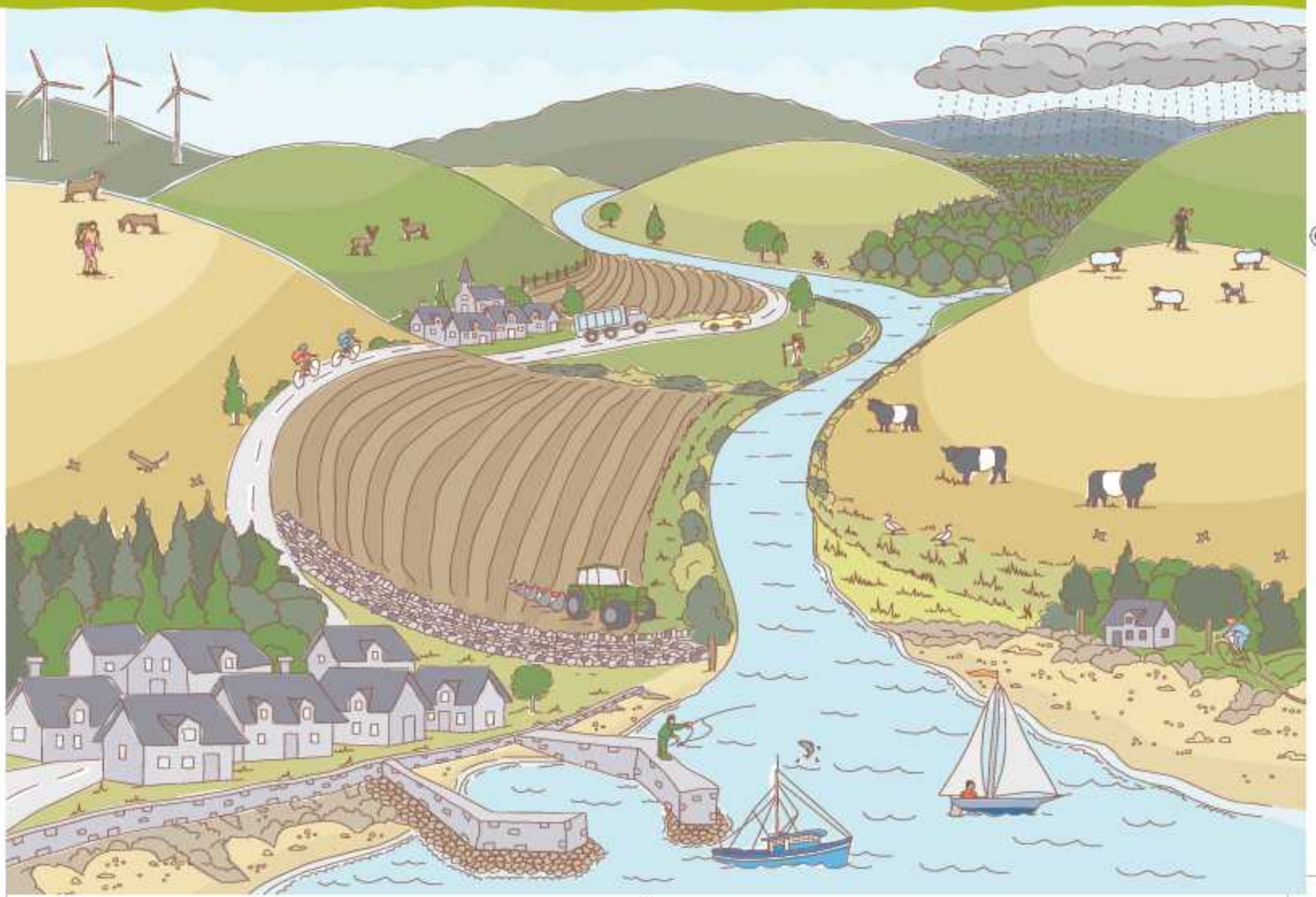
CLIMATE READY BIOSPHERE

OUR VISION

GALLOWAY AND SOUTHERN AYRSHIRE BIOSPHERE



GALLOWAY AND SOUTHERN AYRSHIRE BIOSPHERE

Galloway and Southern Ayrshire Biosphere Partnership

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Scottish Charity No. SCO44137

Adaptation Scotland
supporting climate change resilience

Developing this vision for the Galloway and Southern Ayrshire Biosphere has been supported through the Adaptation Scotland programme.

