6th February 2020

Climate Fife: Sustainable Energy and Climate Action Plan (2020-2030)



One of Fife Council's 2 hydrogen hybrid RCVs top left. Image courtesy of Bright Green Hydrogen,

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Document status	Final - approved by Committee for public release
Date of issue	06/02/20
In the view of Fife Council (please tick appropriate box):	
[X]	The policy, plan or strategy (PPS) falls under the scope of Section 5(3) of the Act and requires a Strategic Environmental Assessment (SEA) under the Environmental Assessment (Scotland) Act 2005 **or**
[ ]	The PPS falls under the scope of Section 5(4) of the Act and requires an SEA under the Environmental Assessment (Scotland) Act 2005 **or**
[ ]	The PPS does not require an SEA under the Environmental Assessment (Scotland) Act 2005. However, Fife Council wish to carry out an SEA on a voluntary basis. They accept that, as this SEA is voluntary, the statutory 5 week timescale for views from the Consultation Authorities cannot be guaranteed.

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Introduction

The Climate Emergency

Over the last decade Fife Council has worked proactively to reduce the emission of greenhouse gases which contribute to climate change, and Fife's carbon footprint has fallen by over 55% (compared to 1990 emission levels). This activity has set a good foundation, but the latest climate science[1] suggests that emissions need to be cut even deeper and faster than previously thought to avoid catastrophic impacts.

In 2018 total annual global greenhouse gas emissions reached 55 gigatonnes of CO2 equivalent. **The world needs to cut emissions by 7.6% every year** for the next 10 years and global annual emissions fall below 25 gigatonnes of CO2e by 2030, if we are to have any chance of limiting warming to below 1.5°C.

Globally, climate change was overshadowed by other issues since the financial crisis; however, it was brought sharply back into focus in 2018 by the United Nations' Intergovernmental Panel on Climate Change (IPCC)[2], which declared that climate change had become an emergency because of a collective failure to act. The IPCC warned that failing to limit global warming to a 1.5°C increase in global average temperatures over the preindustrial period would trigger runaway climate change and have catastrophic impacts on health, livelihoods, food security, water supply, human security and economic growth.

The UN's assessment of the situation is blunt: "Countries collectively failed to stop the growth in global greenhouse gas emissions, meaning that deeper and faster cuts are now required… We need quick wins to reduce emissions as much as possible in 2020… We need to catch up on the years in which we procrastinated. If we don't do this, the 1.5°C goal will be out of reach before 2030."

Inger Anderson, UNEP Executive Director

The impact of climate change has largely, until this point, been masked by the fact that over half of the greenhouse gas emissions released by human activities have been absorbed by natural systems such as the oceans, soils and forests. The latest science[3] suggests we are at a tipping point and that the planet's natural abilities to absorb greenhouse gases appear to be at, or beyond their natural capacity. Earth has warmed to the point that natural sinks of greenhouse gases are now becoming active emitters of greenhouse gases and dangerous 'feedbacks' such as forest fires and melting permafrost are now releasing vast natural stores of carbon into the atmosphere. For

[1] IPCC, 2018: Summary for Policymakers. In: *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty* [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. *World Meteorological Organization, Geneva, Switzerland, 32 pp.* https://www.ipcc.ch/sr15/

[3] WMO Greenhouse Gas Bulletin, 2018 https://public.wmo.int/en/media/press-release/greenhouse-gas-concentrations-atmosphere-reach-yet-another-high

example, the 2019-20 mega-fires[4] in Australia have so far released as much carbon dioxide into the atmosphere as Australia's entire carbon footprint (from human activities) from the previous year.

If natural carbon sinks become emitters at a global scale, then these emissions would dwarf human greenhouse gases and render us powerless to stop full climate breakdown, where global temperatures spiral out of control - so called 'runaway climate change'.

Runaway warming can no longer be considered just a worst-case scenario. Continuing the current global emission trajectory will deliver warming of an estimated 3.2-6°C by the end of the century which would lead to much of the planet becoming uninhabitable. **Business as usual makes runaway climate change the most likely outcome.**

The technologies and policy knowledge needed to avoid this catastrophe already exist, but transformations must begin now. The IPCC warns that we only have a limited period left to take the decisive action required to avert this crisis and avoid uncontrollable warming; and that **emissions need to at least halve, and ideally fall as low as possible by 2030[5]**. However, despite nearly three decades of climate change negotiations, and international commitments such as the Kyoto Protocol and the Paris Agreement there is no sign of a slowdown, let alone a decline, in the concentration of greenhouse gases in the atmosphere. Global greenhouse gas emissions continue to increase at a rate of 1.5% per year.

It would be easy to see climate change as someone else's problem given that the impacts are likely to be most severe in the developing world. But this would be unjust given that 78% of global emissions come from the G20 and given that global emissions are driven by the consumption of the wealthiest countries (such as the UK). Rich countries have simultaneously failed to cut emissions quickly enough at home and have offshored many of their own polluting industries to the developing world. Taking urgent and significant action to cut greenhouse gas emissions is the responsibility of everyone, but most especially those countries which have benefitted for the longest from fossil fuel use and whose consumption is the primary driver of global emissions.

Internationally it is recognised that the current level of ambition of climate change commitments needs to be increased, and rapidly translated into action for the sake of the future welfare of humanity. Commitments to cut emissions are meaningless without action. Mass protests around the world in the last year demonstrate the groundswell of desire for real action. This, alongside overwhelming scientific evidence and the increasingly extreme weather being witnessed globally, have prompted local and national governments to declare climate emergencies. The Scottish Government's declaration of a climate emergency, followed by

Ten years ago, if countries had acted on climate change science, governments would have needed to reduce emissions by 3.3% each year. Today, we need to reduce emissions by 7.6% each year to limit warming to less than 1.5°C. By just 2025, if we fail to act, the cut needed will steepen to 15.5% each year.

Every day we delay, the more extreme, difficult and expensive the cuts become

[4] https://www.washingtonpost.com/weather/2020/01/24/australia-bush-fires-have-nearly-doubled-countrys-annual-greenhouse-gas-emissions/

[5] https://www.technologyreview.com/s/614801/we-need-to-halve-emissions-by-2030-they-rose-iagain-i-in-2019/

Fife Council on 26th September 2019, shows just how timely this plan is. The 2020s must be the decade of climate action.

Fife's response to the climate emergency

It is recognised that Fife Council and the wider community have made considerable progress at reducing emissions and increasing resilience, but that we now need to mobilise to accelerate the pace and ambition of our response to the climate crisis. Climate Fife is Fife's response to the climate emergency.

This Sustainable Energy and Climate Action Plan: *Climate Fife* sets out the next phase of a Fife-wide approach to tackling the climate emergency and considers the actions that need to be taken urgently to limit the its most harmful impacts. A sea-change is needed in terms of innovation, finance and governance and how business as usual is conducted within Fife Council and within Fife society more broadly. All aspects of day to day life will need to change from:

- How we heat and power our homes;
- Where and how we build;
- Settlement patterns and how we move around;
- Investment decisions and budget-setting;
- The type of industry and businesses that will thrive;
- Jobs and skills;
- Consumption patterns and waste management;
- What we eat; and
- How we use land.

Fife Council is aware of how challenging it will be to achieve the actions and targets within this plan; it would be an inadequate response to the climate emergency if they were not so. Every action taken makes a difference, and every instance of inaction will take us closer to a climate breakdown. Whilst the future may be radically different to the present and perhaps very different to how Fifers envisage the future today, if we act decisively and proactively now our actions could help to tackle not just climate change but many other social and economic problems.

The plan sets out the strategy which underpins *Climate Fife*, presenting:

- a vision for **where Fife Council wants to be**, and the themes and programmes to show where actions are needed and how this will be supported;
- **where Fife is now**, with a Baseline Emission Inventory for Greenhouse Gas Emissions, and a Risk and Vulnerability Assessment to show the known and expected risks from unavoidable climate change; and
- **action plans showing how Fife will get to where we want to be,** working in partnership to deliver a robust response to climate change and identifying the first critical steps and plans to take.

Climate Fife is a Fife-wide plan; however, at this stage Climate Fife's action plan largely comprises actions being driven by Fife Council and key public sector partners. While the Council's direct footprint only represents 3% of Fife's total carbon footprint, through our policies, projects and service delivery it has an influence over upwards of 40% of Fife's total carbon footprint. As a Local Authority, Fife Council is termed a *major player* under the Climate Change (Scotland) Act; and as such Fife Council wants to offer leadership within the wider region.

Fife Council's influence on Fife-wide emissions is multi-faceted, and both direct and indirect. For example:

- Fife Council is a major employer in Fife. After the NHS, the Council is the largest employer in the region.
- Fife Council is a large energy and fuel consumer and Council procurement could be a considerable force for good in terms of developing the low carbon economy within Fife if environmental considerations drive purchasing decisions.
- The Council operates a large property and land portfolio within Fife which comprises thousands of properties from leisure centres, offices, commercial and industrial units, schools, landfill sites, parks, woodlands, and care homes to social housing units.
- In conjunction with community planning partners, the Council also sets planning, transport, waste and housing policy and makes strategic decisions about where and how Fife should be developed in the future, and how environmental risks such as flooding are managed. These decisions will shape Fife's future resilience to the projected impacts of climate change and Fife's future emissions trajectory.

Get involved – your climate needs you

Climate change is not a problem that can be solved by government alone – everyone needs to act to cut emissions and adapt to the physical impacts of the changing climate. Climate Fife is for everyone in Fife. It is an evidence-based, living plan that will evolve as Fife responds to climate change and as the full dimensions of climate change become clear.

It is recognised that more actions are needed in the action plan to make Fife as resilient as possible to extreme weather events and to achieve full decarbonisation. The intention is that the action plan will grow to include more projects as more partners become involved in Climate Fife.

Suggestions for new actions are welcomed and should be submitted to: https://climatechange.fife.scot/climate-fife/

Strategy

Vision

Climate Fife's vision has been developed in partnership with local stakeholders and is underpinned by three core principles:

By 2045 Fife will be:

- **climate friendly**, having transformed the economy, infrastructure, land use and energy system to decarbonise how we live;
- **climate ready**, with plans and projects to increase the resilience of Fife communities and the economy to help minimise the impacts from unavoidable climate change; and
- **climate just**, ensuring that all Fifers and the Fife environment can benefit from this transition.

Climate friendly

Climate-friendly refers to activities which cut carbon emissions i.e. climate change mitigation. Scotland is decarbonising its society and economy so that our way of life does not jeopardise the stability of the climate or compromise the life chances of future generations or the living planet on which society depends. Becoming climate friendly will mean aligning Fife with the net zero carbon future set out in the Scottish Government's targets for decarbonisation; which are world-leading in their ambition[6].

Fife has already met existing Government targets for lowering its carbon emissions by 42% by 2020. It is Fife Council's ambition to work with local and national partners to achieve the latest climate change targets, requiring Fife to achieve a net zero emissions target by 2045. Meaning that Fife's contribution to climate change will end within a generation. The amendments also require Scotland to become effectively carbon neutral by 2045[7]. Fife Council recognises that the science in this area is advancing rapidly and that the window for action to avoid catastrophic climate change is small and that the recommended dates for achieving decarbonisation in Scotland may change. Climate Fife will be guided by national policy in this area.

Climate ready

Climate ready refers to increasing resilience to the impacts of climate change – being climate ready is also called climate change adaptation. *Climate Fife* recognises that our society and infrastructure is designed for a historic climate that no longer exists, and that

[6] https://www.gov.scot/policies/climate-change/

[7] The terms carbon neutral and net-zero are often used interchangeably but there are differences. The term net-zero includes a wider basket of greenhouse gases (not just CO2 and methane) but also nitrous oxide, which is emitted during agricultural and industrial activities as well as from the combustion of fossil fuels. Simply being carbon neutral would not stop global warming because these other gases are also harmful to the atmosphere. Perhaps an even better term would be "climate neutral". Net-zero is the point where the same volume of all greenhouse gases is being emitted as is being absorbed through offsetting techniques like forestry.

considerable adaptation will be needed to ensure resilience in the future. In addition, even if all greenhouse gas emissions stopped tomorrow, thermal inertia within the climate system means it takes between 10-40 years for greenhouse gas emissions to affect the climate, therefore considerable disruption is now inevitable from these past emissions. With over half of the industrial greenhouse gas emissions ever emitted having been released since 1988[8]; it is sobering to realise that the impact of over half of humanity's emissions has yet to be fully felt and will be considerable. The stable climate that society and the economy is based on can no longer be assumed, so society must adapt infrastructure and our way of life to cope with the changed climate.

Fife Council is committed to making its region as resilient as possible to the physical impacts of climate change such as flooding and sea-level rise, so that its people, environment, assets and livelihoods can thrive despite climate disruption. With a coastline on three sides, climate change adaptation is a priority for Fife.

Community resilience is often thought of in terms of the ability to withstand and prepare for short term shocks. However, resilience in communities isn't just about 'emergencies', it's also about longer-term challenges or stresses. These longer-term challenges often have the greatest impact on the ability of communities to be resilient, including their ability to respond to emergency events. Therefore, *Climate Fife* will focus on hard adaptation (i.e. how Fife can adapt the built environment through technical solutions) and also build soft adaptation skills amongst the community to build the social skills and networks that will increase resilience and minimise structural barriers to adaptation.

Making Fife climate ready will be a considerable challenge because global progress at cutting greenhouse gas emissions has been so slow. The longer it takes the world to decarbonise, the worse the damage to the climate will be and the more difficult it will be for society to adapt.

Climate just

Fife, like many parts of the world, suffers from social and economic inequalities. Some areas are thriving but there are other areas of Fife where there are real challenges[9]. *Climate Fife* sets out actions that will positively impact upon the lives of everyone in Fife, regardless of their background. The plan aims to transform Fife in the light of climate change to make Fife a resilient, fair and prosperous place to live and work, and puts fairness and social justice at the heart of achieving climate goals. To be successful all Fifers need to benefit from the transition to a decarbonised economy and no sections of the population can be left behind.

Fife Council acknowledge that responding to the climate emergency is not the most common subject that residents raise with Council staff and politicians - however acting on climate change is aligned with achieving the social and economic goals within Fife's Community Plan - *Plan4Fife* - and will be essential in reducing inequalities and achieving social justice. The fact that climate change may not be foremost in the concerns of Fifers does not alter its fundamental significance. Existing demographic and socioeconomic challenges are likely to be exacerbated by a changing climate, and it is likely that those who are least responsible for climate change will be most impacted. Furthermore, the most

[8] More than half of all industrial carbon dioxide emissions have been released since 1988, which is a hallmark year for another reason: it was the year when the evidence and risks of human-caused warming first became widely known: http://ucsusa.org/morethanhalf

[9] A plan for Fife (2017-27), 2017

vulnerable in society will be the least able to adapt to changing weather patterns or respond to extreme events like flooding and will need greater assistance if they are to thrive despite climate change. Many of those at the front line of climate risks have the least capacity to respond whether that is because of economic disadvantage, health concerns or other barriers. Fife Council recognises that it will not be possible to achieve any social and economic objectives, as set out in the Plan4Fife, without addressing climate justice.

Climate justice is not only about preventing disproportionate impacts to historically marginalized groups, but also about ensuring that everyone shares in the health, economic, and social benefits of a clean energy economy. The projects within the action plan which will underpin *Climate Fife* have been designed in recognition of these inequalities to ensure that responding to climate change does not widen existing social divisions, nor exclude any segments of society.

Themes / Programmes of work

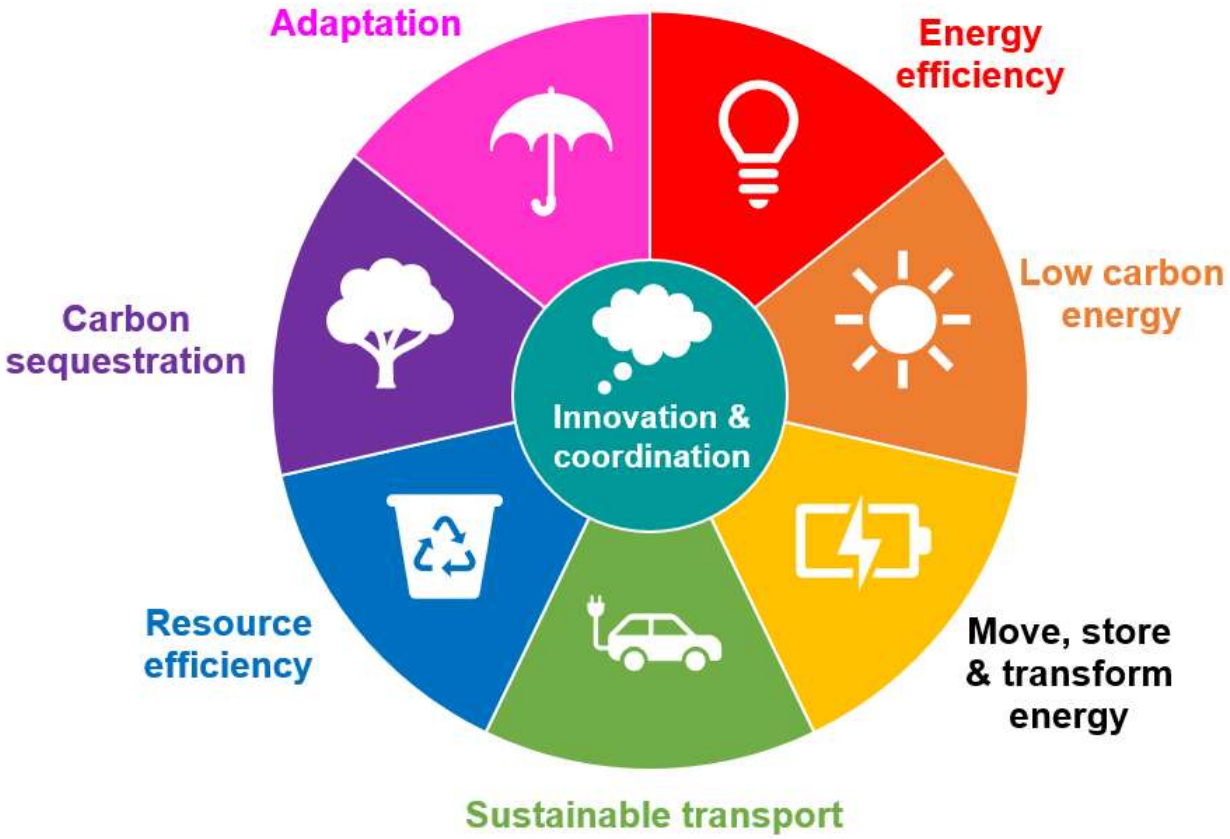
Underneath the climate friendly, climate ready and climate just vision, there are three core areas of climate action, all of which must be undertaken if runaway warming is to be avoided:

- Cutting emissions / decarbonisation – this is called **climate change mitigation**;
- Adapting to the physical changes of climate change – **climate change adaptation**; and
- Actively removing greenhouse gas emissions from the atmosphere (such as by tree-planting or direct capture of flue gases) – **carbon sequestration**.

Fife recognises that to avoid catastrophic climate change greenhouse gas emissions must fall as quickly as possible through a programme of mitigation to deliver net zero by 2045 or earlier if possible, and that this programme of mitigation needs to be bolstered by significant works to absorb greenhouse gases from the atmosphere (sequestration) as rapidly as possible. In terms of the climate emergency the priority has to be on rapid decarbonisation and sequestration because this is what is essential to avoid triggering runaway warming. Fife also recognises that adaptation is needed to cope with today's extremes and will need to be carried out for centuries to come because of the impacts of historic emissions and the time lags in how the atmosphere processes greenhouse gases which mean that climate change will continue for many decades after emissions have stopped.

