this Plan support the achievement of the following targets:

- 35% reduction in net emissions by 2030
- 45% reduction in net emissions by 2035
- Net zero greenhouse gas emissions by 2050

Targets are set against the 2018 baseline, data shown in chart on page 8.

The contributions to the above targets, from each emission sector, are as follows:

The above sectoral reductions represent a proportional change in total emmissions, over the plan period (2022-2027), putting us on track for net zero by 2050 and the interim targets. If these reductions are achieved, significant back loading (ie. the need for increased effort later in the transition) will be avoided.

	ELECTRICITY	BUILDINGS	TRANSPORT	LAND/AGRI	BUSINESS	WASTE	SEQUESTRATION	Emission reduction from this plan
% sectoral change	-100%*	-15%	-15%	-15%	-15%	-15%	+10%	
% reduction of total emissions	25%	4.13%	3.55%	2.33%	0.53%	1.00%	0.31%	36.85%
Emissions per sector in tCO2e	-177,428	-28,204	-24,232	-15,925	-3,647	-6,876	+2,121	-258,433

* Electricity sector reduction, 100% by 2030
(Providing a new second interconnector is in place, with carbon neutral electricity being imported from GB.
In exceptional circumstances i.e. emergencies, some fossil fuel generation may be required to support Island demand)

1. ELECTRICITY

84% of our electricity is currently generated from imported fossil fuels. Carbon neutral electricity is an essential part of our journey to net zero and must be achieved by finding balance within the energy trilemma: security, affordability, and sustainability. Transitioning our electricity supply to carbon neutral sources will not only reduce the emissions created directly by burning fossil fuels but will provide clean power for low carbon heating and transport technologies, unlocking reductions in other sectors.

DELIVERABLES:

1.1 Energy strategy to supply 100% of our electricity from carbon neutral sources by 2030.

1.2 At least 20MW of locally generated, renewable electricity to be available by 2026.

1.3 Policy and legislation reviewed and updated to support delivery of carbon neutral and renewable energy while protecting the natural environment.

1.4 Establish an energy advice service to help people reduce energy consumption and associated bills.

BENEFITS OF CHANGE:

- Enables emissions reductions in other areas dependent on electricity.
- Businesses are able to access carbon neutral energy in line with ESG criteria.
- Potential for job creation as our electricity generation diversifies.
- Increased use of our renewable, natural resources.
- Continued provision of a reliable and secure supply of electricity for homes and businesses.

The images below refer to the alignment of the above policies and proposals to the UN Sustainable Development Goals and are referred to throughout.

[1]Requires a new second interconnector to be in place, with carbon neutral electricity being imported from GB. In exceptional circumstances, i.e. emergencies, some fossil fuel generation may be required to support Island demand.

Sulby Hydro-electric station

2. BUILDINGS

Heating our buildings and homes using fossil fuels such as natural gas and oil currently comprises the largest emissions sector on the Island. Our focus will be on transitioning away from our dependency on fossil fuels by improving energy efficiency, reducing energy demand and increasing uptake of low carbon heating options. In achieving this we will reduce bills for households and businesses while upskilling the industry in green technology.

DELIVERABLES:

2.1 Develop and implement a Low Carbon Heating Strategy which will deliver a 15% sector reduction by 2027, to be underway by the end of 2023.

2.2 Bring forward the ban on fossil fuel heating systems in new builds to 2024.

2.3 Incentivise efficiency measures via grants and schemes, prioritising a fabric first approach and supporting transition to low carbon heating.

2.4 Policy and legislation (eg. planning and building control) reviewed and updated to support delivery of the Low Carbon Heating Strategy and, as set out in the Climate Change Act 2021, to ensure that future development supports biodiversity net gain and delivery of our climate goals.

2.5 Introduce Energy Performance Certificates to drive improvements to the efficiency of the Island's housing.

2.6 Amend Building Regulations to ensure new build properties are 97% energy efficient.

2.7 Work with the construction industry to ensure that local businesses have the skills needed to meet increased demand for low carbon heating technologies.

2.8 Roll out a public engagement campaign promoting energy efficiency in homes and businesses.

2.9 Undertake a retrofit programme for government buildings.

BENEFITS OF CHANGE:

- Buildings will be better insulated and cheaper to keep warm, with more efficient, low carbon heating systems, reducing energy bills and fuel poverty.
- Warm, well ventilated, draught free homes will reduce health issues linked with cold, damp and mould.
- New jobs will be created in energy efficiency, insulation, retrofitting and installation of low emissions heating.

3. TRANSPORT

Transport is the Island's third largest source of emissions. To reduce emissions from this sector, we need to create an environment which reduces the need to travel and enables people to use more sustainable modes of transport, such as walking and cycling, public transport and electric vehicles.

More than any other sector, decarbonising transport will need significant population behaviour change; however, changes in this area also offer the greatest co-benefits, across physical and mental health and for the economy and businesses.

DELIVERABLES:

3.1 Transport Strategy to deliver 15% sector reduction by 2027, to be underway 2024, informed by Strategic Transport Decarbonisation Review to be completed in 2023.

3.2 Renew Active Travel Strategy to significantly increase participation.

3.3 Ban registrations of new petrol and diesel cars from 2030 and hybrids from 2035, in line with the UK and EU.

3.4 Reduce the need to travel by continuing to support provision of public services close to where people live (eg. licence applications, payments etc.) and supporting practices such as home working.

3.5 Ensure that electric vehicle charging infrastructure is in place to meet increasing demand.

3.6 Electrify the public sector cars and vans as soon as possible.

BENEFITS OF CHANGE:

- Improved public physical and mental health through increased activity (walking, cycling etc.) and better air quality.
- Active travel has been shown to significantly reduce costs for households.
- Home working can reduce sickness absence rates, improve productivity and lower road congestion which benefits businesses.
- Bringing services closer to people's homes and encouraging active travel can improve social connectivity and sense of community.
- Quieter, safer streets with more walking and cycling to schools is a better, healthier environment for everyone.

4. AGRICULTURE, LAND AND SEA

This sector comprises the carbon emissions created and removed by how we manage our Island's natural resources, such as the seabed, fields, and woodlands. Diversifying and enhancing the Island's natural environment, both on land and in our territorial sea, is vital in ensuring our net zero goal is met through the long-term capture and storage of carbon. Improving the efficiency and sustainability of the agricultural sector through practices which support food production, water quality, biodiversity and animal health and welfare, and which mitigate climate change will secure jobs and livelihoods whilst achieving our climate goals.

DELIVERABLES:

4.1 Agricultural Strategy to deliver 15% reduction in sector emissions by 2027, to be underway by 2023.

4.2 Commission and implement a Land Management Plan and Strategy, to increase carbon sequestration by 10% by 2027, linking in with the Agricultural Strategy.

4.3 Undertake and facilitate tree planting, peatland restoration and other nature-based solutions, where possible leveraging private sector investment.

4.4 Complete Phases 1a and 1b of the Blue Carbon Project and develop a Blue Carbon Strategy based on the results.

4.5 Establish improved baseline agricultural emissions to ensure the impacts of strategies, actions and policies can be accurately monitored.

4.6 Work with the fishing industry to continue to reduce the carbon footprint of trawling and dredging, increase the efficiency of fishing effort and cut fuel costs.

BENEFITS OF CHANGE:

- New employment opportunities in ecosystems management and conservation.
- Improved maritime management, continuing to work closely with the fishing industry to support sustainable fishing and efficiency.
- Ecosystems benefits including reduced flood risk, clean water and air, pollination, provision of food and raw materials.
- Improved farming efficiency and sustainability, leading to savings and long-term security for agricultural businesses.
- Additional and improved habitats for biodiversity.
- Sustainable local food and positive marketing opportunities for export.

5. BUSINESS

Whilst business activity on the Island makes up a small proportion of overall emissions, businesses are keen to embark on their own net zero journeys, often as part of a wider ESG agenda. We want to support businesses with the transition by making it easier to create their own action plans to reduce emissions and stimulate innovation in technology which helps lower emissions or increase sequestration.

DELIVERABLES:

5.1 Business Emissions Reduction Strategy to support delivery of a 15% sector emissions reduction by 2027, to be underway by 2023.

5.2 Establish support programmes to assist businesses to improve their energy and resource efficiency and build their resilience to climate change.

5.3 Explore the scope for schemes to encourage on-Island innovation and the associated business opportunities.

5.4 Explore the creation of a new 'Innovation Scheme' which enables investment in clean technologies suited to the Island's environment.

5.5 Develop a scheme enabling businesses to support local carbon sequestration projects, as part of their ESG initiatives.

5.6 Support delivery of training and initiatives across the property industry (e.g. design, construction, and consultancy) which will drive improvement in the built environment.

5.7 Encourage increased resource and skills by implementing the outcomes of the Isle of Man Retrofit and Low-carbon skills analysis.

BENEFITS OF CHANGE:

- Economic opportunities for businesses to respond to growing demand for low emissions goods and services.
- New technologies and sustainable property development have potential to provide opportunities for workers and businesses transitioning away from high emission practices, start-up businesses and young people joining the workforce.
- Our economy's climate credentials will attract and retain climate-conscious global businesses.
- Increased opportunities for graduates and young people, building a workforce for delivering the transition.
- Sequestration projects and renewable energy generation will create economic opportunities in a green economy.

Image courtesy of Zurich on the Isle of Man, and Ardern & Druggan who designed and installed the solar array

6. WASTE

Waste and waste management are the Island's fifth largest source of emissions. Food waste, landfill, transportation of waste and the Energy from Waste plant all contribute to this sector's emissions. The best way to reduce emissions from waste is to reduce the amount of waste we create – adhering to the 'reduce, reuse, recycle' principles, in that order.

Long term, both locally and globally, humans need to tackle waste and the problems it causes by transitioning to a 'circular economy'. A 'circular economy' is a socially, economically and environmentally sustainable model which minimises waste, and the negative impacts our waste has on the environment, by using resources more carefully, underpinned by using renewable energy and materials.

DELIVERABLES:

6.1 Waste Management and Circular Economy Strategies to deliver 15% sectoral emissions reduction by 2027, to be underway by 2023.

6.2 Review existing and closed disposal facilities (e.g. landfills) to determine the scope for reducing ongoing emissions related to storage.

6.3 Reduce waste and increase recycling across government.

6.4 Explore measures to reduce food waste to save money across households, businesses and government.

6.5 Support the reduction of single use plastics.

BENEFITS OF CHANGE:

- Reduced pollution and demand for resources, benefitting biodiversity and natural habitats, locally and globally.
- Opportunities for growth and innovation for businesses engaged in the circular economy.
- Responsible consumption reduces waste but also leads to healthier spending habits, reducing pressure on households.

PART 2 – SUPPORTING THE TRANSITION

Five key areas underpin the work to reduce emissions. This Plan includes the policies and proposals related to these support areas. Actions in these areas either enable or support action to reduce emissions across all six keys areas and are essential to delivering the transition in a way that maximises benefit.

ADAPTATION AND RESILIENCE	FAIR CHANGE	LEADING BY EXAMPLE	INVESTING IN OUR FUTURE	ENGAGEMENT AND AWARENESS
Delivering the changes needed to protect our community, our property and our way of life from the impacts of climate change.	Ensuring our transition to net zero maximises benefit, protects the vulnerable and is socially, environmentally and economically sustainable.	Embedding climate action across the Isle of Man Government. Leading a consistent and well managed transition for the Island.	Ensuring that we invest wisely in a sustainable future. Funding the right initiatives at the right times. Delivering a strong, diverse net zero economy.	Supporting our Island community through transition. Ensuring that people and businesses have the information they need to adapt and thrive throughout our transition to net zero.

A. ADAPTATION AND RESILIENCE

As an island we are particularly vulnerable to impacts on our supply chains and from flooding, coastal inundation and more frequent extreme weather events. Our Island Plan acknowledges the importance of understanding and preparing for the inevitable impacts of climate change, some of which we are already experiencing. Through early assessment and action, we will be more resilient to the increasing risks and can minimise future costs by safeguarding people, property, livelihoods and our way of life.

