

UNIVERSITY OF HELSINKI

Rethinking Sustainable Urban Mobility for emerging cities in Latin America

The struggle of increasing automobility in
Lima and Bogotá



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| Tiivistelmä – Referat – Abstract <p>Due to the great need of improving sustainable urban transport and mobility in emerging cities in Latin America, development assistance in the form of Sustainable Urban Mobility planning is currently carried out by national European development agencies and partnerships. This type of assistance is commonly based on successful European experiences and approaches in the field, aiming to decrease both greenhouse gas emissions, poverty and inequality and in the same time to improve accessibility, quality of life and sustainability for the urban citizens. Whilst the model being successful for these purposes in Europe, the emerging nature and different mobility culture of cities in Latin America have experienced different outcomes of Sustainable Urban Mobility planning.</p> <p>The theoretical discussion of this thesis is based on a critical assessment of Modernisation theory and its manifestations in the urban transport sector. The theory would describe the European model of Sustainable Urban Mobility as the “modern”, whereas the mobility paradigm of emerging cities is “yet to be modernised”. This thesis argues that instead of applying the European mobility paradigm on emerging cities, the concept of Sustainable Urban Mobility and its planning models and guidelines need to be contextualised in order to reach the desired outcomes.</p> <p>Through qualitative content analysis of original data from interviews with grassroots level activists, representatives of civil society and non-governmental organisations in the cities of Bogotá and Lima, this thesis shows that the urban structures and mobility culture in the cities differ significantly from the ones in Europe, that lead to different outcomes when applying the European approaches of Sustainable Urban Mobility planning in the cities. The most critical finding is that due to different socioeconomic urban structures, a reduction of greenhouse gas emissions and increase of accessibility cannot be reached simultaneously in a short-term timeframe, as the poor people in the outskirts currently cannot afford other transport modes than non-motorised “sustainable” transport.</p> <p>Challenges such as urbanisation and corruption are often considered the main problems for the implementation of sustainable transport measures in emerging cities. This thesis shows that instead of solely focussing on these challenges, one should criticise the non-contextualised methods in use for encountering them and suggests a preventive approach for urban development. The conclusion follows: It is not only the guidance documents in use for development assistance in the field of Sustainable Urban Mobility that needs to be contextualised, but the whole concept.</p> | | | |
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Abbreviations

| | |
|-----------------|---|
| AFD | Agence Française de Développement (French Development Agency) |
| BRT | Bus Rapid Transit |
| CO ₂ | Carbon dioxide |
| EU | European Union |
| EMS | Emissions Trading Scheme |
| FEMULP | Federación de Municipios Libres del Perú |
| GHG | Greenhouse gases |
| GIZ | Deutsche Gesellschaft für Internationale Zusammenarbeit (German Corporation for International Cooperation) GmbH |
| GTU | Gerencia de Transporte Urbano |
| INDC | Intended Nationally Determined Contributions |
| MOCICC | Movimiento Ciudadano frente al Cambio Climático |
| NAMA | Nationally Appropriate Mitigation Action |
| NGO | Non-Governmental Organisation |
| NUMP | National Urban Mobility Plan |
| SITP | Sistema Integrado de Transporte Público (Integrated Public Transport System) |
| SPDA | Sociedad Peruana de Derecho Ambiental |
| SUM | Sustainable Urban Mobility |
| SUMP | Sustainable Urban Mobility Plan |

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1 Introduction and background

Automobility is a widespread global challenge in terms of accidents, increasing greenhouse gas (GHG) emissions and air pollution in urban areas. The number of vehicles per 1000 inhabitants in European countries however tend to be significantly higher than in Latin America. As an example, Germany has a number of 605 and France 590 vehicles per 1000 inhabitants. In Colombia the equivalent number is 71, and in Peru 73 (NationMaster, 2014; ACEA, 2017).

It is however not only the number of cars that is the challenge *per se*, but the unsustainable perspective of the car as the main mode of transport in urban areas. To avoid this unsustainable development, cities are pushing for alternatives. The dominant model used to battle these problems of automobility in urban areas in Europe is the approach for Sustainable Urban Mobility planning, a model that argues for a shift from “traditional transport”, often private motorised vehicles to “sustainable mobility”, that encourages multimodal and rational combinations of non-motorised and public transport in urban areas. By implementing Sustainable Urban Mobility Plans (SUMP), cities are trying to kill two birds with the same stone, which is increasing levels of GHG caused by private transport as well as inequality as a result of low accessibility to transport.

As a result of this apparent success, SUMP are currently being rolled out in the Latin America. Ongoing projects of Sustainable Urban Mobility development in Latin American cities are often partly financed through initiatives for development assistance, by national development agencies such as the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Agence Française de Développement (AFD) and the European Union in the framework of projects such as Euroclima+ and MobiliseYourCity. These initiatives are carried out according to European terms of Sustainable Urban Mobility and the planning and implementation of Sustainable Urban Mobility Plans are based on European guidance documents and approaches. This type of development assistance has been ongoing for several years but is currently increasing. Only the ongoing Euroclima+ project includes initiatives of Sustainable Urban Mobility in 12 Latin American countries (Gomez, 2019).

One can thus question whether the urban planning approach for Sustainable Urban Mobility, that originally was designed for European cities, remains applicable for

emerging cities in the Global South or whether a contextualisation of the concept is needed? This thesis gives a perspective of how Sustainable Urban Mobility is being enforced in the emerging cities of Bogotá (Colombia) and Lima (Peru) and presents a stance of how the model of Sustainable Urban Mobility needs to be put into the context of emerging cities in Latin America.

Recent global changes such as urbanisation, climate change and economic growth have put a great pressure on both national and local governments for improving sustainability in urban areas. One of the aspects affected the most by these changes is human transport. Cities in the Global South, and particularly in Latin America, suffer from great inequalities and challenges when it comes to urban mobility and sustainability (Cervero, 2013). Development of Sustainable Urban Mobility policies has shown to encourage social benefits and sustainability and the intention is to improve these questions in emerging cities as well (Banister, 2011). The harsh conditions in the transport sector in connection with accessibility, poverty and inequality are often described as a result of urbanisation and administrative challenges such as corruption and lack of democratic courses of action. This thesis argues that while these issues remain valid challenges for transport planning in emerging urban areas in the Global South, the pre-eminent challenge is the lack of contextualisation of the European approaches, structures and guidelines for Sustainable Urban Mobility into the context of emerging cities in Latin America.

1.1 Research questions

Three research questions are to be discussed and answered in this thesis. The first one is to determine the differences to be considered for Sustainable Urban Mobility planning in emerging cities compared to how the concept is implemented in Europe.

After determining the differences, the second question follows: What are the main challenges and possibilities of Sustainable Urban Mobility for emerging cities in Latin America? This question critically discusses the general perspective of an emerging city as a problematic environment for mobility, and instead seeks for answers to how the concept of Sustainable Urban Mobility can be contextualised for emerging cities.

The existing mobility culture has been argued to play a crucial role for successful outcomes of Sustainable Urban Mobility (Banister, 2008). To straighten out this importance in the cases of Lima and Bogotá, the third research question is: In which ways

could the local mobility culture be accounted for in reconstructing a new mobility paradigm?

Aspects of these questions have been discussed Latin American urbanists. For example Alan Gilbert and Robert Cervero have researched the development of the urban mobility situation in Bogotá (Cervero, 2005; Gilbert, 2006). The situation in Lima is somewhat less examined, but researchers such as Dario Hidalgo and Cornie Huizenga have discussed the urban mobility development in Latin America by using the example of Lima (Hidalgo and Huizenga, 2013a). Another notable researcher that tends to focus her research in this field on Latin America as a whole is Paola Jiron (Jirón, 2013). No one of the mentioned researchers however discuss the issue of whether the actual concept of Sustainable Urban Mobility is applicable for these emerging cities. This aspect was raised by Daniela Roque and Houshmand Masoumi, which is further discussed in subchapter 2.3 (Roque and Masoumi, 2016). Whereas their research justifies the importance of the issue, no empirical research similar to this thesis has been carried out before. Addressing these three questions can help to ascertain whether SUMPS constitute a sustainable alternative to urban transport problems in the Global South. How to address these questions, however, require careful reflections.

1.2 Researching urban mobility

The existing approaches for researching urban mobility planning are helpful, but they are of limited use with respect to the specific issues researched in this thesis. To begin with, one must understand how interconnected the urban transport sector is with other fields of urban development such as housing, employment and socioeconomic relations. One cannot possibly discuss the different outcomes of mobility development without approaching it in a holistic way (Hüging, Glensor and Lah, 2014). This entails for example that by improving accessibility through urban mobility development, people will have better opportunities for employment. Another example would be that by encouraging biking as a mode of transport, the citizens will acquire better health conditions. This approach certainly describes the way of understanding urban development but cannot answer the questions posed in subchapter 1.1.

Another debate is the controversial discussion on power relations, leading to different approaches for development. The central question one could ask is: *who benefits from*

this development? The transport sector in general often tends to be encouraged by neo-liberal theories of economic growth. An example of this is Kuznet's theory arguing that economic growth would decrease pollution as more sustainable ways of living will be easier to afford. This idea of economic development has been heavily criticised by Franklin Obeng-Odoom, arguing that free trade is increasing unsustainable automobility in the Global South *by overreliance on automobiles is accompanied by ecological, economic, and social contradictions* (Obeng-Odoom, 2015).

There is no single concept of sustainability, and the discussions on how to interpret the notion are therefore relevant when it comes to researching urban mobility. Anja Nygren has combined the discussions of power relations with interpretation of sustainability and "environmentalism", which is essential for researching sustainable transport. She combines and categorises these different aspects of sustainability into four ideologies: *Environmentalism for Nature*, *Environmentalism for Profit*, *Alternative Environmentalism* and *Environmentalism for the People*. Similar to Obeng-Odoom's research, the central aspect that effectively differentiates these ideologies is effectively *who benefits* of the environmentalism (Nygren, 1998). Both the debates on economic growth and the concept of sustainability is discussed further in the following chapter, and the question of *who benefits* therefore remains central throughout this thesis.

Mobility and transport are often analysed based on quantitative data such as local CO₂ emissions, length of bus and bicycle lanes and air quality indicators and often considered "measurements" of Sustainable Urban Mobility. An example for such research is the application of the Sustainable Urban Mobility Index (I_SUM) on the city of Curitiba, Brazil by de Freitas Miranda and da Silva. The index, that consists of indicators grouped into different themes, shows that Curitiba, with an average of 0.747 (where 1 is the best and 0 is the worst), performs well when it comes to urban mobility (de Freitas Miranda and da Silva, 2012).

The relevance of these results is, however, questionable. The authors themselves bring up various complications such as that some of the indicators are not applicable to the city data (in this case 19) and that there is no guarantee that the city data has not been tempered with. Measuring variables for urban mobility can be hard to do using quantitative data, especially for a comparison between cities. Besides, an "average" based on 87 indicators hardly tells the "quality" of the mobility itself. The mobility seen as a service is instead

often measured through surveys, as proclaimed by Litman in *Measuring Transportation: Traffic, Mobility and Accessibility* which shows the perspective of the user instead of the city itself. Litman also divides the measurements into three different perspectives: traffic, mobility and accessibility, to be measured separately and later on categorised into five different issues (users, modes, land use, transportation problems and solutions and measurements) describing every perspective (Litman, 2013).

For these reasons, this thesis uses original qualitative data, including interviews from five interviews in Lima and five corresponding interviews in Bogotá. The mobility situation as well as the mobility culture is presented through a qualitative content analysis, and each issue put into a certain category based on the model by Litman. These categories will be analysed using a *constant comparison process*, comparing each category with each other. The aim of using different categories and interpret the responses from the interviewees within the categories is to avoid the “creation of quantitative data based on qualitative data” using e.g. coding based on words in the transcripts, that could easily be misinterpreted (Pope, Ziebland and Mays, 2000). The collected data is analysed through a SWOT method (internal strengths and weaknesses compared with external opportunities and threats). This type of analysis is recommended by Ibeas, Dell’olio and Montiquín for describing a mobility situation and problem solving based on focus groups representing a “small population sample” (Ibeas, Dell’olio and Montequín, 2011). The gravity of the challenges and possibilities can be seen in the occurrence in the interviews (for example by how many interviewees mentioning the same aspects).

A SWOT analysis of this kind has the additional strength of facilitating the comparison of results in in the data analysis phase, where the cases of Bogotá and Lima are compared with each other in relation to the content of the *SUMP guidelines* and related academic literature. This comparison confirms the argument whether guidance documents for Sustainable Urban Mobility needs to be contextualised for the Latin America and other regions in the Global South. The results from the data analysis of both cases, Lima and Bogotá, are compared and presented for a suggestion of future development of guidance documents as well as development cooperation initiatives. The methods and approaches used for data collection and analysis are further discussed in subchapter 4.1, *Approaches for data collection and analysis*.

1.3 Theory and arguments

Due to the rapid need of mobility improvement in emerging cities in Latin America, development assistance as well as financing for mobility is needed. However, the main argument of this thesis is that for a good outcome of such urban development, the guidance, models and approaches for Sustainable Urban Mobility planning can't simply be copied from the West and applied in the South. Instead, it needs to be contextualised for the different situations in Latin America. To do so, the argumentation of this thesis is carried out through a critical assessment of Modernisation theory.

The implementation of western concepts and approaches for the Global South has been criticised as an example of Modernisation theory, claiming that by applying the models and structures of the Global North, that is considered “modern” or “developed”, in the Global South seen as “yet to be modernised” or “developing”, the South could reach the same level of development as the North (Bernstein, 1971). When applying this to the context of Sustainable Urban Mobility planning, the argument according to the theory would be that the “modern” European based models of SUM would result in better situations of Urban Mobility in Latin American cities. The critical assessment of modernisation theory and its manifestations in the urban transport sector is further discussed in subchapter 3.5.

The counter argument would be that the European models for Sustainable Urban Mobility *are* applicable for emerging cities in Latin America. To argue against this, the issues will be examined through the three research questions mentioned in subchapter 1.2 as well as analysis of original qualitative data from the cases of Bogotá and Lima. As discussed in the introduction to this chapter, the “mainstream” issues argued to cause challenges for urban mobility are urbanisation and administrative challenges such as corruption and political uncertainty. This thesis argues that even though these issues play an important role, the pre-eminent issue is not the challenges themselves but that the models and approaches for improving urban mobility in emerging cities have not been contextualised for the emerging cities where applied. The first research question, *what differences to be considered for Sustainable Urban Mobility Planning in emerging cities compared to how the concept is implemented in Europe?*, challenges the idea that the European mobility paradigm can simply be applied on emerging cities in the Global South, with an assumption to reach the same outcomes as in Europe. It is researched in relation to the

European guidance documents and ongoing development assistance policies in the field of Sustainable Urban Mobility planning. The argument connected to this question claims that the emerging nature of a city makes the European approaches for Sustainable Urban Mobility inapplicable for emerging cities. Without contradicting this, the argument connected to the third research question is that the local mobility culture needs to be strongly emphasized in the planning processes, as it tends to differ significantly from the examples that the European models are based on. While the two earlier arguments are meant to show that a contextualisation of the European Mobility Paradigm is needed, the second research question shows what the outcome of such a contextualisation could look like.

The current guidelines for Sustainable Urban Mobility planning do not take the underlying mobility culture into specific consideration as a separate phase in the planning process, but only suggest that by implementing a SUMP, one would acquire a “improved mobility culture” (Wefering *et al.*, 2013). Therefore, a specific focus in this thesis is put on the importance of the underlying urban mobility culture for SUMP implementation in Bogotá and Lima, as this is expected to be one of the most crucial differences to the situation of mobility in Europe. To do so, this data is analysed through qualitative content analysis based on the issues raised in the interviews regarding urban mobility culture.

Other theories that could be applied on the case is Dependency theory and Post-colonial theory, both criticising the concept of *Western liberal modernity* (Kapoor, 2002) and arguing that current development cooperation is created in order for countries in the Global South to become dependent of western structures, expertise and especially resources. Dependency theory is based on a critique towards capitalism and neoliberalism (Pieterse, 2001). Whereas it can describe the current situation of transportation in Latin America from a historical context, the European mobility paradigm and the guidance documents this study is based on do not have the goal to increase resource usage but to decrease it in forms of more sustainable modes of transport. Compared to the industry of automobility and private transportation, endorsement of Sustainable Urban Mobility modes can be considered an act against neoliberalism and privatisation, as the goal is to reduce private transport, and does thus not apply on this theory. When Dependency theory puts its focus on critique against the western system of capitalism, Post-colonial theory focuses on structural, political and cultural dependencies (Pieterse, 2001).

Additionally, generalisation is often a common mistake for research regarding the Global South or emerging cities. Case studies can be found claiming to see a “solution” for challenges in emerging cities based on one example, but one case cannot possibly argue that a case study of one city in Latin America represents the whole group of countries. To prevent this inaccuracy, this research has been carried out in the form of a comparative study based on urban mobility in Bogotá and Lima, and applying the results in comparison to the Sustainable Urban Mobility guidelines, which is a planning guidance document based on European examples (Wefering *et al.*, 2013), and ongoing development cooperation to explain the different challenges of Sustainable Urban Mobility in Latin America, as well as to confirm what the possible similarities are. The *SUMP guidelines* are also used for contemporary development assistance, which is further discussed in subchapter 3.2.

1.4 Structure

This study consists of six different chapters. The first and introductory chapter describes the purpose, methodology and research design of this thesis. The concept of an emerging city is vital for this study, as it argues that the idea of Sustainable Urban Mobility needs to be put into the context of emerging cities to ensure a sufficient planning and policymaking process. The term is based on three aspects: urbanisation, economic growth and environmental aspects, that emerging cities tend to be a specific target to. The differences and attributes of an emerging city will be discussed in relation to the SUMP model in chapter two.

Current projects of planning and policymaking for Sustainable Urban Mobility in Latin America are often partly financed through initiatives for development assistance by the GIZ, AFD and the EU. These initiatives push for a transformation from a traditional form of “transport” to modern “sustainable mobility”, that is discussed further in chapter two (de Freitas Miranda and da Silva, 2012). These projects aiming to improve the situation of Sustainable Urban Mobility tend to be based on guidance and policy documents developed by European agencies and consultancies using European cities and best practises as a model for mobility development in Latin America. The complexity of this is discussed in chapter three, and further analysed based on the data analysis findings in chapter five.

The data analysis as well as the mobility situation of the two cases of Bogotá and Lima are presented in chapter four and put into context of the historical development of passenger transport in the two cities. The results are then compared to each other in relation to the European guidance documents in chapter five and the research questions as well as suggested solutions to the problem in the concluding chapter six.

2 Increasing urban populations, emissions, automobility and economic growth in emerging cities – a coincidence or a pattern?

