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Transition to Net Zero Carbon Action Plan

Transition to a Net Zero Carbon Economy

Transport

Area of Collective Focus	Switchover to zero emission vehicles (ZEVs) in city fleets and public transport		
Background			
Potential GHG or CO_2 reduction by 2030	Edinburgh's Study on Economics of achieving net zero by 2037 indicates that investments in low carbon options in the transport sector at the city scale (through Private EV, Park and ride, Express bus network, Cycling, Demand management, Mild hybrid, Plug-in hybrid, Full hybrid, Biofuels, Micro hybrid, Electric, New railway stations, and Rail electrification) would reduce present emissions by 38-40% by 2030 and 67-73% by 2037 depending on the types of measures deployed.	**Potential Economic Uplift by 2030**	– Edinburgh's Study on Economics of achieving net zero by 2037 indicates that there would 3,391 (199 per year) new electric buses by 2037 – Edinburgh's Study on Economics of achieving net zero by 2037 indicates that investments in low carbon options in the transport sector at the city scale (through Private EV, Park and ride, Express bus network, Cycling, Demand management, Mild hybrid, Plug-in hybrid, Full hybrid, Biofuels, Micro hybrid, Electric, New railway stations, and Rail electrification) would generate between 2700-5000 new years of employment depending on the types of measures deployed.
Strategic Objective 1	**Support the growth of supply chains and innovation that capitalise on Scotland's strengths and supports sustainable economic growth**		
Key priorities	▪ Establish/Replicate a Hydrogen Supply Hub to ensure security of fuel supply based on current and planned initiatives (e.g. Aberdeen's planned Joint Venture with a commercial supplier of renewable hydrogen from on-shore or off-shore wind where it will provide anchor demand for hydrogen and allow Inverness, Dundee, Perth, and Stirling to utilise this hydrogen supply until fleets have sufficiently grown to warrant a separate hydrogen supply)		

	▪ Develop a joint procurement framework to support the deployment of zero emission vehicles and infrastructure (electric and hydrogen) and create greater critical mass to attract manufacturers of hydrogen technology companies
Activities	▪ Develop joint roadmaps for achievement of targets (such as plan for hydrogen refuelling infrastructure and electric charging) while co-ordinating with relevant national agencies and initiatives (for example Charge Place Scotland) ▪ Engage with business regarding opportunities for investing in hydrogen production in Scotland (consider collaboration with the Scottish Automotive Industry Advisory Group for this) ▪ Stimulate and support innovation to overcome deployment challenges for zero emission vehicles/ultra low emission vehicles (ULEV) ▪ Support Scottish innovation across the TRL levels, to include demonstration "flagship" projects to enable existing and new Scottish companies to secure market share in ZE HDV markets and the stimulation of ZE technology market development. ▪ Support structures for ZE economic development and innovation to ensure that the facilities and mechanisms are in place to support innovation, development and commercialisation associated with Scottish products and services in the ULEV market. ▪ Ensure that investments are aligned with other national transport priorities e.g. marine, aviation and marine transport
Best practices	<u>Aberdeen</u> o HyTrEc2 – Interreg North Sea Region: Deployment of hydrogen vehicles, green hydrogen production and storage, development of hydrogen refuelling stations and training. Further information is available here: Linkedin, Twitter o Hector – Interreg North West Europe: Hydrogen fuel cell waste truck, development of training and operational recommendations, business case for upscaling based on real life operational data. o JIVE – Fuel Cell & Hydrogen Joint Undertaking - 15 double-decker hydrogen buses – these will be operated by First Group Aberdeen. o FCCP – Interreg North West Europe: six fuel cell pedelecs cargo bikes for last mile delivery
Strategic Objective 2	**Support strategically coordinated investment in the charging network that enable wider energy and transport system benefits and efficiencies**
Key priorities	▪ Leverage greater private sector investment to support growth in public charging infrastructure (in line with advice from Transport Scotland) including for collective charging infrastructure in residential areas ▪ Work with electricity network operators to determine the impact on electricity grid from electrification of public fleets, and plan routes and infrastructure upgrades accordingly (this needs to be done in the broader context of shift to ZEVs in Scotland)
Activities	▪ Support charging infrastructure on strategic road networks for both inter and intra city use of ULEVs. ▪ Cities to determine optimum strategic role for provision of public charging infrastructure (provider or enabler)
Best practices	<u>Dundee</u> Along with providing Dundee with charging infrastructure, the council understood the requirement to provide regional infrastructure especially given that 40,000 weekly journeys into Dundee start from outside the city. Working in partnership with

