# Barra & Vatersay

## Community Climate Action Plan

Author: Shona MacLeod

**June 2023**

## Carbon Neutral Islands

Castlebay Ariel © Stephen Kearney

Community Energy Scotland
Cumhachd Coimhearsnachd na h-Alba
Empowering Communities

Voluntary Action Barra & Vatersay

The Islands (Scotland) Act 2018
Achd nan Eilean Alba 2018

Scottish Government
Riaghaltas na h-Alba

# About the plan

The Carbon Neutral Islands (CNI) project is a Scottish Government Programme for Government commitment that aims to demonstrate the climate-resilience and low carbon potential of islands This Community Climate Action Plan (CCAP) is a community record of existing knowledge and data, and prioritises key actions towards achieving a carbon neutral and sustainable future. This action plan is a 'living document' owned by the Barra & Vatersay community, which can be reviewed and amended to reflect the progress made on our decarbonisation journey.

Voluntary Action Barra & Vatersay (VABV), the local community anchor organisation for the Carbon Neutral Islands Project on Barra & Vatersay, employs a community development officer who has led on the development of this plan. VABV are committed to developing and delivering activities that contribute to the long term social, economic and environmental vitality of Barra & Vatersay. The VABV board of 9 trustees is drawn from a membership made up of local individuals from community groups, clubs and public bodies. VABV currently have 12 members of staff involved in the delivery of their work.

Membership of the project Steering Group is free and open to Barra & Vatersay residents who wish to be community representatives. It is an advisory body that supports and directs the work of the CDO and is a point of contact on island for continual project updates.

The Scottish Government commissioned Community Energy Scotland to act as the key delivery partner for the initial phase of the project. A key aim from government is to ensure the community is at the heart of the project. Community Energy Scotland was chosen given their previous experience of engaging with communities and delivering community led projects.

# Acknowledgements

**This plan would not have been possible without the support of our key project partners:**

**Community Energy Scotland** (CES) is Scotland's only national charity dedicated to supporting communities across Scotland to develop their own decarbonisation & renewable energy projects. They have supported us by carrying out our Energy and Transport carbon audit, providing community outreach expertise, networking opportunities, shared learning and facilitation of training opportunities, as well as support in the production of this action plan.

**Scottish Communities Climate Action Network** (SCCAN) provided a range of training to CNI Community Development Officers (CDOs) and representatives from steering groups and anchor organisations to equip the project members with the skills and confidence to deliver effective engagement events in the island communities.

**Sniffer** have led on the components of the work on climate resilience and adaptation, including support to prepare climate and coastal change assessments and working with live scribes to create visualisations of island specific issues.

CNI Community Development Officer, Shona, would also like to thank the following organisations for their contribution to the development of this Community Climate Action Plan:

- **The Barra & Vatersay Community**
- **Voluntary Action Barra & Vatersay (Anchor Organisation)**
- **Barra & Vatersay Carbon Neutral Islands Steering Group**
- **Coimhearsnachd Bharraidh agus Bhatarsaidh (Barra & Vatersay Community) Ltd**
- **Castlebay Community School**
- **Comhairle nan Eilean Siar**
- **Other Carbon Neutral Island communities and CDOs from Cumbrae, Hoy, Yell, Islay and Raasay**

# Contents

# 1. Executive Summary

The Carbon Neutral Islands (CNI) project is a Scottish Government Programme for Government commitment focusing on the islands of Barra & Vatersay, Cumbrae, Hoy, Islay, Raasay and Yell to support them to become carbon neutral by 2040. In the first phase of activities, wide-ranging baseline carbon audits were carried out for each island which identified key carbon sources and sinks with the aim of stimulating discussion and engagement with the local community. These discussions have helped to identify and shape the key community priorities presented in this island led action plan which seeks to lower emissions and improve resilience on Barra & Vatersay.

The development of the Barra & Vatersay CCAP has included extensive research, analysis, discussion, modelling and engagement with the island community. It identifies priority areas for actions to be taken to reduce community wide greenhouse gas (GHG) emissions and to improve local climate resilience.

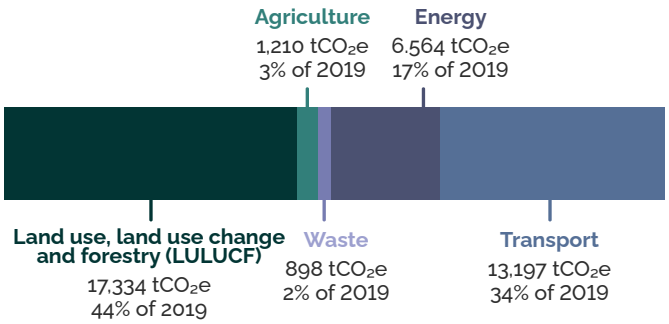
## Top priority actions

The actions from the community consultation and engagement events have been split into various sections within this report, however, below are the top 3 actions which the community felt most strongly about being delivered as part of the plan:

1. Better manage household and business energy usage and efficiency.
2. Feasibility into meeting island's food needs locally.
3. Encourage improved access to public, electric and active transport.

## Carbon Audit Overview:

**2019 emissions by sector**




The graph above gives an overview of emissions from each of the audited sectors: Land use, Land use Change, and Forestry (LULUCF); Agriculture; Waste; Energy; and Transport. The largest source of emissions come from the LULUCF sector, followed by Transport. Managed land under LULUCF is considered to act as a source overall, though uncertainties in this sector are significantly higher than for other sectors.

This graph does not include the Blue Carbon Habitat Suitability Study as it is not covered by the GHG Protocol and is therefore considered separately.

## Next Steps:

This plan is the first phase of Barra & Vatersay's detailed exploration into lowering the GHG emissions of the island in order to benefit the quality of life and resilience of our community. It is important that the community continue to review the plan and its actions, as well as adapt it to take into account any changes arising from refinement of the baseline data and/or community objectives.

Immediate actions which are noted as important for the community following this plan include:

- Allocating lead roles and responsibility for each priority action in order to start pursuing them.
- Develop an investment strategy aimed at costing the community climate change action plan and at identifying finance that can be channelled towards the implementation of the Plan.
- Ground truthing of the land and blue carbon habitat suitability study. Ensuring that the implementation of the Plan is driven by the island community and that its success does not primarily rely on volunteer action.

# 2. Barra & Vatersay and the Climate Emergency

## 2.1 Climate Change

Climate change and nature loss are amongst the greatest threats facing our planet. Global warming has altered ecosystems around the world and can cause a loss of biodiversity. Small, low-lying islands are under threat from climate change and predicted rising sea-levels. Climate change is expected to increase instances of flooding, coastal erosion and extreme weather events, whilst simultaneously negatively affecting water supply, food production, health, tourism and accelerating habitat depletion.

Scotland has declared a climate emergency and stepped up its climate action and commitments through Scotland's 2019 Climate Change Act – calling for net zero greenhouse gas emissions by 2045. Scotland's climate change legislation also ensures that we prepare, in addition to mitigation measures so that we show resilience to the impacts as we progress towards adaptation[1].

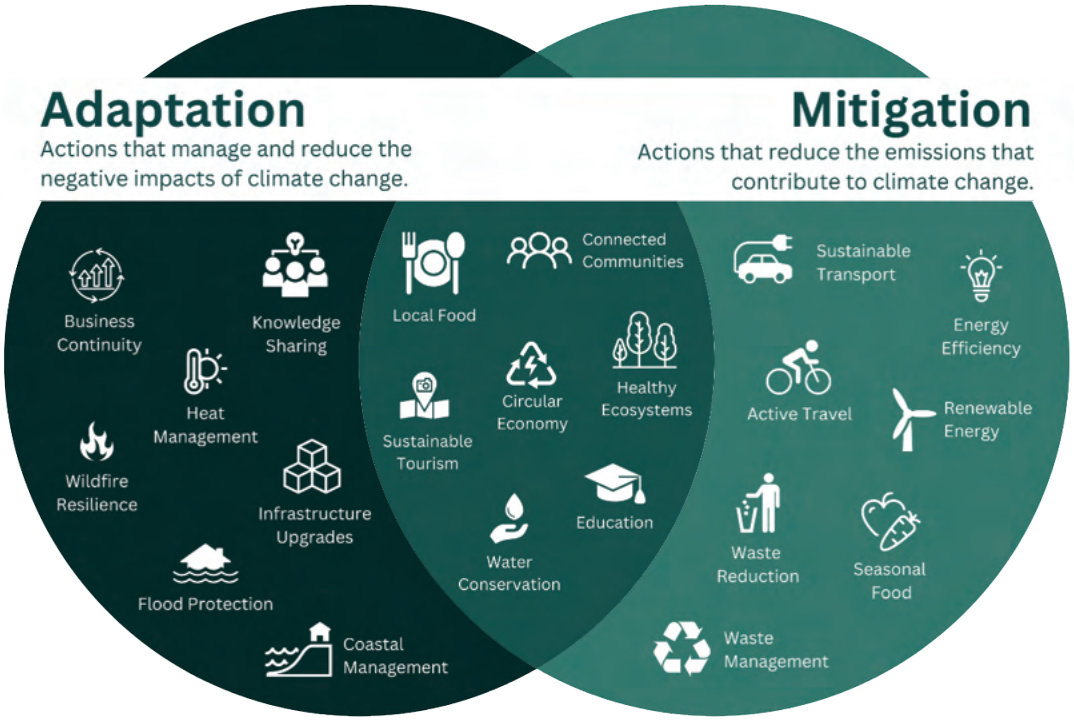
## 2.2 Benefits of Decarbonisation

While the overall aim of decarbonisation is to mitigate and adapt to global climate change, at a local level there are direct benefits from community climate actions. Benefits can include reducing costs for households and businesses, healthier people and places and new opportunities for employment and skills development.

This plan aims to address the need for both **adaptation** actions that manage and reduce the negative impacts of climate change, and **mitigation** actions that reduce emissions that contribute to climate change. The image below illustrates that adaptation and mitigation often overlap, and both are needed to help reduce risks from changes in climate and weather and increase community resilience.

Community resilience is the ability to anticipate, absorb, accommodate, or recover from the effects of a hazardous event in a timely and efficient manner, including through ensuring the preservation, restoration, or improvement of essential basic structures and functions.

