

NECTAR WORKSHOP October 2022 - Mobility and Accessibility after the Pandemic: Emerging Trends and Policy Challenges. Joint Research Centre Sevilla - European Commission

Delivering Resilient Sustainable Transport Systems Using Accessibility Planning Approaches

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ABSTRACT

Clear accountability for transport performance can be difficult to manage within collaborative programmes. Rigour has been growing within accessibility planning approaches to define accountable planning frameworks for cross-sector collective action. These approaches, support more explicit understanding about where and when people are travelling, and strengthen capabilities to influence these travel choices. Accessibility planning connects the individual aims of people with the organisational processes that can effect change, setting them within the context of social and political values.

Stakeholder financing models for maintaining and improving accessibility have proved more resilient than the government funded accessibility planning collaborations. Although accessibility planning has transformed investment in transport, including through platform-based technology systems to manage customer relationships, these collaborative approaches are only one force pushing organisations towards partnership projects for smarter places and connections. Carbon management approaches under PAS 2080, also help to ensure that net-zero accessibility is a much more clearly defined goal for future transport systems. Operational delivery of these approaches is achieved through: inclusive and equitable service design, enhanced opportunities for sustainable lifestyles, responsible business practices, effective regulation, and improvements to fiscal policy.

Accessibility planning helps to make sustainable outcomes more achievable, by ensuring impacts on people and places are more transparent than is possible when planning for mobility, and that they are built into delivery frameworks more effectively. Stakeholders unite through three key drivers of social behaviour: hierarchy (the rules are specified in policy/legislation), individuality (empowering people to seek their preferences), and solidarity (voluntary collective action).

1. INTRODUCTION

1.1. Background

Sometimes transport planning is narrowly viewed in terms of “the formal and informal rules that define interventions in the transport system to facilitate effective and efficient movement of people and goods” (Martens, 2020). However, the role of transport planning can be much broader, managing the interactions between transport and everything else including sustainable development. To encourage these broader approaches in the UK, legal frameworks for community planning were established, with accessibility planning approaches set up to manage the activities connecting transport with the wider economy and society (DHC and UoW 2004). The detailed approaches to community planning have continued to evolve since then (Pemberton and Peel 2016) to reflect the evolving capabilities of communities, businesses and public authorities.

Within these planning structures, accessibility considerations have been central to most decisions about service locations, land use planning, service design, information and communication systems, and the safety, security and the physical layout of the built environment. These approaches broaden the scope of transport planning and investment to include more equitable, people centric, integrated approaches (Halden et al, 2000; ITF 2022).

Clear accountability for transport performance can be difficult to manage within collaborative programmes. Rigour has been growing within accessibility planning approaches to define accountable planning frameworks for cross-sector collective action (Silva, Pinto and Bertolini 2019, Geurs and Halden 2015). Measuring the value of benefits in terms of accessibility change, helps to clarify who, where and what outcomes are being achieved to support equitable planning and allocation of costs and benefits.

In the first 20 years of this century, the growing technology, data and knowledge economies have greatly strengthened accessibility planning approaches by building co-operative working practices on an increasingly robust and more human centric evidence base. The growing uncertainties about the future related to climate change, equity and resource use, increase the need for resilience to be built within communities. More explicit understanding about where and when people are travelling, and the capability to influence these travel choices is becoming an increasingly important measure of each stake in transport’s value chain.

Evidence of accessibility planning from UK practice has been growing as these new approaches have evolved. Previous reviews of practice have identified ways that practice can further improve (Atkins, 2012; House of Commons Environmental Audit Committee, 2013; Halden, 2014). The discussion in the paper explores how these approaches have evolved through a period of rapid social and economic change, including the Covid-19 pandemic and the economic restructuring following the 2008 global financial turmoil.

1.2. Conceptual framework

The explanatory power of accessibility to describe changing patterns of transport and land use, has been extensively explored in research, but cause and effect are far less clear. What combination of factors results in accessibility improvements? Explicit management of

accessibility change can support decision-making on multiple levels, spatially and institutionally, providing a common language through which to broker solutions for people, places and connections (UN 1992). Over the last 30 years, these enabling approaches have developed within three main professional fields, for community/local/neighbourhood planning, land use planning and transport planning. (Figure 1.1).