“The Global South”, “emerging economies” or even “developing countries” are idioms often used for countries or areas that, despite usually being situated in southern parts of the globe, have a GDP (gross domestic product) per capita significantly below the global average, an *emergent conceptual apparatus* and are subject to change (Mignolo, 2011). But what do we call cities with similar attributes? A “city in the Global South” does not tell us anything about the nature of the city such as economic growth, the city’s population nor socioeconomic properties. Technically, a city in the Global South does not need to be emerging. As the concept “developing country” is considered outdated and devaluating, so is “developing city” (Robinson, 2006:1). The argument of chapter two is that emerging cities in Latin America tend to have some characteristics differing significantly from the European cities that the concept of Sustainable Urban Mobility is based on. Because of these aspects, the outcome of SUMP implementation is expected to be different for these cities than for the ones in Europe. In order to proclaim this argument, the concept of “emerging cities” is defined in subchapter 2.1. Subchapter 2.2 maps out how such a description of cities fit to the Latin American context. In the last subchapter 2.3, the connection between emerging cities and increasing automobility is discussed.

2.1 Defining emerging cities

There are a many characteristics that need to be taken into consideration for Sustainable Urban Mobility planning in general. For this study it is however inevitable to describe which characteristics that differentiate an “emerging city” from a “normal city” when it comes to Sustainable Urban Mobility planning. Allen Scott describes the emerging city as cities with high levels of urbanisation, *a new division of labor is strongly under way with major implications for the restratification of urban labor markets and urban social*

life and economic and social transformations currently evident in large urban areas are provoking significant changes in the physical milieu and built form of the city (Scott, 2011). Based on this, there are three main characteristics describing an emerging city for this study: the first one as urbanisation and population increase, the second as economic growth, and last their vulnerability to climate change. Current processes of urbanisation as a phenomenon itself affects countries especially in the Global South, where 90 per cent of future urban growth is expected to happen. According to Robert Cervero, one of the reasons for the emerging cities in the South to suffer from great inequalities and challenges is insufficient urban mobility, sustainability, lack of mobility infrastructure and missing means to control rapid urban expansion (Cervero, 2013).

This type of development is however not new on a global scale. As cities in the North have experienced industrialisation at an earlier stage and development at a slower rate, the infrastructure and transport development has been able to evolve simultaneously. Since the phase of industrialisation happened over a long time period in Europe and North America, the case of Latin America is substantially different. The most rapid processes of industrialisation took place there between 1930-1970, strongly connected to the first wave of urbanisation. For this reason, the need of urban mobility and infrastructure development is the greatest in emerging cities (Jirón, 2013).

It is often assumed that there is a positive connection between growth, economic and environmental sustainability. When it comes to the aspect of urban transport, this is however not the case. Many cities in recently emerging economies face problems of rapidly increasing amounts of traffic and automotive private vehicles due to increasing economic resources. Recent economic growth in emerging Latin American economies such as Peru, Brazil and Colombia have thus resulted in increased traffic accidents, pollution and negative health impacts. The most urgent sign of the need for mobility improvement is the increase of low-middle and middle class citizens in emerging cities, as the number of citizens able to afford private transportation increases (Cervero, 2013).

Despite emerging cities often having very low levels of GHG emissions per capita, cities in the Global South tend to be the most vulnerable to climate change in forms of environmental hazards and degradation. Except for the geographical location also being vulnerable to disasters such as drought and floodings, the infrastructure of the urban areas are usually less resistant to such hazards as a result of limited resources for planning and

construction (Adger *et al.*, 2003). Additionally, cities with high levels of “urban sprawl”, that is strongly connected to urbanisation, also tend to be more exposed to such events (Stone, Hess and Frumkin, 2010).

2.2 Emerging cities in Latin America

Based on the three mentioned aspects describing an emerging city, this subchapter shows that many cities in Latin America can be described using this concept. Ongoing processes of urbanisation, economic growth and environmental vulnerability are described through comparison of quantitative data describing why the emerging city concept is particularly suitable for researching Sustainable Urban Mobility in Latin America.

2.2.1 Urbanisation in Latin America

Urbanisation as a phenomenon itself affects countries especially in the Global South, where 90 per cent of future urban growth is expected to happen. As the phase of industrialisation happened over a long time period in Europe and North America, the case of Latin America is different. Between the time period of 1925-2000, the urban population increased from 25.0 per cent to 75.3 per cent, whereas in North America the equivalent data is 53.8 per cent for year 1925 and 77.2 per cent for 2000. The most rapid processes of industrialisation took place between 1930-1970, strongly connected to the first wave of urbanisation. The second and ongoing wave of urbanisation in the 21st century is connected to increased economic growth and regional inequality, which resulted in people moving to cities due to unemployment and better quality of life (Cerrutti and Bertoncello, 2003).

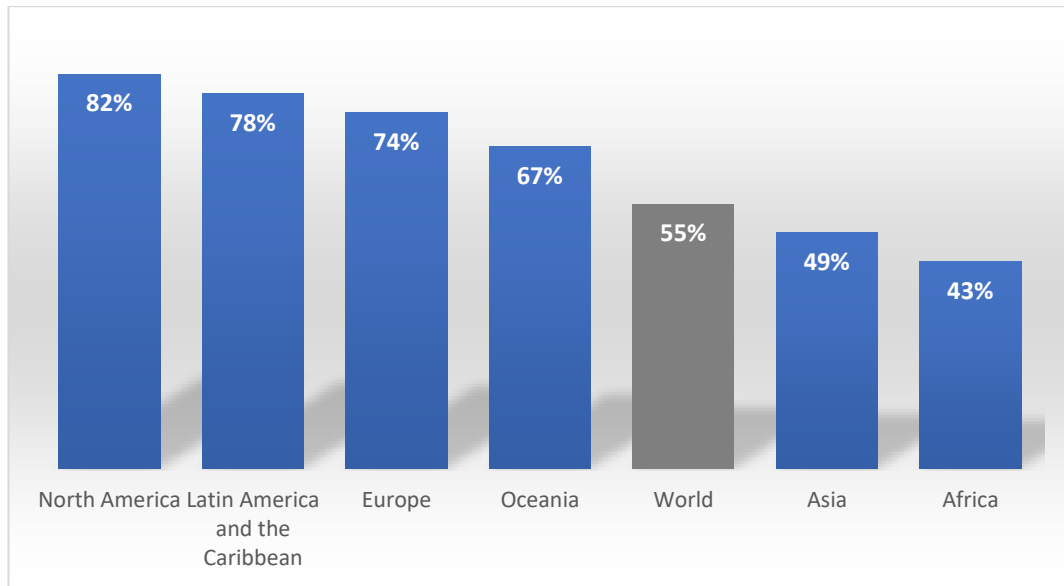


Chart 1: Percentage (%) of the population living in cities by continent (The Population Reference Bureau, 2018)

Current levels of urbanisation in Latin America are among the highest in the world. According to the Population Reference Bureau, 78 per cent of the population in Latin America and the Caribbean lived in cities, just slightly below Northern America, where 82 per cent of the population is considered as urban dwellers. As shown in chart two below, there are however significant differences between Latin American countries when it comes to urban settlement. Urbanisation is by many considered as a major gamechanger for Sustainable Urban Mobility and a feature characterising emerging city in this study. The two case studies of Bogotá (Colombia) and Lima (Peru) have been picked as they are located in larger Latin American countries with high levels of urban settlements.

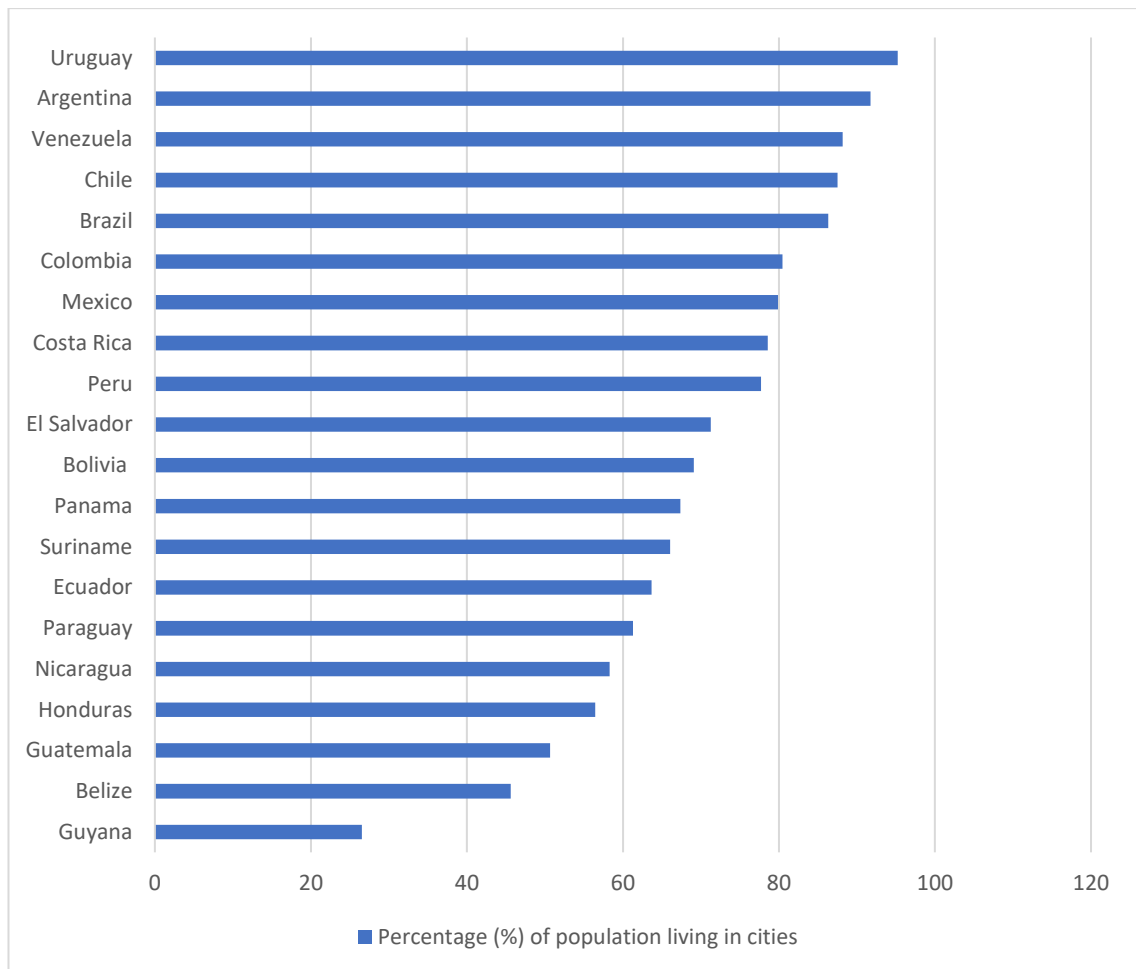


Chart 2: Percentage (%) of the population living in cities by country in Latin America (The World Bank, 2018c)

The question of why urbanisation is considered to play such an important role for sustainability in Latin America is crucial. As one can see in chart one, countries in Europe and North America also have high levels of urban population. But the difference between these is that Latin America has seen a more rapid process of urbanisation in the 21st century. The general assumption is that the lack of existing infrastructure in combination with rapid urbanisation in arising megacities such as São Paulo, Bogotá and Lima have caused complications regarding traffic, sustainability, transport and employment. Another issue is urban sprawl, that is the delocalisation of citizens within cities. Many large cities in Latin America experience increasing population, but a proportional decrease of dwellers in the city centre due to high prices of housing. This has resulted in a greater need of urban transport and mobility in city outskirts (Lankao, 2007).

2.2.2 Economic growth

That *urban infrastructural development has failed to keep pace with this rapid growth* is the issue considered “mainstream” when it comes to the implementation of the European mobility paradigm. Many large cities in Latin America have significantly lower levels of GHG emissions by capita compared to many cities in the North. São Paulo for example, had a level of 1.4 tonnes of CO₂ per capita in 2000, whereas Chicago’s level of CO₂ per capita the same year was 12 tonnes. Based on this, one could assume that improving environmental sustainability in cities in the Global South would not make much of a difference, and that reduction of GHG emissions should mainly be focused on cities in the North. It is however arguable that the higher levels of emissions in the North could be a result of heating, that is usually less required in southern countries. But the higher levels of heating are just a small proportion of the overall emissions, and cannot explain why cities like Sydney (Australia) had emissions of 20.3 tonnes CO₂ per capita in 2005 (The World Bank, 2010).

As mentioned earlier, on the one hand, urban CO₂ emissions are closely related to consumption behaviour. Consumption on the other hand is closely related to economic welfare and growth, which result in a higher CO₂ emission in countries with a higher GDP per capita. In chart three, the CO₂ emissions of the Latin American countries Peru, Colombia and Brazil are significantly lower than the ones of Germany, Australia and the United States. In all these six countries, the levels of CO₂ emissions also correspond to the ones of GDP per capita.

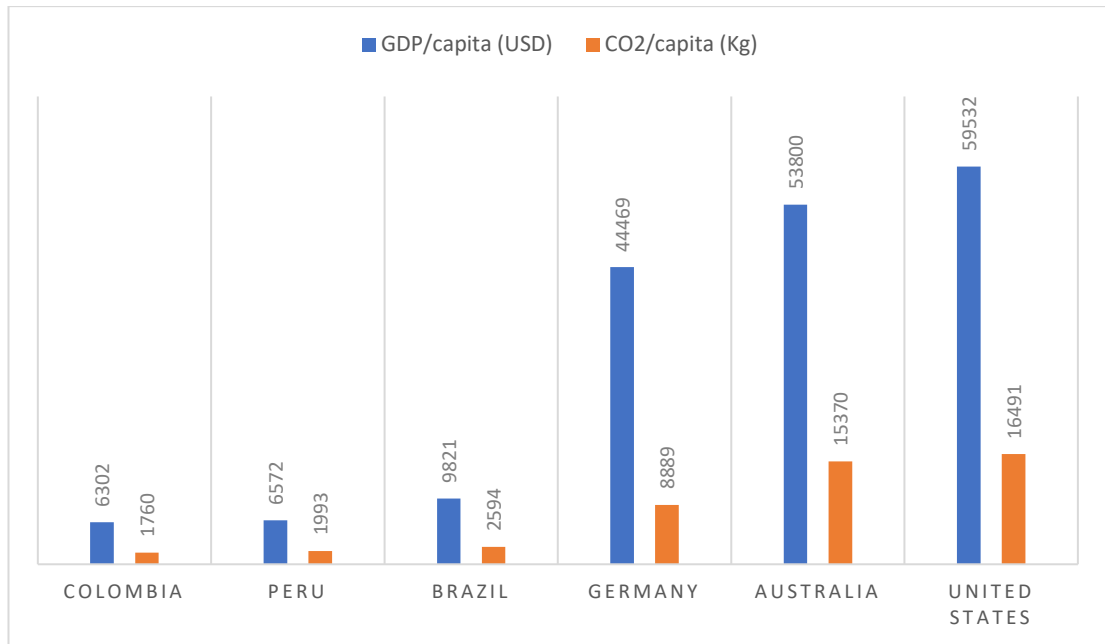


Chart 3: GDP per capita (USD) compared to CO₂ emissions per capita (Kg) (The World Bank, 2014; The World Bank, 2017)

Apart from the connection between reduction of GHG emissions, the transport sector is connected to the national economic development that poses a great interest to the national government. So do urban development and reduction of unemployment and poverty. Mobility and transport make a great example of how GHG emissions relate to economic growth. In the Global South, where private modes of transport are hardly affordable for the large poor population, mobility options such as walking, biking, buses and trains become suitable. As argued by Lankao, the largest proportion of CO₂ emissions derive from wealthy areas, and the less wealthy urban population is emitting far less when it comes to transport (Satterthwaite, 2003). Consequently, in Latin America, where the wealthy tend to live in urban areas, the highest emissions from the transport sector can be seen in cities and not on the countryside. This means that the only sector with lower emissions in urban than in rural areas in Europe, that is the transport sector, still tend to have higher emissions in urban areas than in the rural ones in Latin America. With constant economic growth, more and more people can afford private modes of transport. This, in combination with rapid urbanisation and urban sprawl, is considered to put a great pressure on sustainable urban development resulting in increased traffic, GHG emissions and local environmental impact. As the economies in Latin America are emerging, the result of rapid economic growth is connected to GHG emissions, as one can see in the pattern of the examples Peru, Colombia and Brazil in chart four (Lankao, 2007).

Based on this, the clear connection between economic growth and increasing CO₂ emissions is obvious. On the contrary, what is less certain is the connection between urbanisation and economic growth. As discussed in subchapter 2.1.1, urbanisation is considered a significant challenge for urban development in emerging cities. In comparison, from a European perspective it is seen by many as a possibility for growth and prosperity (Bloom, Canning and Fink, 2008).

A pattern between economic growth, urbanisation and CO₂ emissions can also be noticed in chart four. What causes this pattern, and how the economic growth is divided within these countries over time is however uncertain, so is the solution to tackle these issues. The way for solving this, as suggested by ongoing development assistance of European development agencies, is by implementing Sustainable Urban Mobility Plans.

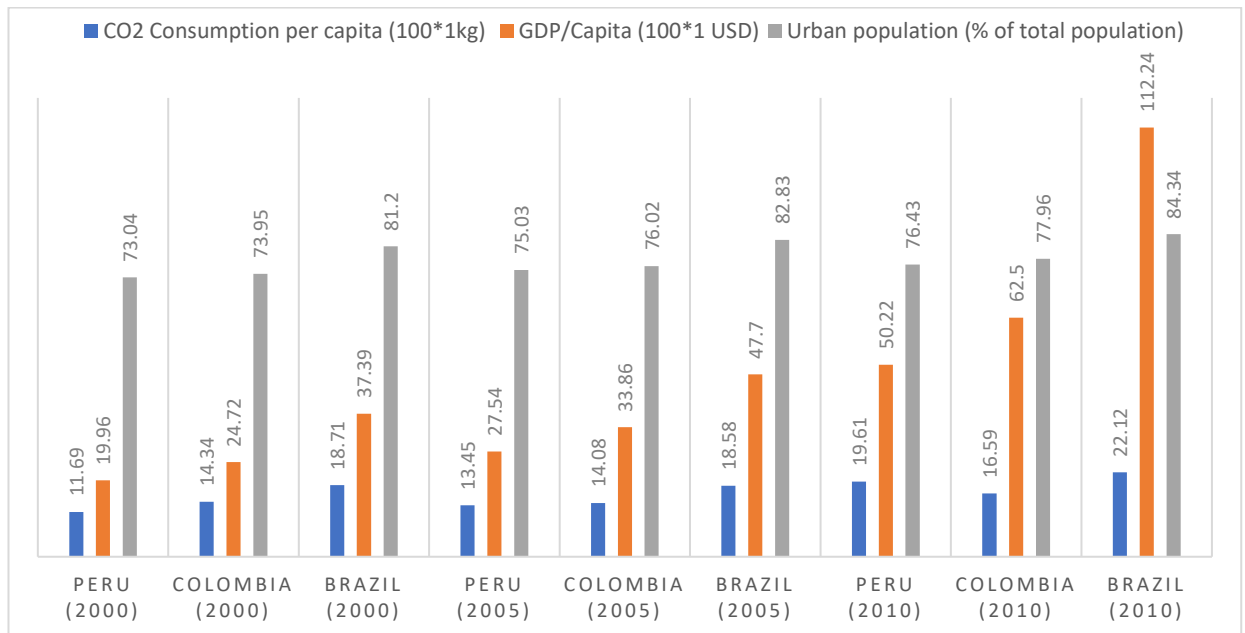


Chart 4: CO₂ emissions compared to economic growth in Peru, Colombia and Brazil 2000-2015 and urban population (The World Bank, 2018a, 2018b, 2018d)

2.2.3 Urban living and climate change

Even though Latin American countries are considered “low-emitters” of GHG emissions compared to many countries on the North side of the globe, the environmental impact of climate change tend to be the highest in the South. According to Hardoz and Pandiella, environmental hazards in these areas often consist of *extreme weather events such as floods, droughts, extreme temperatures heavy rains and storms*. Latin American cities are

mainly located close to watercourses or mountains, which also are the most vulnerable and thus the ones with risks of flooding. These vulnerable urban areas, often with lacking infrastructure, tend to be inhabited by the poorest in society without formal rights to their settlement. In case of an environmental disaster, the society living in the hazardous area is regularly displaced. Despite these areas within cities being most vulnerable to climate change and environmental hazards, they are usually the districts with the least GHG emissions (Hardoy and Pandiella, 2009).

