



| Offshore Wind Turbines, Aberdeen, Scotland. Source: Aberdeen City Council

CITY LEVEL CLEAN AND JUST ENERGY TRANSITION

A HUMAN-CENTRED APPROACH

A report prepared for Phase 1 of the Aberdeen Clean and Just Energy Transition project.

ABOUT US

About the Aberdeen City Council

Aberdeen is a city with a population of around 200,000 people and as local authority, Aberdeen City Council is responsible for its planning, infrastructure, and services. The Council recognises the need to reduce emissions to play our part in limiting global emissions, preparing for the impacts of a changing climate, and transitioning towards net zero.

The Council is involved in a Net Zero Leadership and Delivery Unit, which leads on the Net Zero Aberdeen framework, setting a pathway towards becoming a net zero city by 2045. We have also worked with local organisations on Aberdeen Adapts, the associated approach for adapting to changes creating a more climate resilient Aberdeen. At the same time the city, long renowned as an energy hub, looks to lead on a just energy transition through leveraging its unique cluster of assets, resources and supply chain capabilities to advance opportunities in offshore wind, hydrogen production and carbon capture and storage.

About bp

bp is one of the world's largest energy companies, delivering energy solutions across its operations in Europe, North and South America, Australasia, Asia, and Africa. bp's purpose is reimagining energy for people and our planet, and it aims to be a net zero company by 2050 or sooner and support the world get to net zero. Aberdeen has been home to the company's North Sea operations for more than 50 years.

About the World Energy Council

The World Energy Council is the world's oldest independent and impartial community of energy leaders and practitioners. Through our Humanising

Energy vision, we are working to involve more people and communities in accelerating clean and just energy transitions in all world regions. Formed in 1923, the Council convenes diverse energy interests, with over 3,000 member organisations in around 90 countries, drawn from governments, private and state corporations, academia and civil society.

We effectively collaborate on breakthrough impact programmes and inform local, regional and global energy agendas in support of our enduring mission: to promote the sustainable use and supply of energy for the benefit of all people. The Council convenes leadership dialogues including the World Energy Congress to enable new collaborations and drive to impact and it provides a range of practical tools and briefings to help its members and wider stakeholders define and better manage energy transitions including the World Energy Trilemma Framework.

| City Views, Aberdeen, Scotland. Source: Aberdeen City Council

ABOUT THE PROJECT

In May 2022, the Aberdeen Clean and Just Energy Transition project was established in collaboration with the World Energy Council, bp and Aberdeen City Council (ACC). This partnership was set up with the goal of discovering and building upon previous work relating to clean and just energy transition, aligned with the transition principles of the Scottish Government.

Contributing to the knowledge base of energy transition was deemed an important step in extending the ongoing work in the city of Aberdeen. The scope of the project is 1) to provide a knowledge base of outcomes and key learnings around issues of a clean and just energy transition through the rapid evidence research outputs and 2) to explore citizens' perspectives of the clean and just energy transition to inform further action plans into additional work on the clean and just energy transition in Aberdeen, Scotland.

This report focuses on task 1, with outcomes of a rapid evidence review on existing relevant literature on how to achieve an inclusive and just energy transition in energy cities with focus on key characteristics for an energy city like Aberdeen.

The complete outcomes of the Aberdeen Clean and Just Energy Transition project, including the full and summary reports of task 1 and insights from world-wide place-based clean and just energy transitions can be found [here](#).

Aberdeen Citizens' Perspectives for a Clean and Just Energy Transition, January 2023.

Published by the World Energy Council.

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EXECUTIVE SUMMARY

The Scottish Government has recognised the urgency and opportunity to lead a transformative energy transition in support of its plan to build a resilient economy that is clean, just, and inclusive. This momentous plan calls for country-wide alignment from government, communities and the economy and proposes ambitious targets for Scotland's cities. Specifically in Aberdeen, Scotland's third most populous city, this entails pursuing a rapid shift to a low-carbon economy that is set to position the city as Europe's energy transition capital.

Aberdeen's Net Zero Vision (Aberdeen City Council, 2020a) leverages a city-level response to the environmental imperatives of energy transition, capitalising on the unique assets and capabilities of the city's community and systems to drive economic prosperity through just transition beyond Scotland and Europe.

“Scotland is perfectly placed to lead the development of a green energy revolution. We are already at the forefront of the global development of offshore wind, as well as being world leaders in wave and tidal energy technologies. Others, such as hydrogen also promise to be game changers for our economy. [...] The decades ahead must be a just transition and that means we must not leave anyone behind. We must ensure this economic transformation is managed fairly for workers in existing industries and the communities they support.”

Richard Lochhead, Minister for Just Transition, Employment and Fair Work, The Scottish Government

This report focuses on exploring the existing energy transition knowledge base to support a clean and just energy transition in the city of Aberdeen.

PLACE-BASED CLEAN AND JUST ENERGY TRANSITIONS

The Scottish Government (2021b) defines a just transition as “both the outcome – a fairer, greener future for all – and the process that must be undertaken in partnership with those impacted by the transition to net zero. Just energy transition is how we get to a net zero and climate resilient economy, in a way that delivers fairness and tackles inequality and injustice.” By including elements of inclusiveness and fairness, this definition provides a representative frame of the current progress and global understanding of just transition principles and objectives and is used in this report as the primary definition of the term.

The existing literature, based on normative guidelines, presents practical mechanisms to achieve just transitions. These mechanisms have been outlined into a conceptual framework around, which current knowledge and practice of delivering just transitions can be understood:

- **Achieving equity** – Enabling transformational change to create wealth and improve livelihoods, while recognising needs and diversities across all community groups.
- **Building resilience** – Preparedness to withstand shocks and respond to change without putting socio-economic wellbeing at risk.
- **Empowering communities** – Promoting participatory processes and collective wealth building and strategies to meet needs voiced by community members.



ACHIEVING EQUITY

Communities across the world are experiencing energy transition differently, based on the social, cultural and economic constructs of their societies. Achieving better economic opportunities, improved livelihoods, and enhanced prosperity for all in energy transitions requires close examination of the linkages between energy systems and the social mechanisms that drive communities to prosper. Literature is still inconclusive on the set of metrics and mechanisms that can help address this issue. Still, the evidence reviewed suggests that the shortcomings with just transition pathways stem from a failure to devise whole systems approaches that deliver to different places and needs, leading to poorer outcomes because of uninformed, socially exclusive decisions. Mechanisms used to address these issues are quite diverse but tend to address issues such as inclusion of disadvantaged or minority groups and place-based action. Understanding how transitions affect different communities and engaging diverse players in devising solutions are initial steps which have proven to help deliver positive socio-economic impact.

BUILDING RESILIENCE

Building community resilience is crucial to a just transition. This requires careful planning, both in the short and long term. Understanding what skills are required in the low carbon energy system, how they can be built and how transferable they are from existing industries is critical. This is especially important for fossil fuel industries such as oil and gas, where focusing on skills mobilisation and development can create opportunities to enhance workforce resilience and job retention. The practice of cities, countries, and regions to enhance community resilience to navigate transitions builds on principles of advance and collaborative planning and delivery. Innovation is accelerating rapidly, and the ways of working have changed immeasurably with the advent of technological solutions for collaboration and co-creation. While advance planning helps communities to better prepare for challenges and opportunities ahead, collaborative approaches help to ensure that plans can deliver on meeting the needs of unique local situations. Together, these principles have helped just transition initiatives to deliver resilience and build mechanisms to counter challenges emerging at different stages of the transition process.

EMPOWERING COMMUNITIES

Participatory processes empower communities by building collective capital. Open dialogues between workers, employers, and government engender trust between community members, as well as institutional trust. The mechanisms that facilitate this change include models of community wealth building, projects for communal well-being, and community energy projects, generating resilient communities with an embodied understanding of the common good. There is still little clarity globally on systematically enabling community participation in energy transitions. While bottom-up energy leadership is still to become an evident trait of just transitions, this is a crucial area to ensure justice is equally spread among society's multifaceted needs. Energy literacy initiatives are often used to empower bottom-up leadership and promote community engagement. By expanding awareness of the demands and changes brought by the transition, communities are more empowered to participate and engage in the transition process.

MOVING FORWARD

The evidence and research around just transition is evolving rapidly. Inclusive energy transitions may create more socio-economic opportunities for workers and community members. The success of initiatives is likely to depend on citizen awareness, further reinforcing the importance of participatory processes in designing future communities. Understanding the most effective ways to build community resilience is an important part of enabling a just transition. At the same time, achieving a just transition requires a shared endeavour between governments, companies, unions, civil society, other stakeholders, with arguably more responsibility on governments to create the policy frameworks and enabling environment. As the evidence base matures and evolves, open questions around mechanisms that either catalyse or decelerate just transition will continue to unfold.



| City Views, Aberdeen, Scotland. Source: Aberdeen City Council



INTRODUCTION

Scotland is in the midst of a clean energy transition as it moves away from an oil and gas-based economy and strives to achieve its regulatory target of net zero by 2045¹. The Scottish Government has recognised the extent of the societal damage caused by previous Scottish energy transitions and has committed to delivering a just energy transition to net zero.

In 2019 the Scottish Government set up an independent Just Transition Commission, with a remit to advise on how just energy transition principles can be applied in Scotland. This Commission drew on lessons learned from previous transitions and community engagement events² to provide actionable recommendations, delivered in 2021 (Pinker, 2020; The Scottish Government, 2021a). The Scottish Government appointed Minister for Just Transition, Employment and Fair Work, responded with a statement of intent, vision, key principles, planning framework and intended outcomes for a just energy transition in Scotland (The Scottish Government, 2021b). This intent aligns well with wider just energy transition theories and key principles, going beyond worker-oriented thinking, and incorporating human-centric thinking and justice concepts.

It defines a just energy transition as “both the outcome – a fairer, greener future for all – and the process that must be undertaken in partnership with those impacted by the transition to net zero. Just energy transition is how we get to a net zero and climate resilient economy, in a way that delivers fairness and tackles inequality and injustice.”

The Scottish Government appointed a second independent Just Transition Commission, to provide scrutiny and advice on jointly developed key just energy transition plans. The first of these – an Energy Strategy and Just Transition Plan³, was released in draft format in January 2023. This ongoing work provides a framework and potential funding sources that the city of Aberdeen will be able to draw on.

WORK TO DATE ON JUST TRANSITION IN SCOTLAND

The National Just Transition Outcomes⁴ and the principle of ‘Spreading the benefits of the transition widely, making sure the costs do not burden those least able to pay’, underlies actions already in place in Scotland. The efforts embedded within the transition outcome include record investment in energy efficiency and fuel poverty programmes and the establishment of Consumer Scotland⁵.

The country benefits from functioning social protection systems that are already in place to offset some of the transition costs to the poorest. These include the 2021 Fuel Poverty Strategy⁶, which sets out policies and proposals for national government, local authorities and third-sector partners to help ensure all citizens can have a warm, safe and affordable home. In assisting citizens, the Warmer Homes Scotland programme⁷ offers funding and support to households who struggle to meet the costs of energy. In further commitments, over £1.2 million⁸ has been made available to help key agencies such as Advice Direct Scotland, Home Energy Scotland and Citizen’s Advice Scotland, to channel consumer support and advice to address short-term energy cost challenges arising from rising energy bills.

