Transforming Urban Mobility: Introduction to Transport Planning for Sustainable Cities (Part 1)

Discover the different dimensions of sustainable urban mobility, including the Avoid-Shift-Improve (ASI) framework

TUMI
Transformative Urban Mobility Initiative

UCL

Future Learn

E-learning

★★★★⯪ 4.8 star rating

> 6,000 learners

3 hrs / week

4 weeks

EN/SP 2 languages

Summary Booklet for Learners

English

Spanish

Content

Figure 01: Open Streets in Cape Town (SUTP, 2018)

TUMI
Transformative Urban Mobility Initiative

About TUMI

On behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ), the GIZ Sector Project "Sustainable Mobility" is working on sustainable urban mobility, financing of infrastructure, poverty reduction, and climate protection.

The project is supporting the implementation of the Transformative Urban Mobility Initiative (TUMI). It's objective is to raise awareness on the needs of sustainable urban mobility, build capacities in cities of developing countries, and emerging economies to enable them to achieve their sustainable transport goals. This happens through the dissemination of information about international experience, policy advice, offline and online capacity building formats.

TUMI supports this transition through mobilizing investments in sustainable urban transport infrastructures, supporting innovative pilot projects, capacity building for practitioners and local decision makers. The TUMI capacity development formats vary according to the target group and range from low-barrier webinars to highly specialized expert trainings. Online formats are an integral part of the TUMI capacity development offers.

https://www.transformative-mobility.org/

Introduction

About this course

The Transformative Urban Mobility Initiative (TUMI) and the Bartlett School of Planning at University College London (UCL) have developed an online learning course to help overcome the challenges in sustainable urban mobility.

This course is an introduction to sustainable mobility in cities across the world. It presents an overall approach and framework for delivering sustainable urban mobility, to help practitioners to shape their own transport systems, and to provide a holistic overview on what sustainable urban mobility consists of. It targets decision makers and planners, experts, active citizens, and anyone who is interested in topic.

The overarching goal of this course is to promote widespread knowledge and understanding of the principles of sustainable urban mobility, such as the Avoid-Shift-Improve (A-S-I) paradigm. The course enables an informed exchange and share experiences across the world with the underlying conviction that empowered citizens will act towards greener, healthier and better cities.

Split into two parts, the course includes video lectures, interactive tasks, learning material, as well as many case studies. The course has an application particularly for the Global South but is also of interest for practice in the Global North.

The course is structured in two separate parts:

Part 1: Transforming Urban Mobility: Introduction to Transport Planning for Sustainable Cities

Part 2: Transforming Urban Mobility: Components of Transport Planning for Sustainable Cities

Guiding questions throughout both course parts are:

◆ What transport systems are best for our cities?

◆ What are the components of a sustainable urban mobility strategy?

◆ How might sustainable urban mobility be most effectively delivered?

Figure 02: Sustainable Urban Mobility Online Course overview (GIZ/UCL, 2020)

Figure 03: Case study overview (GIZ/UCL, 2020)

This first course takes 4 weeks to complete and introduces sustainable urban mobility with a focus on city planning. The second course takes 5 weeks to finish and looks at components of sustainable urban mobility, concentrating on the different transport modes.

About this booklet

This booklet gives a summary and key resources used in course Part 1 - Transforming Urban Mobility: Introduction to Transport Planning for Sustainable Cities.

This booklet structures the 4 weeks of the course, and summarizes the key learning take-aways of the articles, video lectures, and case studies presented within the learning platform. At the end, you will find additional resources and references for your continuous for study, education and implementation of sustainable urban mobility.

Background and context

"The right to have access to every building in the city by private motorcar in an age when everyone possesses such a vehicle, is actually the right to destroy the city."

- Lewis Mumford (1963)

There are many reasons to change the transport system from business as usual and to achieve sustainable development. Moving from a car-oriented approach to a people centred-approach provides many benefits, such as:

◆ Freeing valuable space in expanding and congested cities;

◆ Improving road safety and providing alternatives to moving alone by car;

◆ Reducing air pollution and carbon emissions;

◆ Increasing accessibility to social infrastructure and economic opportunities for all members of society.

In addition, neither greenhouse gas emissions nor political targets in the year 2021 are on track to prevent more than 1.5- or 2-degrees global warming. The inability to meet these targets is why the decarbonisation of the transport sector is more crucial than ever.

Despite much debate and discussion, many cities are still struggling to achieve sustainable urban mobility which also looks at wider environmental, social, and economic benefits. Widespread political will and the capacity to implement change are still lacking, slow, or inconsistent. Approaches to set transformative urban mobility in motion are often multifoil and complex. It takes joined efforts such as public institutions, private donors, and voters to create or make changes towards sustainable urban mobility.
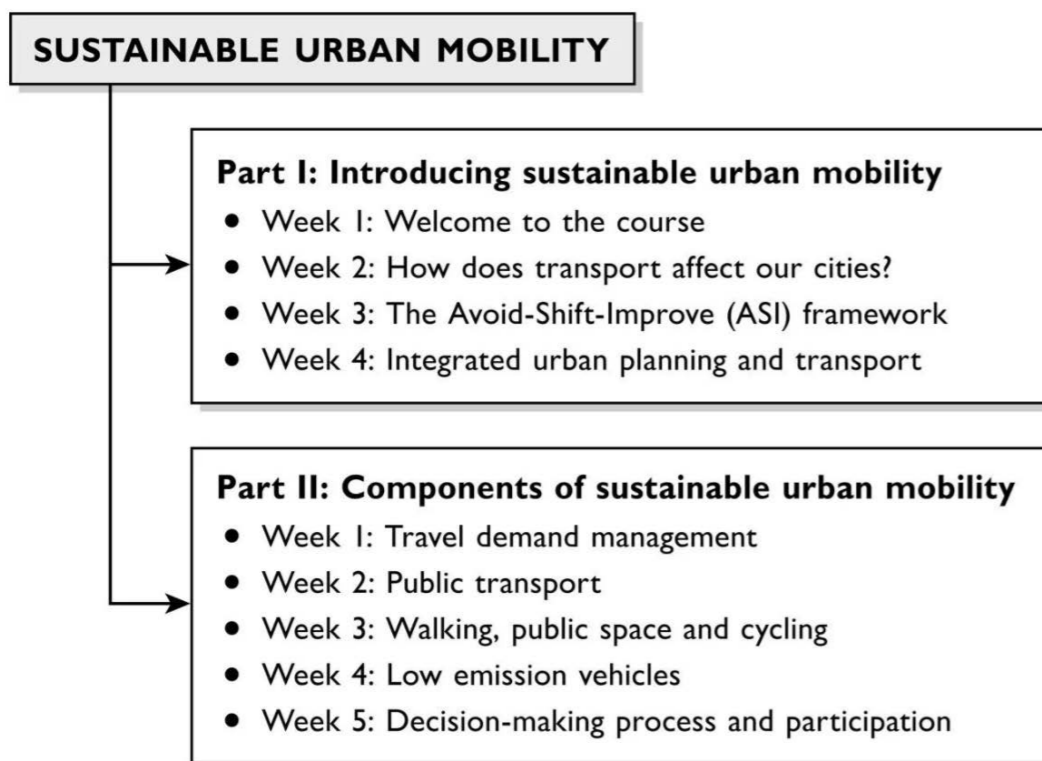
Week 1 Introducing sustainable urban mobility

Week 1 introduces the principles of transport and city planning, the focus and structure of the course, course tutors and participants, the case studies, and considerations on to learn best in a digital learning format.

◆ Mobility is central to life. Mobility has become an integral component in all our lives – transport allows us to access activities and to participate in life

◆ The Covid-19 pandemic gave us a glimpse of what life could be like in cities and on our streets without high levels of traffic

◆ Reducing high levels of private car usage while simoultaneously returning the streets to both public transport and active travel can transform cities. It reduces air pollution, fairly allocates scarce public space, and improve our personal health and safety.