Climate Fife will be implemented through eight themes; each of which will have a dedicated programme of work. These themes have been developed using the principles of the energy hierarchy where the approach seeks to reduce the amount of energy used in the first place and to move and store it in the most efficient manner, before employing technologies to reduce the carbon emissions associated with that energy generation.

These eight strategic themes will combine to form a single integrated plan for Fife as illustrated:



More information on these themes is given below:

Innovation and co-ordination

Business as usual is one of the biggest barriers to robust action to tackle climate change. Responding to the climate crisis will require a total transformation of how people live their lives; business as usual solutions are not going to be enough. To achieve massive innovation across all aspects of society and infrastructure in the next decade will not be an easy task, and will necessitate considerable financial innovation, hand-holding, partnership building, guidance and coordination. Under the innovation and coordination programme, Climate Fife has grouped together projects that will encourage innovative solutions and partnerships. This is a cross-cutting theme and encompasses a wide variety of projects. To facilitate these projects Fife Council will act in a coordinating role, bringing disparate stakeholders together

Energy efficiency

Energy efficiency is one of the most cost-effective ways of reducing costs and carbon emissions simultaneously. Typical energy efficiency measures include retrofitting properties with better insulation, installing more efficient space and water heating systems, controls and energy management systems. Climate Fife projects will increase the energy efficiency of Fife's buildings, assets and infrastructure to reduce energy consumption, associated carbon emissions and energy bills. Projects will improve the performance of building fabric and reduce the energy used by appliances and fittings. Building fabric projects will improve building energy performance by increasing insulation levels and improving glazing standards. Projects targeting energy using appliances and fittings will focus on super-efficient lighting technologies and other energy efficient technologies.

Whilst not glamorous or innovative like many low carbon technologies, or futuristic like a hybrid vehicle, energy efficiency is likely to be the single most important workstream in helping Fife to tackle climate change. The Scottish Government has designated energy efficiency as a National Infrastructure Priority, the cornerstone of which is Energy Efficient Scotland Programme (a 15 to 20-year programme to transform the energy efficiency and heating of Scotland's buildings so that, wherever technically feasible, and practical, buildings are near zero carbon by 2035). Given that the replacement rate for Fife's buildings is less than 1% a year, and that older properties tend to be leaky, draughty, costly to heat and inefficient – the challenge to decarbonise Fife's existing building stock in the next 15 years is considerable.

Low carbon energy

Under the low carbon energy programme, Climate Fife projects seek to decarbonise the heat and power generated and used in Fife. Generating energy locally will create jobs and support the local economy.

Generating more electricity locally via biomass, wind, wave, hydro and solar power, will reduce transmission and distribution losses compared to the current generation and transmission system. Generating heat locally will allow Fife to make the best use of local resources whether that be heat from biomass, (including wood, energy crops and agricultural waste products); heat from air-source, water-source and ground-source heat pumps or using waste heat from industrial processes.

Scotland has made considerable progress in decarbonising its electricity supply and is aiming that by 2020 11% of Scotland's heat demand and 100% of Scotland's electricity demand equivalent will be produced from low carbon sources. The Scottish Government is aiming to decarbonise 100% of Scotland's heat demand by 2050 under current targets, and for a 14% share of transport fuels to be renewable by 2030 under current targets.

Move, store and transform energy

Decarbonisation is a massive challenge, and the Scottish Government is advocating the use of a whole energy system approach to solving the challenge of decarbonising Scotland's economy. A whole energy system approach means developing a portfolio of options for clean energy in all its various uses (electricity, heating and transport), and crucially by fitting them together in the best combinations to deliver energy security and value for business and consumers. Under the move, store and transform energy programme, Climate Fife projects will support an efficient 'whole energy systems' approach to moving, storing and transforming energy into different forms. A whole energy systems approach looks at minimising distribution, transmission and energy transformation losses by making smart choices about the most appropriate energy sources for a given time and location, and by joining networks and storage options together so that they work holistically.

This programme of work will support the increased deployment of district heating and other heat networks, smart grids, energy storage systems (such as battery banks, heat stores, seasonal heat stores) and methods for transferring energy into the most useful forms for local needs. This could include using wind energy to convert seawater into hydrogen fuel for vehicles or using networks of electric vehicles to store excess energy generated during periods of peak generation (such as on windy days) that is surplus to current demand.

District heating is a key element of this work programme and is a means to distribute the heat generated in a centralised energy centre, or heat generated as a by-product of

industrial processes to a network of nearby residential or commercial users to meet their space and water heating needs. Smart grids which are electricity supply networks that use digital communications technology to detect and react to local changes in usage, will also have an important role to play.

Sustainable travel

Transport emissions have continued to rise in Scotland despite massive cuts in other sectors. Continuing with business as usual will not deliver the dramatic reductions needed in travel-related emissions. The idea that all that is required to decarbonise transport is to simply switch our existing petrol and diesel cars into electric versions and carry on as before is unsustainable. The House of Commons Science and Technology Committee says, "*the Government should not aim to achieve emissions reductions simply by replacing existing vehicles with lower-emissions versions …In the long-term, widespread personal vehicle ownership does not appear to be compatible with significant decarbonisation.*"[10] Whilst increasing electric and hydrogen powered vehicles is a part of the solution, all 'zero carbon' strategies must acknowledge ways to actively encourage walking, cycling and improved low carbon public transport solutions. The rapid development of air transport and local airport strategies also need to be reconsidered as part of a low carbon transport strategy, including tackling the concept of 'frequent flying', in an equitable manner.

The Scottish Government is proposing to end the sale of new internal combustion engine cars from 2032. The Scottish Government is aiming for 14% of transport fuels to be renewable by 2030 under current targets. Under its latest work programme the Scottish Government has also committed to work to decarbonise public sector fleets by 2025 and to make all city centres free of vehicle emissions by 2030[11].

Under the sustainable travel programme, Climate Fife projects will focus on decarbonising the Council's own fleet, reducing the need to travel by settlement and development planning and smart technology; promoting active travel, increasing vehicle efficiencies, making public transport more popular and increasing the uptake of ULEV (ultra-low emission vehicles) such as hybrid-electric, full-electric and hydrogen fuel vehicles.

Resource efficiency

Under the resource efficiency programme, Climate Fife projects will help to deliver the circular economy by encouraging the most sustainable ways of managing, recovering and avoiding waste. Keeping materials in use and using resources efficiently will underpin this programme of work. Attention will also be paid to using water, food, land and other resources in the most efficient manner. The Scottish Zero Waste Plan sets the strategic direction for waste policy in Scotland and has a municipal recycling target of 70% by 2025. Fife's own *Zero Waste Fife – Resources Strategy and Action Plan* will also direct action in this area.

[10] https://www.parliament.uk/business/committees/committees-a-z/commons-select/science-and-technology-committee/news-parliament-2017/clean-growth-report-published-17-19/

[11] https://www.gov.scot/publications/protecting-scotlands-future-governments-programme-scotland-2019-20/pages/5/

Carbon sequestration

Under the carbon sequestration programme, Climate Fife projects will focus on removing carbon dioxide from the atmosphere and storing it in long term carbon sinks so that it will not contribute to global warming in the medium term. The latest science suggests that it may not actually be possible to meet Fife Council's climate change targets without massive carbon sequestration efforts because Fife has simply been too slow to cut emissions. This workstream will involve flue gas capture, reforestation projects, biochar[12] projects and efforts to improve the health of delicate ecosystems such as peatlands which, if degraded, can become net emitters of greenhouse gases. Currently, around 12 million tonnes of carbon dioxide are absorbed by Scotland's forests every year and increasing the size of the forests and woodlands will be essential if catastrophic climate change is to be avoided. Afforestation projects, especially those involving urban greening offer a wide range of benefits over and above carbon sequestration: cleaning air, reducing flood risk, and reducing the impact of climate change by providing shade and health benefits. The Scottish Government is committed to reversing the deforestation of Scotland and is committed to planting 10,000 hectares of new woodland every year to help absorb atmospheric carbon emissions.

Adaptation

Under the adaptation programme, Climate Fife projects will seek to increase Fife's resilience to the changing climate (including today's extremes) and adapting society, economy and infrastructure to cope with the new extremes that are projected. Adaptation means anticipating the adverse effects of climate change and taking appropriate action to prevent or minimise the damage they can cause or taking advantage of opportunities that may arise. It has been shown that well-planned, early adaptation action saves money and lives later[13].

Adaptation to climate change can be planned nationally but is mostly delivered locally and to be effective, actions must be tailored to local situations and local vulnerabilities. Local government, as the level of governance that is closest to individual community needs and geographic constraints, has a crucial role in delivering adaptation[14]. The Scottish Government has a national climate change adaptation programme – the Scottish Climate Change Adaptation Programme (SCCAP), and The Climate Change Scotland Act established Public Bodies Climate Change Duties, which require Councils to exercise their functions *in a way best calculated to deliver any statutory adaptation programme*[15].

The initial agreed actions which have been identified under these themes of work for the next decade are presented in the mitigation and (high level) adaptation plan in Appendix B of this report. However, Climate Fife is a living document and additional actions and projects are welcomed.

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[12] Biochar is a charcoal-like by-product of the wood processing industry which has significant carbon storage potential.

[13] Bertoldi, P. (editor), Guidebook 'How to develop a Sustainable Energy and Climate Action Plan (SECAP) – Part 1 – the SECAP process, step by step towards low carbon and climate resilient cities by 2030, EUR 29412 EN, pp6

[14] https://www.climatexchange.org.uk/media/2392/adaptation_decision_making_at_the_local_level_-_a_role_for_national_level_indicators.pdf

[15] https://www.legislation.gov.uk/asp/2009/12/part/4/crossheading/duties-of-public-bodies

Co-benefits

Achieving local objectives

Whilst decarbonisation and building resilience are key drivers within Climate Fife it won't just be the environment that benefits. Implementing Climate Fife will make it easier for Fife Council to achieve a wide range of objectives including social and economic priorities that will benefit everyone in Fife. Climate Fife has been designed with the four outcomes of Fife's Community Plan[16] (the Plan4Fife) in mind, which are:

1. Opportunities for all
2. Thriving places
3. Inclusive growth and jobs
4. Community led services

Fife spends an estimated £445M* annually on gas, electricity, petrol and diesel. To date much of this expenditure goes straight out of the Fife economy to large multinational companies and does not benefit Fife business or communities. Climate Fife will look at opportunities to internalise some of this energy spend (by local energy generation and storage) to benefit the local economy and Fife communities.

*Source: Burntisland Energy Masterplan (Fife Resource Solutions and Ramboll, 2017)

Economic benefits

Implementing Climate Fife will benefit **Fife's economy** by:

- fostering market diversification to reduce economic risks;
- the adoption of new technologies and the development of dirty green and circular economy businesses will lead to job creation that could reinvigorate communities who have been struggling economically since the loss of primary industries in the 1970s and 1980s;
- encouraging local agriculture, market gardening, forestry, biofuels and renewable energy supplies – as well as promoting the sharing economy means that in the future Fifers will spend more of their money in the local economy;
- will provide the political commitment, leadership and long-term planning horizon necessary for local businesses to commit to a low emission future;
- by increasing local food and energy security Fife businesses will be less vulnerable to supply chain shocks arising from climate change; and
- by fostering resilience to a changing and uncertain future it is anticipated that disruption to business; and recovery times after any interruption can be minimised, and that, as a result Fife will be an attractive place to invest.

Social benefits

Implementing Climate Fife will **benefit Fife's society** by:

- reducing inequalities and improving access to opportunities;
- improving local amenities and quality of life;

[16] A Plan for Fife (2017-27) https://our.fife.scot/fife-plan/

- improving health and wellbeing by improved air quality, more active lifestyles, and a healthier diet;
- reducing Fife's dependence on finite resources and diversifying the available energy mix will increase Fifers resilience to the global commodity price shocks that are predicted to become commonplace because of climate change;
- promoting flexible working and strong ICT infrastructure to allow more people to work from home, reducing commuting and giving more space for family life – this will increase economic fairness by benefitting those who have, historically been disadvantaged by their caring responsibilities;
- encouraging the rise of the sharing economy is another big social change that could transform commerce and materials use across Fife in the 2020s. This will help to reduce structural inequalities and social exclusion and will help make local communities more tightly-knit (which is an important component of resilience);
- reducing reliance on private car ownership and the need to travel, will reduce the social exclusion currently faced by car-less households.

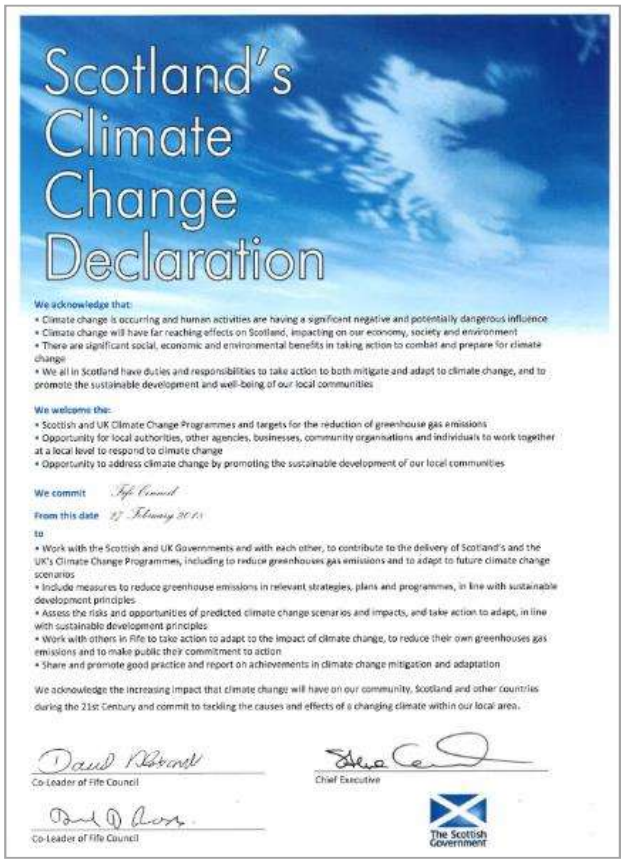
Other benefits

Many of the solutions presented in *Climate Fife* will have considerable benefits for metrics such as quality of life, mental health, community cohesion and a sense of wellbeing. While these are hard to quantify their value should not be overlooked.

International, national and local climate change commitments

Climate Fife is undertaken within a framework of climate change legislation, policy and commitments, including:

- The UN Sustainable Development Goals;
- Scotland's Climate Change Declaration;
- National climate change legislation; and
- The EU Covenant of Mayors for Climate and Energy.


Scotland's Climate Change Declaration

We acknowledge that:
- Climate change is occurring and human activities are having a significant negative and potentially dangerous influence
- Climate change will have far reaching effects on Scotland, impacting on our economy, society and environment
- There are significant social, economic and environmental benefits in taking action to combat and prepare for climate change
- We all in Scotland have duties and responsibilities to take action to both mitigate and adapt to climate change, and to promote the sustainable development and well-being of our local communities

We welcome the:
- Scottish and UK Climate Change Programmes and targets for the reduction of greenhouse gas emissions
- Opportunity for local authorities, other agencies, businesses, community organisations and individuals to work together at a local level to respond to climate change
- Opportunity to address climate change by promoting the sustainable development of our local communities

We commit Fife Council

From this date 27 February 2018

to
- Work with the Scottish and UK Governments and with each other, to contribute to the delivery of Scotland's and the UK's Climate Change Programmes, including to reduce greenhouses gas emissions and to adapt to future climate change scenarios
- Include measures to reduce greenhouse emissions in relevant strategies, plans and programmes, in line with sustainable development principles
- Assess the risks and opportunities of predicted climate change scenarios and impacts, and take action to adapt, in line with sustainable development principles
- Work with others in Fife to take action to adapt to the impact of climate change, to reduce their own greenhouses gas emissions and to make public their commitment to action
- Share and promote good practice and report on achievements in climate change mitigation and adaptation

We acknowledge the increasing impact that climate change will have on our community, Scotland and other countries during the 21st Century and commit to tackling the causes and effects of a changing climate within our local area.

Co-Leader of Fife Council

Chief Executive

Co-Leader of Fife Council

The Scottish Government

Local Commitment

On the 27th February 2018, Fife Council Leaders re-signed the Scottish Climate Change Declaration. Along with the other 31 Scottish Local Authorities, it commits Fife Council to recognise the anthropogenic origins of climate change, to deliver national climate change programmes, to share and promote best practice and to work with others in Fife to act on climate change mitigation and adaptation.

On 26th September 2019, Fife Council acted further by declaring a Climate Emergency, stating:

"Council agrees to declare a Climate Emergency for Fife and, as the only democratically elected body representing Fife alone, to provide leadership in working with others to address urgent challenges of climate change. Council recognises that what is needed are results not rhetoric and by merely expressing wants does not make them happen.

Council further agrees to:

1. Acknowledge the latest target set by the Scottish Parliament and to seek to reduce Fife's carbon emissions by 75% compared with the baseline by 2030 reduce by 90% by 2040 and be carbon neutral by 2045;
2. Continue to develop its Sustainable Energy and Climate Action Plan, which is currently under preparation for consultation and due to be submitted for final consideration by the Environment and Protective Services Committee in February 2020;
3. That the Plan should include a clear strategy and actions with realistic targets, to address climate change and achieve the overall target for reduction in carbon emissions, and should take account of the 12-point guidance on taking forward the climate change emergency agenda locally produced by the Association of Public Service Excellence;
4. Taking account of the capacity and resources, both required and available to it, that the Council will incorporate the cost of climate change adaptation and mitigation within its budgetary decisions;
5. To engage with its community planning partners to revise the Plan4Fife to include a clearer commitment and actions to address climate change;
6. To assist communities to be more resilient to the impacts of global warming and climate change and work with partners and communities across Fife in pursuit of these targets."

National legislation

Fife Council is committed to playing its part in achieving national climate change targets. The Scottish Government has set world leading targets for tackling climate change specifically for carbon emission reductions over the next 30 years and has just updated these targets[17] in line with the latest scientific advice from the IPPC on the importance[18] of keeping global average temperature rises below 1.5°C degrees above preindustrial levels[19]. Scotland has some of the most ambitious climate change targets in the world and the newly approved Climate Change (Emissions Reduction Targets) (Scotland) Act, 2019 which was enacted at the end of October 2019[20] commits Scotland to a new target of net-zero carbon emissions by 2045, and a 75% reduction in greenhouse gas emissions by 2030 (compared to a 1990 baseline). In doing so, Scotland will become one of the first countries in the world

[17] https://www.gov.scot/news/climate-change-action-1/

[18] https://www.ipcc.ch/sr15/

[19] https://www.theccc.org.uk/2019/05/02/phase-out-greenhouse-gas-emissions-by-2050-to-end-uk-contribution-to-global-warming/

[20] http://www.legislation.gov.uk/asp/2019/15/enacted

to legislate to support the aims of the Paris Agreement which sets the standard for the international response to climate change.

Progress is underpinned by the Scottish Climate Change Plan (2018), published in 2018 which is the Scottish Government's third report on proposals and policies (RPP3) for meeting its climate change targets. Alongside the Climate Change Plan, Scotland's first Energy Strategy was published in 2017 and sets out the long-term vision for the future energy system in Scotland which has a strong focus on local energy systems and the adoption of a system wide approach. These updated targets are illustrated in the table below:

Scottish Government Climate Change and Energy targets	Year
100% of Scotland's electricity demand equivalent to be produced from renewables	2020
56% reduction in greenhouse gas emissions (compared to 1990 baseline)	2020
Delivery of national adaptation programme	2024[21]
75% reduction in greenhouse gas emissions (compared to 1990 baseline)	2030
Phasing out of new petrol and diesel vehicle sales	2032
The equivalent of 50% of the energy for Scotland's heat, transport and electricity consumption to be supplied by renewable sources	2030
An increase by 30% of the productivity of energy use across the Scottish economy	2030
90% reduction in greenhouse gas emissions (compared to 1990 baseline)	2040
No more than 5% of Scottish households in fuel poverty	2040
Net carbon neutral	2040
Net zero greenhouse gas emissions	2045

As can be seen, Scotland's national targets primarily relate to climate change mitigation. Adaptation is more difficult to monitor and evaluate than mitigation given its uncertainties, lack of a single clear metric, and the long-term horizons over which adaptation will need to be undertaken[22]. In terms of adaptation targets Fife Council is committed to achieving the outcomes and sub-outcomes of the Scottish Climate Change Adaptation Programme (SCCAP). The SCCAP represents the closest thing that there are to formal adaptation targets in Scotland.