Recognising that energy transition will affect people’s day-to-day lives and people play a key role in shaping these changes, the Scottish government’s response to the recommendations of the Just Energy Transition Commission included co-design and collaboration as a core objective and as a means “to build more resilient, healthy communities” (The Scottish Government, 2021b). The actions from these initiatives have created some

¹ <https://www.gov.scot/policies/climate-change/just-transition/>

² <https://www.webarchive.org.uk/wayback/archive/20210111130831/https://www.gov.scot/publications/just-transition-commission-community-engagement/>

³ <https://www.gov.scot/publications/draft-energy-strategy-transition-plan/documents/>

⁴ <https://consult.gov.scot/just-transition/scotlands-just-transition-outcomes/>

⁵ <https://www.gov.scot/groups/consumer-scotland/>

⁶ <https://www.gov.scot/publications/tackling-fuel-poverty-scotland-strategic-approach/documents/>

⁷ <https://www.homeenergyscotland.org/find-funding-grants-and-loans/warmer-homes-scotland/>

⁸ <https://www.gov.scot/news/additional-funding-for-energy-advice-in-face-of-rising-bills/>

collaborative partnerships, including the implementation of Green Participatory Budgeting with target levels of funding and, on land use, Regional Land Use Partnerships. Other direct responses dealing with the impacts of energy transition include support for the Citizens Assemblies, climate conversations and other community climate initiatives to help inform and support the development of just transition plans.

Scotland's vision for a fairer and greener Scotland by 2045 brings inclusive economic growth to build resilience, with the vision that directly involving a wide range of groups in the co-designing of solutions "will inevitably be a more robust and creative process of planning."

CLEAN AND JUST ENERGY TRANSITION CONTEXT IN ABERDEEN

In May 2022, the Aberdeen Clean and Just Energy Transition project was established in collaboration with the World Energy Council (WEC), bp and Aberdeen City Council (ACC). This partnership was set up with the goal of discovering and building upon previous work relating to clean and just energy transition, aligned with the transition principles of the Scottish Government.

Contributing to the knowledge base of energy transition was deemed an important step in extending the ongoing work in the city of Aberdeen.

The scope of the project was defined as:

- To provide a knowledge base of outcomes and key learnings around issues of a clean and just energy transition through the rapid evidence research outputs – Task 1.
- To explore citizens' perspectives of the clean and just energy transition to inform further action plans into additional work on the clean and just energy transition in Aberdeen, Scotland – Task 2.

This report covers Task 1 – the Rapid Evidence Review (RER) and aims to answer two questions:

1. *How to achieve an inclusive and just energy transition for a city like Aberdeen?*
2. *What strategies can help maximise the socio-economic opportunities in the move to a net-zero economy? And what measures can be implemented to better understand job implications for the energy transition and to support job security and transformation in a city⁹ like Aberdeen?*

Starting with the Aberdeen city profile, the report provides insights from place-based clean and just energy transition with relevance for Aberdeen. Areas for further investigations or studies have been identified and key learnings for further consideration, extrapolated from discussions with the World Energy community of experts, are included. The final chapters provide details of the methodology used, the experts involved, and the sources of knowledge gathered during the research process.

A separate engagement report commissioned to respond to Task 2 "Aberdeen Citizens' Perspectives for a Clean and Just Energy Transition", explores the diverse community perspectives of Aberdeen's citizens, capturing levels of energy literacy and engagement with a just and clean energy transition. Quantitative and qualitative engagement with a cross-section of over 150 Aberdeen citizens through surveys and focus groups provided rich insight on actions needed to advance a just and clean energy transition in the city.

⁹Aberdeen is Europe's Energy capital, serving not only the UK Continental Shelf (UKCS) but providing products and expertise to a global energy industry from West Africa to the Gulf of Mexico. It has an extensive Oil and Gas supply chain with industrial capabilities on its doorstep. Also, existing businesses are already involved in the renewables and offshore wind sector. 51,000 of Scotland's energy jobs (including renewables) are in the City Region (Aberdeen City Council, 2020a).

GLOSSARY

BOTTOM-UP ENERGY LEADERSHIP

Occurs when policy, projects and innovation are largely informed by end-user feedback. This can be enabled by community empowerment, participatory approaches, and using smart technology to communicate between industry and consumer.

(DIS)-ADVANTAGED COMMUNITIES

The extent to which a community, or a community's members, are able to adapt to the characteristics and requirements of a new job market and access opportunities to enhance their socio-economic circumstances.

ENERGY LITERACY

A combination of knowledge, attitudes, behaviours, and interventions with respect to energy, which support citizen participation, inclusion, and behaviour change.

ENERGY EQUITY

The extent to which citizens can access reliable, affordable, and abundant energy for domestic and commercial use. Includes basic access to electricity and clean cooking fuels and technologies, access to prosperity-enabling levels of energy consumption, and affordability of electricity, gas, and fuel.

ENERGY SECURITY

The capacity to meet current and future energy demand reliably, withstanding and bouncing back swiftly from system shocks with minimal disruption to supplies. Includes the effectiveness of management of domestic and external energy sources, as well as the reliability and resilience of energy infrastructure.

ENVIRONMENTAL SUSTAINABILITY

The transition of an energy system towards mitigating and avoiding potential environmental harm and climate change impacts. Focuses on productivity and the efficiency of generation, transmission and distribution, decarbonisation, and air quality.

JUST ENERGY TRANSITION

Scotland's definition of a just energy transition is both the outcome – a fairer, greener future for all – and the process that must be undertaken in partnership with those impacted by the transition to net zero. Just energy transition is how we get to a net zero and a climate resilient economy, in a way that tackles inequality and injustice and is fair to all.

WHOLE SYSTEMS THINKING

The appreciation of dependencies, competitions, relationships, and other types of societal interactions and how they may influence natural or planned outcomes, as opposed to a focus on specific behaviour of isolated parts of a system.

Source: World Energy Council, 2019; 2022a; 2022b



City Views, Aberdeen, Scotland. Source: Aberdeen City Council



CITY PROFILE

Located in the north-east of the country, Aberdeen is the **third most populous city in Scotland**, with a population estimate of 229,060, according to the June 2020 report from National Records of Scotland. The city's population is roughly equally split between male and female, although a higher proportion of males (84.7%) than females (77.7%) are economically active.

Since the discovery of North Sea oil in the late 1960s, Aberdeen has been known as the offshore oil capital of Europe. In the intervening time, the **traditional industries** of fishing, papermaking, shipbuilding, and textiles, have been overtaken by the oil industry and ancillary services that support it. Aberdeen Heliport is now one of the busiest commercial heliports in the world, and the seaport is the largest in the north-east of Scotland.

The University of Aberdeen, founded in 1495, is one of the **oldest universities** in the UK. Together with a second university, Robert Gordon University, located in the Garthdee area, which received university status in 1992, these centres of learning serve the community as hubs of information and knowledge.

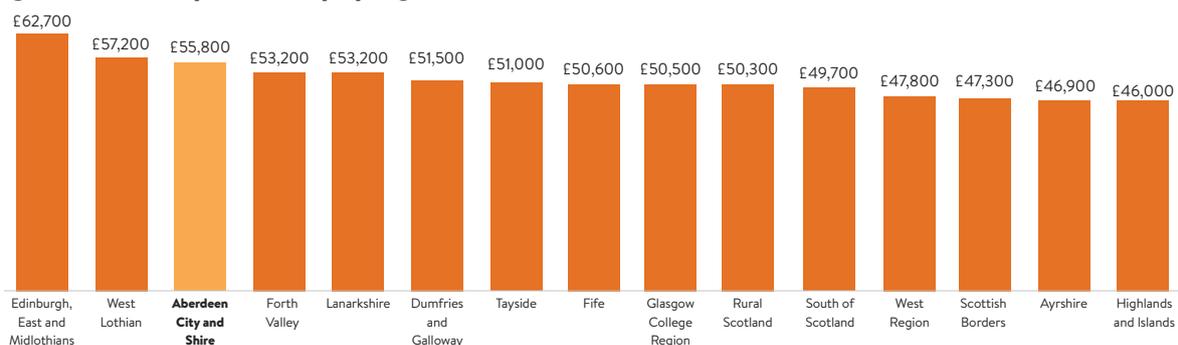
In terms of **cultural diversity**, the 2011 census data for Aberdeen City (based on a population of 222,793) indicated the country of birth of residents as: 75% Scotland; 10% Rest of UK & Ireland; and 15% Rest of World (6.4% EU). Notable is that one out of every four people in Aberdeen were born outside of Scotland, which is higher than the Scottish national average of 16%. 92% of the population is ethnically white, with the remaining 8% of Aberdonians from a non-white ethnic minority, including 4.3% Asian (1.5% Indian and 1% Chinese). Approximately 2.6% of the population has a Caribbean or African origin.

The 2021 Aberdeen City Population Needs Assessment provides helpful data on the population and some of the challenges in the city relating to energy, climate change, and wealth. In the year from July 2019 to June 2020, the **unemployment rate** in Aberdeen City was 2.7% (of those who were economically active). This was lower than the equivalent rate for Scotland of 3.3%. Along with other areas, Aberdeen has seen an increase in unemployment rates due to the widespread impact of the pandemic; however, it is too early to determine whether this will prove to be short-term or more long lasting.

Scotland's Regional Skills Assessment Aberdeen City and Shire (Skills Development Scotland, 2022) provides an overview of economic activity. **Gross Value Added (GVA)** is a measure of the value of goods and services produced in an area and is an indicator of the economy's health. In 2021, GVA was forecast to be £16,629m in Aberdeen City and Shire, or 11.3% of Scotland's output (£146,920m). From 2009-2019, GVA in Aberdeen City and Shire increased by 12.9% or £2,010m. Using the National Records of Scotland Mid-2020 Population Estimates, the population of Aberdeen City and Shire was 9% of Scotland's total, indicating the comparative strength of local industry.

Productivity is the measure of goods and services produced per unit of labour input. Based on forecasts as of October 2021, productivity in Aberdeen City and Shire was forecast to be £55,800. This was above the average for Scotland of £53,000, and third in terms of Scotland's regions overall (Figure 1, below). The region's productivity is largely driven by the sectoral mix that makes up its economy. 283,000 people were employed in Aberdeen City and Shire in 2021, around 14% of which were directly involved in energy.

Figure 1: Scottish productivity by region (2021)



Source: Skills Development Scotland (2022).

In terms of **energy industry employment**, data exists primarily for the oil and gas sector. According to the Population Needs Assessment (Community Planning Aberdeen, 2021), in 2019 it was estimated that the oil and gas industry directly employed around 30,600 people in the UK. Indirect employment (i.e., within the wider industry supply chain) was estimated at 121,000. A further 117,5000 jobs were supported through induced employment (i.e., those who are supported because of the wider economic activity stimulated by the oil and gas industry). In Aberdeen, energy is the second largest source of employment, with nearly 50% of the workforce employed in 'higher level' occupations, 30% in 'mid-level' occupations, and 21% in 'lower level' occupations (Skills Development Scotland, 2022). This extensive mapping of Aberdeen's current job market and workforce skills structure, including characteristics of those directly and indirectly related to energy, is a significant first step towards understanding workforce and job market needs in a just transition in the city.

Overall, in the UK, the total number of jobs supported by the oil and gas sector increased between 2018 and 2019 (from an estimated 259,000 in 2018 to around 269,000 in 2019). This was the first year-on-year increase since 2014. Oil and Gas UK (OGUK) estimated 30,000 jobs in the sector in the UK could be lost as a result of the COVID-19 pandemic and the low oil price arising from it, with around 10,000 of these in the North-East, including Scotland¹⁰. In their 2022 Economic Report, Offshore Energies UK (OEUK), the successor to OGUK, indicated the industry supports nearly 214,000 jobs (direct, indirect and induced), of which some 90,000 are in Scotland (OEUK, 2022). Since the start of 2022, oil and gas prices have recovered strongly sparking a windfall tax and increased scrutiny of industry investments in the UK in alternative energies, given record profits. In general, the volatility of oil and gas prices is felt very keenly in Aberdeen, with sudden downturns – such as the one that occurred in 2014 – resulting in direct job losses and consequential impacts on supply chain, hospitality, retail, and other sectors in the city and region.

