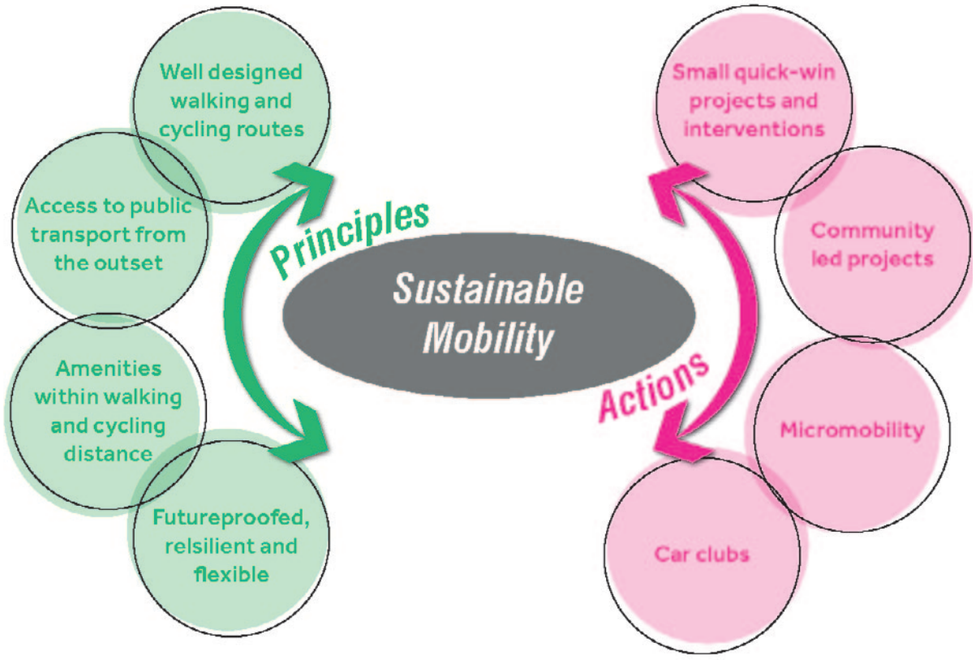
A design approach to sustainable mobility

Katerina Karaga and Natasha Brown consider design approaches to sustainable mobility when masterplanning new developments, with a focus on garden communities







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This past year has tested our lifestyles in many ways. This has included city residents re-evaluating urban living, with an increased interest for the countryside and village locations as people search for green space and bigger homes to accommodate working from home during the pandemic and beyond. Rightmove signified this increased desire for outer City living, with buyers enquiring for homes in rural locations increasing by 126% in 2020 (Rightmove).

To respond to these trends, as well as tackle the housing crisis, the government's aim is to deliver, on average, 300,000 new homes a year with a significant part of it in an environmentally-friendly way by building sustainable settlements - as garden communities.

One of the greatest challenges when designing garden communities, and a risk to their status of truly sustainable developments, lies in mobility. Previous research by Transport for New Homes in 2018 showed that 20 new garden communities assessed in various stages of the planning process, would create up to 200,000 car-dependent homes.

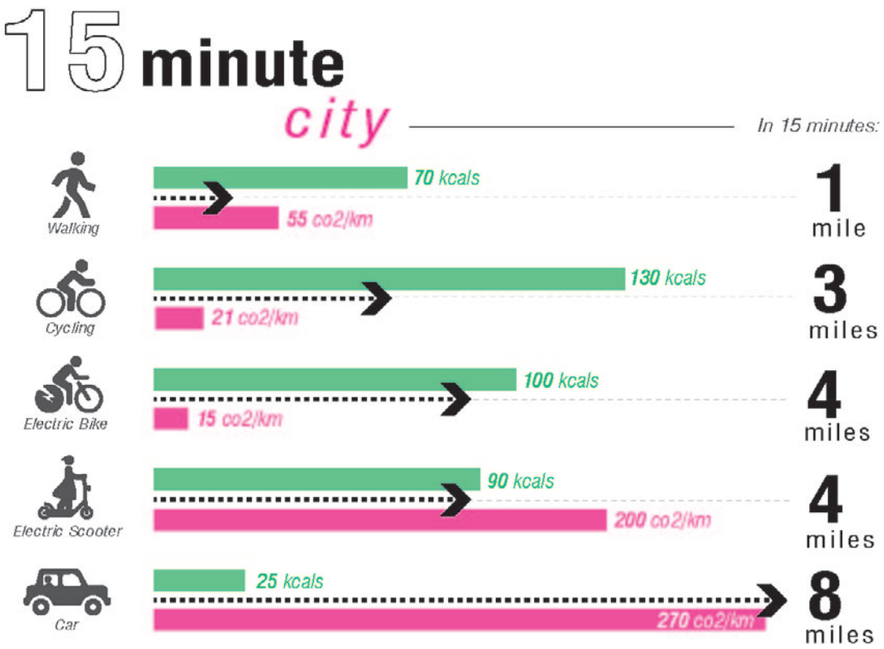
The environmental impact of vehicles is evident in the registered carbon emissions and air quality, with governmental policies emphasising the electrification of motor vehicles as the way to reduce transport CO2 emissions. Although this would help to reduce CO2 emissions as well as nitrogen oxides and particulates, it would fail to tackle many other problems caused by the dominance of motor vehicles such as congestion, road traffic collisions, health, efficient use of space and community severance, for example.