In spite of the urban population increasing in most countries in Latin America, ongoing development projects often tend to be focussed on decreasing GHG emissions rather than confronting poverty, unemployment and improving accessibility. For justifying environmental projects in combination with poverty reduction, Patricia Lankao argues in the article *Are we missing the point? Particularities of urbanization, sustainability and carbon emissions in Latin American cities* that the environmental improvement needs to be “localised” for public and stakeholder support. This can be done through battling environmental issues as part of the local agenda for example air and noise pollution or biodiversal degradation affecting local industries (Lankao, 2007). As discussed in the two subchapters above, urbanisation from a European perspective is often considered a positive contributor to economic growth. Besides, as discussed in the earlier subchapter (2.2.2), economic growth has a strong connection to increasing GHG emissions and environmental degradation (Bloom, Canning and Fink, 2008). The localised approach by Lankao could thus be used not only for environmental aspects, but also when it comes to urbanisation and economic growth, arguing that all three aspects need to be put into a local perspective and not to be seen from the European point of view. This is also a good example of how holistic the urban development field is. Similar to this thesis, one could argue that Lankao is indirectly criticising Modernisation Theory and its manifestations in connection to urban development.

Lankao, however, argues urban settlement to be the most sustainable way of living. The presumption is that a city with functioning modes of public transport, regional distribution of heat and electricity and working infrastructure such as wastewater management can reduce CO₂ emissions significantly. This argument has been widely used when comparing urban CO₂ emissions to each other, for example in the article *Greenhouse gas emissions along the rural-urban gradient* (Andrews, 2008). The problem with these studies is, that

the GHG emissions measured are often based on production instead of household consumption and exclude indirect consumption and do not show the whole picture. CO₂ emissions caused for example from buying a product or a service or taking a flight to a different location are not counted. On the contrary, when including these aspects into a comparison between urban and rural CO₂ consumption, it is inevitable that the urban consumption is higher (Huang, Zhang and Liu, 2018).

Even in a wealthy country such as Finland, research such as *A carbon consumption comparison of rural and urban lifestyles* by Heinonen and Junnila, shows that CO₂ emissions based on consumption are higher in urban and metropolitan areas due to higher levels of consumption when it comes to electricity, heating, consumer goods among others. It is however important to note that the transport sector has significantly lower levels of GHG emissions in urban compared to rural areas. The main reason for this, in the example of Finland, is working public transport infrastructure. Helsinki's regional transport system is also mentioned as a best-practise example in the *SUMP guidelines* that consider *the transport system as a whole* and successfully examines *people's travel behaviour, as well as the environmental impacts of traffic* (Wefering et al., 2013). This argues for the transport sector as a feasible target of emissions mitigation, especially when levels of the amount of automobility are high. Heinonen and Junnila also claim that the higher consumption in urban areas can be a result of higher purchasing power in the cities, as discussed in subchapter 2.2.2 on economic growth (Heinonen and Junnila, 2011).

In emerging economies, higher levels of GHG emissions from transport in rural areas are rare. Instead, the transport emissions in urban areas tend to be significantly higher in the Global South, according to Huang, Zhang and Liu in *Comparing urban and rural household CO₂ emissions-case from China's four megacities: Beijing, Tianjin, Shanghai, and Chongqing*. The example of China shows that the usage of private transport modes such as cars and motorbikes is significantly higher in urban areas, as the citizens' financial situations tend to be better in these areas and due to limited public transport infrastructure (Huang, Zhang and Liu, 2018).

This takes us to the interpretation that the environmental challenges can be seen on two different levels, a "local" level and a "global" level. Whereas the emerging cities tend to be vulnerable to environmental degradation on a local level, their GHG emissions per capita on a global comparison remain low. Environmental degradation, such as air

pollution, can on the other hand can be found on a local level as well. A similar distinction is discussed by Nygren, who differentiates the benefits of environmentalism between people, nature and economic profit, and takes us back to the discussion on *who benefits* discussed in subchapter 1.2 (Nygren, 1998).

2.3 Increasing automobility in Latin America

Whereas many cities are pushing for alternative modes of transport opposed to automobility, many cities in Latin America still remain heavily car oriented, and some even with larger increasing levels of motorisation compared to other cities in the Global South (see figure one). This fact shows an imminent need of alternative ways of mobility in Latin American countries (Roque and Masoumi, 2016).

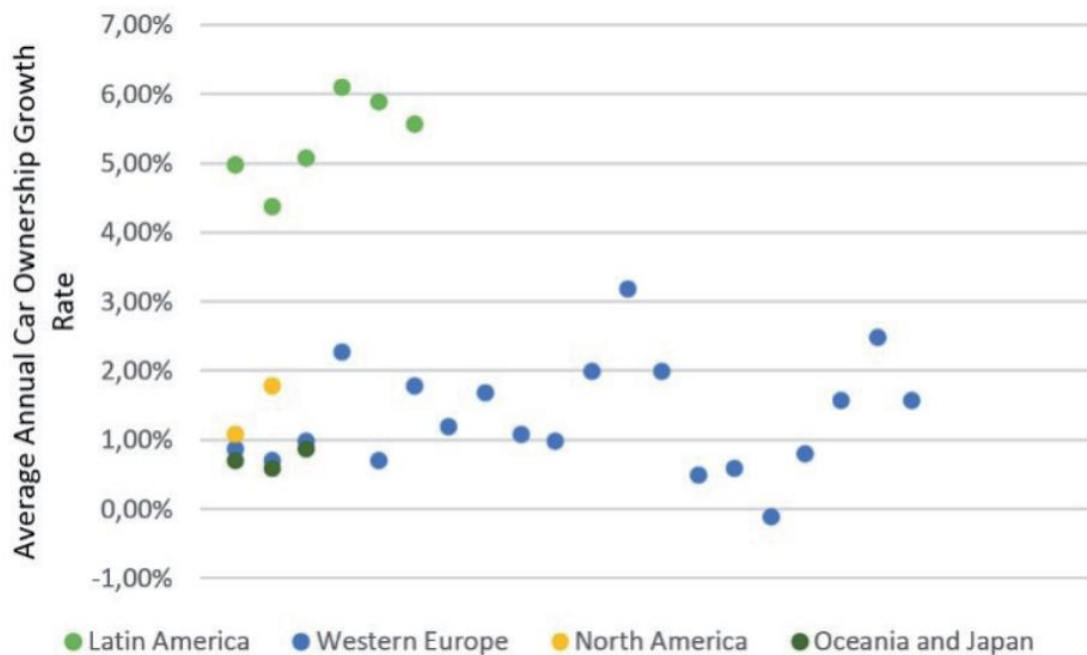


Chart 5: Average annual car ownership growth rate in comparison to other areas (Roque and Masoumi, 2016)

According to Roque and Masoumi, Sustainable Urban Mobility rates in Latin America cannot be compared to the ones in Europe. There is also no clear answer to why car dependence is increasing. But Roque and Masoumi argue that the lack of guidance documents contextualised for Latin America, as well as lack of data are possible factors contributing to the problem. One possible reason may as well be the increasing economic growth, but this cannot explain the situation for each city as the growth rates vary.

Regarding larger cities in Latin America, they argue that the existing data, that often is quantitative, might not be able to explain the situation of citizen behaviour when it comes to car usage, as culture is simply hard to describe in numbers (Roque and Masoumi, 2016). These problems highlighted by Roque and Masoumi justify the form of data collection in interviews and a focus on citizen behaviour or “mobility culture” as it is called in this thesis.

2.3.1 The concept of sustainability

Despite attempts of unification, “sustainability” or “sustainable development” are not multilateral concepts perceived in the same way by everyone. Traditionally the concept was thought to benefit society based on three aspects: economic, social or socioeconomic and ecological factors. Which of these features “weight” the most and what they entail is however up to everyone’s own interpretation and prioritisation. “Sustainability” or “sustainable development” also highlights that the situation is subject to change (Stilwell, 1998). In the case of urban transport, this change is from “traditional transport” to “Sustainable Urban Mobility” discussed in subchapter 2.7.

In a neo-liberal world, the economic aspect of sustainability is often criticised. The critical question is how a free capitalist market can favour both the social and ecological dimension of sustainability. When it comes to urban mobility, it is important to see the whole perspective. In addition to encouraging actors on the private sector to engage in sustainable services for urban transport, the improvement of public transport benefits economic aspects such as access to services and employment which also clearly benefits both the market and the urban economy (Shergold and Bartle, 2016).

Discussions on sustainability often highlight the factors of economic and environmental sustainability, and the third pillar that is the social perspective often falls somewhat by the wayside. In the Global South, with low levels of CO₂ emissions per capita and high levels of poverty, one could argue that the social factor plays the most important role. There is, however, a lack of consensus of what the social pillar of sustainable development actually entails (Dempsey *et al.*, 2009). For this reason, this thesis puts a specific focus on the social aspects as a part of planning processes for Sustainable Urban Mobility to clarify the connection.

2.3.2 Questioning automobility

The way of thought throughout this thesis is seeing automobility as a transport mode that needs to be decreased as of the environmental and social consequences it creates. This is not a consensus among transport researchers. Loren Lomasky argues that an important social aspect of automobility is the autonomy of drivers and the view of private vehicles as a key to freedom. He also claims that private modes of transport increase mobility, and along with the perspective of autonomy and increased mobility he points out that automobility benefits quality of life and economic advancement (Lomasky, 1997). Further research arguing the same point of view can be found, such as *Means of transport and ontological security: Do cars provide psycho-social benefits to their users?* by Hiscock et al., arguing that the autonomy provided by car ownership increases *psycho-social benefits* for individuals (Hiscock *et al.*, 2002).

Lomasky's concept of the connection between autonomy and private transport is rather vague. A common understanding is however that increased mobility has a positive impact on the quality of life. David Bissell argues that the perceptions of automobility as a source of freedom are *more illusory than they are substantive*, and that public transport can improve levels of collectiveness which is beneficial for the quality of life (Bissell, 2010). The idea of Lomasky's "automobile freedom" also presents a picture of the urban space as an "open field" where automobility can be practised without limits. He does not take into consideration that also automobility has its limits such as traffic, limitations of parking and roads that are often liberated through public transport.

The largest misconception by Lomasky and other pro-automobility researchers is the combination of car usage and the public-private spectrum. By comparing the private, represented by the car in this case, and the public, which is pictured as public transport, it makes it simply a question of public versus private ownership that easily could be placed into a "left versus right" political scale. According to the *SUMP guidelines*, the concept of Sustainable Urban Mobility does not count out either type of ownership, but instead argues that the type of transport that should be used is the most sustainable and rational one (Wefering *et al.*, 2013). One could simply ask oneself the question "Does it make sense to drive the car for one kilometre to reach a library?" No, it does not. Considering traffic and parking, it would make more sense to walk instead. The same applies to longer destinations, approximately up to five kilometres, when biking would

be the most reasonable option. For even longer destinations than this in an urban area, it would probably make sense to use public transport that can be faster if the infrastructure allows it. When moving to a low populated destination further away from the city, it is not certain that establishing a bus line or railway for a few persons per day is the most sustainable option, at least on environmental and economic grounds. In this case, sustainable mobility would favour car usage. As one can see by these examples, from a perspective of Sustainable Urban Mobility, the question is not between “private” and “public” as Lomasky argues. Biking, walking and other sustainable modes of transport such as electromobility can impossibly be included in the category of “public transport”.

Another critique towards Lomasky’s idea of automobility “increasing quality of life” is the fact that the possibility for car usage is limited based on socioeconomic grounds, especially in the Global South. It is only a certain part of the population that can afford private transport and a very small proportion that can afford a vehicle for every person in the household eligible to drive. The access to a driver’s license is also restricted, both on economic and legislative grounds that differ from country to country. The usual age that permits citizens to hold a driver’s license is 18, and people with certain disabilities such as low vision, high age or epilepsy might not be allowed a driver’s license at all. One could thus call the idea of automobility as autonomous transport benefitting quality of life a “luxury of the privileged”, and not an argument that can be applied on an emerging city (Cervero, 2013).

2.3.3 From “traditional transport” to “Sustainable Urban Mobility”

Instead of debating the question of public versus private transport, the *SUMP guidelines* argues for the concept of “Sustainable Urban Mobility” compared to “traditional transport”. As traffic and the need for transport is increasing in urban areas in Latin America, there are different approaches to tackle these issues. The easiest way to solve this challenges would be by building new roads and infrastructure to decrease traffic congestion. This does not however reduce traffic *per se*, but only improves it in an unsustainable short-term manner. Another option is improving the conditions for biking, cycling and public transport which is benefitting the urban mobility situation in the city itself.

Which option the local government might choose depends on the will to encourage “Sustainable Urban Mobility” or “traditional transport” modes. The difference between them is crucial. According to the *SUMP guidelines*, traditional modes of transport are set to focus on *traffic* whereas Sustainable Mobility is argued to focus on *people*. Instead of focussing on the improvement for the people by improving quality of life, accessibility and social equity, traditional transport modes focus on speed and velocity of traffic (Wefering *et al.*, 2013).

According to de Freitas Miranda and da Silva’s article *Benchmarking sustainable urban mobility: The case of Curitiba, Brazil*, their perspective of Sustainable Urban Mobility does not differ much from the interpretation of the European *SUMP guidelines*. They argue that the first matter to be included is that sustainable mobility is to be implemented so that all the citizens within the urban environment so they can move freely and safely around the city using sustainable methods. These methods include a sustainable public transport system, but just as much other sustainable ways to move around in the city such as sidewalks, bikeways, city bikes and easily accessible infrastructure such as roads. The mobility structure should also be planned to function efficiently, support a dynamic economy and regional development and limit emissions through renewable resources. As opposed to this, the concept of transport is said to be environmentally unsustainable, aiming to increase transport speed and causes accidents and higher costs than sustainable mobility (de Freitas Miranda and da Silva, 2012).

| Sustainable Urban Mobility | Traditional Transport |
|--|--|
| Citizens can move freely and safely using sustainable methods | Citizens can move fast from one point to another |
| Methods: City bikes Bike lanes Sidewalks Public transport Cars | Methods: Cars Public transport |
| Functions: Eco-efficiency Dynamic economy Regional development Limit emissions Renewable resources | Functions: Velocity Unsustainability Accidents High costs |

Table 1: Differences between Sustainable Urban Mobility and traditional transport (de Freitas Miranda and da Silva, 2012; Wefering *et al.*, 2013)

There is no single method of both decreasing CO₂ emissions, traffic and tackling local environmental issues, urbanisation as well as poverty and unemployment. By enhancing Sustainable Urban Mobility, the local government can however make an influence on a global scale when it comes to GHG emissions reduction. Improved levels of urban mobility also aim for poverty reduction and decreased unemployment through accessibility, as well as localising environmental development goals such as decreasing air and noise pollution.

3 Sustainable Urban Mobility – a solution for emerging cities?

The main goals for improved urban mobility based on the *SUMP guidelines* are reducing accidents and GHG emissions through reduced traffic and automobility, improving levels of poverty and unemployment, battling local environmental issues such as air and noise

pollution and enhancing health and quality of life through more active lifestyles (Wefering *et al.*, 2013). As this concept has been found efficient in growing cities in Europe, the same model is being applied on emerging cities in the Global South.

The main argument of chapter three falls very close to the core of this thesis, that the concept of Sustainable Urban Mobility needs to be contextualised in order to be used for future projects of development assistance in the field. This argument is proclaimed through mapping out ongoing and completed projects for Sustainable Urban Mobility planning in emerging cities in the subchapters 3.1 and 3.2 as well as describing the core ideas of the concept in subchapters 3.3 and 3.4. The application of Sustainable Urban Mobility in emerging cities in Latin America is later on critically assessed as an example of Modernisation theory in the last subchapter 3.5.

3.1 Contextualising Sustainable Urban Mobility for emerging cities

People often think of a sustainable urban environment as a city with a working public transport system. In many cases, for example when trying to balance the modal split from a transport sector with a strong usage of private transportation modes, public transport is a good option. When purely aiming for environmental sustainability in emerging cities, it would however be more efficient to focus on the wealthier areas of the city, as these areas are the ones with highest rates of private transportation. Two strong arguments against this can be pointed out. It is important to keep in mind that the main goal of implementing a SUMP is claimed to be improving the quality of life for the urban citizens, especially for the most vulnerable and exposed in society. In the *SUMP guidelines*, the primary objectives are described as *accessibility and quality of life, as well as sustainability, economic viability, social equity, health and environmental quality*. Hence, one can assume the main objectives to be improving accessibility and quality of life for all, while decreasing the GHG emissions on an overall city-scale. Another argument against improving the public transport infrastructure only in high-emission areas is the *long-term vision and strategy*, that is essential for Sustainable Urban Mobility planning. The SUMP is suggested to be implemented within three to ten years. After this, the process however continues with plan updates and evaluation that is suggested to be carried out at a minimum of every five years (Wefering *et al.*, 2013).

A Sustainable Urban Mobility Plan is commonly carried out on behalf of the city government by the department of transport, environment or similar in cooperation with the local public transport provider. It can often be connected to a national policy on Sustainable Urban Mobility or GHG emissions reduction such as Intended Nationally Determined Contributions (INDCs). The INDCs are policies by national governments to reduce GHG emissions submitted prior to the COP21 Paris Climate Conference in 2015. As one can see in figure two, the transport sector is mentioned in most INDCs. It is however only a few that lists the transport sector as a target for GHG emission reduction. Besides, it is important to keep in mind that by “transport sector”, it is not given that the national government focusses on Sustainable Urban Mobility in its policies and agreements, but might as well be regional transport infrastructure development, as an example (Löhr *et al.*, 2017).