[1] https://www.gov.scot/publications/carbon-neutral-islands-project-progress-report/pages/2/




Adapted from Highland Adapts, available at: https://highlandadapts.scot/

## 2.3. Island Environment

Barra & Vatersay are the two most southernly inhabited islands in Scotland's Western Isles. Barra is approximately 8 miles long and 4 miles wide with Vatersay being roughly 3 miles long and 3 miles wide.

In the past, Vatersay was only accessible from Barra by passenger boat. The Sound of Vatersay was known for its rough seas, and this meant that the transport connection was often unreliable due to the sailing being cancelled. Work began on the construction of a causeway connecting Barra & Vatersay in summer of 1989 to improve transport links, safety of residents and boost quality of life The causeway was ready for use by July 1991 and cost £3.7 million[2].

Residents live predominantly along the low-lying coastal areas of the islands as this is where the road links are. Historically, distance from the sea which would have been a main food source and the land use capacity may have influenced this. The centre of both islands is comprised of steep terrain and have not been utilised for building on as of yet, predominantly due to lack of infrastructure. This uninhabited inland area has historically been used as common grazing for island crofting shareholders.

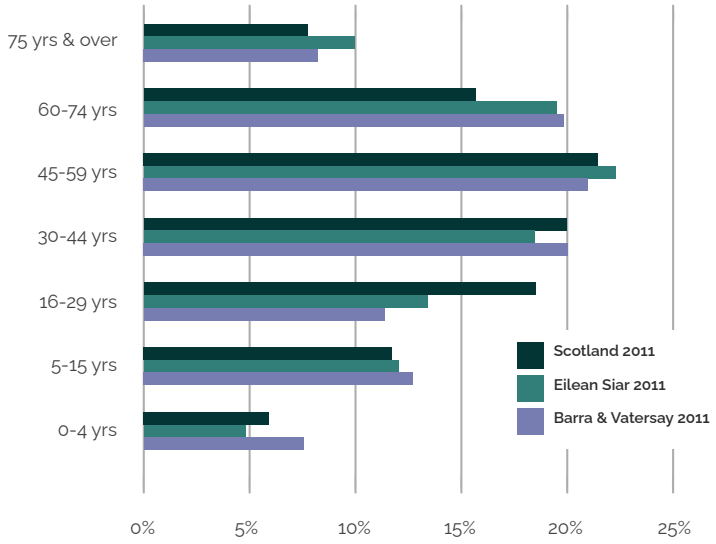
The most densely populated area of both islands is Castlebay, the main town on Barra. The image below shows the location of Barra & Vatersay:


## 2.4. Island Demographics

The combined population was 1,281 residents as of mid-2019. A key factor for the population of Barra & Vatersay is an ageing population. It is typical for young people to move away from the islands in the pursuit of further education and employment opportunities, whilst older residents have typically moved back to Barra & Vatersay. The graph below shows that Barra & Vatersay has a lower population of 16- to 29-year-old residents than both the wider council area and the national average, and has a higher population aged 60 to 74 than both the wider council area and the national average. However, the population of 0- to 4-year-old residents is above both the wider council area and the national average.

There are more updated figures, however, to ensure methodological accuracy, the 2011 census results have been used throughout. The 2021 population of Barra & Vatersay is estimated at 1,308 people[3].

**Demographic Age Profile - Barra & Vatersay, Eilean Siar & Scotland**




A lack of housing has been identified as a significant issue for Barra & Vatersay as it is a limiting factor in retaining and increasing the population, particularly young people. A lack of suitable housing can prevent socio-economic growth due to a reduced workforce and limitations on community growth.

The 2011 Census states that the top three industry sectors in Barra & Vatersay are agriculture & fishing, mining & quarrying and manufacturing. These industries account for 47.5% of the total population employment[4].

[2] https://www.cne-siar.gov.uk/roads-travel-and-parking/bridges-causeways-and-ferries/vatersay-causeway
[3] https://statistics.gov.scot/resource?uri=http%3A%2F%2Fstatistics.gov.scot%2Fdef%2Fconcept%2Ffolders%2Fthemes%2Fpopulation
[4] https://www.cne-siar.gov.uk/media/5557/barra-and-vatersay-profile.pdf

## 2.5. Island Environment

The community-led Local Energy Plan for Barra and Vatersay was developed in 2018 to help the community to look at its existing and future energy needs in terms of power, heat and transport and work out the priorities for action. The seventeen actions proposed in the plan are included in Appendix A.

The Western Isles are supplied electricity by two 33kV subsea cables from Ardmore Point on the Isle of Skye, one to the Northern islands of Lewis and Harris and the other to the Southern islands of the Uists and Barra. These subsea cables originate from a high voltage 132kV overhead transmission line that moves across the Isle of Skye via the Loch Lundie branch of the Fort William – Fort Augustus 132kV transmission circuit.

The subsea cable for the Southern islands terminates at Loch Carnan in South Uist, feeding the "Loch Carnan" 33kV distribution network. Electricity is then transferred to the Pollachar substation in South Uist which feeds an 11kW circuit to Barra & Vatersay.

Barra & Vatersay are therefore connected into the grid supply point at Loch Carnan. The nature of Barra & Vatersay's grid connection via Loch Carnan means that when there is any work carried out on either the distribution or transmission network then the grid supply is lost. At that point diesel generators, located on Barra, are operated to provide power for the islands[5]. It also means that Barra & Vatersay will not benefit from the proposed interconnector to Lewis/Harris in 2030 with export from Uist and Barra continuing to be constrained until the Skye to Fort Augustus line is reinforced.

This means that at present the capacity of the grid infrastructure to site and connect large-scale renewable energy generation is constrained in Barra & Vatersay. This can be overcome by significant infrastructure investment or the development of a smart grid-tied microgrid.

## 2.6. Climate Predictions

Climate and coastal change predictions specific to Barra & Vatersay were modelled by JBA Consulting on behalf of Adaptation Scotland.

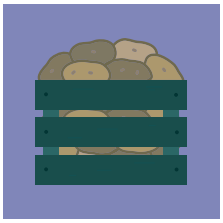
Predictions suggest that the annual average temperature on Barra & Vatersay could have risen 4.7 degrees Celsius by the end of the century. That the sea level could increase by up to 1 meter and that on average the Barra & Vatersay coastline would be expected to retreat up to 23 meters. This is coupled with typically wetter winters and drier summers with an increased intensity of storms[6].

[5] http://localenergy.scot/wp-content/uploads/attachments/barra-vatersay-lep-july-2018-final.pdf
[6] Climate & Coastal Change Assessment Barra & Vatersay (Sniffer and JBA Consulting) – March 2023.


Castlebay © Stephen Kearney


Dunes, Vatersay Bay © Stephen Kearney


Horses © Stephen Kearney



# Barra & Vatersay Climate Predictions

**Historic:** Annual average temperatures for the past 20 years have been above the historic average.

**Future changes:** Mean air temperatures will increase across all seasons. By 2100 there could be an increase of up to 4.7 °C in the summer.

**Historic:** Annual average rainfall for the past decade has been above the historic average.

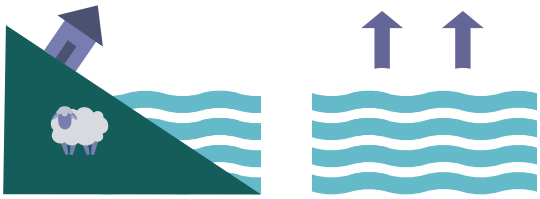
**Future changes:** Winters may become wetter, and summers drier by 2100.

**Historic:** The number of storms, wave heights and intensity has been relatively consistent in the past.

**Future changes:** Peak wave height is expected to increase. Intensity may increase as these are sustained over longer durations.

**Historic:** Historically, erosion and accretion have occured around the coasts of Barra & Vatersay.

**Future changes:** The data projects the shoreline could retreat on average 23m by 2100.



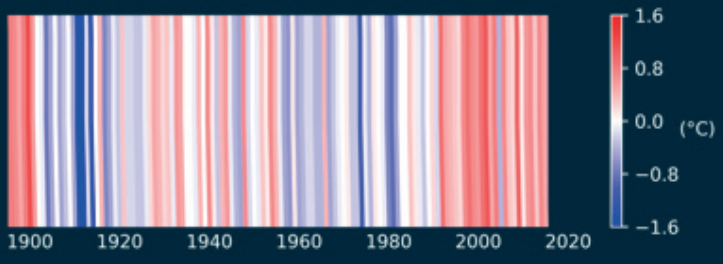
**Historic:** 75% of records of annual average mean sea level between 2017 and 2021 were above the historic annual average.

**Future changes:** Sea levels will rise. This could be up to 1m by 2100.

# Time to adapt!

These changes will result in **impacts which will affect people, infrastructure and ecosystems on Barra & Vatersay.**

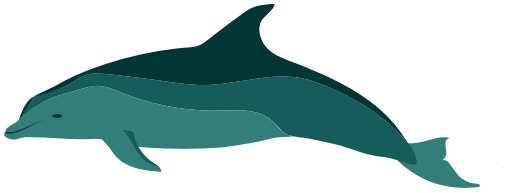
Developing an understanding of climate projections and the challenges we will face is central to Barra & Vatersay's ability to **adapt and become more resilient to climate change.**




**Blue** indicates years with average temperature **below** historic average.

**Red** indicates years with average temperatures **above** historic average.

# 3. The Carbon Neutral Islands Project



In May 2022, the Cabinet Secretary for Rural Affairs and Islands announced the six Scottish islands to be supported by the Carbon Neutral Islands project: Hoy, Islay, Great Cumbrae, Raasay, Barra & Vatersay, and Yell. The CNI project includes one island from each of the local authority areas with responsibility for inhabited islands in Scotland.

More widely, the CNI project will help to deliver key commitments in the National Islands Plan[7] and the National Performance Framework[8], create island-based jobs, and support islands to adapt to the negative effects of climate change.

The project aims to align with wider net-zero and decarbonisation efforts and will contribute to the Scottish Government's statutory target to reach net zero by 2045.

## 3.1. What is Carbon Neutral?

The Project considers carbon neutrality akin to net zero. Accordingly, a carbon neutral island is an 'island where the greenhouse gas (GHG) emissions (captured as CO2 equivalent) are in balance with the sinks'. Sinks can be natural resources capable of absorbing CO2 (trees) or technological solutions that do the same thing (carbon capture and storage). Carbon neutrality is to be achieved by 2040, five years prior to Scotland as a whole.