	surrounding local authorities, the council developed the concept of EV "charging gateways" which links up the city's charging infrastructure with the wider region. Dundee City Council has installed 4 x 50kw chargers and 14 x 22kw chargers into the surrounding region allowing an EV charging network that is seamless and without boundaries.
Strategic Objective 3	**Ensure consumers and businesses benefit from affordable, reliable and accessible infrastructure that supports uptake of zero emission vehicles.**
Key priorities	▪ Leverage greater private sector investment to support growth in public charging infrastructure ▪ Develop and deliver large-scale on-street charging solutions for areas with high proportion of flatted properties ▪ Ensure that all new housing and retail developments have charging infrastructure ▪ Work with retail, business and transport operators to ensure charging infrastructure is provided at key locations where vehicles are parked and which supports modal shift
Activities	▪ Ensure charging infrastructure on strategic road networks within own boundaries ▪ Create joint procurement frameworks for charging infrastructure ▪ Work with electricity network operators to determine the impact on electricity grid from electrification of public fleets, and plan routes and infrastructure upgrades accordingly (this needs to be done in the broader context of shift to ZEVs in Scotland)
Best practices	**Scottish cities** <u>Dundee</u> Dundee has the largest number of electric vehicles in fleet than any other local authority in UK. The council offered free charging for first two years and used its regulatory powers to encourage taxi operators to switch to electric taxis. There are now a total of 108 electric taxis operating in Dundee which is almost 15% of all taxis operating in the city. **UK** <u>London</u> London's environment strategy of May 2018 commits to the following: – All vehicles zero emission by 2050 – Zero emission bus fleet by 2037 and all taxis and private hire vehicles to be zero emission capable by 2033. – All new double deck buses procured in London will be hybrid, electric or hydrogen from 2018. All new single deck buses will be electric or hydro-gen from 2020. – Reduce emissions from rail, river and aviation transport – Since 2018, all newly licensed black taxis must be zero emission capable. <u>Leicester</u>

	Leicester councils have embedded Low Emission Vehicle specifications into their procurement policy. The policy considers vehicles that meet Euro emission standards or equivalent at the time of purchase. **International examples** ▪ Several transit authorities in the Los Angeles region collaborated with the State of California to develop a state-wide joint procurement schedule and maximise economies of scale. A similar approach was taken in Washington State and in India. ▪ Chinese cities like Shenzhen and Guangzhou that have already entirely transitioned their bus fleets ▪ The City of Stockholm and Swedish utility company Vattenfall, together with procurement agency SKL Kommentus Inköpscental AB, carried out joint procurement resulting in framework agreements for electric vehicles (pure electric vehicles and plug-in hybrids) from four different suppliers. Public bodies and private companies were invited to join the procurement consortium. This resulted in a total of 335 partners/buyers stating a requirement for an estimated purchase volume of 1,250 electric vehicles per year.
Strategic Objective 4	**Incentivise the uptake of ULEVs while supporting NTS priorities and sustainable transport outcomes**
Key priorities	▪ Phase out petrol and diesel cars in fleets by 2025 in line with Scottish Government's Programme for Government ▪ Phase out all petrol/diesel vehicles from council fleets by 2030 ▪ Switch over buses and HGVs to zero emission technologies such as battery electric, fuel cell electric and hydrogen including (i) committing to procurement of only zero carbon buses from 2025 where appropriate and (ii) achieve a full zero carbon fleet by 2035 ▪ Formulate Zero Emissions Zones that phase in bans to petrol and diesel vehicles by 2030 ▪ Carry out fleet rationalisation activities and work with other agencies in the city to encourage collective ownership of fleets (for example with police, health services, and universities)
Activities	(Activities in bold are priority and necessary activities) ▪ Work collaboratively to launch and promote coordinated messaging at both a national and city region level to incentivise the update of ULEVs in cities by both businesses and citizens ▪ Ensure policies that promote uptake of ZEVs are aligned to objectives of sustainable transport in line with own local conditions ▪ Incorporate requirements for or setting standards for zero emission vehicles in (i) procurement of transport services for local government (such as staff transport, and logistics services), (ii) procurement of municipal services (such as refuse collection, street sweeping, multi-purpose body vehicles for road maintenance and outsourced public services), and (iii) in all council procurement (such as minimum proportion of total miles travelled (in delivering a contract) that will be zero emission ▪ Require that taxis and private hire companies across all cities transition their vehicles to non-fossil fuels ▪ Co-ordinate with Charge Place Scotland and build on experience emerging from projects currently being undertaken to promote the adoption of common methods of EV charging access and payment across the cities (e.g Dundee MILL Project).
Best practices	**Scottish cities**