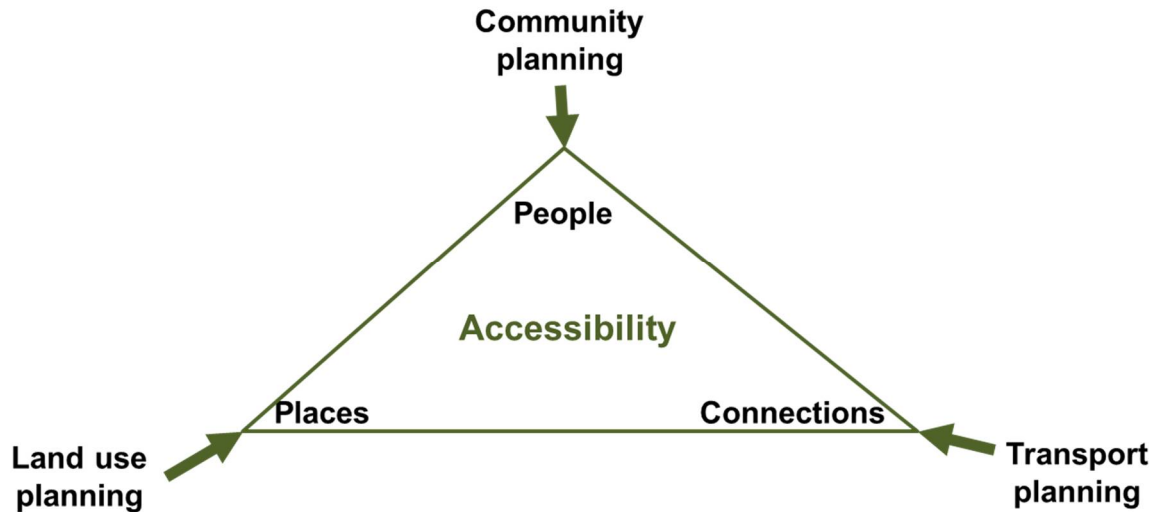


Figure 1.1 – Planning Inputs to Accessibility

The role of accessibility planning in mediating integrated solutions is often not achieved (Kinigadner 2021), not least because conceptions of accessibility are framed differently in each professional field. Without a well-developed framework for integrating the planning for people, places and connections, there is potential for negative outcomes such as:

- People - Improving the capabilities of people to access new opportunities can lead to greater consumption more than better accessibility.
- Places - Improved proximity to local services can concentrate wealth leading to the decline of opportunities in more deprived areas widening inequities in access.
- Connections - A faster transport connection (or e-commerce opportunity) can weaken demand for local facilities, leading to a greater decrease in accessibility, particularly for the least mobile.

Like other similar approaches to co-ordination that rely on similar core concepts, accessibility planning must connect the individual aims of people with the organisational processes that can effect change, setting them within the context of social and political values (Taylor, 2021). These approaches recognise that change is usually controversial and contested, with more optimal outcomes achievable by enhancing the capabilities of people and organisations through deliberation of evidence (DHC and University of Westminster, 2004).

The opportunities to make connections between people and places are as likely to be found in economic, health, education, social inclusion, regeneration, and business activities as they are in transport, land use and community planning. Existing accessibility planning guidance encourages comprehensive assessments to consider all: spatial, financial, physical, information, environmental, safety, temporal, and personal capabilities of different groups to ensure equitable approaches (Scottish Transport Appraisal Guidance, 2003, DfT 2004). The guidance recommends proportionality in the scale and scope of the approaches adopted, through engagement with communities affected and delivery partners, but realizing the potential of these

approaches requires more attention to ways of focusing action, and organising and managing implementation to deliver system level change.

This paper expands the simple framing of accessibility planning in Figure 1.1 to describe these more comprehensive frameworks where the aims of stakeholders, and the mechanisms to effect change, are more explicit. These processes for planning, organising and implementing change are explained through examples of accessibility planning practice.

2 RESILIENT SUSTAINABLE TRANSPORT SYSTEMS

Transport is essential for sustainability, helping to achieve integration and support the needs of the economy, environment, and society. Sustainable development goals for a circular transport ecosystem seek to operationalise these concepts with equitable and affordable net-zero resource use (UN 2015). Resources are limited, and not all demand for travel can be met. Transport systems need a framework to determine what levels of travel demand are consistent with sustainability. The needs of people and organisations to access opportunities was identified as a useful metric for assessing the sustainability of travel demand over 30 years ago (UN 1992) but there remains little standardisation of accessibility metrics, with each nation and region adopting different approaches (ITF 2022).

Progress has been made towards global standardisation for the measurement of carbon emissions, though the UN Paris Agreement leaves it to each signatory to the Agreement to define their own emissions pathway and control mechanisms (Fankhauser 2022). The first global standard established following the Paris Agreement for managing carbon in transport infrastructure (PAS2080) requires a hierarchy of carbon reduction which comprises:

- Firstly, ‘avoid’ travel by evaluating the travel need and exploring alternative means for achieving access without motorised access.
- Secondly, ‘switch’ to alternative solutions to adopt approaches that reduce whole life emissions through alternative scope, approach, materials, or technologies including changing the balance between capital investment and ongoing resource use.
- Thirdly, ‘improve’ solutions to improve the use of resources including potential for reuse or recycling of assets and materials.

The avoid, switch, improve hierarchy is now widely referenced in national and local policy approaches, to encourage and enable organisations to work towards circular economies within their supply chains. However, supply chains to enable these policies to be put into practice remain poorly developed and regulated (Halden 2021). Equitable resource allocation amongst suppliers, government/regulators, customers and wider society are needed to overcome tensions, and nurture acceptance of new systems and processes, including trust building activities to support organisational and cultural alignment. The readiness with which a growing number of countries and organisations have made net-zero pledges speaks to the unifying power of the net-zero narrative, but governance, accountability and reporting mechanisms are inadequate, particularly relating to environmental and social claims.