The draft Scottish climate change adaptation outcomes for the forthcoming adaptation programme period (2019-24), are illustrated below:

[21] And every five years thereafter

[22] https://www.lgiuscotland.org.uk/briefing/monitoring-and-evaluation-of-local-climate-change-adaptation/

Scottish Government draft Adaptation Programme Outcomes[23]	
Outcome 1	Our communities are inclusive, empowered, resilient and safe in response to the changing climate
Outcome 2	The people in Scotland who are most vulnerable to climate change are able to adapt and climate justice is embedded in climate change adaptation policy
Outcome 3	Our inclusive and sustainable economy is flexible, adaptable and responsive to the changing climate
Outcome 4	Our society's supporting systems are resilient to climate change
Outcome 5	Our natural environment is valued, enjoyed, protected and enhanced and has increased resilience to climate change
Outcome 6	Our coastal and marine environment is valued, enjoyed, protected and enhanced and has increased resilience to climate change
Outcome 7	Our international networks are adaptable to climate change

The Covenant of Mayors for Climate and Energy

Recognising the significant challenge of mitigating and adapting to climate change, Fife Council signed the Covenant of Mayors for Climate and Energy[24]on the 27th February 2018.

The new Covenant of Mayors for Climate & Energy tackles the issue by looking at interconnected challenges: climate change mitigation, adaptation and access to secure, sustainable and affordable energy for all. Signatories who signed up to the Covenant after 2016 (such as Fife Council) commit to being bound by the EU's 2030 climate change commitments which are:

- Accelerating the decarbonisation of Fife by cutting CO_2 emissions (and possibly other greenhouse gases if desired) by at least 40% compared to a 1990 baseline by 2030, thus contributing to keeping average global warming below 2°C[25];
- Strengthening Fife-wide capacity to adapt to unavoidable climate change impacts, thus making the Kingdom more resilient;
- Increasing energy efficiency and the use of renewable energy sources within Fife, thus ensuring universal access to secure, sustainable and affordable energy services for all by 2030.

In developing its Sustainable Energy and Climate Action Plan, Fife Council is proud to join over 9,000 local and regional authorities across 132 countries representing 800 million people, who are responding to the climate emergency.

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[23] https://www.gov.scot/publications/climate-ready-scotland-scottish-climate-change-adaptation-programme-2019-2024-consultation-draft/pages/9/

[24] http://www.covenantofmayors.eu/en/

[25] For Fife this target has already been achieved and has been superseded by the declaration (at a national and a local level) of a climate emergency and the onus is now on trying to keep average temperature rises below 1.5°C to reduce the risk of run-away climate change and to comply with requirements within the Climate Change (Emission Reduction Targets) (Scotland) Act to reduce emissions by 75% by 2030.

Implementation

Delivery model

This is the first Sustainable Energy and Climate Action Plan for Fife. Although it is being initiated by the Council, it will rely upon working in partnership with external organisations, businesses and the people of Fife to work. In particular, the Fife Environmental Partnership will play a key role in providing direction, co-ordination, advice and oversight of Climate Fife.

Climate Fife will become a central repository where existing climate change mitigation and adaptation actions can be collated, and progress charted so that Fife's advancement towards the goals can be understood more clearly. It will assess the carbon and adaption impacts of existing work and look to ensure links are made where gaps exist. This document sets out the initial action plan to support the implementation of Climate Fife.

Emergency action plan and actions for the first 100 days

The delivery model takes a holistic approach and seeks to use existing policies, plans and strategies through collaborative partnerships to ensure actions are delivered in the most effective way. Having said this, it is recognised that business as usual will not, on its own, deliver the urgent and decisive action that is needed to tackle the climate emergency. Time is of the essence in tackling climate change and the science suggests that the quicker we can make emissions reductions, the better – in terms of cost to implement measures and avoided costs from climate risks.

Therefore, in addition to making best use of existing delivery routes a 12-month climate emergency action plan supported by a concerted communications campaign is needed to define the new paradigm, redefine business as usual and help deliver the dramatic behaviour change needed in the next decade. Within this 12-month emergency action plan (presented in Appendix A) actions have also been identified for the first 100 days, in line with APSE best practice guidance for responding the climate emergency[26].

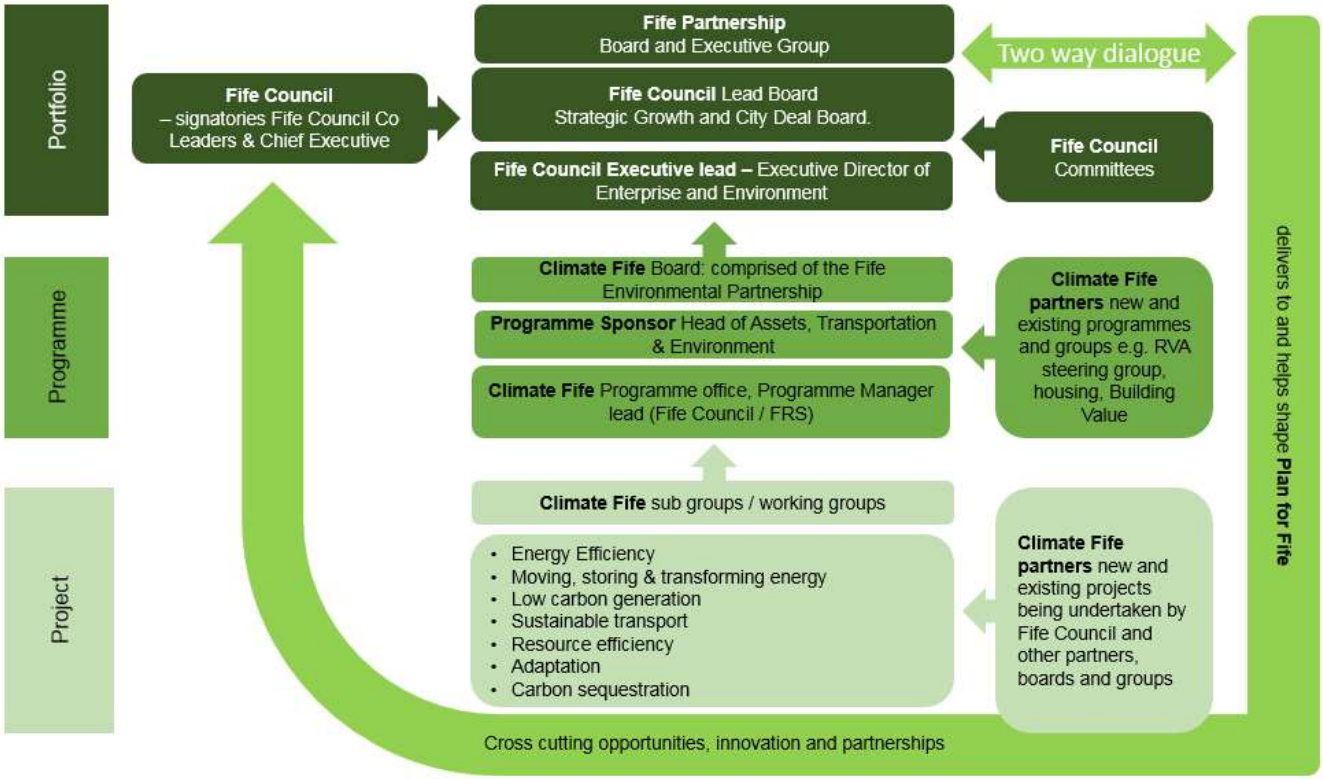
The priority actions for the first 100 days of Climate Fife which will be launched by May 30th, 2020 are:

1. Establish a Climate Fife delivery group to support Council services to deliver robust action against climate change as part of their new Business as Usual;
2. Fife Council will act as an exemplar for the rest of Fife and develop a Carbon Management Plan to set out a programme of carbon reduction measures for its own estate and activities. The draft Carbon Management plan will be revised to reflect the Climate Emergency and will be resubmitted to Fife Council Committee in April 2020, and actions within the plan to be progressed as a priority.
3. Launch a cross-partner, Climate Change communications and behavioural change campaign within Fife: providing a single message usable by communities and organisations emphasising the urgency of action to address the climate emergency and increasing climate literacy so that everyone can play their part in reducing emissions and increasing resilience.

[26] https://www.apse.org.uk/apse/index.cfm/local-authority-energy-collaboration/apse-energy-views/2019/apse-energye28099s-12-points-to-stimulate-thought-on-taking-the-climate-emergency-agenda-forward-locally/#

Organisational structure

Clear governance, well defined organisational structures and clear roles for all partners, will enable the success of Climate Fife. The organisational structure has been designed to best translate ambitions into reality, and to consolidate the knowledge of different organisations and individuals. Cross-cutting opportunities and partnerships will be undertaken at all levels of Climate Fife with the aim of integrating innovation into partners everyday processes.



Partnership working

At this stage Climate Fife's action plan is made up of actions largely being driven by Fife Council and key public sector partners. The intention is that the action plan will grow as more partners become involved in Climate Fife. It is intended that stakeholders and citizens should be involved in all aspects of Climate Fife, and this is being fostered using:

- Partnership working;
- Engagement and consultation; and
- Steering groups.

Stakeholder engagement and statutory consultations have taken place at numerous points within the development of Climate Fife. The views of elected members, Fife Council officers, statutory consultees, community planning partners, business, the third sector, community groups, academia and the wider public have shaped the plan from:

- the initial drawing board,
- action Plan development;
- conducting the RVA,
- informing the SEA; and

- will be an essential element of its ongoing development through the creation, implementation and development of carbon emission reduction and climate change adaptation projects at the local level.

A detailed communications plan is being developed to support *Climate Fife* and ensure that consultation is robust, inclusive and equitable.

The Scottish Government has announced a nationwide programme of stakeholder engagement and community consultation around climate change beginning in the summer of 2019[27]. Fife is committed to supporting and being a part of this *Big Climate Conversation* and ensuring that Fifers opinions shape the development of the climate change action plans. The communications plan which supports Climate Fife will ensure that strong links are made to the *Big Climate Conversation* and that Fifers are encouraged to keep talking about climate change and their local priorities and concerns. While this document sets out the initial principles of Climate Fife, it will be local projects developed in partnership with Fife communities and other local stakeholders that will put flesh on the bones of Climate Fife and ultimately be responsible for delivering carbon savings and managing climate risks.

Staff capacity allocated

Fife Council, as signatory of the Covenant of Mayors, will fulfil the core senior management, programme manager and programme officer roles for Climate Fife. Fife Resource Solutions will support the Council in delivering the action plan by a Climate Fife Delivery Group. As Climate Fife develops, the partnership will expand and projects within the action plan will progress; it is therefore envisaged that other project partners will provide an increasing proportion of staff time in the future.

Delivering transformational change in a short timescale

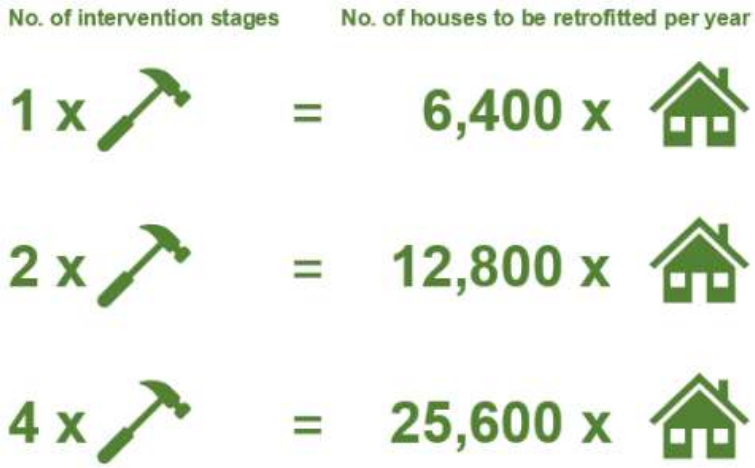
If mankind is to avoid catastrophic runaway climate change our whole society and economy must be transformed and the time for action is short (less than 25 years). This means actions need to rapidly scale up and accelerate the process of decarbonisation that is currently underway. The conventional wisdom has been that decarbonising assets and infrastructure is easier to make the business case for if it is an iterative and incremental process with gradual changes building upon each other, until zero carbon status is achieved. However, the time remaining to make meaningful carbon emission reductions and build climate resilience is now so short, that this delivery model needs to be rethought. Numerous modest, incremental improvements to individual assets is unachievable within the time constraints of avoiding catastrophic warming and society must now seek to decarbonise and adapt in as few interventions as is possible.

Why? Put simply it is a numbers game. For example, looking at Fife's housing stock; to achieve zero greenhouse gas emissions by 2045, every existing dwelling in Fife would need to undergo the following major refurbishments between now and 2045 to make them climate-friendly and climate ready:

[27] https://www.gov.scot/news/the-big-climate-conversation/

- Significantly improve the energy efficiency of building fabric through increased insulation (including potentially over-cladding), and installing triple glazing and super insulated doors;
- Significantly improve the energy efficiency of appliances and lighting within the home and smart metering to monitor emissions, (which may require rewiring);
- Remove old fossil fuel heating systems and inefficient electric heating systems;
- Incorporate low carbon electricity or heat generation into the building;
- Connect to a low carbon energy network – like a local heat network for example and retrofit the heating output devices in the home to accommodate this (might need to resize radiators for example);
- Install electric vehicle charging points nearby, and storage for multiple bicycles;
- Increased capacity guttering, downpipes, water-butts and drainage to slow run-off;
- Some homes may need more active flood protection measures such as air brick covers, non-return valves, flood resistant doors and windows etc;
- More robust detailing that will be less susceptible to wind damage and rain ingress;
- Install water efficient appliances and bathroom fittings to save water;
- Passive solar shading, green-walls and green roofs to reduce overheating and storm damage and improve air quality; and
- Increased permeable surfacing, rainwater storage and SUDS[28] to reduce flood risk.

Every home in Fife could be revisited multiple times to make these changes incrementally, but practically it is likely to need to combine some or all these interventions to achieve the 2045 targets. In Fife there are already over 160,000 homes - the more stages it takes to achieve this work, the higher the number of properties that will need to be retrofitted every year, and Fife quickly enters the realms where this will not be physically possible to achieve in time. **So, how many homes a year would need to undergo all these improvements to make every home in Fife climate friendly and climate ready by 2045?**



[28] Sustainable Urban Drainage System

Every year that targets for achieving climate friendly and climate ready refurbishments are missed, will increase the number of homes to be retrofitted in subsequent years. And these figures just consider Fife's homes, there are thousands of other buildings and structures which will need to be refurbished to make them climate friendly and climate ready during the same period.

The greater the number of stages involved in retrofitting Fife's housing stock, the higher the overall cost will be and the greater complexity and potential wastefulness of resources if measures are upgraded multiple times before the end of their useful life. Delivering measures in combined packages of interventions will make savings in terms of staff time and other costs (for example scaffolding) which could reduce overall expenditure. Some measures might be tied to required expenditure as and when components of a house or flat comes to the end of its useful life; i.e. when a roof is replaced it would be cost effective to make use of the scaffolding to install a range of other measures at the same time (such as PV panels, resized guttering, solar thermal water heating panels, loft insulation).

As well as working with national programmes, Climate Fife's action plan has Scaling Up and Acceleration phases and a cross-cutting innovation working group to target this challenge.

Monitoring and evaluation

Monitoring is a very important part of Climate Fife. Regular monitoring followed by adequate adjustments of the plan allows the process to be one of continuous improvement and Climate Fife to be a living document. This monitoring report will be used to communicate with citizens and other stakeholders, keeping them informed on progress achieved, barriers encountered, opportunities, and any possible need for corrective measures.

Formal reporting will be undertaken as follows:

- A full monitoring report will be compiled for Fife Council actions annually and every 2 years for the full action plan, in line with the Covenant of Mayors' monitoring requirements.
- An annual Climate Fife progress report will be presented to the Fife Partnership Board.
- The Environment and Protective Services Committee of Fife Council will receive an annual update as part of the Public Bodies Duties Reporting (PBDR) requirements of the *Climate Change (Scotland) Act* 2009. Work with partners is reported in the wider influence section of this report and Climate Fife actions will be monitored through this.
- As well as this annual reporting, progress will be monitored and reported through the Fife Environmental Partnership – a committee of community planning partners that meets 4 times a year. To ensure frequent oversight and strategic guidance for Climate Fife this committee will now have a standing item on Climate Fife progress.

Climate Fife will be updated annually in line with reporting against strategy, targets and actions, of new available knowledge and expertise, of the latest technological or financial opportunities for sustainable energy projects and/or for adaptation action; in a continuous cycle of Plan, Do, Review, Action. Climate Fife will be comprehensively updated every 5 years in line with EU guidance.

Adaptation and mitigation involve very different approaches to monitoring and evaluation. While the metric for assessing climate mitigation success is clear (CO2), there is no single unit of measurement to understand the success of climate adaptation actions. True dynamic

indicators of successful adaptation such as floods avoided, heat wave deaths prevented etc. cannot be measures.

Mitigation monitoring requirements	Adaptation monitoring requirements
A formal commitment to making changes in the short term and in the long term	Changes implemented immediately and in the long term
Actions which may have an immediate effect on greenhouse gas emissions and which have a formal end goal (decarbonisation)	A process that begins today but has gradual effects and which may not have a formal end-point
One common indicator: measured levels of greenhouse gas emissions	Multiple indicators which are often specific to a geographic area

Source: LGiU https://www.lgiuscotland.org.uk/briefing/monitoring-and-evaluation-of-local-climate-change-adaptation/

In line with the EU's Sustainable Energy and Climate Action Plan guidance Climate Fife will evaluate climate risk and adaptation using quantitative and qualitative indicators, process, output and outcome indicators. The adaptation indicators used within Climate Fife have been selected from those recommended within the EU's Covenant of Mayors guidance and the suite of over 100 national level indicators produced by ClimateXChange (CXC) which are used to monitor adaptation progress and identify trends in climate risks and impacts in Scotland.

Full details of the indicators used for adaptation are in the Risk and Vulnerability Assessment.