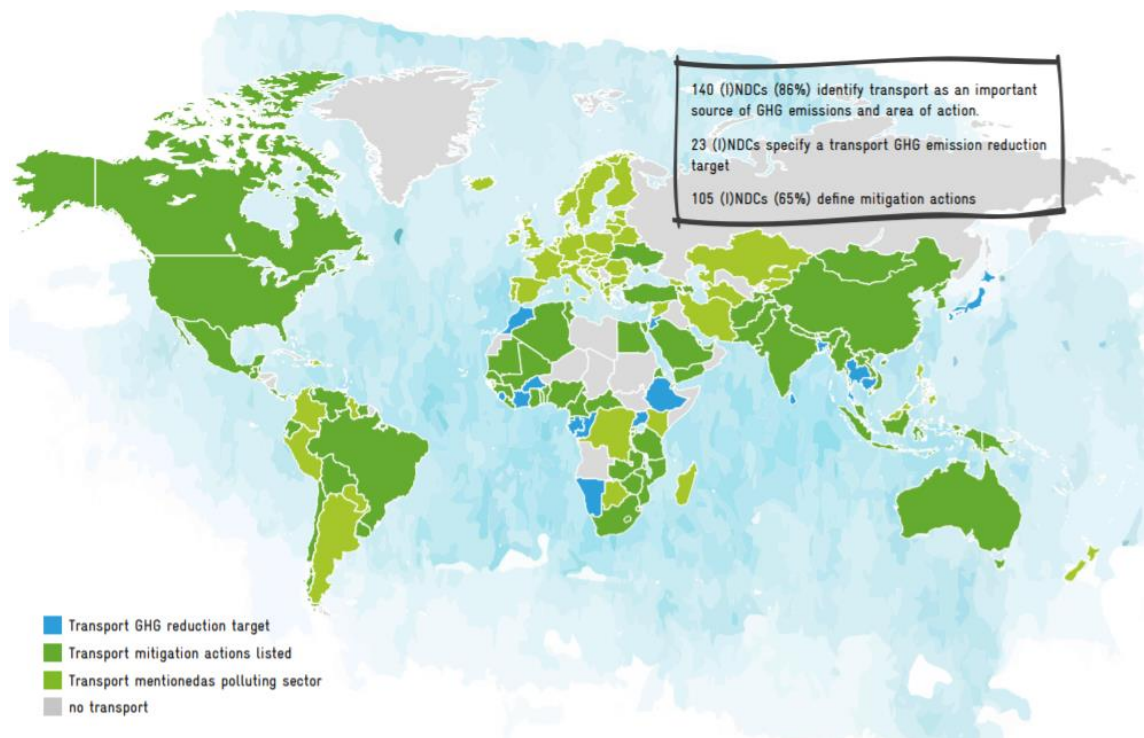


Figure 1: Transport sector as target for GHG mitigation in INDCs (Löhr *et al.*, 2017)

3.2 Examples of ongoing development cooperation

As the need of sustainable urban solutions for transport and mobility in Latin American cities increases, so does the international funding and guidance provided by the international community in the form of development assistance. Apart from bilateral agreements on development cooperation carried out by national development agencies such as the GIZ and the AFD, partnerships for a united development assistance, such as MobiliseYourCity, has been formed. While mapping out all ongoing development assistance in form of the sustainable mobility in Latin America is inessential for this thesis, the general focus is put on larger European partnerships, ongoing development assistance in the cases of Bogotá and Lima.

One example of a large-scale European development assistance project is Euroclima+, in which the GIZ and AFD within the MobiliseYourCity partnership account for the sustainable mobility part, as the project includes initiatives in the fields of governance and food production as well. The large-scale project is divided into three categories: national level plans (NUMPs), local level plans (SUMP) and pilot projects that focus on a certain branch of mobility in the cities. The number of total projects is 15, all situated in Latin America. The project goals include *addressing global climate change* due to high emissions in the transport sector as well as to *favour social equity, economic prosperity and quality of life*. The ultimate goal is to provide the cities with Sustainable Urban Mobility Plans that reduce carbon emissions (de Coninck and Engelskirchen, 2019).

As a part of the TRANSfer project, that is providing assistance for Nationally Appropriate Mitigation Action plans (NAMAs) for the transport sectors of emerging countries in all continents, the GIZ has assisted the Peruvian Ministry of Transport and Communication and the Ministry of Environment with developing a national policy as such, called “TRANSPerú”. The plan, that was established in 2015, has an implementation phase from 2016-2019 and the “long-term” mitigation phase from 2016-2025 during which 5.9-9.0 MtCO₂ is expected to be reduced out of 15.2 MtCO₂ yearly emissions from the transport sector in total. Other goals of the policy include establishing an *Integrated mass public transport system in Lima / Callao* and a *single transport authority* for both cities as well as to modernise the existing public transport vehicle fleet. Even though a large part of the policy is focussed on the metropolitan area of Lima, the aim is to also support other local

governments with carrying out Sustainable Urban Mobility Plans (Capone and Velezmoro, 2015).

The methodologies used by the MobiliseYourCity partnership are published on their website. The main policies utilised for this purpose are the *SUMP guidelines* that has been discussed earlier, the technical document *Urban Mobility Plans – National Approaches and Local Practice*, the *Urban Mobility: A Source of Solutions Against Climate Change* by AFD and CODATU as well as the partnership's commonly produced factsheets and policies (MobiliseYourCity, 2019).

3.3 Resource management

Different approaches based on European models for of sustainable urban development usually unite in the vision of reducing GHG emissions. When it comes to the different approaches for reducing emissions, opinions tend to differ. In today's agenda of sustainable policy, recycling and circular economy plays an important role. Research regarding urban ecosystem services, waste management and production processes often points out the importance of recycling and usage of renewable resources (Haas *et al.*, 2015)

When it comes to sustainable mobility, the approach presented both by de Freitas Miranda and da Silva as well as in the *SUMP guidelines* is however not based on recycling resources, but to reduce the overall usage of resources. This way of GHG emission reduction is described through the *metabolism model* by Peter Newman. This model focuses on the decrease of resource usage instead of recycling and increasing the outcomes of the usage called "liveability". As the name entails, the model can be compared to the metabolism of a human. When a person eats food, the amount of food consumed reduces the amount of "waste". Other implications are what type of food is consumed, which symbolises the type of resource inputs. Regarding sustainable resources, for example using renewable resources instead of oil for energy production, is symbolised as "healthy food". While the decrease and the quality of resource inputs plays an important role in the process, so does the actual usage of the resources, which certainly effects the outcomes explained as "liveability". An example of this in the metabolic context could be how you are taking care of your body in forms of exercise that improves your health and life quality, so to say your "liveability" (Newman, 1999).

The metabolism model can thus be well applied for the perspective of Sustainable Urban Mobility, with the idea that “less is better”. By using alternative ways of mobility, e.g. walking and biking, shared mobility modes such as public transport and carsharing, implementation of sustainable mobility policies can reduce the overall resource consumption. The goal of reaching “liveability” for the urban dwellers is also equivalent to the objective of improving quality of life through Sustainable Urban Mobility planning, described to be a top priority goal in the *SUMP guidelines* (Newman, 1999; Wefering *et al.*, 2013).

Although the ultimate goal is improved “liveability” through resource consumption reduction, the usage of renewable resources is not neglected in Sustainable Urban Mobility planning. The method used for this purpose is usually through renewable energy in forms of electromobility. According to Carlos Belalcazar, Cuellar Alvarez and Clappiers research project presentation *Towards a Sustainable Mobility in Bogotá, Colombia* the average CO₂ emissions of a fuel-based car in Bogotá are 65.2 g/km per passenger. On the contrary, an average electric car has emissions of 25.9g/km per passenger, with all sources of energy combined. If the source of electricity however would be entirely produced by coal, the CO₂ consumption of an electric car would reach 64.4 g/km per passenger, equivalent to the emissions of a petrol fuelled car. In these cases, the emissions are usually released outside of the urban area and might only improve the air quality in the city, but not aspects of traffic or global warming. If the source of electricity instead would be entirely based on renewable sources such as solar and wind power, the emissions would be 1.9 g/km per passenger. For this reason, urban energy resource management plays an important role when it comes to electromobility (Carlos Belalcazar, Cuellar Álvarez and Clappier, 2017).

3.4 “Avoid - Shift - Improve”

A general approach for Sustainable Urban Mobility planning in emerging cities is the “Avoid - Shift - Improve” method, that is used for explaining a change of urban mobility as well as mobility culture, both on a user and administrative level. The approach is commonly used for projects of development cooperation in urban mobility by the GIZ GmbH and the MobiliseYourCity partnership funded by the European Commission’s Directorate General for International Cooperation and Development and the AFD. It has also been used in the TRANSPerú NAMA, where it’s claimed to be *internationally*

accepted as a guiding principle to transform a transport sector towards a sustainable development path (Capone and Velezmore, 2015).

The Avoid - Shift - Improve approach signifies a development of urban mobility in different steps. The first step “avoid” shows the decrease of transport overall, by decentralisation of necessary infrastructure and services to avoid unnecessary trips. Examples of such decentralisation could be by extending infrastructure for water provision and increasing the number of health-clinics and schools. The “shift” phase on the other hand represents the change of mobility culture from private transport usage to more sustainable modes such as non-motorised or public transport. The shift towards mobility from traditional transport however also requires infrastructure development such as bike lanes, sidewalks, bus stops and lanes, that can already be included in the “avoid” phase. The third and last “improve” step focuses on the improvement of already existing infrastructure such as electrification of buses or repaving roads (GIZ, 2004).

Apart from being used by organisations for development cooperation such as the GIZ and MobiliseYourCity, the Avoid - Shift - Improve approach has been applied in academic research such as *Implementation of sustainable urban transport in Latin America* by Hidalgo and Huizenga. They argue that in *rapidly emerging countries*, when it comes to urbanisation and growth, a *paradigm shift* in transport is needed for Sustainable Urban Mobility. From a large perspective, this paradigm shift could be described as the shift from traditional transport to sustainable mobility, discussed in subchapter 2.2. The Avoid - Shift - Improve approach could thus be seen as a method for carrying out this specific transformation (Hidalgo and Huizenga, 2013b).

There are several reasons discussed by Hidalgo and Huizenga for why the urban mobility culture needs to change in emerging cities in Latin America. As already mentioned, the cities experience far more rapid levels of urbanisation and economic growth than European cities, which is the main target group of the *SUMP guidelines*. As of this rapid emergence, a fast change of the culture is also needed, in order to adopt new models of mobility. The urban mobility culture is significantly different in Latin American cities compared to European ones. One of the main reasons for this is the still existing deep inequalities between the urban dwellers in Latin America. The lack of access to mobility is seen as an absence of freedom, and the access to private transport as a privilege for the elite, resulting in increased aspirations for car ownership. The car is also seen as a way

for individual economic development through access. Even though social inequality exists in Europe, and it plays a role when it comes to the mobility aspect, the aspirations for private transport modes are not the same as in many cities of the Global South, and wealthier people still commonly use sustainable mobility modes. With a far more developed infrastructure system already in place, the importance of the “avoid” step is less significant (Brand and Dávila, 2011).

An example of how the Avoid - Shift - Improve approach can change the urban mobility culture is the cable-car system in Medellín (Colombia), discussed by Brand and Dávila in *Mobility innovation at the urban margins: Medellín's Metrocables*. They argue mobility to be strongly connected to social inequality between urban communities. This inequality is connected to the lack of access, and improved mobility conditions, such as the cable-car system, have significantly improved both the social and economic opportunities for the poor urban dwellers, as well as the mobility culture creating a *new paradigm for social organization* for the city. Along with the first cable-car project, neighbourhood upgrading and infrastructure development was carried out in the poor areas of the city, symbolising the “avoid” step. As the cable-car was built, it connected the poorest urban areas with the wealthy ones, establishing a new mobility culture for the city. Followed by this, two other cable-car lines were built to increase the levels of mobility. Apart from being a sustainable mobility mode, the most important aspect of the cable-car system is the creation of a new mobility culture, powered by the feeling of inclusion for the poorest in society (Brand and Dávila, 2011).

The *SUMP guidelines* do however not mention the Avoid - Shift - Improve approach. Instead, *Moving towards a new mobility culture* is explained as a “benefit” of implementing a Sustainable Urban Mobility Plan. No steps or guidelines for creating the new mobility culture are brought up, instead it is assumed to be connected to the steps of the SUMP cycle such as 2.3 *Plan stakeholder and citizen involvement* and 4.1 *develop a common vision of mobility and beyond* (Wefering *et al.*, 2013). This approach could thus be considered a small “contextualisation” of the concept. It is however important to note that according to the MobiliseYourCity Avoid - Shift - Improve approach, it is not the guidance nor the European mobility paradigm that is expected to change, but instead the emerging city before the new models of mobility are applied.

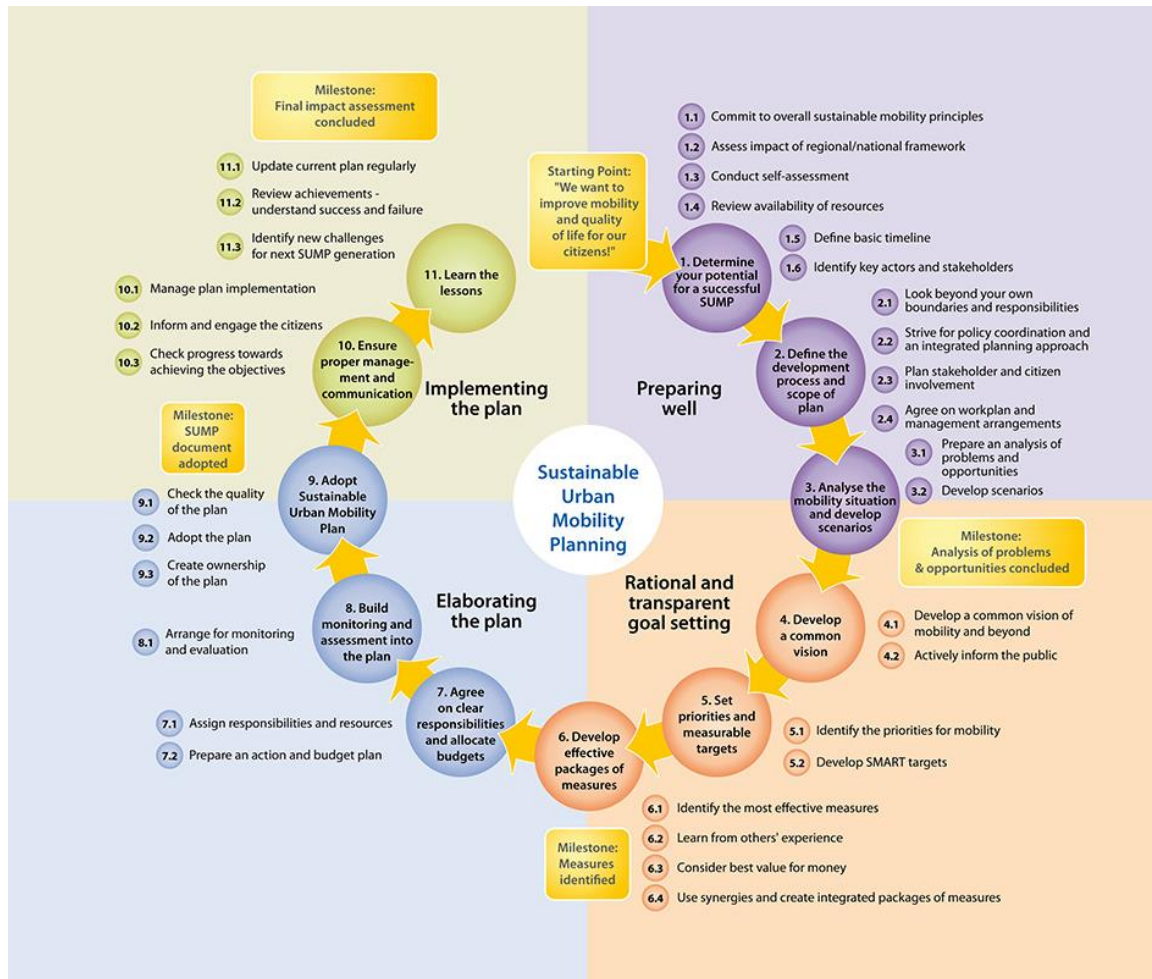


Figure 2: Planning cycle for Sustainable Urban Mobility Plans (Wefering *et al.*, 2013)

3.5 Critical assessment of Modernisation theory and its manifestations on the urban transport sector

The earlier subchapters, particularly 3.2 and 3.4, show's us that ongoing European development assistance in the form of Sustainable Urban Mobility planning follows the perspective that the European model of mobility is the way to go, and Emerging Cities in Latin America need to adapt. It is evident that the need for reducing and preventing the rapidly increasing levels of automobility in Latin America is urgent. If the European model of Sustainable Urban Mobility for reducing private transportation in cities is the best option for emerging Latin American cities is however questionable. As mentioned earlier, the current usage of private transportation in most Latin American countries is significantly lower than in Europe. Ongoing development cooperation applies the European concept of Sustainable Urban Mobility on emerging cities in Latin America – a pursuit that can be critically assessed as an example of Modernisation theory.

The theory relies on the concept of modernity and modernisation, that describes one system, society or method as the “modern” whereas the other is the one to be “modernised”. The idea corresponds to the historical theory of underdevelopment, that is describing some countries or cities as “more developed” and others as “less developed” or “developing”. Whereas the theory of underdevelopment labels out the *status quo* of the situation, the Modernisation theory describes a process of transformation. Modernisation theory is however not strictly bound to a country or even a city and can therefore be applied on a method or approach. It is often used for structural processes but can also explain a transformation of a culture or citizen behaviour. The theory is therefore suitable as a subject of critique for the transformation of existing mobility structures in Latin American cities into “modern” systems of Sustainable Urban Mobility (Bernstein, 1971).

According to Jennifer Robinson’s interpretation of Modernisation theory for urban environments, she argues that *Contemporary thinking about cities silently reproduces this idea of an external 'savagery' that sustains the fantasy of (Western) urban modernity*. It would describe the European mobility paradigm as the “modern”, and the existing way of transport in Latin American cities as “yet to be modernised” (Robinson, 2006:13). This would include procedures such as planning, implementation and infrastructure development, but also the transformation of the traditional mobility culture for *moving towards a new mobility culture* as mentioned in the *SUMP guidelines* (Wefering *et al.*, 2013). What the traditional urban mobility systems entails in terms of structure and culture is however harder to describe, and therefore the mobility situation for the two cases of Lima and Bogotá are examined through interviews with grassroot-level activists and civil society representatives in the transport sector. This field research is presented in the following chapters four and five.

The conception of modernity can also be discussed from a post-colonial perspective of Eurocentrism, which in this case would entail western countries using the concept to favour western models for *Euro/American domination and hegemony* (Dirlik, 2003). In the case of SUM, this would rather mean that western countries would pursue development cooperation in the mobility sector for their own political and economic gain. As discussed in subchapter 3.3, the aim of resource management for the concept of SUM is to reduce resources such as by reducing private motorised transport and CO₂ emissions based on the metabolism model. Even though electromobility in combination with

renewable energy is encouraged, the idea is not to recycle but to reduce resource usage. This means that for a country such as Germany, which along with France is one of the largest actors when it comes to development assistance for Sustainable Urban Mobility, would lose on a decrease of automobility as a result of their high exports on private transportation vehicles. As an example, according to the Observatory of Economic Complexity, personal cars account for 8.8 per cent of the German exports to Peru and is the largest product of export (Observatory of Economic Complexity, 2017). It is thus hard to argue for a post-colonial connection between SUM and ongoing development assistance, at least when it comes to the actors mentioned in this subchapter.