The need to address, and the capability to solve, these problems lies in different economic and social sectors, requiring cross-sector approaches to draw from diverse skills. Achieving more sustainable transport systems can be achieved by: building on the policy commitments by translating them into planning processes, and identifying the organisational processes to effect

change, including enabling responsive accountable implementation capability. Figure 2.1 describes increasingly popular approaches to making these connections with:

- Goals - Net zero accessibility defined as a central unifying planning goal co-ordinating the three statutory planning requirements for public authorities.
- Planning - Aligning land use, transport and community planning aims with the social and political values for sustainable accessibility to identify co-ordinated action for people, places and connections.
- Organising – Evidence of the potential and mechanisms for achieving sustainable accessibility change prompting action in each sector where the organisational capability to manage change lies.
- Implementing – Partnership, investment, rules, allocation of responsibility, promotion of behaviour change and monitoring of the effects of each action to manage and refine net-zero accessibility change over time.

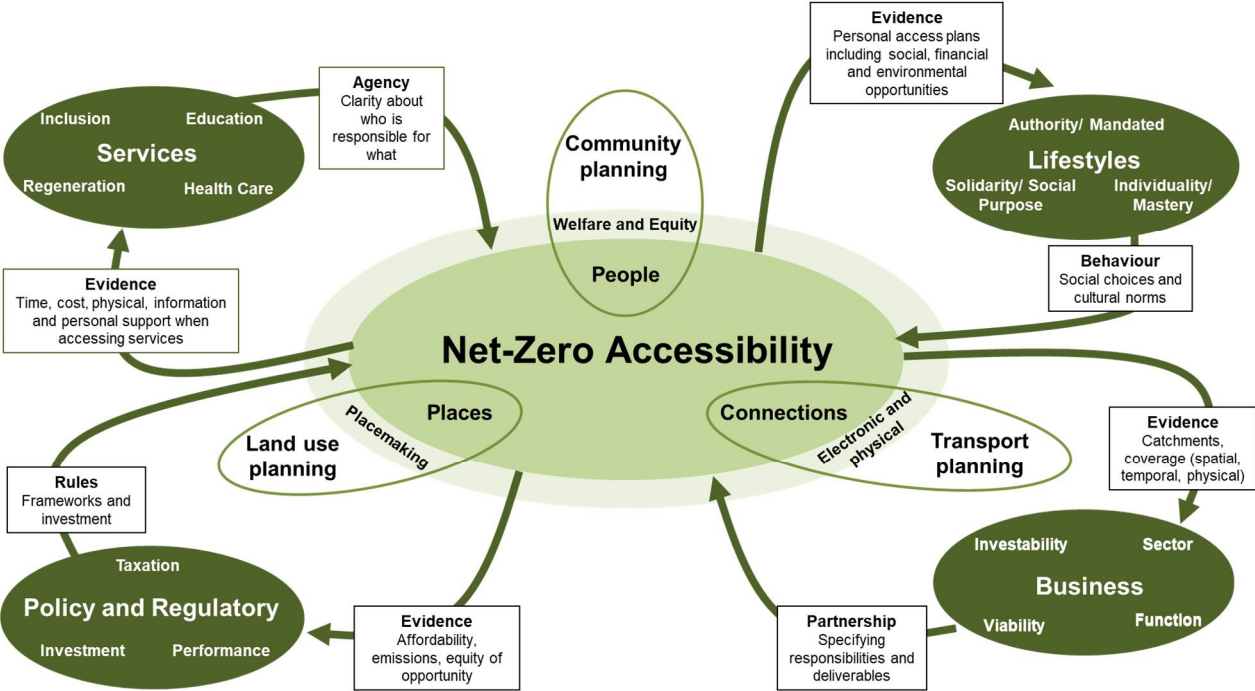


Figure 2.1 – Planning and organising Net-Zero Accessibility

These approaches recognise that the weak implementation of sustainable transport over the last 30 years has derived from the poor connections between policy goals and policy instruments. Planning processes have often been the main instruments of sustainable transport delivery, but these only weakly affect the day decisions on sustainable transport implementation by service providers, residents, and businesses. Often poor alignment between transport, land use and community planning complicates the implementation landscape.

The focus on net-zero accessibility helps to align the direction of change with the capabilities for action. For example, tax changes are often politically unachievable as they fail to align community planning and transport planning approaches, such as when they disproportionately affect the costs of access for those people living in the least accessible locations (European Parliament 2022). By designing accessibility planning processes to connect the goal of net-zero

access directly with the organisational delivery mechanisms, the capabilities for change are greatly enhanced through the co-production of solutions building trust and ownership.

The evidence of how to work collaboratively toward net-zero accessibility draws from four main types of operational delivery:

- Access to services
- Nurturing sustainable lifestyles
- Responsible business
- Effective regulation and fiscal policy

These four areas are discussed in turn below.

2.1. Access to Services

Practice for the co-design and co-production of solutions for access to services has developed over more than 20 years (Atkins 2012). One key area has been health service planning with joint health and transport partnerships between the national health service, the transport authority, and service users. The partnership in the city of Inverness and the surrounding Highlands of Scotland region, is managed by the health authority, NHS Highland, and the regional transport body, HITRANS. The location of healthcare facilities has been highly controversial, since increasing specialisation in health care provision has resulted in centralising health services over many years requiring longer journeys for many residents to health care services in cities (Golding et al 2020). Co-design of health and transport services with the local community seeks to identify more optimal service delivery arrangements. More collaborative ways of working have been able to identify and assist with delivery of:

- Avoiding travel - A wider range of health services being provided closer to where people live reducing the needs to travel.
- Switching resource allocation - Investing in local people to help them access health and social care more easily such as travel training and support for remote e-access using computer and telecommunications services.
- Improving travel – Introducing lower cost, lower emissions shared transport solutions.