Opportunities to make a local area more climate-resilient arise with every new development project or policy change approved by local authorities. The impacts of missing such opportunities can be significant and will last for a very long time therefore it is vital that a robust method is used to assess which adaptation options are most appropriate, and when and where they should be implemented[29]. Fife Councils approach to assessing which adaptation options to include within the adaptation strategy and action plan is based on the latest best practice guidance produced for the Committee on Climate Change and will include a mixture of output indicators, outcome indicators and impact indicators[30]:

Risk and Vulnerability Assessment (RVA)

A Risk and Vulnerability Assessment of Fife's climate-related risks is a prerequisite of a Sustainable Energy and Climate Action Plan. Fife Council analysed potential hazards and assessed the vulnerability that could pose a potential threat or harm to Fife. The outcome was used to shape the Adaptation theme of the Plan and the high-level actions in the action plan. A summary of the risk and vulnerability assessment will be available online at: www.fife.gov.uk/climatechange

[29] *Ibid*, pp13

[30] Power, K., England, K., Toplis, C. & Hoermann, B. (2018) Adaptation actions in cities: what works? Report of research findings, AECOM and Sniffer.https://www.theccc.org.uk/wp-content/uploads/2018/11/Adaptation-actions-in-cities-what-works-final.pdf pp13

Baseline Emission Inventory (BEI)

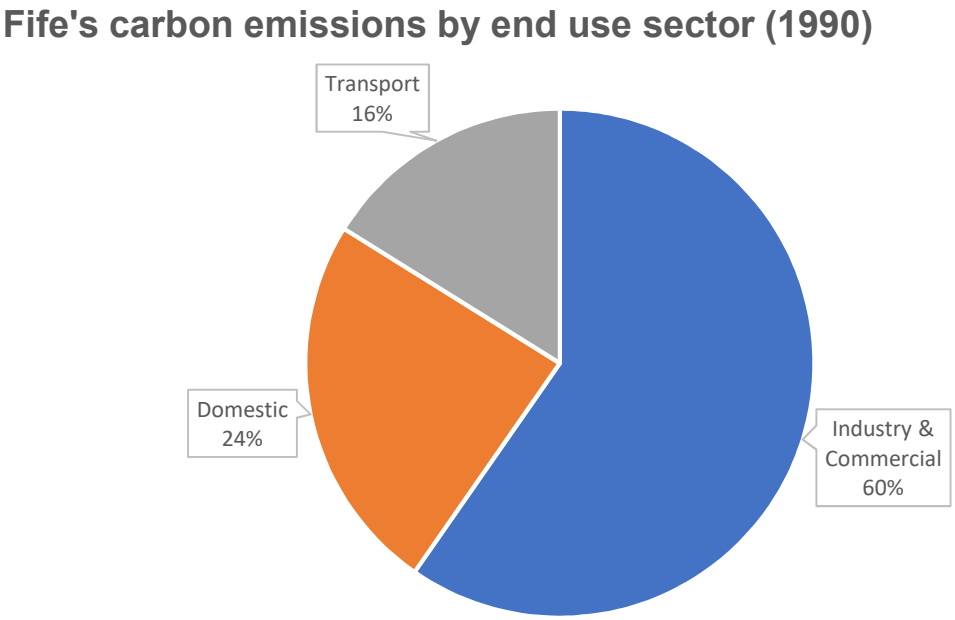
To set an emissions reduction target and to develop appropriate actions for the Climate Fife action plan, Fife Council needed to collate the following information:

- An understanding of greenhouse gas emissions for Fife from a set starting point (what the Covenant of Mayor's calls the Baseline Emissions Inventory or BEI) over which emission reduction trends can be measured; and
- An understanding of how greenhouse gas emissions have changed since the baseline (the Monitoring Emissions Inventory or MEI); and
- What might happen to Fife's greenhouse gas emissions in the future.

The BEI and MEI will allow the principal sources of Fife's CO_2 emissions and their respective reduction potential to be identified[31].

Baseline emissions inventory (BEI) 1990

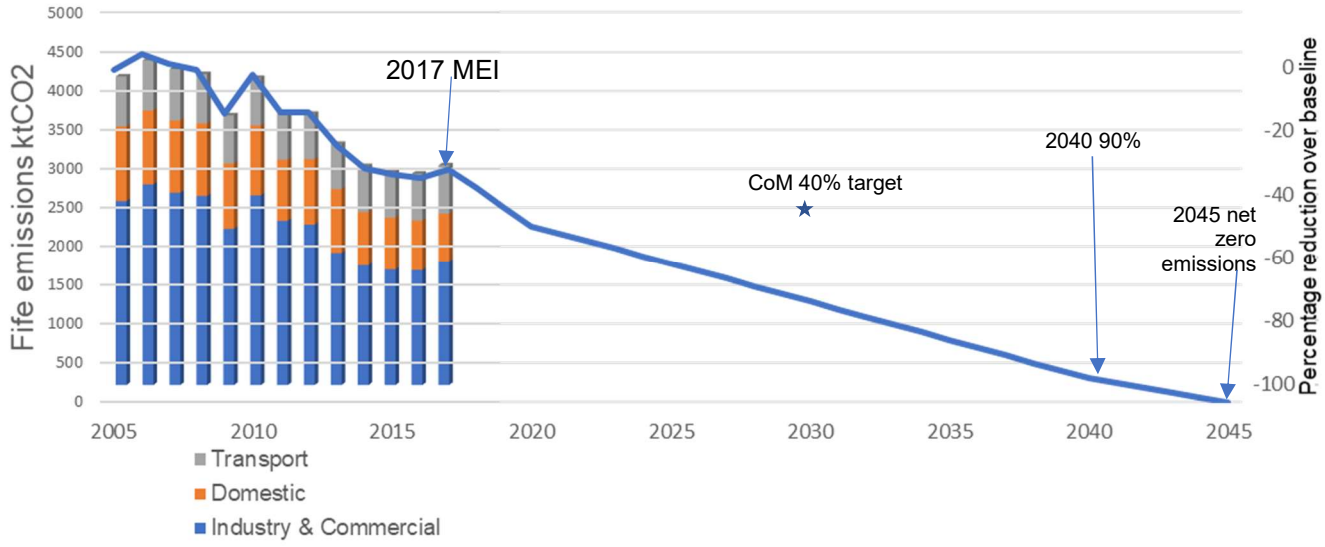
Internationally the year used for carbon reduction baselines is 1990, as defined by the Intergovernmental Panel on Climate Change (IPCC. After seeking government advice, Fife Council calculated its BEI to the international standard baseline of 1990 by extrapolating Fife's carbon footprint back from the BEIS (Business, Energy and Industrial Strategy Department) dataset which beings in 2005, back to 1990 assuming Fife followed the national Scottish trend for the interim period 1990-2005. Extrapolating the carbon footprint back from known data to 1990 in line with the national trend, reveals: Fife's 1990 carbon emissions are estimated to have been 49272.85 $ktCO_2$ in 1990.



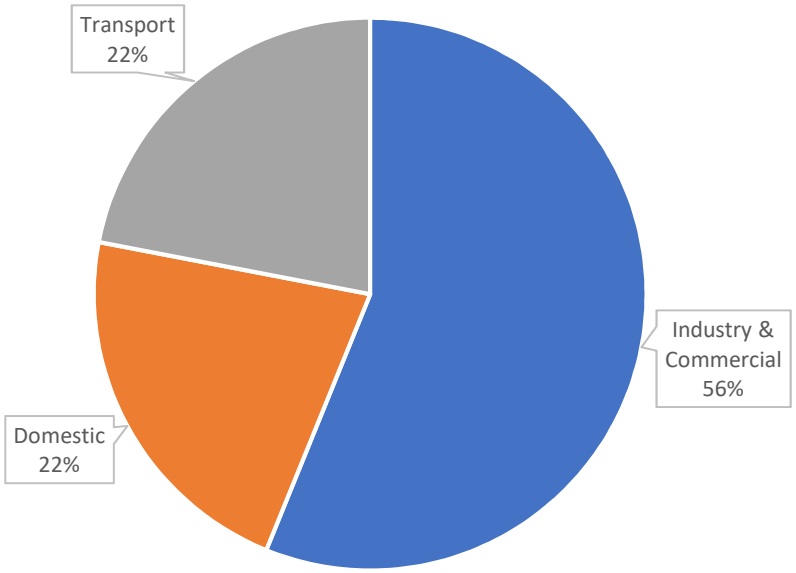
[31] https://www.covenantofmayors.eu/support/faq.html

Monitoring emissions inventory (MEI) 2017

The graph below shows Fife's emission reductions since the 1990 baseline in kilotons of carbon dioxide and percentage. Actual carbon emission reduction has occurred from 1990 to 2017, thereafter shows the linear carbon emission reduction required to meet targets.



Fife's carbon emissions by end use sector (2017)



Recent trends in greenhouse gas emissions in Fife

Key observations that can be drawn from these figures are that the greatest cuts to greenhouse gas emissions have been associated with a reduction in heavy industry in Fife. Despite an increase in population and the number of households, emissions from homes have remained at a constant proportion of the footprint over the last 25 years. This reflects wider societal trends i.e. as building standards and energy consuming equipment have become more efficient, the number of homes in the area has increased and the average

number of energy consuming gadgets within a typical home has dramatically increased since 1990. Furthermore, while emissions from land use / land use change and forestry have remained relatively constant, the proportion of emissions arising from the transport sector has risen significantly and continues to rise in line with emissions trends across Scotland. While industry and commerce continue to be the largest source of greenhouse gas emissions within Fife (primarily because of several large hydrocarbon industrial installations located within the Kingdom), emissions from all sectors have fallen dramatically except for emissions from transport, which have barely fallen since 1990.

Emissions reduction target

Climate Fife commits to surpass the Covenant of Mayor's target of achieving a 40% reduction in greenhouse gas emissions by 2030 (over a 1990 baseline) because Fife Council has already achieved this target and the latest science suggests that more significant and rapid cuts in emissions are needed. Fife seeks to achieve a science-based target of a 75% reduction in greenhouse gas emissions by 2030, and to achieve net zero greenhouse gas emissions by 2045 in line with Scottish Government targets (which are based on recommendations from the Committee on Climate Change), as set out in the recently approved targets of the Climate Change (Scotland) 2019 Act.

Meeting the target

Fife Council recognises that meeting the target will be challenging for Fife Council and its partners. As far as is possible the actions within the Climate Fife action plans will attempt to quantify their emissions reduction impact. For some initiatives it may be possible to develop relatively detailed carbon emission reduction estimates once the business cases are developed, however for others it may be that only best estimates may be available.

External factors which may impact progress against targets

There are several external factors which will impact on Fife Councils ability to achieve their emission reduction goals including most notably, UK and Scottish government policies and the financial support Fife Council receives from central government.

A key factor will be the decarbonisation of the electricity supply grid where generation from fossil fuels is rapidly being replaced by electricity generated from renewable energy. This will have a direct impact on the grid emission factor (a measurement of CO2 emissions intensity per unit of electricity generation tCO2/MWh).

Demographic factors will also influence Fife's emissions trajectory. According to the most recent Council Plan, by 2035:

- Fife's overall population is expected to increase to over 380,000;
- Fife households are projected to rise by over 35,000 and the average household size is projected to fall further to 1.99;
- Single adult households are projected to increase from 35% in 2010 to 43% in 2035, with those aged over 75 showing the largest increase;
- Fife's overall child age population is expected to have decreased by 2000;
- Fife's working age population will see a steady decrease to 213,000 by 2035 (a reduction of around 23,000 or 10%);

- Fife's older population (65+ age group) is expected to increase to 105,000 by 2035 (an increase of nearly 41,000).

These changes will have a significant impact on Fife's future greenhouse gas emissions trajectory and the resilience of the population to future climate change.

Other external factors which will impact on Fife Councils ability to cut emissions include BREXIT and the associated loss of access to European Union grant funding for climate change projects; and the impacts of climate change itself which may affect the seasonality of energy use and space heating demand in the winter and cooling demand in the summer.

Action Plans

It is recognised that in order to achieve the transformation needed over the next decade to tackle the climate emergency, a step-change needs to occur in attitudes, processes and business as usual priorities across Fife Council and other community planning partners, therefore a detailed 12 month climate emergency action plan of priority actions which need to be achieved before March 2021 is presented in Appendix A of this report. This 12-month emergency action plan includes urgent actions for the first 100 days and subsequent months and will lay the groundwork for delivering the full Climate Fife action plan for the first phase between 2021 and 2030, and subsequent phases between 2030 and 2050.

The actions which should be carried out over the next decade under the 8 themes of work are presented in the draft mitigation and (high level) adaptation plan which is presented in Appendix B of this report.

It is vital that the 12-month emergency action plan is delivered to achieve medium- and longer-term objectives.

Climate Fife is a living document, and other actions will need to be developed, in conjunction with local stakeholders if Fife Council is to decarbonise Fife and achieve maximum resilience to climate change impacts.

At this stage the Covenant of Mayors does not expect signatories to have developed detailed adaptation action plans. Therefore, Fife Council's adaptation action plan is high-level at present. Fife Council will work with community planning partners and local stakeholders from spring 2020 onwards to develop a detailed adaptation action plan of priority actions which should be taken between now and 2030 to increase Fife's resilience to the unavoidable impacts of climate change. These projects will be developed to respond to the risks identified in the RVA. In addition, it is likely that new risks and hazards will emerge over the coming years as the climate continues to change and that these will need to be addressed in a timely fashion.

Appendix A Climate Fife Action Plan, 12 Months to March 2021

Action Area	Description	Climate Fife Actions
Priorities for the first 100 days to be delivered by 30th May 2020		
Fife Council Climate Fife Delivery Group	Support Services through a Climate Fife delivery group. Fife Council will implement a delivery group supported by Fife Resource Solutions. The Climate Fife Delivery Group will: • support Services in delivering actions required to meet the targets. • review Service Change Plans to identify support and action, including through the 'Opportunity Papers' process. • Deliver and co-ordinate projects for Services to meet targets. • Provide internal training and CPD and facilitate expert support and guidance • Report progress at appropriate management level	IC03, IC04, IC06, IC08, IC12, IC14, IC16, IC16b, IC23, , AD11
Launch and begin implementing Fife Council Carbon Management Plan	Deliver projects within the revised Carbon Management Plan (2020) to reduce Fife Council's carbon emissions, including decarbonising fleet, energy efficiency, renewables development and updating design approaches. Carbon reduction in line with Scottish Government and Climate Emergency targets of 75% by 2030 net zero emissions by 2045. (against 1990 levels).	EE01, EE04 (a-c), LC01 (a-c), MST03, RE07, RE08, ST10
Other priorities for the Emergency Action plan to be delivered by 30th March 2021		
Communications and behavioural change campaign	Launch a cross-partner, Climate Change communications and behavioural change campaign within Fife. Providing a single message usable by communities and organisations emphasising the urgency of action to address the climate emergency and increasing climate literacy so that everyone can play their part in reducing emissions and increasing resilience.	IC15, IC17,
Financial innovation	Climate change actions do not always make sense using traditional financial metrics and payback calculations yet without them we know that the costs to society and to Fife Council could be catastrophic. New financial models are needed to support climate action. Fife will investigate and deliver innovative options to financially support Climate Fife actions	IC04, IC07, IC08, IC19, IC20, IC21, EE09, EE13, MST05, MST08, ST11
Housing	Deliver energy efficiency measures across housing within Fife. Engage with housing sector to identify opportunities and challenges to ensure the optimum technical solutions are applied. Prepare for the tightening of Building Standards, a future without gas heating systems and zero carbon buildings. Ensure all housing staff are aware of these policy developments.	EE01, EE02, EE11, LC04

Local Development Plan	Prepare for revision of the of the Local Development Plan by reviewing existing policies, develop Fife's climate risk and vulnerability evidence base and undertake a Low Carbon Place project.	AD09
Partnership Asset Management	Innovative partnerships will be needed to respond to the climate emergency. Develop partnership approaches to management of public asset including an asset sharing and Land Management plan. Fife Council will develop a coordinated land strategy to manage Fife Council land assets in a way that will best respond to the climate emergency; which recognises the many different and sometimes conflicting demands for Fife's limited land resource. The latter should include a review of sequestration, reforestation and rewilding options and an urgent review to resolve barriers to tree planting	IC16, IC20, IC21, IC22, EE12, LC05, CS07, AD03, AD04
Food and diet	Support delivery of local food initiatives including plant-based diets, food waste and food re-distribution projects. Fife Council to support plant-based options within their own facilities and to ensure that land management plan considers local food production and food security.	LC06, RE06, RE09, AD04, AD13
Support Sustainable Transport	Prepare for the revision of the Local Transport Strategy and support sustainable transport projects through active travel, Fife Council's carbon management plan, Leven Rail Link Blueprint and Levenmouth Connectivity project.	ST01, ST02, ST05, ST10,
Adaptation	Develop an Adaptation Plan for Fife. This will link to the emerging Land Management Plan to manage Fife Council land assets in a way that will best respond to the climate emergency. This will include using Fife Council owned land to adapt to climate change and to ensure food and energy security.	RE10, RE11, CS06, AD02, AD03, AD04, AD05, AD17
Maximise benefit from procurement and Council expenditure	Implement lifecycle assessment approaches to procurement – requiring energy, food, and other procurement options to consider carbon footprint could help to keep money in the local economy and reduce supply chain risks from climate change. Supporting staff choices through salary sacrifice schemes for low carbon technologies,	IC01, IC03, IC04, IC08, IC15, IC19, EE11, EE13, LC04, LC08< LC12, RE09, RE12,
Waste	Deliver the Zero Waste Fife – Resources Strategy & Action Plan, including supporting plastic free community projects. Add waste to Fife Council's carbon footprint.	RE01, RE07 RE13
Community Resilience Building	Provide community wealth building and resilience through supporting community groups to deliver climate change projects, supported by Fife Environmental Partnership and facilitated by Fife Resource Solutions.	LC05, AD02, AD12, AD13, AD14
Lobby Government	Lobby government on a number of national policy areas to support action within Fife, for example to tighten national standards, fill evidence gaps or to provide additional resources.	IC13, IC16, IC19, EE09, EE10, LC07, MST08, ST11, CS05, AD08, AD10, AD12,

Appendix B Climate Fife mitigation and adaptation action plan (2021-2030)

This appendix presents projects that will be undertaken during the first plan phase (2021-2030). Note that only high-level adaptation actions are considered in this action plan. A detailed adaptation action plan will be developed in the first phase of Climate Fife (2020-22).

Actions within the action plan are defined in several ways. Firstly, we have assessed whether an action will contribute to the three overarching principles:

 = climate friendly  = climate ready  = climate just

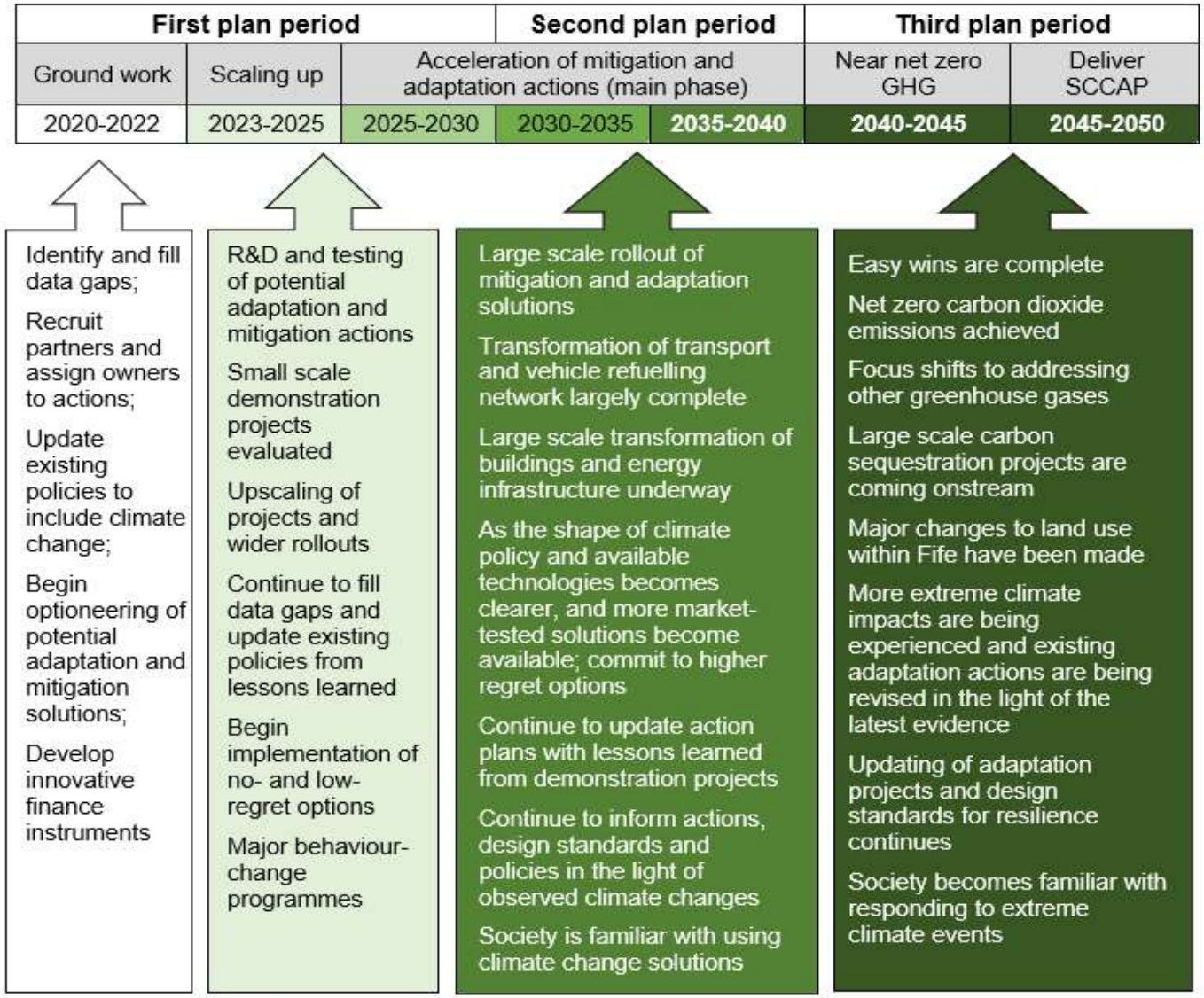
Climate Fife will be implemented in a phased approach of 5 phases of activity. Between now and 2050 there will be three plan periods, each comprising a decade. Actions within the action plan are assigned to a discrete plan period and phase. Some actions will stretch across multiple time phases, some will be undertaken across the whole life of Climate Fife. Diagram A1 illustrates how these plan periods and phases will fit together and the type of activity we expect to undertake during each period and phase. Some actions may continue in one form or other across plan periods and phases.