Chapter three of this thesis has shown that the goals of the European models and approaches for Sustainable Urban Mobility planning, such as decreasing pollution and increasing accessibility, correspond to the ones of Emerging cities in Latin America in most cases. The application of the European Mobility Paradigm is however not as easy, as a result of both different urban structures as well as a different mobility culture and can be criticised through Modernisation theory. Whether this critique is justifiable will be examined through Qualitative Data Analysis in the following chapter.

4 Data collection and analysis

As the goal for this thesis is to get a good understanding of the grassroots levels and local experience of urban mobility and its planning and policymaking processes, the aim has been to collect data through a bottom-up approach. This has been done through ten interviews with 16 interviewees, as some of the interviews included two persons, in the two emerging Latin American cities Bogotá and Lima. The participants in these discussions have been representatives of civil society, NGOs and municipal unions. Chapter number four presents an analysis of this original data in the form of qualitative data analysis and presents it through a SWOT analysis. The approach for this is further discussed in subchapter 4.1. The analysis of each case, Bogotá in subchapter 4.2 and Lima in subchapter 4.3, is divided into different categories describing the mobility situations.

The interviewees were chosen based on a mapping of grassroots level activists and stakeholders active in the fields of urban mobility and urban development. A longlisting of 48 possible interviewees was made through online desktop research and recommendations from local contacts and interviewees in both cities. 42 of the longlisted

potential interviewees were contacted continuously and prioritised based on availability as well as covering different types of actors in the field. The questions for the interviews were sent out to the interviewees in advance and small differences to the questions based on the city and the type of represented organisation were made¹. The data was then collected through field trips to Bogotá and Lima in February and March 2019.

Collection of qualitative data as well as bottom-up research has been successfully used and encouraged in previous research in the field of Sustainable Urban Mobility (e.g. Fraser *et al.*, 2006) as well as in prior cases in the same cities (Ibeas, Dell’olio and Montequín, 2011). The method is particularly good at participatory processes in initiatives for sustainability, and as a contrary to the “mainstream” methods in forms of quantitative data collection, it provides a better picture of the actual differences. Quantitative data of the urban mobility situation can also be very hard to read, compare and easily tempered with as discussed in subchapter 2.4. The mobility situation, culture and citizen behaviour of an urban area are difficult to describe through quantitative data, which argues for a quantitative data collection and analysis (Roque and Masoumi, 2016).

The collected data has been recorded and transcribed in order to carry out a qualitative content analysis for each case. With the purpose of facilitating the comparison between the two cases of Lima and Bogotá, the challenges and possibilities are mapped out through a SWOT analysis, presenting the internal strengths and differences as well as the external opportunities and threats of the Sustainable Urban Mobility and its connection to planning processes. On the one hand, the internal strengths and weaknesses are determined based on whether the effects or processes can be controlled, technically, within the frame of the city and its administration. This includes aspects regarding municipal planning and support for sustainable mobility, local air pollution and infrastructure. External opportunities and threats on the other hand show the national or global circumstances such as urbanisation and national legislation.

In both cases, as the interviews were carried out, it was inevitable that the latter respondents started to repeat the arguments of prior interviewees, which entails that the data saturation point has been reached (Fusch and Ness, 2015). The repeating of responses

¹ Please see annex.

for this type of analysis is however not a liability, as the gravity of each challenge or possibility is measured based on the frequency. As this is a qualitative content analysis based on a small-scale set of interviews, it is important to keep in mind that there is a margin of error when it comes to the comparison of the responses.

4.1 Approaches for data collection and analysis

The two cases of Bogotá and Lima have been analysed based data collected through field research in the form of interviews. The case of Bogotá is based on five interviews carried out with eight activists, representatives of civil society, NGOs and a municipal union. To correspond with this, the case of Lima is also based on five interviews carried out with eight activists with similar backgrounds.² The responses in the interviews are then referred to literature confirming the relevance of the arguments and discussed through a qualitative content analysis. In subchapters 4.2.4 and 4.3.4, the content from the interviews is compared through two separate SWOT analyses in order to facilitate the comparison of responses. Challenges and possibilities are extracted from the SWOT analysis for comparison in the “Challenges and possibilities” subchapters. The importance of possibilities and challenges are accounted for based on the total frequency of the issues mentioned. It is important to note that the combined responses regarding challenges and possibilities include both aspects related to the urban mobility situation, planning and development procedures as well as interconnected issues covering both of these categories. The results of the data analysis are then compared in chapter six.

The two separate SWOT analyses provide perspectives of the situations of urban mobility and the processes of Sustainable Urban Mobility planning in Bogotá and Lima based on the five interviews in each city. The SWOT analysis method follows the approach of analysing urban renewal (Yi *et al.*, 2017). This entails a categorisation of the challenges and possibilities in regard to their internal and external effects. Whereas the SWOT method is commonly used to analyse the situation of an organisation or company, such categorisation is rather different than in the usual application of the method in an urban environment due to the many stakeholders and actors in the field of urban mobility. For

² Six interviews were originally carried out in Lima, but the last one had to be discarded in order to match the collected amount of data in Bogotá.

this reason, the internal aspects of strengths and weaknesses are determined by if the effects derive from the stakeholders within the city or outcomes from urban events. Examples of such local aspects are infrastructure and political issues. On the contrary, the external opportunities and threats are categorised as caused by effects that the city or the stakeholders within the urban environment cannot affect or decisions that are taken on a higher instance than the local government. Examples of such events are national legislation and regulations and urbanisation.

4.2 The case of Bogotá, Colombia

Bogotá, known as a city that has suffered from crime, corruption and poverty in the 20th century (Poveda, 2011), has recently experienced significant economic, political and social changes. The result of these changes can be seen in increased urban development, improved infrastructure and culture of citizenship. Despite the annual population growth, since its peak in the 60's, levels of urbanisation are still remarkably high as the urban population exceeds 10 million in 2019.

| | 1990 | 2000 | 2010 | 2019 |
|--------------------------------------|-----------|-----------|-----------|------------|
| Annual growth rate (% of population) | 3.01 | 2.89 | 2.89 | 2.65 |
| Population | 4 740 448 | 6 329 384 | 8 417 705 | 10 779 376 |

Table 2: Urbanisation in Bogotá (World Population Review, 2019a)

According to Ricardo Montezuma (2015), the largest urban administrative changes happened in the middle of the 90's as many new parties emerged to replace the traditional ones. The new parties, along with the mayor of Bogotá such as Antanas Mockus and Enrique Peñalosa, established new development programs focussing on a citizen culture, inclusion and reduced levels of corruption. An example of a development programme as such is "Formar Ciudad" ("educate the city") 1995-1997 (Montezuma, 2005). The development around inclusion and culture of citizenship has been emphasised in further development projects such as the ongoing "Bogotá Mejor para Todos" project.

In combination with constant economic growth and increased tax rates, Bogotá has managed to increase the tax revenues in the city. With the high number of leftist governments, public spending has also risen, and processes of democratisation have been successful. Decentralisation of urban services has been a topical issue (Gilbert, 2006). Recent economic growth has however led to increased car usage throughout the years as more people have afforded private transportation. Other outcomes of the economic growth are labour-based urbanisation and immigration. The rapid expansion of the city has created imminent needs of urban transport. These needs have earlier been met through private transportation, an extensive taxi business and informal public transportation such as small busses and minivans.

4.2.1 Urban mobility situation

Severe traffic congestion, resulting in increased air pollution and accidents, has been one of Bogotá's largest challenges in the last 30 years due to large levels of urbanisation and economic growth. The first attempts to battle traffic were trying to restrict personal vehicle usage in the city. These attempts were however heavily opposed by the public. Instead, the local government chose to focus on developing the public transportation system. The first development to focus particularly on urban mobility, in combination with citizenship culture, was "Por la Bogotá que Queremos" (For the Bogotá We Want), a plan carried out by Mayor Peñalosa in 1998-2000. Along with this plan, the Transmilenio Bus Rapid Transport system was established (Montezuma, 2005).

Despite the successful initiatives by Mockus and Peñalosa at an early stage, the increasing of traffic and informal and uncontrolled transportation remained. For this reason, the local government chose to formalise the informal busses. This was carried out through the establishment of the Integrated Public Transport System SITP as one of the first initiatives of the mayor Samuel Moreno in 2008. Instead of the former bus companies and informal actors in the transport system, the SITP initiative integrated all private companies and informal actors into one system, with a common ticketing system including the Transmilenio Bus Rapid Transit (BRT) network. SITP was also intended to include a metro and train system in the future (Hidalgo and King, 2014).

With a modal share of 36 per cent of daily journeys, the public transport system (SITP and Transmilenio) is the second most used mode of transport in Bogotá after walking,

according to the Deloitte City Mobility Index. Private transportation only accounts for 13 per cent of daily journeys. In comparison to many cities in Europe, the per cent of car usage is significantly low. In a city such as Helsinki, for example, the equivalent per cent is 39 (Deloitte, 2018a, 2018b).

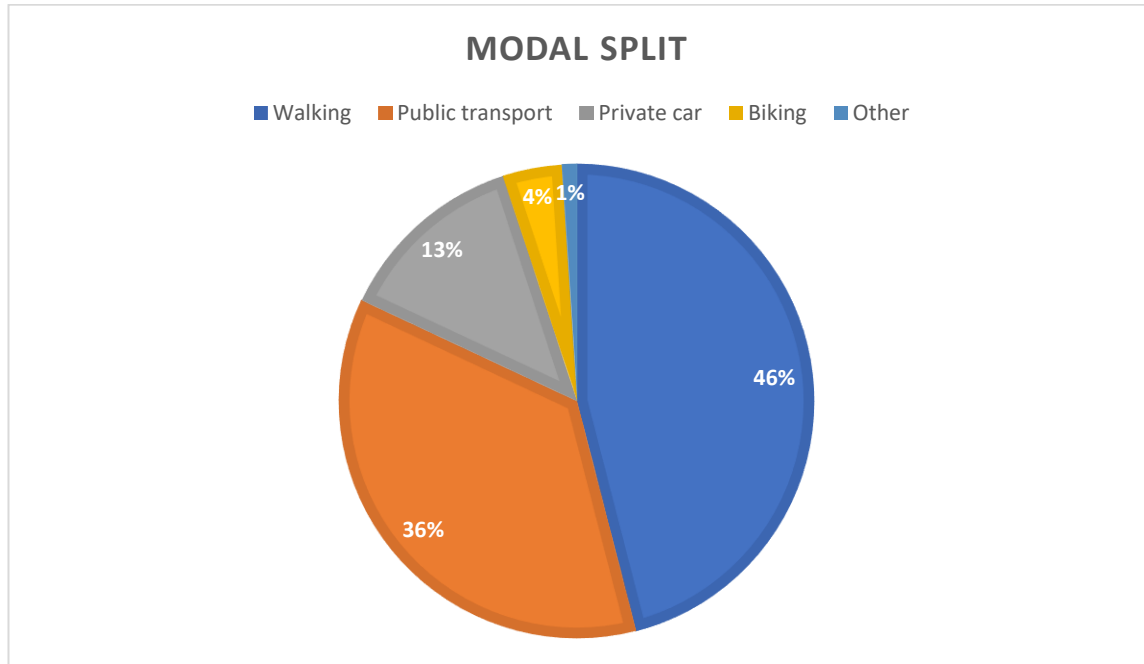


Figure 3: Modal split of transport modes in Bogotá (Deloitte, 2018a)

The low car usage in Bogotá and high usage of shared transport and walking might give a picture of Bogotá as a well-functioning city when it comes to Sustainable Urban Mobility. According to the two staff members at the Colombian non-governmental organisation (NGO) Despacio, this is however not the case. They argue that the public transport system works sufficiently in the city centre and some of its outskirts particularly in the North, but that there is a lack of accessibility in the newly emerged outskirts of the city. Their comment on the comparison of SITP to the old informal system follows: *Yes it [the informal system] takes forever, yes it's inefficient, yes it's slow, yes it's uncomfortable but the service for these people was working very well.* In comparison to the old system of informal and unintegrated transport companies, the journey duration, punctuality and comfortability of SITP has increased, and it is significantly better for the people living closer to the city centre. The accessibility for people in the outskirts has decreased, and the interviewees claim that the old informal system might have benefitted the poor people in the outskirts more than the current one. This argument can be

confirmed by Guzman, Oviedo and Cardona, who claims that the current public transport system increases the inequality gap (Guzman, Oviedo and Cardona, 2018).

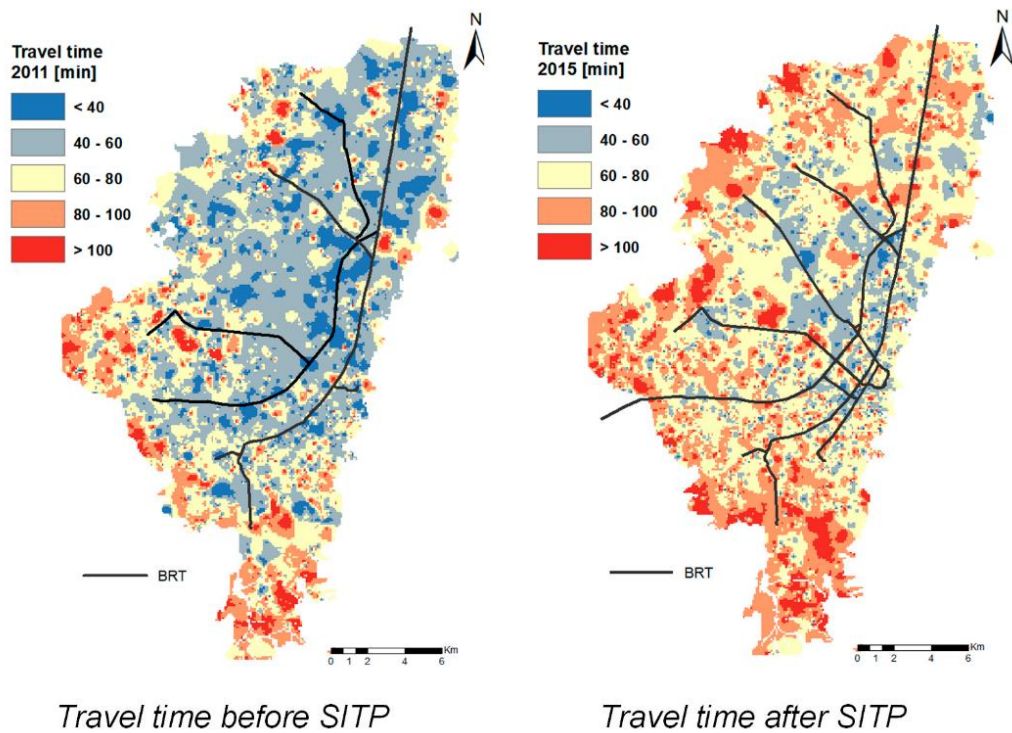


Figure 4: Integrated SITP system compared to informal buses (Guzman, Oviedo and Cardona, 2018)

Following the European model of private transportation usage in urban areas, one would assume that usage of private transportation is the highest in areas with low accessibility to public transport. For an emerging city such as Bogotá, this is however not the case. Colombia has a stratification system categorising different socioeconomical classes from one to six based on income, where six represents the wealthiest and one the poorest in society. According to the staff members at Despacio, the people in stratum four to six are the ones using private transportation the most. Stratum three tends to use public transportation on a regular base, stratum two occasionally uses public transport in combination with walking and biking and stratum one is almost entirely limited to walking due to the comparatively high prices for public transport.

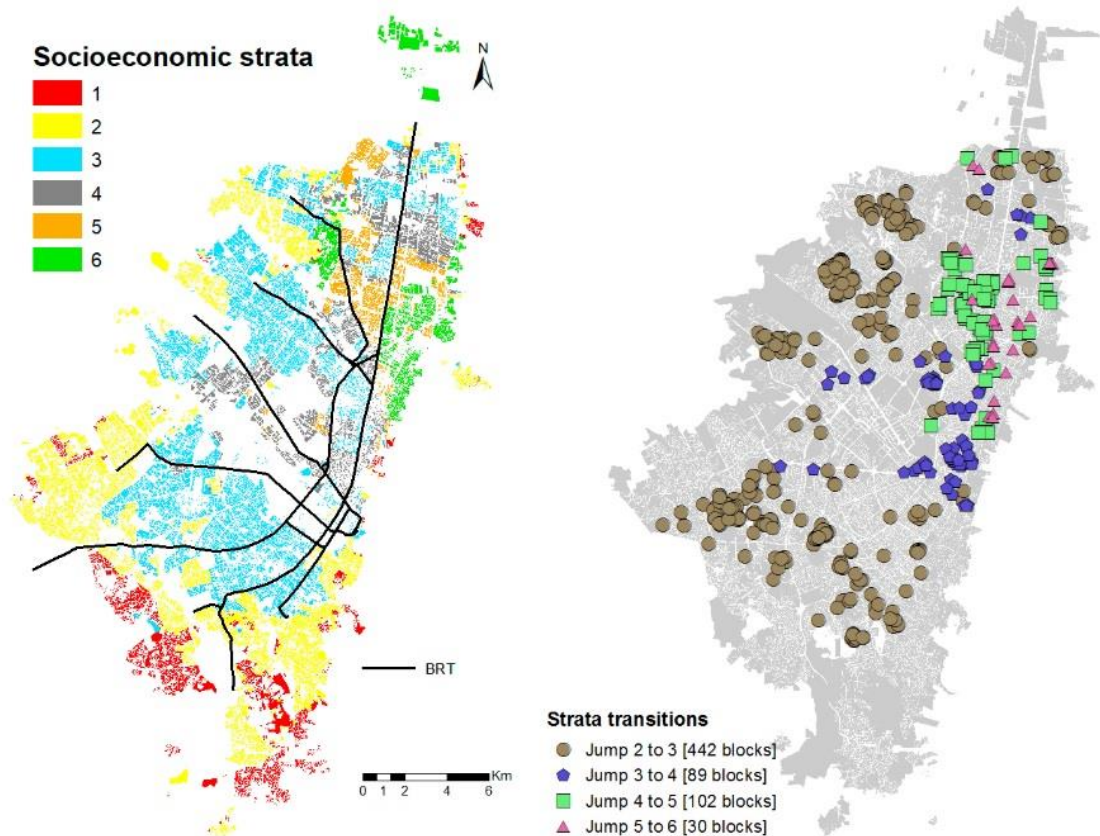


Figure 5 (left): Socioeconomic stratum year 2016 (Guzman, Oviedo and Cardona, 2018)

Figure 6 (right): Recent stratum transitions year 2016 (Gallego, Montoya and Sepulveda, 2016)

Figure five shows in which areas people belonging to different socioeconomic classes, or stratum, reside. The map also describes how the Transmilenio BRT system connects the different districts to each other. For an emerging city as Bogotá, it is important to keep the economic growth in mind. The areas that now are categorised as stratum three have recently experienced economic growth. All of these emerging districts are situated relatively close to the Transmilenio BRT system. It is important to keep in mind that Bogotá has experienced significant socioeconomic growth and expansion already prior to the implementation of the Transmilenio and SITP systems (Gallego, Montoya and Sepulveda, 2016).