Analysis in the NHS Highland area suggests that approximately 20% of all travel associated with healthcare can be avoided (Golding 2020). In particular, as a result of the co-production between 2014 and 2022 new local medical and treatment centres are being used to reduce the distance people need to travel.

Local centres are also now better equipped with technologies to provide high quality digital connections to specialist centres with local nursing support for patients. As a result, video appointments have become increasingly common (Wherton 2020) and are most widely supported by the older people who were prior to the co-design and production were most likely to resist online health appointments. In the NHS Highland area, prior to the Covid-19 pandemic, Caithness was the first part of NHS Highland area to make widespread use of the video appointments. When online appointments were often required as part of infection control during the peak of the pandemic, all parts of the NHS Highland scaled up their video appointment services. The scope for video appointments to replace face to face appointment varies by treatment speciality, so the proportion of video appointments depends on the triaging of healthcare priorities for each time period and location. However, as a broad average across

large population areas, since the end of the Covid-19 restrictions broadly 9% of appointments across all of the NHS Highland area continue to be made by video when previously they were face to face resulting in over 10% reduction in travel to healthcare appointments. The switch to video appointments is also associated improvements in patient satisfaction from, particularly older people who can now reduce the stress of travel.

The co-production has also helped to build trust in shared transport solutions including investment by the bus operator in commercially run public bus services to the regional hospital in Inverness and increased use of community run transport schemes for trips to healthcare.

2.2 Nurturing Sustainable Lifestyles

Achieving behaviour change towards approaches which avoid travel, adopt new ways of working, and improve transport takes time to build new culture and attitudes, but progress is being made in some areas using accessibility planning approaches. West Dunbartonshire is one of Scotland’s most deprived council areas and has been experiencing a cycle of decline in access to opportunities and services. The area is on the western fringes of the city of Glasgow. Centralisation of jobs and services within Glasgow, has created demand for more travel under a long term trend continuing over more than 30 years.

The Council defined a new more collaborative approach for connecting Dunbartonshire (West Dunbartonshire Council 2022) seeking greater community involvement to enable a virtuous cycle that improves access to allow people to travel less and boost the local economy. By broadening the scope of the transport delivery framework, the aim was to seek better alignment between council policy aims and local culture and behaviour by changing the focus of council activities from predominantly service provision towards approaches which enabled wider change within the community. The overall approach to is summarised in Table 2.

Table 2: Planning, Delivering and Enabling Sustainable Travel in West Dunbartonshire

Statutory Role for Council	Avoiding travel and travelling Less	Switching approach with a new scope for making connections	Improving transport with a programme of transition to zero-emission solutions
Plan, develop and operate services (PDO)	-More competitive local services monitored by measuring access to opportunity -Equity analysis of service delivery to make streets and public transport more accessible to all -More video and tele-service delivery	-Safe connected networks with new hubs for interchange between services -Community designed safe route plans for all significant trip attractors -Improved signing	-Replace petrol diesel car and vans with electric cars and vans -Replace diesel buses with zero emission buses -Replace diesel trains with zero emission trains -Replace diesel trucks with zero emission -Licensing terms for taxi and private hire vehicles to phase out
Procuring council services (CS)	-Planning services and land uses to achieve so	New community providers for path maintenance	

	that an increasing share of trips are local -Staff working online		petrol and diesel vehicles
Enabling others (EO)	-Accreditation and reward programmes (e.g. travel plans) -Grants for service providers who strengthen more local service provision	-Data sharing partnerships to help communities understand and build on opportunities -Community streets -Training programmes -Grants for community projects	-EV charge point partnerships -Bus quality partnerships -Freight quality partnerships

When lockdown restrictions were started for the Covid-19 pandemic, the enabling approaches in the strategy were boosted, such as community transport providers expanding the delivery of food to older or vulnerable people, and communities growing local food improving availability of healthy food in local retail outlets. By the end of 2020 there was optimism that implementation of local and national policies for community empowerment had been accelerated by the pandemic. However, when lockdown restrictions were eased, tensions grew as the new community providers increasingly found themselves facing competition from larger organisations that had increased their influence during the pandemic. Staff surveys for the connecting Dunbartonshire programme also found that some staff in public agencies feel threatened by community action, reflecting national research findings (Pemberton and Peel 2016).

In the post pandemic environment, trust has been harder to build, but there have been positive benefits from the accessibility planning work. West Dunbartonshire community groups, supported by council policies for connecting communities have been able to develop local food supply chains. Deprived communities responded to the Council’s consultations with support for new road pricing schemes to help fund their community connections. New policies for equity in the council proposals imply some shift in council spending away from improvements for relatively wealthy car owners, to less wealthy non-car users.