Actions have been allocated to the following activity phases:

- Ground work (2020-2022);
- Scaling up (2023-2025);
- Acceleration phase (2026-2040)
- Near net zero (2041-45); and
- Deliver SCCAP (2046-50).

These phases are illustrated in diagram B1, and described in more detail below:

Diagram B1: Climate Fife plan phases



Ground work (2020-2022): this phase will focus on easy wins including projects that can be delivered quickly. In addition, essential foundation activities will be implemented including:

- developing financial instruments and new ways to finance projects;
- consolidating political support;
- engagement with key sectors;
- building new partnerships and strengthening existing partnerships;
- changing planning laws and creating new planning policy and guidance;
- updating Fife Council policies in the light of new national climate change targets;
- undertaking engagement programmes to support the public;
- screening current developments at the planning stage for climate risk and emissions and working to adapt these to prevent potential climate liabilities from being built;
- developing tools for impact evaluation and successful implementation;
- and deployment of small-scale test projects.

The importance of a sense of urgency, political consensus and appetite for action is consolidated during this period, and that any actions which can be started now, begin in earnest.

Scaling up (2023-2025): during this phase smaller projects will be completed as exemplars and activity will turn to how to use the lessons learned for larger scale deployment. Integrating learning into new project proposals will be fast-paced and collaborative. This is the phase where teething troubles will be most apparent as new technologies and ideas are tested in the real-world. It's likely that some ideas and technologies may not be progressed beyond this period if they do not work out, and that new exemplar projects will be conceived as technology develops. Ground will be being broken for some large projects, and lots of planning will be underway for many more. Some ground-work activities will still be ongoing such as developing planning guidance and financial instruments and public engagement. Long term projects such as reforestation which will take time to deliver their benefits need to be being implemented during this period if not before. Large scale developments are expected to mostly focus on known technologies and approaches that have low risk but high benefit to best assure success. As new technologies emerge during the delivery of Climate Fife, these will be considered and tested using the same staged approach.

Acceleration of mitigation and adaptation actions (2026-2040): In many ways this is the main phase of Climate Fife. Small projects have gained momentum and are being rolled out at neighbourhood or settlement-wide and in some cases, even Fife-wide scales. While many teething problems will have arisen during the scaling up phase some challenges will only arise at larger scales of deployment or as new technologies come on stream during the acceleration phase. These will have to be rapidly overcome. Legislation is prohibiting many fossil fuel technologies and maladaptive practices. Low and zero carbon alternatives are becoming the norm. Activity during this period will be akin

to a war effort as every aspect of Fife's economy, infrastructure, land use and built environment is overhauled to reduce emissions and increase resilience. Carbon sequestration activities become a major component of the Fife economy. Unfortunately, climate extremes are also becoming the norm and the already challenging Climate Fife work programmes will have to accommodate this.

Near net zero GHG (2041-45): While the previous phase saw the bulk of carbon reduction; activity during this phase action turns toward phasing out other greenhouse gases (most notably nitrous oxide and refrigerants with high global warming potential) and ensuring that sequestration projects are sufficient to absorb any emissions which cannot be phased out. While we will be starting to see the benefits of long-term projects it is also likely that some extreme impacts of climate change and associated socioeconomic impacts (large scale climate migration for example) will be being experienced in earnest.

Deliver SCCAP (2046-50): This phase sees a net zero Fife dealing with the more extreme impacts of climate change and adapting existing actions in the light of the latest climate science and observed impacts. The benefits of large-scale adaptation projects are being felt but adaptation will be a continuous process for the foreseeable long-term future as long-term changes such as sea level rise play out over the coming decades and centuries.

Actions are also defined by which source of emissions they will reduce using BEI sectors from the Covenant of Mayors template:

The action plan also defines actions by the type of activity that is needed from identified leads or partnerships. Actions are defined as:

- Direct – for actions where there is an identified lead or partnership to take forward measures directly;
- Enable – for actions where partners need to work together and enable each other to act;
- Support – for actions where an identified lead or partnership provides support for others to act; and

- Policy – for actions where Fife Council needs to change Council policy (this may be procurement policy, planning policy etc) to remove barriers to action for itself and others.

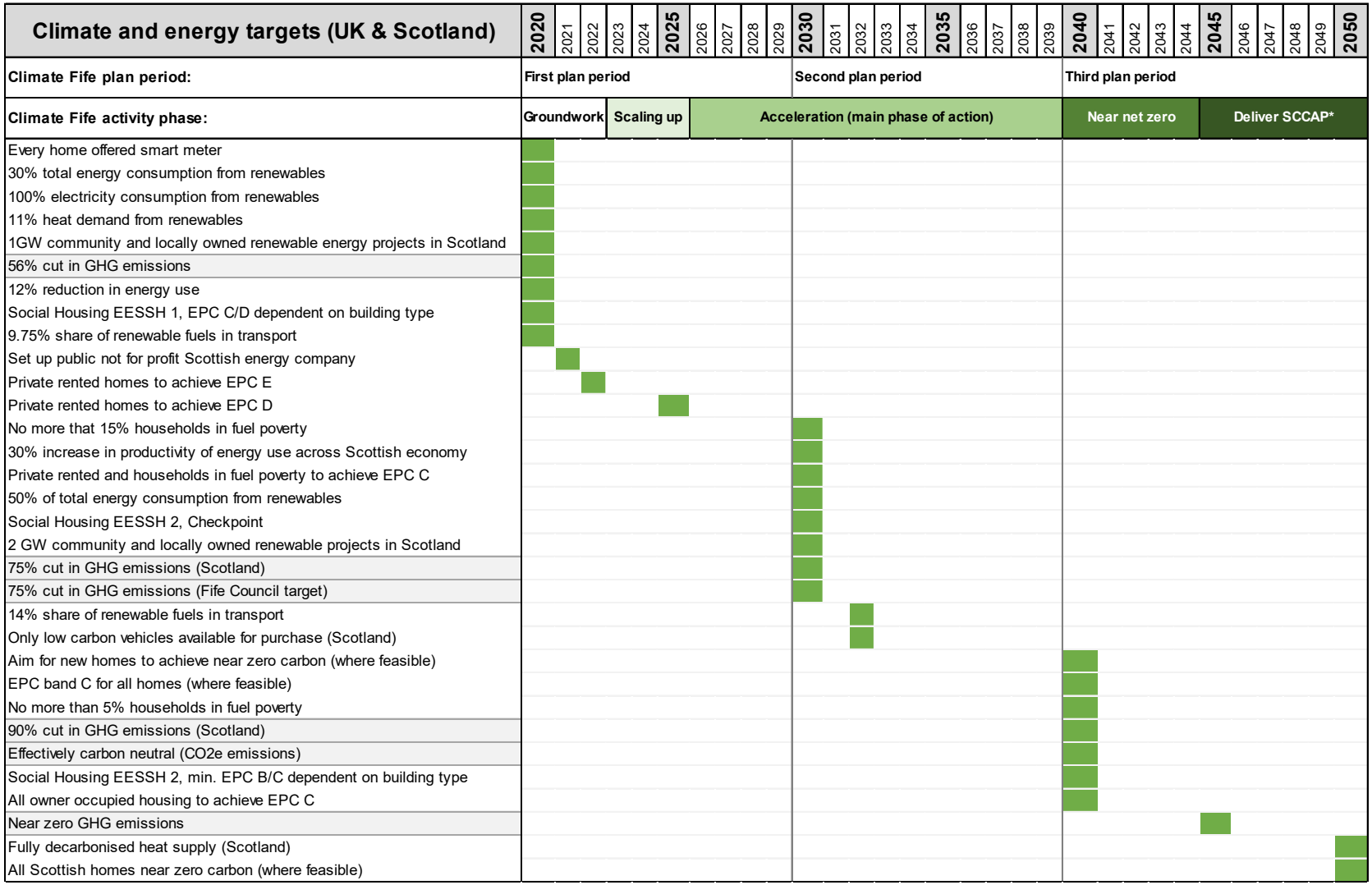
Finally, actions are defined by how they will enable Fife Council and partners to comply with national climate change policy and targets. Compliance relates to which target below the action relates to and will enable compliance with. A summary of climate change targets for Scotland is presented in Diagram B2 below, with a more detailed timeline in Diagram B3.

Diagram B2: Summary of Scottish Government climate change and energy targets

Scottish Government Climate Change and Energy targets	Year
100% of Scotland's electricity demand equivalent to be produced from renewables	2020
56% reduction in greenhouse gas emissions (compared to 1990 baseline)	2020
Delivery of national adaptation programme	2024[32]
75% reduction in greenhouse gas emissions (compared to 1990 baseline)	2030
Phasing out of new petrol and diesel vehicle sales	2032
The equivalent of 50% of the energy for Scotland's heat, transport and electricity consumption to be supplied by renewable sources	2030
An increase by 30% of the productivity of energy use across the Scottish economy	2030
90% reduction in greenhouse gas emissions (compared to 1990 baseline)	2040
No more than 5% of Scottish households in fuel poverty	2040
Net carbon neutral	2040
Net zero greenhouse gas emissions	2045

[32] And every five years thereafter

Diagram B3
Scottish climate change target timeline



* SCCAP: Scottish Climate Change Adaption Programme

Innovation & coordination

ID	Action	Description	Lead	Partners	BEI sector	12-month action?	Activity type	Phase	Alignment with vision		
IC01	Fife Council Climate Fife Delivery Group	Within the first 100 days Fife will support Services through the establishment of a Climate Fife Delivery Group, supported by Fife Resource Solutions. This Climate Fife Delivery Group will: • Support services in delivering actions required to meet the targets • Review Service Change Plans to identify support and action, including through the 'Opportunity Papers' process • Deliver and coordinate projects for Services to meet targets • Provide internal training and CPD and facilitate expert level support and guidance • Report progress at appropriate management level	Fife Council	Fife Resource Solutions	All	Yes	Direct, support and policy	Ground work (2020-22)	Yes	Yes	Yes
IC02a	Commit to a carbon neutral	Community planning partners work together to ensure that all senior officers and elected members within Fife Council (and Trusts) have undertaken carbon literacy training,	Fife Council	Fife Council Trusts, Community	All		Direct, support	All	Yes	Yes	Yes

	Fife by 2045 at the latest	climate risk training and have become climate leaders themselves, with further plans brought forward to disseminate these issues through the thinking and decision making of all directorates. Implement Continued Professional Development to increase science and engineering literacy for decision makers to help them best understand the potential solutions. Consider engagement with the forthcoming COP in Glasgow.		planning partners							
IC02b		Fife Council to review the current staffing resource distribution, and skillsets within the Council. There may be business case for spend to save investment in skills and new posts.	Fife Council	Training providers, third sector partners, support organisations	All	Yes	Direct	Ground work (2020-22)	Yes	Yes	Yes
IC02c		Fife Council induction and working practices to include energy and resource efficiency, reflecting the Fife climate emergency. Basic resource efficiency actions to be included within job competencies using the Integrated, Social & Material Framework to ensure that desired behaviours are supported.	Fife Council		All		Direct, and policy	Ground work (2020-22) Scaling-up (2023-25)	Yes	Yes	Yes
IC03	Revise existing policies to reflect the climate emergency	Fife Council will when reviewing and revising policies and strategies, ensure that they are compatible with delivering the Climate Fife vision and reflect the Fife Climate Emergency by use of the Fife Environmental Assessment Tool (FEAT)	Fife Council	Community planning partners	All		Policy, Direct and Support	Ground work (2020-22) Scaling-up (2023-25)	Yes	Yes	Yes
IC04	Investigate and deliver innovative options to financially	Fife Council will work partners to design, fund and commission (or deliver in-house) detailed advice on the timescales, actions and budgets needed to deliver a carbon neutral Fife by 2045. Fife Council will work with	Fife Council	Academia, community planning partners, third sector, Fife	All	Yes	Policy	Ground work (2020-22)	Yes	Yes	Yes

	support Climate Fife actions	partners to develop business cases for low carbon and transport investments using alternative financing models. This may require financial innovation such as whole life costing, municipal bonds, a climate fund, an internal carbon cost, or the establishment of an Energy Services Company to deliver locally generated low carbon energy and heat. The Council will act as an exemplar by introducing formal climate screening of all its budgets; with the 2021-22 budget being used to pilot budget setting against a backdrop of climate risks. Focus on opportunities, shared benefits approach, fostering innovation and providing officer time to think outside of business as usual. Fife Council will explore options that increase financial benefits through linked energy systems / whole energy systems models. This will develop a process to investigate potential improved financial returns where energy project business cases are linked. Investigate "Agency" models where a third party could aggregate supply and demand for an industrial estate to maximise the commercial benefits to the businesses. also test them out so we can find out what works in different situations, the margin for the Council and how they can be used together.		citizens, the business community							
IC05	Develop a communications strategy and engage in climate strategy to raise	Within the first 100 days Fife Council and partners will develop a climate change communications strategy that will emphasise that climate change action is an urgent priority. Fife Environmental Partnership will work with community organisations to develop this	Fife Council, Fife Environmental Partnership	Community groups, third sector, FCCAN, Greener Kirkcaldy, CLEAR	All	Yes	Direct and support	All	Yes	Yes	Yes

	awareness, identify risks and opportunities and develop shared projects	communication strategy, and maximise resources to support and community action and minimise bureaucratic barriers The strategy will: • Include climate literacy and deliver training to local people in how to reduce their carbon footprint and increase their resilience to climate change. • support and celebrate the activities of community groups • regular climate conversations with residents, the third sector and the business community through Community Planning structures • promote local action e.g. Beach clean-ups • Link to national campaigns and events e.g. Climate week.		Buckhaven & Methil, Sustainable Cupar, St Andrew's Environmental Network, Transition network, Extinction Rebellion							
IC06a	Provide regular progress reports	Fife Council will provide regular interim progress reports on delivery against Climate Fife to Full Council, Fife Environmental Partnership, the Sustainable Growth and City Deal Board and direct to the Chief Executive.	Fife Council	Fife Environmental Partnership	All	Yes	Direct	All	Yes	Yes	Yes
IC06b		Fife Council will report back to the people of Fife annually on what it (and community planning partners) have done to address the climate emergency and what we are planning to do. Climate Fife progress reports will be published with committee papers online and via social media.	Fife Council	Community groups, third sector, Fife Environmental Partnership,	All	Yes	Direct	All	Yes	Yes	Yes
IC07	Innovative financing for public good	Council, community groups and the third sector to work together on grant funded projects for community energy schemes and other climate change projects. The Council's	Fife Council	Private sector developers, Scottish Futures Trust,	All		Direct and support	All	Yes	Yes	Yes

		business support and funding support advisors will be made available to support community investment in renewable energy and grant applications for community climate change projects. Promote investment and align public sector capital investment to unlock developer funding for transport and education infrastructure.		Improvement Service							
IC08	Assess the impact of all policy decisions, budgets and investments on climate change mitigation and adaptation, and other externalities.	Fife Council will use an environmental screening tool to ensure that all policy and investment decisions made by the Council consider the climate emergency and other environmental issues. All decisions made by the Council and its partners in response to the climate emergency will also be supported by equality assessments as well as the Fairer Scotland duty to maximise their positive effects and reduce any negative impacts.	Fife Council	Fife Council Trusts, community planning partners	All	Yes	Direct and policy	Ground work (2020-22) Scaling-up (2023-25)	Yes	Yes	Yes
IC09a	Support future generations in responding to the climate emergency	Fife's educational establishments will engage openly with pupils on the climate emergency and actions which are needed to respond to it. Fife Council will work closely with schools, local colleges and universities to build the skills and capacity for a greener and more resilient economy in Fife. Including a focus on new technologies (battery storage, heat pumps, ULEV, other renewables), forestry and food production, and ensuring the provision of apprenticeships and other opportunities for inclusive growth. Schools will use the EcoSchools programme to support young people to engage in climate change. Fife Environmental Partnership will link to 2050 Climate Group and other young people's organisations / charities dealing with	Fife Council. Fife Environmental Partnership	Fife College, University of St Andrews, Community groups, third sector; 2050 Climate Group	All		Direct and support	All	Yes	Yes	Yes

		the interplay between climate change and intergenerational equity									
IC09b		Review investment in the school and further / higher education estate to ensure carbon reduction, climate resilience and climate education are core principles.	Fife Council	Fife College, University of St Andrews	All		Direct and support	All	Yes	Yes	Yes
IC10a	Provide support, training, and information to help national and local partners to deliver energy reduction and decarbonisation programmes across Fife	Deliver energy reduction and decarbonisation training programmes to reduce business outgoings and reduce business failure rates.	Business Improvement District	Fife Council	All		Support	All	Yes	Yes	Yes
IC10b		Supply expert training, support and information to SMEs and third sector with regards to climate change obligations such as LHEES. This could include greater Council engagement with the forthcoming COP in Glasgow.	Fife Council	Fife Council	All		Support	All	Yes	Yes	Yes
IC11a	Update and implement Fife Council's Carbon Management Plan	Within the first 100 days Fife Council will update Council Carbon Management Plan in line with new national and Climate Fife targets.	Fife Council		Municipal buildings, residential buildings, municipal fleet, public lighting		Direct	Ground work (2020-22)	Yes	-	Yes
IC11b		Investigate and develop what additions are required to Building Standards for Fife Council assets to be net zero emissions by 2045 at the latest (and possibly as early as 2030 depending on the outcome of a national policy review expected in Spring 2020) and reduce running costs and Council revenue spend.	Fife Council	Scottish Government, social housing providers, volume housebuilders, local building industry	All buildings		Direct, policy and support	Ground work (2020-22) Scaling-up (2023-25)	Yes	Yes	Yes