The Project will look at carbon neutrality as broadly as possible in line with the Scottish Government's updated Climate Change Plan list of sectors:

- Electricity
- Buildings
- Transport
- Industry
- Waste and the Circular Economy
- Land Use, Land Use Change and Forestry (LULUCF)
- Agriculture
- Negative Emissions Technologies

In addition, the project will also include a blue carbon component which will support Scotland to refine its nationwide methodologies in this field.

## 3.2. Drivers underpinning the Carbon Neutral Islands Project

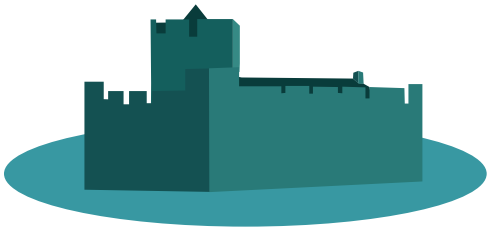
The CNI project is underpinned by the following key drivers: alignment, justice and inclusion, and replicability.

**Alignment:** The project aims to align with existing island-based climate change actions and to avoid duplication of efforts. The first step towards this was a study which mapped existing island-based climate accounting exercises, projects, and funding sources.

**Justice and inclusion:** The project will support islands to become carbon neutral in a just and fair way. To ensure this, the project will consider the recommendations of the Just Transition Commission[9]. Fairness will be promoted through an effective bottom-up participatory process driven by the six island communities.

**Replicability**: The work is being completed to standardised and agreed methodologies wherever possible in order to allow replication and direct comparison. All Scottish islands will benefit from the project through knowledge sharing of good practice from the implementation of the project. The six islands will act as 'Lighthouse Communities' for other Scottish islands and as catalysts for net zero action across Scotland.

[7] https://www.gov.scot/publications/national-plan-scotlands-islands/
[8] https://nationalperformance.gov.scot/
[9] https://www.gov.scot/groups/just-transition-commission/



## 3.3. Wider aims for the CNI Project

By 2040 the aims for each of the six islands are:

- The island community has achieved carbon neutrality.
- The net zero journey has been driven by the island community itself.
- Learnings from the six CNI islands are shared with the Scottish Government Islands Team, Local Authorities, Climate Regional Hubs and the Islands Centre for Net Zero and help to develop resources to support other Scottish islands on their decarbonisation journeys.

Whilst the overarching theme of the project is climate resilience, the project aims to improve quality of life, create employment and improve the sustainability of the community whilst delivering community lead climate action.

**A tonne of $CO_2$ would look like a filled hot air balloon**

## 3.4. An Island Led Approach

On Barra & Vatersay the CNI project is led by an island Steering Group of community representatives who identified Voluntary Action Barra & Vatersay (VABV) as the anchor organisation. VABV is funded by the project to employ a local CNI Community Development Officer (CDO) – Shona MacLeod. The CDO is the link between the Steering Group, the Community, and the external agencies involved in the project, supported by Community Energy Scotland (CES).

The CDO has worked closely with the technical team at CES to ensure local data informs the initial carbon audit, discussed throughout the following sections which includes work by external consultants. The carbon audits, along with climate and coastal change assessments by Adaptation Scotland and JBA Consulting, are tools to help identify and highlight potential key areas for decarbonisation, mitigation and adaptation actions. However, the actions within the Community Climate Action Plan look beyond the data to reflect the island community's priorities for a flourishing carbon neutral future.
The Community Climate Action Plan (CCAP) helps the community record existing knowledge and data, prioritise key projects and schedule actions towards a carbon neutral and sustainable future.

The CCAP is a 'living document' owned by the Barra & Vatersay community, which can be reviewed and amended to reflect the progress made on the island's decarbonisation journey.

Dune Erosion © Stephen Kearney

# 4. Carbon Audits Overview

**To inform discussions of community priorities for climate action and track progress towards these goals, carbon audits have been completed to establish a representative baseline for each island. It is thanks to the cooperation of local residents and businesses that this exercise has been possible.**

**The audits quantify greenhouse gas (GHG) emissions sources and sinks for the key sectors – Energy; Transport; Waste; Agriculture and Land-Use, Land-Use Change and Forestry (LULUCF). These audits have been undertaken by Community Energy Scotland and Aether, respectively, in collaboration with the CDO and local steering group. A Blue Carbon 'Habitat Suitability Study' is also being developed.**

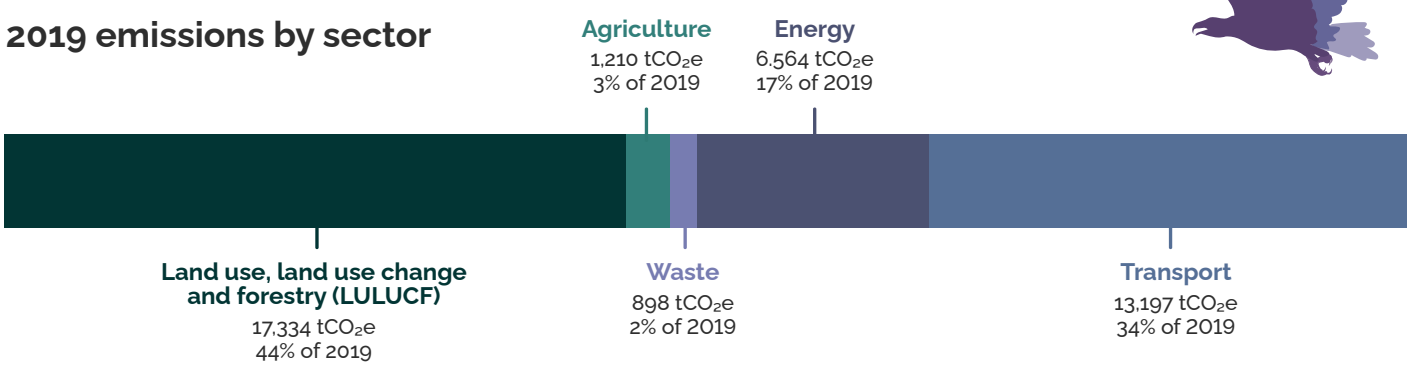
**To quantify the impact of certain community climate actions, it would be useful to supplement the carbon audits with life cycle assessments connected to given goods or services, as discussed in Section 8.2.**


Castlebay © Stephen Kearney

## 4.1. Key Findings

The graph below gives an overview of emissions from each of the different sectors, including LULUCF; Agriculture; Waste; Energy and Transport. This is intended to provide a snapshot of the current level of emissions on Barra & Vatersay. 2019 has been used as the investigation year for consistency purposes.

While the analysis contains estimates and uncertainties, it helps to indicate the scale and pattern of emissions across each sector. Carbon audits are one of the tools to help inform discussion and decision-making as the community tracks a pathway forward. The largest source of emissions attributable to Barra & Vatersay comes from the Land Use, Land-Use Change and Forestry (LULUCF), closely followed by Transport:

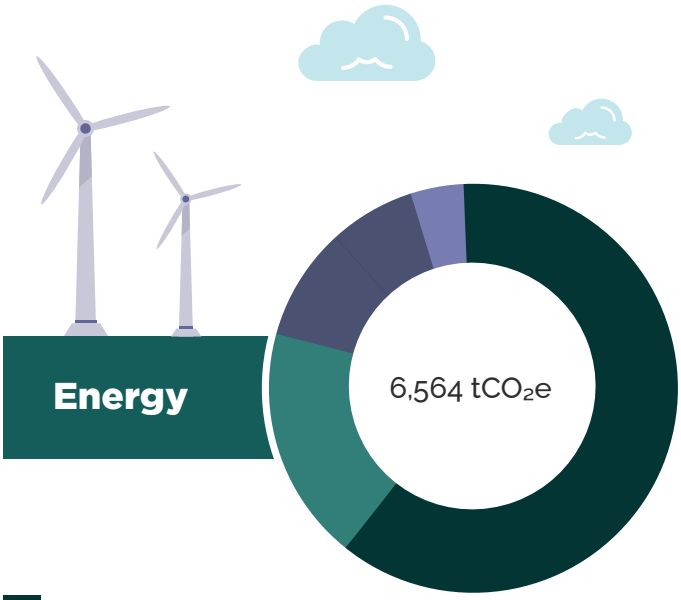


# 5. Energy

Community Energy Scotland conducted an audit of the Energy sector on Barra & Vatersay to develop a baseline greenhouse gas emissions study as part of the Carbon Neutral Island Project. The report dated February 2023 looks at both domestic and non-domestic energy use on the Island and used previously compiled data from the Barra Local Energy Plan.

## 5.1. Carbon Audit

The CES audit shows that heating oil is the largest source of emissions attributable to Barra & Vatersay in the Energy sector, closely followed by electricity generation. These account for 2,627 $tCO_2e$[10] and 1,679 $tCO_2e$ of the total from this sector, respectively.




- **Residential -** 4,049 $tCO_2e$
- **Agriculture, forestry & fishing -** 1,195 $tCO_2e$
- **Commercial & Institutional -** 1,026 $tCO_2e$
- **Manufacturing industries -** 294 $tCO_2e$

62% of emissions in this sector come from domestic energy. It should be noted that domestic consumption estimates are assumed to include consumption from self-catering accommodation, which should be accounted under commercial and institutional energy. However, due to uncertainty as to the share of non-domestic housing, these are accounted for under residential energy until this information has been clarified.


Horve, Castlebay © Stephen Kearney

## 5.2. Carbon Audit

Households on Barra & Vatersay are dependent on the purchase of fuels for combustion and grid supplied electricity for heating. Scottish Government domestic EPC statistics detail that over half (58%) of households use heating oil as their primary heating source. Around a third of households primarily use electric heating, of which 66% use storage heaters, 28% use heat pumps, and 6% use room heaters. 3% of households rely on solid fuels, including biomass, for heating.

Scottish legislation defines households which experience fuel poverty as those which spend at least 10% of their net income on fuel to meet the minimum temperature for the minimum number of hours. Extreme fuel poverty is experienced when fuel costs exceed 20% of a household's net income for the same period[11].

Rates of fuel poverty are greater in the Western Isles than the Scottish national average. Around 36% of households[12] in the Western Isles experience fuel poverty, while extreme fuel poverty affects 23% of households. These figures pre-date the cost-of-living crisis and so are expected to have increased.