	<u>Aberdeen</u> ○ Joint Procurement Framework for H2 HGVs and vans retrofitting under the one already being coordinated by Aberdeen City Council on behalf of Highland Council, Aberdeenshire Council, Angus Council and various public sector bodies. ○ Joint Procurement Framework for fuel cell electric vehicles (HGVs, cars and vans) under the one being coordinated by Aberdeen City Council on behalf of Highland Council, Aberdeenshire Council, Angus Council and various public sector bodies such as SNH, SEPA, NHS Grampian, non-blue light Police Scotland, RGU, Aberdeen University, NESCol, etc. **UK** The new Dynamic Purchasing System (DPS) for procuring EV and Hybrid vehicle charging solutions launched by the Crown Commercial Services (CCS) in May 2020. A DPS is more flexible than a traditional framework and allows for new suppliers to be included, supporting innovation and providing access to new companies entering the marketplace /sector during the life of the DPS.
Strategic Objective 5	**Support a Just Transition and growth of new skills while minimising avoidable disruption**
Key priorities	▪ **Work with the private sector to develop e-mobility solutions within the Sustainable Travel Hierarchy**
Activities	▪ Work with (i) SDS on skills development to address skills gap, and (ii) relevant agencies suck as UKRI on R&D ▪ Build on experience emerging from projects currently being undertaken to support the development of city-wide EV or hydrogen based car clubs and share schemes, provide access to such vehicles to all citizens. ▪ Act as regional leads to promote active travel
Best practices	

Notes:

- If cities commit to procurement of only hydrogen based buses to ensure 100% of the bus fleet is non-fossil fuels from 2025, they will to be at par with commitments made by London, Greater Manchester, Liverpool, Birmingham and Oxford.
- The cities can consider signing up to C40 fossil fuel free streets declaration https://www.c40.org/other/green-and-healthy-streets.
- London, Greater Manchester, Liverpool, Oxford, and Birmingham are signatories to the C40 Cities Fossil Fuel Free Streets Declaration which requires cities to procure, with their partners, only zero-emission buses from 2025; and ensuring that a major area of the city is zero emission by 2030. The commitments of cities that are signatories to this declaration vary on the basis of their context and can be found at https://c40-production-images.s3.amazonaws.com/other_uploads/images/1426_FFF_ACTION_070120.original.pdf?1578400005
- The UK government is considering bringing forward the end to the sale of new petrol and diesel vehicles to 2035 under its Transport Decarbonising Plan 2020 aimed at net zero. Target of 2030 by the Scottish Government is more ambitious.

- The UK Government is currently inviting feedback on the *Decarbonising Transport: Setting the Challenge* document on how to reduce emissions from transport. It has plans to finalise the Transport Decarbonisation Plan 2020 aimed towards net zero by November 2020 (so that the plan was ready in time for COP26 in Glasgow). However, there may now be a change of timelines.