◆ Transforming our transport systems will help to achieve contemporary public policy goals such as the climate imperative set in The New Urban Agenda and the Sustainable Development Goals.
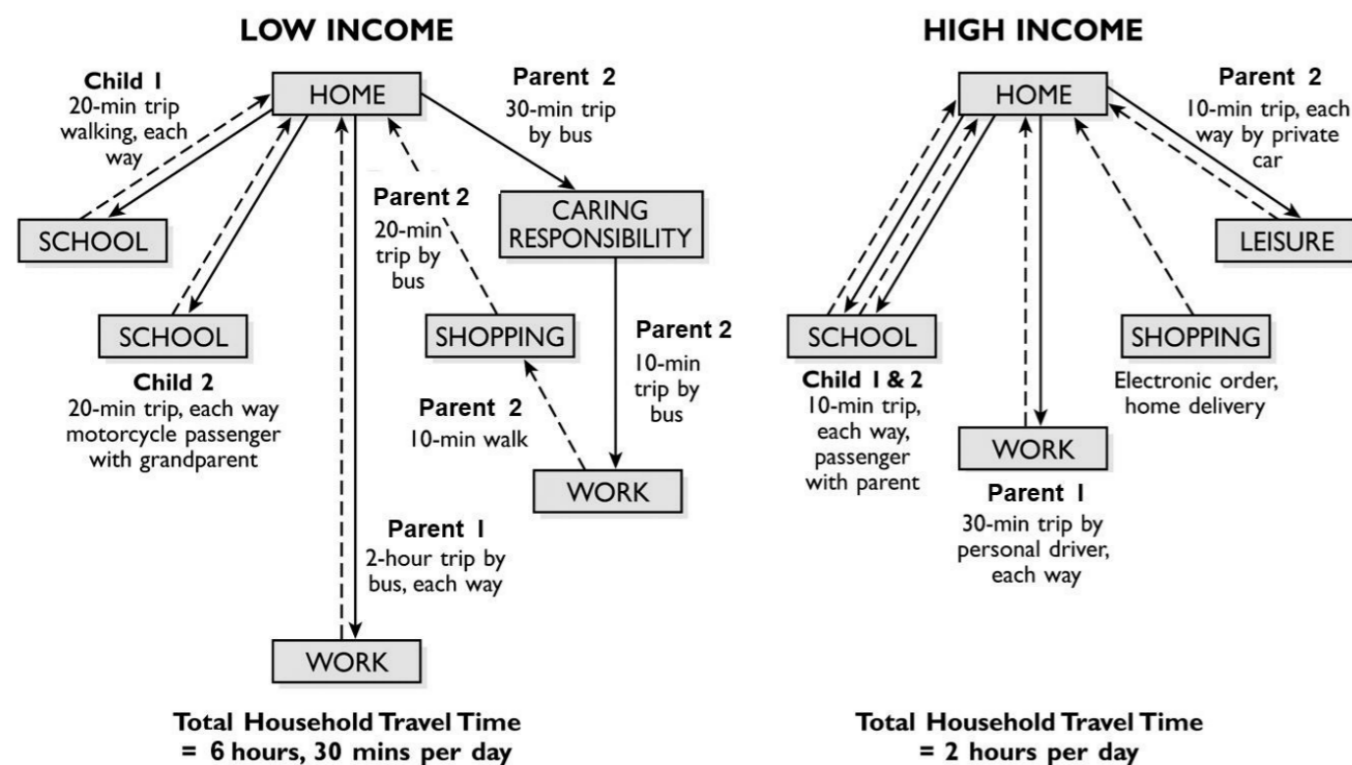
◆ The video feature illustrates how transport conditions can vary in different cities, and how journey experiences and the activities that citizens can reach are very dependent on the transport systems that are built.

◆ In dispersed and congested cities, many people experience poor journeys. The availability of good transport systems especially affects disadvantaged groups and how they live in our cities. Children, the elderly, females, people with disabilities, ethnic or lower income groups, should be able to travel around and participate in life as they wish in our cities.

The distribution of travel opportunities

◆ Social equity issues are particularly important. The modes of transport used by the individuals depends very much on transport infrastructure in the places where people live or work, but also on social norms and transport behaviour in their social environment. For example, there can be a huge difference in travel behaviour between a poor and a rich household living in the same city.

Week 1 Discussion and reflection

It is important to develop transport systems that are specific to local aspirations but consistent with global sustainability objectives. We all have very different travel behaviours, experiences of travel, and activities that we participate in. Access to transport and the impacts of transport are unevenly distributed and vary particulary by context. Reflect upon your local transport:

◆ How does transport work in your city? What are the main means of travel, problems and opportunities?

◆ How is transport used in your neighbourhood?

◆ What do you like and dislike about your travel behaviours?

Figure 04: Developing Vasconcellos (Hickman, 2001)

Figure 05: Street space allocation in Dar es Salaam / Tansania (Hickman, 2019)

Figure 06: Cable car system in Bogotá / Colombia (Hickman, 2019)

Figure 07: Mini Bus Fleet in Hong Kong (Hickman, 2019)

Week 2 How does transport affect our cities?

Week 2 examines the adverse impacts of motorization and how the concept of sustainability can be better applied in transport. The two focus questions are:

◆ **What are the levels of motorization and patterns of change?**

◆ **What are the impacts of this type of travel?**

The dominance of motorization

◆ The levels of global motorization are now running at unprecedented levels: There are 1.24 billion motor vehicles internationally in 2014, including 907 million passenger cars and 329 million commercial vehicles (Freund and Martin, 1993).

◆ Recent data shows an increase in the number of motor vehicles of 4% from 2013-2014 and 38 per cent from 2005-2014 (International Organization of Motor Vehicle Manufacturers, 2015)
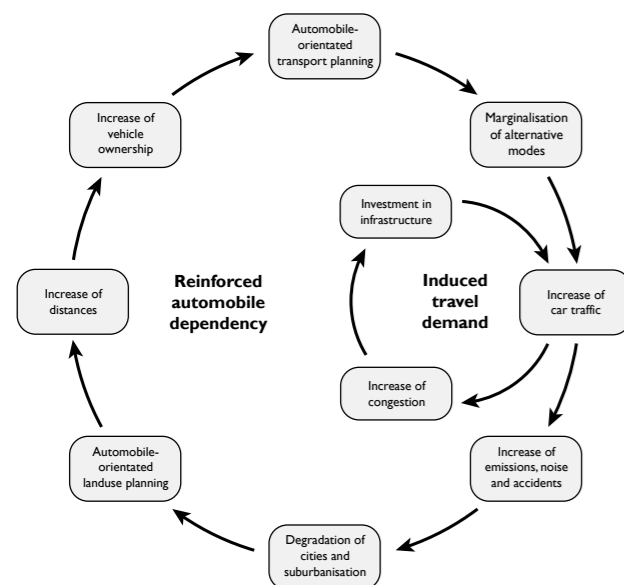
◆ The continued increase in motorization comes with many adverse impacts such as environmental, social, economic challenges, and issues such as the quality of city life

The old paradigm / Conventional transport planning

◆ Transport planning, as a discipline, was established to help support the building of highways and facilitate the growth of motorisation and this has long since shaped the form of transport planning

◆ Predict and provide = forecasting future demand and then providing infrastructure to meet this demand, using mostly quantitative approaches to project and cater

◆ Induced travel = traffic demand expands to meet the increased highway capacity and the vicious circle of motorisation is experienced as more space for the car is required

Institutional support for motorisation

◆ The growth in motorisation has been encouraged by many institutional actors such as motor manufacturers, oil suppliers, and development industry, but also national and city policies, universities and consultants, and the mass media and advertising industry

◆ The engineering discipline has helped shape our cities for the dominant use of the car. The counter movement towards sustainable urban mobility, where public transport, walking, and cycling are given much greater priority, has only just begun

Video Feature: Why the car has no future?

◆ The taken-for-granted approach to design and build cities around the private car is being challenged in many contexts. Serious efforts and investment to develop high quality public transport, walking and cycling networks are still limited.

◆ In cities with high levels of motorization, major adverse impacts such as energy depletion, carbon dioxide emissions, traffic casualties, local air quality, health impacts of physical inactivity, and the loss of public space to the car clearly outweigh the benefits of private car usage.

Interpreting sustainability in transport

◆ The Brundtland Report defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland Report, 1987)

◆ The United Nations High Level Advisory Group on Transport (2016) defines sustainable transport as "the provision of services and infrastructure for the mobility of people and goods – advancing economic and social

development to benefit today's and future generations – in a manner that is safe, affordable, accessible, efficient and resilient, while minimising carbon and other emissions and environmental impacts."