IC12	Strengthen low carbon and climate ready actions within the City Deal workstreams	Fife Council Climate Fife Delivery Group to review and develop City Deal actions to support delivery of the net zero carbon target and increased climate adaptation actions.	Fife Council	City Deal partners	Buildings and infrastructure	Yes	Direct, policy and support	Ground work (2020-22) Scaling-up (2023-25)	Yes	Yes	Yes
IC13	Lobby the Scottish Government to embed climate change action into public procurement processes and financial practices	Fife Council will work with other Local Authorities and the Scottish Government to consider whether any legislative change is needed to allow carbon reduction and climate resilience to be mainstreamed into procurement decisions, Scottish Government funding (for example should the Scottish Futures Trust only fund zero carbon buildings) and financial processes (i.e. loan pooling, ring fencing of climate grant funding for example). In the light of the outcome of this exercise, Fife Council will review and update its procurement and financial processes accordingly.	Fife Council	Scottish Government, other local authorities	All	Yes	Direct, policy and support	Ground work (2020-22)	Yes	Yes	Yes
IC14	Strengthen climate actions within the Plan4Fife	Review and develop Plan4Fife actions to support delivery of national net zero carbon targets and adaptation programme.	Fife Resource Solutions, Fife Environmental Partnership	Fife Council, community planning partners	All	Yes	Direct, policy and support	Ground work (2020-22) Scaling-up (2023-25)	Yes	Yes	Yes
IC15	Adopt an emissions modelling tool	Fife Council will adopt an emissions modelling tool to quantify the impact of Climate Fife mitigation and sequestration actions and to inform future target-setting.	Fife Council	Scottish Government, SSN, academia	All		Direct	Ground work (2020-22) Scaling-up (2023-25)	Yes	-	Yes

IC16a	Collaborative partner development and action across all Climate Fife programme areas	Work with partners in The Leven Programme to develop innovative renewable energy opportunities in the Leven catchment area	The Leven Partnership Board	Fife Council, CLEAR Buckhaven & Methil	Local energy productio n		Direct and support	All	Yes	-	Yes
IC16b		Carry out all the actions identified by the Association for Public Services Excellence (APSE) for dealing with the climate emergency.	APSE	Other local authorities	All	Yes	Policy, direct and support	Ground work (2020-22) Scaling-up (2023-25)	Yes	Yes	Yes
IC16c		Develop a sustainable joint campus for Dunfermline high school and Fife College	Fife Council	Fife College, Scottish Government	Municipal buildings, tertiary buildings		Direct and support	Ground work (2020-22) Scaling-up (2023-25)	Yes	Yes	Yes
IC16d		Support and develop a Local Heat and Energy Efficiency Strategy (LHEES) with the Scottish Government.	Fife Council	Scottish Government	Municipal buildings, tertiary buildings		Direct and support	Ground work (2020-22) Scaling-up (2023-25)	Yes	Yes	Yes
IC16e		NHS Fife to develop Sustainable Development Action Plan (SDAP) based on National NHS benchmarking exercise	NHS Fife	Scottish Government	Municipal buildings, tertiary buildings		Support	Ground work (2020-22) Scaling-up (2023-25)	Yes	Yes	Yes
IC16f		Work with Fife Community groups to engage their members	Fife Environme ntal Partnership	Community groups, third sector,	All	Yes	Direct and support	Ground work (2020-22) Scaling-	Yes	Yes	Yes

								up (2023-25)			
IC17	Support and encourage behaviour change and to tackle resistance to change through the development of a bottom-up behaviour change strategy for Community Planning partners	Develop a communications and engagement strategy to support people to change highlighting what individuals can do and presenting a positive vision of future Fife. Having people understand and be motivated to reduce energy consumption and to decarbonise is essential to the success of energy solutions. Fife Council and partners will develop staff communications campaigns via new and existing staff communications channels, including suggestion of a daily tip over a month; targeting skills sectors; CPD, Masterclasses etc. Process for learning lessons to embed these. Communications campaign also linked to schools and education staff and incorporation of the climate emergency into the curriculum and extra-curricular activities	Fife Environmental Partnership, Fife Resource Solutions	Third sector, FCCAN, and other community partners	All	Yes	Direct and support	All	Yes	Yes	Yes
IC18	Gather evidence to inform lobbying	Many of the actions within this action plan advocate lobbying Scottish Government to update legislation or technical standards. However, before Government can be effectively lobbied there is a need to gather evidence and the views of other stakeholders. Fife Council will contribute to evidence gathering by government via consultations and Parliament hearings and also investigate the most appropriate avenues for lobbying government out with formal consultations i.e. SOLACE the proposed, High ambition climate change network etc.	Fife Council	Other local authority partners, Fife Environmental Partnership, third sector, professional associations	All	Yes	Direct and support	Ground work (2020-22)	Yes	Yes	Yes

IC19	Investigate incentives to cut emissions and use resources efficiently	Investigate options to develop incentives to reward behaviour which helps to tackle the climate emergency (such as cutting emissions, reducing waste or increasing resilience). Incentivisation should be introduced where possible. Without negative and positive incentives, the progress towards targets will be considerably slower. Other municipalities have offered reductions in Council tax, free parking, public transport vouchers or awards and prizes for individuals and municipality staff who make significant strides in cutting emissions. Fife Council will consider similar ideas. Policies will be designed carefully so that the impact of change is fairly distributed. Price signals should act on all Fifers, but in a proportionate manner.	Fife Council	Fife Environmental Partnership, third sector, community groups, local business, other public sector bodies	All		Direct and support	Ground work (2020-22)	Yes	Yes	Yes
IC20	Partnership agreements	Develop simplified partnership agreements for Fife Council and others to speed up coordinated working and accelerate the take up of scalable projects. The climate emergency requires a fast response and partnership agreements are quicker to deliver than formal strategy.	Fife Council	Community planning partners, private sector, third sector, community groups	All		Direct	Ground work (2020-22) Scaling-up (2023-25)	Yes	Yes	Yes
IC21	New delivery vehicles / establishment of joint ventures	Existing organisational structures may not be able to deliver the rapid innovations needed in the short window of opportunity that is available. Fife Council to commission a review of the best approaches to deliver energy, carbon, sequestration outcomes this should include the use of the ALEO and other joint ventures able to act as aggregators and delivery agents for delivering community projects across Fife by providing technical	Fife Council	Fife Resource Solutions (Fife Council's environmental ALEO) Community planning partners, private sector, third sector,	All	Yes	Direct, support	Ground work (2020-22) Scaling-up (2023-25)	Yes	Yes	Yes

		and funding support and access to Council assets and land if needed.		community groups							
IC22	Custodian register	List of key organisations acting on climate change in Fife, and a named contact for each project to enable sharing and innovation. Consider a tagging system to support this, e.g. providing contact information for a Fife Council lead with named officer, summary of project, aspiration for next steps, links where available to maximise the opportunities to learn lessons and roll out innovation as efficiently as possible.	Fife Council	All	All	Yes	Policy, support	Ground work (2020-22) Scaling-up (2023-25)	Yes	Yes	Yes
IC23	Climate Fife expert register	Develop register of people with technical expertise relevant to Climate Fife and willing to share this knowledge with community planning partners via CPD, masterclasses and other means.	Fife Environmental Partnership	All	All	Yes	Policy, support	Ground work (2020-22) Scaling-up (2023-25)	Yes	Yes	Yes

Energy efficiency

ID	Action	Description	Lead	Partners	BEI sector	12-month action?	Activity type	Phase	Alignment with vision		
EE01	Reduce energy demand from street infrastructure	Light Fife Green to replace all Fife street lighting lamps with energy efficient equipment, including LEDs	Fife Council		Public Lighting	Yes	Direct	Ground-work (2020-22)	Yes	No	Yes
EE02a	Improve domestic energy efficiency in-line with national guidelines, striving for beyond the legal minimum where possible	Install energy efficient measures in Council owned domestic housing stock (through EESSH [Energy Efficiency Standard for Social Housing] & HEEPS: ABS [Home Energy Efficiency Programmes Scotland: Area Based Scheme] and future energy efficiency support programmes)	Fife Council	Scottish Government	Residential Buildings	Yes	Direct	Ground-work (2020-22), Scaling up (2023-25),	Yes	Yes	Yes
EE02b		Support the installation of energy efficient measures in non-Council owned housing stock (through EESH & HEEPS: ABS and future energy efficiency support programmes)	Housing associations	Fife Council	Residential Buildings	Yes	Direct	Ground-work (2020-22), Scaling up (2023-25),	Yes	Yes	Yes

EE02c		Support the installation of energy efficiency improvements in off-gas and rural areas and install measures into rural Fife Council housing stock	Fife Council		Residential Buildings	Yes	Direct and support	Scaling up (2023-25)	Yes	Yes	Yes
EE03	Prepare for Scottish Government new home targets	Review policy implications for new build housing and non-residential buildings that from 2024 these must use renewable or low carbon heat. Consider in revisions of plans, such as the Local Development Plan and the Local Housing Strategy.	Fife Council	Scottish Government	Residential Buildings		Direct, and support	Ground-work (2020-22), Scaling up (2023-25), Acceleration (2025-40)	Yes	Yes	Yes
EE04a	Implement Fife Council's Carbon Management Plan (CMP)	Fife Council will act as an exemplar for the rest of Fife and develop a programme of carbon reduction measures for its own estate and activities in response to the targets set out by Climate Fife and national climate change legislation. The Carbon Management plan is being revised to reflect the Climate Emergency and will be resubmitted to Fife Council Committee in April 2020.	Fife Council	Scottish Government	Municipal Buildings	Yes	Direct	Ground-work (2020-22),	Yes	-	Yes
EE04b		Fife Council will implement a programme of investment in its existing built assets to improve their energy efficiency and help deliver carbon neutrality by 2045, or earlier if mandated by Government. The ability to deliver this action is predicated on appropriate funding being made available by central government. This will involve a large-scale energy efficiency retrofit programme using an Energy Management Revolving Fund, amongst other funding measures. It will not be possible to achieve national carbon	Fife Council	Scottish Government	Municipal Buildings	Yes	Direct	Ground-work (2020-22), Scaling up (2023-25), Acceleration (2025-40)	Yes	Yes	Yes

		targets without a large scale retrofit programme of existing buildings.									
EE04c		Monitor energy consumption within Fife Council buildings and those that we lease to ALEOs and Trusts. Close monitoring of consumption will allow technical faults and billing errors to be quickly identified and rectified. Improve BEMS and smart monitoring to make it easier to keep track of energy consumption in real time. There should be wider installation and central control of Building Energy Management Systems to reduce energy consumption and avoid localised changing of controls delivering more energy / heat than is required.	Fife Council	Utility companies, FRS, Fife Sports and Leisure Trust, Fife Cultural Trust, Fife Coast and Countryside Trust etc	Municipal Buildings	Yes	Direct	All	Yes	-	Yes
EE05	Continue to promote energy efficiency advice services for Fife	Work to support and direct Fifers towards energy efficiency advice programmes such as Cosy Kingdom which deliver energy efficiency assistance direct to Fife households, helping to reduce fuel poverty and greenhouse gas emissions. Cosy Kingdom is a free and impartial energy and debt advice service available to all tenants and homeowners across Fife.	Greener Kirkcaldy, St Andrew's Environmental Network, Citizens Advice and Rights Fife	Fife Council	Residential buildings		Support, direct	All	Yes	Yes	Yes
EE06	Support social housing providers in reducing the energy demand of their properties	Work with local social housing providers to improve the energy efficiency of Fife's social housing; with the aim of scaling up and accelerating existing work so that we reduce emissions from heating homes and buildings to near-zero by 2045, (in line with advice from the Committee on Climate Change and mandated under the Climate Change Scotland Act, 2019). Partners are already working to	Ore Valley Housing Association, other social housing providers	Fife Council, Scottish Government	Residential Buildings		Support	All	Yes	Yes	Yes

		significantly improve the energy efficiency of their housing stock. For example, the energy efficiency renewal works being done by Ore Valley Housing Association on their 675 domestic properties.									
EE07	Work with local partners to improve the energy efficiency of their property portfolios	University of St Andrews will implement a suite of energy efficiency projects (funded through a revolving fund) to reduce the carbon intensity of their property assets. The emissions from these buildings should be reduced to near-zero by 2045, (in line with advice from the Committee on Climate Change and mandated under the Climate Change Scotland Act, 2019).	University of St Andrews	Fife Council, Scottish Government,	Municipal Buildings	Yes	Direct	Ground-work (2020-22), Scaling up (2023-25), Acceleration (2025-2040)	Yes	Yes	Yes
EE08	Work with partners to develop ambitious targets for energy efficiency for existing buildings	Work with Scottish Government and local partners to develop new, ambitious targets to address the low levels of energy efficiency and carbon-intensive heating that are a feature of Fife's older housing stock, and rural off-gas network properties, most of which are in private-ownership, private-rented or mixed-tenure ownership. Decarbonising these properties will lead to considerable social, health and wellbeing and economic co-benefits and help to deliver the goals of the Plan for Fife. HEEPS: ABS needs to be reconfigured to deliver net zero buildings.	Fife Council	Scottish Government, Housing Associations, private sector housing providers (landlords and lettings agencies),	Residential Buildings, Municipal Buildings, Tertiary,		Direct, policy, support	Scaling up (2023-25), Acceleration (2025-2040)	Yes	Yes	Yes
EE09	Lobby government for additional funding for energy efficiency projects for	Fife Council has already achieved nearly all of the most obvious energy efficiency improvements for its own building stock, but we are far from net zero. The energy efficiency works which still need to be undertaken are more complex, costly and have longer payback periods; additional	Fife Council	Scottish Government, Other local authority partners,	Residential Buildings, Municipal Buildings	Yes	Direct	Ground-work (2020-22), Scaling-up (2023-25)	Yes	Yes	Yes

	public and private sector	revenue will be needed from Central Government to ensure built assets can be decarbonised in line with national targets. There needs to be more support in particular for the private rented sector and owner occupiers to tackle those not persuaded by the limited grants/ loans currently available.			, Tertiary,						
EE10	Lobby government for stronger national policy on zero carbon buildings in Building Standards.	Fife Council recognises that the technologies with which to build zero carbon buildings are already established and in regular use in other parts of the world (. Furthermore, with over 160,000 homes in Fife today all of which will need retrofitting to achieve net zero standards between now and 2040, every new building built today that is not zero carbon will add to the retrofit challenge. Given, it is much more expensive to retrofit these technologies to existing buildings; Fife Council will work with other local authorities to lobby Scottish Government and SEPA to fast-track zero carbon design into building standards as soon as possible.	Fife Council	Scottish Government, Other local authority partners	Residential Buildings, Municipal Buildings, Tertiary,	Yes	Policy	Ground-work (2020-22),	Yes	Yes	Yes
EE11	Optimise technical solutions and share best practice	Affordable Housing Programme, and Property Services to engage with technical providers (including private developers) to identify opportunities and challenges, cost differentials vs savings, process or management requirements to ensure the optimum technical solutions are applied to new builds, and that expected benefits are realised.	Fife Council	Private developers, housing associations, commercial property management companies, Scottish Government, other Local Authority	Residential Buildings, Municipal Buildings, Tertiary,	Yes	Support	Ground-work (2020-22),	Yes	Yes	Yes

				partners, other Community Planning partners							
EE12	Rationalisation and asset-sharing	In partnership with the community, Fife Council will develop an asset rationalisation strategy which considers duplicated provision in communities balanced against need to minimise undue travel burden for facilities users (which also has carbon implications).	Fife Council	Community Councils, Councillors, Community groups	Municipal buildings, Tertiary,	Yes	Policy and direct	Ground-work (2020-22), Scaling-up (2023-25)	Yes	Yes	Yes
EE13	Salary sacrifice / inducements	Fife Council is the largest employer in Fife and encouraging Council employees to reduce their carbon intensity could have a major impact on Fife-wide emissions. Review Fife Council salary sacrifice scheme to assess if it can be used to support the uptake of energy efficiency, low emission vehicle or renewable energy measures by staff. Linking to existing loans for energy efficiency from the EST, Scottish Government etc	Fife Council	Energy Saving Trust, Scottish Government	Residential buildings, private transport	Yes	Support	Ground-work (2020-22),	Yes		Yes

Low carbon energy

ID	Task	Description	Lead	Partners	BEI sector	12 month action?	Activity type	Phase	Alignment with vision		
											
LC01a	Implement Fife Council's Carbon Management Plan (CMP)	No new fossil fuel heating systems can be installed in Fife Council new builds from 2024. Business cases for developments before 2024 should consider whole life costs including the replacement of fossil fuel heating systems beyond 2024. If business cases demonstrate that it is unavoidable to install a fossil fuel heating system between 2020-24 then designs must demonstrate ability to be retrofitted with low carbon alternatives as soon as practicably feasible, and the cost implications.	Fife Council		Municipal Buildings	Yes	Direct	Ground-work (2020-22)	Yes	Yes	Yes
LC01b		Council new builds and renovations to include low carbon heat or electricity generation where practicably possible. Business cases for developments before 2024 should consider whole life costs including the replacement of fossil fuel heating systems beyond 2024. If business cases demonstrate that installing renewable heat or electricity generation is not possible between 2020-24 then designs must demonstrate ability to be retrofitted post 2024 and the cost implications of delaying installation.	Fife Council	Scottish Government	Municipal Buildings	Yes	Direct	Ground-work (2020-22)	Yes	Yes	Yes
LC01c		Monitor low carbon technology prices and look to incorporate low carbon generation	Fife Council		Municipal Buildings,		Direct	All	Yes	Yes	Yes

		technologies (both heat and power) onto Fife Council built assets as soon as financially viable.			Residential Buildings						
LC02	Implement the Climate Change (Scotland) 2019 Act	No new fossil fuel heating systems in any newbuilds within Fife by 2024 in compliance with the new Climate Change Act and updates to Building Standards.	Fife Council	Scottish Government, local utilities, housing developers, the building industry	All buildings		Direct, support, policy	Scaling-up (2023-25)	Yes	-	Yes
LC03	Review existing Fife Council policy and plans to enable low carbon development	Prepare for the next revision of, and periodically review and update the Local Development Plan thereafter, to support and enable low carbon development.	Fife Council	Scottish Government	All	Yes	Policy	Ground-work (2020-22)	Yes	Yes	Yes
LC04	Promote and install low carbon technologies across Fife's housing stock	Support partners seeking to develop local low carbon energy and heat generation for housing. For example, the Ore valley 500kw wind turbine & 12kW of Solar PV	Ore Valley Housing Association	Community groups	Domestic	Yes	Direct	Ground-work (2020-22)	Yes	Yes	Yes
LC05	Develop a land strategy to manage Council land assets as a resource in tackling climate change, to produce low carbon energy and to	Fife Council will develop a coordinated land strategy to manage Fife Council land assets in a way that will best respond to the climate emergency; which recognises the many different and sometimes conflicting demands for Fife's limited land resource. This should consider a whole system approach to land use; encourage multiple simultaneous uses and the siting of activities on the most appropriate land. This will include using Fife Council owned land to produce renewable energy, timber	Fife Council	Various other stakeholders including SNH, Forestry Commission Scotland, Scottish Land Trust, Community groups	All	Yes	Policy	Ground-work (2020-22)	Yes	Yes	Yes

	balance this against other land use needs	wood fuel, biomass fuel, reduce flood risk, encourage active travel, reduce food miles, absorb carbon by tree planting etc. The land strategy should also consider the renewable energy potential of water bodies and coastline and investigate more dynamic and pro-active use of vacant and derelict land to deliver local, low carbon energy.									
LC06	Support partners seeking to develop local low carbon energy and heat generation for non-domestic purposes.	Support other public bodies in investigating the feasibility of low carbon energy and heat generation and support their installation where appropriate. Explore collaboration opportunities i.e. University of St Andrews extending solar PV deployment on campus; Scottish Water's extensive deployment of solar PV onto waste water and water treatment facilities across Fife is leading the development of public sector renewables. Scottish Water are also investigating the use of waste heat for heating purposes.	University of St Andrews, Scottish Water	Fife Council	Municipal		Direct	Scaling up (2023-25)	Yes	Yes	Yes
LC07	Lobby government for additional funding for renewable energy and heat projects	Fife Council has already installed many renewable energy and biomass heat installations meaning that the most economical opportunities have already been exploited (by and large). The low carbon energy and heat projects which still need to be undertaken are more complex, costly and have longer payback periods; which means that the capital funds available are often insufficient. Additional revenue will be needed from Central Government to ensure that we can decarbonise our built assets in line with national targets.	Fife Council	Scottish Government, Other local authority partners,	Residential Buildings, Municipal Buildings, Tertiary,		Direct	Ground-work (2020-22), Scaling-up (2023-25)	Yes	Yes	Yes