Household Energy and Transport Survey responses indicate that 51% of respondents are experiencing fuel poverty and 20% of respondents are experiencing extreme fuel poverty[13]. Furthermore, 38% of respondents felt they were unable to adequately heat their home. Electricity costs were stated as the most common reasoning for this, however most respondents also quoted dated or inefficient heating systems and lack of, or poor, property insultation.

These figures, along with the current energy crisis at the time of writing, indicate that fuel poverty is significantly higher and much more common on Barra & Vatersay than previous figures show.

[10] $tCO_2e$ refers to metric tonnes of $CO^2$ equivalent emissions.
[11] Fuel Poverty (Targets, Definition and Strategy) (Scotland) Act 2019
[12] Scottish House Condition Survey: 2016-2018 Local Authority Tables Key Results
[13] Household Energy and Transport Survey – February 2023

## 5.3. Commercial and Institutional Properties

The carbon audit identified that around 16% of Energy sector emissions (1,026 tCO2e) were attributable to commercial and institutional properties in Barra & Vatersay. However, it is almost certain that this figure is lower than actual levels due to a lack of data. Self-catering accommodation is assumed to be included within domestic energy figures and it is likely that some smaller businesses on the island being are miscategorised. This means that further work will be required to understand the full extent of non-domestic emissions on Barra & Vatersay.

## 5.4. Existing Renewable Energy Generation

At present, there is one wind turbine that is wholly owned by the local community. It is operated by Barra and Vatersay Community Ltd and located in Eoligarry.

This turbine has been in use since May 2014 and has a rated output of 900 kw[14]. The average annual production over the period 2016–22 was 3.3GWh, meaning that the turbine operates at a full output 41% of the year, on average. This represents 53% of the combined annual electrical demand for the domestic/commercial/institution on the islands. Increasing renewable penetration without deploying a smart grid-tied microgrid is not possible due to grid constraints.

Based on feed-in-tariff data provided by Ofgem, there are a further 6 small-scale wind turbines on Barra & Vatersay (6-30kW capacity) and 18 domestic solar photovoltaic arrays (4-12kW), giving a total installed capacity of 1,008 kW.

Community engagement as part of the CNI project has shown that locals are keen to explore the feasibility of further community owned energy generation at suitable locations on Barra & Vatersay. There is also an interest in support to install domestic renewable energy systems.

## 5.5. Community Areas for Action

[14] Local Energy Plan for Barra and Vatersay, 2018. localenergy.scot

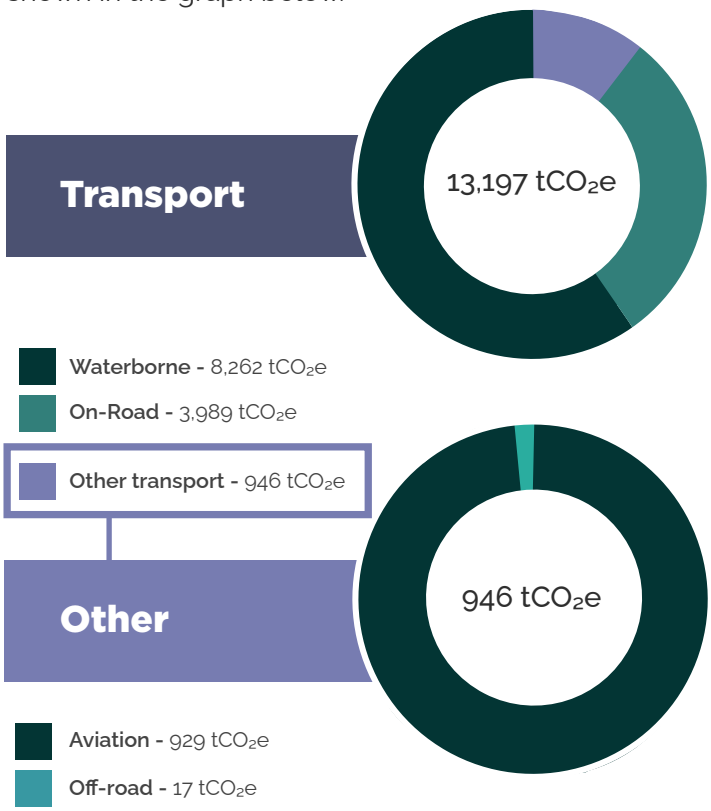
| Sector | Action | Priority | Timescale |
|---|---|---|---|
| **Energy** *Building*<br>**Energy** *Efficiency* | Home insulation and draught proofing projects, primarily focusing on older, harder to heat homes e.g. new windows scheme. | **High** | **S-M** |
| | Home energy measures to help Barra & Vatersay community to better understand household energy consumption e.g., smart meters. A deeper level of understanding can lead to behaviour change. | **High** | **S** |
| | Home insulation and draught proofing projects, primarily focusing on older, harder to heat homes e.g. new windows scheme. | **High** | **S** |
| **Energy** *Community* | Set up a local support and advice service to help households reduce energy use, coordinating with external agencies (e.g., Home Energy Scotland) to provide comprehensive individual support. | **High** | **S** |
| **Energy** *Community* | Individual business carbon audits. | **High** | **S** |
| **Energy** *Renewables* | Conduct feasibility studies of various local renewable energy generation solutions. Supported by Barra & Vatersay Local Energy Plan (Appendix A). | **High** | **S** |
| **Energy** *Renewables* | Support private household renewable energy installation, through signposting to grants and funding opportunities. | **High** | **S** |
| **Energy** *Community* | Upskilling locals through training to install and maintain local domestic energy projects and insulation projects. | **Medium** | **S-M** |
| **Energy** *Solar* | Project to cover all permanent residential housing (Solar PVs with Battery Storage for individual households). | **Medium** | **M-L** |

# 6. Transport

Community Energy Scotland conducted an audit of the Transport sector for Barra & Vatersay to develop a baseline greenhouse gas emissions study as part of the Carbon Neutral Island Project. The report, dated February 2023, considers emissions from all transport use attributable to the island.

## 6.1. Carbon Audit

The Transport sector includes emissions from on-road traffic as well as ferries departing the island. Waterborne transport accounts for around 63% of emissions in this sector predominately due to the fuel powering the ferries, while around 30% of emissions come from on-road vehicles. The other 7% comes from other transport such as off-road vehicles, aviation and private boats shown in the graph below.




## 6.2 Waterborne Transport

### 6.2.1 Castlebay – Oban Ferry Route

The Barra & Vatersay mainland ferry service is provided by CalMac Ferries Ltd operating the Castlebay – Oban route. This is a direct route of 76.2 nautical miles that takes approximately 5 hours each way.

Pre-COVID lockdown data from 2019 was deemed to be the most complete dataset for a typical year available at the time of the audit and has been used for this reason. During this timescale, CalMac Ferries Ltd operated 701 sailings on this route, consuming 2,104,858 L of Marine Gas Oil fuel and resulting in an emissions total of 5,842 metric tonnes CO2e. Approximately 44% of the total emissions from the Transport sector of the Carbon Audit are attributed to the Castlebay – Oban sailing, making this ferry the biggest single emitter associated with Barra & Vatersay.

Waterborne travel by its nature includes journeys which occur entirely out with the island boundary of Barra & Vatersay. GPC guidance requires that, for transboundary journeys, emissions associated with departing journeys only are attributed to the island. As Barra & Vatersay is the only island serviced by this route, there is an argument that all emissions should be considered in future.

Community engagement has shown that a lack of public transport connections accessible to passengers travelling on this route was highlighted as a barrier for travelling off island.

### 6.2.2. Ardmhor – Eriskay Ferry Route

The Ardmhor – Eriskay ferry service is also provided by CalMac Ferries Ltd. This is a direct route of 5.5 nautical miles that takes approximately 40 minutes each way. During 2019, CalMac Ferries Ltd operated 3,198 sailings on this route, consuming 241,609 L of Marine Gas Oil fuel and resulting in an emissions total of 671 metric tonnes CO2e. Approximately 5% of the total emissions from the Transport sector of the Carbon Audit are attributed to the Ardmhor – Eriskay sailing.


Kisimul Castle © Stephen Kearney

## 6.3. Aviation

The Barra – Glasgow flight is operated by Loganair and the aircraft operating on this route is a Viking DHC-6-400 Twin Otter (DHC6). During 2019, Loganair operated 1,349 flights on this route, consuming 353,063 L of Jet A1 fuel resulting in an estimated outward journey emissions total of 929 tCO2. Due to the altitude of aviation emissions in the atmosphere, the effect of emissions is greater than those occurring at ground level – this is known as radiative forcing. The scale of the appropriate radiative forcing factor is subject to significant uncertainty, so the central estimate multiplier of 1.9 is applied, in line with national GHG reporting standards.

## 6.4. On-Road Transportation

### 6.4.1 Local Bus Service

During community engagement, a lack of sufficient bus services and connections on the island was highlighted as the main barrier to using public transport. The reduction of the council funded bus service has meant this timetable is now unsuitable for a portion of respondents and therefore increases reliance on private cars.

### 6.4.2. Electric Vehicles

Electric vehicles (EVs) are well suited to island locations in many ways. Journey distances are usually short, which means that the vehicle range is less of an issue compared to a mainland environment.

At the time of writing, there are 3 electric vehicles owned by Voluntary Action Barra & Vatersay, these EVs are operated within the third sector and aim to promote social inclusion.

Presently, household ownership of EVs is low. However, this is gradually increasing, and during the tourist season there is increased demand for EV infrastructure due to the addition of visitor EVs. The availability of EV charging infrastructure and the responsibility for timely upkeep and maintenance of chargers was another concern of the Barra & Vatersay community when considering EV ownership.

### 6.4.3. Walking and Cycling

Feedback from community engagement and survey responses highlighted the lack of safe walking infrastructure is a concern on Barra & Vatersay. Survey participants reported that destinations were often inaccessible on foot due to poor and inconsistent provision of footpaths. Thus causing reliance on other means of transport, such as private cars. Participants expressed that active travel measures such as cycling were not widely adopted on the island due to a lack of cycle paths and safe provisions for the activity.

During the survey, participants were asked to rank potential travel projects in order of importance. Walking and cycling paths were the second most popular option of potential project for the community climate action plan to take forward.