2.3 Responsible Business

Transport business models have traditionally been based on the economics of supply and demand. Where supply becomes scarce the price rises to fund more supply. However, the design of services based on supply and demand for mobility has increasingly been failing to reflect social needs. New business models valuing accessibility have been aligning transport business models with policy goals far more effectively than within business models for travel demand.

Walking has been the mode of transport with the greatest scope for these new service designs. Walking is so valuable to everyone that it is unthinkable that it should not be free, and because it is free it is not valued, and because it is not valued it is starved of investment, and because it is starved of investment many social and economic problems result. The new business models emerged first in controlled settings such as shopping centres where ‘footfall’ (the number of people walking around) has been measured and used to assess the value of different business approaches for managing the investment in promoting walking. Using such business models

for walking, the value of walking is predominantly derived from the activities of walkers adding value to non-transport activities as they access services (Lyons, 2020).

Like walking, internet connections provide access at a cost close to zero for users. Sometimes these new technology services are described as ‘mobility as a service’ or ‘transport as a service’ to echo the language of ‘as a service’ internet subscription service designs (Anyadike-Danes 2022). Many new technology services are not yet designed socially (Pangbourne, Mladenović, Stead & Milakis, 2020) but setting them within an collaborative accessibility planning approach aligns business models with the value of accessibility to manage relationships more socially:

- Business travel plans where employers offer packages of transport services to improve access for staff and customers to work such as subsidised travel tickets, car leases, cycle purchase/lease, and parking.
- Personalised journey plans issued to users of health services such as the tickets and passes needed to make a journey to hospital, or travel in special transport services commissioned by health authorities.
- Personalised tariffs where pay as you go pricing for road use is used, such as making access to work by car more affordable for young drivers who sign up for insurance based on where and how they drive (Halden, 2008).
- Travel for education using designated routes for walking and cycling and fares for transit services or special transport provision designed by education authorities.

Access to opportunity has been much enhanced by the internet, both as a substitute for travel and to complement and assist access by transport. Informed travellers do not necessarily behave in ways more consistent with policy or which strengthen communities, so the need for accessibility planning interventions has shifted from the provision of information, to effective governance of information systems (Metz, 2019).

Connecting people to opportunities requires detailed understanding of diversity within the population, and of the activities and places where access is delivered. Personalised services, using tools such as personal travel accounts are being used to help people customise their accessibility preferences in terms of cost, time, reliability and quality. A customer for an event such as concert or music festival will be travelling on an unfamiliar journey, so travellers are provided with personalised information and ticketing package, including assistance if required, together with personalised incentives such as discounted transport services for net-zero choices (DfT 2007).

2.4. Effective Regulation and Fiscal Policy

2.4.1 Basic accessibility standards

There are few common global standards for accessibility, but the World Health Organisation recognises accessibility as a human right for: physical access, access to information, and financial access to health, specifically identifying priority groups for action as being vulnerable or marginalized groups and all geographical areas including rural locations (WHO, 2013). The policy and legislation require access to opportunities to be ‘reasonable’ ensuring that provision is contestable by any people that consider they have been treated unreasonably.

Managing change through accessibility plans involves a systematic review of instances where people face barriers to access on account of physical, financial, information, safety or other challenges, with the collaborative plan identifying action to overcome these barriers by those with the ability to effect change.

Accessibility measures are increasingly operationalised in professional practice, but the adoption of actual accessibility standards is rare (Ryan 2023). Whilst accessibility standards can be set within specific local settings, elsewhere it is difficult to agree definitions and measures acceptable to all groups, with transparent measurement approaches and robust conditions for ensuring implementation.

2.4.2 Location and Land use Planning

Significant change in land uses is usually subject to some form of transport assessment (Scottish Government 2005), using detailed analysis of accessibility change to review:

- a. No net detriment to access – Often the most accessible locations next to transport interchanges or networks are already developed, so when locating new housing, leisure, retail or other opportunities demonstrating no net detriment to access associated with new development will often benefit existing locations as much as the development location. For example, building a new school or cycling route associated with a new housing development not only serves the new housing but existing locations as well. Indicators used in assessments are typically the travel time by walking, public transport and driving to local facilities.
- b. Accessibility ratios for equity – Ensuring that solutions are consistent with greater equity can be demonstrated by the ratio of accessibility for one group in society compared with another. Assessments typically show ratios for car available and non-car available travel times to frequently accessed locations such as employment centres, and grocers. Where the non-car available travel times are more than four times the car available travel times the location can be described as car dependent and ratios of lower than about 2.5 are needed for the location to be classed as competitive for public transport.
- c. Neighbourhood access to local services - Service providers planning locations of services have long taken account of the catchment population, but often using crude accessibility measures such as the crow flies distance. Increasingly journey times are used to optimise locations. For example, the UK pharmacy grant scheme targets support for pharmacies where there is no existing pharmacy within walking distance of an existing pharmacy. Businesses considering pharmacy locations are therefore incentivised to locate new premises in areas that improve access to these services. The government data on the travel times from each house address to each pharmacy used in this national scheme recently also proved to be useful when planning rapid deployment of accessible vaccination locations across the country as part of the response to the Covid pandemic.