The city contains **37 neighbourhoods** – small area geographies that are used (by Community Planning) to differentiate different areas of the city. The Scottish Index of Multiple Deprivations (SIMD) is the Scottish Government's official tool for identifying small area concentrations of multiple deprivation across Scotland. Following SIMD 2020, 13 of Aberdeen's neighbourhoods are recognised as deprived: Torry, Tillydrone, Seaton, Woodside, Middlefield, Cummings Park, Northfield, Heathryfold, Mastrick, Kincorth, Ashgrove, George Street, and Stockethill. Aberdeen City Council has a Local Outcome Improvement Plan¹¹ which includes targeted measures to some of these neighbourhoods defined as 'priority areas'.

Based on overall **rankings of deprivation**, Aberdeen City's position worsened between 2016 and 2020. The number of data zones in the 20% most deprived areas of Scotland has increased from 22 (out of 283) in 2016 to 29 in 2020, and the number of data zones in the 20-40% most deprived areas increased from 57 to 65. This means that the proportion of data zones in the 40% most deprived areas of Scotland has increased from 28% to 33.2%. Conversely, while lower than in 2016, Aberdeen City still has a relatively high number of data zones in the 20% least deprived areas of Scotland with 104 (36.7%) data zones in this category.

Between 2016 and 2018, an estimated 23% of households in Aberdeen were in **fuel poverty**, with 12% being in extreme fuel poverty. A higher proportion of those in social housing were in fuel poverty than those in owner-occupied housing (48% compared to 10%).

Aberdeen City acknowledges the importance of feeding **socio-economic indicators** such as access to transport, health outcomes, and better housing into the city's approach to net carbon zero (Aberdeen City Council, 2020b). The Net Zero Aberdeen Routemap¹² states that "increasing energy efficiency and effective use of resources will help to alleviate fuel poverty and deliver a 'just energy transition' protecting and sustaining income growth of those facing most socio-economic challenges." Aberdeen City Council's 2022 Participatory Budgeting programme UDECIDE¹³ aims to contribute to enhancing Aberdeen's Local Outcome Improvement Plan whilst also supporting the aims of the Aberdeen Adapts Climate Adaptation Framework.

In 2018 **CO₂ emissions** in Aberdeen totalled 1,210.4kt (down from 1,875.1kt in 2005). Of this, 44.4% is attributed to industry and commerce, 28.9% to domestic use, and 26.9% to transport. Since 2005, per capita

¹⁰ <https://oeuk.org.uk/call-for-three-stage-framework-to-help-head-off-thousands-of-job-losses-in-oil-and-gas-industry/>

¹¹ <https://communityplanningaberdeen.org.uk/aberdeen-city-local-outcome-improvement-plan-2016-26/>

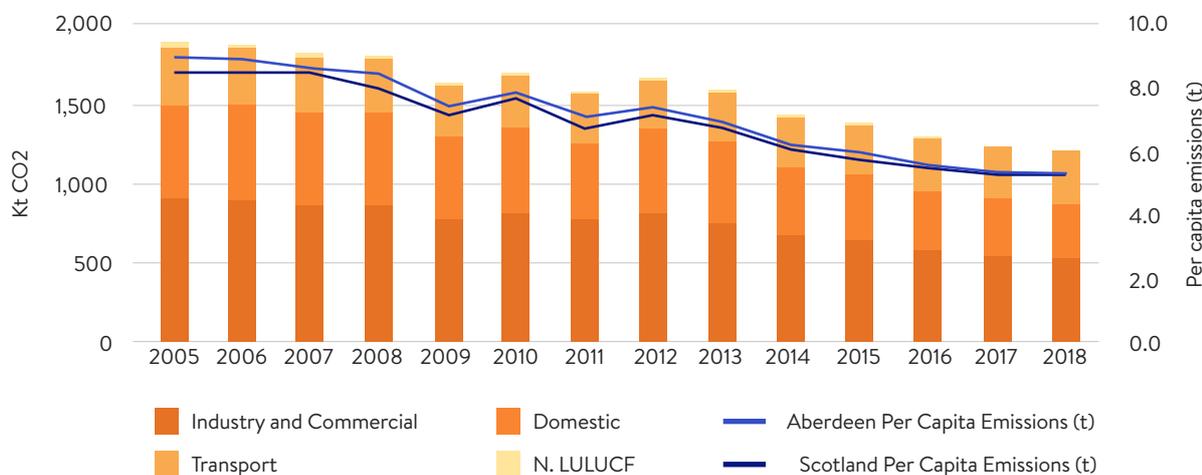
¹² <https://www.aberdeencity.gov.uk/net-zero-aberdeen>

¹³ <https://www.aberdeencity.gov.uk/news/community-projects-across-city-awarded-funding>



CO₂ emissions have fallen in both Aberdeen and Scotland, mostly due to the greening of the electricity grid, and a local commitment to meeting the Scottish Government target of net zero emissions by 2045, put in place by the Net Zero Vision for Aberdeen. In 2018, the per capita levels were similar in Aberdeen and Scotland overall, at 5.3 tonnes.

Figure 2: CO₂ Emissions estimates, Aberdeen City



Source: GOV.UK, UK local authority and regional carbon dioxide emissions national statistics: 2005 to 2018

As of 2020, Aberdeen City had 56 publicly available **electric vehicle chargers** installed to encourage the use of electric vehicles. This is an increase of 3 since 2019, but an increase of 26 since 2017 and equates to 4% of the total number of chargers available in Scotland. Aberdeen has developed a cluster of hydrogen activity with two publicly accessible hydrogen refuelling stations and one of the largest and most varied fleets of hydrogen vehicles in Europe, including cars, vans, road sweepers, waste trucks and 15 fuel cell double decker buses, a world-first deployment.

Aberdeen and Grampian Chamber of Commerce tracks **investment in the city and region**. Their latest Investment Tracker was published in February 2022 and indicates investment in the region of £3.2bn since 2017. The **Aberdeen City Region Deal** was signed in 2016 with £250m of funding provided evenly by UK and Scottish Governments. A further £576.2m was committed by local authorities, universities, private sector, and other investors, bringing the total deal envelope to £826.2m. This has now increased to £936m as contribution from the private sector has increased. By February 2022, 54% of the fund had been spent. In addition, the city secured further funding of £254m from the Scottish government to focus on key strategic transport priorities, including faster rail connectivity with the central belt.



| Source: World Energy Council Humanising Energy Series

PLACE-BASED CLEAN AND JUST TRANSITIONS

JUST TRANSITIONS – A GRADUALLY EVOLVING CONCEPT

The first uses of the term ‘just transition’ can be traced back to the United States in the 1970s, when they helped to connect the need to improve workers’ and communities’ health and livelihoods, while simultaneously preserving the natural environment. This infusion of the environmentalist movement with workers’ concerns was led by the trade unionist Tony Mazzocchi, who played an important role in the passing of the Occupational Safety and Health Act of 1970 and of the “Superfund for Workers” in the early 1990s. The Superfund was built upon the increase in job losses associated with environmental regulations and was intended to provide job and income guarantees to support the livelihoods of affected workers (UNRISD, 2018; Mazzocchi, 1993). For the next 20 years, a series of trade union and environmentalists’ efforts to promote the social element of energy transitions contributed to reinforcing justice towards workers’ needs and rights as a condition for energy transitions.

The 2006 merger of the International Confederation of Free Trade Unions (ICFTU) and the World Confederation of Labour created the International Trade Union Confederation (ITUC), which played a crucial role in further defining the concept of a just transition. The ITUC was one of the biggest promoters of the just transition agenda, presenting it as “a tool the trade union movement shares with the international community, aimed at smoothing the shift towards a more sustainable society and providing hope for the capacity of a ‘green economy’ to sustain decent jobs and livelihoods for all” (UNRISD, 2018).

These efforts culminated with the Paris Agreement of the twenty-first session of the Conference of the Parties (COP21) in 2015 which, for the first time, united all nations around “the imperatives of a just transition of the workforce and the creation of decent work and quality jobs in accordance with nationally defined development priorities” (UNFCCC, 2015). Hereafter, the global climate talks mediated by the UN have consistently made reference to a just transition towards environmentally sustainable economies and societies for all. Another 6 years later, at COP26 in Glasgow in Scotland, a Just Transition Declaration was officially signed and endorsed by over 30 nations¹⁴. The Declaration is based on the International Labour Organisation (ILO) Guidelines for a Just Transition, which has been published a few months prior to the Paris Agreement in 2015. The ILO guidelines highlight the need to secure the livelihoods of those who might be negatively affected by the green transition and also stress the need for societies to be inclusive, provide opportunities for decent work for all, reduce inequalities and effectively eliminate poverty (ILO, 2015; Galgóczi, 2018).

The ILO’s approach expands from initial definitions of just transitions and start to give visibility to socio-economic elements such as social consensus, gender equity and consideration of local needs beyond job and income security, as criteria to evaluate the justness of transitions. Concomitantly, the 2010s have seen parallel efforts aimed at expanding the definition to embrace further aspects of socio-economic impact beyond employment and job security.

A sample of definitions of just transition, summarising how the term has been understood and evolved since 2015, is provided in Table 1:

¹⁴ https://www.ilo.org/global/about-the-ilo/newsroom/news/WCMS_826717/lang-en/index.htm



Table 1: Working definitions of Just Transitions from 2015-onwards

NAME	STAKEHOLDER TYPE	YEAR	JUST TRANSITION APPROACH
Just Transition Centre	Workers (Trade Union)	2016	“A Just Transition secures the future and livelihoods of workers and their communities in the transition to a low-carbon economy. It is based on social dialogue between workers and their unions, employers, and government, and consultation with communities and civil society. A plan for Just Transition provides and guarantees better and decent jobs, social protection, more training opportunities and greater job security for all workers affected by global warming and climate change policies.” ¹⁵
GSI	Government	2018	“A just energy transition is a negotiated vision and process centred on dialogue, supported by a set of guiding principles, to shift practices in energy production and consumption. It aims to minimize negative impacts on workers and communities with stakes in high-carbon sectors that will wind down, and to maximize positive opportunities for new decent jobs in the low-carbon growth sectors of the future. It strives to ensure that the costs and benefits of the transition are equitably shared.” (Zinecker et al., 2018)
Climate Justice Alliance	Community	2018	“Just Transition is a vision-led, unifying and place-based set of principles, processes and practices that build economic and political power to shift from an extractive economy to a regenerative economy. This means approaching production and consumption cycles holistically and waste free. The transition itself must be just and equitable, redressing past harms and creating new relationships of power for the future through reparations. If the process of transition is not just, the outcome will never be. Just Transition describes both where we are going and how we get there.” ¹⁶
Stockholm Environment Institute	Non-profit	2020	“Supporting just transitions means not only dealing with compensation and employment measures for affected workers, but also looking for ways to ensure environmental protection and restoration, diversify industry and other economic activities, and tackle socio-economic inequity and gender inequality.” (Atteridge and Strambo, 2020)
SSE plc	Business	2021	“A just transition seeks to reach net zero in the fairest way possible for working people, consumers and their communities, ensuring that the benefits of climate action are shared widely whilst preventing an unfair burden of the costs on those with the least.” (SSE, 2021)
Just Transition Initiative	Investor + Think Tank	2021	Differentiate between three key dimensions of social inclusion, distributional impacts, and intention—indicating 4 possible approaches to just transitions: 1) systems change through Inclusive process and broad impact; 2) narrow transition through an inclusive but focused approach; 3) incremental reform through a less inclusive and focused approach and 4) top-down transition through a less inclusive process but broad impact. ¹⁷
Scottish Government	Government	2021	“A just energy transition is both the outcome – a fairer, greener future for all – and the process that must be undertaken in partnership with those impacted by the transition to net zero. Just energy transition is how we get to a net zero and climate resilient economy, in a way that delivers fairness and tackles inequality and injustice.” (The Scottish Government, 2021b)

¹⁵ <https://www.ituc-csi.org/just-transition-centre>

¹⁶ <https://climatejusticealliance.org/just-transition/>

¹⁷ <https://justtransitioninitiative.org/a-framework-for-just-transitions/>



JUST TRANSITIONS – A WORKING DEFINITION

By including elements of inclusiveness and fairness, the **Scottish definition of a just energy transition** provides a representative frame of the current progress and global understanding of just transitions' principles and objectives:

“A just energy transition is both the outcome – a fairer, greener future for all – and the process that must be undertaken in partnership with those impacted by the transition to net zero. Just energy transition is how we get to a net zero and climate resilient economy, in a way that delivers fairness and tackles inequality and injustice.”