**One tonne of $CO_2$ is roughly equal to:**

- **3400 miles in a petrol car**
- **1/5 of an average household's annual heating oil use**
- **14 sacks of household coal**

Vatersay West Beach © Stephen Kearney

Horve, Castlebay © Stephen Kearney

## 6.5. Community Areas for Action

| Sector | Action | Priority | Timescale |
|---|---|---|---|
| **Transport** *Infrastructure* | Increase infrastructure available for EVs on Barra & Vatersay through installation of public EV charge points across the islands and support for domestic chargers through signposting to grants and funding opportunities. Exploring EVs as a form of battery storage. | **High** | **M** |
| **Transport** *Public* | Improved community bus service e.g., additional funding to support the service, improved timetable that services whole island, lower/free ticket price, support for bus operators to convert to EV. | **High** | **S-M-L** |
| **Transport** *Active* | Improvement of walking and cycling paths on Barra & Vatersay, ensuring paths and roads are resilient to changing climate, and adequate lighting on paths. | **High** | **M** |
| **Transport** *Infrastructure* | Work with external agencies to support low emission ferries and plane travel on Barra & Vatersay. | **High** | **L** |
| **Transport** *Public* | Work with external agencies to ensure mainland travel is compatible with public transport, reducing the reliance on private car access. | **High** | **S** |
| **Transport** | Support a car share club. | **Medium** | **S** |
| **Transport** *Active* | Community and visitor access to electric bikes. | **Medium** | **M** |

**Cleat Village © Stephen Kearney**

**Cleat Phone Box © Stephen Kearney**

# 7. Land, Land Use Change and Forestry

Aether was requested by Community Energy Scotland to develop a baseline study of Land Use, Land Use Change and Forestry (LULUCF) for Barra & Vatersay as part of the Carbon Neutral Island Project.

The report dated March 2023 details emission estimates calculated using island specific data as far as possible, gap filling with local authority or national datasets where needed. Assessment of this area has to date been mostly desk based and its uncertainties are significantly higher than other sectors. It is important that the information on habitats considered is 'ground-truthed' to provide additional certainty.

Due to the high level of uncertainty in this sector, it is important that the CNI Project works to increase the understanding of how important these habitats are in the pursuit of a carbon neutral island through additional data collection.

## 7.1. Carbon Audit

Overall, the LULUCF sector was found to be the biggest emission source attributed to Barra & Vatersay across the three carbon audits. The LULUCF assessment considers six land-use categories, based on IPCC[15] and UKCEH[16] designations, as detailed in the table below. Peatlands are captured under the grassland category. Managed Land is defined by the IPCC as land where communities intervene in land-use for ecological, economic, and social purposes. As such, all land on Barra & Vatersay is viewed as managed, in line with national and international guidelines.

[15] PCC (2003) 'Good Practice Guidance for Land Use, Land-Use Change and Forestry'. IPCC, p.p 2.6, Available at: https://www.ipcc.ch/site/assets/uploads/2018/03/GPG_LULUCF_FULLEN.pdf
[16] IPCC (2006) 'Consistent Representation of Lands'. IPCC, Volume 4, Chapter 3, pp.3.6. Available at: https://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/4_Volume4/V4_03_Ch3_Representation.pdf

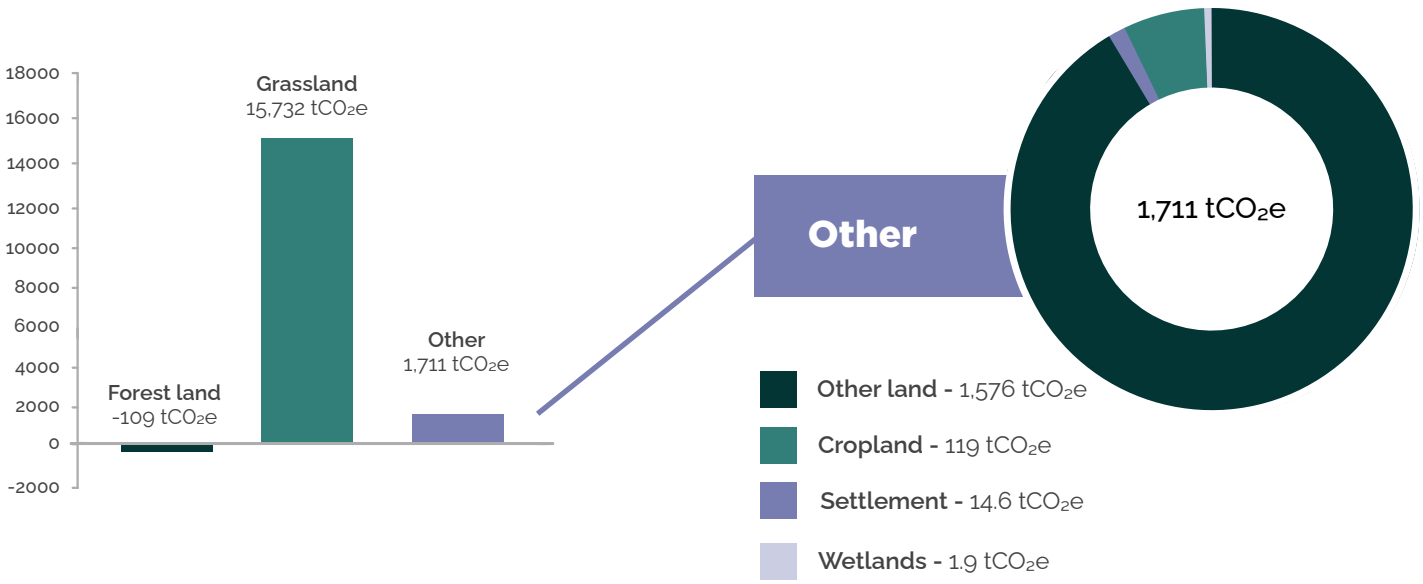
**Grassland accounts for 15.7ktCO2e, which represents 89% of emissions from the LULUCF sector.**

**Forest land acts as a sink after they have become established, and this sub section is carbon negative overall, highlighting the importance of protecting woodlands on Barra & Vatersay and encouraging new growth. Peat extraction occurs on Barra & Vatersay at a domestic level, further information on this can be found in the Appendix.**

| IPCC Land Use Category | UKCEH Land Cover Class 2020 |
|---|---|
| Arable Land | Arable and Horticultural |
| Forestland | Broadleaved Woodland |
| | Coniferous Woodland |
| Grassland | Improved Grassland |
| | Neutral Grassland |
| | Calcareous Grassland |
| | Acid Grassland |
| | Heather |
| | Heather grassland |
| Other Land | Inland Rock |
| | Supralittoral Rock |
| | Supralittoral Sediment |
| | Littoral Rock |
| | Littoral sediment |
| Settlements | Urban |
| | Suburban |
| Wetland | Fen, Marsh, and Swamp |
| | Bog |
| | Saltwater |
| | Freshwater |
| | Saltmarsh |

These figures reflect the best data available at this time, but more work is needed to 'ground-truth' these results and to provide a more accurate account of the LULUCF emissions and their role in the journey to carbon neutrality.

## LULUCF




## 7.2. Community Areas for Action

| Sector | Action | Priority | Timescale |
|---|---|---|---|
| Land Use | Coastal erosion, flood management and resilience scheme – to ensure houses, transport links and services are reliable, available and safe, and that there is support for vulnerable people / areas. | High | M-L |
| Land Use | Tree planting schemes. | High | S |
| Land Use | Encouraging biodiversity conservation e.g., through restoration schemes, education, school workshops, wildflower meadows. | Medium | S |
| Land Use | Ground truthing of land use data (gathering more in-depth and island specific data). | Medium | S |
| Land Use | Confirm full extent and condition of peatland on Barra & Vatersay. | Medium | S-M |

# 8. Agriculture

Aether was contracted by Community Energy Scotland to develop a baseline study of the Agriculture sector of Barra & Vatersay part of the Carbon Neutral Island Project. The report dated March 2023, details emission estimates calculated from national level data in addition to island specific data such as livestock numbers.

## 8.1 Carbon Audit

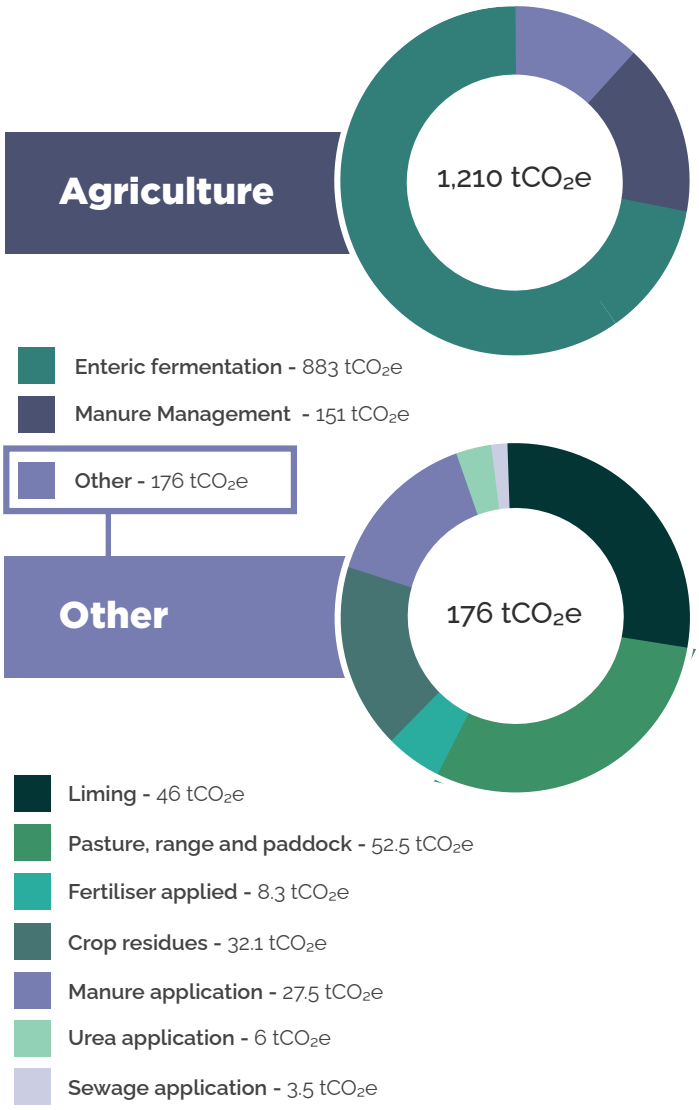
Within the Agriculture sector, the main source of emissions arises from enteric fermentation (emissions deriving from the digestive systems of ruminant livestock) which accounts for 76% of total 870 tCO2e.