LC08	Work with local communities to develop low carbon energy and heat generation projects seeking to install renewables on public sector buildings and land and land held in common good	Work with communities to secure funding for low carbon energy and heat generation developments. Implement projects to establish local, community-owned (or part-owned), renewables including PV cooperatives, small scale hydro etc. Work in cooperation with other agencies. This should include exploring options for low carbon technologies in conservation areas and for how to use the energy generated to reduce fuel poverty and best respond to local economic and social needs.	Fife Environmental Partnership	FCCAN and other Community groups, third sector, housing associations	Residential Buildings, Municipal Buildings, Tertiary,		Direct	Ground-work (2020-22), Scaling-up (2023-25)	Yes	Yes	Yes
LC09	Partnership working to develop wider and innovative renewable energy and heat schemes with regional partners	Fife Council will seek partners to facilitate larger scale low carbon generation in Fife such as larger solar farms, low carbon district heating and heat pump schemes and other large-scale renewable energy and heat generation opportunities that may be too large for community groups to want to run. Other opportunities which will be investigated include working with the University of St Andrew's and other partners to explore the geothermal potential of the Scottish Midland Valley Hot Saline Aquifer which lies beneath parts of Fife and the Firth of Forth which could provide a low carbon heat source, and which could be tied into planned regeneration initiatives such as Levenmouth Reconnected. Fife Council will liaise in initial steps with University of	Fife Council	Other local authorities, private developers, other public sector bodies, large landowners	Residential Buildings, Municipal Buildings, Tertiary,		Direct	Ground-work (2020-22), Scaling-up (2023-25)	Yes	Yes	Yes

		St Andrews on this opportunity. We will also approach other local authorities to explore a more regional approach to sustainable energy and heat opportunities (such via the Tayplan and SESPlan). This should investigate joint developments and revenue sharing.									
LC10	Provide education and support for using new low carbon technologies	Fife Council will provide support (directly, and via community and third sector partners) to local people and businesses in how to use low carbon technologies such as heat pumps, EV, hybrid vehicles etc to maximise the efficiency of these technologies and to increase user satisfaction. Education will be provided at schools, tenant briefings, community events, online etc.	Fife Council	Community groups, third sector, housing associations	Residential Buildings, Municipal Buildings, Tertiary,		Direct	Ground-work (2020-22), Scaling-up (2023-25)	Yes	Yes	Yes
LC11	Map Fife to identify low carbon generation potential	An audit and map of Fife is required to show where the opportunities for low carbon energy are to direct action. This will build upon the existing heat map and should include renewable heat and electricity generation sources and opportunities to capture waste heat from existing operations and processes and use this as a low carbon heat source. Scottish Water Horizons heat from sewers for example. This map should also include geothermal potential.	Fife Environmental Partnership		Residential Buildings, Municipal Buildings, Tertiary,		Direct	Ground-work (2020-22), Scaling-up (2023-25)	Yes	Yes	Yes
LC12	PV generation linked to parking and potentially, EV charging.	Review successful schemes in other areas (Stirling / Falkirk) for PV linked to car parking.	Fife Council	Other local authority partners	All buildings, Private and commercial transport,		Policy	Ground-work (2020-22), Scaling-up (2023-25)	Yes	Yes	Yes

LC13	Housing Services to plan for transition to low carbon heating	Use Housing Annual Plan to build in transition to alternative heat source. (SHIP) A strategic direction for alternative low carbon heat required from Scottish Government which can then be adopted by the annual strategic housing Plan – SHIP.	Fife Council	Scottish Government	Municipal Buildings, Residential Buildings		Direct	Ground-work (2020-22), Scaling-up (2023-25)	Yes	Yes	Yes

Move, store & transform energy

ID	Action	Description	Lead	Partners	BEI sector	12-month action?	Activity type	Phase	Alignment with vision

MST01	Review existing Fife Council policy and plans to support district heating and other local energy networks	Periodically review and update the Local Development Plan to support and enable innovative energy solutions which support a whole energy systems approach, and which encourage more efficient movement, storage and transformation of energy.	Fife Council	Scottish Government	All buildings, Industry, Tertiary, local heat production, local energy production		Policy	Ground work (2020-22), Scaling up (2023-25), Acceleration (2025-40)	Yes	Yes	Yes
MST02	Collaborative working to create local energy networks through projects. Introduce 2 workstreams for projects: Available Technology and Innovation to run in parallel.	Work with public sector, utility supply companies and other businesses to drive the energy transition and support the development of projects that drive forward the development of smart grids, hydrogen fuel networks etc such as the WESLID project. The aim is to deliver the biggest emission reductions for the lowest cost; which will require mostly utilising available technology in the early years (i.e. technologies which are market ready, proven, etc will be quicker to roll out). Focus on replicable approaches, ideally scaled up from pilots, with consideration for how to scale across all Fife or in partnership across Scotland. Develop a parallel programme of innovation where this links to local opportunity in Fife. Expectation that this will be smaller scale. Look to scale-up mirroring the available technology programme's approach.	SGN, SPEN etc,	Fife Council, FCCAN, Greener Kirkcaldy, CLEAR Buckhaven & Methil, St Andrew's Environmental Network, Sustainable Cupar,	All		Direct, support and policy	Ground work (2020-22), Scaling up (2023-25), Acceleration (2025-40)	Yes	Yes	Yes
MST03	Implement Carbon	Investigate opportunities to grow and develop existing energy networks, such as: Glenrothes Energy Network; University of St	Fife Council	University of St Andrews	Domestic, Tertiary	Yes	Direct, support	All	Yes	Yes	Yes

	Management Plan (CMP)	Andrews network within current and future iterations of the CMP. This should include the investigation of geothermal potential.					and policy				
MST04	Support mandatory inclusion of district heating into national building standards via a phased approach	Alongside other Scottish Local Authorities, Fife Council will support calls for the mandatory inclusion of district heating systems, where feasible in all major new housing developments and renewal projects as part of national building standards. Options which allow the distribution of cool in the summer should be prioritised in the forthcoming update of Building Standards to address future climate change.	Fife Council	Other Scottish Local Authorities, Scottish Government	Residential Buildings, Municipal Buildings, Tertiary, local heat production,		Support	Scaling up (2023-25), Acceleration (2025-2040)	Yes	Yes	Yes
MST05	Seek measures to amend non-domestic rates assessments for district heating	Fife Council and partners will seek measures by the Scottish Government to amend non-domestic heating rates assessments for domestic district heating installations to encourage the use of district heating in place of standalone heating in new build and refurbished homes (where densities and building envelopes allow).	Fife Council	Scottish Government	Residential Buildings, local heat production, local electricity production,		Support	Ground-work (2020-22), Scaling up (2023-25),	Yes	Yes	Yes
MST06	Explore options to build more district heating networks and local energy networks within Fife	Continue to explore opportunities for district energy (heating and cooling provision) for Fife Council complexes. Strive to implement these where technically feasible, which may require innovative approaches to project finance and payback periods	Fife Council	Scottish Government, Scottish Futures Trust, grant funders, community groups	Residential Buildings, local heat production, local electricity production,		Support	All	Yes	Yes	Yes
MST07	Develop LHEES (Local Heat and Energy	Develop strategic approach to energy efficiency and decarbonised heating, within the wider work to enable a whole energy system, in line with anticipated legislative	Fife Council	Community groups such as Greener Kirkcaldy, CLEAR Buckhaven &	Residential Buildings, local heat production, local		Support	Ground-work (2020-22), Scaling up (2023-25),	Yes	Yes	Yes

	Efficiency Strategy)	requirement to develop a Fife Local Heat and Energy Efficiency Strategy.		Methil, Sustainable Cupar, St Andrew's Environmental Network,	electricity production,						
MST08	Lobby government for additional funding for local energy and heat networks	District heating and local energy network projects are more complex, costly and have longer payback periods than present capital funding allows for when designing new assets. Additional revenue will be needed from Central Government to ensure decarbonisation of built assets in line with national targets and to allow local heat networks to become sufficiently mainstream that associated prices fall due to economies of scale.	Fife Council	Scottish Government, Other local authority partners,	Residential Buildings, Municipal Buildings, Tertiary,	Yes	Direct	Ground-work (2020-22), Scaling-up (2023-25)	Yes	Yes	Yes
MST09	Develop a local energy network solution for industrial estates	Develop a portal energy centre model for industrial/commercial units as a foundation for a wider industrial energy system, drawing on local generation, energy storage and supply, for both new and retrofit of existing business clusters in Fife. This will include the role of business energy use as a system anchor. Timeline proposal [years]: 1-2 development, 2-5 pilot, learning from lessons and scaling up, 5-10 roll out. Explore industrial options around M90 Junction 3 as an early greenfield pilot in conjunction with the Shared Education Campus, the Strategic Development Area, the Park & Choose and the Council's depot. Explore options around Levenmouth as a brownfield field pilot. The pilot outputs will include a case study for business to enable replication.	Fife Council	Other local authority partners, City Deal partners,	Tertiary (non-municipal) buildings, equipment/ facilities local heat production, local electricity production,		Direct, support, policy	Ground-work (2020-22), Scaling-up (2023-25)	Yes	Yes	Yes

MST10	Develop a programme of local energy & climate masterplans	Develop a programme of a local masterplans across Fife covering mitigation (energy and sequestration) and adaptation actions linked to local need. Approach to consider utilities such as energy, water & sewerage, for a wide range of need such as buildings and transport. This will build on the existing work in Fife and will integrate into: • Local Community Plans • proposed Local Area Plans, • LHEES, and • Proposed Land Use Plan This will include sector specific approaches where needed, such as for Industrial estate action plans building on the portal energy centre approach. Masterplans will prioritise options which deliver more than one Climate Fife theme, such as generation and energy storage or sequestration. 10 settlement plans will be undertaken in the first 5 years.	Fife Council	Other local authority partners, consultancy, academia, Scottish Government, community groups, Community Councils, FCCAN, Greener Kirkcaldy, CLEAR Buckhaven & Methil, Sustainable Cupar, St Andrew's Environmental Network,	All		Direct	Ground-work (2020-22), Scaling-up (2023-25)	Yes	Yes	Yes

Sustainable transport

ID		Description	Lead	Partners	BEI sector	12-month action?	Activity type	Phase	Alignment with vision

ST01a	Update and implement Fife Council's Local Transportation Strategy	Revise previous transport strategy, policy and plans, as required, to deliver evolving climate change and energy targets. The new strategy will enforce Transport Scotland's sustainable transport hierarchy and will include ambitious targets for modal shift with associated delivery plans. To meet these targets the new strategy will prioritise pedestrians and cycling strategies over road building schemes whilst encouraging low carbon transport use.	Fife Council	Key stake holders	Public transport, Private and commercial transport, Municipal vehicles		Policy	Ground-work (2020-22)	Yes	Yes	Yes
ST01b		As part of the new strategy, Fife Council will consider how to reduce the dominance of the private car and how to make Fife more appealing for active travel e.g. looking at increasing pedestrianisation, incentivising car sharing, rolling-out car clubs, reducing speed limits on residential roads, implementing workplace parking taxes, developing car-free zones near locations attended by large numbers of potentially vulnerable pedestrians and further improving the public realm to encourage active travel.	Fife Council	Key stakeholders including community groups	Public transport, Private and commercial transport, Municipal vehicles		Policy	Ground-work (2020-22)	Yes	Yes	Yes
ST01c		Make innovation a core principle of the Local Transportation Strategy; improving freight modal choice, working with public transport operators to increase access and affordability, improve accessibility for all, and the development of hydrogen and other ULEV networks should be investigated and actioned where feasible. Climate change should inform the whole strategy.	Fife Council	Key stakeholders, local transport operators, community groups	Public transport, Private and commercial transport, Municipal vehicles		Policy	Ground-work (2020-22)	Yes	Yes	Yes

ST01d		As part of the new strategy look at options for reducing the environmental impact of freight movements in Fife.	Fife Council	Online retailers, Sustrans and key stakeholders	Private and commercial transport		Policy, direct and support	Scaling-up (2023-25), and Acceleration (2025-40)	Yes	Yes	Yes
ST02	Develop active travel network	Continue, and where possible accelerate the implementation of a programme of active travel and network development for walking and cycling. Where possible this will deliver safe, high quality, segregated cycling arterial routes. Greenspace is a key resource for active travel and for increasing wellbeing and uptake of active travel. It is important that new developments are well connected to active travel routes. To ensure that the next generation grow up embracing active travel continue to implement School Travel Plans, with supporting initiatives, Bikeability, WOW (Walk Once a Week), Park & Stride, etc	Fife Council	Sustrans, Paths4all, Cycling Scotland, Sustrans, School PTA and pupils Greener Kirkcaldy, CLEAR Buckhaven & Methil, Sustainable Cupar,	Public transport	Yes	Support	All	Yes	Yes	Yes
ST03	Develop EV infrastructure	Continue and where possible, accelerate, the phased approach to planning and implementing EV charging facilities across Fife. Note that the expansion of EV charging facilities will have a consequential increase in electricity consumption and careful submetering will be required to manage this energy. New locations where chargers could be installed could be developed in partnership with other organisations (for example super market car parks so that EV can charge as people shop)	Fife Council	Scottish Government (including Switched on Fleets)	Private and commercial transport, Municipal vehicles,		Direct and support	All	Yes	-	Yes
ST04	Update the Council Fleet Plan to decarbonise Fife Council's	The latest programme of work for the Scottish Government requires public sector bodies to decarbonise their vehicle fleets rapidly. Therefore, Fife Council's fleet management and replacement plan (2019-	Fife Council	Other public sector partners	Municipal vehicles		Direct and support	Scaling-up (2023-25), and	Yes	-	Yes

	own vehicle fleet in line with Climate Change Scotland Act	29) will be revised to reflect the new requirement for public bodies to phase out the need for any new petrol and diesel light commercial vehicles by 2025 and for all vehicles by 2030. This will involve exploring the potential for further integrating electric and hydrogen fuelled vehicles into the Council fleet.						Acceleratio n (2025-40)			
ST05	Support the reinstatement of the Levenmouth rail line, and other viable rail links that have been closed.	Fife Council will support the reopening of the Levenmouth rail line. Detailed designs are currently being drawn up for the Levenmouth link, which will connect Leven to the Fife Circle. It is estimated the project, which also includes improved bus services, cycle and walking facilities will be operational within five years and will include new railway stations at Leven and Cameron Bridge. Reopening the line will connect an estimated 35,000 people to the Scottish railway network and reduce car dependence in Levenmouth and East Neuk. Other rail links which have been closed which could be investigated for future reinstatement include the reopening of Newburgh station, and the Dunfermline to Alloa line.	Scottish Government	Levenmouth rail campaign, Network rail, Fife Council	Public transport, Private and commercial vehicles	Yes	Support	Scaling-up (2023-25),	Yes	Yes	Yes
ST06	Support national plans to de-carbonise railway rolling stock	Fife Council will work with the Scottish Government and other partners to decarbonise Scotland's passenger rail services by 2035. Fife's railway lines currently use diesel rolling stock. Where trains cannot be electrified, the Scottish Government has committed to invest in battery-powered trains and work with developers of hydrogen fuel cell trains to accelerate deployment in Scotland. Detailed national timescales and actions for	Scottish Government, Transport Scotland, Network Rail	Fife Council	Public transport		Support	Acceleratio n (2025-40)	Yes	-	-

		decarbonising rail services will be released in spring 2020.									
ST07	Improve the fuel and carbon efficiency of local private sector and public transport fleets	Continue to promote Eco Stars Fleet & Taxi Recognition Scheme which offers advice on best practice to fleet operators of goods vehicles, taxis, buses and coaches to improve efficiency and reduce fuel consumption and associated emissions. Promote the reduced operating costs of EV and hybrid vehicles to private fleet operators at points of contact (i.e. taxi fleets at licensing).	Fife Council	Local haulage, bus and taxi companies	Municipal fleet, Public transport, Private and Commercial transport		Support and deliver	Ground-work (2020-22), Scaling-up (2023-25)	Yes	-	Yes
ST08	Tackle problematic air quality	Implement actions from Fife Council's two existing Air Quality Management Areas to improve air quality and unlock climate change, emissions and health and wellbeing co-benefits.	Fife Council	SEPA	Municipal fleet, Public transport, Private and Commercial transport		Deliver	All	Yes	Yes	Yes
ST09	Support fleet operators to comply with the requirements of new Low Emission Zones in Dundee, Edinburgh, Glasgow and Aberdeen.	ECOstars to work with public transport and commercial fleet operators to assist them in adjusting to the new LEZ (low emission zones) being rolled out in major cities across Scotland between 2018-2020. Most relevant to Fife vehicle operators are the new LEZ zones in Dundee and Edinburgh.	Other local authorities (City of Edinburgh, Glasgow City Council, Dundee City Council, Aberdeen City Council)	Local haulage, bus and taxi companies	Municipal fleet, Public transport, Private and Commercial transport		Support	Ground-work (2020-22)	Yes	Yes	Yes
ST10a	Implement Fife Council's Carbon	New fleet vehicles be Ultra Low Emission vehicles from 2030, and public sector fleets need to decarbonise by 2025. Fife Council will cease specifying and procuring conventional combustion engine vehicles and	Fife Council	Scottish Government	Municipal fleet	Yes	Direct	Scaling-up (2023-25), Acceleration (2025-40)	Yes	-	Yes

	Management Plan	upskill the vehicle maintenance teams accordingly. Fife Council has already begun replacing current vehicle inventory with EVs and hydrogen powered vehicles and this will continue at pace to meet the 2025 target in the Scottish Government's programme of work.									
ST10b		Investigate opportunities to reduce the Council's grey fleet and to encourage the decarbonisation of staff vehicles. This could be via a reinstatement of a leasing scheme or other kind of partnership approach to encourage employees to switch from Petrol / Diesel cars to Hybrid or fully electric cars.	Fife Council	Fife Council staff and contractors	Public transport, Private and commercial transport	Yes	Direct	Ground-work (2020-22), Scaling-up (2023-25)	Yes	Yes	Yes
ST11	Lobby government for additional funding to maintain new transport assets	Permeable paving and path surfaces, and a large-scale expansion of the cycle network will lead to significant increases in the maintenance demands put upon Councils. Additional revenue will be needed from Central Government to ensure that these vital new assets are maintained. Fife Council will lobby government for this resource as a priority to ensure that travel within Fife can be decarbonised in a timely manner and ensure that we can continue to expand the active travel network.	Fife Council	Scottish Government, Sustrans	Private and commercial transport	Yes	Direct	Ground-work (2020-22), Scaling-up (2023-25)	Yes	Yes	Yes
ST12	Promote and support low emission vehicle fleet expansion and charging network across Fife	Support partners across Fife to develop electric vehicle charging infrastructure. For example, Ore Valley Housing Association and the expansion of their electric fleet expansion and installation of chargers at 2 sites. Supporting local partners will help all Fifers adapt to changes in the law whereby fossil fuel internal combustion engine vehicles will no longer be sold in Scotland from 2032.	Scottish Government,	Transport Scotland, Fife Council, Ore Valley Housing Associatio, other public sector partners	Public transport, Private and commercial transport		Support	Ground-work (2020-22), Scaling-up (2023-25)	Yes	-	Yes