DELIVERABLES:

A.1 Deliver an Adaptation Strategy, taking account of climate impacts, across all areas of society, economy and the natural environment.

A.2 Introduce appropriate reporting requirements, for public bodies, in relation to adaptation to existing climate change reporting timetables.

A.3 Review and update policies and legislation to ensure that adaptation and resilience are embedded in decision making and climate risks are appropriately assessed.

A.4 Establish an adaptation working group to ensure interdependencies are recognised and opportunities for collaboration maximised.

A.5 Obtain an independent Climate Risks and Opportunities assessment.

BENEFITS OF CHANGE:

- Risks to public health, property, infrastructure and businesses, from the effects of climate change, will be reduced.
- New infrastructure will be built to withstand the effects of the changing climate.
- Economic opportunities in the construction and ecosystem restoration sectors.
- Our community will understand the actions they can take to adapt to the changing climate.

Coastal erosion on the west coast of the Island

B. FAIR CHANGE

A healthy, happy population who have the information they need to navigate and adapt to change, a robust and prosperous economy, plentiful job and development opportunities and a thriving natural environment are essential and fundamental needs. Meeting these needs must be at the heart of all our actions for us to deliver a future that has not just low emissions, but one which is prosperous and in which we can all thrive.

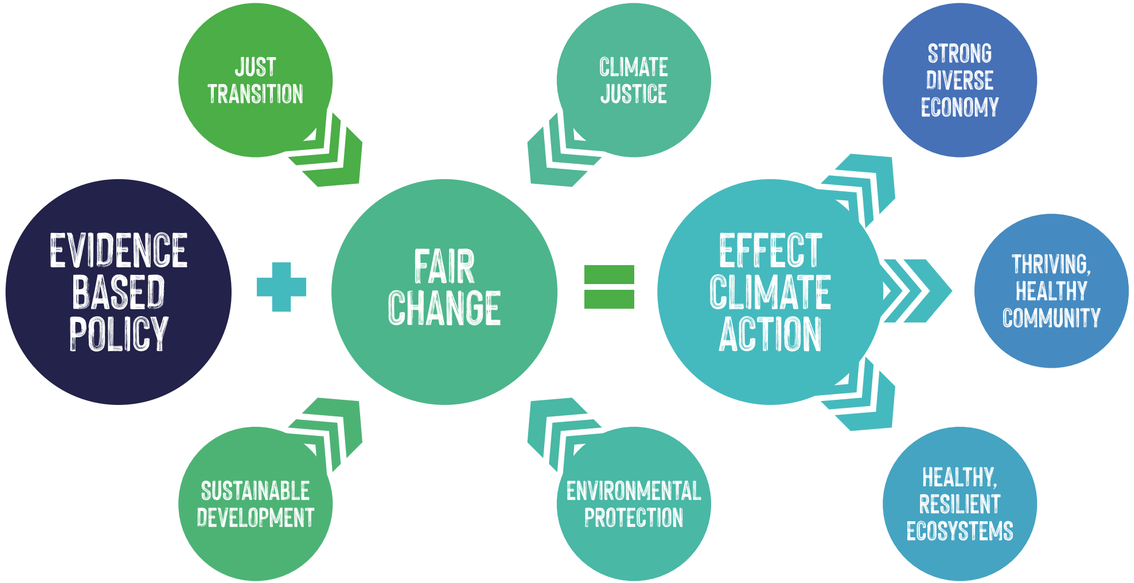
DELIVERABLES:

B.1 Ensure that public bodies (e.g. government departments and local authorities) are supported in implementing the Fair Change Framework.

B.2 Maximise social inclusion in policy development, ensuring meaningful engagement with people and businesses affected by change.

BENEFITS OF CHANGE:

- A well-managed just transition, ensuring plentiful employment opportunities, guided by meaningful, positive engagement with businesses and the community.
- Maximisation of the societal, environmental and economic co-benefits of change.
- Support and benefits are directed to those who need them, reducing inequality overall.



The graphic above shows how the principles that make up Fair Change all feed into policy development and implementation to ensure fair and effective climate action. Adhering to these principles along our journey to net zero will help us to minimise the costs associated with the social, economic and environmental disruption which climate change and the mismanagement of the transition could cause.

C. LEADING BY EXAMPLE

In line with the climate change duties set out in the Climate Change Act 2021 public bodies must undertake their usual functions in ways which support emissions reduction, just transition, climate justice, biodiversity and sustainable development. Those duties provide a clear mandate, across the public sector, for unified and determined climate action. Within Isle of Man Government we will work to ensure that all departments are supported and encouraged to deliver effective emissions reductions while continuing to serve the Manx public.

DELIVERABLES:

C.1 Develop training to support and enable relevant officers across government and public bodies to acquire the knowledge they need to deliver effective climate action.

C.2 Support public bodies in achieving compliance with their legal climate change duties by providing guidance, information and coordinating collaboration.

C.3 Reporting by public bodies on their climate change duties to commence in 2023 (for the period April 2022 – March 2023). Information collected will be used to help public bodies improve emissions reductions year on year.

C.4 Government-wide policy review to ensure that existing practices do not restrict our ability to meet our climate goals.

C.5 Explore legislative options to support long-term sustainable development, eg. the Well-being of Future Generations (Wales) Act 2015.

C.6 Obtain extension of the UK's ratification of the Paris Agreement to the Isle of Man.

BENEFITS OF CHANGE:

- Consistency and accountability across the public sector, in relation to climate action, through the guidance and reporting associated with the climate change duties.
- Use government buying power via procurement activity to drive decarbonisation.
- Public bodies understand the interactions between climate and policy activity.
- Reduction in energy bills across the government estate as buildings become more energy efficient and staff understand how they can save energy.
- Socially, environmentally and economically sustainable decision making is supported across the public sector, leading to long term decision making.
- We are part of a global network of governments and organisations with a common goal and benefit from their expertise.

D. INVESTING IN OUR FUTURE

The large scale change needed to transition to a net zero society will require investment. However, it is important to note that investment is needed to maintain existing assets regardless of our transition to net zero and delay will undoubtedly increase the costs associated with the changes needed. The costs of transition will be spread across the public and private sectors, households and businesses. Understanding these costs and ensuring that they are distributed according to the ability to pay is essential to ensure that our Island's financial security, and our quality of life, is protected and enhanced.

DELIVERABLES:

D.1 Climate Change Funding Strategy by 2023, which acknowledges climate financing as a priority.

D.2 Develop an appropriate Manx carbon emission and ecosystem valuation approach, in line with those already being used in the UK and around the world.

D.3 Carefully assess and manage the impact of lost public revenue from fossil fuels and associated opportunities and challenges.

D.4 Invest in the right forms of public support (eg. schemes, grants, information, training etc.), at the right times, to best support the most vulnerable and achievement of our climate goals.

D.5 Maximise private sector contribution by providing opportunities which align with Environmental, Sustainability and Governance (ESG) criteria.

D.6 Co-ordinate climate and international aid policy to ensure aid aligned to the commitments for climate finance and adaptation to align with the Paris Agreement.

D.7 Support departments with responsibility for any future economic strategies to develop and deliver their goals in a sustainable and low emission way.

D.8 Review government reserve funds and pensions investment to better align with sustainable and responsible investments.

BENEFITS OF CHANGE:

- Long term financial security and sustainability, through careful planning to transition to a strong, diverse economy which can thrive in a net zero world.
- Better cohesion between the needs of the economy and the environment.
- Our Island is a location that attracts and retains climate-conscious international businesses.

E. ENGAGEMENT AND AWARENESS

Government has a key role in ensuring that our Island community has the information it needs to adapt to impacts of climate change and to engage with and contribute to our transition. We know that nearly 70%* of the Manx public are either extremely or very concerned about climate change and we will support and encourage the changes in behaviour which will be needed to move away from fossil fuels, at a pace that people can manage. Equally, however we know that the public may be unsure of what net zero will mean in practice, what steps they can take, or they face barriers that stop them from acting. We will help guide people through the transition to help everyone play their part.

DELIVERABLES:

E.1 Continue to raise awareness and understanding of climate change and sustainability at all stages of education.

E.2 Explore whether climate change and sustainability should be included as required content in the curriculum, ensuring all Island children learn about the causes and effects of climate change and the roles they can play in the Island's transition to a net zero society.

E.3 Ensure learning and training are available that prepare students for employment in the low carbon economy of the future.

E.4 Net Zero Engagement Strategy to provide a framework for engaging the Island's citizens in the transition to net zero.

E.5 Develop awareness and educational campaigns to help ensure people understand the climate emergency, reduce climate anxiety, empower positive action and increase awareness of the Isle of Man Government's actions in addressing climate change.

E.6 Work closely with a wide range of respected and responsible partners to ensure that we raise awareness of climate change to all parts of our community.

BENEFITS OF CHANGE:

- Our Island community has the information it needs to prepare for and adapt to change.
- Individuals are empowered to make choices which are more sustainable and protect the planet.
- Young people are made aware of the changing planet and how it will affect their future.
- The public will play a part in the transition to net zero, actively shaping plans and collaborating with government.
- Public understanding of the net zero goal and the transition to a sustainable Island will improve.
- A fairer, stronger and more sustainable society with a common value and vision.
- Improved local biodiversity as people become more connected with nature.

*Taken from Climate Change Insights Survey 2021, available at netzero.im

PART 3 – MONITORING

Monitoring implementation of this Plan is vital to ensure we are making progress towards our targets. The Climate Change Act 2021 requires an annual progress report to be issued to Tynwald each year to review the previous year's actions along with a five-yearly emissions reports. These reports will indicate whether we are on track to reach our emission reduction targets and enable effort to be adjusted if necessary. Emissions fluctuate naturally year on year and so five-yearly emissions reporting enables the tracking of trends, which indicate progress more accurately.

Greenhouse gas emissions statistics provide the highest-level measure of progress, at an Island wide and sectoral level, via our national inventory. The inventory will show progress towards national emissions reduction targets and is published annually, typically in May/June, two years in arrears. The full set of inventory statistics are available at netzero.im.

A set of indicators will also be used to track the outcomes of actions and policies within the Plan. An indicator is a specific objective measure closely aligned to achieving the desired outcome. It will underpin monitoring of long-term progress, but will also enable us to be responsive to change in the near-term.

As we progress through the plan period the data collected will help to inform the actions and associated indicators for subsequent climate change plans.

Annual progress reporting will enable us to assess whether the data we are collecting is appropriate and, if necessary, we can modify our approach based on that information. The table below therefore shows examples of indicators, many of which are already being monitored, but is not intended to be exhaustive or prescriptive.

EXAMPLE INDICATORS AND ASSESSMENT CRITERIA

Indicators	Assessment
Annual greenhouse gas emissions	Year on year change
Five-yearly greenhouse gas emissions	Trends showing trajectory
Percentage of carbon neutral electricity generation	Annual average
Percentage of dwellings in Energy Performance Certificate (EPC) categories A/B/C	Trend data every five years
Proportion of electric vehicles per 1000 people	Annual figure
New electric vehicle (EV) registrations	Year on year change, monthly growth
Hectares of new nature-based solutions	Annual figure

NET ZERO
ISLE OF MAN

Isle of Man
Government
Reiltys Ellan Vannin

netzero.im

climatechange@gov.im

689390 / 219322

The Climate Change Transformation Team
Thie Slieu Whallian, Foxdale Road, St Johns,
Isle of Man, IM4 3AS

Illustrations by Ali Hodgson

APPENDICES TO THE ISLE OF MAN CLIMATE CHANGE PLAN 2022-2027

SD2022/65

INTRODUCTION – REQUIREMENTS OF THE ACT

The sections of the Climate Change Act 2021 listed below set out the content that must be included in this Plan. The sections of the Plan and the appendices which provide the required information are specified.

Section 18(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;
See Part 1 of the Plan.

(b) the Council of Ministers' proposals and policies for meeting interim targets (if any) during the plan period;
See 'Interim Target' section in Part 1 of the Plan.