The Bogotá City Council has also tried to battle the high levels of traffic congestion and private transport through restrictions of car usage. The main initiative “Pico y placa” or “Peak and plate” was started by mayor Enrique Peñalosa in 1998, restricting every registered car only to be able to be used on certain days of the week. According to the interviewees at the transport trade union Colfecar, the municipal union Federación

Colombiana de Municipios (FEMULP) and the NGO Despacio, these restrictions have not been successful. The one of the interviewees from FEMULP for example claimed that *the people who have money just bought a second car. So we didn't do anything. And so the people who can pay for it, they just don't quit to the comfortability of the particular vehicle* This entails that car users have been able to circumvent the restrictions either by buying two cars or by using motorbikes. The interviewees also claim Pico y placa to be one of the main reasons for the rapidly increasing usage of motorbikes in the city, that do not fall under these restrictions. The issue of increasing motorbikes does not only affect the severe traffic congestion, but also escalates rates of accidentability and air pollution. Whereas the comments totally rejecting any forms of traffic restrictions correspond to the interview with Colfecar, the representatives from the NGO Despacio and the municipal union FEMULP had a slightly different perspective of such regulations. They did not see the regulations as “weaknesses” *per se*, but instead as an approach that has not reached its intended goals. Traffic restrictions are often heavily criticised, both among urban development researchers as well as among the citizens themselves. One of the first cities to introduce such restrictions was Athens, followed by other cities such as Beijing, Santiago and Bogotá. None of these restrictions have been able to reduce neither traffic nor emissions significantly. In Quito, Ecuador the city has not followed the traditional model of Pico y placa, but instead adjusted it to a local context for example by only restricting traffic during peak hours in the city centre. The adjusted approach of Quito has had a significantly higher outcome than previous attempts of traffic regulations (Carrillo, Malik and Yoo, 2016).

4.2.2 Urban mobility culture

Based on the responses from all five interviewees, it is easy to conclude that the mobility culture is changing. The largest reason for change is argued to be the increasing traffic congestion, motivating people to use alternative modes of transport to reach their journey destination. Some have realised that a trip that could take up to one hour by car or bus can be done in half an hour by bike, according to an interviewed biking activist from Mejor en Bici. The local government has carried out several initiatives for the improvement of mobility culture such as “Al colegio en bici”, as a part of the “Bogotá mejor para todos” project that encourages children to bike to school. Another initiative is the Ciclovía every Sunday, an event where the main streets in the city centre are closed

for cars, as well as the yearly car free day, when no private transportation is allowed in the city centre. Also sustainable thinking is increasing and affects the decisions made by citizens for their transport preferences.

Despite the slight change in mobility culture, an interviewed biking activist and staff member at *Mejor en Bici* along with the two interviewees at *Despacio* argued that the mindset of private transportation as a symbol for power, wealthiness and freedom still remains. Even the poorest in society see it as a goal to own a car, or possibly a motorbike depending on their economic situation. This type of mindset corresponds to Lomansky's idea of "automobile freedom" discussed in subchapter 2.6. The responses did not show any connection between increased levels of life quality for users of private transportation. The respondents in fact argued for the opposite, that bike users tend to experience the highest rates of life quality. These arguments can be confirmed by scientific research, such as *Quality of Life, Physical Activity, and Built Environment Characteristics Among Colombian Adults* (Sarmiento *et al.*, 2010).

In addition, several interviewees claimed that the citizens of Bogotá are not yet used to the formal and organised structures of the SITP and Transmilenio public transport. The earlier type of informal transport system was not bound to follow any specific routes or timetables, which created a culture of non-punctuality and flexibility regarding routes and non-existing bus stops. Followed by the interview with two staff members at *Federación Colombiana de Municipios*, this culture of informality still remains, and therefore it tends to be hard for both the passengers and bus drivers in Bogotá to adapt to the new system. They claimed that *something that we don't have in our mind [...] is punctuality [...] you have this because your system works like this*. An example of this is how people often try to get on or off the bus in the middle of the streets as well as avoid paying for tickets.

4.2.3 Challenges and possibilities

Both based on literature review, statistics and the collected data, one of the largest challenges for Sustainable Urban Mobility planning is argued to be urbanisation and population increase. The two interviewees at *Federación Colombiana de Municipios*, with significant expertise in the structures of urbanisation in Bogotá, claimed that the main factor for Bogotá's increasing population is connected to labour opportunities. Throughout the years these urbanisation movements have mostly been domestic, i.e.

people moving from the countryside or smaller cities in Colombia to larger cities such as Bogotá, Medellín and Cali. However, in the last two years, as a result of the economic and political crisis in Venezuela, the immigration to Bogotá has skyrocketed. Urbanisation is a global phenomenon, and not solely a challenge for emerging cities. As discussed in subchapter 2.2, the degree of urbanisation is significantly higher in the Global South and cities such as Lima and Bogotá. One important aspect brought up by the interviewees is that it is not the external threat of urbanisation *per se* that is the greatest challenge, but the internal inability to control the movements to the city, creating different forms of informal settlements and inaccessibility to urban transport.

As mentioned earlier, the city council of Bogotá has carried out several initiatives for sustainable mobility in recent years such as the Transmilenio BRT system, the SITP formalisation of busses, Pico y placa as well as projects for improving the local mobility culture and promoting the bike as a mode of transport. It is important to note that most of these projects have been started in the beginning of each mayor's term in order to be completed within the timeframe of four years, that is as long as the mayoral term lasts. Larger projects requiring an implementation overlapping several mayoral terms, such as several plans for the creation of a metro system in Bogotá, are rare. This leads to another of the most severe challenges for Sustainable Urban Mobility planning in Bogotá highlighted by three of the interviewees: political continuity.

Three interviewees out of five mentioned this issue and argued it to be one of the most serious challenges for Sustainable Urban Mobility planning in Bogotá. The metro system for example, that has been planned several times by different mayors, reflects this issue. As all of the plans for this transport system were discarded by the following mayor. Enrique Peñalosa decided to emphasise the Transmilenio BRT project as a replacement until a metro system was put in place. This project received strong political support from several parties, which put a certain pressure on the following mayor Antanas Mockus to finalise the second phase of the project extending the routes and the fleet (Ardila-Gómez, 2004). The success of Transmilenio as a project overlapping two mayoral terms however shows a possibility for political continuity in Bogotá, whether it reaches sufficient political support or not.

Not all responses were. Three of the interviewees also mentioned the aspect of community participation and activism when it comes to decision-making and transport planning.

Citizens tend to support the idea of prioritising public instead of private transport. These two aspects, activism and community participation, are argued to be the strongest possibilities for Sustainable Urban Mobility planning in Bogotá. Straight followed by this is, the increasing governmental initiatives for improving mobility culture are considered a positive aspect by two interviewees. Based on these three possibilities, one can conclude that despite the lack of political continuity, the political environment in Bogotá somehow favours the future development of Sustainable Urban Mobility.

Another critical challenge is the lack of respect for traffic regulations and the law in general, including weaknesses in law enforcement mentioned by four interviewees and corruption mentioned by three interviewees. One interviewee described the situation with the following words: *what you can see is that it's actually really hard to get a ticket. I'm on my bike all my time, if there's a policeman at the stop I can go through it. He won't stop me.* Other respondents also claimed that in case of receiving a fine, it can easily be avoided through bribing. The same negligence exists when it comes to parking, but also speeding resulting in the challenge of high velocities mentioned by four interviewees. The high velocity particularly in private transportation can be considered a part of the mobility culture of Bogotá. Taxi drivers for example are always aiming to decrease transport time as much as possible in order for the customer to be satisfied with the service.

| Challenges | Urbanisation & city expansion | Law enforcement | Velocity | Political continuity | Corruption | Air pollution | Lack in infrastructure |
|---------------|------------------------------------|---|---|-----------------------|------------------------------------|-----------------------------------|--|
| Possibilities | Community participation & activism | Public interest in sustainable modes of transport | Governmental initiatives for mobility culture | Biking infrastructure | Geographic opportunities & climate | Possibilities for electromobility | Existing instruments for mobility planning |

Table 3: Possibilities and challenges based on the responses of five interviews in Bogotá.³ Responses are included into the comparison based on how many times they have been mentioned, and for the lower frequencies based on how severe the challenge or possibility is argued to be.

Mentioned by: 4 interviewees, 3 interviewees, 2 interviewees
3 interviewees, 2 interviewees, 1 interviewee

³ With eight activists, NGO and municipal union representatives.

4.2.4 SWOT analysis of Bogotá

| | Positive impact | Negative impact |
|-----------------|---|---|
| Internal | <p style="text-align: center;"><u>Strengths</u></p> <p>Cycling:</p> <ul style="list-style-type: none"> - Increasing share for bicycle usage - Good infrastructure (bike lanes) - Good attitudes toward bicycling <p>Mobility culture:</p> <ul style="list-style-type: none"> - Willingness to use public transport - Sharing culture increasing <p>Governmental initiatives</p> <ul style="list-style-type: none"> - Local government pushing for electrification of vehicles - Governmental (local) approaches to improve mobility culture (e.g. Al colegio en bici, ciclovía) - Constantly improving density of buildings - Masterplan for urban development (including mobility) existing since 2004 <p>Activism & citizen engagement</p> <ul style="list-style-type: none"> - Community participation in mobility & infrastructure improvement - High levels of activism | <p style="text-align: center;"><u>Weaknesses</u></p> <p>Infrastructure:</p> <ul style="list-style-type: none"> - Lack of infrastructure; not enough roads nor space - Electric grid not yet sufficient for electrification of vehicles <p>Transmilenio BRT system</p> <ul style="list-style-type: none"> - Old, ran by diesel - Overcrowded, uncomfortable - Too expensive for the poorest in society - Violence in the system <p>Accessibility</p> <ul style="list-style-type: none"> - Lack of accessibility in outskirts and southern areas - Public transport hardly accessible for people with disabilities - Housing prices in the centre too high <p>Governmental challenges</p> <ul style="list-style-type: none"> - Lack of political continuity & collaboration - Corruption - Inability to handle increasing urban population - Overregulation (e.g. Pico y placa) <p>Air pollution</p> <ul style="list-style-type: none"> - Freight causing high levels of air pollution - Air pollution crisis: level orange - Motorbike usage increasing rapidly <p>Chaotic situation</p> <ul style="list-style-type: none"> - Chaotic public transport system - More than 30 000 taxis driving around causing chaos - Third city in the world with most traffic jam - High velocity, accidents, insecurity <p>Mobility culture</p> <ul style="list-style-type: none"> - No constant mobility culture - Low levels of citizen education |
| External | <p style="text-align: center;"><u>Opportunities</u></p> <p>Governmental initiatives</p> <ul style="list-style-type: none"> - Obligatory mix of diesel and biodiesel - National policies and regulations for sustainable transport in process - Legal basis for participation of citizens <p>Geographic opportunities:</p> <ul style="list-style-type: none"> - Good climate for bicycling, walking etc. - Flat surface | <p style="text-align: center;"><u>Threats</u></p> <p>Increasing population</p> <ul style="list-style-type: none"> - Urbanisation - High levels of immigration (particularly from Venezuela) <p>Economic challenges</p> <ul style="list-style-type: none"> - High costs of transport related to security - Lack of technology for producing sustainable fuel - National government can only finance between 40-70% of infrastructure development <p>Public issues</p> <ul style="list-style-type: none"> - National dependence on road transport (no trains) - Public thought: need of streets - Lack of future perspective (whole Latin America) - Disrespect for rules, signs, punctuality and law enforcement (nationwide) |

Table 4: SWOT analysis based on the responses from five interviews in Bogotá

Based on the SWOT analysis above, one can see that most of the challenges for improving Sustainable Urban Mobility have their origins in structural disputes within the system of transport and mobility. The threat of urbanisation and population increase however poses significant challenges to the system and changes the perspective of future mobility development. Inequality, when it comes to accessibility to the transport system, is a problem that needs to be addressed in future projects of urban mobility in Bogotá. The aspect of low levels of accessibility, particularly in the southern parts of the city, is mostly related to two events. The first one, that has already been discussed thoroughly is the external threat of rapid urbanisation, whereas poor people tend to settle down in southern areas. The local government in Bogotá has struggled to control the expansion of the city, creating areas of informal settlements in the South such as Ciudad Bolívar. Apart from suffering from poverty and unemployment, the “new” areas in the South have very low levels of accessibility. The other aspect that has caused this problem is the formalisation of informal transport into the SITP system from 2012 onwards.

4.2.5 The general conception of a sustainable Bogotá

Bogotá has in many cases been presented as a “model city” of Sustainable Urban Mobility planning in the Global South. An example of this perception is the Sustainable Transport Award received in 2005 for the Transmilenio BRT system as well as the C40 City Climate Leadership Award for urban transport (Mettauch, 2013). Similar credit has been acknowledged in academic research, for example by Robert Cervero in *Progressive Transport and the Poor: Bogotá's Bold Steps Forward* (Cervero, 2005).

Also, Alan Gilbert’s paper cited earlier, glorifies the governance and leadership of the city, claiming that the leadership has taken “brave” and “unpopular” decisions in line with the best interest of the city in a long-term perspective. As examples of such decisions, he mentions Pico y placa and Transmilenio. According to the interviewees, this is however not the case. Despite good initiatives and planning procedures for Sustainable Urban Mobility, the actual implementation of most measures are not carried out due to the lack of political continuity. The citizens of Bogotá still suffer from unsustainable transport in many ways such as high velocities, traffic accidents, high levels of air pollution and low accessibility particularly in poor areas in the South. The interviewees thus claim that the picture of Bogotá as a “model city” when it comes to urban transport is rather false, even though the intentions of the plans might have been good. When comparing this with Alan

Gilbert's article it is important to keep in mind that it dates back to 2006, when both the initiative of Transmilenio and Pico y placa were new. The data used for the study (e.g. *Abstention in Mayoral Elections in Bogotá*) is mostly quantitative and easier to misinterpret than the arguments by local experts, and can therefore be easily misinterpreted, as discussed in subchapter 1.2 (Gilbert, 2006).

4.3 The case of Lima, Peru

With around ten million inhabitants, the population of Lima is approximately the same size as the one in Bogotá. It is also one of the fastest growing urban areas in Latin America, both economically and in terms of urbanisation. Despite similar structures when it comes to economic and population growth, there are large differences regarding urban transport and mobility development. Lima has a decentralised governance structure dividing the city into 43 different municipalities, which puts a significant pressure on each district for urban mobility development (Rodriguez-acosta and Rosenbaum, 2005). Another noteworthy difference is the process of privatisation in the transport sector in the last two decades (Janoschka, Sequera and Salinas, 2014).

| | 1990 | 2000 | 2010 | 2019 |
|--------------------------------------|-----------|-----------|-----------|------------|
| Annual growth rate (% of population) | 2.67% | 2.07% | 1.99% | 1.84% |
| Population | 5 836 537 | 7 293 549 | 8 919 759 | 10 554 712 |

Table 5: Lima population growth (World Population Review, 2019b)

As in many other metropolitan cities in Latin America, the focus on urban mobility has increased significantly as part of recent development projects and cooperation. This can be seen particularly in the development of a metro system called “Tren Electrico” and the “El Metropolitano” BRT system that started in 2006 and began its operations in 2010. The Metropolitano, among many other BRT's in Latin America, was created based on the success of Transmilenio in Bogotá. The system, that otherwise is very similarly planned as the one in Bogotá connecting the northern parts of the city with the South, is

still less extensive compared to Transmilenio. This is however compensated with Tren Electrico, connecting western outskirts with the city centre.

Lima still faces severe challenges in the aspects of Sustainable Urban Mobility as well as high levels of inequality and segregation connected to the urban areas. The scenery of urban mobility in Lima also differs significantly from the one in Bogotá, especially due to the increased levels of privatisation of the transport sector, as will be discussed in the following subchapter (4.3.1).

4.3.1 Mobility situation

As mentioned earlier, the public transport system of Lima consists of a BRT system called El Metropolitano and the Tren Electrico subway. With a highly active scene of private transport providers, such as taxis and minibuses, the public transportation system however tends to be rather chaotic. This is a result of a legislation passed by the local government, allowing anyone to provide transport services. This led to a huge increase both in transport vehicles (from 10 500 in 1990 to 47 00 in 2000) and transport companies (150 to 411 respectively), mostly in the form of privately-owned minibuses. Due to the high increase in supply of transportation services, the supply did not meet its demand, resulting in poor service, increased air pollution, unreliable and unsafe transportation *per se*. The city has tried to replace these informal busses with so called “corridor” busses organised into five corridors: the blue, the red, the green, the purple and the yellow corridor. Even though every corridor has more than one bus line, they all use the same “main road” or avenue that forms the “corridor” itself (Scholl and Gray, 2016).

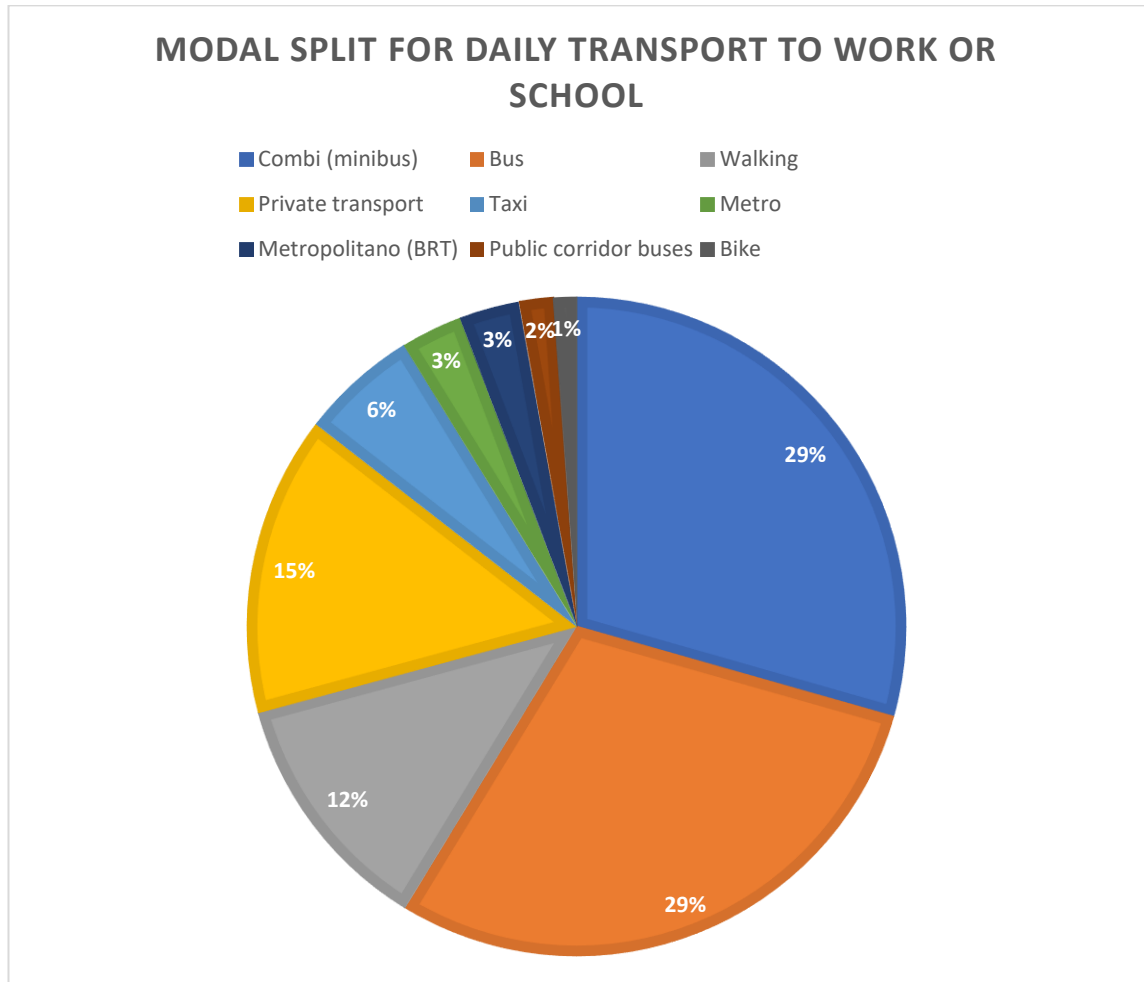


Figure 7: Modal split for daily transport to work or school in Lima (Alegre Escorza *et al.*, 2018)

In the modal split above, one can see that the clearly largest modes of transport in Lima are buses and minibuses. But it is easy to be mistaken, as these buses are operated by private companies, or even by informal actors and individuals, and not part of a public transport system. The public transport system, that includes Metropolitano, Tren Electrico (Metro) and the corridor buses, only counts for eight per cent of daily transport to work or school, which is less than the amount of people walking. It is also important to keep in mind that the modal split presented above does not show the modal split for other daily trips such as grocery shopping, recreational activities, eating out or dropping off children.