Useful resources:

- London's environment strategy https://www.london.gov.uk/sites/default/files/london_environment_strategy_0.pdf
- Clean Fleets, Procurement clean and efficient road vehicles http://www.cleanfleets.eu/fileadmin/files/documents/Publications/Clean_Fleets_Guide_-_Final___Nov_2014.pdf
- Transport for London, Sustainable fleet management guide http://www.tfl.gov.uk/cdn/static/cms/documents/fuel-and-fleet-management-guide.pdf
- Local measures to encourage the uptake of low emission vehicles GOOD PRACTICE GUIDE, June 2015 https://urbanforesight.org/wp-content/uploads/2015/07/LowCVP-Good-Practice-Guide-revised-compressed.pdf
- C40 How to shift your bus fleet to zero emission by procuring only electric buses https://www.c40knowledgehub.org/s/article/How-to-shift-your-bus-fleet-to-zero-emission-by-procuring-only-electric-buses?language=en_US
- C40 Good Practice Guide on Low Emission Vehicles http://c40-production-images.s3.amazonaws.com/good_practice_briefings/images/7_C40_GPG_LEV.original.pdf?1456788962
- Impact of Electrification of Auckland's Bus Depots on the Local Electricity Grid https://www.c40knowledgehub.org/s/article/Impact-of-Electrification-of-Auckland-s-Bus-Depots-on-the-Local-Electricity-Grid?language=en_US

Transition to a Net Zero Carbon Economy

Waste

Area of Collective Focus	Scale up circular economy initiative in cities		
Potential GHG or CO_2 reduction by 2030		**Potential Economic Uplift by 2030**	
Case Study	<u>Glasgow</u> ▪ Glasgow's Circular Glasgow programme is cited as a best practice in much of the literature on cities' pursuit of circular economy. ▪ Glasgow is participating in OECD's programme on economics and governance of circular economy in cities <u>London</u> ▪ London has set a target of cutting waste, and diverting surplus and unwanted items to useful purposes to achieve 65 per cent municipal waste recycling rate by 2030, and reducing CO2 emissions, and transitioning to a low carbon circular economy ▪ London has a circular economy roadmap ▪ London's environment strategy focuses on transition to low carbon circular economy ▪ The London Waste and Recycling Board supports set up by the Greater London Authority supports SMEs that want to make their processes more circular with their Advance London Business Support Programme. ▪ The Greater London Authority's Responsible Procurement Policy includes reference to the circular economy. <u>International examples</u> *Amsterdam* ▪ Amsterdam has successfully employed public procurement as a powerful instrument that leverages the purchasing power of the municipality to create a market for circularity. For example, through circular procurement, it was agreed that no new furniture would be supplied if existing furniture was still satisfactory. When new furniture was purchased, the supplier would take back the old furniture and assess, based on predefined criteria, if the furniture was still suitable for reuse, could be refurbished or had reached the end of its life cycle. Products that no longer met the criteria, were disassembled and parts would be reused for making new products. ▪ As of January 2018, the municipality of Amsterdam introduced a system of mailbox stickers. It is now only allowed to deliver unaddressed mail or newspapers if a mailbox carries a yes-yes sticker, rather than in the absence of a no-no sticker. This cuts back 34 kg of paper waste per household per year.		

	Brussels Regional Program for a Circular Economy The programme includes cross-functional measures (regulatory framework, direct and indirect aid, innovation, procurement contracts, employment, training, education); sector-based measures (construction, resources & waste, trade, logistics, food); and governance measures (strengthened cooperation between administrations)		
Direct actions	▪ Promote circularity in the built environment – from design, planning, and procurement, to construction, asset use and end-of-life. Thus ensuring buildings are designed and used flexibly and that retrofit or new construction projects have circular economy principles at the core, for example utilising , (recycled, reusable and bio-based materials, renewable energy solutions, and software to track raw material use. ▪ Commit to circular economy in all relevant council procurement such as city led construction initiatives, IT, food and drink, furniture, and textiles ▪ Establish circular economy/waste innovation hubs building on existing experience	**Benefits**	▪ Stimulate the market for circular economy products ▪ Stimulate new enterprises ▪ Job creation ▪ Opportunity to get value from manufacturing by-products or 'waste' resources' ▪ New revenue streams & increased competitiveness for Scottish businesses ▪ Promote innovative solutions to processing waste and supporting the circular economy ▪ Enhanced resilience of cities
Actions		**Outcomes**	
Short Term 2020 - 2022	▪ Review Zero Waste Scotland sponsored Circular Economy Initiatives to identify how cities, SG and other agencies can add value and support circular economy initiatives at scale. ▪ **Develop a joint circular economy action plan and approach** (building on the ongoing work with Zero Waste Scotland and in line with the Scottish Government's circular economy strategy) that sets out priorities, planned measures and joint circular economy procurement approaches **Step 1** i) Build on Transition to Net Zero Briefing Pack to identify what CE activity is already taking place/establish a baseline; and ii) Develop a governance model to track progress on circular economy activity.		