The relationship between garden communities and private-car ownership is often the result of limited public transport, poor quality of public realm and the lack of provision of walking and cycling routes, as well as few amenities within walking or cycling distance. Although the provision of walking and cycling facilities is not a new concept, they are not always designed in effectively.

In areas where highway networks are congested, planning consent will only be achieved with minimal or no highway impacts. Therefore, developments that propose high-quality, well-connected sustainable transport options will enable and encourage people to walk and cycle and help to achieve the necessary mode share to gain planning consent.

So, how can we do it? What are the principles of sustainable mobility? And how are these evolving?

One of the positives we have seen from the pandemic is that small quick-win projects for our streets can make a massive impact on the way we use our public realm. Many pilot pro- >>>



RIGHT::
How healthy and sustainable are walking, cycling, driving...? The diagram explains the relationship between catchment areas for 'a 15 min city' walk, cycle, electric bike, electric scooter and car, versus calories spent and CO2 emissions. Cycling is among the lowest carbon-per-kilometre modes of transport – it's even better than walking, due to walking's higher calorific demand per kilometer. Carbon emissions include manufacturing and the food/calories needed.

>>> jects have increased or quickened the implementation of active travel on our streets in the past year. This micro-focus can enable wider public realm transformation and behavioural change. If it can be achieved in complex urban centres with multiple stakeholders, it should be possible to apply similar principles in garden communities.

The "15-minute city" concept, a hot topic in masterplanning in 2020 and 2021, can be easily applied to the garden communities design with the aim of improving sustainable mobility. Self-sustaining developments reduce the need for unnecessary long-distance travel, often travel by car, therefore neighbourhoods are more walkable and cycle-able, have a strong sense of community, promote health and wellbeing, and in the long run, improve resilience to health emergencies, and promote sustainability and liveability. This is why it's important for garden communities to be well connected to an existing established settlement with key amenity space provision. Alternatively, when creating detached new settlements, it's essential to plan for the efficiency and provision of services to allow for a successful hyperlocalism approach, with local facilities easily accessible without a car or by frequent public transport services from occupation.

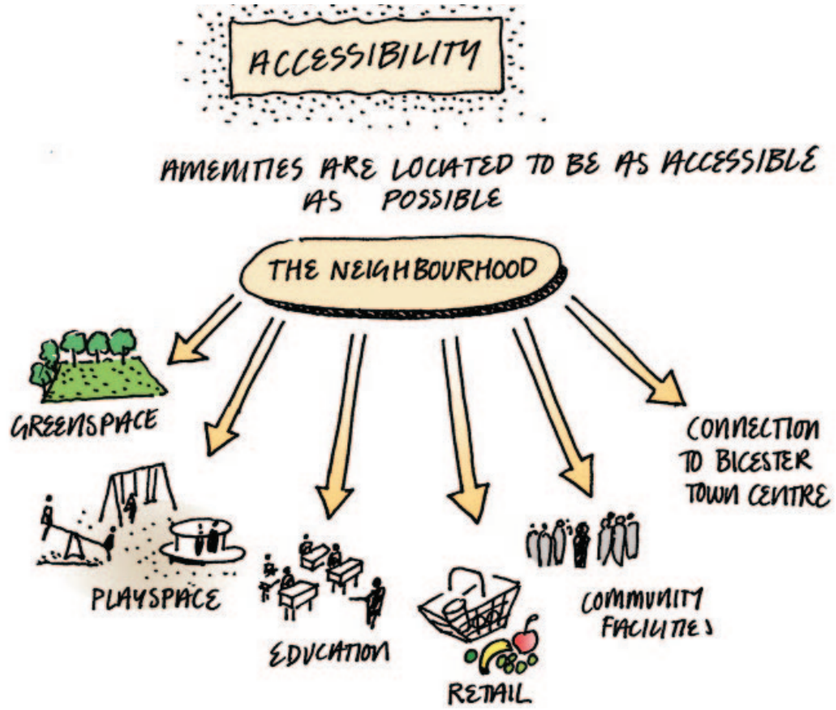
Farrells masterplan, North West Bicester, is the UK's first eco-town with the initial phase providing 393 truly zero carbon homes and 40% of the overall masterplan to be developed as parks and green areas, including bicycle lanes, footpaths and public transport as an integral part of the scheme. Schools will be located within walking distance of all homes, while jobs created will be within sustainable travel distance. A community hub accessed via mobile devices will allow residents to check car club availability, monitor energy usage and prices, check public transport information and communicate with other residents.