Other land management practices such as applying inorganic fertiliser, liming, and the decomposition of manure under anaerobic conditions also have an impact. These figures reflect the best available data and use local livestock numbers, but more work is required to verify the findings.

## 8.2 Local Food

During community engagement, it became clear that residents would like to have access to more locally grown food. Potential options for the production of local food could be small-scale, such as through the provision of community owned growing spaces. These projects could be combined with actions to avoid waste to ensure that excess food produced is used by those in the wider community.

Emissions related to food have not yet been assessed and is something the CNI Project may look at going forward. A potential investigation is life-cycle greenhouse gas (GHG) accounting,




which evaluates and reports the full life-cycle GHG emissions associated with the raw materials extraction, manufacturing or processing, transportation, use, and end-of-life management of a good or service, regardless of which sector produces these emissions. This is a fundamentally different approach than GHG inventories, which quantify emissions from different industrial or economic sectors on an annual basis. Life cycle analysis may be necessary to understand the impact of changes in food production and to assess their significance in achieving a carbon neutral Barra & Vatersay.

## 8.3. Community Areas for Action

| Sector | Action | Priority | Timescale |
|---|---|---|---|
| Agriculture | Support for food processing facilities on the island for use by whole community e.g. for freezing, pickling, salting, drying and fermenting food. | High | S-M |
| Agriculture | Promote the availability of local produce, fresh vegetables and meat in local shops. | High | S-M |
| Agriculture | Community garden with allotments and greenhouses to allow for growing large volumes of versatile local produce e.g., potatoes and carrots. | High | S-M |

# 9. Waste and Wastewater

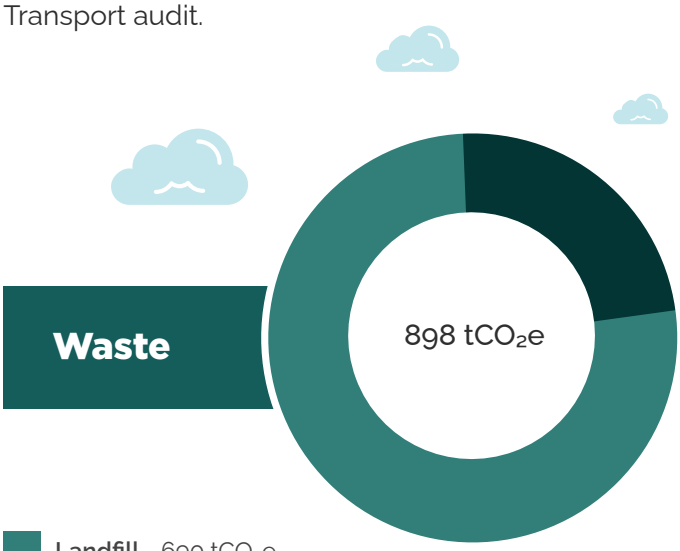
Aether was requested by Community Energy Scotland to develop a baseline study of the Waste sector for Barra & Vatersay as part of the Carbon Neutral Island Project.

The report dated March 2023 details emission estimates calculated using island specific data as far as possible, gap filling with local authority or national datasets where needed.

## 9.1. Carbon Audit

In 2019, the majority of emissions from the Waste sector are due to landfill, equating to 77 % of emissions from this sector (0.69 kt CO2e). This is followed by wastewater treatment and disposal (0.21 kt CO2e).

Landfill waste that is exported and treated off island has been included in this audit, however, emissions from the transport of this waste outside the island have not been included. The reason for this is that these emissions have already been allocated under the Community Energy Scotland Transport audit.




**Landfill -** 690 $tCO_2e$

**Wastewater treatment and disposal -** 208 $tCO_2e$

Landfill falls under scope 3 as waste is exported whilst wastewater is treated on island.

## 9.2. Water Availability

The drinking water supply on Barra & Vatersay is at risk of experiencing the effects of climate change according to the JBA future climate predictions. These predicted conditions are likely to bring heavy and intense winter rainfall which could lead to flooding, in addition to warmer and drier summers which can reduce the availability of drinking water.

Comparisons of SEPA flood data with soil maps of Scotland reveal a high carbon content of the soils surrounding Loch an Duin, the water reservoir for Barra & Vatersay. A combination of dry weather followed by heavy rainfall and surface water flooding could increase levels of dissolved organic carbon in Loch an Duin, and subsequently increase harmful compounds in the distributed drinking water[17].

[17] Reference to PhD: The impact of climate change on the provision of drinking water on the Isle of Barra: An investigation of the risks and resilience on a Scottish island - by Kirsty Hunter. Awarded August 2022 by University of Strathclyde.


Dune Erosion on Vatersay Bay © Stephen Kearney


Marram Grass on Vatersay Bay © Stephen Kearney

## 9.3. Recycling

It was highlighted during engagement that Barra & Vatersay have ongoing issues with waste disposal services, particularly for households recycling.

The household survey indicated that 98% of residents see recycling as a core priority but are restricted from recycling as much as they would like to due to the location and inaccessibility of the recycling facilities on the island. Most respondents indicated that if facilities were improved, they would recycle more waste.

Waste collections from Barra & Vatersay are taken off island to be sorted. Paper and tin collections are taken to Market Stance Depot on Benbecula, and paper/card and residual waste is taken to Creed Park in Lewis. At the time of writing, kitchen waste is not separated and glass cannot be recycled at a household level.

The household survey also indicated that there is a lack of transparency and trust on the recycling process in the Western Isles which can make residents unmotivated to recycle. The CNI Project will aim to improve the transparency and trust of the recycling process in collaboration with the Local Authority.

Stream at Seal Bay © Stephen Kearney

## 9.4. Community Areas for Action

| Sector | Action | Priority | Timescale |
|---|---|---|---|
| Waste *Recycling* | Explore ways to increase Comhairle nan Eilean Siar recycling facilities on Barra & Vatersay. | High | S-M |
| | Clarification of recycling process and confidence in recycling segregation. | High | S |
| Waste *Composting* | Community composting areas, support to install an anaerobic digestor on the island to deal with food waste on site. | High | M-L |
| Waste *Recycling* | Increased provision of public bins on the Barra & Vatersay, especially on areas of high footfall during tourist season. | Medium | S-M |
| Waste *Circular Economy* | Re-purposing education workshops to encourage repairing and utilising furniture/white goods instead of throwing away. | Medium | M-L |

# 10. Blue Carbon

Adler & Allan were requested by Community Energy Scotland to develop a 'Habitat Suitability Study' to derive models of potential blue carbon sites as part of the Carbon Neutral Islands Project.

The report dated March 2023 provides distribution maps of potential locations of existing blue carbon habitats on and around Barra & Vatersay. The results are only an indication of potential habitats and need to be validated before an assessment of carbon stocks and the potential for sequestration in waters surrounding Barra & Vatersay can be estimated. Further work will be necessary in this area.

## 10.1. What is Blue Carbon?

Several definitions of blue carbon exist. The Scottish Blue Carbon Forum defines blue carbon as the carbon captured and stored in marine and coastal ecosystems that accumulates over long timescales through natural processes (e.g. photosynthesis). Carbon is present in both inorganic and organic forms.

Blue carbon habitats are increasingly recognised for their potential as a marine nature-based solution, offering multiple co-benefits for climate mitigation, adaptation, and biodiversity. As a nature-based solution, blue carbon habitats are important in tackling climate change and, in conjunction with some terrestrial habitats, can help to reduce atmospheric carbon dioxide via natural sequestration/carbon capture.

In Scotland, blue carbon habitats include saltmarshes, seagrasses, kelp beds, biogenic reefs, and geological sedimentary stores, such as seafloor and sea loch sediments, and many of these are present in the coasts and seas around Barra & Vatersay.

## 10.2. Blue Carbon Potential

To understand the potential of blue carbon habitats for climate change mitigation on Barra & Vatersay, we need to calculate the contribution from Barra & Vatersay's existing blue carbon habitats.

The focus of future work should be on the organic carbon stored in these habitats. This is because the formation of organic carbon leads to sequestration of carbon dioxide (the principal greenhouse gas) and where the carbon stored remains vulnerable to human pressures. It is hugely challenging to calculate the impact of disturbance on organic carbon stores because the ocean carbon cycle is complex and many evidence gaps remain.

In contrast, the formation of inorganic carbon (calcium carbonate) in the marine environment does not reduce the amount of atmospheric carbon dioxide and physical disturbance of some inorganic carbon, for instance shell material, is not known to cause emissions. However, calcifying reef structures, such as maerl beds, are essential for biodiversity and can help to trap and protect organic carbon that may come from other sources. The role calcifying habitats play in climate mitigation is not currently well understood.

Due to current data gaps, including on the extent and condition of blue carbon habitats around Barra & Vatersay's shores, the Adler & Allan baseline study is heavily based on 'predicted' blue carbon stores from habitat suitability modelling, a process that maps areas with the correct conditions for a habitat or species to exist. Ground-truthing of these habitat models will help to validate the predictions and improve the evidence base of habitat distribution and extent. This information can then inform a more accurate scoping of the potential contribution of blue carbon habitats to carbon sequestration and storage for the island.

## 10.3. Community Areas for Action

| Sector | Action | Priority | Timescale |
|---|---|---|---|
| Marine | Encourage small scale sustainable fishing e.g. hand dived scallops. | High | S |
| Marine | Encourage validation of modelling outputs for Blue Carbon Habitats around Barra & Vatersay. | High | S |
| Marine | Encourage the development of a Blue Carbon Habitat management, protection and restoration plan. | High | M |
| Marine | Support seaweed farming projects, e.g SWMID Seaweed Farm at Aird Fada on the Isle of Mull. | Medium | M |

# 11. Community Resilience

Creating sustainable communities which are resilient to climate change involves taking a holistic approach combining decarbonization with adaptation and actions to increase community resilience.

Some of the actions suggested during the community engagement process were focused more on community resilience than specifically on lowering carbon emissions. The community of Barra & Vatersay still view these as important. Ideas considered most relevant to the CNI project are listed below. The CNI project will look to support making these projects as sustainable as possible as part of their development.