Together with this long-term vision for a just transition, the government outlines 4 overarching themes that can help deliver on this vision (The Scottish Government, 2021b). These are:

- 1. Planning** for a managed transition.
- 2. Equipping** people with the knowledge and skills they need, while putting in place safety nets to ensure no-one is left behind.
- 3. Involving** those who will be impacted: co-design and collaboration; and
- 4. Spreading** the benefits of the transition widely, while making sure the costs do not burden those least able to pay.

Given the relevance of the Scottish framing of just transitions to the current just transitions global dialogue, this evidence review uses it as its primary definition of the term.

JUST TRANSITIONS – EVIDENCE OVERVIEW

The synthesis of the information collected in this rapid evidence review provides some insights into the existing global knowledge base of just transition practices over the past 10 years. Much of the evidence reviewed focuses on the theories and concepts underlying just transitions, with fewer examples of practical applications.

It is important to acknowledge that the political-economy and socio-cultural diversity within and across cities means there is no universal framework on how to implement and measure progress towards just energy transitions. In an attempt to differentiate the rich literature on guidelines and frameworks to achieve just transitions from evidence-based findings, findings are classified as normative views (derived from a set of norms or guidelines that are not necessarily evidence-based) and mechanisms (derived from or informed by objective and practical evidence).

Practical learnings to date have come from just transitions already completed or underway, in, transitions away from coal (Christiaensen and Ferré, 2020; Mercier, 2020; Hess et al., 2021; Furnaro et al., 2021). From a geographical perspective, evidence is usually focused on countries or regions (Hoppe et al., 2015), as also seen from the coal case studies and from the examples in Boxes 2 and 3 in this chapter.

Some examples of practical implementation are available at a city-level (Pulselli et al., 2021; Bayulgen, 2020), and some normative examples for a city context (World Bank, 2014; Murphy et al., 2021). Overall, managing employment and job security is the area that collects the largest evidence base in guiding just transitions today.

Building on this evidence base, this research has found that clarifying employment and job security as a narrower concept within wider socio-economic wellbeing can help practically to enhance and deliver just transitions. While employment and job security measures are important as they help to offset the impact of transition to those directly or indirectly dependent on it for income, they are not the only element of supporting a just transition. An expanded focus on the wider socio-economic impact of energy transitions beyond employment and job security is key to delivering on the just transition principles of inclusiveness

and fairness, especially when considering the different levels of equity, community resilience and social empowerment across community groups.

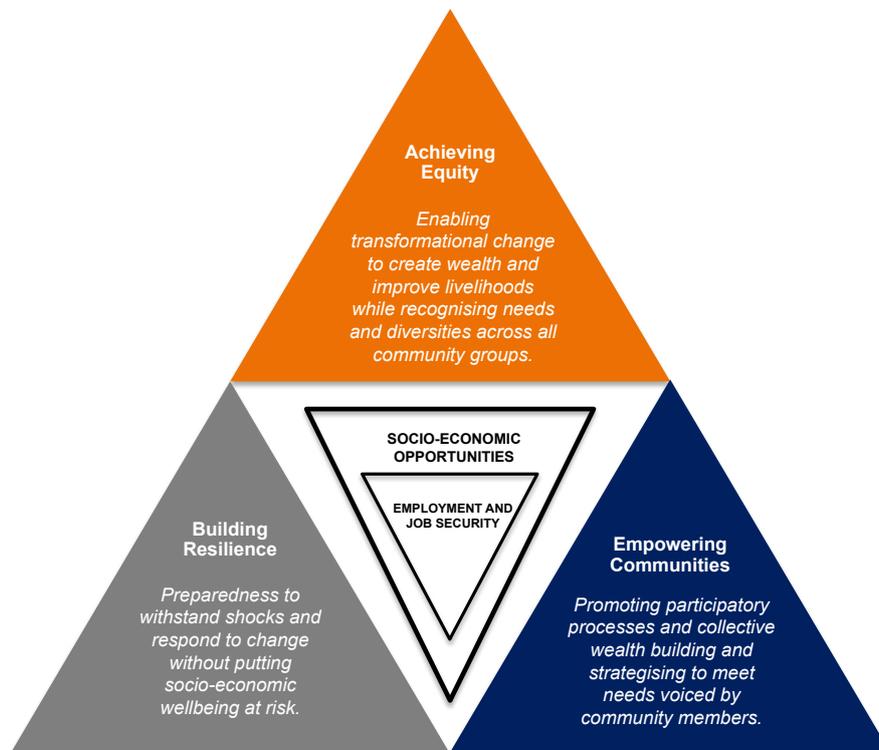
Socio-economic equity (Eisenberg, 2019; ILO, 2018; UNEP, 2022), community resilience (Lipsit 2020; von Staden 2020; UNFCCC, 2020; Murphy et al., 2021; Council for Inclusive Capitalism, 2021) and community empowerment (Mulholland et al., 2020; Lennon et al., 2019; Hoppe et al., 2015) are widely addressed in evidence as core elements for delivering justice in transitions.

Together, the definitions of just transitions reviewed in this study and the wider evidence base of practical mechanisms, point to a conceptual framework, around which current knowledge and practice of delivering just transitions can be understood:

- **Achieving equity** – Enabling transformational change to create wealth and improve livelihoods, while recognising needs and diversities across all community groups.
- **Building resilience** – Preparedness to withstand shocks and respond to change without putting socio-economic wellbeing at risk.
- **Empowering communities** – Promoting participatory processes and collective wealth building and strategies to meet needs voiced by community members.

Employment and Job Security and broader Socio-Economic Opportunities are understood as cross-cutting objectives that are relevant to each of the three key learning areas.¹⁸ This conceptual framework is outlined in Figure 3:

Figure 3: Conceptual framework of Just Transition narratives



¹⁸ Given the very broad information around socio-economic opportunities, this research provides a high-level perspective on this topic, while a much narrower focus has been taken on employment and job security.



In the next two sections of this chapter, the report discusses the quality of evidence surrounding this conceptual framework and reviews: (a) to what extent socio-economic opportunities and employment and job security are an essential component of a just transition (normative views); and (b) mechanisms that may enable them to be incorporated into different aspects of the just transition.

With the Rapid Evidence Review methodology, this report covers a handful of key sources, while other equally relevant sources may have been omitted (see methodology section).

ACHIEVING EQUITY

Normative understanding of the role of achieving equity in a just transition vision

Achieving equity is enabling transformational change to create wealth and improve livelihoods while recognising needs and diversities across all community groups.

Table 2: Normative views of achieving equity through a Just Transition

ACHIEVING EQUITY THROUGH A JUST TRANSITION
<p>Normative Views</p> <p>Understand underlying disadvantages to manage change. Balance trade-offs systemically for an equitable transition.</p>

Understand underlying disadvantages to manage change. Communities will be affected differently by energy transitions according to how **(dis)advantaged** they are in their interaction with existing and new energy activities. A (dis)advantaged condition encompasses the extent of a community or community member’s ability to adapt to new job market characteristics and requirements and access opportunities to enhance their socio-economic condition when engaging with the city’s clean and just transition process. In addition to the effects on jobs, it is important to consider how those already affected by structural barriers including gender and racial inequalities, and lower economic and educational attainments, may be impacted by change.

This view is shared among the leading global forums for just transitions, such as the International Labour Organisation (ILO) Guidelines (ILO, 2015), which focuses on the importance of social protection for a just transition that is inclusive of all layers of society. The ILO argues that transition must be complemented with adequate labour market policies to ensure a smooth and just transition. In the Theme Report on Enabling SDGs Through Inclusive, Just Energy Transitions (UN, 2021), the United Nations’ Department of Economic and Social Affairs emphasises social justice extended to the poorest as inextricably linked to ensuring sustainable energy for all, given their greater vulnerability to climate change. Others, such as the Institute for Public Policy Research illustrate, with numbers, the divide between the contribution of the poorest to the national carbon footprint versus their resilience against increases in costs due to climate change and climate adaptation and mitigation (IPPR, 2020).

There are injustices and inequalities that can arise in marginalised or frontline communities. These communities are usually located close to energy infrastructure, whilst being geographically separated or inaccessible from population centres, and are dependent upon the local energy industry for employment. The inequalities these communities may be exposed to are both a consequence of the environmental impact of energy industry activities (e.g.: greater exposure to pollution levels, vulnerability to environmental hazards, etc.), and the impact on income as services and supply chain flows are disrupted by transition. Another illustration of how disadvantages can develop can be seen in England, where most constituencies with the highest proportion of greenhouse gas (GHG) intensive jobs fall outside of London and Southeast, where wealth and investment are disproportionately concentrated (IPPR, 2020).

Balance trade-offs systemically for an equitable transition. A whole systems lens is focused on the ways

in which social, economic, political, and environmental dimensions interact across multiple scales (local, national, and global) of the energy value chain. The shortcomings with just transition pathways stem from a failure to devise whole systems approaches that deliver to different places and needs, leading to poorer outcomes because of uninformed, socially exclusive decisions, and resulting in worsening of inequalities. Importantly, the whole systems nature of energy means that a just transition in one location can bring costs and injustices for other locations. Supply chain and procurement policies and practices should avoid exacerbating injustices in other regions. Energy transition will significantly impact entire supply chains across the fossil fuel industry, particularly in coal-dependent sectors (UNEP, 2022).

Just energy transition pathways recommend prioritising the needs of vulnerable groups to achieve win-win outcomes for social, livelihoods and economic benefits. Such pathways are supported by tools and mechanisms to empower people and protect the livelihoods of vulnerable groups and are characterised by a multi-sector integrated approach to improve access to health and education, safeguard and protect the rights of vulnerable groups, enhance prosperity through modern, safe, and affordable energy access and implement supportive frameworks to increase the role of innovation, co-creation, and community building (UN, 2021).