◆ In other words, sustainability in transport is a holistic approach to ensure achievement against all goals of sustainability in the transport sector including the economic, social, and environmental dimension.

Week 2 Discussion and reflection

◆ What are the adverse impacts of motorisation? Which do you consider to be the most important and why?

◆ Are these impacts worth the convenience of using a car?

Transport in your city or neighbourhood:

◆ We have seen that sustainable transport can be understood differently. How do you interpret this?

Using a transport project in your city or neighbourhood, consider:

◆ How sustainable is it? What are the economic, environmental and social impacts?

◆ What are the impacts on city planning?

Figure 08: The vicious cycle of motorisation (Hickman, based on GIZ, 2019, Broaddus et al., 2009, Pharoah, 1992)

In industrialised cities:

Before 1920: the compact city
Walking and cycling are the dominant modes of transport. Public transport has an important role in getting people from A to B.

1920 - 1950
Walking, cycling and public transport are still the most common modes of travel. The car appears in the city and has to adapt to the built up structure.

From 1950: the car-oriented city
The car is priorised in planning. Every other mode of transport is subordinated to the car and has to adapt.

Planning for the livable city
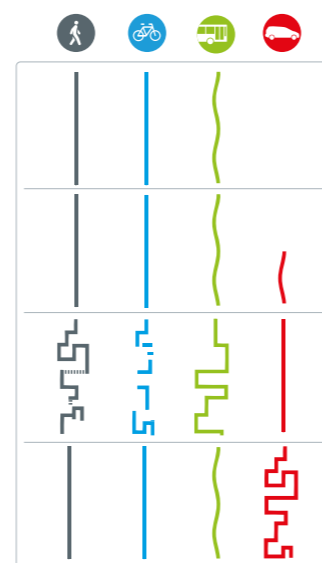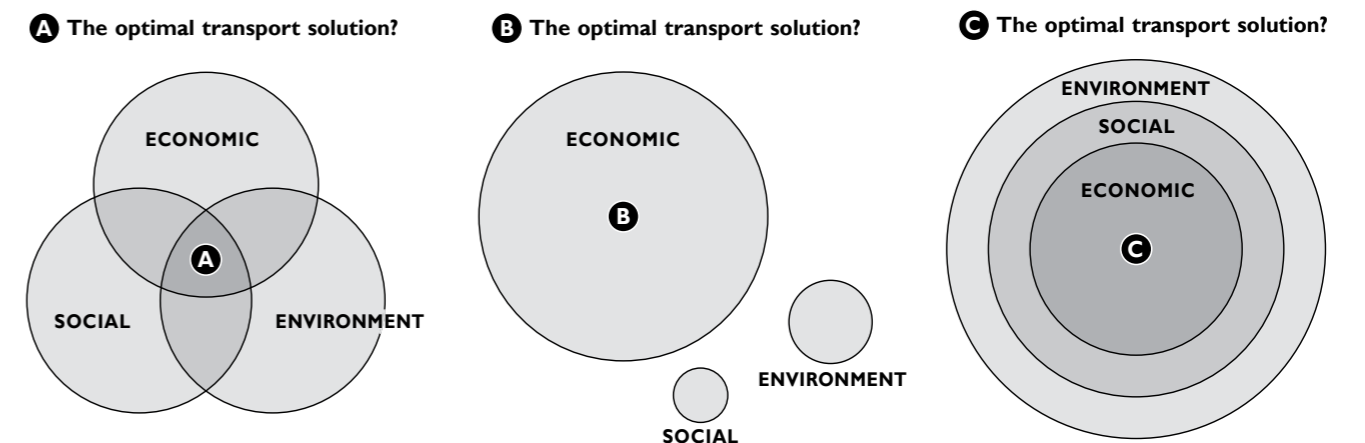In order to achieve a livable environment the sustainable modes of transport need to be priorised.

Figure 09: A short history of traffic engineering (GIZ, 2019, based on Colville-Anderson, 2018)

Figure 10: Approaches to sustainability in transport (Hickman, 2019)

Week 3 The Avoid-Shift-Improve (ASI) framework

Week 3 introduces the Avoid-Shift-Improve (ASI) framework and focuses on these questions:

◆ **What vision do we want for transport in our city?**

◆ **What is the ASI framework?**

◆ **Will ASI help with social equity?**

Video Feature: Inspiration from good practice

◆ Developing transport systems which support sustainable cities is much more than a technical process.

◆ The video feature gives insights from travel in the Netherlands, particularly from Delft and Utrecht, showing possibilities for a different form of travel. Such as, travel with the bicycle, walking and public transport as the primary means of transport.
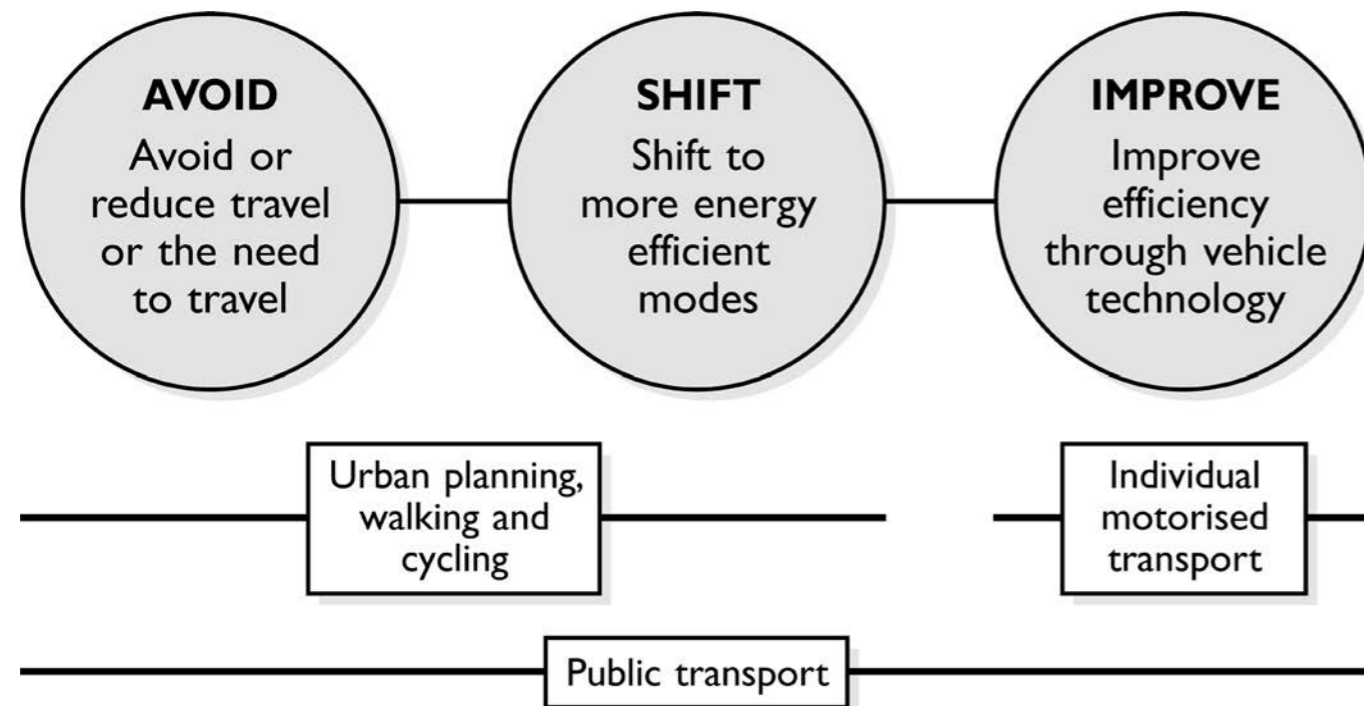
Visioning and Back casting

◆ Transport strategies can be based on the development of an agreed future vision. The vision should represent what people wish their city's transport system to be like in the future. Hence it must be developed in a participatory manner.

◆ As Robinson (1990) reminds us: "A concern, not with what futures are likely to happen, but with how desirable futures can be attained. It is thus explicitly normative, involving working backwards from a particular desirable end-point to the present in order to determine the physical suitability of that future and what policy measures would be required to reach that point."

The Avoid-Shift-Improve (ASI) Framework

◆ The ASI framework brings together the development of sustainable transport policies and challenges conventional predict, and provide approaches. Which, often led to highway building.

