

Towards a walking world

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1 Introduction

In June 2016 Arup published, *Cities Alive: Towards a walking world*. This research report was produced by a multi-disciplinary, global Arup team and includes insight and interviews with a range of thought leaders in this field. Its primary purpose is to highlight the benefits of walking to cities and to define actions that city leaders can take, to both improve conditions for and to encourage walking in their cities. The report demonstrates the social, economic, environmental and political benefits of walking. With a growing desire within society to create more liveable streets, walkability should be used as a catalyst for developing sustainable, healthy, prosperous and attractive cities.

Creating a walking world requires action. So how does a city design the built environment to get more people walking?

To set the context, **50** drivers of change are outlined, covering social, technological, economic, environmental and political domains. These explore current and emerging global trends that are shaping the future of our cities.

A list of **50** benefits of walking is then presented. Benefits that should be achievable in most contexts and demonstrable by quantitative and qualitative measurements.

40 actions that city leaders can consider to inform walking policy, strategy and design are proposed. These actions have been informed by a catalogue of **80** international case studies that it is intended will inspire action, and assist cities in developing their own initiatives.

This paper will summarise the key findings from the research report and will highlight some selected drivers of change, benefits, actions and case studies that are most appropriate in a Scottish cities context.

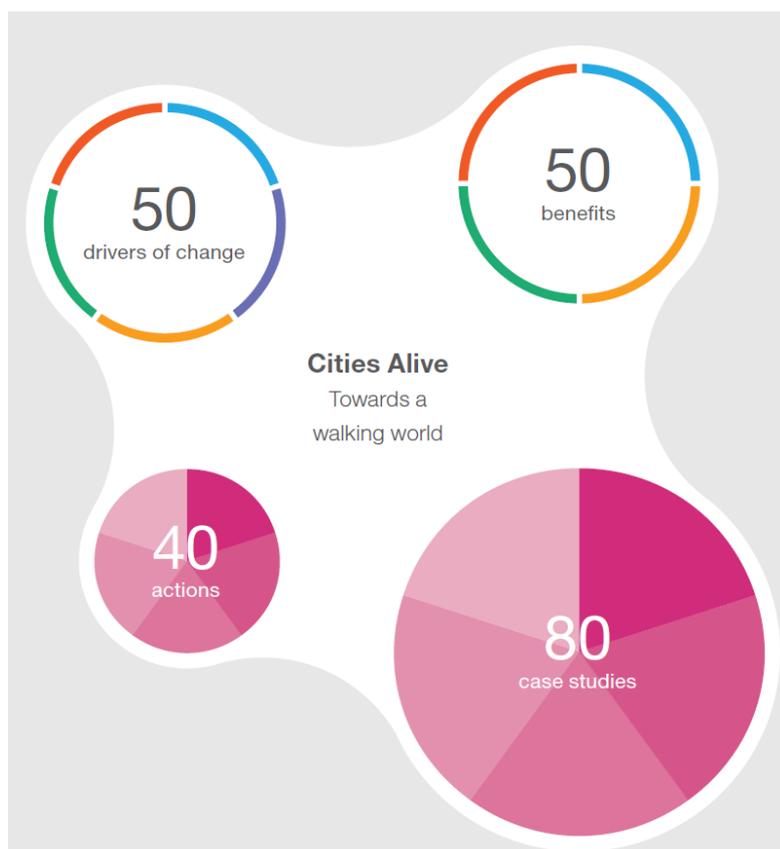


Figure 1 – Towards a walking world

2 Background to this paper

Walking as a mode of transport can often be taken for granted, however the role walkability plays in developing more liveable, sustainable, resilient, healthy, safe and attractive cities cannot and should not be underestimated.

Walking can often be neglected, as a mode of transport in its own right. Frequently walking is not specifically referred to in designs, plans or policies at city level, or, if it is, it gets grouped with cycling as a joined up package of Active Travel when in fact they are significantly different modes of transport.