In these cases, the share of pedestrians, for example, is much higher. Recent data for the overall modal split in Lima does however not exist (Alegre Escorza *et al.*, 2018).

As of the harsh conditions of urban mobility, particularly when it comes to safety, unequal accessibility and emissions in forms of air pollution and GHG emissions, public transport was heavily financed by the Inter-American Development Bank and the World Bank. The first approach was establishing the El Metropolitano BRT system following the success of similar projects in Bogotá and Curitiba. The main purpose of the system was connecting the poor areas in the northern and southern parts of Lima with the city centre. Despite being successful with this connection, the poorest districts still remain without accessibility to the central areas, whereas the middle and low income areas gain most from the transport system (Scholl and Gray, 2016).

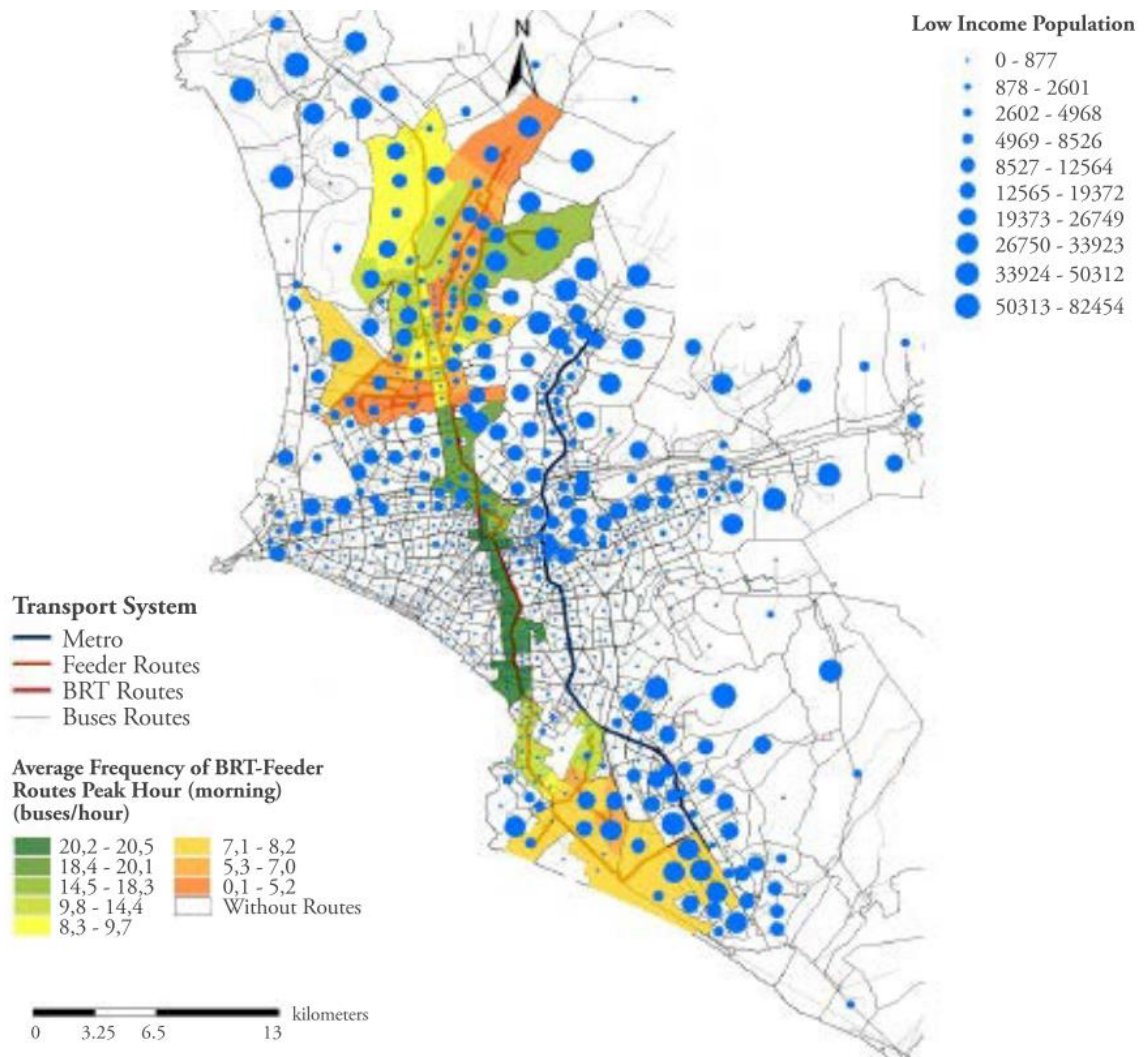


Figure 8: El Metropolitano BRT usage mapping in comparison to poverty in Lima (Scholl and Gray, 2016)

Very similar to Bogotá, the socioeconomic groups in Lima are divided into six strata, from A (wealthiest) to F (poorest), based on income. According to a representative from the NGO Disperse, automobility is most common among the high class (A) and middle class (B, C) strata. Public transport such as El Metropolitano and Tren Electrico tend to be used mostly by lower middle class, whereas transport services by privately owned and informal actors are often used by the poor (D). The poor and extreme poor (E, F) are also inclined to be the ones most commonly reaching their daily destinations on foot. In addition to being emphasised by the interviewees, this information has been highlighted in the *Mobility and Accessibility effects of IDB-supported BRT systems in Cali and Lima* report by the Inter-American Development Bank (Scholl and Gray, 2016).

The usage of different transport modes is not only determined by income, but also by the geographical attributes of the city. Even though the city can be considered as “flat”, it includes some comparatively large hills on the western side. These hills have been inhabited since the 1950’s, and the larger settlements took place in the 60’s and 70’s. Unlike Bogotá, where the hills are popular neighbourhoods among the wealthy, the hills in Lima are often inhabited in forms of informal settlements or *barriadas*, as they are called in Peru. Due to poor infrastructure and challenging geography, the buildings and homes in these areas are usually only reachable by foot using stairs, which counts out the possibilities for other modes of transport (Fernández-Maldonado, 2008).

4.3.2 Urban Mobility Culture

According to the many of the interviewees, there is *no common mobility culture in Lima*. As one might find this statement rather bold, one could instead interpret that there is no *single* mobility culture. Due to the fragmentation of the city into 43 districts mentioned earlier, the culture differs mostly based on area and wealthiness as discussed in the subchapter above. However, some similarities are to be found that cover all socioeconomic groups and areas.

One aspect raised by many of the interviewees is the image of the car as a source of freedom and symbol for power and wealthiness. This seems to be very similar to the situation in Bogotá, and some of the interviewees argued the capitalist view of automobility to be even stronger in Lima than in Bogotá, due to the processes of privatisation and encouraged entrepreneurship in the 90’s. There is also a general

perception of the *idea that faster is better*, as said by a representative from the non-governmental organisation MOCICC. This has led to the design of Lima as a *city built for cars* by for example increasing the number of lanes and big roads instead of focussing on sidewalks and unmotorised traffic.

Regardless of which stratum people belong to, the citizens of Lima tend to have a fear of the intense traffic and aggressive drivers in the city, which is one of the main reasons for why biking is so unpopular and has a low representation in the modal split. According to a biking activist from Cicloaxion, most bikers in Lima belong to the high- and middle-class stratum (A, B and C), which differs from the case of Bogotá. As mentioned earlier, a reason for this is that many of the poor live on the hills on the west side of Lima, where biking infrastructure does not exist. Wealthier parts of the city such as Miraflores and Barranco have sufficient infrastructure for biking, which also creates a safer atmosphere for bikers. The people in these areas also live usually close to their work, which increases the possibilities for biking. The fear of aggressive drivers still exists, and biking is often considered more of a hobby or sport than a transport mode or necessity among the wealthy, and is mainly used as a transport mode among the poor that lives in an area with infrastructure and geography that allows biking. Parents are also afraid of letting their kids' bike, and no programmes like "Al colegio en bici" in Bogotá exist in Lima. Instead, the local government has pushed for a programme to increase biking to work by extending the holidays for people biking.

4.3.3 Challenges and possibilities

According to two representatives from the municipal union Federación de Municipios Libres del Perú (FEMULP), there are several challenges for implementing and extending the public transport system in Lima. One of the largest challenge for projects in the sector of infrastructure development are the overwhelmingly large studies that need to be carried out in order to get an approval for a specific project. This includes an environmental study, showing that the project is environmentally friendly. The local environment is usually put in focus for these studies, but it can also include aspects of climate change and mitigation of GHG emissions. The second study that needs to be carried out is an archeological study. As of the many historical and inheritencial sites and artefacts in Peru from the time of the Inka empire and other indigenous heritage, it is understandable that the government finds it important to avoid the demolishment of these sites. For this reason,

an archeological study is to be carried out in order to show that the project does not harm any historical objects. The third and last study is the economic study, which needs to illustrate that the project will be economically beneficial, sustainable and that there is a demand for the infrastructure or service the project provides.

According to the contributing interviewees from the FEMULP union, the intention of these studies does not pose a challenge as such, and the idea is good *per se*. The issue is however the political and socioeconomic climate of Lima, that complicates the nature of such studies. To begin with, carrying out these studies might take anything from one to ten years. With a lack of political continuity, similar to the case of Bogotá, this entails that the local government and the political situation might be totally different to when the project was commenced, and the current support for such projects might have disappeared. In an urban environment with socioeconomic structures such as the ones in Lima, both the economic and the environmental study tend to complicate things for poverty reduction and improving accessibility. The cost-benefit equation in order to prove that the project is economically feasible can be very hard to present for a project that is supposed to improve accessibility in poor urban areas. The people in these areas often cannot afford services such as public transport, bicycles or electric vehicles. One argument is that even though the financial means do not exist yet, the development will create employment opportunities in the area. To prove an argument like this is however hard. The same goes for environmental requirements. Improving public transport is often argued as an environmentally feasible measure for climate mitigation, reducing CO₂ emissions and improving air quality. This only occurs when private transportation is reduced and citizens choose to use the public transportation system instead. In a scenario where the citizens in the area are already forced to use more environmentally friendly transportation modes such as walking or biking, usually because they cannot afford something else, it is difficult to argue for the project on an environmental basis. Just as with the economic study, proving that the public transport system will be environmentally feasible in the future when the citizens eventually would afford to buy cars instead, might be quite challenging. The same goes for requirements of improving the local environment for issues such as the local air quality, that will not be improving public transport in poor areas. This takes us back to the discourse of *who benefits* of the environmentalism discussed by Nygren. In the case of Lima, as has been presented in the

paragraph above, it is the wealthy urban dwellers that has benefitted from the public transport and mobility development in Lima and not the poor.

Another challenge in the political climate is corruption, mentioned as a challenge in four out of five interviews and often argued to be the most severe weakness for urban infrastructure development in Lima. The issue of corruption also challenges the liability of the studies mentioned earlier, as many actors might try to bribe government officials for their approvals. According to an interviewee representing the NGO Dispurse, there is a common comprehension of *el roba pero hace obra*, which means “he steals but he does something”. This entails that if a politician or a government official does his work, he or she is also entitled to a certain provision of the public funds.

Apart from the lack of political continuity, the challenge of fragmented governance and cooperation between districts in Lima has been mentioned as a weakness by four out of five interviewees. With 43 different municipalities and mayors within the city of Lima, and the neighbouring city of Callao situated in the same metropolitan area, it is understandable that the cooperation might be complicated. The 43 different mayors can also belong to different political parties and might have totally different insights regarding urban mobility. Measures as well as SUMP for improving urban mobility are often carried out on a municipal level such as the San Isidro SUMP, instead of on a city- or metropolitan level (Municipalidad de San Isidro, 2015). This explains the lack of both data and planning documents regarding urban mobility for the whole city of Lima. According to an interview with a biking activist from the civil society organisation Cicloaxion, this aspect can be seen in reality for example when it comes to biking infrastructure. Bike lanes are usually developed by the distrital municipalities, and have increased in wealthier areas such as San Isidro and Miraflores in recent years. However, there are seldom any inter-municipal collaborations regarding the planning of these lanes, and they often tend to stop where the border of the municipality ends.

One of the interviewees from the NGO Dispurse argued that despite the fragmentation of Lima divided into 43 municipalities, there are still possibilities to unite the districts for large scale projects. The first reason for this is that projects affecting Lima Metropolitana,

the whole Lima province, fall under the authority of the mayor of Lima⁴. He or she can then force the other mayors to follow. Larger transport infrastructure like main streets, avenues and rails are administered by the Gerencia de Transporte Urbano (GTU). Such projects and infrastructure include the El Metropolitano BRT system, the Tren Electrico metro and the corridor buses.

Other possibilities are the growing interests for sustainability in general and the interest for alternative transport modes that are less affected by traffic. This has led to an increase in initiatives for sustainable solutions, both from the administration as well as civil society. An interviewed activist from the civil society organisation Cicloaxion argued that it is the grassroots level activism that puts the pressure on the local government to improve the situation. These local organisations have increased rapidly in recent years, and as an example, Cicloaxion is only one out of many biking organisations cooperating with each other within the Bicired network.

| | | | | | | | |
|----------------------|------------------------------------|---|--|---------------------------------|--------------------------------------|--|---|
| Challenges | Urbanisation & city expansion | Corruption | Cooperation between municipalities & fragmentation | Air pollution | Infrastructure | Fear of traffic, aggressivity & velocity | Law enforcement |
| Possibilities | Community participation & activism | Public interest in sustainable modes of transport | Governmental initiatives for mobility culture | Sustainable thinking increasing | Geographical opportunities & climate | Possibilities for electromobility | Possibility for electromobility through existing renewable energy |

Table 6: Possibilities and challenges based on the responses of five interviews in Lima⁵. Responses are included into the comparison based on how many times they have been mentioned, and for the lower frequencies based on how severe the challenge or possibility is argued to be.

Mentioned by: 5 interviewees, 4 interviewees, 3 interviewees, 4 interviewees, 3 interviewees, 2 interviewees, 1 interviewee

⁴ Currently mayor Jorge Muñoz.

⁵ With eight interviewees (activists, non-governmental organisation and municipal union representatives).

4.3.4 SWOT analysis of Lima

| | Positive impact | Negative impact |
|-----------------|---|--|
| Internal | <p style="text-align: center;"><u>Strengths</u></p> <p>Government initiatives</p> <ul style="list-style-type: none"> - Ciclovía (streets closed for cars on Sundays) - Recent approaches for citizen and civil society participation in planning and decision making - Possibility and willingness to extend Metropolitano and the train - Initiatives to increase biking by local government (e.g. Bike to work) - Current city administration & mayor interested in mobility improvement - Different districts in Lima not responsible for transport – possibility to unite <p>Interests and activism</p> <ul style="list-style-type: none"> - Increasing interest for biking - Well-established and increasing interest for activism and grassroots level activities - People respect bikers - Sustainable thinking increasing <p>Mobility situation</p> <ul style="list-style-type: none"> - Modal split; car usage increasing but not high - Possibilities for electromobility | <p style="text-align: center;"><u>Weaknesses</u></p> <p>Governmental challenges</p> <ul style="list-style-type: none"> - Corruption - Inexistence of good political decisions and rules for street utilisation - Fragmented governance, city segregation - Avoiding regulation, low law enforcement - Political continuity, short term vision - Uncontrolled city expansion - Economic issues; not all districts can meet the same budget <p>Infrastructure</p> <ul style="list-style-type: none"> - Slow completion of infrastructure, roads - No existing infrastructure for electric cars - Lack of bike lanes - Lima built as a city for cars <p>Culture</p> <ul style="list-style-type: none"> - Culture of entrepreneurship, free market; many different actors in transport profiting from the chaos - Poor education - Biking seen as an initiative for the elite - Violent environment - Drivers lack respect for other actors in traffic - Capitalist culture; owning a car equals status, power - Fear of traffic, velocity for bikers <p>Traffic & Public transport system</p> <ul style="list-style-type: none"> - Metropolitano; overused and overcrowded - Unsustainable modes of transport e.g. mototaxis - Informality in the transport sector; overloaded - Lack of intermodality, connectivity - Low accessibility for people in the outskirts - Traffic not organised at all - Lack of planning and purpose - High air pollution |
| External | <p style="text-align: center;"><u>Opportunities</u></p> <p>Geographical opportunities</p> <ul style="list-style-type: none"> - flat surface, good weather <p>Resource management</p> <ul style="list-style-type: none"> - Potential for electromobility through renewable energy (sun, wind) | <p style="text-align: center;"><u>Threats</u></p> <p>Mobility culture:</p> <ul style="list-style-type: none"> - Fragmented mobility culture in Peru - Aggressive driving, confrontations between the people - No participation - Idea that there is no expertise in the grassroots <p>Structural challenges</p> <ul style="list-style-type: none"> - Construction slow because of required studies prior to implementation - Urbanisation, overpopulation, immigration leads to huge increase in population - Lack of funding, people accept money for any purpose without having the capacities to implement it - Bad leadership in Peru compared to other countries in Latin America, lack of political will |

Table 7: SWOT analysis based on the responses from five interviews in Lima

As one can see in the SWOT analysis above, there are significantly more internal challenges, that is “weaknesses”, than external “threats” in Lima. Additionally, there tend to be more internal strengths mentioned by the interviewees than external opportunities. It is however important to note that the challenge expressed by all interviewees is the external threat of urbanisation. Also, the external possibility of good geography and climate for non-motorised transport was highlighted by two interviewees, which is more than some of the internal aspects.

Similar to the situation in Bogotá, one can see that most of the challenges mentioned by the interviewees are based on structural internal weaknesses connected to governance, infrastructure and urbanisation. The structural challenges when it comes to governance are however perceived to be the fragmentation of the city administration into 43 municipalities and the political collaboration between these, rather than political continuity even though this problem remains. Corruption is an issue that was emphasised by four out of five interviewees, and also argued to be a problem in every project of infrastructure development in the city.