	iii) Set ambitious targets to attract investment in circular activities. ▪ Develop a joint approach to CE innovation, building on existing concepts from the cities (e.g. Edinburgh and Binn Eco-Park) ensuring national agencies are involved in the development of hubs. Cities can develop/establish different hubs based on local economy/opportunity and share learnings and work collaboratively to support other hubs via SCA Peer-to-Peer Network. ▪ Set ambitious targets to attract investment in circular activities ▪ Strengthen engagement with local citizens on the Circular Economy including facilitating more community involvement in practical initiatives, for example through support for city-wide sharing platforms and reuse and repair infrastructure. ▪ Take steps to align with the Household Recycling Charter Code of Practice. ▪ Build networks and share information to raise the knowledge levels of local stakeholders	
Medium Term – 2020 - 2025	▪ **Circular Economic Action Plan and Approach** **Step 2** – i) Develop bespoke action plan for each city with common themes to enable cities to share learning through SCA Peer-to-peer network. Co-development of actions plans is essential involving council, business community, third sector, community representatives, and considering how the agencies can support delivery of actions. ii) Ensure targets for attracting investment in circular activities are supported by priorities in action plan. ▪ Understand and develop business cases for CE projects, ▪ Leverage economic support as required to help circular initiatives overcome financial barriers.	

	▪ Build ownership and understanding of opportunities from circular economy across departments and agencies through campaigns and capacity building supported by SCA Peer-to-Peer Network. ▪ Develop and deliver circular economy education strategy across councils, in collaboration with agencies involved in the CE Skills Hub (eg SDS). Link to CESAP. ▪ Leverage procurement through incorporating circular criteria in tenders to promote and pursue circular economy. ▪ Establish tools, activities and collaborations to support and encourage businesses towards circular operations. ▪ Engage Scottish and UK governments/legislators where legal barriers emerge for low hanging-high impact initiatives ▪ Improve recycling rate including taking steps to maximise food waste collections and promote poorly performing recycling services.	
Longer Term – 2020 - 2030	▪ **Circular Economy Action Plan and Approach** **Step 3** – Actively using governance model to track progress on impact of Circular Economy Action Plan and modifying approach accordingly. ▪ Develop provision of recycling services for a wider range of materials (for example, textiles, waste electrical and electronic equipment (WEEE)) and consider innovative, collaborative solutions to address this. ▪ Work collaboratively to attract investment in waste reprocessing services/facilities.	▪ Businesses in Tayside (comprising the council areas of Angus, City of Dundee and Perth & Kinross) that adopt circular economy practices could achieve economic benefits of around £404 million across four sectors through: – Construction and the built environment sector – £185 million – Energy infrastructure sector – £186 million – Manufacturing sector – £19 million – Food and drink sector, and the wider bio- economy – £14 million Demonstrate the impact Scottish Circular Economy Action Plan is having across Scottish Cities in terms of the following national targets:- By 2025:- •reduce total waste arising in Scotland by 15% against 2011 levels •reduce food waste by 33% against 2013 levels

		•recycle 70% of remaining waste •send no more than 5% of remaining waste to landfill By 2030: Match EU ambition for all plastic packaging to be economically recyclable or reusable.

Notes:

- Deconstruction criteria pertains to dismantling existing buildings in a manner that there is selective removal of structural components like window frames and doors. By doing so, materials and components of old buildings can be maintained at higher values.
- Cities can also commit to zero waste pledges or develop zero waster strategies. C40 cities that have signed the advancing zero waste declaration have pledged to the following:
  - reducing the municipal solid waste generation per capita by at least 15% by 2030 compared to 2015; and
  - reducing the amount of municipal solid waste disposed to landfill and incineration by at least 50% by 2030 compared to 2015, and increase the diversion rate away from landfill and incineration to at least 70% by 2030.