Scotland is ahead of most countries as it has a national walking strategy – *Let's Get Scotland Walking!* however in Scotland's cities there can be a lack of walking only specific actions, where more often than not they are part of wider active travel / sustainable transport initiatives that typically often focus predominately on cycling / public transport initiatives.

Walking is also in decline according to recent statistics. In 2015 in Scotland, walking is the second most used mode of transport at 22 percent, but this is a decrease from 25 percent in 2014; car is the most used mode of transport with 51 percent of journeys made as a car driver, and a further 13 percent as a car passengerⁱⁱ. There is a significant opportunity to increase walking levels where currently 14 percent of adults usually walk to work and 49 percent of children usually walk to school as their main mode of transport. This opportunity is highlighted when respondents were asked what discourages them from walking more, 57% stated nothing, demonstrating that there are no significant barriers to be overcome unlike with other transport modes.

There are also some recent positive walking indicators in Scotland where in 2014, 67% of adults made a walking trip of more than a quarter of a mile in the last seven days which is the highest figure in the

last decade. Also in 2014, 58% of adults said that they had walked for pleasure or to keep fit at least once in the last seven days which is the highest in recent times.ⁱⁱⁱ

With this background in mind the opportunities for Scotland's cities to increase walking levels appear to be significant. The question then is, what can be done to increase the level of walking trips?

3 Drivers of Change

With nearly 70% of the world's population set to live in urban areas by 2030^{iv}, it is increasingly cities, more than national or regional governments that have the power to improve walkability for the majority of the population. Key to the success of cities and the quality of life they offer to new and existing residents is how people move around within them. In the recent past, planning for the city has primarily revolved around planning for motorised vehicles, and in particular the private car.

Cities now need to design physical activity back into everyday lives of their inhabitants. One of the easiest ways to do this is by incentivising and facilitating walking as a regular, daily mode of transport for a range of trip types.

Many successful cities around the world have shown that by getting more people walking in parallel with reducing the number of vehicles within cities, will result in healthier, happier citizens and thriving streets and public spaces. What trends are behind this fairly recent but noticeable shift in city dwellers lifestyles and demands?

Figure 2 shows 50 drivers of changes grouped into five themes. These five key themes that are shaping how cities are evolving and what residents are demanding of the places in which they choose to live are noted below. Highlighted below is a key sub trend that is the most applicable in a Scottish context to cities.