For instance, it is noted that gender-transformative approaches are not yet consistently integrated into all governments and companies' energy transition plans to close gender gaps and empower women by ensuring gender parity in the employment, policy, and decision-making processes. Although recruitment processes for green jobs have made significant progress in reducing the gender and diversity gap in employment, the recently published Global Green Skills Report 2022 (LinkedIn Economic Graph, 2022) states that there is still a significant gender gap in green skills (62 women possess green skills for every 100 men), and that older workers, and less educated workers are less likely to have green skills. Therefore, there is significantly more work to be done to tackle inequality and improve gender and diversity in the low carbon jobs space.

MECHANISMS FOR ACHIEVING EQUITY THROUGH A JUST TRANSITION

There is limited practice and knowledge sharing of success cases for all-encompassing just transitions. The evidence reviewed shows linkages between economic and other inequalities such as gender, ethnicity, and health. Countries and organisations working towards achieving equity in just transitions are still exploring these areas. Yet, case studies suggest that understanding how transitions affect different communities and engaging diverse players in devising solutions are initial steps which have helped to deliver positive socio-economic impact (CIF, 2021).

Table 3: Mechanisms for achieving equity through a just transition

ACHIEVING EQUITY THROUGH A JUST TRANSITION
<p>Jobs And Employment Mechanisms</p> <p>Bring minorities and vulnerable groups onboard. Support low-skilled workers to access new job markets.</p>
<p>Wider Socio-Economic Mechanisms</p> <p>Create flexibility for locally relevant approaches. Design technologies and incentives for widespread socio-economic benefits.</p>

JOBS AND EMPLOYMENT MECHANISMS

Bring minorities and vulnerable groups onboard. The United Nations Development Programme argues that just transitions must provide economic opportunity, education and skills training, and adequate social safety systems especially to the most vulnerable population (UNEP, 2022). Expanding the focus of just transition beyond skills building to include the extent to which an individual can benefit economically from the energy transition, can help improve workforce equity while implementing a just transition.



Inequalities can often be stronger around younger generations, those with low levels of education, or female-headed households.

From a Sustainable Development Goals' perspective, disaggregation of data relating to marginalized groups such as women, children, youth, indigenous, and others can help identify the disparities and gaps. In addition, transparency, accountability, and good governance can help to better understand disparities and create solution-oriented thinking and action. The UN indicator of 'Percentage of people with disabilities employed by the energy industry in vocational or technical roles' as a measure of the Sustainable Development Goal 10 of Reduced Inequalities, provides additional guidance towards this view¹⁹.

Community groups affected by the transition can provide valuable insights on the employment and economic ecosystems impacted by transition. An example of addressing inequalities while developing climate change policies and practices is provided by the approach taken by the New Zealand Educational Institute, and the union representing teachers and support staff in Aotearoa, New Zealand, when they were required to determine what impact climate policy imposes on communities, schools, and childhood centres (Smith, 2017). The process began with a series of steps that each group took to reach a central theme around climate change. Through discussion, cooperation, and collaboration they recorded their work in giant posters, many of which used traditions, symbols, and practices to illustrate the words of indigenous peoples. These actions showed the New Zealand Educational Institute and the union ways of encouraging participation in enviro-schools that support students to plan, design, and implement sustainability actions. This work joins local and national campaigns to ensure a just transition, especially in rural communities where many Māori face job losses and community breakdown. The social dialogue has produced a just transition plan focused on sustainability and the rights and concerns of the Māori - a just transition in a context involving indigenous peoples and holders of Treaty rights.

Support low-skilled workers to access new job markets. Overall, high-skilled workers tend to benefit more easily from transition, while low-skilled workers tend to be discouraged from pursuing skilled job opportunities. A World Bank pilot of the new delivery system for active labour market policies in Western Macedonia suggests a personalised client-centred approach to job-market assistance with a focus on low skilled workers, to enhance equity and achieve a just transition. The pilot programme included wage subsidies, entrepreneurship, and demand-responsive training (theoretical training and internship). The experiment was designed with a modular approach, based on occupational standards approved by industry associations and employers. It included in-depth counselling sessions, elaboration of individual action plans (IAPs), continuous training of regionally relevant professional skills, using local labour market data and demand surveys to identify skills gaps and employers' needs. These methods helped to expand the existing active labour market programs and tailor strategies specifically to Western Macedonian. This local relevance was regarded as fundamental to the transition process and required close collaboration with key stakeholders such as employer associations, social partners, and the coal transition planning process (Christiaensen and Ferré, 2020).

WIDER SOCIO-ECONOMIC MECHANISMS

Create flexibility for locally relevant approaches. Just transition strategies recognize the impact on workers transitioning from the fossil fuel industries and other vulnerable groups within the whole community. In the case of the Bhadla Solar Park in India, which is the world's largest solar park with a capacity of 2,245 MW, it was recognised that there should be no impact on indigenous peoples in the park area. In an effort to reduce social impact in the surrounding communities, investment was made to develop Community Development Policy, the Community Development Action Plan, Gender Action Plan, along with CSR policies and investments mobilised by government entities and developers. Although social impacts were not entirely eliminated from the project, investments contributed to the creation of income-generating activities and alternate livelihoods: 150 women were provided vocational training on

¹⁹ <https://www.un.org/sustainabledevelopment/inequality/>

embroidery work and handicrafts; 75 women were trained in basic accounting, finance management, and negotiation skills; 415 women benefited from Micro Enterprise Development Training on animal breeding and improved access to water and electricity; 156 households had improved access to potable water; 74 households were electrified through home light systems (CIF, 2021).

Design technologies and incentives for widespread socio-economic benefits. Experience with carbon taxes in many countries has yielded positive outcomes. For several European countries, the introduction of carbon taxes has been growth oriented and just; typically, governments with successful carbon tax schemes have addressed political economy issues through dialogue with key stakeholders to build consensus (World Bank, 2022). The imposition of carbon taxes can be economically neutral where generated revenues compensate for adverse effects on the economy and vulnerable groups. In Bulgaria, Croatia, and Romania, carbon-pricing scenarios forecast a net-positive yield. Although carbon taxes must be managed carefully to offset impact on consumer prices for lower income households, in all these countries, the net impact on equity is projected to become more progressive if revenues are used to scale up social assistance and related policies to support workers through labour market transitions.

Box 1: in practice: achieving equity as a measure of success

Citizens' perceptions of just transitions and social injustice in London

A listening campaign with London citizens on their priorities and expectations from the city's administration highlights how **environmental challenges are perceived through multiple lenses in relation to justice.**

When expressing their views, most participants were motivated by struggles within their own lives, or the lives of those they care about, leading to a perspective that was necessarily broader than a focus on the environment alone would allow. For instance, stories around homes often highlighted poor insulation, mould, or unaffordable heating bills alongside issues surrounding overcrowding, landlords, perception of neglect, high prices and constrained choice – as interconnected components of a larger problem.

While perceiving these issues as most directly relevant to their life and priorities, citizens did not anticipate a clear link between addressing those issues and enabling a clean transition. When presented with the view that such link exists, participants were motivated to learn and engage further in the city's clean transition.

Key Learnings:

- The issues that affect people more directly have the greatest influence on their judgment of, and motivations towards, clean and just transitions. As such, communities perceive legitimacy and justice of a clean transition initiative not only as it benefits the city, but how it affects them directly.
- The consideration of socio-economic inequalities as a strategic challenge becomes critical to the legitimacy and success of clean and just transitions.

Potential application to Aberdeen:

- The Community Engagement study conducted in parallel to this evidence review noted significantly lower levels of belief in the ability of the energy transition to reduce community inequalities, compared to other benefits such as health and quality of life improvements.
- Supplementary conversations with citizens from some of the neighbourhoods in Aberdeen identified as areas of multiple deprivation, suggest some perceive the oil and gas industry has not helped address social inequalities and therefore question why the energy transition will.
- The importance of developing effective community engagement mechanisms to ensure social justice is effectively addressed is highlighted.

Source: Murphy et al., 2021



BUILDING RESILIENCE

Normative understanding of the role of building resilience in a just transition vision

Community resilience is preparedness to withstand shocks and respond to change without putting socio-economic wellbeing at risk.

Table 4: Normative views of building resilience through a just transition

BUILDING RESILIENCE THROUGH A JUST TRANSITION
<p>Normative Views</p> <p>Plan for short- and long-term to improve community resilience.</p> <p>Focus on skills to build robust and shared workforce resilience.</p>

Plan for short- and long-term to improve community resilience. Just transition is a key lever for resilient economies and a strong driver for job creation, job upgrading, new investment and poverty eradication (ILO, 2015). As incumbent industries are phased out, whole communities must find new support systems for their workforce. In the immediate wake of transition, companies must pay wage arrears and severance payments along with temporary income support and labour market policies; in the long-term, citizens also require pension payments, local redevelopment funds, and social service financing; where industry resources are insufficient, funds must be organised from local, regional, and national budgets (World Bank, 2022).

Thriving communities are characterised by their resilience to shocks at both the local and global level. On a global level, the International Organisation of Employers (IOE) has prioritised efficient use and sustainable management of key resources such as water, energy, land, agriculture, and marine food sources. This will require a “holistic life-cycle thinking based on sound science, continuous improvement and will be a long-term effort” (IOE, 2012). Stimulating private sector resources to further community resilience is identified by the IOE as another area of growth (UNFCCC, 2020).

Focus on skills to build robust and shared workforce resilience. Energy economies (regions where economic activities are primarily powered by the energy industry) give a clear example of the impacts of energy transitions on jobs. As the skills base and economic activity in these regions is so tightly aligned to the energy industry and its associated supply chains, it is particularly important to consider the transferability of existing skills into new energy technologies to enhance workforce resilience and maintain economic security.

As an energy economy, Scotland’s approach to the just transition aims at enabling a steady adaptation of skills and workforce practices in a way that protects jobs and meets employer demand, while contributing to widespread resilience. It recognises the diversity of needs across occupations and societal groups, where some may face limited impact in their day-to-day work, and others may need to adapt or reskill entirely. In addition to the effects of transition, these impacts will occur against the compounding effect of Brexit and COVID-19 recovery, and alongside other trends such as digitisation, which will also fundamentally change the nature of work. For Aberdeen, a city which is home to approximately half of Scotland’s energy sector jobs (around 36,000 in total), this view is reflected in the recognition of the need to “proactively connect local people – especially those living in disadvantaged communities – to the skills, training and employment opportunities provided by the transition,” within and beyond the energy sector (Aberdeen City Council, 2020a).

Expanding to the whole United Kingdom, recent study on the region’s energy workforce by Robert Gordon University (RGU) suggests that over 90% of the region’s oil and gas workforce have medium to high skills transferability and are well positioned to work in adjacent energy sectors. This also applies to the offshore energy workforce, where the report predicts that over 65% of the workforce will be supporting low carbon energy activities by 2030. The RGU study’s emphasis on the UK’s position as a world class basin for oil, gas, and offshore wind and with ambitious targets for new clean energy

infrastructure makes it relatable to the Aberdeen city context (RGU, 2021). To make the most effective use of skills as a city strength and resiliency asset, engagement of communities and employers throughout the skills-building process, and a continuous improvement approach to empowering skilled workforce, will help build robust and shared workforce resilience as transitions evolve (Round, 2018).

MECHANISMS FOR BUILDING RESILIENCE THROUGH A JUST TRANSITION

Proactive and collaborative approaches towards resilience. The practice of cities, countries, and regions to enhance community resilience to navigate transitions, builds on principles of advance and collaborative planning and delivery. While advance planning helps to better prepare for challenges and opportunities ahead, collaborative approaches help to ensure that plans can deliver on the real needs of unique local realities. Together, these principles have helped just transition initiatives to deliver resilience-building mechanisms towards challenges emerging at different stages of the transition process.