◆ It has become an important approach for cities in developing transport strategies and involves a wide range of measures, including urban planning, public transport, walking and cycling, and vehicle efficiency measures.

◆ The ASI framework gives priority to sustainable transport modes and gives guidance to improve the motorised transport that remains (e.g. goods services).

◆ ASI policy measures can be set within a decision-making process with different stages, including the vision for transport and city planning, the implementation and programme evaluation.

The Social Equity Dimension

◆ There are two key dimensions: transport systems should allow all population groups and neighbourhoods to access the activities available in the city; while the adverse impacts of travel, such as severance, noise and air pollution, should not fall disproportionately on disadvantaged groups (Hickman et al., 2019).

◆ There are different exclusionary factors that may limit the accessibility of individuals and population groups (Church et al., 2000), including:

- **Physical exclusion:** physical barriers relating to the transport system and built environment.

- **Geographical exclusion:** poor transport provision, with peripherality often increasing the poor access.

- **Exclusion from facilities:** poor access to shopping, financial, leisure, heath, education and other facilities.

- **Economic exclusion:** income and transport network constraints may limit the job search and access to employment.

- **Time-based exclusion:** wider caring commitments may mean that there is limited time to travel to other activities.

- **Fear-based exclusion:** varying according to gender, ethnicity and other factors, and strongly influencing how transport facilities and public spaces are used

- **Space exclusion:** the design of public space may encourage usage by some groups and not others.

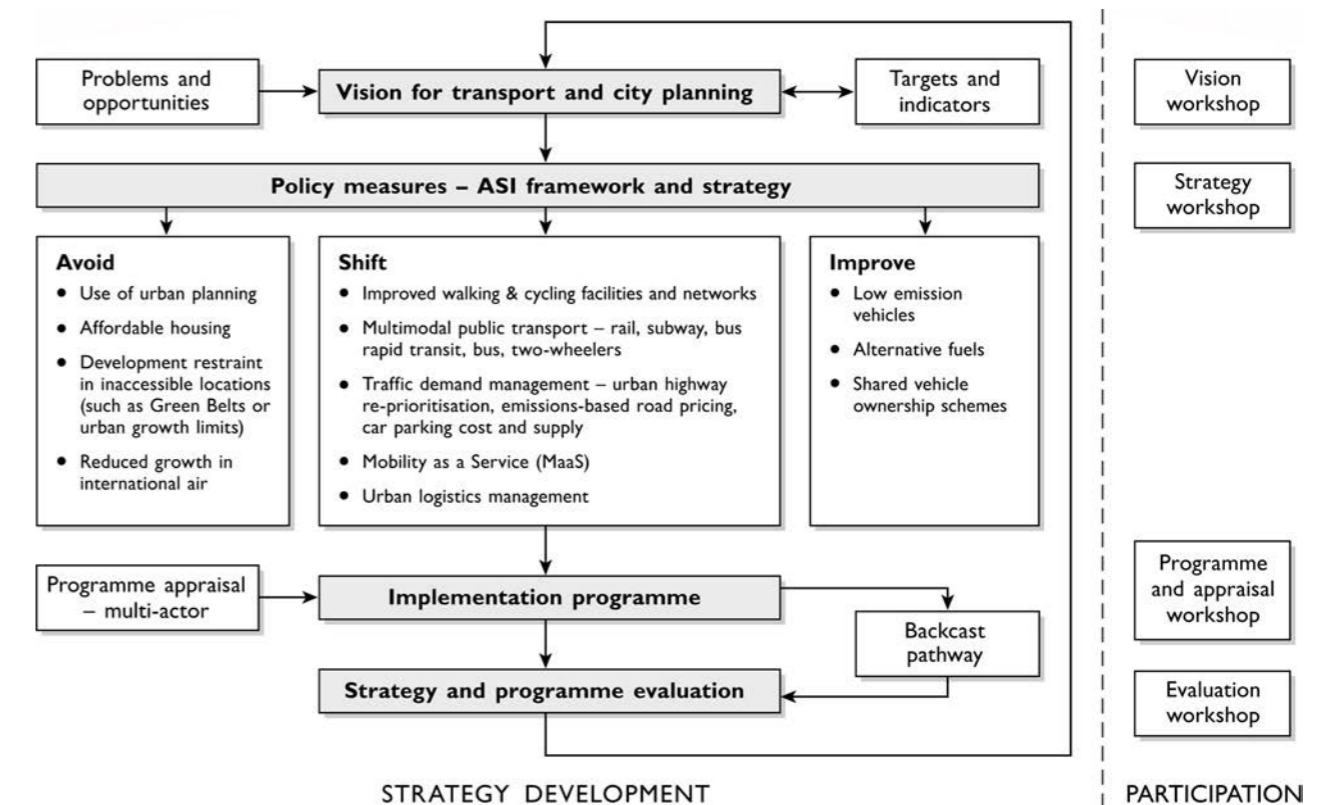Figure 11: The ASI framework components (Hickman, based on GIZ, 2019)

Figure 12: Giving the ASI framework a direction (Hickman based on GIZ, 2019)

Week 3 Discussion and reflection

Learning by doing: Develop a vision and ASI strategy for a city or neighbourhood of your choice and explain:

◆ What is your vision for travel in 2040?

◆ What are the key policy measures to include in the strategy, using the Avoid-Shift-Improve framework?

◆ How will your strategy tackle distributional issues ?

Video Feature: The sustainable mobility paradigm

◆ The video feature shows a debate on sustainable mobility and the environmental imperative with Professor David Banister from the University of Oxford, author of the Sustainable Mobility Paradigm.

◆ Transport crisis involves three different dimensions affecting the transport sector but also constitute significant environmental and social challenges:

- the pollution side of things, particularly CO_2,
- the growth in travel for people and goods,
- the growth in population.

◆ Existing approaches to transport planning such as the four-step model (trip generation, trip distribution, mode choice and implications of the mode on the transport network) is very mechanistic and does not consider environmental or social considerations in a quantitative manner

◆ Questions to challenge the status and set out in the Sustainable Mobility Paradigm to reframe the planning and decision-making debate are:

- Does a trip need to take place in the first place?
- Can journey lengths be reduced by better to urban planning strategies?
- How we can promote public transport and active mobility?
- If a trip by motorized transport needs to take place can the mode itself be improved with the help of technology?

Figure 13: Potential emissions reduction with the ASI approach by year 2050 (GIZ, 2018, based on Bongardt et al, 2011)

Figure 14: Example of Avoid measure in Bogotá / Colombia (Hickman, 2019)

Figure 15: Example of shift measure in Dar Es Salaam / Tansania (Hickman, 2019)

Figure 16: Example of improve measure in Medellín / Colombia (Hickman, 2019)

Box Story 2: The Avoid-Shift-Improve (ASI) framework

Click here to read more

A successful strategy in transport requires the adoption of a comprehensive and coherent approach centred on humans instead of cars. The Avoid-Shift-Improve (ASI) approach focuses on mobility needs of people to develop sustainable urban transport strategies. The aim is to reduce the environmental impact of transport and increase the quality of life in cities through improving social and economic conditions. The three pillars are in this order:

◆ **Avoiding** motorized trips and reducing trip frequencies and distances of all modes.

◆ **Shifting** individual motorized transport towards public and active mobility modes.

◆ **Improving** the energy efficiency, technology, accessibility and safety of the transport system.

Week 4 Integrated urban planning and transport

Week 4 examines how the shape of the built environment is critical to facilitate sustainable travel by looking at best practice examples from around the world. Being a part of the Avoid strategy in the ASI-framework the key goal is to reduce the need to travel. The key questions in this week are:

◆ **What are the principles for transit-orientated development?**

◆ **What are good practice case studies for integrated urban planning and transport? And what can we learn from them?**

Video feature: Unplanned urban sprawl

◆ The video gives a view from a flight over São Paulo and the wider metropolitan urban area in Brazil, with recent urban growth sprawling over a large area, giving rise to inequitable living conditions.

◆ The metropolitan urban area is relatively dense, at 6,400 persons per square kilometre. But it is far from compact, sprawling for 100 kilometres from east to west and 50 kilometres from north to south.

Projected global urban growth

◆ The global population of 7.3 billion in 2015 is expected to reach 8.5 billion by 2030, 9.7 billion in 2050 and 11.2 billion in 2100 (United Nations Department of Social and Economic Affairs, 2015) with much of this growth taking place in cities.