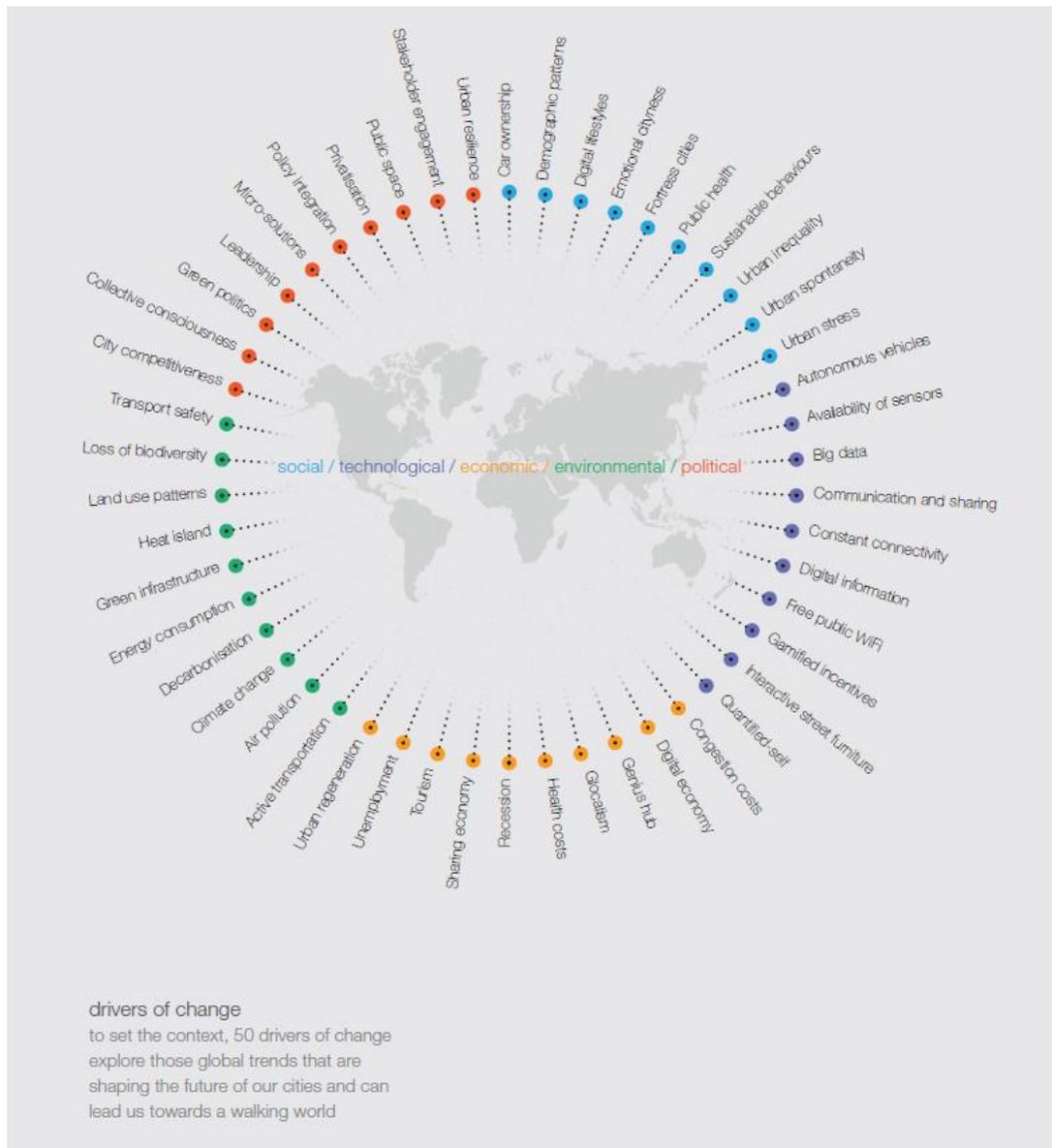


Figure 2 – Drivers of Change

3.1 Social trends

- Car ownership
- Demographic patterns
- Digital lifestyles
- Emotional cityness
- Fortress cities
- Public health
- Sustainable behaviours
- Urban inequality
- Urban spontaneity
- Urban stress

Key Scottish sub trend = Car Ownership.

Car ownership in Scotland is increasing. 2.9 million motor vehicles were licensed in Scotland in 2015, its highest ever level and 13% higher than in 2005. There was a 2% increase in new vehicle registrations

in 2015 compared to 2014; and in 2015 there was the highest number of new vehicle registrations in a single year since 2007.^v

An implication of this recent increase in vehicle registration could be the recent decline in walking levels seen between 2014 and 2015 as highlighted earlier in this paper.

3.2 Technological trends

- Autonomous vehicles
- Availability of sensors
- Big data
- Communication and sharing
- Constant connectivity
- Digital information
- Free public Wi-Fi
- Gamified incentives
- Interactive street furniture
- Quantified-self

Key Scottish sub trend = Big Data.

Increasingly Scottish cities are utilising Big Data to gain a better understanding of how and when people move about and to provide open data to its residents. An example of this is the Glasgow future city project that includes active travel as one of its open data sources.^{vi}

3.3 Economic trends

- Congestion costs
- Digital economy
- Genius hub
- Globalism
- Health costs
- Recession
- Sharing economy
- Tourism
- Unemployment
- Urban regeneration

Key Scottish sub trend = Tourism.