Seeking to unite people behind accessibility as a placemaking goal is commonly applied in most local authority land use plans. Branding accessible neighbourhoods as “15-minute neighbourhoods” has been used by some authorities to represent the locations where people live within walking distance of core local services including grocers and health services. Local service providers use these methods to influence demand so that access to local services

becomes more popular, using policy instruments such as relief on taxes or grants for service provision where there is a need for enhanced local services (DHSC 1998).

The Covid-19 pandemic helped to accelerate land use plans for a more rapid transition to net-zero to enable people to access services locally. However, the national database of records of planning consents shows that the desire of governments to support more development proposals in total, regardless of quality, resulted in many more development consents being awarded. One legacy of the pandemic disruption is that many unsustainable developments have received planning consent which in normal times might have been rejected by planning authorities.

The pandemic legacy pipeline of development with planning consents will not all be funded. Although land use planning has been viewed as a key mechanism for governments to ensure sustainable land use development, given the proliferation of unsustainable planning consents, there is now greater potential for influence through ethical and social governance (ESG) of finance.

2.4.3 Data frameworks

Many accessibility challenges are not visible from publicly available data, relating primarily to personal issues, or for specific people in private settings, so these are best resolved through personal customer relationship management and personalised travel plans (DfT, 2007). To assist with the process of data sharing, data collaboratives have been used to draw together data within governance frameworks that respect data use consents such as the use of data on how local services are being accessed (ODI, 2021).

Accessibility planning processes are helping to provide the organisational frameworks for this process of sharing evidence providing transparency, allocating responsibilities to manage accountability, and openly sharing methodologies and data at the level needed to empower collaborative decision making to enable feedback to correct imbalances (Wigan, 2011).

2.4.4 Regulating markets

As a derived demand, regulation of transport markets is complex since transport regulation affects all of the aspects of the economy and society that transport serves, often in ways that are hard to predict and difficult to manage. These problems have been growing, with transport costs increasingly bundled with other services in more integrated online marketplaces. Equitable market design requires that, as far as practicable, transport prices for each journey should reflect the travel purpose and needs of people making the journey or purchasing the transport. This is best achieved at the level of individual locations or organisations, so regulation for sustainable development has typically required process solutions such as travel plans.

However, the quality and effectiveness of travel plans has been difficult to regulate, with many travel plans being little more than greenwash (Rye 2002). Net-zero accessibility performance metrics help to overcome these challenges through travel plans (Highland Council 2022) by regulating:

- Levels of access for new housing locations, such as the requirement for residents of the dwelling to pay an annual facilities management fee to fund net-zero services such as zero emission bus services and shared micro-mobility solutions.

- Access to local opportunities such as net-zero access to key services such as grocers, leisure facilities, and health services with obligations (e.g. for landowners) to ensure local services are maintained.
- Equitable allocation space to maximize the potential for net-zero accessibility, most commonly managing parking supply according to accessibility criteria.

3. ENHANCING CAPABILITIES FOR CHANGE

Clear goals for net-zero accessibility, co-ordinated planning, effective organisation and managed implementation only succeed where social change is effectively managed. The transport sector is characterised by inertia, and path dependencies which affect the technologies used, the approach to infrastructure, social practices, planning and decision-making (Anyadike-Danes 2022). Wider adoption of net-zero accessibility planning approaches requires this social change to be managed.

There are many different perceptions of society, all important to the perspectives of different groups of people. For incremental change to succeed, accessibility planning must respect the different traditions whilst offering a common language and communication framework within which to measure and manage progress towards social goals such as equity and sustainability (Social Exclusion Unit, 2003).

Figure 3.1 describes how relevant evidence about net-zero accessibility can be used to guide the inclusive and enabling approaches to community governance and empowerment.

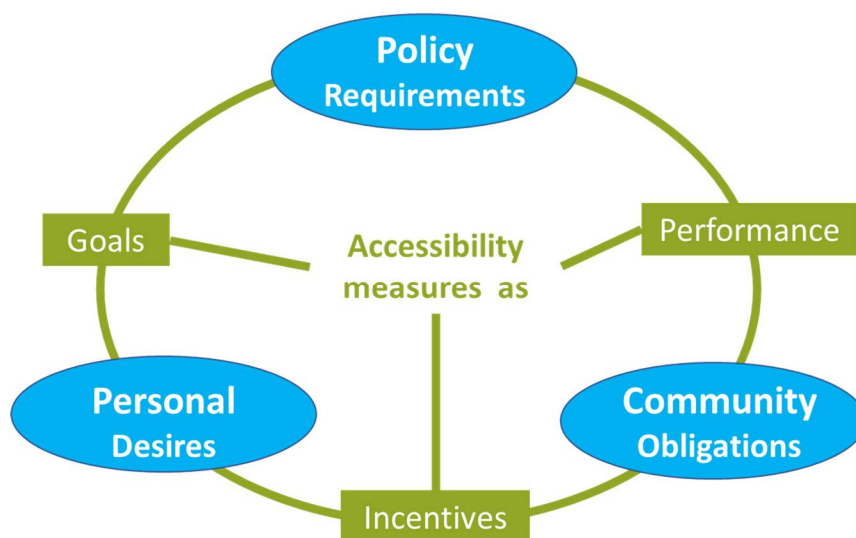


Figure 3.1 – Designing accessibility business models socially

This approach frames travel behaviour change within the broad social framework of net-zero accessibility to identify three key drivers of social behaviour (Halden, 2017):

- a. Hierarchy (the rules are specified in policy/legislation) – Accessibility aims to define these attributes depend on some policy, rule or social aim being framed by an overseeing or managing organisation.
- b. Individuality (empowering people to seek their preferences) – These recognise and enable personal factors such as information systems to support better travel

choices, the capability to ride a bike or drive a car, and many personal preferences on ways of accessing opportunities, particularly for people with more specific mobility needs.