(c) the timescales over which the proposals and policies mentioned in paragraphs (a) and (b) are expected to take effect; and
Except where otherwise specified the proposals and policies contained within the Plan are expected to take effect during the plan period (2022-2027).

(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;
  See Appendix 6 – Phase One Action Plan Progress Report

Section 18(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;
  See Appendix 1 – Expected Impacts of Strategies and Appendix 2 – Our Economy

(b) fiscal circumstances, in particular the likely impact of policies and proposals on taxation, public spending and public borrowing;
See Appendix 1 – Expected Impacts of Strategies and Appendix 2 – Our Economy

(c) policies or proposals on public health;
See Appendix 1 – Expected Impacts of Strategies and Appendix 3 – 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

See Appendix 1 'Expected impacts of strategies'

The basis of energy policy is, and will continue to be, finding balance within the 'energy trilemma' of security, affordability, and sustainability. At present our electricity supply is not environmentally sustainable because it is primarily reliant upon fossil fuels. The policies and proposals set out in this Plan seek primarily to address this imbalance by improving sustainability while still ensuring that our energy supply is as secure and affordable as possible. The Plan contains a commitment for 20MW of locally generated renewable electricity to be available by 2026, which provides a potential opportunity for the private sector. Energy and carbon intensity are expected to improve as a result of the policies and proposals set out in this Plan, particularly as a result of efficiency measures.

The decarbonisation of our gas and oil powered electricity supply is intended to be complete in 2030 (outside this Plan period).

(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.

See Appendix 1 – Expected Impacts of Strategies and Appendix 4 – Our Environment

Section 18(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.

See Appendix 5 – Fair Change

Section 18(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.

The relevant UN Sustainable Development Goals are indicated by icons in each section of the Plan.

See also Appendix 5 – Fair Change

Throughout the appendices, reference to 'sections' and 'actions' (indicated by action number) refer to the main body of the Plan, references within the appendices are indicated by the letter A and the appendix section number.

APPENDIX 1 – EXPECTED IMPACTS OF STRATEGIES

This Plan sets out the development and implementation of several important strategies which will provide detailed information on the way forward in key emission areas. Development of those strategies will include detailed economic and environmental impact assessments. The percentage reduction for each of the strategies is expected to be delivered within the plan period (2022-2027), unless stated otherwise.

Strategies for Key Emission Areas:

Strategy	Target	Description
Energy Strategy	100% emission reduction by 2030	Reduction to be achieved by decarbonising our electricity supply currently generated by gas and oil. Relies upon a new second interconnector being in place, with carbon neutral electricity being imported from Great Britain. In exceptional circumstances i.e. emergencies, some fossil fuel generation may be required to support Island demand).
Low Carbon Heating Strategy	15% emission reduction by 2027	To be achieved by measures to increase building efficiency (e.g. insulation) and low carbon heating choices (e.g. heat pumps). For more information about the potential routes to decarbonisation of this sector see the Renewable Heating Scenarios.
Transport Strategy	15% emission reduction by 2027	To be achieved by measures which encourage alternative, low carbon forms of transport such as walking, cycling, public transport and electric vehicles. A strategic transport decarbonisation review is planned to inform how best to implement such changes.
Business Emissions Reduction Strategy	15% emission reduction by 2027	This strategy will need to focus primarily on reducing emissions from refrigeration and air conditioning, as the largest business emission source (after heating which is included in the Low Carbon Heating Strategy).
Agricultural Strategy	15% emission reduction by 2027	To be achieved through measures which focus on improving efficiency, encourage sustainable farming practices and support local food production.
Waste Management and Circular Economy Strategy	15% emission reduction by 2027	Three categories of emissions have been included in this policy area, for the purposes of this Plan: landfill; sewage decomposition and the Energy from Waste Plant. This strategy will need to consider the full life cycle of our waste, how to reduce it and how to best dispose of unavoidable waste.
Land Management Plan and Strategy	10% sequestration increase by 2027	The Land Management Plan will provide the guidelines for land use and land use change across the Isle of Man, outlining a strategic approach to maximise carbon sequestration and maintain and restore biodiversity and wider ecosystem services.

The sectors referred to are those shown in the chart in the Our Emissions section of the Plan. For more information on emission categorisation, see Appendix 7 – Understanding Our Emissions.

In developing these strategies departments will be responsible for assessing and implementing policies and actions to achieve the specified reductions in sector emissions. All strategies must be developed and implemented in line with the principles set out in the Climate Change Act 2021. The strategies must, therefore, be designed to contribute to lowering emissions; to a strong and diverse economy; to maximising public health and wellbeing and to the protection and enhancement of the natural environment. Where negative impacts are identified, mitigation of those impacts must be considered.

For more information on the principles which govern how public bodies must undertake their functions and, therefore, how they will develop and deliver the strategies, see Appendix 5 – Fair Change, section 21 of the Act, the 'Climate Change Duties – Guidance for Public Bodies' and the 'Fair Change Framework'.

Supporting Strategies

The Plan also contains a number of strategies which will support the delivery of effective climate action in the Isle of Man:

- The Climate Finance Strategy will provide more detailed information as to the expected effects of the policies and proposals set out in this Plan on the Isle of Man economy and, in particular, fiscal circumstances, taxation, public spending, and public borrowing.
- The Adaptation Strategy will identify measures needed to ensure that our Island is prepared for the effects of the changing climate; that our homes and businesses are as well protected as possible; and our future infrastructure is designed to withstand the expected changes. The strategy should maximise the protective role of natural habitats.
- The Blue Carbon Strategy will deliver a management plan to strategically maximise marine carbon sequestration, and maintain and restore biodiversity and wider ecosystem services.
- The Net Zero Engagement Strategy will ensure that our Island community has the information it needs to navigate our journey to net zero, to adapt to change and to enable people to make low emission, sustainable choices in their own lives. We will keep people up to date with what their government is doing to tackle emissions and how it can help and maximise social inclusion in policy development to ensure that those who will be affected by change are involved in how the policy is delivered.

APPENDIX 2 – OUR ECONOMY

A2.0 Introduction

This section explains the expected effects of the strategies, policies and proposals contained within this Plan on the Isle of Man economy, including the competitiveness of particular sectors, businesses, jobs and employment opportunities, fiscal circumstances, taxation, public spending, and public borrowing.

The health of our economy, our population and our environment are intrinsically linked, and it is widely understood that climate change is having a significant impact on the global economy and that these impacts are becoming increasingly severe[i]. Protecting our economy, and ensuring that we can continue to thrive, therefore, requires us to take measures to mitigate and adapt to climate change.

The world around us is changing, as too is the global economy. To deliver the strong and diverse economy described in Our Island Plan[ii] we must be agile and adapt our economy to function sustainably and encourage business and investment which support climate action and environmental protection. When facing an uncertain future, it makes sense to conserve and protect our 'natural capital', the resources our physical environment provides to us, and which sustain us. The actions set out in this Plan are, therefore, designed to facilitate the Island's transition to a 'green' economy, ensuring that we keep pace with the changing world, strengthen our economy and remain a jurisdiction which attracts climate-conscious international business.

Numerous studies[iii] have indicated that action to reduce emissions will become more expensive as time passes and that delaying climate action not only increases risk and cost but also defers the realisation of the potential co-benefits. According to the 2016 Scoping Study on co-benefits produced by Aether, the economic value of co-benefits can exceed the cost of the climate mitigation action.

Slowing the rate of global warming as quickly as possible is the only way in which we can reduce the severity of the impacts of climate change and the costs associated with those impacts[iv]. Such costs include damage to property, ill health, and increases in the costs of resources, including food due to crop failure and supply chain disruption[v]. Some of the impacts of the changing climate are already unavoidable[vi] and to reduce the associated risks and costs we must implement adaptation measures. The 2021-2022 budget[vii] expanded the Island's financial commitment to tackling climate change, with £5 million more for climate change mitigation initiatives and a total of £6.25 million for the Department of Infrastructure's climate change adaptation budget, including £2.25 million for flood defence works and schemes.

The disruption of the pandemic has put considerable strain on the Island's economy in recent years; however, support for businesses was quickly rolled out and many businesses adapted their models almost overnight to continue to operate despite the restrictions. The ingenuity and agility shown by Manx businesses during the pandemic has proven their ability to adapt and overcome significant and fast-moving changes. These attributes will serve the Manx economy well as the changes needed to reach net zero begin to take shape over the course of this Plan. Importantly too, we have more information and the ability to plan further ahead in relation to climate change, as opposed to the rapidly changing situation of the pandemic. One of the most important

features of supporting the Manx economy through the transition will be to communicate changes clearly and provide sufficient notice, to enable businesses time to adapt.

All businesses on the Isle of Man are dependent on fossil fuels to varying degrees because of how embedded their use is in our way of life. The table below provides a summary of the ways in which certain types of businesses rely on fossil fuels.

The lists are not intended to be comprehensive.

Fossil fuel role in business	**Examples of relevant businesses**
Primary extraction or processing of fossil fuels.	Not present.
Sale and distribution of fossil fuels.	Retailers of vehicles fuels, home heating fuels etc.
Use of fossil fuels for energy generation.	Manx Utilities*, businesses reliant upon generators (e.g. mobile businesses such as caterers, entertainments etc.) or emergency generators (e.g. hospitals).
Sales, maintenance, and services related to fossil fuel equipment and vehicles.	Garages, mechanics, heating engineers etc.
Transport/vehicle services using fossil fuel vehicles.	Taxis, coach hire, aviation, shipping (trade, delivery of goods etc.), recreational vehicle hire (quads, boats etc.).
Businesses dependent on specialised, fossil fuel driven equipment and vehicles.	Construction, agriculture, fishing, arborists/tree surgeons, caterers.
Businesses dependent on fossil fuels for energy, heating and/or transport.	All, to varying degrees.
Businesses with ESG (environment, social and governance) considerations.	Financial services, international businesses etc.
Businesses connected to or reliant upon motorsport tourism.	Caterers, event co-ordination, hoteliers, and accommodation providers etc.
	*MU is a statutory board and not a for profit business

Some of these connections are direct and others are indirect, but the shift away from fossil fuels between now and 2050 is highly likely to affect all businesses to varying degrees.

A2.1 Electricity

Fundamentally, the transition of our electricity (section 1) supply to carbon neutral sources will not impact most businesses directly as they will continue to receive a secure, reliable supply of electricity through the network, as they currently do.

Provision of 20MW of electricity from local renewable generation (1.2), in addition to imported electricity from renewable sources via the existing and planned additional interconnector, will provide consumers with choice and could contribute to businesses' ability to fulfil their own environmental, climate and ESG related goals. This will ensure that, during the period before full transition of our electricity supply to carbon neutral sources, businesses are able to respond to shareholder or consumer desire for use of renewable energy and the Island is able to attract and retain climate conscious businesses.

A2.2 Buildings

For many businesses, the policies and actions set out in section 2 (Buildings) will simply mean changing the way they heat their premises by replacing fossil fuel heating systems with carbon neutral alternatives, such as heat pumps when their existing system reaches the end of its life. Although at present the installation price of heat pumps is more than that of fossil fuel boilers[viii], that price is expected to fall as a result of measures in the UK designed to stimulate the manufacturing market and heat pumps are already more efficient to run[ix], particularly when used in conjunction with 'fabric first' measures, such as insulation.

Decreasing the use of fossil fuels for building heating will directly impact businesses which sell those fuels, reducing their customer base and making them less able to remain competitive as their profit margins decrease. The Low Carbon Heating Strategy (2.1) will provide more detail as to the extent and timing of the changes and how they will impact such businesses. Not all properties on the Island are suitable for electric heating and so there is likely to be scope for some businesses, such as those which currently supply heating oil, to diversify into the provision of carbon neutral biofuels. The need for warm homes will remain but the methods for providing them will change and the associated businesses will need to consider how their business models will need to adapt to remain viable. Action 2.7 and section 5 (Business) will support this process through training and reskilling opportunities.

Some of these changes will occur regardless of climate action in the Isle of Man as they are influenced by global changes in prices and supply chains. It is important to acknowledge that any decrease in competitiveness for high carbon businesses is likely to be balanced by increased competitiveness for emerging, low-carbon businesses as their costs fall and demand increases.