Increasingly new long distance walking routes such as the recently completed Hebridean Way^{vii} and the John Muir Way^{viii}, are being used to promote and attract tourists to visit Scotland.

3.4 Environmental trends

- Active transportation
- Air pollution
- Climate change
- Decarbonisation
- Energy consumption
- Green infrastructure
- Heat island
- Land use patterns
- Loss of biodiversity
- Transport safety

Key Scottish sub trend = Active transportation.

Active transportation is increasingly being viewed as a priority in Scotland highlighted by the recent formation of an Active Travel Task Force reporting directly to the Transport Minister.^{ix}

3.5 Political trends

- City competitiveness
- Collective consciousness
- Green politics
- Leadership
- Micro-solutions
- Policy integration
- Privatisation
- Public space
- Stakeholder engagement
- Urban resilience

Key Scottish sub trend = Urban resilience.

Scottish cities have or are in the process of developing resilience strategies such as the Glasgow strategy published in 2016.^x

Walking is an independent and reliable transport mode. Increasing the walkability of a city provides an opportunity to improve its resilience and can form a key part of cities transport response to the resilience challenge.

4 Benefits

Evidence of benefits is essential to influence city decision-makers. To achieve the shift towards walkable cities, the development of an evidence-based methodology is a fundamental step to establish a shared global recognition that walkable environments can shape better cities.

A literature review and a series of multidisciplinary workshops held in different geographic areas by an Arup global team led to the development of a list of benefits of walking that should be achievable in most contexts and demonstrable by quantitative and qualitative measurements. This provides a framework to guide decision makers to set visions, long-term planning, and monitor results, from a multidisciplinary and integrated perspective.

As shown in Figure 3, the findings define 16 areas of benefits, and a series of secondary indicators, identified as follows:

- **Social benefits** such as health and wellbeing, safety, placemaking, social cohesion and equality.
- **Economic benefits** including city attractiveness, the local economy, urban regeneration, and cost savings.
- **Environmental benefits** associated with virtuous cycles, ecosystem services, liveability and transport efficiency.
- **Political benefits** associated with leadership, urban governance, sustainable development and planning opportunities.



Figure 3 – Areas of benefit

The specific benefits that can be achieved will depend on the unique circumstances and characteristics of each individual city. Below are selected benefits from the list of 50 that we believe are most appropriate and likely to be achieved from a Scottish cities context.

4.1 SOCIAL

Benefit = Addressing the obesity crisis

Walking is the perfect exercise to make regular physical activity available, affordable and easily accessible to all.

Obesity reduces life expectancy by an average of three years.^{xi} Previously considered an issue only for high-income countries, obesity is a public health problem on the rise over many parts of the world. In 2014, more than 1.9 billion adults – 39% of the global population aged 18 and over – were overweight and over 600 million of these (13%) were obese. The WHO identifies dietary choices and physical inactivity – caused by increasing urbanisation, sedentary jobs, and passive modes of transport – as the major causes of this problem.^{xii}

Studies demonstrate that, depending on weight, walking at an average speed (5 km/hour) burns around four calories per minute, which translates to over 100 calories for a typical 30 minute commuting walk. Walking 3km a day three times a week can help reduce weight by up to 0.5kg every three weeks.^{xiii}

4.2 ECONOMIC

Benefit = Promoting tourism

For tourists, walking is the best way to experience a city as it makes the experience more recognisable and memorable.