- c. Solidarity (voluntary collective action) – People unite to participate in a collective solution as a result of an obligation to others such as: being an employee of an organisation or member of a society, or buddy schemes for travel to school and other community events and facilities.

Systematic reviews of the many ways of measuring accessibility show that each measure must be designed to be relevant to context in which it is being applied (Committee of the Transport Access Manual, 2020). The effectiveness of accessibility planning delivery in supporting the social change depends on the clarity with which each change can be explained by accessibility metrics. Table 3.1 illustrates how measures of accessibility are used to align policy goals with personal desires and community obligations to help progress collaborative working and business models towards improved access to opportunity.

Table 3.1: Illustrative measures of accessibility to manage performance against socially designed goals

	Policy Requirements	Personal Desires	Community obligations
Goals	Increase in employability capabilities of population	High quality jobs within easy access	
	Net-zero emissions	Stated preferences for access to more quality and choice (e.g. measured as floorspace of retail or access to a representative basket of retail products) and lower prices using the time and cost of ultra low emission travel solutions	
Performance	Proportion of properties in an area within step free walking distance of a shop	Walk time to a foodstore with at least x sq m of floorspace),	Proportion of retail spend made without motorised travel
	Ratio of journey times to city centres for car and non-car available trips	Cost of making a designated journey	Proportion of people using non car options to access city centres
	An hourly bus service to hospital)		
Incentives		Number of people benefitting from cheaper travel using travel tickets discounted when accessing hospital services	Proportion of population aware of best value travel opportunities

4. CONCLUSIONS

Accessibility planning has proved to be a highly successful approach for managing collaborative working towards a net-zero transport economy and society. However further improvements are needed to improve the coverage and resilience of these processes.

The 2008 global financial crash revealed weaknesses in the resilience of accessibility planning processes when many cross sector, sustainable, partnership projects were sacrificed to protect narrow financial accounting value for individual organisations rather than broader social value. Many of the lessons about resilience from Covid-19 pandemic are similar to 2008, but stakeholder financing models for maintaining and improving accessibility have proved more resilient than the government funded accessibility planning collaborations that were more dominant at the time of the 2008 global financial crash.

Accessibility planning helps to achieve more sustainable outcomes with a broader scope. Within accessibility plans, impacts on people and places are more transparent than with planning for mobility, helping particularly to manage cross sector working and behaviour change by people and businesses. Decarbonisation of transport, such as through electrification of vehicles, becomes more socially and economically achievable when managed as part of programmes to manage progress towards net-zero accessibility.

Although accessibility planning has transformed investment in transport, including through platform-based technology systems to manage customer relationships, these collaborative approaches are only one force pushing organisations towards partnership projects for smarter places and connections. Carbon management approaches under PAS2080 to avoid travel and shift the scope of transport implementation, to ensure that net-zero accessibility is a much more clearly defined goal for future transport systems.

Resilient social design using accessibility planning approaches reflects the diversity of perspectives on society. Success in co-ordinating co-production of activities demonstrates the ways that legal and financial frameworks can combine with personal and community preferences towards more achievable change.

5. REFERENCES

Anyadike-Danes, C.M., Berglund-Snodgrass, L., Dickinson, J., Fred, M., Hesselgren, M., Isaksson, K., Marsden, G., Mukhtar-Landgren, D., Oldbury, K., Paulsson, A. and Sjöman, M., 2022. Experimentation for sustainable transport?: Risks, strengths, and governance implications. Linneförlag.

Atkins 2012 Accessibility Planning Policy: Evaluation and Future Direction - Final Report. Centre for Research on Social Policy

Committee of the Transport Access Manual 2020. A Guide for Measuring Connection between People and Places

DfT 2004. Guidance on Accessibility Planning in Local Transport Plans. Department for Transport. London

DHC and University of Westminster 2004. Developing and Piloting Accessibility Planning. Department for Transport. London. https://dhc1.co.uk/content/accessibility_developing.pdf

DfT 2007 Making Personal Travel Planning Work. Department for Transport. London

European Parliament 2022. Pricing Instruments on Transport Emissions. Policy Department for Structural and Cohesion Policies. Directorate-General for Internal Policies. PE 699.641

Fankhauser S., Smith S., Allen M., Axelsson K., Hale T., Hepburn C., Kendall J. M., Khosla R., Lezaun J., Mitchell-Larson E. Obersteiner M., Rajamani L., Rickaby R., Seddon N., and Wetzler T, 2022. The Meaning of Net Zero and How to Get it Right. Nature. <https://doi.org/10.1038/s41558-021-01245-w>

Farrington J.H., Shaw J., Richardson T., MacLean M., Bristow G, Halden D, Leedal M 2004 Settlements, Services & Access: The Development of Policies to Promote Accessibility in Rural Areas in Great Britain. HM Treasury, Welsh Assembly Govt., Countryside Agency and Scottish Executive.