◆ The challenge is that most urban growth is likely to be unplanned and in dispersed urban areas unless stronger planning regimes can be developed.

◆ Urban population density is correlated with public transport usage, i.e. the denser a city, the higher the share of public transport. In low density, dispersed cities it is difficult to build public transport systems and gain high passenger numbers.

◆ Cities like Sao Paolo, Brazil illustrate the problem with projected global urban growth. Much of this is likely to be dispersed and car-dependent unless it is planned in a way to make cities more compact and attractive to public transport, walking, and cycling.
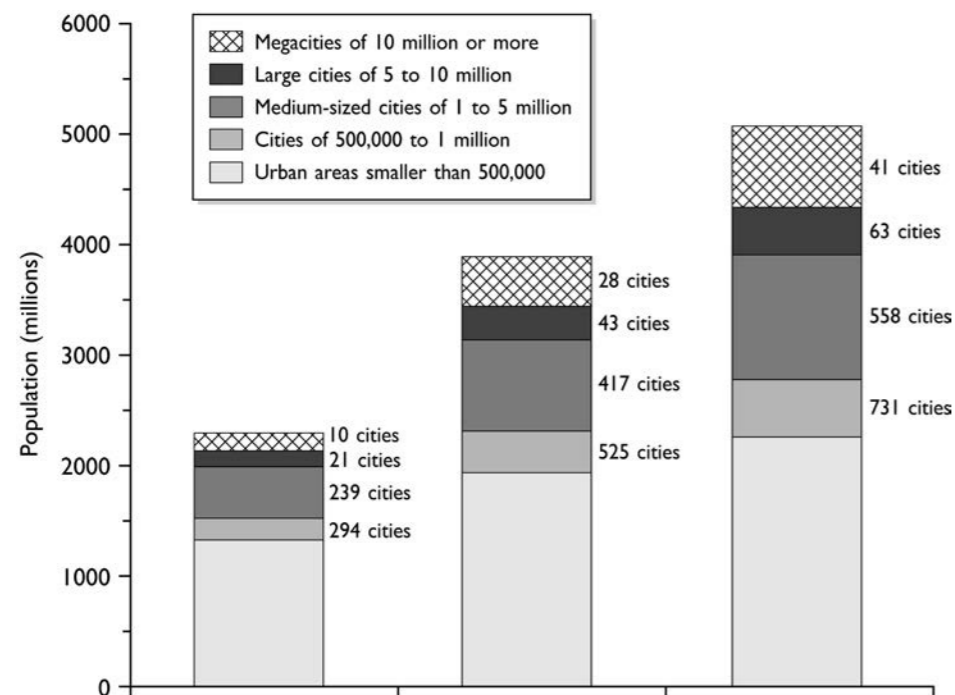

Figure 17: Urban growth in cities (Hickman, 2019, based on United Nations Department of Social and Economic Affairs, 2014)

Principles of Transit-Oriented Development (TOD)

◆ The quality of integration between urban development and the transport network can differ significantly. The TOD Standard (ITDP, 2017) gives an approach to measuring the quality of transit-orientated development.

◆ The video lecture on TOD examines how the built environment might be shaped to encourage sustainable travel behaviours. It also considers the relationship between land use and transport, the issue of self-selection, and spatial application through TOD.

Accessibility Planning

◆ Transport is not usually an end in itself, but instead a means to allow individuals to access the activities that they need. This includes employment, health, education and leisure activities. Travel itself can sometimes be productive, with activities carried out whilst travelling (such as reading, listening to music and relaxing).

◆ Accessibility has been suggested for the last couple of decades as a better metric than saved travel time to measure the success of transport systems and the impact of new transport projects.

◆ The video from Karst Geurs, University of Twente, examines how accessibility might be measured and how it might be related to social equity.

◆ In the video Geurs compares the agglomerations of Randstad in the Netherlands and São Paulo in Brazil:

• **Randstad:** polynuclear structure with low income groups in urban centres and high-income groups in the suburbs but the mixing works well.

• **São Paulo:** monocentric structure with low income groups in the periphery and high-income groups in the urban centres.
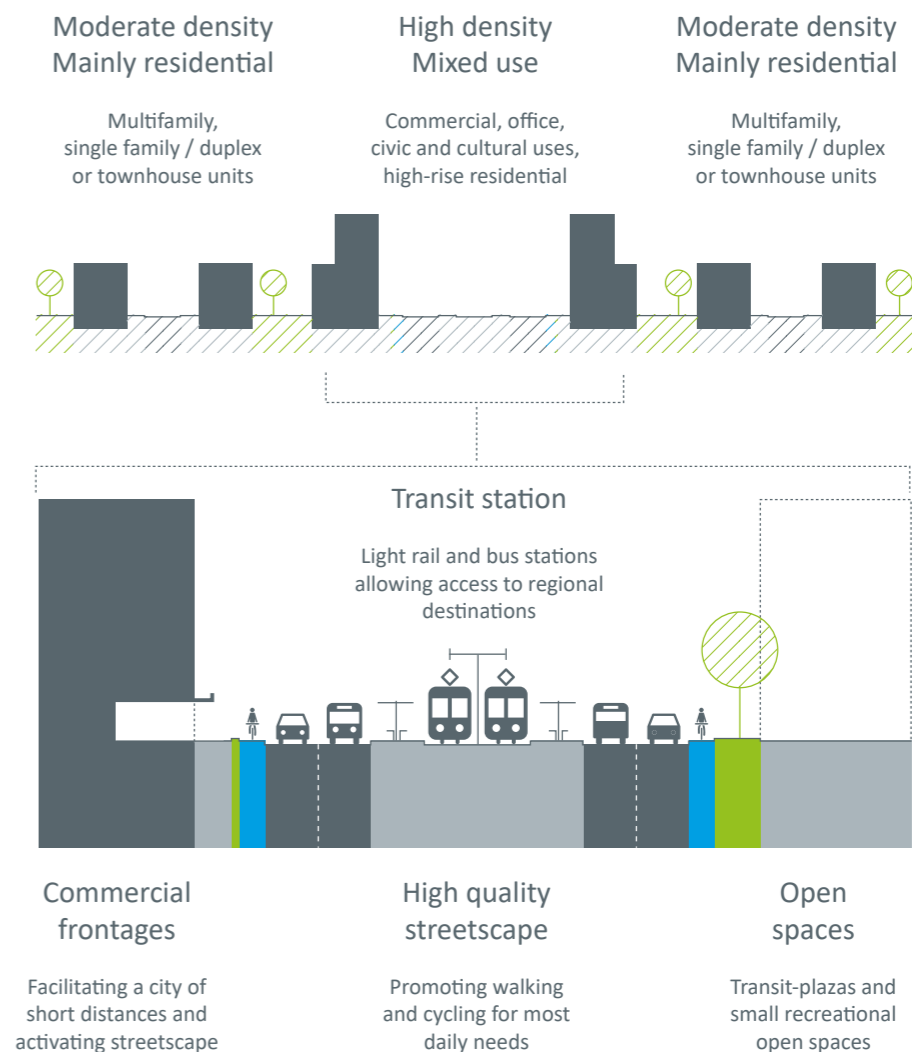
Figure 18: Example of a transit-orientated station development (GIZ, 2019)