ST13	Promote and support green travel initiatives within Fife Council and other major employers within Fife	Increase the use of mobile ICT and remote working within Fife Council teams (reducing the need to travel to base) and car and lift sharing to reduce commuting miles and associated emissions.	University of St Andrews	Fife Council	Public transport, Private and commercial transport		Support	All	Yes	Yes	Yes

Resource efficiency

ID	Action	Description	Lead	Partners	BEI sector	12-month action?	Activity type	Phase	Alignment with vision

RE01	Implement "Zero Waste Fife" Fife's Resources strategy and action plan	Promote Zero Waste Scotland's waste reduction campaigns such as Love Food Hate Waste	Fife Council	Zero Waste Scotland, Greener Kirkcaldy, CLEAR Buckhaven & Methil, Sustainable Cupar, St Andrew's Environmental Network,	Other		Support	Groundwork (2020-22)	Yes	-	Yes
RE02		Promote and facilitate reuse, including running a reuse pilot at recycling centres.	Fife Council		Other		Support and direct	Scaling-up (2023-25),	Yes	-	Yes
RE03		Fife Council will promote and facilitate recycling (for example by improving waste stream monitoring and collection efficiencies by piloting new technology).	FRS, Fife Council	Zero Waste Scotland	Other		Direct	All	Yes	-	Yes
RE04		Replace landfill of waste with energy recovery for residual waste	Fife Council		Other		Direct	Acceleration (2025-40)	Yes	Yes	-
RE05		Fife Environmental Partnership will work to reduce single use plastic waste and support public sector organisations in Fife to end single use plastic consumption. The use of plastics in textiles has a significant negative impact on ocean health because of the discharge of textile microplastics from washing machines. Fife Council will consider how our procurement specifications can be used to champion natural fibre use in textiles and furniture.	Fife Environmental Partnership	Fife Council, other community planning partners, Zero Waste Scotland	Other		Support and direct	Scaling-up (2023-25), Acceleration (2025-40)	Yes	-	Yes

RE06	Publish a food strategy for Fife	Fife Environmental Partnership will work with local stakeholders to produce a local food strategy for Fife which will look at improving the quality, health benefits, affordability, access to and reduce the environmental impacts of food consumed within Fife. Policy options which could be considered include making space for food growing a requirement of new housing developments in the future to help improve food security. Promotion of plant-based diet (or at least a focus on less meat consumption). Promoting the health, social and environmental benefits and impacts on cutting meat/dairy. Presenting the environmental benefits of local, grass fed meat should also be included. Other options include looking to improve the sustainability of school meals and meals on wheels (and all other catering provided by the Council) in line with national policy direction to use public procurement to tackle the climate emergency. Engaging school children on food production / consumption will also be included in the strategy. Ultimately the aim should be to switch to locally grown sources for food in Council institutions, and to introduce more allotments.	Fife Environmental Partnership,	Fife Council, third sector, community groups, FCCAN, Nourish Scotland, Permaculture Scotland	Other		Support and direct	Scaling-up (2023-25),	Yes	Yes	Yes
RE07	Include waste in Fife Council's carbon footprint	Fife Council will update its carbon footprint calculation methodology from 2020 to include waste and waste management. This will bring Fife in line with foot-printing best practice.	Fife Council		Other	Yes	Direct	Ground-work (2020-22)	Yes	Yes	Yes
RE08	Include water consumption in Fife	Fife Council will update its carbon footprint calculation methodology from 2020 to note water consumption (this will have to be carefully presented to avoid double counting	Fife Council		Other	Yes	Direct	Ground-work (2020-22)	Yes	Yes	Yes

	Council's carbon footprint	with Scottish Water's national footprint). Closer monitoring and reporting of water consumption is anticipated to lead to better management and will increase Fife's resilience to climate change risks such as water scarcity and will reduce the carbon emissions associated with water pumping and processing.									
RE09	Investigate increasing plant-based options for Fife Council catering.	Fife Council Facilities Management will trial meat free days at its facilities to promote wellbeing and raise awareness that reducing meat consumption is part of the range of available climate mitigation options. Fife Council Facilities Management will trial a meat free school catering day and use this to inform and guide plans.	Fife Council	Fife Council, NFU, Soil Association, Community Groups, Nourish Scotland, Permaculture Scotland,	Other	Yes	Direct, policy	Ground-work (2020-22)	Yes	Yes	Yes
RE10	Promote the use of natural flood management techniques to maximise efficient resource use in Flood Risk Management	The partner approach under the Flood Risk Management (Scotland) Act 2009 promotes the use of natural resources over man made solutions. This means finite resources are used more efficiently than they would have been in the past. This approach extends to multiple benefits, for example a pond would be bounded by natural structures as opposed to concrete solutions, and that is could bring an amenity benefit to the community over the flood attenuation function. Moreover, natural solutions have lower embodied carbon and, in some cases, can become carbon sinks.	Fife Council	Scottish Water, developers, SEPA	Other		Direct	Ground-work (2020-22)	Yes	Yes	
RE11	Develop innovative water resource management solutions and	Water resources need to be protected through the development of innovative water management solutions. This encompasses both water excess, in terms of flooding, and stress, in terms of drought. With the effects of climate change becoming more pronounced	Fife Council	Scottish Water, SEPA, Scottish Government, academia,	Other		Policy	Ground-work (2020-22)	Yes	Yes	

	update Planning Guidance accordingly	any flood mitigation solutions need to be considered for their effects on water stress, this is particularly applicable to feeding of water supply reservoirs and agricultural needs. Within Planning, this can include the development of better grey water systems and the stronger promotion of SuDS, installation of water meters and water efficient appliances and equipment within new buildings. Some of this work can be improved with closer working with third parties such as SEPA, Scottish Water, academia, developers and consultancy firms.		developers, consultancy							
RE12	Development / adoption of a LCA (life cycle assessment) carbon calculator to be used as part of procurement processes	Public sector bodies' procurement could be a considerable opportunity for decarbonising and reducing environmental impacts. When procuring assets which have the potential to have considerable embodied carbon or emit considerable carbon emission during transportation or their operating life – Fife Council will endeavour to estimate these emissions and for these high carbon procurement categories ensure that the embodied, transport and operating carbon emissions are considered in the procurement process and that low carbon options are prioritised.	Fife Council	Academia, consultancy	Other		Policy, direct	Ground-work (2020-22), Scaling-up (2023-25),	Yes		Yes
RE13	Monitor plastic pollution	Fife Council will support community groups and regulators to monitor plastic pollution on Fife's land and coastline; and will provide encouragement, support and publicity for community beach clean-ups.	Community groups, SEPA	Fife Council, community groups	Other		Support	Ground-work (2020-22), Scaling-up (2023-25),		Yes	

Carbon sequestration

ID	Action	Description	Lead	Partners	BEI sector	12-month action?	Activity type	Phase	Alignment with vision		
CS01	Review of sequestration, reforestation and rewilding options	Fife Council will undertake an urgent review to address the existing barriers to tree planting to significantly increase the number of trees within Fife over the next decade. The review should consider urban street trees as well as rural sites, and also identify vacant and derelict land that would be suitable for reforestation or other rewilding for use as a carbon sink, low carbon biomass growing, public open space and as part of a green infrastructure / climate adaptation plan. The plan will identify sensitive habitats and land to be protected from degradation to prevent it becoming a net emitter of greenhouse gases (i.e. peatland soils, saltmarsh).	Fife Council	SNH, Forestry Commission Scotland, Woodland Trust, SEPA, Scottish Water	Other	Yes	Policy	Ground-work (2020-22)	Yes	Yes	Yes
CS02	Develop a land strategy to manage Council land assets	In response to Action CS01 Fife Council will develop a land strategy (and costed plan) which will include how to best to use land resources to harness natural processes for absorbing emissions. This action forms part of Action LC05 above.	Fife Council	SNH, Forestry Commission Scotland, SEPA, Scottish Water, Scottish	Other	Yes	Policy	Ground-work (2020-22)	Yes	Yes	Yes

				Government, community groups, charities and other large landowners within Fife.							
CS03	Woodland and habitat management	Implement a plan to sustainably manage Fife woodlands held in public or common good ownership, including significant new woodland creation to absorb carbon emissions. Carry out any improvements as required to maintain the integrity of woodland, peatlands and saltmarsh to ensure that they continue to act as carbon stores, and do not become emitters of carbon dioxide because of habitat degradation.	Fife Coast and Countryside Trust, Fife Council	Forestry Commission Scotland, SNH, Woodland Trust, Scottish Government	Other		Direct, support	All	Yes	Yes	Yes
CS04	Support and co-ordinate Fife wide carbon sequestration opportunities	In addition to developing a strategy for carbon sequestration on Fife Council land, Fife Council will help other community planning partners including the University of St Andrews to investigate their own opportunities for carbon sequestration (for example assessing the feasibility for flue gas capture). Fife Council will seek to engage other major landowners within Fife to encourage them to use their land in a way which maximises carbon storage. This will need to consider the best carbon storage planting options for Fife; how to incentivise landowners to protect sensitive habitats; to rewild and reforest appropriately; and how to encourage "greening" as a house building requirement and given that established trees are much more effective at storing carbon than saplings, this should consider how to prohibit or at least	Fife Council	SNH, Forestry Commission, University of St Andrews, Scottish Water, Woodland Trust, landowners, developers Scottish Government, FCCAN, community groups,	Other		Support	All	Yes	Yes	Yes

		minimise, the removal of existing woodland and established trees for new development.									
CS05	Lobby government for additional funding and specialist technical support for carbon sequestration projects	Carbon sequestration projects are a marked departure from traditional local authority areas of expertise. Many carbon sequestration projects will be innovative and will require piloting at scale. Additional revenue will be needed from Central Government to allow this.	Fife Council	Scottish Government, Other local authority partners,	Other	Yes	Direct	Ground-work (2020-22), Scaling-up (2023-25)	Yes	Yes	Yes
CS06	Fife wide carbon sequestration / reforestation with Fife Actions under the Flood Risk Management (Scotland) Act 2009	Fife Council have obligations under the Flood Risk Management (Scotland) Act 2009 to mitigate the effects of climate change on flooding, the impacts of which are felt across society and the environment. Any sequestration / reforestation / rewilding projects will report their findings to Structural Services for consideration of impacts on flooding, so that lessons can be learned.	Fife Council	Scottish Water, SEPA, developers, Forestry Commission Scotland, SNH, Woodland Trust,	Other		Direct	Ground-work (2020-22), Scaling-up (2023-25)	Yes	Yes	Yes
CS07	Develop a carbon sequestration communication strategy	Develop a communication strategy to increase understanding of carbon storage and rewilding – and highlight the environmental, social, soil health, biodiversity, health/wellbeing, economic, air quality and flood risk mitigation benefits. Use more accessible language when describing sequestration so people understand it and aren't put off by it – perhaps use alternative terms such as "greening" or "carbon store". This could be linked to a greening fund to encourage reforestation / rewilding projects and a register of community projects. This could include rewilding / sequestration roadshows to support	Fife Environment Partnership (FEP)	Fife Council, Forestry Commission Scotland, SNH, Woodland Trust, Greener Kirkcaldy, CLEAR Buckhaven & Methil, Sustainable Cupar, St	Other	Yes	Direct, support	Ground-work (2020-22),	Yes	Yes	Yes

		community tree planting and local growing initiatives. This action forms part of action IC05 above.		Andrew's Environmental Network,							

Adaptation

ID	Action	Description	Lead	Partners	BEI sector	12-month action?	Activity type	Phase	Alignment with vision		
AD01	Produce and maintain a climate risk register	The Council and its community planning partners will produce a formal climate risk register incorporating the findings of the Risk and Vulnerability Assessment undertaken by Climate Fife.	Fife Council	Community planning partners, Local Resilience Partnership, Adaptation Scotland	Other		Policy, Direct	Ground-work (2020-22)	-	Yes	Yes
AD02	Produce a detailed climate change adaptation action plan	This adaptation action plan is high level only, the next step is to work with local partners to identify priorities for adaptation action (using the results of the RVA), and to develop and implement adaptation projects to address these risks.	Fife Council	SNH, SEPA, Community planning partners, Local Resilience Partnership, Adaptation Scotland, FCCAN,	Other	Yes	Policy, Direct	Ground-work (2020-22)	-	Yes	Yes

				community groups							
AD03	Review of sequestration, reforestation and rewilding options and their role in adaptation	Fife Council will undertake an urgent review to address the existing barriers to tree planting to significantly increase the number of trees within Fife over the next decade as reforestation in the appropriate location is a vital tool in reducing flood risk. The review should also identify vacant and derelict land that would be suitable for us as part of a green infrastructure / climate adaptation plan. This action is tied to CS07 above.	Fife Council	SNH, Forestry Commission Scotland, SEPA, Scottish Water	Other	Yes	Policy	Ground-work (2020-22)	Yes	Yes	Yes
AD04	Develop a land strategy to manage Council land assets	In response to Action CS01 Fife Council will develop a land strategy (and costed plan) to address how to manage Fife Council land assets in a way that will best respond to the climate emergency. This will include using Fife Council owned land to adapt to climate change and to ensure food security in the future. This action is tied to action LC05 above.	Fife Council	SNH, Forestry Commission Scotland, SEPA, Scottish Water, Scottish Government, NUF, Soil Association, Nourish Scotland, Permaculture Scotland, community groups, charities and other large landowners within Fife.	Other		Policy	Ground-work (2020-22)	Yes	Yes	Yes
AD05	Use risk-based	Use best-practice risk-based approaches (i.e. for adaptation, vulnerability, etc) rather than	Fife Council	Academia, Adaptation Scotland,		Yes					

	approach to target action	just SIMD to prioritise where adaptation action is needed first.		Local Resilience Partnership							
AD06	Support and co-ordinate Fife wide adaptation opportunities	A strong and healthy community is essential for resilience. Assist communities and community planning partners to build their own resilience to climate risks by supporting adaptation, local food, allotments, community energy, active travel, health and wellbeing and community cohesion projects.	Third sector, community groups	Fife Council, Local Resilience Partnership	All	Yes	Support	All	-	Yes	Yes
AD07	Produce and maintain an asset register of structures that Fife Council are responsible for which perform a flood defence function (both natural and manmade)	Work with SEPA under Section 19 (SEPA to prepare maps of artificial structures and natural features) and Fife Council obligations under Section 60 (Flood Protection Schemes) and Section 62 / 63 (Registers of flood protection schemes) of the Flood Risk Management (Scotland) Act 2009. All of which consider 'structures' that perform a flood risk function at a point in time but should include the potential to be adapted to reflect the needs into the future.	Fife Council	SEPA	Other		Direct and support	All	Yes	Yes	
AD08	Push for a stronger national and local planning position with regards to development adjacent to / on the current functional floodplain.	Fife Council will work with other local authorities to lobby Scottish Government and SEPA to produce a more precautionary approach to coastal flooding and the functional floodplain recognising that sea level rise could be more severe than currently mapped and that awareness / acceptance of the abandonment principle needs to be set now.	Fife Council	SEPA, Adaptation Scotland, Scottish Government , other local authorities	Other	Yes	Policy	Ground-work (2020-22)		Yes	

AD09	Tree assessments	Due to stormier conditions the health and structural integrity of trees along roads and near to houses will need to be assessed more frequently. As part of Street Tree and Woodland strategies, Fife Council will consider the most appropriate approach to tree assessment in the light of climate change impacts. This strategy will consider adaptation and sequestration. For example, if Fife Council owned trees are found to be unsafe and need to be felled then appropriate replanting would be recommended to ensure that biodiversity and carbon storage losses are minimised.	Fife Council	SNH, Forestry Commission Scotland, Woodland Trust, landowners	Other		Direct	Scaling-up (2023-25)		Yes	
AD10	Lobby government to update Building Standards to increase resilience	Fife Council recognises that the review cycle for Building Standards means that the current regulations are based on assumptions about weather and climate parameters that are now out of date. Building Standards must be updated to reflect the most recent science on the likely impacts of climate change in terms of wind loading, temperature and rainfall extremes. They should be updated to encourage the mainstreaming of adaptive measures such as urban greening (green roofs and walls), superinsulation, heavyweight construction, passive design, grey and rainwater recycling and considerable increases in drainage capacity and ability to withstand cloudburst events.	Fife Council	Other local authorities, Scottish Government, professional bodies	Other	Yes	Support	Ground-work (2020-22)	Yes	Yes	Yes
AD11	Training and development sessions for decision makers on local climate risks and	There is better understanding of climate change mitigation (i.e. cutting emissions) than climate change adaptation. It is vital that decision makers increase their understanding of climate risks and resilience building solutions. Workshops should be held to upskill decision makers and detailing the key risks by	Fife Council	Community Councils, Adaptation Scotland, Transition	Other	Yes	Support	Ground-work (2020-22)	Yes	Yes	Yes

	appropriate adaptation options	area committee, and by Council service (with heads of service) with agreement on appropriate solutions to reduce risks and maximise opportunities.		network, FCCAN							
AD12	Community resilience building	Fife communities will need to become more resilient to the physical impacts of climate change, but also potentially to food and energy supply disruption in the future. Working with partners Fife Council wants to understand what are the key factors that impact on vulnerability, and what factors are most important in increasing resilience. Fife Council will work with partners to consider existing examples from Transition Towns etc. Fife Council will use tools from the Levenmouth Adapts project, which were developed in partnership with Adaptation Scotland, to inform the Local Community Planning process, ensuring adaptation is a consideration in the plans.	Fife Council	Community Councils, Adaptation Scotland, Transition network, FCCAN, community groups	Other	Yes	Support	Ground-work (2020-22)	Yes	Yes	Yes
AD13	Food security programme	Fife Council will support local partners to develop a food-related programme of local projects to reduce Fife's vulnerability to the international food supply chain disruption which is predicted to become more commonplace because of climate change. Projects within this theme of work should look at local low carbon food supply options and addressing food poverty vulnerability. We need to make more land available for food growing and more support for local organisations and residents to make this happen. Projects under this programme should include expanding allotment provision, community gardens, food cooperatives, food banks, community kitchens, reforestation using edible	Community groups such as FCCAN, Greener Kirkcaldy, CLEAR Buckhaven & Methil, St Andrew's Environmental Network, Sustainable Cupar,	Fife Council, Community Councils, Adaptation Scotland, Transition network, Zero Waste Scotland, Soil Association, Permaculture bodies, Nourish Scotland, Permaculture Scotland	Other	Yes	Support and direct	All	Yes	Yes	Yes

		tree species, food-growing education projects for all ages and should link to food waste minimisation efforts being carried out as part of the Zero Waste Fife and Love Food, Hate Waste campaigns.									
AD14	Displacement programme	Review climate change displacement risks from long-term sea-level rise and other threats to Fife's available land, to review these risks, and to actively manage land use with a view to reducing the need for future displacement of activity and population.	Fife Council	Community Councils, Adaptation Scotland, Transition network, FCCAN, community groups, Fife Migrants Forum	Other		Direct	All	Yes	Yes	Yes
AD15	Use Fife's coast and countryside assets to tackle climate change	Fife Coast and Countryside Trust will continue to manage the Fife Coastal Path, Pilgrims Way and other coast and countryside assets for the benefit of Fifers and visitors in a way which will help respond to the climate crisis i.e. such as by including climate change adaptation, sequestration and mitigation. This action is tied to LC05	Fife Coast and Countryside Trust	Fife Council, SNH, SEPA, FCCAN, community groups	Other		Direct	All	Yes	Yes	Yes