## 11.1. Overview of Community Actions

| Sector | Action | Priority | Timescale |
|---|---|---|---|
| **Community Resilience** | On-island upskilling opportunities of electric vehicle and renewable energy infrastructure to ensure EVs and domestic renewables can be maintained and serviced locally. | **High** | **S-M** |
| **Community Resilience** *Housing* | More local authority housing with energy efficient measures for families and young people prioritised. | **High** | **L** |
| **Community Resilience** *Partnership/ Collaboration* | Network of support across Western Isles. Working with other community groups to find resources and funding opportunities for developing low carbon projects and to share learnings and good practice. | **High** | **S-M** |
| **Community Resilience** | Support Citizen Science Projects on Barra & Vatersay. | **Medium** | **S-M** |
| **Community Resilience** *Youth* | Shared knowledge and learning network for Castlebay and Eoligarry Primary School with other CNI project schools. | **Medium** | **S** |
| | Support for younger people to stay on the island/return to the island after further education to ensure skills relevant to low carbon projects are retained e.g., housing, employment, infrastructure, support network. | **Medium** | **M-L** |
| | Engagement with Castlebay and Eoligarry School within Science Technology Engineering Maths (STEM) framework. | **Medium** | **S-M** |

# 12. Community Engagement

A total of 3 public drop-in sessions were held in the community, at Vatersay Community Hall, Castlebay Community Hall and Garadh a Bhagh a Tuath in March 2023. Information from the carbon audits along with updates on the project progression were shared with attendees. These events were run in support with Climate Hebrides CIC and Bùth Bharraigh. During these events, the community were invited to share their concerns and aspirations for a carbon neutral Barra & Vatersay. A total of 312 separate ideas were suggested, they were wide ranging in both concept and potential for delivery. The approach was taken to 'merge' ideas into one action within the CCAP if the concept and outcome were highly similar.

A Household Energy and Transport Survey was released on the 23rd of February. This was circulated online through social media and via paper copies included in each Guth Bharraidh, the local weekly newspaper. This remained open for submission for 2 weeks. A total of 42 responses were received. The purpose of this survey was to understand concerns and priorities around household energy, fuel poverty, public transport and recycling. Results from the Household Survey have helped to shape this Community Climate Action Plan.

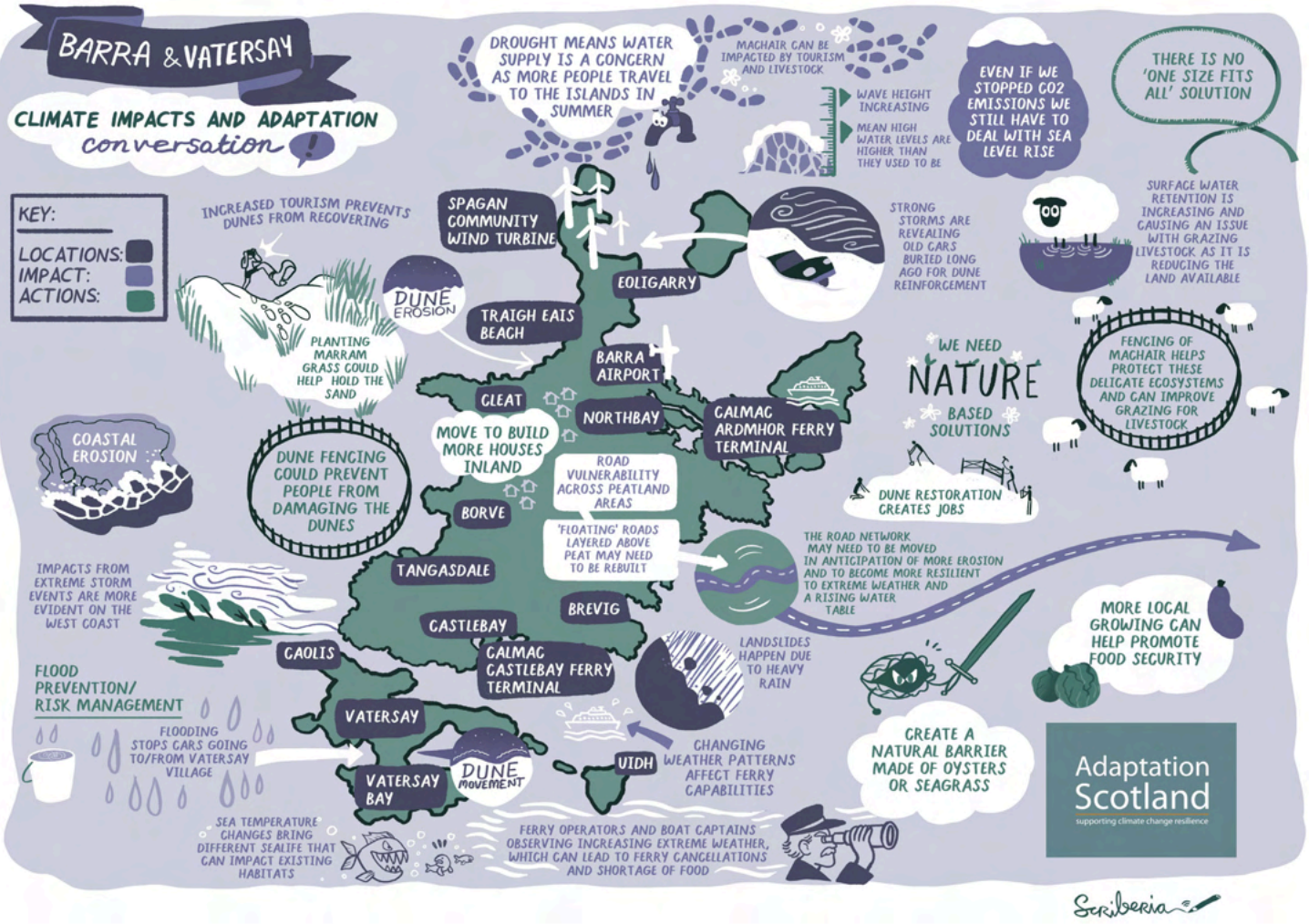
Presentations and discussions took place with pupils from Castlebay Primary School and Eoligarry Primary School. The children were keen to share their thoughts on climate change, how Barra & Vatersay could become carbon neutral and what they feel are the most important actions to get us there. Timescales for the initial stage of the CNI Project have meant engagement with some groups has been limited. Secondary School aged pupils have been identified as a group that will need future engagement.

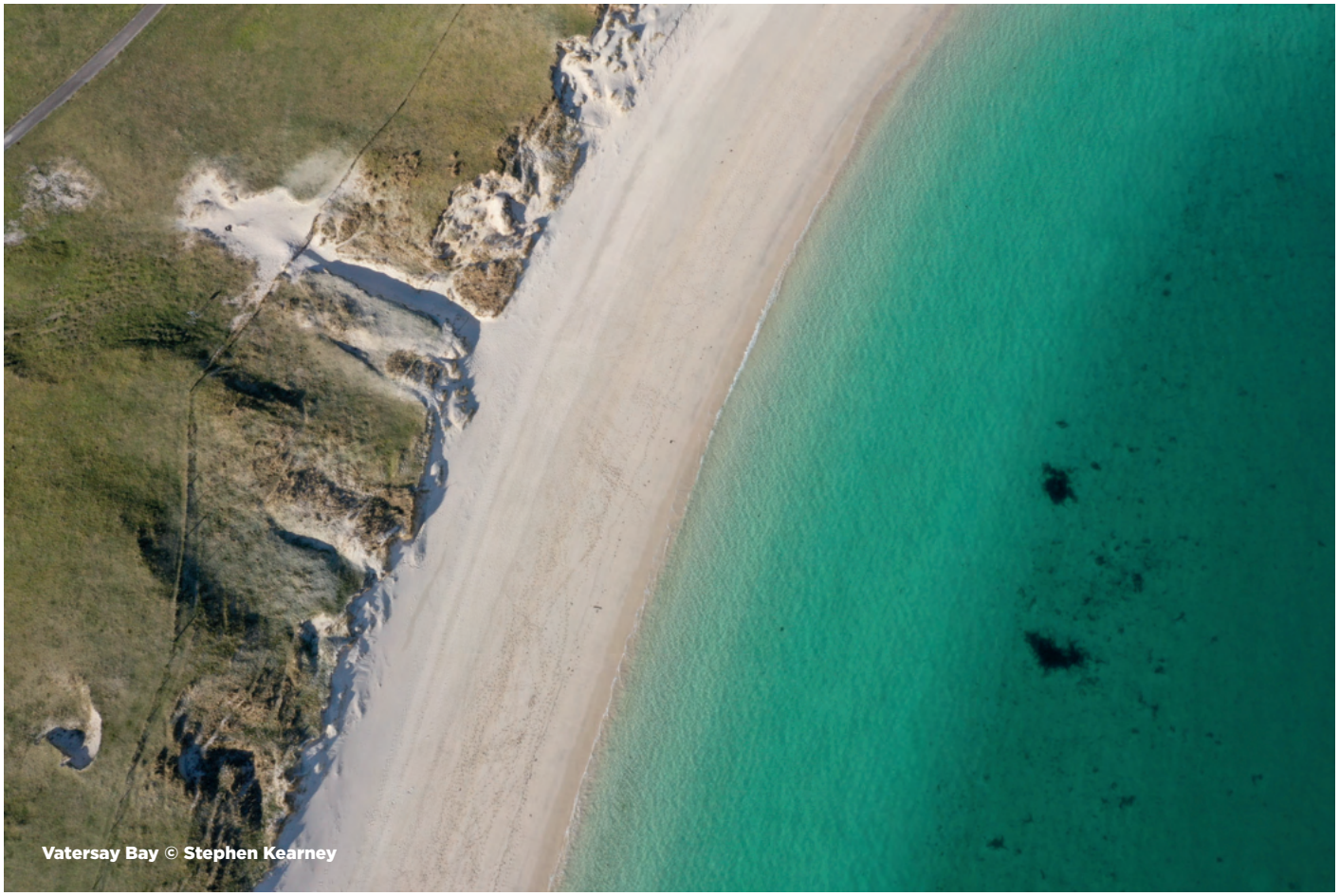
Informal engagement took place with representatives from the local crofting community during February 2023. The CDO met with the majority of the island Township Clerks to gather livestock numbers and information on the crofting practice within each township to better inform the Agriculture sector of the CNI carbon audits.