Table 5: Mechanisms for building resilience through a just transition

BUILDING RESILIENCE THROUGH A JUST TRANSITION
<p>Jobs And Employment Mechanisms</p> <p>Plan workforce transition proactively. Join education and industry together to empower the workforce.</p>
<p>Wider Socio-Economic Mechanisms</p> <p>Enable localised action for widespread resilience. Promote partnerships with society to deliver relevant measures.</p>

JOB AND EMPLOYMENT MECHANISMS

Plan workforce transition proactively. A proactive workforce transition plan is a long-term strategy based on the intersection between diversity inclusion, stakeholder dialogue, and experimentation (Pinker, 2020) Such an approach starts well ahead of any impact being felt and aims for justice throughout the transition process and not only as a means of reparation. In this approach institutions and partnerships to support workers are established early on to provide assistance as change is being implemented. These may include social programs for continued access to health, education, and similar services, as well as pension benefits wherever necessary (Cunningham and Schmillen, 2021). For example, the Ruhr Valley in Germany has taken 60 years of structural change to transition away from coal and steel to a knowledge-based economy (Galgóczy, 2018). A long-term approach is necessary to successfully identify mechanisms and tools that can be used to support communities, manage impact, and address risk. An opposite approach, which attempts to offset the impact of negative consequences already crystallised from the transition, risks reduced adaptation time and reduced opportunities to address injustices and inequalities.

Join education and industry together to empower the workforce. The United States Congress-funded POWER initiative was established to assist coalfield communities' transition. Under this initiative, a budget of between US\$28-US\$38 million was made available from federal resources to support communities and regions – mostly in the cluster of states covered by Appalachia – that have been affected by job losses in the phase-out of coal industry activities and the spin-off effects on coal-related supply chain industries. The initiative offered economic and workforce development to communities affected by coal-related job losses via grants designed to empower them to devise solutions to shape a transition process that would benefit not only impacted workers and businesses, but also the economic future and strategic goals of the whole community. These activities were mainly geared towards (1) diversifying economies; (2) creating jobs in new or existing industries; (3) attracting new sources of job-creating investment; (4) and providing a range of workforce services and skills training (Pinker, 2020). In addition to ensuring



access to social welfare for mineworkers and families and accelerating clean-up of hazardous abandoned mine lands, the efforts addressed acute needs at the local level by retaining more than 36,600 jobs in various industries including entrepreneurship, broadband development, tourism, and other industries (Congressional Research Service, 2022).

Although this example brings valuable learnings about proactively building job market resilience to transition, analysis by Piggot et al. (2019) found that the POWER programme's failure to anticipate how the job market would develop in response to the transition created an important resilience gap, with younger workers lacking time to build skills needed to transfer to other emerging industries, and unnecessary training provided for disappearing roles. This further impacted companies' ability to anticipate actions to shore up pensions and remediation funds, and experiment with alternative business models while they remained profitable. To address this gap and with the view to improve workers and economic resilience to transition, Christiaensen and Ferré (2020) suggest a focus on promoting better anticipation of future skills needs, developing better matching between skills and labour market needs, and bridging the gap between education and work.

WIDER SOCIO-ECONOMIC MECHANISMS

Enable localised action for widespread resilience. A resilient transition decentralises decision-making powers and promotes collective wealth building (Murphy et al., 2021). In the process, community coalitions undergo an iterative learning process for a ground-up approach to transition, and several successful just transitions organisations incorporate iterative learning processes. An example is ICLEI – Local Governments for Sustainability, which uses a design process of Analyse, Act, Accelerate to foster urban development policies, plans and processes (van Staden, 2020). As a global network of more than 2,500 local and regional governments committed to sustainable urban development, the initiative aims to influence sustainability policy and drive local action for low emission, nature-based, equitable, resilient and circular development. The organisation focuses on five development pathways to facilitate integrated sustainable urban development, one of which is the Resilient Development, which makes resilience a core part of all municipal strategies and prepares for new risks and impacts considering the rights and needs of vulnerable sections of society. The approach finds that strengthening essential systems can be achieved through a transparent and inclusive approach, which enhances trust in public institutions. One example is ICLEI's Bogor Circular Economy Jobs, which builds on stakeholder consultations, collaboration with local partners and community-led demonstrations to identify key circular economy challenges and formulate recommendations for circular economy projects that create local jobs²⁰.

Local context influences the choice of mechanisms for mitigating socio-economic impacts of transition to disadvantaged communities. Indicators that can help better understand the local context include the health of the economy and availability of fiscal resources, and the state of the social protection system. The dynamics of transition (rapid disruption, or a planned and controlled process) also shapes the local context (Cunningham and Schmillen, 2021). Focusing on three pillars of mitigation, adaptation and increased access to secure, affordable and sustainable energy, the Global Covenant of Mayors for Climate & Energy (GCoM) initiative, an ICLEI spinoff, acts on this principle, supporting the implementation of relevant solutions, captured through climate action plans developed, implemented and monitored by cities and local governments²¹. Plans, targets and achievements are reported and publicly available on GCoM reporting platforms, such as the carbonn Climate Registry (cCR)²².

Promote partnerships with society to deliver relevant measures. Engaging all relevant stakeholders, including government, the private sector, civil society and affected populations, in the planning and implementation of energy-transitions strategies helps to facilitate community engagement and deliver measures that are relevant to the local context. Such integration is more complex than traditional siloed approaches as it involves accounting for different needs and perspectives across a wide stakeholder base

²⁰ https://iclei.org/bogor_circular_economy_jobs/

²¹ <https://iclei.org/gcom/>

²² <https://carbonn.org/initiatives>

(UNDP, 2018). The Brussels Employment-Environment Alliance case study is a good illustration of this point, bringing elements of a proactive, participatory, long-term, and integrated approach, which has led to tangible results (Box 2).

Box 2: in practice – building resilience as a measure of success

The ‘Employment-Environment Alliance’ (Alliance Emploi-Environment) in Brussels

This sector policy launched by the Brussels Government in 2010 was based on a **comprehensive approach to clean and just transition**, aimed not only at improving the environmental balance of the Brussels Region, but also at developing jobs for Brussels inhabitants and revitalising the city’s economy.

The program focused on 200 initiatives over four sectors considered promising for green employment: sustainable construction; water; sustainable food; and resources and waste. The project included: mobilisation of all the stakeholders of the sector; preparation of actions directly linked to the needs of the target publics and operators’ work; promotion of cooperation between operators from different areas; linking of complementary actions and synergies around strategic objectives; and the development of action plans as the process progressed. The innovative character of the project is the pro-active, participatory, and integrated approach designed to make improvement of the environment a source of economic opportunity and job creation for Brussels inhabitants.

After four years of implementation, outcomes for sustainable construction included the creation of 12,200m² of training facilities, 29 training modules, skills enhancement for 1,800 businesses, and successful employment or continuous training for 50% of young graduates engaged.

Key Learnings:

- The comprehensive approach to clean and just transition has been successful at mobilising sector stakeholders, enabling cooperation, and building socio-economic resilience to the city’s transition process.
- Awareness of the local context and risk and response assessment were crucial in the project’s performance.
- Success was enabled via stakeholder consultations and action plans, but also through collaboration and an iterative and long-term implementation approach of continuous improvement.

Potential Aberdeen application:

- The Brussels example does not differentiate between neighbourhoods within the city and any inequalities that may exist differences between them. There may be merit in adapting this approach in Aberdeen to focus on areas of multiple deprivation alongside effective community engagement, as a mechanism for demonstrating just and clean energy transition can be an effective mechanism for addressing community inequalities.

Source: <https://environment.brussels/state-environment/report-2011-2014/environment-sustainable-city/focus-alliance-emploi-environnement>



EMPOWERING COMMUNITIES

Normative understanding of the role of empowering communities in a just transition vision.

Empowering communities is promoting participatory processes and collective wealth building and strategising to meet needs voiced by community members.

Table 6: Normative views of empowering communities through a just transition

EMPOWERING COMMUNITIES THROUGH A JUST TRANSITION
<p>Normative Views</p> <p>Involve communities from ideation to implementation for just transitions. Activate participative processes to build trust.</p>

Involve communities from ideation to implementation for just transitions. Transition planning should be participatory, including diverse stakeholders and younger people – failure to consult inclusively risks transition. A lack of agency around energy infrastructure can effectively lock citizens out of decision making (Lennon et al., 2019). Additionally, some decarbonisation efforts require monitoring and reporting that excludes those in the community without the capacity or skill set to engage (Johnson and Krause 2019). Just transition efforts often involve grassroots coalitions and participatory processes (Johnson and Krause 2019). For instance, the United Nations report ‘Enabling SDGs Through Inclusive, Just Energy Transitions’ (UN, 2021) shows evidence of how several countries have conducted environmental impact assessments on land use management that involve indigenous population as project stakeholders.

On the other hand, it is also noted how exclusion impedes just transition objectives. Community exclusion from the transition process has often resulted in protests and resistance to transition initiatives, as exemplified by the extractive industries in the Gulf Coast, United States, or the frontline communities in the Niger Delta, Nigeria (Johnson and Krause, 2019). Societal dissatisfaction and lack of trust in the transition process can be aggravated by the existence of a ‘socio-technical paradox’, whereby communities feel disconnected from the energy system as a whole and perceive themselves as having very limited agency in designing and delivering transitions (Lennon et al., 2019).

Activate participative processes to build trust. Social dialogue is a powerful means of building trust, developing a shared understanding, and building equity, as it can help to account effectively for diverse needs and co-design solutions in response. Incorporating the needs and concerns of those most directly affected by the change ensures a design that works for the community. Sovacool and Dworkin (2014) argue that a “fair processes and public involvement can rehabilitate eroded trust in authorities and institutions”, and should include providing understandable information about energy, involving stakeholders at all stages of projects. Under the United Nations Sustainable Development Goal 11 of ‘making cities and human settlements inclusive, safe, resilient and sustainable’, indicator 11.3.2 measuring ‘the proportion of cities with a direct participation structure of civil society in urban planning and management’ is a direct link to this point²³. By considering the progress and willingness of decision-makers to integrate resident and civil society participation in urban planning and management, the indicator highlights the need for a people-centred approach to guide urban development processes.

Public participation enables broader consensus building, which greatly enhances the legitimacy of the planning process and the plan itself. Participative processes need to be adapted to the community, with some needing to rebuild trust in authorities through fair processes and public engagement with stakeholders. Without institutional trust, energy generation and community energy projects predominantly rely on households taking their own initiative (Baxter and Cox, 2017). The support and trust of local communities could catalyse the transformational change.

²³ <https://sdgs.un.org/goals/goal11>

MECHANISMS FOR EMPOWERING COMMUNITIES THROUGH A JUST TRANSITION

Collective social power reimagines employment and socio-economic opportunities. The devolution of capital and social power to local communities has the potential to transform the places we live and work. Places where a large industrial corporation has removed itself from the area may generate opportunities for transformational community engagement in energy transition. Examples from the extractive industries are illustrated below. The mechanisms that facilitate this change include models of community wealth building, projects for communal well-being, and community energy projects, generating resilient communities with an embodied understanding of the common good.

Table 7: Mechanisms for empowering communities through a just transition

EMPOWERING COMMUNITIES THROUGH A JUST TRANSITION
Jobs and employmentss mechanisms Understanding diversity to meet workforce needs. Enable gound-up participation for effective workforce transition.
Wider Socio-Economic Mechanisms Support community energy projects for bottom-up economic activation. Promote energy literacy to enable bottom-up energy leadership.