Case studies on integrated urban planning and transport

London — Station area redevelopment

Utrecht — Strategic planning Houten

Delft — Station area redevelopment

Freiburg — Public transport and urban neighbourhoods

Hong Kong — New town development
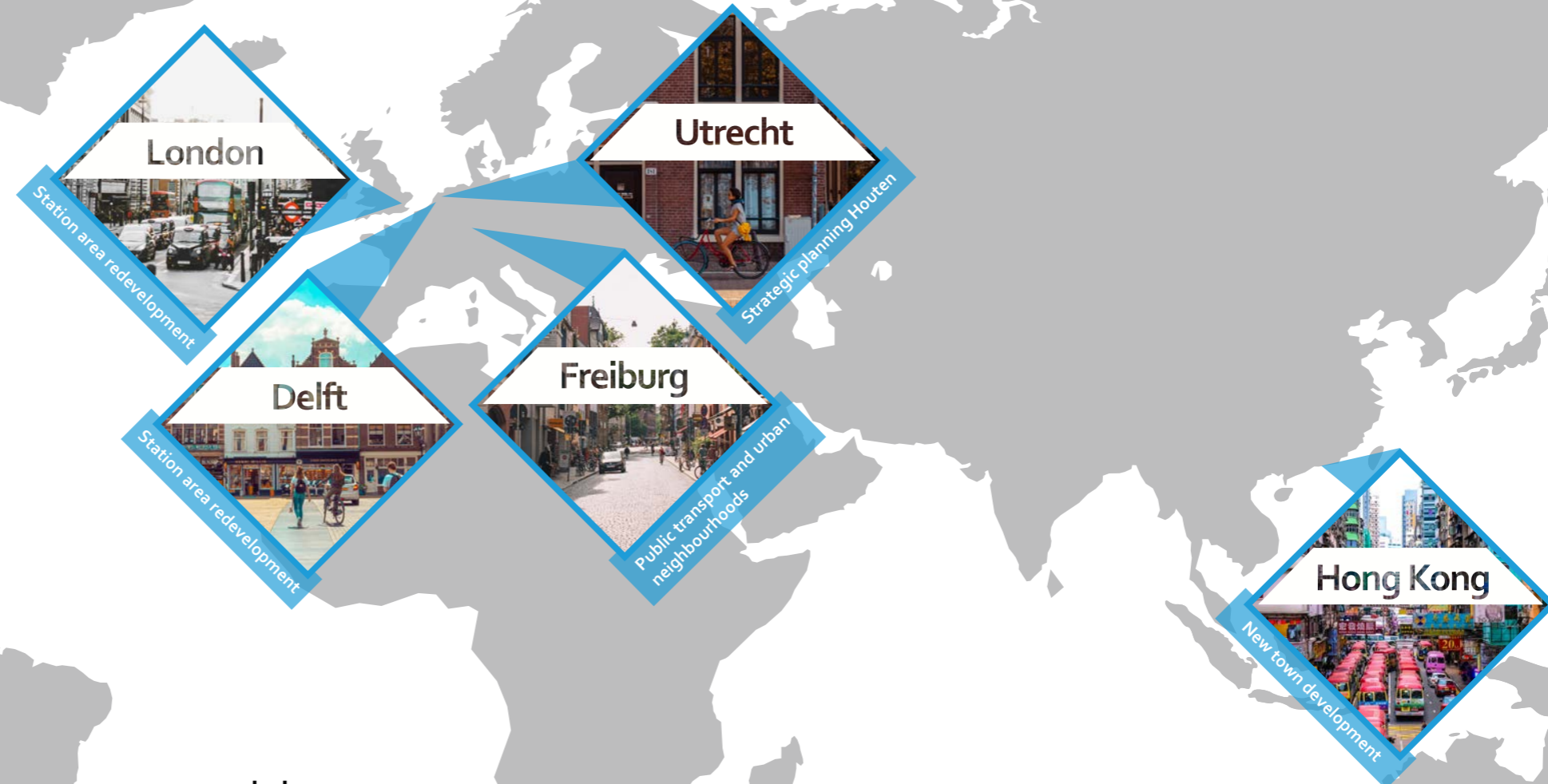
Course part 1 involves looking at case studies on transport and city planning, particularly where there are lessons to be drawn from good practice considering examples and reflections from experts and practitioners in diverse academic and professional fields.

61 %
Bike share in modal split

40 %
Residents coming to the city centre on a bicycle

Figure 19: Houten New Town / Netherlands

Strategic planning

Houten, The Netherlands

Strategic planning can be carried out at the national, regional and urban scales, to ensure urban development is located and designed appropriately, including integration with transport systems.

The case study video showcases the planning and development of Houten, a new urban development and VINEX growth location, in the Netherlands.

A central element of this approach was the VINEX strategy (supplement to the fourth national policy document on spatial planning), published in 1993, where housing development was planned in a 10-year programme across multiple cities in a polycentric and compact form.

The main planning principle was to develop Houten in a village-like way to a very human-friendly especially child-friendly town.

Transport planning focused on as low motorised traffic system to give priority to cycling and walking as the main mode of transport. Car traffic was left to the outside ring road.

Figure 20: Cycling route in Houten / Netherlands (Hickman, 2019)
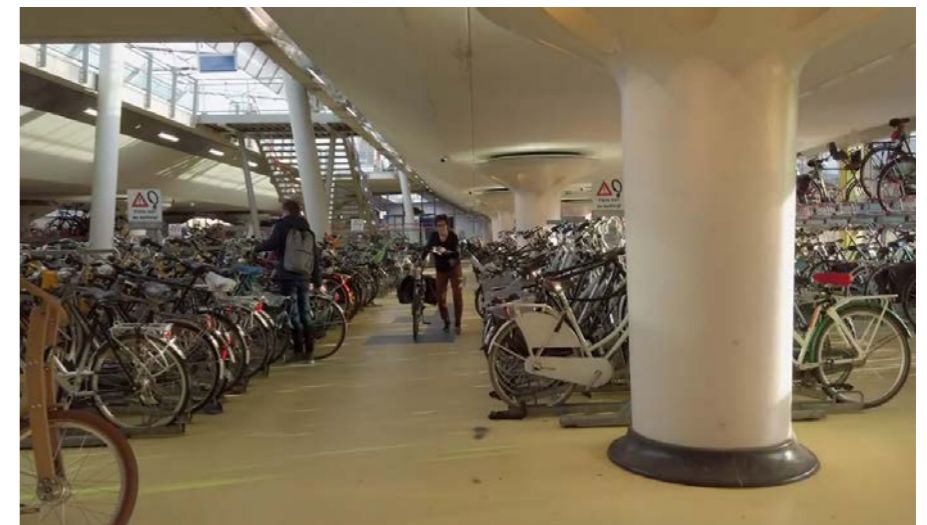

Figure 21: Bike parking space in Houten / Netherlands (Hickman, 2019)

Figure 22: Houten New Town / Netherlands (Hickman, 2019)

68 %

Trips undertaken by public transport, cycling and walking

since **1970**

Leading city for progressive and environmental-based urban planning

Figure 23: Vauban and Rieselfeld in Freiburg / Germany

Public transport and new urban neighborhoods

Freiburg, Germany

The case study video shows two suburban neighborhoods in Freiburg – Vauban and Rieselfeld – both well-known examples of new and well-integrated suburban developments.

Freiburg, located in the southwest of Germany, has been a leading city for progressive and environmental-based urban planning since the 1970s.

A tradition of citizen participation in politics has been developed, shaping urban development in the city.

Space for the private car is reduced, and the use of walking, cycling and public transport is promoted. The neighbourhoods are linked into the city center by tram extensions and high-quality longer-range cycle networks.

Over the last three decades, integrated land-use and transport policies have helped to increase the share of trips by walking, bike, and public transport, and reduce the share of trips by private car to just 32%.
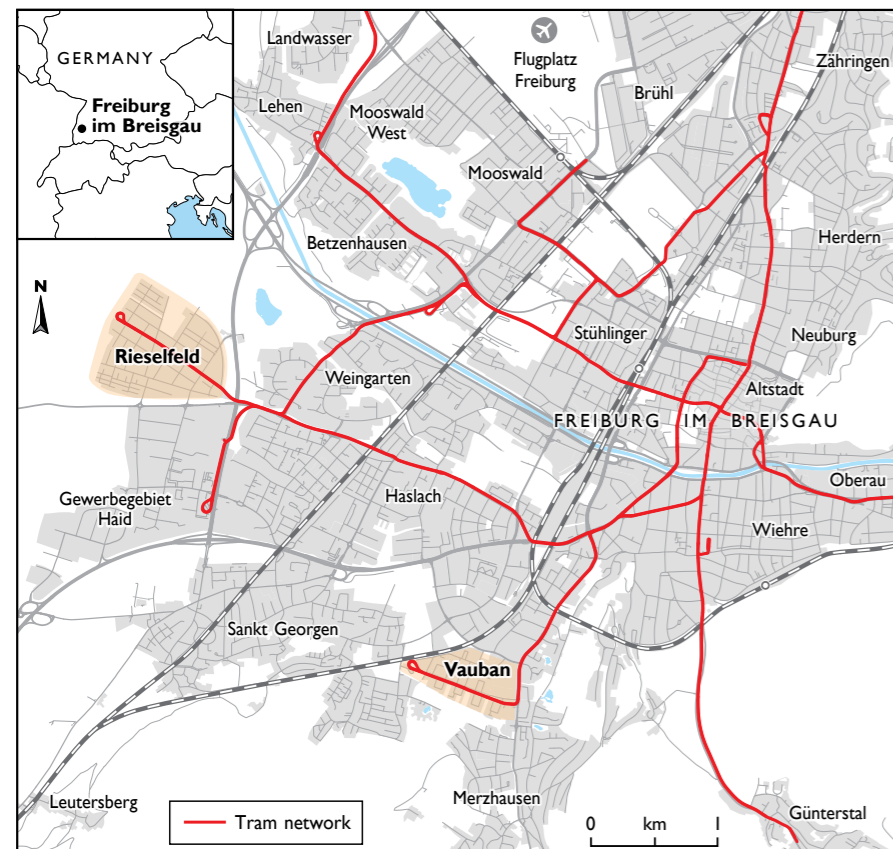