Businesses already involved in (or which adapt/diversify to become involved in) the provision of energy efficiency measures (2.1, 2.3, 2.5, 2.6, 2.8, 5.2 and 5.6) and low carbon heating solutions (2.1 and 2.2) are expected to see an increase in demand as a result of associated actions. This would include businesses which provide or retrofit insulation and double/triple glazing and those which supply, install and maintain heat pumps. This is expected to create employment opportunities, including for reskilling for workers in sectors where competitiveness has been reduced.

While this shift in demand may be daunting for those employed in high carbon sectors, it is reassuring for the economy overall. In line with the just transition principle, affected businesses will be encouraged to diversify and workers in high carbon sectors will be supported to retrain and upskill as they move into jobs in the green economy.

Changes to planning and building control legislation (2.4 and 2.6) and the phasing out of replacement fossil fuel heating systems (2.1 and 2.2) will affect the construction industry and businesses involved in the fitting and maintenance of such systems. Buildings and construction methods and standards have been changing and improving for many decades and these changes are expected by the industry. The Climate Change Act 2021 contains a ban on installing fossil fuel heating systems in new buildings (which includes extensions) from 1 January 2025, for which the construction and property development sectors will already be preparing. The intention is that this ban will be brought forward to 2024 (2.2) following the agreement of this Plan. The prices of low carbon technologies, such as heat pumps, continue to fall as global uptake increases and, as fossil fuel heating systems become less common, the costs associated with them are likely to rise. The efficiency of low carbon heating is likely to become increasingly attractive to purchasers considering the current volatility of fossil fuel prices.

For households, better insulation lowers household bills without sacrificing comfort[x] (2.1, 2.3, 2.5 and 2.8). Assessing the life cycle costs associated with low carbon choices, against high carbon options will often demonstrate that the low carbon option is cheaper overall. The cost of many of the changes needed to reduce household emissions are 'front loaded', meaning that there is an initial cost followed by a pay-back period and then ongoing savings. However, the costs associated with the purchase and installation of low carbon heating systems are falling while their efficiency continues to rise, shortening the 'pay-back' period.

The introduction of Energy Performance Certificates (2.5) is expected to stimulate the market for energy efficiency measures, which will benefit related businesses. However, property owners who need to make changes to their properties to improve their energy efficiency will be impacted. The costs of these improvements may be reflected in increased rents, which could negate the cost benefit of reduced energy use for tenants. Care will need to be taken to monitor this and ensure that rental accommodation is affordable.

A2.3 Transport

The Transport Strategy (3.1) will set out in detail the future of transport for the Isle of Man and how it will contribute to the net zero goal. This information will enable businesses to prepare, adapt and make changes at the right times, minimising negative impacts and maximising opportunities for diversification and reskilling.

Safe and reliable transportation of both people and goods is essential to the Isle of Man economy. The policies and proposals in section 3 (Transport) of this Plan seek to reduce the number of fossil fuel vehicles on the roads and, therefore, the associated emissions, in several ways: by making journeys shorter; through the strategic placement of local amenities; encouraging walking and cycling for those journeys; encouraging the use of public transport for longer journeys whenever possible; and facilitating the use of electric vehicles for journeys which cannot be taken by foot, bike or public transport.

The sectors likely to be the most directly impacted by the policies and proposals set out in section 3 are retailers of fossil fuels for vehicles and of fossil fuel vehicles themselves. However, as with heating, the primary need (in this case transport) will not be disappearing but will need to be provided in different ways. This will create opportunities for diversification and for new businesses. The fact that electric vehicles (EVs) can be charged at home, while petrol and diesel can only be purchased from licensed premises presents a particular challenge for petrol stations. However, in the UK and around the world, such businesses are meeting this challenge by installing rapid and ultra-rapid charging points which can be used if charge runs low while away from home and for EV owners whose properties, such as flats, are not suitable for home charging. Many petrol stations already have diverse business models, functioning as convenience shops etc.

The banning of the registration of fossil fuel cars and vans by 2030, followed by hybrids from 2035 (3.3) align with the UK's equivalent proposed bans. This alignment protects the Island from being flooded with high emission vehicles that are unsaleable in the UK and ensures that supply chains for importation of EVs will be in place for retailers on the Island. The Isle of Man has a large second-hand vehicles market. The impact from banning the registration of new vehicles is, therefore, limited and trigger points for removing second-hand fossil fuel vehicles from the market will need to be considered in the future.

Actions which enable more necessary journeys to be made by foot, bike or public transport (3.1, 3.2 and 3.4) are expected to reduce household transport costs. For households and businesses which require private vehicles, the prices of new EVs continue to fall and the second-hand market continues to grow. EVs are far more efficient than a conventional car and tend to have lower fuel and maintenance costs[xi]. The placement of amenities locally (3.4) is expected to support businesses in towns and villages around the Island as people are more able to fulfil their needs and spend more time shopping closer to their homes. Increasing demand for bikes and associated services (3.2 and 3.4) is likely to benefit relevant businesses and could create new ones.

Online shopping, which experienced massive growth globally during the pandemic, is likely to continue to grow[xii]. Continuing to promote and support local provision of government services in communities (3.4) and the consumption of local food (section 4) will help to promote shopping locally, supporting local food producers and retailers, and is expected to increase footfall in towns and villages as people are able to meet their needs closer to home. This will provide opportunities for businesses, such as cafes and restaurants, which offer experiences that cannot be obtained online. Fewer vehicles using the roads is expected to decrease congestion and make walking a safer and more pleasant experience which should contribute further to footfall for businesses.

Overall, a population who walk and cycle more and who are exposed to less vehicle emissions while doing so, will be healthier and this will place less burden on healthcare services and reduce public spending on healthcare costs[xiii]. This benefit may only be seen in the medium to long term but should not be ignored as it addresses the causes of illness, rather than the symptoms, and reduces overall need to use health services.

A2.4 Agriculture, Land and Sea

The actions relating to agriculture outlined in section 4 (Agriculture, Land and Sea) are expected to enable a greater understanding of the Island's agricultural emissions (4.5) to support the production of an emissions reduction strategy (4.1). Farming efficiency advances through the implementation of low-carbon farming practices (4.1) have been demonstrated to reduce farm level costs and enhance food security and local biodiversity[xiv]. Farm businesses

may benefit economically from reduced costs and low-carbon farming techniques through bottom-line savings on products (e.g. fertilizer) and through retaining access to market as major retailers adopt Scope 3 (indirect emissions from goods and services) emissions reductions strategies. Highlighting the carbon footprint of produce from local farms engaged in emissions reductions, through a labelling campaign, if recommended in the Agricultural Strategy 2023, could increase the competitiveness of the local produce by appealing to carbon-conscious consumers.

The production of locally sourced biomass (as recommended in the Renewable Heating Scenarios and Future Energy Scenarios respectively) may impact on the land available for traditional/current farming practices, however, this could provide a significant economic opportunity for the Manx farming industry to diversify and increase profitability. Marginal lands, currently utilised for practices often supported by subsidies, can effectively grow biomass[xv].

The recent IPCC Working Group 3 Mitigation of Climate Change report[xvi] stated that 'carefully and appropriately implemented' action within the land use sector may provide significant co-benefits. To achieve this, a comprehensive Land Management Plan and Strategy (4.2) will be developed and delivered, creating jobs and employment opportunities in the environmental sector. Actions to protect and restore ecosystems (4.1, 4.2, 4.3 and 4.4) may reduce public spending through delivering improvements to ecosystems services (e.g. reduced spending for flood damage and water treatment); natural carbon capture (natural sequestration is cheaper and more accessible than artificial methods); and public health benefits (reducing spending on health services through long term reduced morbidities, improved levels of health and wellbeing). The volume of work anticipated through the actions set out in section 4 (agriculture, land and sea) could increase business opportunities and private sector investment in the sector.

The Isle of Man, through developing and delivering a Blue Carbon Strategy (4.4), could become a world leader in blue carbon field and attract private investment and industry growth both providing local employment opportunities. (Blue carbon is the natural storage of carbon in marine habitats such as sea grass meadows.) Actions to effectively protect and restore areas of biological and fisheries importance (4.3 and 4.4) will contribute to healthy marine ecosystems[xvii] which may benefit the fisheries industry by maximising catch quality and quantity, thereby sustaining and improving the industry's competitiveness in the global market. If feasible, the production of marine biofuels could provide additional maritime employment opportunities and alternative sources of income for the fishing industry. Utilisation of the seabed to produce marine biofuels may reduce/realign current fishing grounds and may lead to a reduction in traditional catch landings, it is believed that this could be offset financially by working to increase the efficiency of fishing effort (4.6), the availability of new seafood produce and the potential harvesting of biomass. The potential of supplying biomass from terrestrial sources may also help create employment for local people in the forestry and agriculture sectors and thus increase community income. Generating and utilising local biomass will help reduce public expenditure on the importation of fossil fuels and energy from foreign sources, and increase independent energy security.

A2.5 Business

Outcomes from the Business Emissions Reduction Strategy (5.1) are expected to encourage emissions reductions in the private sector. Energy efficiency measures (5.2) are cost effective and lead to long term savings for businesses[xviii]. Supporting businesses to respond to increasing consumer preference for environmentally sustainable and climate conscious goods and services will contribute to maintaining and enhancing their competitiveness on both the local and international markets and will ensure that the Island is a desirable location for international companies to do business. Legislative measures to

minimise leakage from air conditioning and refrigeration were brought into effect in 2020 and resulted in ratification of the Montreal Protocol being extended to the Island. Reducing these emissions requires substitution with other less harmful substances; using alternative technologies which do not require GHG refrigerants; improving leak tightness; reducing the required refrigerant content of a system; and improvements to containment on disposal (recovery, recycling or destruction). While businesses should already be meeting statutory minimum standards, consideration should be given to how businesses could be encouraged to reduce emissions further by, for example, replacing their equipment with lower emission alternatives.

This Plan seeks to encourage climate research and development on the Island which may provide opportunities for the creation of new jobs and diversification (5.3). Furthermore, the Plan aims to support businesses and workers through training and reskilling (5.6). By ensuring that workers and businesses in high emissions sectors have access to the training and information needed to adapt to the transition to a net zero economy we can protect livelihoods and maintain economic stability.

A2.6 Waste

The Isle of Man imports large volumes of resources – including construction materials, fossil fuels, organic material, vehicles, food etc. - little of which is recycled. In the EU, each inhabitant uses 13.4 tonnes of materials per year[xix], 7 tonnes of which become waste[xx]. Low levels of reuse and recycling have economic consequences[xxi], as resources are disposed of before their potential for use is reached; and have negative impacts on humans, nature, and our environment through pollution[xxii] and the damage caused in obtaining the resources in the first place. There is a clear need to shift away from our current model of lineal consumption. Although many local authorities have made efforts to increase recycling in recent years, there is much more to be done in 'closing the loop' to create a 'circular economy'[xxiii] (6.1, Figure 1).