  Information on this declaration and what cities have pledged to as well as their actions can be found at https://c40-production-images.s3.amazonaws.com/other_uploads/images/1925_Brochure_waste_031019.original.pdf?1570116127 https://c40-production-images.s3.amazonaws.com/other_uploads/images/2347_DECLARATION_PROGRESS_WASTE_160919.original.pdf?1568618444

Useful resources:

- City governments and their role in enabling a circular economy transition: An overview of urban policy levers https://www.ellenmacarthurfoundation.org/assets/downloads/CE-in-Cities_Policy-Levers_Mar19.pdf
- Amsterdam's Circular Economy Roadmap: Lessons Learned and Tools for Upscaling https://www.c40.org/case_studies/amsterdam-s-circular-economy-roadmap-lessons-learned-and-tools-for-upscaling
- Municipality-led circular economy case studies https://www.c40.org/researches/municipality-led-circular-economy
- OECD, The Circular Economy in Cities and Regions http://www.oecd.org/cfe/regional-policy/Circular-economy-brochure.pdf
- Zero Waste Scotland, Circular Economy Opportunities: Tayside, October 2018 https://www.zerowastescotland.org.uk/sites/default/files/ZWS_Tayside_v16.pdf

Transition to a Net Zero Carbon Economy

Low carbon heat for buildings

Area of Collective Focus	Extending district heating (and cooling) systems to all buildings based on the standardised approach to low carbon heat planning policy across the cities		
Potential GHG or CO2 reduction by 2030		**Potential Economic Uplift by 2030**	– Scottish Renewables study on heat network growth suggests that local economies can receive a boost from heat network investment because civil engineering (the digging of trenches and the laying of pipes) accounts for roughly 40% of a network's capital costs, often using skills that are sourced locally. – Scotland also has several UK leading companies at the forefront of largescale heat pump design, manufacture and installation.
Case Study	London, Bristol, Liverpool and Leeds have leading initiatives International *Copenhagen* Copenhagen has a district heating network that covers all buildings. The city has committed that by 2025, the Greater Copenhagen Utility (HOFOR) will make the system carbon neutral by transitioning from coal, oil, and natural gas to sustainable biomass. To produce carbon neutral heating, HOFOR will replace fossil fuels at large combined heat and power (CHP) plants with wood pellets from sustainably grown forests. It will also deploy large-scale heat pumps that run on wind energy and geothermal energy and incorporate heat storage provided by large water tanks. *Vancouver*		

	Vancouver's Vancouver Neighbourhood Energy Strategy is rolling out low carbon district heating and cooling systems in the city. Under this strategy, neighbourhood renewable energy systems supply centralized heating, hot water, and sometimes cooling for multiple buildings. The strategy serves the dual purpose of converting existing fossil fuel-based district heating systems to run on low carbon fuel sources, such as wood chips, and building new district heating systems to serve both new developments and existing buildings.		
Direct actions	▪ Commit to decarbonising heat used in the city by 2030	**Benefits**	▪ Opportunities for district heating investment ▪ Reduced heating costs ▪ Better physical and mental health outcomes through warmer homes ▪ Mitigate fuel poverty ▪ Revenue stream to the cities from the sale of heat to connected buildings ▪ Enhance energy security and resilience ▪ Adapt to the changing climate and warmer temperatures
Actions		**Outcomes**	
Short Term 2020 - 2022	▪ Review and refresh previous Alliance activity on Local Heat and Energy Efficiency Strategies (LHEES) to plan for heat decarbonisation of buildings ▪ Review the Heat Networks Regulation Bill going through the Scottish Parliament to (i) consider the potential benefits this might bring for cities on low carbon heat, (ii) to identify the secondary regulation that will be required to ensure the bill is actionable, and (iii) to consider the impact on resources of cities to manage the new responsibilities that the Bill puts upon local authorities. ▪ Develop a joint action plan ▪ Identify policy changes required within cities to achieve targets		