Figure 24: Green space design in Freiburg / Germany (GIZ, UCL 2020)

Figure 25: Public Transport, Cycling and Walking go together in Freiburg / Germany (GIZ, UCL 2020)

Figure 26: Light Rail Transit in Freiburg / Germany (GIZ, UCL 2020)

100

New built homes around the station redevelopmet

5.000

Bike parking spaces at Delft station

Figure 27: Delft station redevelopment area

Station area redevelopment

Delft, The Netherlands

Spoorzone Delft (Railway Zone Delft) is a major redevelopment project, covering 40 hectares, being implemented around the new central railway station in Delft.

It is again a classic transit-orientated redevelopment, located on the edge of the historic city centre and residential neighbourhoods to the west and south.

The impetus for the project was the removal of the old railway viaduct, putting the railway into a tunnel, and then using the new space to build a new railway station and municipal office. The redevelopment included around 1.200 dwellings, offices, a city park, water features and landscaping, bicycle parking and new road access (Gemeente Delft, 2013).
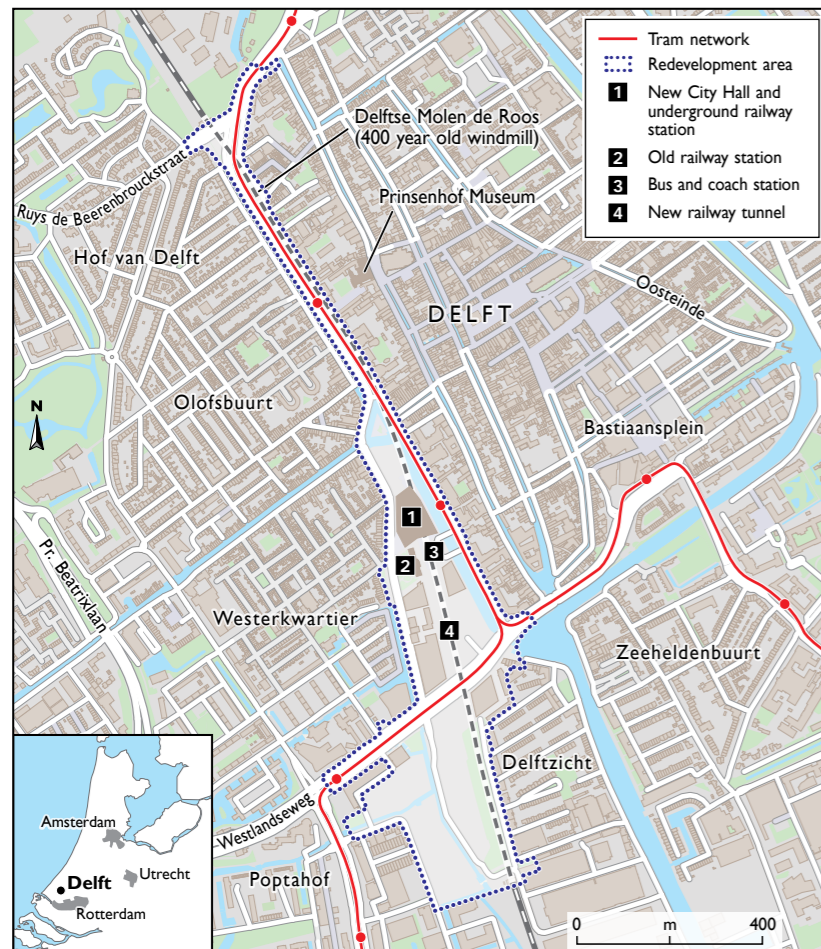

Figure 28: Public transport system in Delft / Netherlands (GIZ, UCL 2020)

Figure 29: Traffic-calmed zone in Delft / Netherlands (GIZ, UCL 2020)

Figure 30: Cycling as a main means of transport in Delft / Netherlands (GIZ, UCL 2020)

Watch on Youtube

30.000

New jobs

5.000

New residents

2002 2019

King's Cross

St Pancras International

1	Central St Martins
2	Gasholder Park
3	Granary Square
4	Lewis Cubitt Park
5	Regent's Canal

King's Cross
LONDON

N

0 m 400

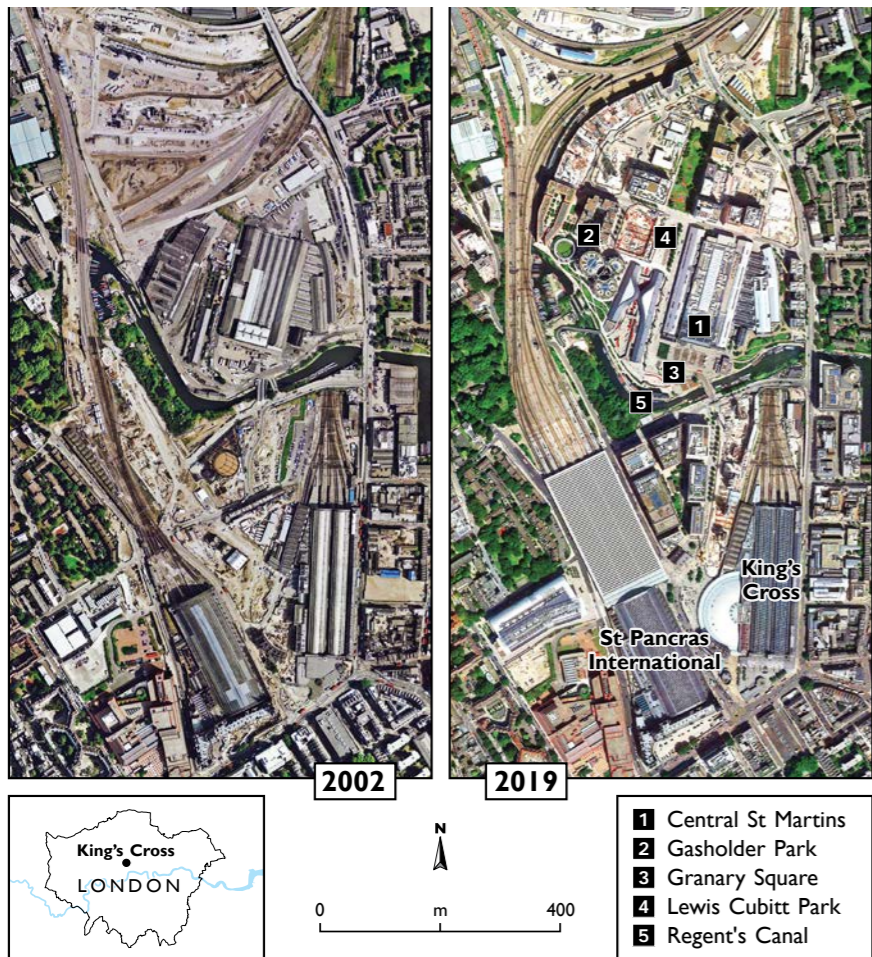Figure 31: King's Cross station area before and after redevelopment

King's Cross Station area redevelopment

London, United Kingdom

The King's Cross station area redevelopment project is one of the most complex urban renewal projects in the UK. It covers 27 hectares to the north of King's Cross station.

In 2008, Argent, London & Continental Railways and DHL formed a joint partnership to act as a single landowner – King's Cross Central Limited Partnership (KCCP). Argent are the property developer and Allies and Morrison lead master planners. The project has significant financial backing with Hermes Investment Management (the British Telecom pension fund) and Australian Super (an Australian pension fund) supporting Argent.