JOBS AND EMPLOYMENT MECHANISMS

Understand diversity to meet workforce needs. It is essential to strengthen institutional capacity to understand and account for diversity needs and potential. Collecting, managing, and sharing data on the city population characteristic and needs is a good approach. Knowledge of these intersections can help better coordinate existing barriers and empower just transitions by retooling, re-skilling and via energy initiatives that create livelihood opportunities that serve the actual needs of diverse communities.

There are different approaches to retaining a workforce in a region where a key employer transitions. The Evergreen Cooperatives²⁴, based in Cleveland, Ohio, in the United States, offers a renowned example of a global innovation model that has successfully equipped workers not only with jobs, but also with a supportive ecosystem. Diverse stakeholders from sectors including healthcare, universities, municipal government joined together with the goal of creating equitable wealth at scale. The initiative focused on an inclusive approach rather than investing resources in a trickle-down process. In practice, this meant offering jobs and a sense of security and well-being to workers, rather than investing in training for jobs that did not align with the pre-existing skill sets of the community.

Enable ground-up participation for effective workforce transition. While the purpose of ground up initiatives often expand well beyond employment, they offer examples of holistic place-based approach that enables individuals and households to thrive. An existing mechanism to deliver job creation is local community foundations: independent philanthropic organisations that funnel assets from local donors to projects the community wants. One example is Australia's Mirboo North Community Foundation²⁵, whose members manage a 'future fund,' allocating appropriate investment to build capacity and skills. They also manage a shared meeting space for rent to people in the community. The Foundation's Public Ancillary Fund receives donations and organises them for community projects such as a local swimming pool and a well-being program at primary and secondary schools. The Sydney Community Foundation operates as small grants specialists, awarding grants to innovative grassroots charities that support projects to employment pathways. Their sister organisation – Sydney Women's Fund – focuses on developing opportunities for women and girls locally. A third entity, Be Kind Sydney, fosters place-based philanthropy to allocate private

²⁴ <https://www.evgo.com>

²⁵ <https://mirboodistrictfoundation.org.au>



ancillary funds. While the purpose of these community foundations expands well beyond employment, the holistic place-based approach enables individuals and households to thrive.

Other examples of ground-up initiatives are Cooperative and Mutual Enterprises (CMEs), which usually work across industries including health, housing, aged care, childcare, education, agriculture, banking, retail, insurance, arts and motoring. Examples of cooperatives such as the Business Council of Co-operatives and Mutuals in Australia²⁶, and the Democracy Collaborative²⁷ in the United States thrive around the world and are a powerful mechanism for building capital.

In some case studies, open processes of dialogue between workers, employers, and governments have helped to improve project credibility (Zinecker 2018). These dialogues can then be transformed to dedicated institutional processes that builds support for social change (Rosemberg 2017). In one example, Ghana conducted a stakeholder consultation process alongside fuel pricing reforms that included parliamentary subcommittees, industry players, consumer groups, and civil societies. (Addo et al., 2017).

In Latrobe Valley, Australia, the closure at short notice of Hazelwood lignite power station and poorly supported restructuring of the local economy led to strong local distrust of any further transition away from coal. (Mercier, 2020). The local government adopted a new approach, stating that “If Government does ‘things differently’ by supporting and working with and across ‘community’ in the Latrobe Valley on ‘things that matter’ then impact will be direct, built on collective effort, leadership and local strengths for long term resilience” (Cain, 2019). Inspired by ground-up models, the Latrobe Valley formed a Transition Centre to create jobs after a fire at the Hazelwood mine devastated the community (Farmer and Ipsen, 2016). The Centre, which now operates as the virtual backbone of the group leading the coal transition, runs feasibility studies on economic development proposals and collects expertise to critique the proposals. The group also seeks to understand and resolve bottlenecks, assist with rapid prototyping to move to action, and push feedback to government on policy barriers. Through this work they were also able to report on clearly defined metrics for success which can help to deliver and measure impact.

WIDER SOCIO-ECONOMIC MECHANISMS

Support community energy projects for bottom-up economic activation. Under the community energy approach, which differs from traditional large-scale projects, citizens and communities are involved as producers, distributors, and sellers of electricity, in addition to their consumer role. Initiatives and projects of this kind are sometimes referred to as Energy Communities or as Community Energy Co-ops (CEC). They share the characteristic of enabling a new energy systems’ structure where citizens participate more actively and benefit more directly from the clean transition.

These projects are powered by a mixture of distributed technologies including geothermal heat pumps, air source heat pumps, solar pv, wind turbines, hydro, battery storage, hydrogen, etc. Community project needs will largely differ based on the balance between resource needs and availability and economic context at kick off. The flexibility to understand, adapt and respond to local needs greatly enhances the relevance of funding options. Some existing flexible formats include bottom-up finance such as share offers, which give priority access to community members, or investor memberships, whereby shareholders receive interest on their investment from the funds raised and project outcomes. These models have the benefit of keeping individual investment affordable for a citizen-level investor, although they are usually limited as able to only partially cover CAPEX costs.

One example, the Clean Energy Collective²⁸ sells solar pv panels and pools resources to create a community-owned solar farm. This structure takes advantage of economies of scale, allowing collective members to split the cost of inverters. The impact on jobs and local economies can be seen in the United

²⁶ <https://bccm.coop/>

²⁷ <https://democracycollaborative.org>

²⁸ <https://cleanenergycollective.com>

Kingdom where, in 2021 alone, £21.5m of investment was raised for new projects a £15m of community energy income spent locally, boosting local economies. These schemes can promote equity by bringing technology by prioritising bringing technology to low-income residents. The Darebin Solar Savers Scheme²⁹ installed solar pv panels for low-income households. The City Council covered up front costs and households pay back over 10 years. To date, the program has helped over 1,800 households. Beyond the household level, other initiatives focus on powering community organizations. CORENA³⁰ is an example of a crowd funded community solar project where community organizations apply for zero-interest loans to provide energy efficiency. Organizations then pay back the initial funding over time with the bonus of lower costs to increase. These initiatives provide sustained reduction to energy costs through green sources.

In Scotland, programmes such as Community Energy Futures have started to pave the way in creating engagement opportunities for different community groups, to promote knowledge-sharing on the challenges associated with climate change and the energy transition. The initiative supports the development of innovative community owned renewable energy generation assets as a way to empower communities in energy transitions. Communities are enabled to develop their own energy projects, with assistance ranging from project management to application sourcing and funding, to consultations and technical advice. In Aberdeen, the landmark Donside Hydro Scheme³¹ sets the tone of what a community energy project can be as the first community energy scheme in the country. Managed by Aberdeen Community Energy, the small hydro project uses power from its neighbouring river – The Don – to create electricity which is then sold to the national grid. With a total cost of GBP1.2 million, the project was mainly financed by through share offers purchased by residents and local investors, who are given a fixed rate 4% annual return.

Promote energy literacy to enable bottom-up energy leadership. There is still little clarity globally on systematically enabling community participation in energy transitions. While **bottom-up energy leadership** is still to become an evident trait of just transitions³², this is a crucial area to ensure justice is equally spread among society’s multifaceted needs. Evidence supports that some places can be less able to leverage community active engagement to respond to climate crisis; for example, those reliant on more carbon-intensive industrial production like paper, food, petroleum refineries, chemicals and metal/mineral industrial, as these contexts tend to be conditioned by more imperative central government policies and top-down implementation (Webb et al., 2022). Consequently, opposition to clean transition projects can be motivated by frustration and perceptions of injustices. Further, the ability of some communities to express their concerns more easily than others may risk creating net zero ‘winners and losers’ in a transition process.

Energy literacy initiatives are often used to empower bottom-up leadership and promote community engagement. By expanding awareness of the demands and changes brought by the transition, communities are more empowered to participate and engage in the transition process. For instance, the Kildonan Energy Initiative³³ conducts face-to-face energy visits to reduce utility costs. At meetings with homeowners, experts explain appliance costs, identify issues impacting use, and help budget energy use, in addition to supplying free energy and water-saving retrofit items. The need to empower consumer engagement through knowledge is also acknowledged in practices such as the Green Collective Agreements in Canada, which joins together different transition areas such as climate adaptation, costs, workforce adjustment and social responsibility to promote engagement and deliver just transitions (UNFCC, 2020).

²⁹ <https://www.darebin.vic.gov.au/solar>

³⁰ <https://corenafund.org.au/>

³¹ <https://acenergy.org.uk>

³² <https://www.worldenergy.org/world-energy-pulse-2022>

³³ <https://www.kildonanenergy.com>

**Box 3: in practice: empowering communities as a measure of success****Including participatory mechanisms in climate action: Boulder, Colorado**

Boulder, a city in Colorado, United States, is well-known for its commitment to ambitious and fast climate change mitigation. Boulder climate commitments are to switch to 100% renewable energy by 2030, together with achieving 80% community emissions reduction by 2050. The city's vulnerability to climate change, which became clear as the city council declared a climate emergency in July 2019, contributes to the sense of urgency to reduce carbon emissions through a clean transition.

While the 'clean' element is clearly justified through the tangible perception of vulnerability to climate change, the 'just' element of a transition that is inclusive and benefits all has been less prominent in the city's climate agenda. Community engagement attempts have been included in the protocol, but on a short-term approach, which proved insufficient to enable true collaboration.

As a result, clean transition measures were designed with a partial understanding of community needs, leading to a negative impact on vulnerable communities. This was made evident with the effects of an imposed tax on fuel for cars, which adversely impacted immigrant households who relied on fuel to run their landscaping businesses. In response, a Just Transition Collaborative was established at the University of Boulder, Colorado, to develop inclusive participation, projects, and policies.

The acknowledgement of the negative impact of clean transition motivated the creation of the Climate Justice Leaders, a group representing communities of colour, immigrants, youth, elders, and low-income communities. The group was trained to engage collaboratively in energy transition planning and delivery and brought proposals and recommendations to the Climate Justice Assembly, a government decision-making body. Further inclusiveness was enabled with the creation of policy templates and protocols, an inclusive engagement fund, and inclusive engagement training and skills building for city staff. The Climate Justice Leaders' active role has facilitated matters such as job training, support structures for green transition, housing, transportation and childcare reforms to be incorporated into transition policy.

Key Learnings:

- At first, the 'clean transition' narrative had not yet incorporated the 'justice' element, leading to adverse effects on most vulnerable communities.
- The reduced timescales of plans focused on short-term delivery prevent community engagement in action planning. In such cases, communities tend to organise and advocate for themselves to either demand participation in or protest clean transition measures.
- This case study demonstrates one avenue of community empowerment through developing a coalition and leadership team to bring community concerns forward.
- This project was put in place as a reparatory action to transition injustices. It has a top-down element from being driven by policy makers, not the communities themselves. A further advance in just policies would see communities empowered to participate in transition planning proactively rather than reactively in response to injustices.

Potential Aberdeen application:

- Boulder provides a salutatory reminder of the risk of acting without effective engagement and the potential for well-intended 'clean' action to have unintended 'justice' consequences. This reinforces the need to ensure effective community engagement and participation mechanisms are established in Aberdeen as part of the forward plan.

Source: Johnson and Krause, 2019



| Solar Panels, Aberdeen, Scotland. Source: Aberdeen City Council



AREAS FOR FURTHER RESEARCH

The concept of an all-encompassing energy transition process continues to evolve globally. The literature reviewed in this report gives an overview of priority areas in just transition efforts today. While there is a rich array of practical evidence and practice of how to achieve just transitions from an employment and job security perspective, the need to deliver on broader socio-economic objectives to deliver truly just transitions is mainly recognised from a normative perspective, with little practical evidence of how to achieve these goals.