Adaptation Scotland is a programme funded by the Scottish Government and delivered by Sniffer.

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1 Exchange Crescent, Conference Square, Edinburgh, EH3 8UL

FOREWORD:

Scotland's climate is changing. In the Biosphere we are seeing this first hand, with many people affected by more frequent heavy rainfall causing flooding, coastal surges, the spread of pests and disease, and changes to the growing season. In the future we will see even more change, and this will require us to adapt.

Our Vision for a Climate Ready Biosphere is one in which we take early and planned action to prepare ourselves, allowing us to tackle challenges and benefit from opportunities. There is a strong focus on building resilient communities and sustainable businesses, while ensuring that the unique natural environment is protected and enhanced.

We know that no one organisation, business, community or individual will be able to adapt to climate change alone. The Biosphere brings people and organisations together. It will continue to act as a catalyst for action, encouraging joined-up thinking and sharing best practice.

As Scotland's first UNESCO Biosphere, we are now also one of the first in the world to set out a positive vision for a Climate Ready Biosphere. We will share lessons we learn with our international partners, as we all face the global challenge of climate change.

The Galloway and Southern Ayrshire Biosphere Partnership Board is committed to working with partners to fulfil Our Vision for a Climate Ready Biosphere. We would urge you to get involved and commit to action that will help ensure that we have a climate ready future.

Joan Mitchell
Chair Galloway and Southern Ayrshire Partnership Board
September 2015

INTRODUCTION:

The Galloway and Southern Ayrshire UNESCO Biosphere was designated in July 2012 and covers over 5,200 sq km of South West Scotland. It is a unique and diverse place.

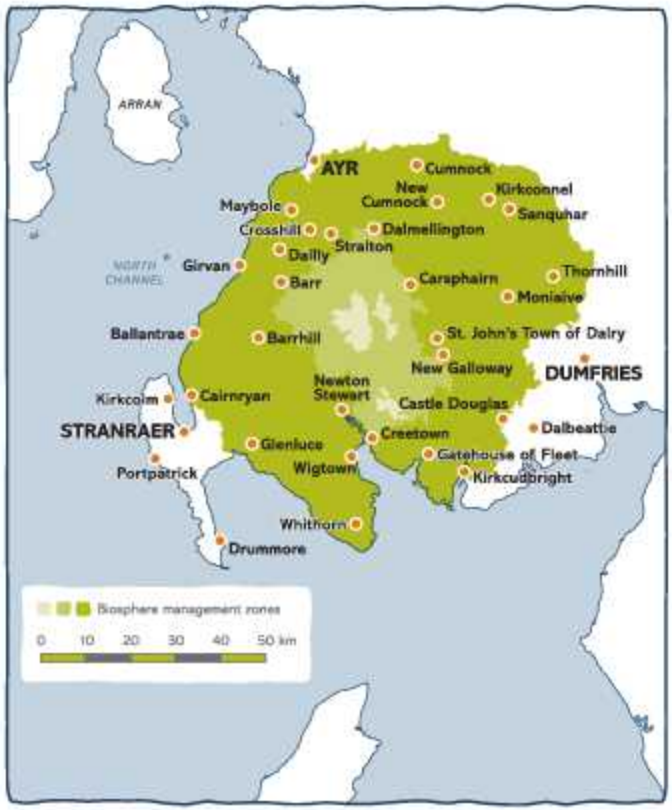
Home to around 95,000 people, the biosphere benefits from a mild temperate climate brought by the Gulf Stream, which is ideal for farming and forestry. It has a unique biodiversity that brings together a wide range of species and habitats, with many at the furthest northerly or southerly limits of their range.

But our climate is changing, so we have to change too.

During the autumn of 2014 the Biosphere Partnership, supported by Adaptation Scotland, gathered people from a range of organisations, businesses and communities across the region to identify the impacts of climate change and begin to plan our response.

Together we created Our Vision for a Climate Ready Biosphere. This sets out the challenge we face and provides a positive vision for how our people, natural environment and economy can adapt and thrive.