Globalisation and increased mobility have made it easier to travel both in terms of time and costs. The number of international tourists worldwide is expected to increase by 43m every year^{xiv}. Tourism can notably contribute to increasing urban wellbeing, economic growth and quality of life and has become one of the leading economic sectors for several countries. In 2011, the overall income of inbound tourism exceeded \$1.2tr, with an average of \$3.4bn per day.^{xv}

Tourism is influenced by a city's infrastructure and in particular the pedestrian accessibility. Walkability creates public spaces that are more enjoyable to pass by and spend time in. The pedestrianisation of the north side of *Trafalgar Square* brought a 300% increase in visitors^{xvi} and Times Square in New York City is now crossed by 300,000 pedestrians each day after it was pedestrianised, and is the most visited place globally.^{xvii}

4.3 ENVIRONMENTAL

Benefit = Addressing air pollution

Due to a lack of vegetation and increased traffic congestion, urban areas have difficulty absorbing air pollutants. About 50% of the global urban population experiences air pollution 2.5 times higher than World Health Organization recommendations.^{xviii}

More than 1bn people are subjected to urban air pollution every year, which is estimated to cost about 2% of GDP in developed countries and about 5% of GDP in developing countries, where over 90% of air pollution in cities is caused by vehicle emissions.^{xix}

Pedestrian-only streets have long-term beneficial effects on air quality. Since 2010, Embarq has monitored the level of pollutants after the pedestrianisation of 295 streets in Istanbul's Historic Peninsula, registering a 32% reduction of NO₂ over a four year period.^{xx}

Even a single day without vehicle traffic can bring significant benefits. In September 2015, Paris' inaugural car free day, *Journée Sans Voiture* cut levels of nitrogen dioxide by 40% in parts of the city.^{xxi}

4.4 POLITICAL

Benefit = Fostering competitiveness

Investing in walkability raises cities' competitiveness and their importance in the global cities network. Today, urban competitiveness is more than ever a key central issue for cities policies.

During the 1980s, Melbourne was nicknamed "a doughnut", because of the lack of amenities in the city centre. In 1994, the city decided to plan a substantial upgrade of public spaces to revitalise it into a vibrant 24-hour destination. In a 10 year period, footways and street furniture were renovated, and narrow back lanes were turned into a walkable network, complete with cafes and restaurants.^{xxii}

In 2015, Melbourne was recognised by the Economist as the “World’s most liveable city” for the fifth consecutive time.^{xxiii}

5 Actions

Moving towards a walking world requires actions. These actions can be wide ranging and include visions and strategies, safe and efficient transport systems, creating liveable environments, a sense of place and community and smart and responsive cities.

The walkable city is a city that puts people movement first. Therefore, to address the complexity of the often competing movement issues, a wide variety of actions and policies is required, diversified both by nature and dimension, as illustrated in Figure 4. These actions concern:

- **visions and strategies:** series of urban policies, involving city plan policies and innovative interventions, promoting a diffused walkable approach to the city;
- **safe and efficient transportation systems:** interventions that operate on a city’s infrastructure providing an improved street network;
- **creating liveable environments:** set of actions that affects the urban quality, re-designing public space on the basis of pedestrians’ priorities;
- **sense of place and community:** strategies and proposals to encourage the active and emotional participation of citizen in everyday urban life;
- **smart and responsive cities:** technological tools and innovative approaches contributing to a city’s monitoring and evaluation.