One-to-one engagement has occurred regularly where members of the community have been looking for more information about the project or advice relating to their own personal and business circumstances, and home energy efficiency.
A Climate Impacts and Adaptation Mapping workshop was carried out by Adaptation Scotland and Sniffer to produce a map of Barra & Vatersay that was live scribed during the session by a graphic artist. This workshop was run live with members of the Steering Group on the 14th of March 2023, an online Miro board was left online until the 20th of March to collate ideas from Steering Group members who could not attend the live session.

Vatersay West Beach © Stephen Kearney


Vatersay Bay © Stephen Kearney



Vatersay Bay © Stephen Kearney

# 13. Next Steps

The CNI project will proceed to cost the implementation of the Community Climate Action Plan and it will develop a community investment strategy to help fund the actions where necessary.

**What:** This Action Plan is a tool for the whole community to use in order to ensure the long-term sustainability of the island, its people and its ecosystems. While some of the actions are already clearly defined others may need further discussion to understand what is needed to achieve the desired outcome.

**Who:** While the CCAP is intended to benefit the whole community, specific actions will require a range of different actors. These include:

- Individuals within the community.
- Community organisations.
- Private businesses.
- Local Authorities.
- Statutory Bodies.
- Scottish (and wider) Government.
- Other networks of interested parties and communities.
- Most actions will require the different actors to collaborate, and building partnerships will be an important part of the process, along with a potential need to lobby and influence others.

**How:** It is important that actions are led by and for the community. This will likely involve leading on immediate actions, taking advantage of any potential "quick wins" available, working on longer plans and investment strategies and exploring opportunities for collaborations which will allow the Barra & Vatersay community to lead, and work with others, to begin making tangible progress towards their own local vision of a decarbonised future. The CDOs have been an integral part of this project and its progress.

The resources required to deliver on this vision are likely to be substantial, and the Investment Strategies will consider and describe in detail how best to utilise funding from different sources including:

- Local and external sources
- Existing public funding
- Public-private partnership
- Private investment

**When:** Having identified the timescale for each action it will be important to map out a timeline for implementation. Some actions may be achieved quickly while others may take longer and require different stages of activity.

Vatersay Bay © Stephen Kearney

# 14. Review of actions

The Community Climate Action Plan is intended to be a living document reviewed and updated locally by the Barra & Vatersay Community Development Officer as the project progresses.

It is suggested that a review of the plan is conducted by the CNI Steering Group on Barra & Vatersay regularly to reflect on progress and update or amend identified actions in line with any changes to the island's circumstances. Engagement with the wider Barra & Vatersay community on changes may be necessary as deemed appropriate by the CDO and steering group.

| CNI Development Officer Contact Details | |
|---|---|
| **Key contact** | Shona MacLeod |
| **Email** | shona@vabv.org.uk |

# 15. Appendices

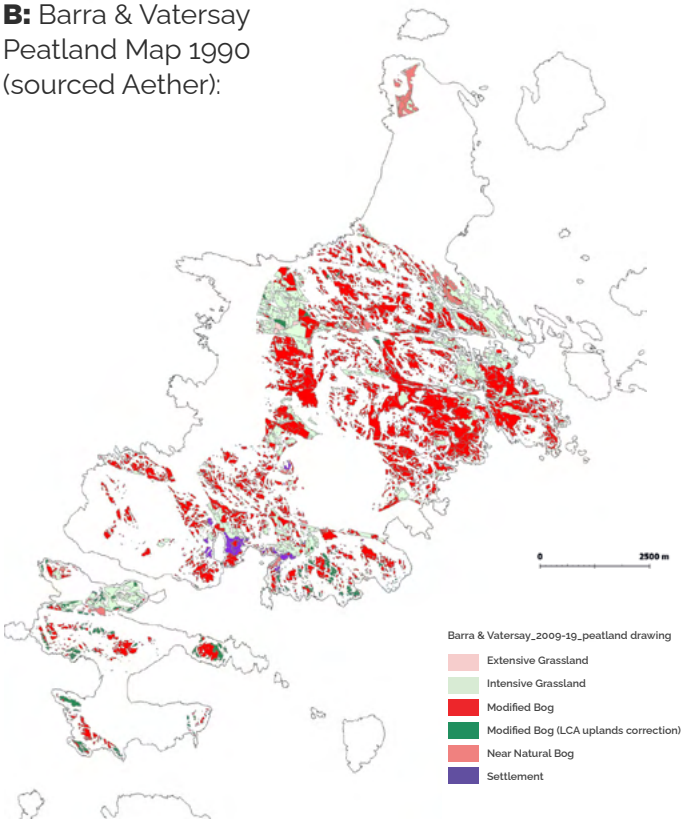
**A:** Actions emerging from Barra & Vatersay Local Energy Plan 2018:

https://localenergy.scot/casestudy/barra-and-vatersay-local-energy-plan/

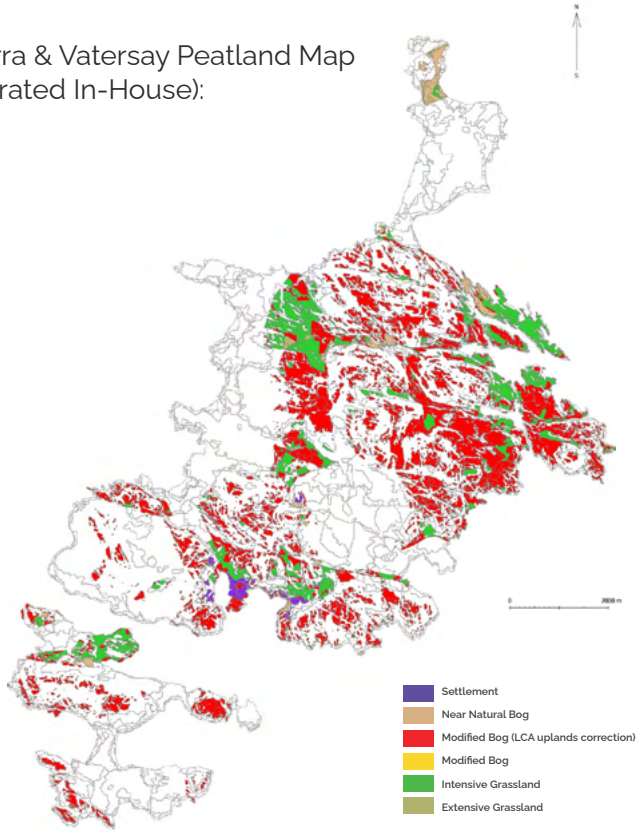
| # | Action | Description |
|---|---|---|
| 1 | Continue and advance dialogue with DNO, CnES, relevant agencies and Scottish Government to address constrained local and distributed network in respect of local generation and supply. | Seek enhancements to local electricity grid network both internally and in respect of the distributed and transmission networks serving the Western Isles. |
| 2 | Continue dialogue with CnES and other relevant bodies regarding a Western Isles Energy Supply Company (ESCo). | Explore potential remit of Western Isles ESCo and how that might benefit energy supply for all communities. |
| 3 | Deliver community event to promote energy efficiency and opportunities for support in demand management, tariff switching and resource efficiency. Include low emission vehicles and associated support. | Raise awareness among community in Barra and Vatersay of existing support services available to homes and businesses (link with Action 13). |
| 4 | Community to work with Barratlantic to promote energy and transport action among non-domestic consumers. | Share knowledge and understanding of support to non- domestic users and potential actions around energy and transport. |
| 5 | Provide support and advice around tariff switching. | Offer support and advice to households and businesses regarding electricity tariff switching and maintaining awareness of changes to tariffs in the market. |
| 6 | Ensure heating oil purchasing options offer best value for residents and businesses. | Promote bulk purchase of oil for residents and businesses. |
| 7 | Community joint venture water efficiency project. | Implement awareness programme centred on water efficiency and benefits of more efficient water use to individual households and businesses. |
| 8 | Continue to improve fabric, insulation and space heating within local residential properties, targeting EPC C rating as minimum standard. Where possible use local installers. | Secure funding for ongoing improvement works to insulation, building fabric and space heating as appropriate to building form, age and wall construction. |
| 9 | Small scale solar PV development and other small-scale generation. | Explore community opportunity for collective install of solar PV on Barra and Vatersay Promote other small- scale renewables as suitable for homes/businesses. |
| 10 | Seek to use heat pumps where appropriate as primary heat source. | Seek designs for new build dwellings that use heat pumps where appropriate and practicable as the primary heat source alongside high levels of insulation and fabric. Look for opportunities to retrofit during renovation of existing dwellings. |

| | | |
|---|---|---|
| **11** | District heating (Castlebay). | Carry out feasibility study for district heating scheme centred around Castlebay School and St Brendan's Hospital. |
| **12** | Community wind turbine and hydrogen production. | Explore potential for local hydrogen production using community wind generation. Market availability to consider ferry operators, hauliers and bus operators. |
| **13** | Promote awareness of electric vehicles and look at potential for a car club. | Develop promotional and awareness event to showcase electric vehicles and sources of advice and support (link with Action 3) Discuss potential for development of a car club with pool of electric vehicles operated as part of a wider Western Isles model. |
| **14** | Community minibus. | Speak with bus operators and Community Voluntary Action Barra & Vatersay, alongside other agencies, to explore potential for electric or hydrogen fuelled bus to supplement existing services. |
| **15** | Extension of EV charging infrastructure. | Extension of EV charging infrastructure extending electric vehicle charging points. |
| **16** | Active Travel. | Discuss with CnES emerging details within Active Travel Strategy and opportunities for enhancements or improvements to current active travel routes (walking and cycling). |
| **17** | Smart grid development. | Seek development of localised grid management system. |

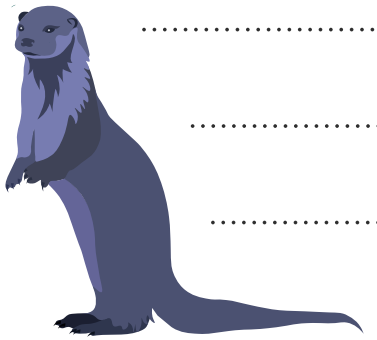
**B:** Barra & Vatersay Peatland Map 1990 (sourced Aether):




**C:** Barra & Vatersay Peatland Map (Generated In-House):



# Notes



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