Making it happen will involve everyone. The partners of the Biosphere intend to lead through action and will report on progress in our action plan. However, to become climate ready everyone needs to get involved, and that includes you!



"NOT EVERYWHERE HAS THE RIGHT INGREDIENTS TO BECOME A BIOSPHERE – THE STATUS IS GIVEN ONLY TO WORLD-CLASS ENVIRONMENTS WHERE PEOPLE AND COMMUNITIES VALUE THEIR ENVIRONMENT, ARE COMMITTED TO CARING FOR IT AND ASPIRE TO MAKING IT BETTER."

We can only achieve this in a changing climate if we take positive action to become climate ready – securing and enhancing our environment and the livelihoods of the people for whom it is home.

Biospheres worldwide share three common functions:

- Conservation of Biodiversity – to contribute to the conservation of landscapes, ecosystems and species;
- Sustainable Development – to foster economic and human development which is socio-culturally and ecologically sustainable;
- Research and Monitoring – to provide support for research, monitoring, education and information exchange related to local, national and global issues of conservation and development.

THE CHALLENGE:

Rain, sun, wind and snow – the weather is part of what defines the biosphere and the people who live here. We often see ourselves as 'weather-proof', taking it in our stride and getting on with the things that need to be done, regardless of the weather.

The weather helps to create our natural environment, shaping our mountains and hills, supporting our peat bogs, wooded valleys, farmlands, and providing the water that flows through our lochs and rivers to our diverse coastline. It is crucial to many of the unique habitats and iconic wildlife that make our biosphere internationally important.

The quality and diversity of this environment – including the weather – also makes it an ideal place for growing, rearing and producing a wide range of foods, infused with the unique flavours and characteristics of this special landscape.

We are proud of our resilience, but severe weather still poses a serious challenge that can have devastating consequences. It also seems to have occurred more frequently in recent years, with repeated floods, storms, coastal surges and a couple of severe winters all causing damage and disruption.

It's not just the extremes of weather that have been challenging. Recent years have in general been warmer and wetter than in the past. There have been benefits, such as longer growing seasons. But there have also been problems, like waterlogging of fields and accelerated spread of larch disease by wind and rain.

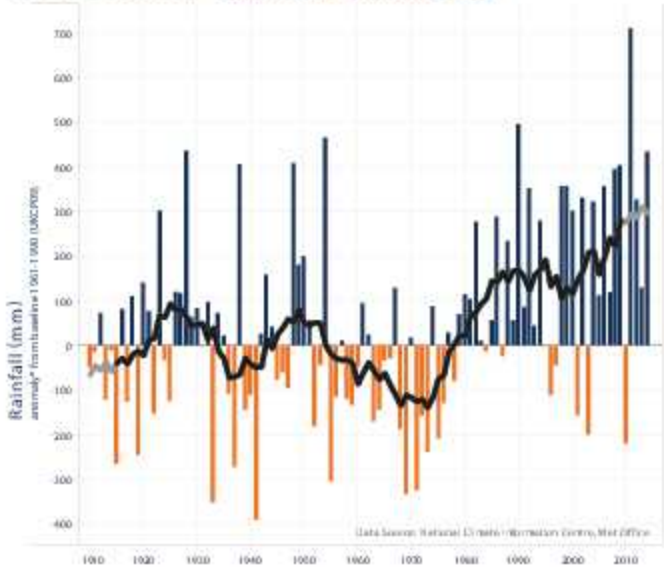
RAINFALL:

We know about rain, and it has always been wet here. But over the last few decades there has been a trend of increasing rainfall, with at times deluges of unprecedented levels. This trend is expected to continue in the future with autumn and winter becoming wetter through the 21st century. We are also likely to see more intense, heavy downpours – which can lead to rapid rise in watercourses, with only skyreburn warning (i.e. no warning at all).