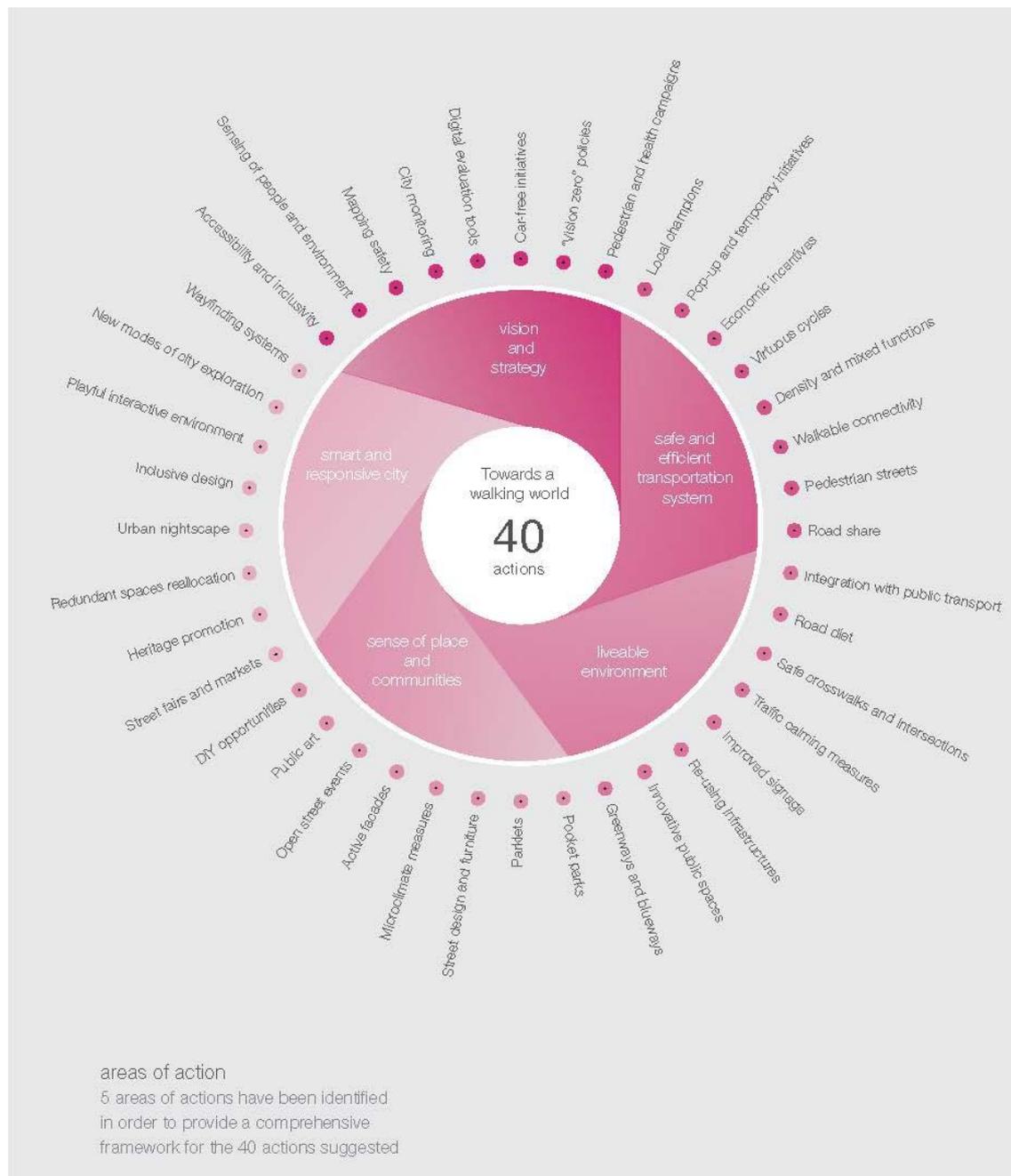


Figure 4 - Actions

Highlighted below is one selected action from each of the five areas which are likely to be applicable in a Scottish cities context.

5.1 Visions and strategies

- Density and mixed functions

Location of homes, places of work and facilities are the most significant influencers of transport demands and transport mode choice. The compactness of a city, especially whether or not different land-uses are within walking distance of each other, is the most decisive attribute that gets people walking, or choosing alternative modes of transport.

5.2 Safe and efficient

- Road diet

A road diet, or the reallocation of lanes from roads for new and different functions such as landscaping, cycling or walking paths may help achieving systemic improvements and balance the use of the street environment. A road diet is a very effective way for cities to reclaim redundant street space that is currently dedicated to vehicles, increasing spaces to other modes such as walking.

5.3 Liveable environments

- Parklets

The significant number of surface vehicle parking spaces in a city offers an opportunity to re-imagine and reclaim public space. Temporarily, or permanently, redesigning car parking spaces as pedestrian havens such as parklets allows for greater social interaction which in turn encourages walking.