	▪ Engage with Scottish Government for the revision of Scottish Planning Policy and Building Regulations to encourage the use of heat networks in new build developments or during major renovations (within the context of other low carbon/zero carbon technologies such as Passiv Haus design, solar PVs and heat pumps) ▪ Review lessons learnt from pilots and initiatives across all cities to build a heating system that delivers across all low or zero carbon energy technologies available and planned (including Hydrogen) under Scotland's energy plan ▪ Conduct joint studies to understand the technical potential and feasibility of recovering/generating heat from the range of sources available to cities ▪ Set up knowledge exchange forum/practices between cities ▪ Raise public awareness: of the benefits of heat networks and ambitions to increase their use. ▪ Review National Comprehensive Assessment detailing potential Waste Heat Network opportunities when the report is published early 2021 with SG/UK Govt as a route to accelerating delivery of opportunities in Scottish cities.	
Medium Term – 2020 - 2025	▪ Promote and support skilling of contractors in heating and building trades on heat decarbonisation options ▪ Design and use communications initiatives to showcase buildings where district heating initiatives are deployed stock, non-council housing and buildings) ▪ Prepare joint business models, financing and funding strategies for district heating projects building on existing experiences and challenges	

	▪ Investigate options to create joint Energy Services Company(ies) (ESCo) to help coordinate planning, funding, operations, and delivery of projects	
Longer Term – 2020 - 2030	▪ Phased roll out of district heating to all buildings	▪ Scottish Renewables has identified 46 potential heat network projects across Glasgow, Edinburgh, Aberdeen, Dundee, Stirling, Inverness and Perth. If built using low-carbon heat from day one, projects would avoid 100,000 tonnes of carbon emissions per year. ▪ Scottish Renewables estimates that with the right policy environment, the heat networks identified by it could grow to meet 8% of Scottish Heat demand, saving one million tonnes of carbon emissions per year – the equivalent to c.10% of emissions from buildings in Scotland

Notes:

- The Department for Business, Energy & Industrial Strategy (BEIS) is developing policy options for the development of a regulatory framework for heat networks. It plans to establish OFGEM as the heat network regulator, require heat networks to report on price and quality of service standards as well as ensure all heat networks become low carbon by 2030. The policy proposal closes for consultation on June 1, 2020 and is available at HEAT NETWORKS: BUILDING A MARKET FRAMEWORK https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/878072/heat-networks-building-market-framework-condoc.pdf
- The Association for Decentralised Energy is a trade association for decentralised energy, representing more than 160 interested parties from across the industrial, commercial and public sectors. Several councils are members of this Association.

Useful resources:

- Vancouver https://vancouver.ca/green-vancouver/neighbourhood-energy-strategy.aspx
- The Association for Decentralised Energy's good practice guide for local authorities https://www.theade.co.uk/resources/guidance/district-heating-good-practice-guide-for-local-authorities
- Renewable energy in district heating and cooling: Case Studies from the International Renewable Energy Agency https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2017/Mar/IRENA_REmap_DHC_Case_Studies_2017.pdf?la=en&hash=963DB0F2449088164CAB724EC4CA8BAEB21D1141

Transition to a Net Zero Carbon Economy

Non-domestic energy efficiency and low carbon power generation in city assets

Area of Collective Focus	Improve energy efficiency of buildings owned by cities followed by addition of low carbon power generation		
Potential GHG or CO2 reduction by 2030		**Potential Economic Uplift by 2030**	– Dundee has implemented energy saving measures on buildings: savings in the first year of 900 $tC0^2e$ and £260,000
Case Study	<u>Bristol</u> – Delivered an energy efficiency programme which has cut emissions in the council's buildings by 60%, achieving the council's 2020 carbon reduction target three years ahead of schedule. – Nearly £2m invested in energy efficiency refurbishments across council-owned buildings delivering £1m annual savings on energy bills. – Refurbished museum and heritage buildings implementing high standards or energy efficiency through top of the range LED lighting and intelligent heating controls – Installed energy efficient street lighting across the entire city council portfolio <u>London</u> London's Retrofit Accelerator - Workplaces (also referred to as RE:FIT) as established in 2009 to make London's non-domestic public buildings and assets more energy efficient. The programme not only reduces carbon emissions but also results in large guaranteed energy savings for the public sector https://www.london.gov.uk/what-we-do/environment/energy/energy-buildings/retrofit-accelerator-workplaces <u>International examples</u> Paris' primary and pre-schools comprise more than a quarter of all city-owned buildings. As a result, the Climate Plan of 2007 created the School Retrofit Project to tackle energy efficiency in schools. The City established a dedicated team tasked with retrofitting schools in order to reach the target of 65GWh of energy savings per year. https://www.c40.org/case_studies/paris-school-retrofit-project-tackles-energy-efficiency-in-public-schools		
Direct actions	▪ Follow a three-step approach that is based in o Can energy efficiency be made? How much?	**Benefits**	▪ Lower energy bills freeing up funds for other projects