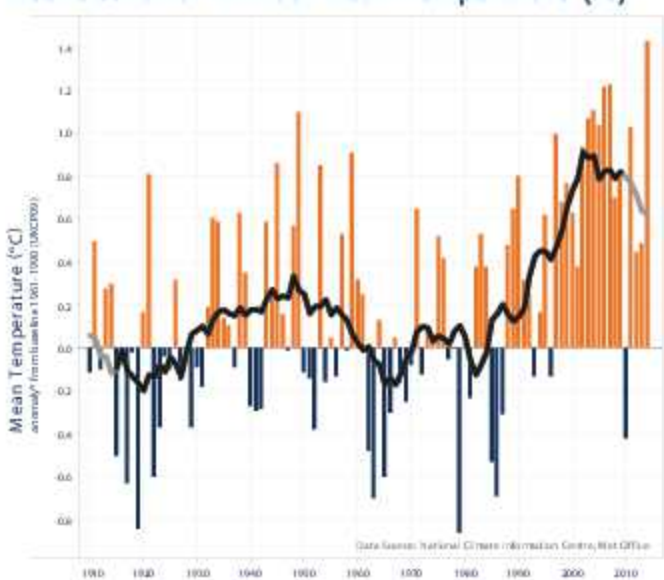
Flooding has a devastating impact on people, nature, homes and businesses – both in villages and across the countryside. It causes damage and disrupts the infrastructure and day-to-day services that we rely on, often leaving people cut-off. It can seem at times that the region is 'closed for business'.

Although rainfall may be our biggest challenge, by the middle of this century new weather patterns are likely to bring typically drier summers, and may bring more drought. This could have some benefits, such as tourism and recreation, reduced waterlogging in fields, but it will threaten important habitats like peat bogs that need wet conditions – and increase the risk of wildfires. Forestry and water reservoirs will need to be carefully managed to deal with changeable water availability.

West Scotland - Annual Rainfall (mm)



West Scotland - Annual Mean Temperature (°C)



Observed changes in annual mean temperature and annual rainfall for West Scotland. Values are compared to 1961-1990 baseline average which shows how any year compares to the average (warmer/cooler and wetter/drier). The black line is a 10-year running mean. For more see the Adaptation Scotland Climate Trends Tool. Based on Met Office National Climate Information Centre data.

TEMPERATURE:

Most of us love those all too rare hot days! The prospect of temperature rise might seem like something to embrace – and there will be opportunities from warmer conditions. However, it will pose a wide range of challenges across the biosphere, not least to the unique landscapes, habitats and wildlife that define it.

Over the last few decades temperatures have risen by more than 1°C in West Scotland. This is a trend that is set to continue with temperatures by the 2050s likely to increase by at least a couple of degrees, more similar to those in South-West England today. It is possible they could even go beyond anything experienced in the UK.

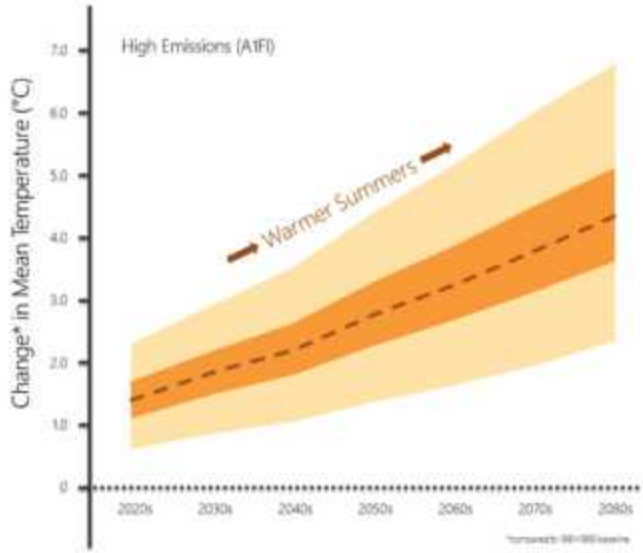
We could benefit from a warming climate that encourages people to get outdoors and take advantage of abundant recreational and tourist activities across the region. Milder winters could reduce the need for heating and the number of cold related deaths. Longer growing seasons and warmer conditions could also benefit productivity of farming and forestry. However, it will also pose significant challenges. Buildings may not perform well in a future climate and need costly retrofit or replacement. In mild and wet conditions pests and diseases can spread more easily. Some habitats and wildlife could even be lost to the region if temperatures rise too much.