5.4 Place and community

- Street fairs & markets

Street fairs and markets have traditionally been areas of intense pedestrian activity, as face-to-face communication and the direct experience of the available goods and services are invaluable to market shopping. Launching new market-like events is a way of attracting people onto streets.

5.5 Smart and responsive

- Wayfinding systems

New smarter wayfinding systems are able to actively promote and encourage walking by providing access to real-time data and making walking more engaging, efficient and informed. GPS enabled apps can accurately inform users of their route possibilities and present walking as a viable mode choice. Travel-planning apps like *Citymapper*^{xxiv} now enable users to calculate the fastest route from A to B, comparing multiple modes of transport, including walking for all or part of trips.

6 Case Studies

A wide and diverse collection of emerging ideas and case studies to capture the initiatives that are taking place around the world in creating walkable cities have been collated.

Emerging ideas or concepts along with recent projects are highlighted in the case studies, with the aim to inspire designers, planners, and decision makers to provide their own solutions in their own city.

These case studies have been grouped into five themes and below is a selected case study from each theme that could be applied in a Scottish cities context.

6.1 Theme: safe and efficient transportation system

Case Study: Freeway-Covering Urban Public Park Dallas, TX. Woodall Rodgers Park Foundation for public use.^{xxv}

Built over a recessed section of motorway, “Klyde Warren Park” is a privately managed park that offers year-round activities, connects two previously separate districts, and increases foot traffic and quality of life.

6.2 Theme: sense of place and communities

Case Study: Leefstraat “Living Streets” Summer Road Closure Project Ghent, Belgium. City of Ghent for public use.^{xxvi}

This 10-week road closure experiment saw 22 of Ghent’s busiest streets closed to traffic and converted into ‘living streets’, featuring pop-up parks and bars helping locals to play, socialise and relax.

6.3 Theme: Liveable environment

Case Study: High Line Aerial Greenway Redevelopment Project New York City, NY. NYC DPR for public use ^{xxvii}

This 1.5 mile long stretch of disused elevated railroad track on New York City's West Side was redeveloped into an extremely popular urban park, revitalising neighbourhoods and providing greenspace.

6.4 Theme: vision and strategy

Case Study: Ecomobility Neighbourhood Car Free Experiment Suwon, South Korea. EcoMobility World Festival for public use.

As part of the "EcoMobility" World Festival, an area of Swon City, South Korea, was converted into an 'ecomobile neighbourhood' with aim of providing residents with a taste of car-free urban living. ^{xxviii}

6.5 Theme: smart and responsive city

Case Study: Low-Energy Interactive Public Light Sculpture Rotterdam, Netherlands. Studio Roosegaarde for CBK Rotterdam et al.

Composed of hundreds of fibres and evolving over several locations since 2007, DUNE is an interactive light and sound installation that responds to the motion of people, encouraging public interaction and the exploration of urban space. ^{xxix}

7 Conclusions

This paper has focussed on walking, which can often be taken for granted as a mode of transport and not been given the priority that it deserves in city transport plans and policies. It has investigated the role walkability plays in developing more liveable, sustainable, healthy, resilient, safe and attractive cities.

The Towards a walking world research report, that this paper has summarised, is intended to inspire decision makers, designers, planners, engineers, consultants and technical specialists working in the built environment to take positive steps towards a walking world.

This will require taking actions to see transformational changes in cities, many of which suffer from a legacy in recent decades of being designed around vehicles and in particular the private car at the expense of people movements and pedestrian activity; and it will require placing walkability at the heart of our current and future urban areas.

The starting point for Scottish cities will be to create a city vision and strategy for walking taking the lead from Scotland's National Walking Strategy, recognising it as a transport mode in its own right (not just as part of wider sustainable or active travel plans and initiatives), as well as an important part of almost all trips.