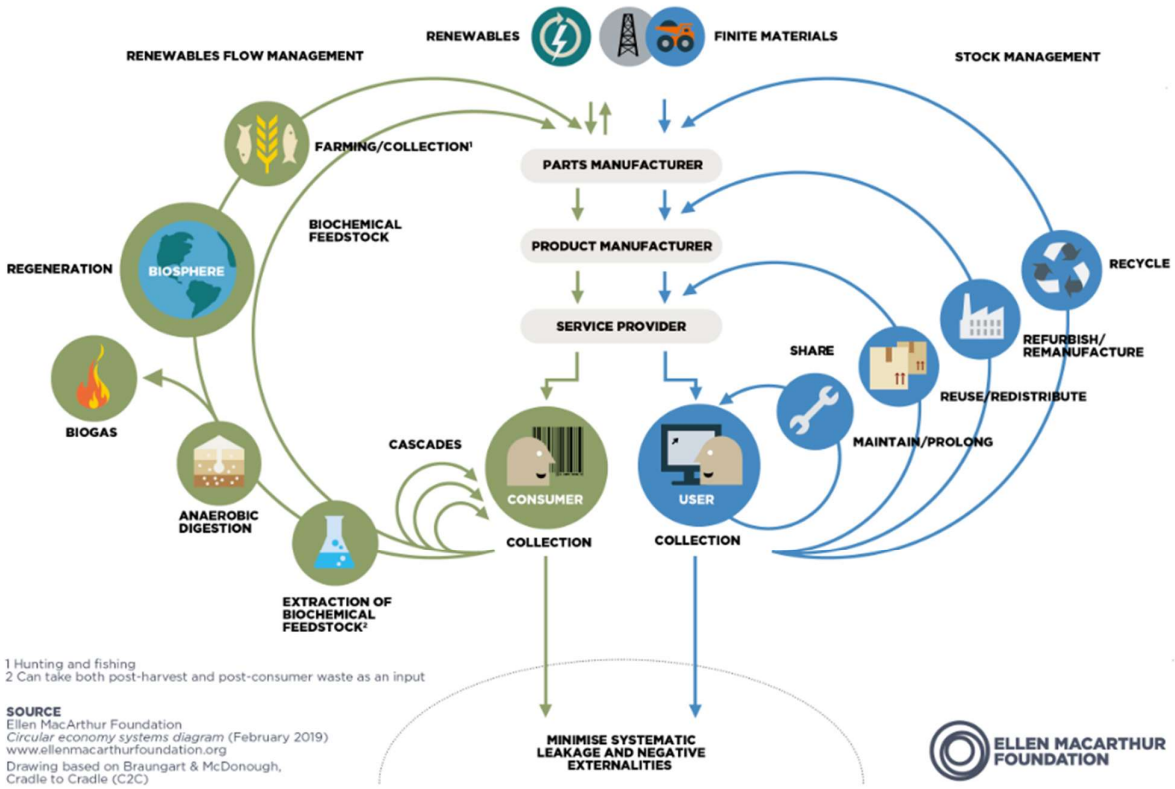


Figure 1: Circular Economy

In a circular economy waste ceases to be waste and becomes a 'secondary raw material'. This paradigm shift is likely to offer economic opportunities, stimulate innovation and create employment. A circular economy promotes the 'waste management hierarchy' (Figure 2), and significantly reduces the financial and environmental burden of disposal. Reducing waste to energy combustion and using sorted feedstock will reduce potential adverse health (cancer and non-cancer) impacts, so reducing expenditure on public health[xxiv].

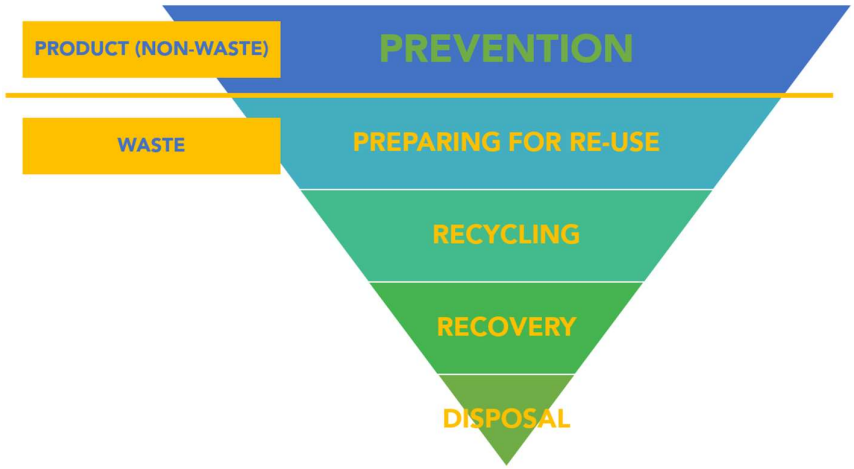


Figure 2: Waste Management Hierarchy

A circular economy can foster sustainable economic growth and generate new jobs in repair and rental, repurposing, sorting and recycling[xxv]. 'Industrial symbiosis' turns one industry's by-product into another's material input, for example district heating schemes, where industrial waste heat is piped to homes in the surrounding neighbourhood.

Improper waste management can result in soil, water and air pollution, with negative impacts on health, ecology and the environment, all of which are costly to rectify[xxvi]. Solid wastes (landfill and incineration) are both linked to increased prevalence of birth defects, cancers and respiratory problems. Hazardous and toxic waste, and the emerging priority of E-waste, bring challenges[xxvii].

Changes will need backing in legislation and accompanying monitoring. We will support businesses through this transition and work to ensure that the means for education and reskilling are provided.

A2.7 Adaptation and Resilience

The delivery of an Adaptation Strategy (A.1) is expected to lead to long term savings though the protection of existing infrastructure from the worsening effects of climate change and by ensuring that new infrastructure is 'future proof' and designed with the changing climate in mind.

To limit losses, both private and public, associated with property damage, vulnerable areas need to be protected. Integrating adaptation and resilience into policy by government and businesses is necessary to ensure that risk from the predicted changes is minimised and infrastructure does not need replacing prematurely. Adaptation measures include protecting and enhancing habitats which provide natural protection from the effects of climate change. If correctly managed this will save money which would otherwise need to be spent on artificial alternatives.

Adaptation measures which reduce risks to public health will also avoid the associated financial burden on health services.

A2.8 Fair Change

Our economy, just like the global economy, will change significantly between now and 2050 because it is currently so dependent on fossil fuels. The just transition principle means managing that process so that, through the changes needed, we not only protect our economy but improve it. Our current economic model is not sustainable - the costs of continuing to burn fossil fuels; over-using our planet's resources; creating waste we are unable to dispose of; and polluting and damaging habitats, are too great. We are incurring a huge debt which we will pass to future generations. We must transition our economy to one which operates within the natural boundaries of what our planet can provide. By doing so we maximise the 'ecosystem services' it provides to us and minimise the cost of solving the problems we have caused.

The principles of Fair Change and the policies and proposals set out in section B (Fair Change) support the transition to a sustainable economy, an economy which can develop and thrive for the benefit of our and future generations.

Maximising social inclusion in decision making (B.2) will contribute to the delivery of a just transition: Involving affected workers and employers in decisions which affect their sectors and any support measures needed will mean that businesses are well prepared to adapt to changes.

A2.9 Leading by Example

Training (C.1) and planned for on-going review (initially at 6 months following publication) of the 'Climate Change Duties – Guidance for Public Bodies' will support the public sector in delivering a just transition and developing climate policies which support the economy, businesses, and the workforce through the transition. Job opportunities may be created as need for climate expertise increases across the public sector.

A2.10 Investing in Our Future

All the policies and proposals set out in section D (Investing in Our Future) have been designed to support a strong and diverse economy. While reducing emissions clearly comes with a price tag, it is very important to acknowledge the long-term savings and avoided costs of early climate action.

Preparation of the Climate Change Funding Strategy (D.1) will provide more detailed analysis as to the expected impacts of the policies and proposals set out in this Plan on the Island's fiscal circumstances and public borrowing and spending. At present, there are no specific policies or proposals designed to affect the Island's tax regime. The overall cost of the transition to net zero, and this five-year portion of that transition, will be spread across the public sector, the private sector, and individuals. Much of this spread will occur naturally, driven by consumer preferences driving the profitability for businesses of meeting increased demand for low carbon goods and services.

A scheme designed to provide opportunities for local businesses to contribute to sequestration and emissions reduction projects on the Island will be established (D.5). Businesses will be able to demonstrate to their customers, via a government backed scheme, that they are supporting efforts to decarbonise and protect the environment. This is expected to benefit those businesses by helping them meet increasing consumer demand for climate and environmentally friendly choices.

Using Government buying power via procurement activity to drive decarbonisation (as per section C of the Plan) is expected to reinforce existing support for purchasing from local businesses.

A2.11 Engagement and Awareness

The policies and proposals set out in section 10 have been designed to raise awareness, engage the public and encourage private individuals and households to act in relation to climate change.

The provision of information relating to climate change and local action (E.1, E.2, E3, E.4 and E5) should help individuals understand the implications of climate action for their specific situation and their personal options to enable informed choices. The delivery of a Net Zero Engagement Strategy (E.4) will ensure that people are informed and engaged at the right times and in the right ways, enabling them to best prepare and adapt to change. In doing so the Island's businesses can also adapt to changing purchasing patterns, benefiting from increased demand in some areas; and avoiding losses, by understanding potential decreases in demand sufficiently early.

APPENDIX 3 – PUBLIC HEALTH

A3.0 Introduction

This section explains the expected effects of the policies and proposals contained within this Plan on public health. The rapidly warming climate is the "greatest threat" to global public health. Recently, more than 200 medical journals[xxviii] issued this warning in an unprecedented joint statement that urges world leaders to cut heat-trapping emissions to avoid "catastrophic harm to health that will be impossible to reverse."[xxix xxx]

The effects of climate change are already being felt on the Isle of Man, with increased extreme weather events and sea level rises, however the full extent of how this will develop is not yet understood. What is certain is, if unchecked, the impact on physical and mental health will be significant, with negative consequences to the economy.

The factors that contribute to health and wellbeing at a population level are wide, and involve an interplay of biology, psychology and socio-environmental factors[xxxi]. Figure 3 illustrates the widely accepted model, demonstrating the spheres of influence on public health. All can be adversely affected by climate change and many have been mentioned in this Plan.

Figure 3: Influence of Climate Change on Public Health

Public health interests in climate change can be divided into 3 broad categories:

1. Climate-sensitive health risks
    a. Direct e.g. extreme weather events, heat stress, drought
    b. Indirect e.g. changing disease patterns, food and water insecurity, air pollution
2. The co-benefits of climate change mitigation measures
3. The opportunity 'Fair Change' provides to address poverty and inequality.

Climate sensitive health risks are increasing with rising temperatures, more extreme weather, rising sea levels, changes in vector ecology, water and food supply impacts and air pollution (Figure 4). Preparing for these changes in advance is 'adaptation'.

Co-benefits of climate change mitigation measures on public health are numerous and remarked upon throughout the Plan. Positive impacts are mediated via the determinants of health. These include:

Cleaner air by reduced fossil fuel burning in electricity production and transport, leads to a reduction in cardiovascular and respiratory diseases, lung cancer, dementia, diabetes, autism and mental health disorders[xxxii].

A more active population by the promotion of active travel and green spaces has a strong association with reduced cases of diabetes, cancer, cardiovascular disease and dementia. There are tangible mental health benefits, with decreased depression and stress and with improved concentration[xxxiii].

Figure 4: Climate Change Adaptation - UK Environment Agency

Improvements to the built environment through 'place based' planning and public transport, can improve connectivity, a sense of community and tackle loneliness.

More energy efficient homes reduce excess winter deaths, breathing conditions linked to mould and depression and anxiety that have been linked to cold homes[xxxiv].

The most vulnerable populations are at highest risk from climate change, including the oldest and youngest, and those already facing economic and health challenges[xxxv]. This is not only being most affected by the changing climate, but also potentially most disadvantaged by actions taken to mitigate climate

change. Poverty and inequalities are associated with a myriad of adverse health, wellbeing and social outcomes in this generation, and this will be the case in generations to come[xxxvi].

However, if the mitigation measures are designed to be 'fair', with input from those likely to be affected, the process of change will help to address poverty and inequality and build a healthier, more secure future for everyone.

A3.1 Electricity

Actions set out in section 1 (Electricity) will contribute, alongside actions in other sections, to the overall reduction in the burning of fossil fuels and are, therefore, likely improve air quality by reducing pollution. Limited information is currently available about air quality on the Isle of Man and connections between current air quality and the health of our community are not known. We aim to improve data collection in this area to enable targeted future measures for improvement and ensure that, whichever mix of electricity generation technologies are employed, our air quality is protected. In England, the total cost due to the NHS and social care due to air pollution (from particulate matter and nitrogen dioxide, both typically caused by burning fossil fuels) is estimated to be between £1.5 billion and £5.5 billion in 2025 and between £5.3 billion and £18.6 billion in 2035[xxxvii]. Improvements in air quality are, therefore, expected, in the long term, to contribute to lower public spending on health care by reducing morbidities linked to fossil fuel air pollution, such as cardiovascular and respiratory diseases and lung cancer.