King's Cross station itself has been redeveloped, with an expanded Western Concourse, providing improved waiting facilities, opened in 2012.

The neighboring St Pancras station was refurbished in 2007 and acts as the terminus for High Speed One and Eurostar trains to mainland Europe.

Figure 32: King's Cross station area after the redesign in London / United Kingdom (GIZ, UCL 2020)

Figure 33: Pedestrian space at King's Cross station in London / United Kingdom (GIZ, UCL 2020)

Figure 34: Public space for recreation at King's Cross London / United Kingdom (GIZ, UCL 2020)

735.000

people were planned to live in Sha Tin

1.8 million

were supposed to live in the first three of nine new towns of Hong Kong

Figure 35: Sha Tin New Town in Hong Kong

New town development

Hong Kong, China

Sha Tin is a new town development in the East New Territories in Hong Kong.

It was built as part of the new town developments in the 1970s, based on new town planning experience in the UK, but of a very different scale, giving increased housing capacity for the rising population in urban Hong Kong.

Most of the flat land in Kowloon and Hong Kong Island had been developed and the government proposed new towns in the New Territories, largely a rural area at the time.

Nine new towns were built and around half of the population of Hong Kong lives in these areas.

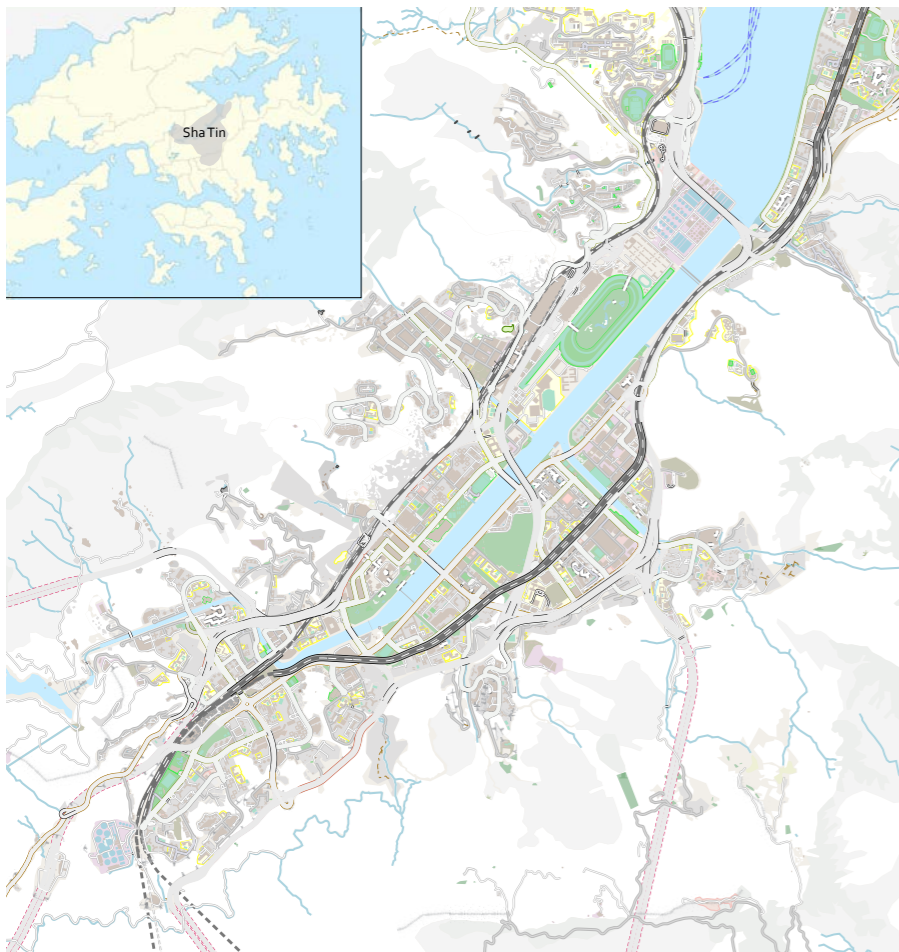Figure 36: Sha Tin new town in Hong Kong (GIZ, UCL 2020)

Figure 37: Cycling paths as a part of the transport planning in new towns in China (GIZ, UCL 2020)

Figure 38: Pedestrian bridges are connecting the different parts of the city (GIZ, UCL 2020)

Glossary

There are different words and terms used on the course that may have particular meanings to transport planners. We include some here with their definitions to support your understanding and the reading of this booklet:

◆ **Accessibility planning:** using transport infrastructure to increase the opportunities for activities

◆ **Avoid-Shift-Improve:** a framework for sustainable mobility, covering urban planning, public transport, walking and cycling and low emission vehicles

◆ **Compact city:** a high density, mixed use urban area with short travel distances

◆ **Garden city:** a self-contained community surrounded by protected open space

◆ **Gravity model:** estimate of the volume of flows between two or more locations based on gravitational interaction

◆ **Highway capacity:** ability of a road to accommodate traffic volume

◆ **Mobility:** ability to move or be moved freely and easily

◆ **Mode:** the means of travel

◆ **Mode choice:** choosing between different means of travel

◆ **Mode shift:** moving from one means of travel to another

◆ **Motorization:** using motor vehicles for travel

◆ **New Town:** a planned urban centre, usually public authority-led

◆ **Original position:** a hypothetical situation where participants are kept unaware of their position in society and use this to choose a fair social position, developed by John Rawls

◆ **Predict and provide:** the estimation of future transport demand and providing infrastructure to meet this demand, usually by building more road capacity

◆ **Route assignment:** the selection of routes between origin and destination

◆ **Social equity:** the fair access to opportunities, livelihood, education, and resources

◆ **Street space allocation:** how street space is shared between the different modes and uses

◆ **Suburbanization:** the outward growth of urban development

◆ **Sustainability:** the ability to be maintained at a certain rate or level, with economic, environmental and social dimensions

◆ **Sustainable Development Goals (SDG):** a framework to achieve a more sustainable future for all, including 17 goals, developed by the United Nations

◆ **Sustainable transport:** a means to access activities, within environmental limits and equitably

◆ **Sustainable urban mobility:** transport systems allowing access to activities, within environmental limits and equitably, at the city scale

◆ **Transit-orientated development (TOD):** maximizing the amount of urban development within walking distance of public transport

◆ **Transport:** the movement of people, animals and goods from one location to another

◆ **Transport planning:** the process of defining future policies, strategies and projects to meet future needs

◆ **Travel behaviour:** the movement of people, animals and goods over space and time

◆ **Trip generation:** the estimation of the number of trips at the origin or destination

◆ **Trip distribution:** development of a matrix that displays the number of trips from each original to each destination zone

◆ **Vision:** a desired endpoint or goal

◆ **Walkability:** a measure of how friendly an area is for walking

Figure 39: Cars are dominating the streets in Dar el Salaam (Hickman, 2019)

Figure 40: In Rio de Janeiro a main road was converted to be used by cyclists and pedestrians (Hickman, 2019)

List of Resources

Week 1 Resources

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Take your learning further

Part 2

Transforming Urban Mobility: Components of Transport Planning for Sustainable Cities

The second part of the course focuses on the components of sustainable urban mobility. It will examine more detailed interventions to sustainable urban mobility, particularly the 'Shift' and 'Improve' parts of the Avoid-Shift-Improve typology.

➤ Go to Course Part 2 (ENG)

➤ Go to Course Part 2 (SPA)

3 hrs / week   5 weeks

★★★★½
4,8 star rating

Week 1: The Components of Sustainable Urban Mobility
Travel Demand Management (TDM)
Travel Demand Management Case Studies
Car Parking Management
Informal Transport

Week 2: Public Transport
Encouraging actives modes
Metro and Light Rail Transit
Global Bus Rapid Transit practice
Street space allocation in your city

Week 3: Walking, Public Space and Cycling
Mass transit options
Gender and mobility
Assessing walkability in your city
Bike sharing systems

Week 4: Low-Emission Vehicles
Advances in low-emission vehicles and fuels
How sustainable are biofuels?
Electric Mobility
Low-emission vehicle application

Week 5: Decision-Making Process and Participation
Well-being and social equity
Political economy of project implementation
Normative and participatory transport planning
Developing a sustainable transport strategy

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