Momentum is also working on a large-scale masterplan project in the West of England that is based on the 15-minute city or self-sustaining community concept. The masterplan is designed so that people can both live and work within the same area and walk or cycle easily between their homes and workplaces. The masterplan will also provide other community uses such as schools and leisure facilities and a public transport hub for those that need to travel further. High-quality walking and cycling facilities will link the site to the wider network of routes and reduce severance caused by existing rail and highway infrastructure. Parking is proposed to be located on the periphery of the site with limited vehicle access across the site.

Removing cars or reducing the number in a settlement in this way frees up public realm space and enables human-scale environments; improving liveability or quality of life including making residents feel safer, more socially connected and included, and providing access to diverse housing options linked via public transport, walking and cycling infrastructure to employment, education, local shops, public open space and parks, health and community services, and leisure and culture. Improved liveability is more attractive to buyers and renters and therefore good for developers to build into their plans at an early stage.

Furthermore, the new Swedish concept of "the 1 minute city - the space outside your front door" could be applied to existing neighbourhoods to improve their own streets. This initiative allows locals to become the 'co-architects of their own streets' and decide how much space is used for cars parking and movement.

Unfortunately, the design of walking and cycling routes in garden settlements is often an afterthought, with examples of walking routes that do not feel safe, poor street lighting and routes ending abruptly. To improve walking and cycling facilities and public realm, local residents can be involved in influencing and testing improvements such as closing sections of streets for play. Unused or under-used garages and parking spaces can be converted to cycle parking, micromobility hubs, studio and working spaces or new parklets.



This has been achieved very successfully at the Town development of Marmalade Lane, Cambridge where the community was involved in the design of the development and the provision of public space and car parking. This resulted in a low car parking ratio for the area (around 1.25 spaces per dwelling) and parking concentrated into a single location on the edge of the development with shared and actively managed spaces. The residential streets are used for play and leisure.

How can we provide sustainable alternatives to reduce private car use within garden communities?

In addition to high-quality walking and cycling routes and bike share schemes, electric scooters and electric bikes also provide an option to open up areas in a sustainable way

Previously considered as a 'first and last-mile' solution - complementary to public transport - the potential of these micromobility options has emerged alongside the pandemic, focusing on providing passengers with a transport mode which allows them to independently make journeys which they might normally use public transport for. These initiatives lead us towards future networks of community routes for use by pedestrians, cyclists, micromobility and mobility vehicles and bring new and longer journey possibilities. increasing the distance that can be travelled to key amenities and broadening the demographic of people cycling.

There will always be locations where car use is required for some people or where there is existing parking provision that residents would like to convert to other uses. Car clubs can provide an alternative in this situation and have been shown to replace up to 14 cars (CoMo UK, 2020). Other solutions for sites where car parking is needed in the short term or anticipated to decrease over time include providing structures such as multi-storey car parks - either as temporary facilities or designing them so that they can be converted to other uses if demand falls.

Of course policy also plays a vital role in ensuring that alternatives are considered. For the Deptford Landings development, the planning condition states that unless all parking spaces provided are taken up, no further car parking spaces can be added in the successive development stages (until all parking spaces already provided are occupied or taken up).

With growing pressure on garden communities to provide for the post-pandemic lifestyle, they need to be designed in a future-proof way to be resilient and flexible, providing high quality walking and cycling facilities and allowing us to adapt to new and more sustainable methods of transport such as electric bikes and scooters, electric car clubs, mobility as a service and potentially also autonomous vehicles.



BELOW:
North West Bicester, Farrells's masterplan, UK's first eco town, Accessibly principles and first phase houses