Geurs, K. and Halden, D. (2015) Accessibility Planning Theory and Practice in the Netherlands and the UK. Transport and Development. Edward Elgar.

Golding, J. MacRae, N. and Halden, D. 2020 Access to healthcare: using co-creation to develop sustainable mobility initiatives to enhance accessibility in semi-rural areas. <https://starconference.org.uk/star2020.html> December 2020

Halden, D. 2008. Citizens, consumers and the acceptability of road pricing. Proceedings of the Institution of Civil Engineers – Transport. Volume 161 Issue 3, pp. 149-154, August 2008

Halden, D., McGuigan, D., Nisbet, A. and McKinnon, A. 2000 Review of Accessibility Measuring Techniques and their Application. Scottish Executive Central Research Unit.

Halden, D. 2014 Shaping the Future. Case Studies in Accessibility Planning. Transportation Research Procedia Volume 1, Issue 1, 2014, Pages 284-292

Halden, D. 2017. The use of accessibility indicators in planning and investment. International Transport Forum, <https://www.itf-oecd.org/files/use-accessibility-indicators-planning-and-investment>

Halden D, McKinnon A., Macpherson A. 2021, A New Look at Making Sustainable Transport Work for Everyone. <https://stsg.org/a-new-look-at-making-sustainable-transport-work-for-everyone>

Highland Council 2022. Inner Moray Firth Local Development Plan - Transport Appraisal.

House of Commons Environmental Audit Committee 2013 Transport and Accessibility to Public Services. UK Government

ITF 2022. Broadening Transport Appraisal. Round Table 188. International Transport Forum. <https://www.itf-oecd.org/broadening-transport-appraisal>

Lyons, G. 2020 Walking as a Service Does it have Legs? Transportation Research Part A: Policy and Practice Volume 137, July 2020, Pages 271-284

Martens, K. (2020) A People Centred Approach to Accessibility. International Transport Forum at the OECD. <https://www.itf-oecd.org/people-centred-accessibility>

Metz, D. (2019) Driving Change. Travel in the 21st Century. <https://www.agendapub.com/books/78/driving-change>

ODI (2021) The Use of Mobility Data for Responding to the COVID-19 Pandemic http://theodi.org/wp-content/uploads/2021/03/Data4COVID19_0318.pdf

Pangbourne, K. Mladenović, M., Stead, D., and Milakis, D. (2020) Questioning Mobility as a Service: Unanticipated Implications for Society and Governance. Transportation Research Part A: Policy and Practice, Volume 131, pages 35-49

PAS 2080. 2016 (revised 2023). Carbon Management in Infrastructure Verification. <https://www.bsigroup.com/en-GB/standards/pas-2080/>

Pemberton and Peel 2016 - New Models of Community based Planning in the Devolved UK [https://planningexchange.foundation.org.uk/reports/Pemberton-and-Peel-Community-Planning-Project-Report-October-2016FINAL\(DPSP\).pdf](https://planningexchange.foundation.org.uk/reports/Pemberton-and-Peel-Community-Planning-Project-Report-October-2016FINAL(DPSP).pdf)

Ryan J., Martens K. 2023. Defining and implementing a sufficient level of accessibility: What's stopping us? Transportation Research Part A: Policy and Practice. Volume 175.

Rye T. 2002 Travel Plans: Do They Work? Transport Policy 9:4, pp 287-298

Scottish Transport Appraisal Guidance 2003 Accessibility and Social Inclusion. 4: 50-53 Scottish Government. Edinburgh.

Silva C, Pinto N, Bertolini L 2019, Designing Accessibility Instruments Lessons on Their Usability for Integrated Land Use and Transport Planning Practices. Routledge.

Scottish Government 2023. National Planning Framework 4. <https://www.gov.scot/publications/national-planning-framework-4/pages/3/>

Scottish Government 2005. Planning and Transport. <https://www.gov.scot/publications/planning-advice-note-pan-75-planning-transport/>

Social Exclusion Unit (2003) Making the Connections: Final Report on Transport and Social Exclusion, Office of the Deputy Prime Minister, London, UK

Taylor, M. 2021 Co-ordination Theory <https://www.thersa.org/blog/matthew-taylor/2021/04/coordination-theory-the-basis-for-working-together>

UN 1992. Agenda 21 - Earth Summit Action Plan. <https://sustainabledevelopment.un.org/content/documents/Agenda21.pdf>

UN 2015. United Nations Sustainable Development Goals. <https://sdgs.un.org/goals>

Wigan, M. 2011 The role of contestable processes in advancing sustainability in transport and planning. Road and Transport Research. March 2011 Vol 20 No 1 ISSN 1037-5783

West Dunbartonshire Council 2022 – Connecting West Dunbartonshire - A Strategy for Net-Zero Transport

Wherton J and Greenhalgh T. 2020 Evaluation of the Near Me video consulting service in Scotland during COVID-19. University of Oxford for Scottish Government

WHO (2013) Universal Health Coverage and Universal Access, Bulletin of the World Health Organization 2013; 91:546-546A