A3.2 Buildings

Every winter, cold living conditions contribute to avoidable deaths, particularly amongst older people[xxxviii]. Poor housing conditions, such as cold and damp, have also been linked to increased depression and anxiety[xxxix] which, in addition to the direct impacts on wellbeing and the ability to enjoy life, can affect people's ability to work, leading to financial struggles and impacting employers, and increase demand on health care services[xl].

Fuel prices are expected to continue to rise, and some households are already struggling to heat their homes. Poorly insulated homes are more difficult, and, therefore, most costly, to keep warm.

The actions set out in section 2 (Buildings) of this Plan will facilitate improvements to domestic heating through insulation and modernised heat generation which will have direct effects on health and wellbeing. 'Fabric first' measures (such as improved insulation) will improve comfort and could help to reduce excess winter deaths caused by cold living conditions. The prevalence of moulds associated with asthma and bronchitis, which are common in cold, damp homes, also diminishes when homes are warm and well-ventilated[xli].

The 'fabric first' approach (2.3) will also help address fuel-poverty as less energy is needed to heat a well-insulated home. Those currently experiencing fuel poverty are often faced with the choice between warmth and food; reducing energy demand for heating will free up money for food. Improved nutrition has been shown to have benefits for physical and mental health including improved concentration levels which improves performance in education and the workplace[xlii].

District heating schemes (as proposed in the Renewable Heating Scenarios) have the potential for helping the most vulnerable, due to the most suitable neighbourhoods also housing the lowest earners. This could help address existing inequalities and in so doing represent 'Fair Change'.

A3.3 Transport

Physical inactivity can contribute to weight gain, poor sleep, and higher levels of stress which, in turn, increase the risks of a wide range of negative health outcomes, such as dementia, hip fractures, various cancers, cardiovascular disease and type 2 diabetes[xliii]. The actions set out in section 3 (Transport) will help to address the risks of physical inactivity to public health by supporting increased travel by walking or cycling (3.2). Active travel has been shown to improve concentration and productivity at work and school[xliv]. Rates of depression and sickness absence can also reduce[xlv].

Loneliness and social isolation, particularly in older people, have been linked to increased risks of high blood pressure, heart disease, obesity, a weakened immune system, anxiety, depression, cognitive decline, Alzheimer's disease, and even death[xlvi]. Actions relating to planning policy and government services (3.4) will ensure that access to active travel routes, public transport, public services, and amenities are priorities. This will improve social connectivity, strengthen communities, and help to tackle loneliness.

Walking and cycling (3.2) are the most affordable forms of transport. Enhancing our built environment, provision of services and access to public transport will enable people to make savings, compared with using private vehicles (3.4).

Fewer fossil fuel vehicles (3.3) on our roads will reduce associated air pollution which is expected to improve air quality and benefit respiratory health[xlvii].

Electric vehicles (EVs) are significantly quieter than their fossil fuel equivalents which has led to concerns about increased accidents, in particular collisions with pedestrians, most notably those hearing or vision impairments. Studies have been undertaken around the world to determine whether this is an actual or a perceived risk, but results are contradictory or inconclusive[xlviii]. This is primarily because the current usage of EVs is different in nature to that of fossil fuel vehicles, EVs being used more commonly in urban areas for shorter journeys which could contribute to a disproportionate number of accidents involving pedestrians. Some EV manufacturers have proposed adding recorded sounds while vehicles are running, which could mitigate this risk, and thoughtful travel infrastructure which prioritises the pedestrian (and cyclists) will also help. Concerns about the danger of death or injury being increased due to the use of electricity (i.e. the potential for shock) and the flammability of EV batteries are unfounded. EVs are built to meet the same strict safety standards as their fossil fuel counterparts[xlix] and are engineered specifically to avoid the possibility of 'thermal runaway'[l] where the flammable electrolyte inside an EVs battery can ignite, becoming much hotter than a fire fuelled by petrol or diesel.

A3.4 Agriculture, Land and Sea

In undertaking actions to restore, protect and enhance natural environments and ecosystems (4.2, 4.3 and 4.4), provision for space which the public can enjoy and undertake exercise can be created. Time spent in natural outdoor environments has been shown to reduce stress, enhance social wellbeing and

improve both physical and mental health[li]. When compared to exercise in urban environments, exercise in natural environments has been proven to deliver greater health and wellbeing outcomes[lii].

The policies and proposals in section 4 (Agriculture, Land and Sea) are expected to contribute to both limiting the potential negatives health impacts of climate change, by increasing sequestration, and improving the general health and wellbeing of our community, leading to reduced burden on health services in the future.

Declaration of a biodiversity crisis, in addition to the previously declared climate emergency, could add to anxiety suffered, particularly among younger generations, however, effective education in climate change (E.1 and E.2) can mitigate feelings of anxiety.

A3.5 Business

Stress in relation to job security and finances can contribute to serious mental health issues[liii]. The policies and proposals set out in section 5 (Business) alongside those in section D (Investing in Our Future), are designed to support delivery of a just transition, minimising negative impacts on the workforce and ensuring that opportunities for employment and reskilling are available to those who need them. These actions are, therefore, expected support public health.

A3.6 Waste

The waste and by-products resulting from our current forms of waste management can be hazardous and harmful to human health[liv]. Taking a strategic approach to waste management as set out in section 6 (Waste), through improved collection, processing and end of life disposal, may reduce the risks associated from contact with harmful substances and pollutants.

A3.7 Adaptation and resilience

Damage to ecosystems, reducing their capacity to provide essential resilience against the effects of the changing climate (e.g. by reducing run-off, acting as effective heat sinks, reducing coastal erosion, and mitigating the impacts of flooding) increases the impact of severe weather events and the associated health risks[lv]. Actions in section A (Adaptation and Resilience) are designed to minimise these detrimental effects and are, therefore, expected to support public health.

A3.8 Fair Change

The Isle of Man Climate Change Survey showed 72% of respondents were ‘somewhat’ or ‘very worried’ about climate change[lvi]. In a global survey of young people, three-quarters said they thought the future was frightening and over half (56%) said they think humanity is doomed[lvii]. Hopelessness and a loss of

self-determination leads to deteriorating mental health. 'Climate anxiety' or 'eco-anxiety' about the impacts of climate change itself exists alongside worries about the changes needed to mitigate those impacts. Concerns about job security and changes to the employment market, as described in section A2.0 above, and the cost of transition for household and businesses – particularly in the context of the current cost of living crisis, rising energy bills and inflation and the war in Ukraine – all contribute to higher levels of stress, anxiety, and depression[lviii].

The principles of Fair Change, which underpin the policies and proposals set out in this Plan, mean that engagement with the public will be prioritised. Keeping people informed and ensuring that they are involved in the process of change will provide them with time to adapt and ensure that support measures are directed where they are most needed and to best effect. As a package of measures this Plan provides reassurance that the Isle of Man takes the effects of climate change seriously and is doing something about it.

A3.9 Leading by Example

Section C (Leading by Example) is designed to deliver a unified approach to climate action across government, ensuring that public health is prioritised and promoted. This is supported by the Climate Change Duties – Guidance for Public Bodies which includes the Fair Change Framework. These documents provide advice in relation maximising public health in accordance with the principles of sustainable development.

A3.10 Investing in Our Future

Section D (Investing in Our Future) is designed to support a strong and diverse economy. The health of the economy is essential for the health of the population as it enables the delivery of key services and access to jobs and education. The policies and proposals in that section are, therefore, expected to support public health.

A3.11 Engagement and Awareness

Section E (Engagement and Awareness) sets out how the Manx public will be supported throughout the transition. On-going engagement and education around climate change and the Island's mitigation efforts will help to provide reassurance and security and decrease the levels of anxiety around climate change in our community.

APPENDIX 4 – OUR ENVIRONMENT

A4.0 Introduction

This section explains the expected effects of the policies and proposals contained within this Plan on environmental considerations and, in particular, the likely impact of the net zero emissions target or an interim target on biodiversity, ecosystems and ecosystem services.

In the context of global progress in making the connection between tackling climate change and taking care of our natural environments, this Plan is very much a climate *and* ecosystems plan which aims to make considerable progress in reducing our emissions, whilst also explicitly acknowledging the ecological emergency and the need to act urgently to protect and enhance our ecosystems and biodiversity. Fully functioning ecosystems provide numerous ecosystem services to people, including provisioning services, such as supply of natural resources and food produce, and regulating services that modify hydrological processes (e.g. peatlands improving water quality), as well as socio-economic services like recreation and eco-tourism[lix]. Environmental conservation, habitat restoration and land management play a vital role in mitigating the effects of climate change, for example enhancing carbon sequestration and thus reducing atmospheric GHG emissions[lx]. Furthermore, environmental restoration can play a significant role in adapting to climate change by protecting settlements[lxi]. Floodplains, seagrass and saltmarshes can all deliver natural protection against rising sea levels and the extreme weather events that are becoming increasingly common[lxii].

In terms of the specific impact of the interim target and the net zero target, the main concern for ecosystems and biodiversity is that, as our need for climate action intensifies and developments of low carbon alternatives accelerate, there is a risk that the impact on ecosystems could be seen as a necessary price to pay for rapid progress. However, this could not be further from the truth and the wider principles in the Plan and in the Act, around ensuring that the UN Sustainable Development Goals (including SDG 15 'Life on Land' and SDG 14 'Life under Water') are delivered and on the protection of biodiversity and ecosystems, provide a clear framework for achieving net zero whilst also significantly improving the health of our ecosystems and biodiversity. Enhancing the vital role that the natural environment plays in reducing our emissions, increasing carbon storage, and providing us with the resilience we need to adapt to climate change is, therefore, a key feature of this Plan and the principles that underpin it.

Changes in the way we use the land and sea have been the main historical and current causes of biodiversity loss. Some of the policies and proposals outlined in this Plan to mitigate GHG emissions will require further changes in land and sea use which may cause biodiversity loss. However, research has shown that even ambitious plans for GHG reduction, with land-use change, can positively benefit biodiversity when undertaken strategically[lxiii]. It will be important throughout the design and implementation of the Plan to identify and evaluate all the potential impacts the actions, policies and proposals may have on biodiversity. In doing so positive impacts can be facilitated, to help ensure the multiple benefits listed above are achieved, and all unintended negative impacts are avoided where possible.

Fewer emissions slow the build-up of heavy metals in soils and water, allowing for a potential increase in biodiversity and enhanced ecosystem services[lxiv]. This enables habitats to increase resilience to extreme weather events and improves natural flood/drought protection, supporting artificial climate change adaptation measures e.g. flood defences.

A4.1 Electricity

The Energy Strategy will take into account the impact of the technologies used on biodiversity and the environment.

Any use of biofuels, subject to the biofuel feasibility report, will review the impacts that production of biomass feed stocks for biofuel may have on biodiversity, disease risk and other natural capital metrics associated with the production of biomass. Any recommendations made for the producing of local biomass must meet the criteria for sustainability as defined in Article 29 of Directive (EU) 2018/2001[lxv] on the promotion of the use of energy from renewable sources. These criteria state that biofuels, bio liquids and biomass fuels cannot be produced from areas of high biodiversity or carbon storage importance.

A4.2 Buildings

Action 2.4 in the Plan will involve identifying and implementing the methodology and processes needed to support the commencement of amendments, contained with the Climate Change Act 2021, to existing planning legislation. Those amendments will make the following considerations relevant to planning application and wider planning strategy:
(a) the maximisation of carbon sequestration;
(b) the minimising of greenhouse gas emissions;
(c) the maintenance and restoration of ecosystems;
(d) biodiversity net gain;
(e) the need for sustainable drainage systems; and
(f) the provision of active travel infrastructure.