	○ Is addition of a renewable source appropriate? ○ Which is the most suitable renewable source? ▪ Set energy efficiency targets with the objective of achieving the benchmarks laid down by the Scottish Government by 2040 ▪ Undertake to monitor and publicly report in-use energy consumption of their buildings against targets ▪ Shift remaining building energy supply (including heating and cooling) to renewables ▪ Prioritize the use and retrofit of existing building stock to reduce the demand for new buildings ▪ Apply net zero carbon building standards by 2030 for all new assets ▪ Commit to net zero carbon in operation, by 2040 for all new assets		▪ Improved health and well-being of employees ▪ Reputational driver for cities ▪ Retrofits, renovation and construction in order to ensure delivery of low-carbon, energy-efficient non-domestic buildings will be a new growth area, spurring job creation ▪ Support energy efficiency in other sectors through demonstration effect, creation of a market for energy efficiency solutions and lowering risks amongst private investors ▪ Optimise the use of electricity within a smart energy network and maximise its value to the organisations deploying them.
Actions		**Outcomes**	
Short Term 2020 - 2022	▪ Develop a joint action programme building on the Scottish Government's non-domestic energy efficiency framework ▪ Investigate how smart energy systems technologies within a decentralised energy model utilising energy trading could reduce energy demand from the grid and reduce energy costs ▪ Establish requirements and benefits of smart energy systems ▪ Work with Scottish Government (which is aiming to do work on the benchmarking of public sector buildings in 2021) to assess energy efficiency potential in all buildings owned by cities to set baseline and targets		

	▪ Work with Scottish Government to understand and align with the mandatory performance-based rating scheme for non-domestic buildings being developed by UK Department of Business, Energy and Industrial Strategies ▪ Develop a plan to embed energy efficiency as a priority across departments within the city ▪ Enact/amend regulations and/or planning policies that are aligned to targets ▪ Replace all streetlights with energy efficient lighting systems and explore opportunities for future smart intelligent lighting building existing programme of activity across cities in the SCA's 8th City ERDF Programme. ▪ Assess feasibility for deploying solar energy on all city owned buildings and their integration into smart energy systems. ▪ Awareness campaign within the city's own departments to get support and seek behaviour change ▪ Build awareness and engagement to help people fully understand how plans and initiatives will benefit the cities and why it is worth the investment.	
Medium Term – 2020 - 2025	▪ Develop ready-made or 'turn-key' solutions ▪ Use city assets as testing sites for innovative technology, inviting industry to trial new technology and approaches on city buildings by drawing upon experiences and current projects in cities eg. Perth Smart Energy City Programme ▪ Link and deploy energy efficiency strategies under Local Heat and Energy Efficiency Strategies ▪ Develop approaches for financing energy efficiency ▪ Test models for delivering smart energy systems.	

Longer Term – 2020 - 2030	▪ Complete energy efficiency retrofits in all buildings ▪ Introduce renewable energy and smart energy systems across prime city buildings with a clear plan for moving forward on other assets ▪ Establish best practice for implementing smart energy systems across Scotland ▪ Report in-use energy consumption of buildings against targets	– All buildings under city ownership achieve energy efficiency targets

Notes:
C40's Municipal Building Efficiency (MBE) Network supports city efforts to improve the energy efficiency of the buildings they own, lease, and manage.
https://www.c40.org/networks/municipal-building-efficiency

Useful resources:

- https://www.c40knowledgehub.org/s/article/Accelerating-Municipal-Building-Efficiency-Technical-Assistance-Six-C40-City-Case-Studies?language=en_US