RISING SEA:

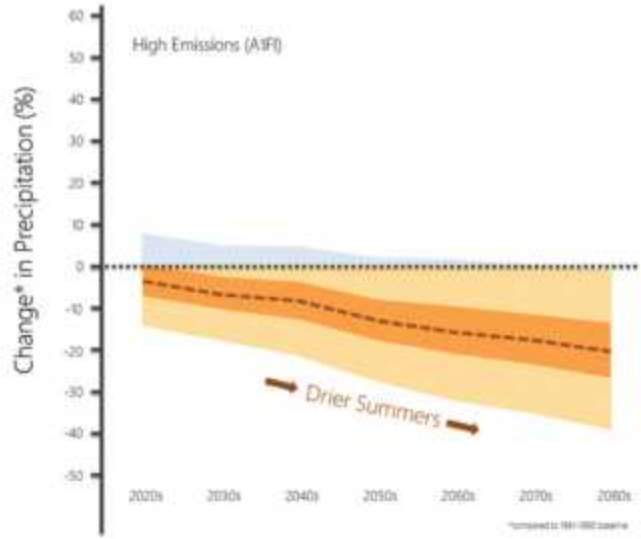
The coastline of the Biosphere features a wide variety of natural habitats, including mudflats, sands and shingles, sand dunes, dune grasslands and sea cliffs – supporting abundant and distinctive wildlife. Many towns and villages are located around the coast, reflecting the historic importance of the sea to local livelihoods.

Coastal flooding and erosion are unavoidable in many places – damaging properties and infrastructure both in towns and villages as well as key transport links like the A75. Although change at the coast is a natural process, important habitats can be adversely impacted with implications for rare wildlife. This has implications for our growing eco-tourism sector. These risks will be exacerbated by storm surges and sea level rise, which has been accelerating in recent decades and is projected to rise by up to 70 cm by the end of the century.

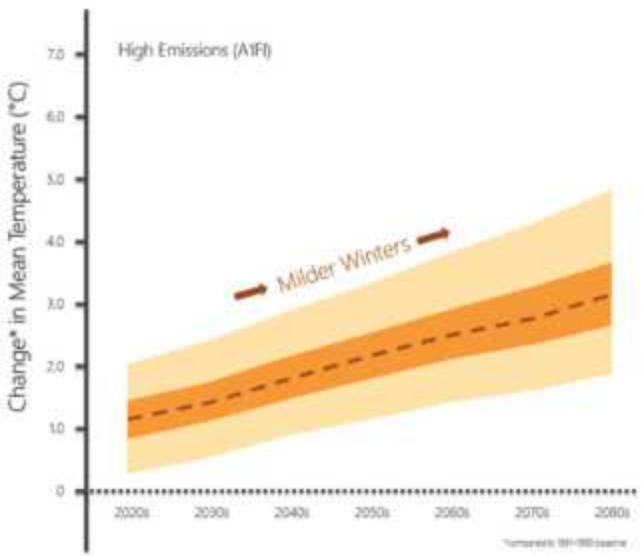
West Scotland – Summer



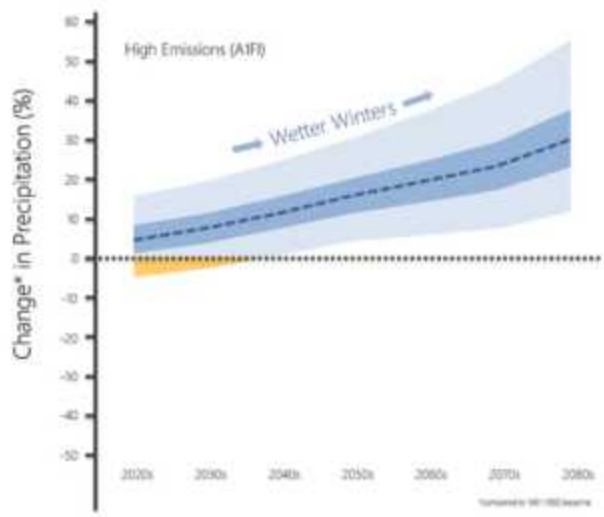
West Scotland – Summer



West Scotland – Winter



West Scotland – Winter



UKCP09 climate projections for West Scotland showing expected change in mean temperature and mean precipitation of the 21st century. The dashed line is 50% central estimate, the inner band is the likely probability range and the outer band is the very likely probability range (i.e. it is very likely that temperature or rainfall will be within this range). Note all values compared to 1961-1990 baseline average.