Consideration of these factors is critical to ensuring that we encourage sustainable property development and ensure that carbon already stored in habitats is not released. The provision of high quality, 'future proof' housing, developed in a way which does not damage our natural resources and ecosystem services is essential. Without these precautions homeowners are at risk of experiencing otherwise avoidable depreciation in value[lxvi] of their properties or difficulty in obtaining, or being able to afford insurance[lxvii], for example if natural flood defences are damaged leaving properties at greater risk.

The amendments to planning legislation referred to above will help to ensure that existing carbon storing habitats, which can be difficult and costly to repair, are protected from damage or destruction by including carbon sequestration in the application process.

A4.3 Transport

GHG's and air pollution caused by vehicle emissions can have negative effects on the natural environment (including reducing growth and survival of plants and crops)[lxviii] through the development of a Transport Strategy (3.1) these impacts could be effectively mitigated. Additionally, the sulphur emissions from fossil fuel vehicles can increase acidification of soils, vegetation and water sources leading to significant negative consequences for natural ecosystems and the biodiversity they contain[lxix]. Reducing fossil fuel vehicle usage could reduce the levels of localised air pollution and positively impact the natural environment.

It is estimated that millions of animals are killed every year on the roads in the UK. Reducing the number of vehicles on the Island's roads could lower vehicle-based animal mortality[lxx].

A4.4 Agriculture, Land and Sea

Section 4 (Agriculture, Land and Sea) has a particular focus on the natural environment, but all the actions outlined in this Plan are supported by the climate change duties set out in the Act which require public bodies to undertake their functions in ways which support the protection and enhancement of biodiversity, ecosystems and ecosystem services.

In addition, climate change training (C.1) will ensure a good understanding and buy-in across government to the importance of protecting and enhancing ecosystems to support climate mitigation and adaptation. Protected areas play a key role in the protection, enhancement and restoration of biodiversity and ecosystems[lxxi] and there is a re-iteration of the need for further protection of sites on land, in line with targets in the Biodiversity Strategy.

As a substantial proportion of infrastructure projects are Government-led and public bodies (including Government Departments, statutory boards etc.) are significant landowners, the commitments in this Plan should make a significant difference to ensuring that the uses of land in public ownership support biodiversity and healthy ecosystems.

Other actions in this Plan are likely to have beneficial effects on the environment, for example, improvements in air quality from the planned transition away from fossil fuels in the electricity, buildings, and transport sectors benefit plants and animals as well as humans[lxxii]. Adaptation measures (section A) rely upon key ecosystem services such as flood defence and so such areas, which are also valuable habitats, will be protected.

The strategic Land Management Plan (4.2) is critical to avoid the unintended ecological and climate consequences resulting from poorly considered sequestration projects (e.g. planting trees on peatland or other valuable carbon stores). Such consequences can be devastating in terms of emissions but can also be extremely difficult and costly (or even impossible) to rectify[lxxiii]. The work that is planned as part of the development of the Land Management Plan will ensure that future land use decisions maximise carbon sequestration, minimise the emissions associated with habitat loss and protect and enhance biodiversity, ecosystems, and ecosystem function. A comprehensive integrated Land Management Plan would provide the best assurance against

the risk of ecosystems and biodiversity failing to be protected as the pressures of land use for climate action (e.g biomass cultivation, solar farms etc.) impact on natural habitats.

The commitment to develop a five-year funding plan for ecosystems and biodiversity implementation which enables tree planting, peat restoration and wetlands enhancement, to ensure sequestration is on track to achieve the required carbon removals by 2050, as part of the Climate Change Funding Strategy will mobilise investment in protection and restoration of ecosystems and to work to align agricultural policy will contribute to the protection of biodiversity.

The development of a Blue Carbon Strategy acknowledges the potential risk to marine biodiversity, ecosystems and ecosystem services of poorly managed marine infrastructure developments and includes a policy commitment that high standard Environmental Impact Assessments and a strategic and well-evidenced Marine Spatial Planning approach will both be used to ensure that new marine infrastructure required for the transition (e.g interconnectors, offshore wind farms) do not have a negative impact on biodiversity, ecosystems and ecosystem services.

Increasing the protected area of the Manx territorial sea would bring significant benefits to marine ecosystems and biodiversity[lxxiv].

A4.5 Business

Work across industries to improve climate literacy, awareness of emissions and maximise the realisation of low carbon business opportunities will develop a greater understanding of actions which benefit the natural environment. The impact of this supplemented skill set will increase the effectiveness of climate action and enhance the Island's ability to deliver nature-based solutions effectively, this may have the impact of increased the viability of investment in the sector. With an investable sector and locally skilled individuals 'green' and 'blue' industries may develop on the Island. Additional funding in these areas through the development of viable industries will have a profoundly positive impact on biodiversity, ecosystems and natural environments[lxxv].

A4.6 Waste

A waste management strategy (6.1) will consider the collection, prevention, recycling, repurposing, treatment, and disposal of the Island's waste with a view to positively impacting the natural environment by reducing greenhouse gas emissions, removing pollution and litter, and decreasing the need for new landfill sites. Creating and promoting a healthy and clean natural environment through improved waste management and recycling (6.2 and 6.3) will benefit biodiversity by removing hazards from, and reducing the need to alter, ecosystems[lxxvi].

A4.7 Adaptation and resilience

Adapting to climate change and increasing the Islands resilience to the vulnerability of its effects (A.1 and A.3) will involve developing nature-based solution to provide ecosystem benefits, particularly through reducing flood and coastal inundation risk[lxxvii]. Coastal and upland wetlands, river flood plains, and

marine habitats all play crucial roles in mitigating the risks associated with flooding and coastal inundation as well as providing important habitat for rare and endangered species[lxxviii]. Poorly planned and/or executed adaptation measures can negatively impact the economy and natural environment[lxxix]. The drivers of vulnerability must be identified and addressed in the planning phase of adaptation. This further underlies the importance of an integrated Land Management Plan and Strategy (4.2).

A4.8 Fair Change

One of the four fundamental principles of Fair Change is 'enhancing biodiversity, ecosystems and ecosystem services'. This means that the policies and proposals set out in this Plan must be delivered in accordance with that aim. Furthermore, the Climate Change Act 2021 created legal 'climate change duties' for public bodies to unify the public sector's approach. The guidance for public bodies, which was published on the 31st March 2022, along with the policies and proposals set out in section B, will help to achieve this.

A4.9 Leading by Example

By ensuring that knowledge of climate change and an understanding of the importance of mitigation is embedded across government departments through training (C.1), climate action will become a part of everyday decisions within government. The training will ensure that the natural environment is carefully considered when enacting change and implementing policies through the Fair Change Framework (B.1).

A4.10 Investing in Our Future

The principles of Fair Change laid out in the Plan, along with the climate change duties for public bodies set out in the Act, mean that protecting and enhancing biodiversity, ecosystems and ecosystem services must be intrinsic to all actions taken in relation to this Plan.

The delivery of the Climate Change Funding Strategy (D.1) and the development of an appropriate Manx carbon emission and ecosystem valuation approach, in line with those already being used in the UK and around the world, (D.2) will ensure that environmental protection is valued and funded appropriately. As has been highlighted, an integrated Land Management Plan and Strategy will be a key factor in ensuring that benefits are realised, costly maladaptation is avoided, and ecosystems thrive.

A4.11 Engagement and Awareness

By helping the public understand and become more aware of climate action (E.1, E.2, E.3, E.4 and E.5), greater public involvement in protecting and enhancing the natural environment could be achieved. Providing opportunities for the public to assist with the development the natural environment through climate action may also help improve mental well-being[lxxx], physical health (through increased activity), offer cost free activities for individuals and families, and give a platform for learning and information sharing relating to climate action. Research has shown that people with a greater connection to

nature are more likely to behave positively towards the environment, wildlife and habitats. It is, therefore, expected that increasing public involvement in nature-based climate action will have a positive, on-going, impact on the natural environment[lxxxi].

In supporting the public through the transition by ensuring a general understanding climate change and our collective role in mitigating its effects, a greater awareness and ability to undertake actions to improve the natural environment will be established.

Appendix 5 – Fair Change

The global transition to net zero is uncharted territory. Although we understand the kinds of actions and policies that are needed to reach it, the implementation of those actions, which affect all areas of life, must be an iterative process. Each stage of the transition, and the actions which contribute to it, must be carefully considered to ensure that change is delivered fairly and effectively. On-going monitoring is essential to ensure that we remain on-track, can take advantage of emerging opportunities and are quick to identify and resolve any unexpected challenges.

External factors, such as geo-political or global market changes, will also play a part in shaping our journey to net zero. We must be alert to these changes and adapt our approach when necessary.

The Act sets out clearly the principles which must be followed for climate action in the Isle of Man to be undertaken in such a way as to ensure that our economy, the health and wellbeing of our nation and our environment are protected and enhanced. Those principles (collectively referred to as 'Fair Change') and the extent to which the Plan takes account of them are set out here:

- The just transition principle
    - The strategies outlined in this Plan and the policies and proposals they will contain must be developed and delivered with regard to this principle, as defined in full in section 8(1) of the Act, ensuring that we engage with businesses and the workforce to transition to a low carbon economy which maximises high-value employment and businesses opportunities and contributes to resource-efficient and sustainable economic approaches which help to address inequality and poverty.
    - The specific ways in which the policies and proposals set out in this Plan are expected to affect the Island's economy are explained in Appendix 2 – Our Economy.
- The climate justice principle
    - All strategies, policies and proposals contained in this Plan must be developed and delivered with regard to this principle, as defined in full in section 8(2) of the Act, ensuring that they (a) support the people who are most affected by climate change but who have done the least to cause it and are the least equipped to adapt to its effects; and (b) help to address inequality
    - Part (a) of the climate justice principle covers two important considerations: those within our community who are most vulnerable, which includes those with low income and other marginalised or disadvantaged groups but also vulnerable communities in the wider world. This means that our efforts to reduce emissions must support the most vulnerable locally, who will find it most difficult to adapt to change but also must not impinge or negatively affect other communities or their efforts to address climate change. This means that we will not 'outsource' our emissions (i.e. by moving high emissions activities off-Island and onto another jurisdiction's greenhouse gas inventory). This does not mean that we cannot, for example, import electricity or fuels but would mean that we need to take into consideration the way in which the electricity or fuels are produced.

    - Part (b) of the climate justice principle means that we must look for ways to reduce emissions which seek not only to protect the vulnerable from negative impacts but to address the causes of inequality. The large-scale changes which are needed provide an opportunity to re-examine how we do things and to seek more sustainable, fairer solutions which will contribute to lessening inequality overall.
- Sustainable development
    - Sustainable development covers a wide range of topics, usually explained by reference to the 17 UN Sustainable Development Goals (UNSDGs). The UNSDGs to which the policies and proposals set out in each section of the Plan are intended to contribute are indicated by icons.
- The protection and enhancement of biodiversity, ecosystems and ecosystem services.
    - All strategies, actions, policies and proposals contained in this Plan must be developed and delivered in ways which support the protection and enhancement of biodiversity, ecosystems and ecosystem services. The specific ways in which those policies and proposals are expected to affect these considerations is set out in Appendix 4 – Our Environment.

In addition to the specific strategies, actions, policies and proposals set out in this Plan, public bodies, which includes government departments, have a statutory duty to support emissions reductions and the principles in the Act. Guidance has been published to help them do this, including a 'Fair Change Framework' designed to support the practical implementation of the just transition and climate justice principles, sustainable development and environmental protection and enhancement. This means that any actions taken by public bodies which contribute to the policies and proposals in this Plan must also be undertaken in a way which supports the health and wellbeing of our community, our economy, and the environment.

AN INCLUSIVE ISLAND

All members of the community feel engaged in designing the solutions and making the decisions that will affect them and their voices are valued.

A PROSPEROUS ISLAND

We have an innovative, strong, flexible economy that creates new high quality, sustainable jobs. The work force has the skills, training and education necessary to meet these new opportunities.

AN EQUITABLE ISLAND

People are enabled to meet their full potential no matter what their background or circumstances. The benefits of climate action are distributed fairly and costs are spread according to ability to pay.