More walking champions are needed in cities to help make that change. Creating safe and efficient transportation systems, liveable environments, a sense of place and community, and smart and responsive cities will all help to make walking a normal part of everyday life and the natural choice for shorter journeys.

8 References

- i <http://www.gov.scot/Publications/2014/06/5743>
- ii <http://www.transport.gov.scot/report/j450918-05.htm>
- iii <http://www.transport.gov.scot/report/SCT01171871341-00.htm>
- iv <https://www.fastcodesign.com/1669244/by-2050-70-of-the-worlds-population-will-be-urban-is-that-a-good-thing>
- v <http://www.transport.gov.scot/report/SCT01171871341-03.htm>
- vi <http://futurecity.glasgow.gov.uk/data/>
- vii <http://www.visitouterhebrides.co.uk/see-and-do/activities/hebridean-way>
- viii <http://johnmuirway.org/>
- ix <http://www.transport.gov.scot/environment/active-travel-task-force>
- x <https://www.glasgow.gov.uk/index.aspx?articleid=17668>
- xi http://www.noo.org.uk/uploads/doc/vid_7199_Obesity_and_life_expectancy.pdf.
- xii <http://www.who.int/mediacentre/factsheets/fs311/en/>.
- xiii *Benefits of Walking*, by coolwalking. 2013. Available from: <http://coolwalking.com/benefits.html>
- xiv *Tourism towards 2030: Global overview*, by World Tourist Organization. 2011. Available from: http://cf.cdn.unwto.org/sites/all/files/pdf/unwto_2030_ga_2011_korea_1.pdf.
- xv UNWTO Tourism Highlights 2012 Edition, by UN World Tourism Organisation. 2012. Available from: <http://mkt.unwto.org/sites/all/files/docpdf/unwtohighlights12enhr.pdf>.
- xvi The pedestrian pound. The business case for better streets and places, by Living Streets. 2014. Available from: http://www.livingstreets.org.uk/media/1391/pedestrianpound_fullreport_web.pdf.
- xvii Pedestrian Counts, by Times Square Official Site. 2014. Available from: <http://www.timessquarenyc.org/do-business-here/market-facts/pedestrian-counts/index.aspx#.V0h4aPmLTDC>.
- xviii *Air quality deteriorating in many of the world's cities*, by World Health Organization. 2014. Available from: <http://bit.ly/1nnM5Pb>.
- xix *Urban Air Pollution*, by United Nations Environment Programme (N/A). Available from: <http://bit.ly/1QcGQz3>
- xx *Assessment of the Air Quality Effects of Pedestrianisation on Istanbul's Historic Peninsula*, by Embarq Turkey. 2015. Available from: <http://www.wrirosscities.org/research/publication/assessment-air-quality-effects-pedestrianization-istanbuls-historic-peninsula>.
- xxi *Paris car ban cut harmful exhaust emissions by up to 40 per cent*, by Caroline Mortimer. 2015. The Independent. Available from: <http://www.independent.co.uk/environment/paris-cuts-harmful-no2-exhaust-emissions-byup-to-40-per-cent-after-banning-cars-for-a-day-a6679686.html>.

xxii *Under-Development: Reclaiming 700 Miles of Public Space*, by Urban Omnibus. 2015. Available from: <http://urbanomnibus.net/2015/08/under-development-reclaiming-700-miles-of-public-space/>.

xxiii *Melbourne named world's most liveable city for fifth consecutive year*, by Andrew Jefferson. 2015. Herald Sun. Available from: <http://www.heraldsun.com.au/news/melbourne-named-worlds-most-liveable-city-for-fifth-consecutive-year/news-story/ef1f8af4620f2a29115e8228235772e4>.

xxiv <https://citymapper.com/london>

xxv <https://www.klydewarrenpark.org>

xxvi <http://www.leefstraat.be/en/>

xxvii <http://www.thehighline.org/>

xxviii <http://www.ecomobilityfestival.org/>

xxix <https://www.studioroosegaard.net/project/dune/info/>

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