DO YOU REMEMBER..?

IN 1963 THE PREGNANT MUMS HAD TO GO INTO THE MATERNITY WARD TWO DAYS BEFORE THE STORM WAS DUE?

LAST YEAR WE WERE TRYING TO GET TO MY MOTHER IN LAWS FOR NEW YEAR, AND WE ONLY JUST GOT THROUGH THE FLOODS AT LOCH KEN. THEY WERE MORE THAN 2 FEET DEEP.

THE HUGE FOREST FIRE ON THE BORDER BETWEEN GALLOWAY AND AYRSHIRE? WE NEEDED FIRE ENGINES FROM 3 VILLAGES, AND LOTS OF VOLUNTEERS, AND YOU CAN STILL SEE THE EFFECT ON THE HEATHER.

WHEN THE A77 WAS CLOSED BECAUSE THE FLOOD WAS UNDERMINING THE BRIDGE OVER THE STINCHER?

THERE WAS A PLAN TO PUT A SKI-LIFT UP BLACKCRAIG FROM NEW GALLOWAY? THERE WOULDN'T BE ENOUGH SNOW FOR THAT THESE DAYS.

THE FERRY IS DISRUPTED REGULARLY. DO YOU REMEMBER WHEN IT HAD TO GO AND RESCUE A FISHING BOAT IN DISTRESS?

WE HAD TO ASK OUR NEIGHBOURS TO HELP US TAKE FOOD UP TO THE SHEEP WHICH WERE STUCK IN SNOW DRIFTS ON TOP OF THE HILL. WE HAD TO STAMP A NARROW PATH UP HILL WITH SHEEPFEED IN OUR RUCKSACKS. LUCKY WE HAD FRIENDLY NEIGHBOURS.

I WAS TRYING TO GET TO A RUNRIG CONCERT IN DUMFRIES. AND (I'M EMBARRASED TO SAY THIS) I HAD TO PUT VODKA IN MY CAR'S SCREEN-WASH.

LAST YEAR I GOT SUNBURNT HILLWALKING IN MAY. AND THE FOLLOWING WEEK THERE WERE BLIZZARDS.

OUR VISION FOR A CLIMATE READY BIOSPHERE:

PEOPLE AT THE CENTRE

BY 2020...

People across the region have always helped each other. But communities are now developing resilience plans and networks using local resources and expertise to help themselves during and after severe weather events – building on support from local authorities and emergency services. This is also getting people involved in decisions about managing long-term risks in their communities and across the region, reducing potential impacts now and in the future.

The Biosphere partners are taking an active role in raising awareness about climate change, spreading the message that adapting can be an opportunity. This includes partners highlighting good examples from local communities and businesses and developing demonstrations at key locations (e.g. visitor centres and guided walks).

This has seen community-led projects springing up across the Biosphere, with a range of innovative ideas put into action around food, tourism, nature and education.

BY 2050...

Communities across the biosphere are thriving. The tourist season has extended and the region is more popular than ever with visitors driving demand for local food and hospitality after long, leisurely days spent walking, cycling and sailing.

Climate change has been a serious challenge, with an increased frequency of severe weather events that require an emergency response. Now that

community resilience planning is part of the fabric of our communities, we are working together to assist vulnerable people, and protect our homes and businesses. This response has brought us closer together.

Local people have driven long-term choices and investments that have respected the heritage of the region, whilst creating sustainable communities with strong local services and connections. They have played a key role in making difficult decisions to deal with threats from climate change, including reducing flood risk, protecting habitats and managing coastline retreat at some locations.

> “PEOPLE AND COMMUNITIES WILL BENEFIT FROM ACTIONS TO ADAPT TO CLIMATE CHANGE”

> “AN INCREASE IN EXTREME AND UNPREDICTABLE WEATHER HAS MEANT PEOPLE IN OUR COMMUNITY ARE NOT READY OR PREPARED TO BE SELF-SUFFICIENT. WE'VE CREATED COMMUNITY RESILIENCE TEAMS TO DEVELOP A CO-ORDINATED COMMUNITY PLAN, IDENTIFYING RESOURCES AND INDIVIDUALS IN THE COMMUNITY WHO CAN HELP TO ENSURE EVERYONE IN OUR COMMUNITY IS SAFE.”