A HEALTHY ISLAND

Residents' health and wellbeing is maximised, with an emphasis on prevention. We understand and act on the wider determinants of health, including housing, physical activity, diet, air quality etc.

A SOCIALLY SUSTAINABLE ISLAND

We have strong, cohesive communities, where all people feel they belong. Communities feel safe, well connected and resourced. We have a cultural legacy we are proud to pass on to future generations and consider the long term societal outcomes of our actions avoiding short term benefits that risk long term harms.

AN ENVIRONMENTALLY SUSTAINABLE ISLAND

We do not take actions that are environmentally unsustainable. Biodiversity and the natural environment are protected restored and improved. We value our natural environment and the services it provides us. We consider the long term environmental outcomes of our actions and avoid short term benefits that risk long term harms.

A RESILIENT ISLAND

People, their homes and our infrastructure are prepared for effects of the changing climate. Society, the economy and ecosystems are capable of being flexible and responsive to new challenges. We do not invest in high carbon technology, industry or infrastructure.

AN ISLAND THAT IS PART OF THE GLOBAL COMMUNITY

We acknowledge our contribution to global issues, play our part to address them and local climate action demonstrates this. We understand that the actions we take locally can have global consequences. We are an Island that, when seeking to improve its economic, social, environmental and cultural wellbeing, does so in a way that contributes positively to global wellbeing.

The figures to the left sets out the 'Fair Change Objectives' from the Fair Change Framework which forms a part of the 'Climate Change Duties – Guidance for Public Bodies'

These objectives describe the net zero society which the actions in this Plan are designed to bring us closer to achieving.

As we move through the period of this first Climate Change Plan we must continue to strive for a net zero future which is better for everyone.

APPENDIX 6 – PHASE 1 ACTION PLAN – PROGRESS UPDATE

An assessment of the progress towards implementing proposals and policies, set out in the Isle of Man Government Action Plan. Note that a full progress report is also published in a separate document (GD 2022/56).

Ref	Policy Commitment and Short-Term Actions	Status
1	Council of Ministers is committed to urgently establishing a Climate Change Transformation Programme, with a dedicated fund and a Political Steering Board to develop and deliver government's climate change action plan	
1.1	Establish a transformation fund to support activities and action in 2020/21.	Complete
1.2	Create a Climate Change Transformation Programme structure, Political Board and reporting and review cycles.	Complete
1.3	Create a Climate Change Transformation Programme Team.	Complete
1.4	Prepare Phase 2 action plan for government, to be presented to Tynwald in 2021.	In progress
1.5	Deliver the Phase 1 action plan, and report to Tynwald on progress in July 2020.	Complete
2	Council of Ministers commits to government leading with large scale changes to reduce emissions	
2.1	Review government policies and align with the delivery of the target set for the Isle of Man to achieve net zero carbon by 2050	Superseded
2.2	Include performance indicators in the Programme for Government that will monitor and improve the Departments, Boards and Offices' individual carbon/greenhouse gases impact	In progress
2.3	Carry out a climate impact audit on government's estate creating a strategic plan to reduce emissions and maximise opportunities for carbon sequestration.	In progress
2.4	Carry out short term actions to reduce the carbon impact of Government estates, such as implementing LED lighting, biomass boilers, electric space heating wherever possible.	In progress
2.5	Create a plan for installing cycle racks (with charging points for EV bikes) and showers in all public buildings, where suitable, and begin implementation.	In progress
2.6	Create policy immediately to move the government fleet to be electric or reduced emission vehicles by default (where practical), with the electrification of the public service fleet (excluding certain categories of specialist vehicle) to be achieved by 2030.	In progress
2.7	Place the order for the first hybrid buses and put in place a programme for wider implementation.	In progress
2.8	Fully implement government's plastics plan and eliminate unnecessary single use plastics and other disposables from government use.	Complete
2.9	Develop and implement a plan to significantly reduce food waste across the government estate.	Superseded
2.10	Develop and implement a climate impact assessment to be required as part of all government procurement processes.	Superseded
2.11	Encourage mobile working, where possible for government employees to reduce travel requirements.	Closed
3	Council of Ministers commits to securing no less than 75% of the Island's electricity from renewable sources by 2035	
3.1	Develop a strategic plan for delivering 75% of the Island's electricity from renewable sources by 2035.	In progress
3.2	Model the future electricity grid requirements.	In progress
3.3	Launch prior information notice (pre tender) for onshore renewable energy generation up to a maximum capacity of 20MW.	Complete

3.4	Launch prior information notice (pre tender) for offshore wind farm.	Closed
3.5	Review MUA practices and the Electricity Act and propose changes to encourage diversified generation.	Complete
4	Council of Ministers commits to providing a wide range of incentives, both financial and non-financial, and raising standards to reduce emissions from buildings in the Isle of Man.	
4.1	Build awareness and skills for contractors in energy efficiency and low carbon heating options.	In progress
4.2	Develop building controls to assist with meeting climate targets, to include the ban of fossil fuel heating appliances by 2025 in new build properties and set an appropriate date by which to ban the replacement of existing heating appliances with oil powered models.	In progress
4.3	Develop and propose revised support schemes for energy efficiency and space heating to reduce property emissions.	Complete
4.4	Establish a new, low electric heating tariff to encourage electrification of heating.	Closed
5	Council of Ministers commits to increasing natural carbon capture opportunities, whilst protecting and enhancing ecosystems, to help reach net zero by 2050	
5.1	Complete the first in a series of peat land restoration projects, restoring a minimum of 1000 acres.	In progress
5.2	Complete the first in a series of woodland planting projects with wider ecosystem benefits (for example natural flood risk management, biodiversity).	In progress
5.3	Plant a woodland (Keyll y Theay) of 85,000 trees at Meary Veg.	Complete
5.4	Develop a comprehensive land management plan to maximise carbon sequestration and maintain and restore biodiversity and wider ecosystem services.	In progress
5.5	Provide additional incentives for tree planting under the Agricultural Development Scheme and through a dedicated woodland grants scheme.	Complete
5.6	Ban all peat cutting.	In progress
5.7	Develop a comprehensive blue carbon management plan to maximise carbon sequestration and maintain and restore biodiversity and wider ecosystem services.	In progress
5.8	Work in partnership with the Manx National Farmers' Union (MNFU) to consider the active role agriculture can play in increasing sequestration.	In progress
5.9	Develop planning advice on maximising carbon sequestration, minimising emissions and maintaining and restoring ecosystem services, and work towards a requirement for biodiversity net gain and for appropriate Sustainable Drainage Systems in future planning policy.	In progress
6	Council of Ministers commits to achieving net zero carbon emission transport by 2050	
6.1	Ensure new Isle of Man Steam Packet Company vessel specification allows transition to alternative, low carbon fuel.	Complete
6.2	Develop an Active Travel Strategy in line with Planning Policy for areas outside of Douglas.	In progress
6.3	Bring forward a strategy which promotes public transport and active travel; considering a package of measures that will be required to change travel behaviour, including vehicle duty orders, car parking charges, planning policies, car sharing and deploying electric charging points in park/ride and park/walk facilities.	Superseded
6.4	Develop an all island charging network by 2030; strategically aligning plans for private and public sector provisions (including facilities for high-speed charging).	In progress

6.5	Announce future road tax requirements.	Superseded
6.6	Announce end date for registration of fossil fuelled vehicles.	In progress
7	Council of Ministers commits to work with our business sector and industries to adapt as market conditions change and to facilitate economic growth in the transition to a neutral economy	
7.1	Review of business/industry emissions and options to reduce emissions - in partnership with Chamber of Commerce and other business and industry partners.	In progress
7.2	Review of agriculture emissions and options to reduce emissions, in partnership with Manx National Farmers' Union (MNFU).	In progress
7.3	Publish a re-skilling strategy and action plan for a green economy, to include a further and higher education programme to match skills to future needs.	Not started
7.4	Establish a local offsetting scheme to fund Isle of Man carbon sequestration projects, initially to offset personal and business flights.	In progress
7.5	Develop a strategy to encourage green technology and innovation on the Isle of Man.	In progress
7.6	Investigate opportunities for further business hubs in key locations around the Island.	Not started
7.7	Develop plans that encourage a climate action and a circular economy by reviewing business support schemes to incentivise climate positive initiatives and discourage climate negative ones.	Not started
8	Council of Ministers reconfirms its commitment to bring a Climate Bill into the branches by June 2020	
8.1	Carry out a formal public consultation on the Climate Change Bill.	Complete
8.2	Introduce a Climate Change Bill into the branches by June 2020 that will provide a legal framework to enable the delivery of net zero emissions by 2050.	Complete
9	Council of Ministers is committed to a full awareness and engagement campaign to enable individuals and organisations to understand climate change and undertake the changes required to achieve net zero.	
9.1	Develop and implement a public information and engagement campaign; promoting zero carbon actions that individuals, families and businesses can take.	Complete
9.2	Create website with information and resources to inform and inspire action (e.g. energy efficiency tools, business tools).	Complete
9.3	Organise community events to provide inspiration, information and advice to enable change.	Complete
9.4	Commission independent focus groups to explore and report on public support and capability for change, to inform the phase 2 action plan.	Complete
9.5	Raise awareness of climate science and climate action in schools and encourage change.	In progress
10	Council of Ministers is committed to further research and analytical work to understand the complexities and impact of Professor Curran's report upon our economy, our environment and across all sectors of our community, reporting to Tynwald with government's climate change action plan	
10.1	Complete a comprehensive review and feasibility study on Professor Curran's report - determining more robust costs with an expenditure profile and clear understanding of the impact on all areas of our economy, our environment and across all sectors of our community.	Superseded
10.2	Carry out further research and analytical work on areas beyond the scope of Professor Curran's report that might provide further options for action for the Isle of Man to achieve net zero by 2050.	Complete

10.3	Undertake a comprehensive exercise to understand the funding options available and the social and economic implications of those options.	Superseded
10.4	Develop a system for setting, reviewing and monitoring carbon targets for Isle of Man emissions, with appropriate advice and validation.	Complete
10.5	Carry out further research to fill evidence gaps identified within Professor Curran's and the Analytical Team's reports	Complete
10.6	Develop a strategy for 'just transition' that will enable all sectors of society to make the necessary changes and prevent exclusion or disadvantage through change	In progress

APPENDIX 7 – UNDERSTANDING OUR EMISSIONS

The baseline year, against which our emission reductions are measured, is 2018. This year was chosen because better data was available for that year, when compared with 1990 which is a commonly used baseline, based on the Kyoto Protocol.

We report emissions data annually and it is collated by Aether, the same external company used by the UK for this purpose. We receive our inventory (the breakdown of our emissions) every year, two years after the data is submitted.

We adhere to international reporting practice, as required by the Climate Change Act 2021 and by the UK. The Isle of Man's emissions form a subset of the UK's emissions.

In line with international reporting guidelines, emissions are reported in the following sectors: agriculture; business; energy supply; land use change; residential; transport; and waste management.

For the purposes of this Plan emissions have been segregated by policy area rather than by IPCC categories. This categorisation is designed to show which strategies are most likely to influence certain sources of emissions. For example, business heating is shown under 'buildings' rather than 'business' because the Renewable Heating Scenarios which will inform the Renewable Heating Strategy, include commercial buildings and often the measures needed to improve their efficiency are the same. Similarly, the Energy from Waste Plant is shown under the 'waste' category rather than 'electricity' because the reduction of emissions from that source will need to be considered as part of a waste strategy.

More detailed segregation of emission sources may be needed as strategies are developed because there are numerous connections between sectors and sources for which multiple departments may share responsibility. Cross-government cooperation and collaboration will be essential to deliver emissions reductions across all sectors.

Any changes to the way emissions are segregated for the purpose of policy development will be reported in the annual progress report on the Plan which must be submitted to Tynwald no later than July each year.

The arrangement of the emissions data for the purposes of this Plan and for assisting with policy and strategy development does not influence the way we report our emissions which will continue to align with international best practice.

To view our emissions set out in the IPCC reporting categories please visit https://netzero.im/resources/data/ where you can view data from 1990 to the latest published inventory.

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