To deliver just transitions more effectively in the future, there needs to be a better evidence-based understanding of how we can achieve just transition goals, considering impact on employment and job security specifically and on socio-economic needs more broadly.

Noting the methodological framework used in this research (see methodology section), the backdrop of time and scope of engagement, the mechanisms to enable the shift towards 'just' energy transitions cannot be all understood from this research's outcome alone.

Scotland's focus on ensuring the transition is just as a way to answer the net-zero challenge, is also in response to its historical painful experiences of unplanned transitions and exclusion of some community areas The Scottish Government (2021a, p. 3-4). To safeguard against history repeating itself and taking up the opportunity to reduce the risk of slowing down (deceleration) the energy transition process, further research areas are presented below, which may provide a broader body of evidence for stakeholders interested in the topic of 'just transitions':

- What is the most effective mechanism to support skilled people connect better to work opportunities and will upskilling guide a change in pace for job creation?
- Is the pace of transition impacted by price; what are the different framing options for the types of costs that consumers face (e.g., price of energy, carbon pricing, etc.)?
- What drives demand-side job creation opportunities or job creation equations (i.e., how many projects happen and what are the influencing factors)?
- How can the state at the country- and city-level engage with private sector and civil society most effectively to mobilise just transitions?
- How can communities with low levels of civic participation influence the response to climate crises?
- What is the role of private industries in building communal trust?
- How to establish place-based strategies to drive skills development.
- How to introduce social and community dialogues to drive just transitions.



| Electric Car Charging Sign. Source: Aberdeen City Council

MINDING THE GAPS

The need for a more inclusive energy transition may create more socio-economic opportunities based on the emerging research. Aberdeen's citizens are at present more aware of the process around energy transition and the possible benefits according to the community engagement report outcomes. Yet, the degree of scepticism and perceived lack of trust as indicated from the same community report may impact the pace of just energy transition in Aberdeen.

Although there is little evidence on what works most effectively in accelerating a just transition, the evidence that does exist, combined with the strong normative foundation that the literature offers, provides a base for considering how Aberdeen might best accelerate a just transition. Examples of some of these pragmatic future actions are listed below:

Achieving equity: The challenge of coordinating diverse energy ecosystems to deliver tangible socio-economic impact suggests that just transitions can be used to transform existing inequalities through community dialogues and best practices sharing. While skills building will be an important aspect of the energy transition, adopting a whole system thinking inclusive of society groups that are unable to access the job market in the first place, may allow the integration with a just process.

Building resilience: In the Rapid Evidence Review, there was less evidence of how to build community resilience in the context of just transitions. However, conclusions from this study show how an advance planning and collaborative delivery can enable the community to withstand the shocks of the current energy transition.

Empowering communities: Participative processes are key to establishing interpersonal and institutional trust in communities. Some of the successful case studies of communities with just transition share capital through mechanisms like mutual enterprises, co-operatives, and community foundations. Shared community energy projects may foster a shared vision.

METHODOLOGY

This work builds on existing just transition use cases with the view of informing policy and practice decision-making, and contributing to the creation of well-designed, effective, and efficient policies and interventions.

The Rapid Evidence Assessment method was selected as the most appropriate tool to meet the objectives of this research (Collins. A. et al., 2015) and the process used is outlined below:

PREPARATION

- **Determine research question and methodology:** articulate the need for work and identify appropriate method.
- **Establish a Steering Committee and confirm method:** create an advisory group with project stakeholders and confirm need for work and method.
- **Establish a review team:** include research and technical experts with knowledge of policy and/or practice context.
- **Hold a kick-off meeting:** with participation of all Steering Committee members to agree on project scope and timeline.

EXECUTION

- **Develop a protocol:** detailed outline of methodology to be used – to be validated by project stakeholders.
- **Search for the evidence:** follow strategy identified in the protocol, record all search results in a database, regularly update stakeholders and progress and agree on alterations if needed.
- **Screen the search results:** apply criteria outlined in protocol and record results of each screening phase.
- **Extract evidence that relates to the research question:** create a systematic map of the fully screened evidence.
- **Critical appraisal of evidence:** evaluate relevancy and robustness of evidence to the research question and prioritise evidence with higher scores.
- **Synthesise the results:** use synthesized findings to answer the primary and secondary questions, highlight implication of findings for policy and/or practice and areas for further research if relevant
Communicate findings: produce final report.

SIGN OFF

- **Sign off project:** ensure the review has provided a clear and sufficient response to the question(s); ensure that the quality of the work meets the original scope; sign off project; discuss with Steering Committee following steps.
- **Disclaimer:** The Rapid Evidence Review covers a handful of key sources. Due to the time constraints and scope of focus, a full synthesis of the literature on just transition was not possible. Key sources, themes, and case studies may have been omitted.

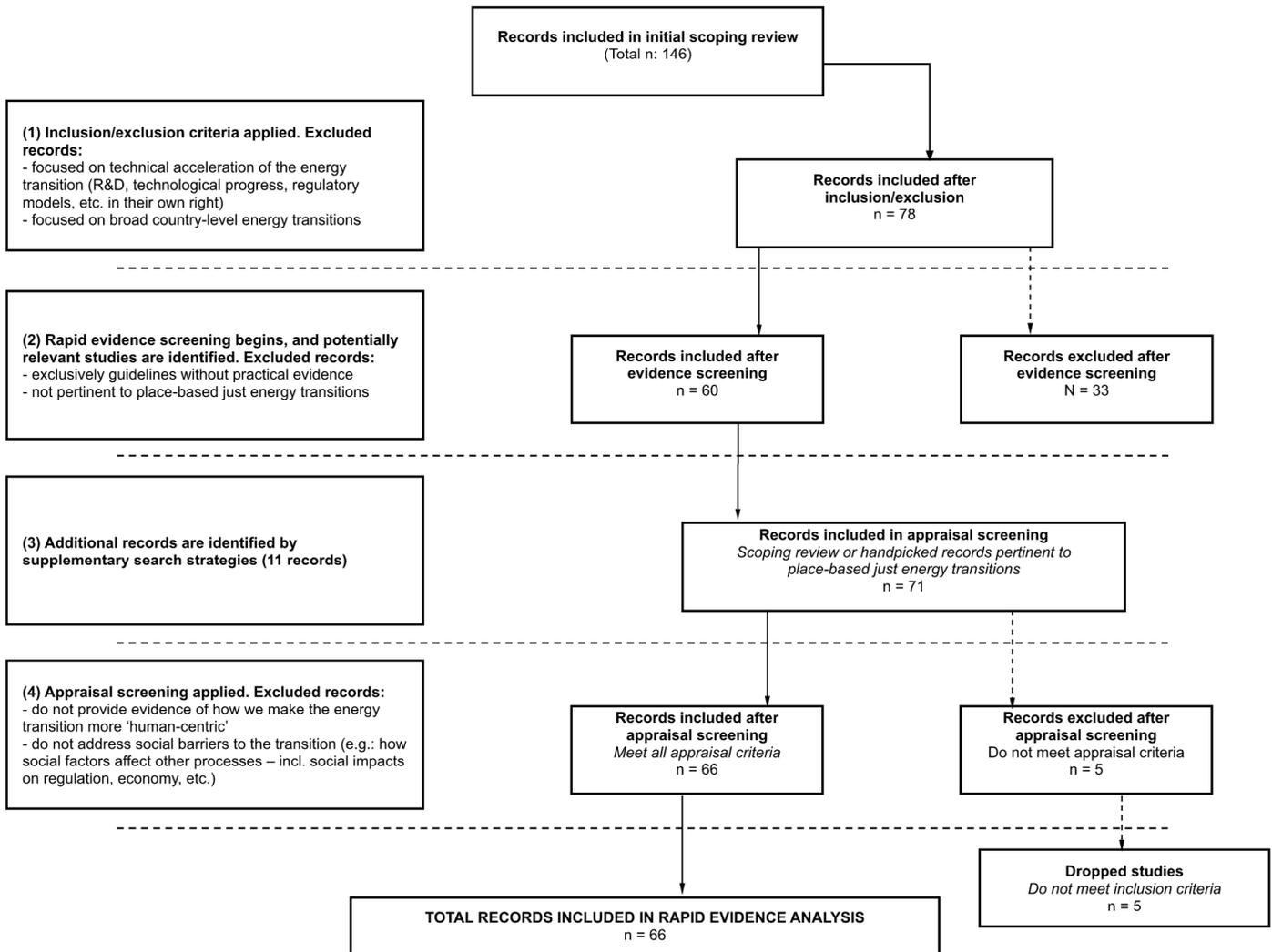
RAPID EVIDENCE REVIEW PROCESS OVERVIEW

- **Questions** – This Rapid Evidence Review has been designed to answer one primary question and two secondary questions.
 1. *Primary question: ‘How to achieve an inclusive and just transition for an energy city like Aberdeen?’*
 2. *Secondary questions: ‘What strategies can help maximise the socio-economic opportunities in the move to a net-zero economy?’ and ‘What measures can be implemented to better understand job implications for the energy transition and to support job security and transformation in an energy city like Aberdeen?’*
- **Search Criteria** - Evidence has been mainly searched in the English language literature with interest for all geographic locations, particularly for the city/local level. Priority was given to evidence from 2015-onwards, which is more likely to reflect the oldest definition of just transitions provided by the UN International Labour Organization in 2015.



- **Keywords searched:** Just; Energy; Transition; Clean transition; City; Energy jobs; Labour force; Job transformation; Net-Zero; Labour training; Jobforce; Inclusive; Citizen participation; Climate change; Extractive industries; Regenerate industrial area; Workers; Energy startups; Fairness and opportunities; city level government; Stakeholders; Jobs and skills development; economic strategies; social wellbeing; cosmopolitan justice; people empowerment
- **Sources considered:** Multilaterals and development organisations research, government papers, academic papers, industry and civil society associations, company reports.
- **Characteristics of evidence base:** the largest proportion of identified evidence uses a review (38%) or qualitative research methodology (30%), followed by quantitative (21%) and economic analyses (9%).
- **Full catalogue:** 146 records relevant to just energy transitions globally were identified and reviewed.
- **Screened catalogue:** 60 records either provided practical evidence on how to achieve just transitions or included pertinent information to place-based just transitions, meeting the minimum standards of coding for inclusion in the rapid evidence review.
- **Supplementary search:** 11 additional records were identified by supplementary search strategies and were included in the research catalogue.
- **Critical Appraisal:** 66 records out of 71 submitted for critical appraisal contained evidence or guidelines on how to make the energy transition more ‘human-centric’, or on how to address social barriers to ensure just transitions and were included in the rapid evidence analysis.
- **Analysis:** Evidence was extracted from selected sources based on relevance to primary and secondary questions. Evidence was analysed with acknowledgement of the following distinction:
 - specific job and employment needs and opportunities, which gather large normative/theoretical and practical evidence;
 - broader socio-economic needs and opportunities, which gather large normative/theoretical support but fewer practical evidence.
- **Synthesis:** Findings were synthesized with focus on extracting practical and pragmatic mechanisms from select sources and case studies. The three key learning areas were used as an organising framework to convey lessons learned:
 1. Achieving equity
 2. Building resilience
 3. Empowering communities
- **Guidance:** The overarching findings about how to achieve place-based clean and just energy transitions were synthesized by the review team through iterations with and guidance from Project Leadership team, Steering Committee and the World Energy Council’s global network of energy and community engagement experts.

Figure 4: The Scoping Review & Rapid Evidence Review Decision Tree



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