LAURA KILTIE, WHITHORN COMMUNITY RESILIENCE TEAM. PICTURED COMMUNITY RESILIENCE IN ACTION, PORT WILLIAM

A THRIVING SUSTAINABLE ECONOMY

BY 2020...

The region has a growing reputation for sustainable development that is climate ready – with local businesses taking action to deal with risks and seize opportunities as we respond to climate change. The Biosphere partners are playing a key role in promoting innovative business and the growth of community enterprises.

Tourism is important to the local economy and is being promoted through initiatives like the Biosphere and Dark Skies Park. Our focus on sustainability and enhancing the natural environment encourages visitors and locals alike to enjoy outdoor activities and attractions. Although there is no escaping the unpredictable weather, by diversifying and innovating we are increasingly seen as a great place to visit at any time.

Local farmers, foresters and land managers are taking a lead in the region becoming sustainable and climate ready. They are using local knowledge to make decisions that will support their businesses, both now and in the long term – as well as enabling the region to thrive. This includes action to manage risk from pests and disease, deliver natural flood management, restore and enhance habitats, and plant species-rich woodlands.

Across the Biosphere there is a long tradition of producing high quality local produce – and this is set to continue with producers adapting to changing growing conditions, potential disruption to supply chains and growing demand for local sustainable produce.

BY 2050...

Although the region is still wet and the weather unpredictable, temperatures are much warmer than they were in the early 21st century. This has led to real change in people's lives, the natural environment, and our connections with the rest of the world. Our businesses have been at the forefront in responding to climate change. With sustainability and climate resilience embedded for decades, they have dealt effectively with threats and realised opportunities.

“ADAPTING TO CLIMATE CHANGE WILL STRENGTHEN BUSINESSES AND GENERATE NEW OPPORTUNITIES”

Tourism has mostly benefited, with the region a thriving tourist destination as many people see the climate as ideal, especially given sweltering summer temperatures further south. The emphasis on sustainable local investment has built the capacity to respond to the serious challenges of storms, flooding and sea level rise. Tourism is carefully planned to minimise adverse impacts and promote the natural environment, which is under strain from the changing climate.

There are longer growing seasons and conditions have improved, with agriculture and forestry able to increase productivity – although there are still challenges with changeable weather (from water-logging to increased drought) and the risk of pests and disease. The decisions made over the last few decades mean that the region is widely known for its high quality produce – and businesses are prospering.

The early action taken by farmers, foresters and land managers to deliver natural flood management, plan for fluctuations in water supply, restore and enhance habitats, and cultivate species-rich woodlands – has made the region more resilient to climate change. This reduces risks to producers and also brings them the benefits of being part of a thriving region where local produce is valued.

© Kevin Shields (Farmland and Times Group)

“FROSTS, RAINFALL AND TEMPERATURES ALL AFFECT THE SIZE, QUANTITY AND QUALITY OF THE AYRSHIRE TATTIE CROP. LESS FROST AND EARLIER SPRINGS COULD BE A BENEFIT TO THE AYRSHIRE TATTIE GROWERS. AN EARLIER GROWING SEASON ALSO BENEFITS DAIRY FARMERS AS EARLIER GRASS CROPS MEAN REDUCED WINTER FEED COSTS.”

GEORGE NORRIS, LOCAL POTATO EXPERT, PICTURED HERE WITH AN AYRSHIRE POTATO

WE WORK WITH NATURE, NOT AGAINST IT

BY 2020...

The Biosphere was designated due to the unique natural environment in the region – and our commitment to protect and enhance the landscape, habitats and wildlife. In recent years there has been a concerted effort to understand the impacts of climate change on our varied natural environment, from the hills and peat bogs on the uplands, through forested valleys and farmlands, to the sea. This knowledge is helping to plan our response – so that we can support our iconic environment. It has also highlighted the inevitability of change, especially for species and habitats at their southerly limits.

The Biosphere is well known for pioneering work to protect peat bog habitats. Practical projects and research are helping to support these habitats to adapt and play an important role in reducing the risk of downstream flooding by storing water, as well as their vital role in storing carbon.

Agreed changes in forest and land management will transform habitats in the years ahead. Policies to diversify planting and introduce mixed species woodland management will support the natural environment to adapt and increase benefits to people.

BY 2050...

The climate has changed over the last few decades, becoming much warmer – and while still a wet region, rainfall is becoming more seasonal. This has led to changes in our natural environment, affecting habitats and wildlife. New species are appearing while some of our more familiar species are becoming less common, or even disappearing. Nature is better able to adapt to these changes due to work to improve the quality and connectivity of habitats.

Improvements to moors, mixed-species woodlands and coastal wetlands are making them more resilient to the changing climate. They are also providing places for people to enjoy the peace and tranquillity of the Biosphere, as well as providing space for nature to adapt and helping to manage flood risk across the region.

Periods of warmer, drier weather are happening more frequently. These conditions put stress on peat habitats

> “WE WILL PROTECT AND ENHANCE OUR NATURAL ENVIRONMENT AND USE IT TO HELP US ADAPT TO CLIMATE CHANGE – AND AVOID ITS WORST EXCESSES”

in the uplands, but they remain resilient due to restoration over the previous decades, which has returned them to a healthy natural state. There is also an increased risk of wildfires in the region's woods and forests, which is being tackled through coordination between authorities, woodland managers and volunteers to raise awareness and respond rapidly when fires happen.

Accelerating sea level rise at the coast has driven change in this dynamic environment. Early decisions to give the coast enough space to change are proving beneficial – minimising impacts through managed realignment in some locations and supporting natural habitats and ecosystems.

> “WE WORK WITH VOLUNTEERS AND PARTNERS TO IMPROVE GLOBALLY RARE PEATBOG HABITATS AND THE WILDLIFE THEY SUPPORT. IN GOOD CONDITION THESE ECOSYSTEMS ALSO PROVIDE MULTIPLE BENEFITS. THEY ACT AS A VAST CARBON STORE AND ABSORB LARGE VOLUMES OF WATER, REDUCE FLOOD RISK, AND ACT AS A NATURAL WATER FILTER.”

JENNIFER DUNN, EAST AYRSHIRE COALFIELD ENVIRONMENT INITIATIVE. PICTURED VOLUNTEERS ON A DRAGONFLY SURVEY

MAKING IT HAPPEN:

Climate change is having a profound impact on the landscape, habitats, wildlife and culture of Biospheres around the world. There is an urgent need to protect and manage these special places in a way that enables them to thrive in the face of ongoing, significant change.

The Galloway and Southern Ayrshire Biosphere partners are committed to taking a leading role in adapting to climate change. We will ensure that people and nature are working together to make our Climate Ready Biosphere.

However, we recognise that adaptation to climate change is a global challenge. We will share what we are doing with others around the world, both supporting and learning from wider efforts to ensure a low carbon climate ready future.

We as partners in the Biosphere intend to lead through action – and will publish and report progress on an annual action plan. However, to become climate ready everyone needs to get involved, and that includes you! So please get in touch to find out more – your ideas are what will make this happen.

THE GALLOWAY AND SOUTHERN AYRSHIRE BIOSPHERE PARTNERS:

Ayrshire Food Network

Leader Ayrshire

Carrick Community Councils' Forum

Craigengillan Estate

crichton carbon centre

Cumnock Community Council

Leader Dumfries & Galloway

Dumfries & Galloway Council

East Ayrshire Council

Forestry Commission Scotland
Coimisean na Coillearachd Alba

Gatehouse Development Initiative

University of Glasgow
School of Interdisciplinary Studies

NFU Scotland

rspb giving nature a home

SEPA
Scottish Environment Protection Agency

Scottish Land&Estates

Scottish Natural Heritage
All of nature for all of Scotland

Scottish Water
Trusted to serve Scotland

South Ayrshire Council

Visit Scotland
Scotland's National Tourism Organisation
Buidheann Turasachd Nàiseanta na h-Alba

southern uplands partnership
living land, living community

DOWNLOAD THE CLIMATE READY BIOSPHERE ACTION PLAN AND FIND OUT MORE ABOUT OUR WORK TO ADAPT TO CLIMATE CHANGE:

WWW.GSABIOSPHERE.ORG.UK

Adaptation Scotland
supporting climate change resilience

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