On the contrary, the possibilities tend to rely on initiatives and activism from grassroot levels and civil society. The initiatives often originate from sustainable thinking and interest in alternative modes of transport, due to the increasing levels of traffic and automobility in recent years. The local governments try to respond to these initiatives by establishing projects and events for improving mobility culture. The flat surface and the location near the sea gives Lima good opportunities both when it comes to non-motorised transport and electromobility⁶ based on electricity from renewable sources, in this case wind.

The data analysis in this chapter has mapped out the challenges and possibilities of the two cases of Bogotá and Lima through interviews with local experts in the field. The next chapter will give a presentation as well as an interpretation of the results, in order to finally give recommendations for Sustainable Urban Mobility planning for cities with similar characteristics.

⁶ Electromobility entails transport with any vehicle empowered by a rechargeable battery, e.g. electric scooters, bikes or cars (Gröger, Gasteiger and Suchsland, 2015).

5 Data analysis results

As noted in the data analysis, Bogotá and Lima are two emerging capital megacities in Latin America that have experienced similar levels of economic growth and population increase in recent decades. In terms of urban transport, the Latin America Green City Index ranks Bogotá's urban mobility situation as "above average", just one step above Lima which is ranked as "average", whereas the only city in Latin America ranked higher than them both is Santiago in Chile. In the index report, the differences highlighted between the two cities in Bogotá's favour are explained to be the unorganised public transport system and the lack of an integrated ticketing system in Lima versus the extensive biking network, Transmilenio BRT system and low ratio of cars per capita in Bogotá (Economist Intelligence Unit, 2010). Based on the data analyses in chapter four, one can conclude that there are more differences to this, but also similarities, that needs to be emphasised.

Through a comparison of the two cases analysed in chapter four, chapter five argues that despite structural challenges such as urbanisation and economic growth, the main problem is the non-contextualised European model for Sustainable Urban Mobility planning that has been applied in the cities. To do so, the urban mobility culture is compared in subchapter 5.1, followed by a comparison of challenges and possibilities in subchapter 5.2. The argument is then put into the context of ongoing development cooperation in subchapter 5.3 and connected to the critical assessment of modernisation theory in subchapter 5.4.

5.1 Mobility situation and culture

Based on the ten interviews conducted for this study and the interpretation of these responses, the largest difference between the mobility situation in the two cities is not the "chaotic" situation in Lima compared to the "organised" public transport in Bogotá, even though it can seem like it at a first glimpse. According to the data analysis, the main difference causing the assumedly more chaotic situation in Lima is the process of privatisation in the private sector compared to the formalisation of local buses and private actors into the SITP system in Bogotá.

If one would compare the two systems of both cities, it could be argued that Lima is in the same situation as Bogotá was in 15 years ago with a fresh BRT-system, but still a lot

of existing informal and private actors in the transportation sector and a large proportion of the population in favour of private motorised transportation modes. But looking at the situation now, there have been several improvements as well as disadvantages with the urban mobility development in Bogotá. The improvements on the one hand, according to the interviewees, tend to be results of the initiatives by the local government, the third sector and civil society to benefit mobility culture and sustainable thinking when it comes to urban transport. The disadvantages on the other hand incline to be attempts to formalise the traditional bus system into SITP, including improving accessibility, and when the citizens still were used to the informality of the old bus system. This has then led to a decrease in the usage of public transport in the modal split (including informal buses) from 59 per cent in 2005, 41 per cent in 2011 (Rodríguez Hernández and Quiros, 2016) and 36 per cent in 2018 (Deloitte, 2018a). As this change is a result of decreased accessibility in poor areas, the share of walking in the modal split has increased.

Despite that the formalisation of private busses has not happened in Lima, similar patterns can be seen in the city's urban mobility development. Whereas the city of Bogotá has pushed for projects improving urban mobility culture throughout the recent years, and there has been a political and public will to improve the system, comparable initiatives in Lima are very fresh and small-scaled. This can be assumed to be one of the reasons for why there has been no significant breakthrough for the usage of the public transport systems in Lima. What however seldom is being researched is the environmental and socioeconomic impact of the informal and private transport as well as ways to improve the traditional transport system instead of replacing it with a new one.

Except for the aspect of being used to formality or not, there are also many other features of mobility culture that need to be compared. The picture of private transport, or cars essentially, as a symbol for power wealthiness and freedom remains in both cities. This idea can be well compared to Lomasky's thoughts on automobility discussed in subchapter 2.6, arguing that the private car is a source of freedom and accessibility in this way increases quality of life (Lomasky, 1997). As already discussed, this concept does not comply with today's discussions and research on urban mobility, especially in emerging cities where the poor cannot afford private transportation. The idea can however be used to describe the reason for why people see the car as a source to power and prosperity. According to the interviewees in both cities, this mindset has decreased in

Bogotá especially among the wealthier citizens and due to projects for improving mobility culture. In Lima this conception of private transportation remains strong.

In both cities a fear exists for using non-motorised modes of transport, especially biking. In Bogotá, the fear is mostly related to robberies, both while biking (especially at night-time) but also when leaving the bike at a public place. In Lima, the anxiety is more focussed towards the chaotic traffic and aggressive drivers. The difference between these two types of fear is that the people in Bogotá still have a positive view of biking and do not reject the bicycle as a mode of transport. It is therefore also popular as a mode of transport for people unable to afford private motorised transportation or public transportation, but also among wealthier people willing to use sustainable transport or to avoid traffic. In Lima on the contrary, bicycle usage is not seen as an option by many due to the perception of aggressive drivers and high danger. As the city of Lima is very fragmented, it is still hard to argue that this certain fear exists in all areas, as wealthier possess way better infrastructure, especially when it comes to bike lanes.

5.2 Challenges and possibilities – a comparison between the cities

As shown in the table below, many of the challenges and possibilities mentioned by the interviewees in both cities are the same or quite similar. These can thus be categorised as challenges *common for emerging cities in the Latin America*. It is however important to keep in mind that the challenges or possibilities do not necessarily have to be for emerging cities *per se*, but can also describe today's aspects of Sustainable Urban Mobility development in a modern large city. Despite the cities being two emerging cities in Latin America of approximately the same size, there are some aspects that differ. These can thus be called *city-specific challenges and possibilities*. In the table below, some challenges and possibilities relate specifically to the mobility situation, some to the planning and development procedures and some are interconnected. When applying these for future urban mobility planning, the categorisation of these challenges and possibilities are to be taken into consideration.

| | | | | | | | | |
|---------------|----------------------|------------------------------------|---|--|---------------------------------|--------------------------------------|--|---|
| BOGOTÁ | Challenges | Urbanisation & city expansion | Law enforcement | Velocity | Political continuity | Corruption | Air pollution | Lack in infrastructure |
| | Possibilities | Community participation & activism | Public interest in sustainable modes of transport | Governmental initiatives for mobility culture | Biking infrastructure | Geographic opportunities & climate | Possibilities for electromobility | Existing instruments for mobility planning |
| LIMA | Challenges | Urbanisation & city expansion | Corruption | Cooperation between municipalities & fragmentation | Air pollution | Law enforcement | Fear of traffic, aggressivity & velocity | Lack in infrastructure |
| | Possibilities | Community participation & activism | Public interest in sustainable modes of transport | Governmental initiatives for mobility culture | Sustainable thinking increasing | Geographical opportunities & climate | Possibilities for electromobility | Possibility for electromobility through existing renewable energy |

Table 8: Possibilities and challenges based on the combination of responses from five interviews (with eight activists, NGO and municipal union representatives) in Bogotá and five interviews in Lima (with eight activists, NGO and municipal union representatives).

Mentioned by: 5 interviewees, 4 interviewees, 3 interviewees, 4 interviewees, 3 interviewees, 2 interviewees, 1 interviewee

5.2.1 Common challenges and possibilities for emerging cities in Latin America

As one can see in the comparison above, most of the challenges and possibilities repeated several times by the interviewees are the same in both cities. These include urbanisation, law enforcement, corruption, community participation, governmental initiatives etc. Even

though some of the challenges and possibilities are categorised under the same label, the nature of them can differ in both cities.

Both groups of interviewees argued urbanisation in combination with uncontrolled city expansion to be the largest challenge for Sustainable Urban Mobility planning in both cities. Most of the interviewees in Bogotá and Lima however argued the external “threat” of urbanisation not to be the actual challenge, but instead the internal “weakness” of uncontrolled city expansion. In the same way, community participation and activism along with public interest benefitting Sustainable Urban Mobility is on the rise in both cities and claimed to be the largest strengths for sustainable mobility improvement. One reason for this is that they reflect in governmental and political interests the same issues resulting in governmental initiatives for improving mobility culture and other projects in infrastructure. It is important to keep in mind that these initiatives are very new and small-scale in Lima, whereas they have existed for a longer time in Bogotá.

What is then this so called “uncontrolled city expansion”, and how can it be “controlled”? Urbanisation is not going to stop. According to Paola Jirón, uncontrolled urban expansion has a strong connection to city planning not corresponding to the urban needs and structures, and in this case urban transport planning. One can thus argue that by applying the European non-contextualised models for Sustainable Urban Mobility planning that don’t fit the urban structures of emerging cities in Latin America, the outcome will be “uncontrolled” (Jirón, 2013).

As a result of the data analysis, it is noticeable that both cities experience challenges when it comes to administrative aspects. Apart from corruption which is an evident challenge in both cities but especially in Lima, the structures and procedures of politics and administration are seen as challenging for long-term and large-scale Sustainable Urban Mobility planning in Lima and Bogotá. The nature of these challenges however differ, and will be discussed in the following subchapter (5.2.2). As mentioned in subchapter 6.1, both cities also experience challenges when it comes to mobility culture. In Lima these challenges are focussed on fear of aggressive drivers and high velocity in traffic.

Similar tendencies can be seen among citizens in Bogotá, where velocity is considered a severe challenge as well.

5.2.2 City-specific challenges and possibilities for Bogotá and Lima

While both cities experience administrative challenges, the main challenge in Bogotá is the problem of political continuity within the city administration, that is when a newly elected mayor does not want to continue the projects initiated by the previous one. Whereas this challenge still persists in the case of Lima, the largest administrative challenge there mentioned by the interviewees is the fragmentation of governance divided into 43 municipalities which aggravates collaboration for Sustainable Urban Mobility projects.

There are some challenges and possibilities that can be argued both to be city-specific, but also common for emerging cities in Latin America. These include the external opportunities of climate and geography as well as the both external and internal challenge of air pollution. Interviewees in both Bogotá and Lima claimed that there is an opportunity for non-motorised transport due to the climate that is neither too warm, cold nor rainy. Both cities also have a flat surface which facilitates biking and infrastructure improvement. The climate aspect can be argued to be similar in other Latin American cities, that very seldomly experience snow. Except for this fact, the climate in Latin America can vary also because of the El Niño and La Niña events (Grimm, Barros and Doyle, 2000). The same goes for the geographical aspect, as the opportunity of a flat surface does not apply for every city. The challenge of air pollution, that both is caused by the industries but also by motorised transport, can also be affected by the location of the city as well as by surrounding geography.

An interesting observation is that in none of these two cases the interviewees have pointed out financial issues or lack of budget as a severe challenge for Sustainable Urban Mobility development. Illustrated in the SWOT analyses, economic issues were mentioned particularly when it comes to the deficit lost in traffic security and accidents as well as budget restraints posed by the national government. In Lima, the economic challenges relate to the fragmentation of the city districts, where every municipality has its own budget and budgets for intermunicipal projects can be hard to agree upon. It was also mentioned that administrative units tend to have a very low threshold for accepting offers, for example from development cooperation or banks, for new projects in infrastructure or

mobility development. This entails that the actors pushing for the new development initiatives often get to set the guidelines for the planned activities.

5.3 Connection to ongoing development cooperation and European guidance

As discussed in subchapter 3.2, the ongoing development assistance activities are extremely focussed on the reduction of GHG emissions. Socioeconomic improvements, *e.g. reduced accident rates, less air pollution and less congestion* are encouraged but there is no scenario mentioned within socioeconomic features would be prioritised over the reduction of GHG emissions. The expected reduction of GHG for the first four and following six years are clearly stated in documents such as the TRANSPerú NAMA (Capone and Velezmoro, 2015). Who the main recipients of this development assistance are, that is *who benefits* of the environmentalism, is discussed further in this subchapter.

The view of resource management in the urban transport sector in the form of the *metabolism model*, including the aim to reduce resource usage and not recycling, creates a complexity, especially when the reduction of GHG is expected to happen within the ten following years. As mentioned, both by the interviewees at the NGO's Despacio in Bogotá as well as Dispurse in Lima, the lack of long-term approaches when it comes to GHG emissions reductions is one of the greatest problems with ongoing development activities. Results are expected to be seen straight away and large results within ten years such as in the TRANSPerú NAMA. This creates the complex situation of "less is better", where public transport cannot be improved if GHG emissions are not immediately reduced. With this focus on rapid reductions of GHG emissions, it is impossible to expect improvements of public transport infrastructure in areas inhabited by the poorest in society. The reason for this is that the citizens living in these areas cannot afford cars. Their "modes of transport" are thus walking and biking, if the geographical aspects of the areas allow it and occasionally informal busses if the service exists. As these types of transport are already considered "sustainable", the development of public transport systems, such as the Transmilenio and Metropolitano BRT-systems are implemented in areas where levels of automobility are high, usually in the high- and middle-income areas (stratum 4-6 in Bogotá, A-C in Lima). Based on this, it can be argued that the third "social" pillar of Sustainable Urban Mobility has been left out from the ongoing development assistance projects in Latin America.

This complexity of striving for immediate and short-term reduction of GHG emissions leads to the fact that the urban mobility situation in poor areas remains unchanged and “sustainable” modes of transport are encouraged, or this is at least what the stakeholders might assume. As discussed in chapter two, emerging cities are categorised by their high levels of economic and population growth, leading to the rapid expansion of the cities. The cities are not only expanding, but also changing fast. One type of such a change is gentrification, that has been experienced in both Lima and Bogotá. These processes however do not tend to be structured and planned types of gentrification, but instead a result of city expansion and increasing prices of housing and real estate in the urban areas (Janoschka, Sequera and Salinas, 2014). The consequence for the urban mobility situation is the same; when wealth increases and people do not have access to public transport, they will start using private transport instead. This, in a long-term perspective, increases GHG emissions.

Nevertheless, it is understandable that the ongoing development activities have followed this model of intended improvements for sustainable mobility, as it is based on the European model and its approaches. In most European cities, the socioeconomic urban structures, when it comes to mobility, differ from the ones of emerging cities in Latin America. In large European metropolitan areas, e.g. in London, the districts with high levels of automobility are situated in the outskirts of the cities, with lower real estate prices. Consequently, these areas are the ones where less wealthy people tend to live. The rural areas are on the other hand the ones with the highest car ownership per capita (Clark, 2007). By extending and improving public transport to these areas, decreasing CO₂ emissions as well as poverty reduction goes hand in hand. In emerging cities in Latin America, the situation is the opposite.

It is however not only the European models used for development assistance that encourage the complexity of the situation, but also some of the administrative structures that already exist. The lack of political continuity mentioned by many of the interviewees contributing to this study complicates the situation for a long-term approach. In Lima, this adds up with a fragmentation of the city into 43 municipalities, and the heavy studies required for infrastructure projects. The economic study with its cost-benefit evaluation, and the environmental study that encourages CO₂ emissions reduction, by definition also

support projects reducing automobility where it already exists, which is in wealthier areas of Lima.

5.4 The “modern” concept of mobility

The application of the model for Sustainable Urban Mobility planning based on the European *SUMP guidelines* on emerging cities in Latin America can sufficiently be critically assessed as an example of Modernisation theory. This claim is made not only based on the fact that all “best practise examples” are from Europe, but also that the urban structures and mobility culture differ to such extent that adopting the same model in Latin America will have significant consequences. As mentioned by most interviewees contributing to this study, urbanisation in Latin America is seen as one of the largest challenges for urban development. In Europe on the other hand, it is seen by many as a possibility for growth and prosperity (Bloom, Canning and Fink, 2008).

Despite this fact, when comparing the European *SUMP guidelines* with development assistance policies, it is inevitable that the policies take one step further for a general focus on immediate reduction of GHG emissions. The first of the main objectives mentioned in the guidelines is to *ensure all citizens are offered transport options that enable access to key destinations and services* while still reducing GHG emissions. They also emphasise a *long-term vision* and strategy, with a *perspective of 20-30 years*, where the SUMP should be updated and re-evaluated every five years (Wefering *et al.*, 2013). As discussed in the previous subchapter (5.3), methods as such tend to work in the European cases, but not in the cases of emerging cities in Latin America. Why important aspects such as guaranteeing transport options for all citizens as well as a significant long-term emissions reduction have been downgraded from an important document such as the TRANSPerú NAMA, is however questionable. This observation entails that the whole concept of Sustainable Urban Mobility would be highly in need of a contextualisation for emerging cities, not only the *SUMP guidelines*.

That the model of SUMP remains uncontextualised for perspectives of Latin American emerging cities can be noted in the Avoid - Shift - Improve approach, that is suggested to *Avoid the need to travel, shift to or maintain share of more environmentally friendly modes* and *improve the energy efficiency of transport modes and vehicle technology* (GIZ, 2004). The general idea of this approach, that is to avoid unsustainable transport modes,

is comprehensible. Unnecessary transportation should, in the first step, be avoided, people using private transportation should shift from cars to non-motorised transport or public transport, which in the last step should be improved in general. However, little has been mentioned regarding the areas *without* access to neither public transport nor private transport, and the whole idea is just based on a change from a mobility culture where people use private transportation and, in the end, prefers public transportation. As discussed in subchapter 5.4, the general idea of that it is target city for that needs to change in order to implement an SUMP, and not the SUMP approach that needs to be contextualised in order to fit the urban area, is an example of Modernisation theory.

What the countries providing the development assistance for Sustainable Urban Mobility planning get out of the cooperation is debatable. As discussed in subchapter 3.6, the Post-colonial theory for political or economic predominance is not applicable for the SUMP model. It is evident that the main goal for ongoing development assistance however, as stated for example in the TRANSPerú NAMA for the transport sector, is *significant reductions in GHG emissions*. Global emissions trading, an approach initiated in the Kyoto agreement and proceeded in the Paris agreement, can thus be one reason for the strong position regarding short-term GHG emissions reduction. The application of the European model of SUMP in Latin America could thus open new possibilities for European actors in the sector.

To explain this further, one could have a look at the situation in Lima and Bogotá 70 years ago: the cities were significantly smaller than today and levels of poverty and crime were certainly high. Both cities however had functioning tram and train systems throughout the city. As argued by one interviewee from the NGO Disperse in Lima, these public transport systems were dismantled as they were replaced by a “modern” way of transport, that it’s the privately owned automobile. This, along with the wave of privatisation in the 90’s, was heavily supported by American development assistance as an *instrument of foreign policy* called the “Fordist period”, in order to increase American exports of oil and vehicles, but also to support capitalism around the world (Griffin and Enos, 1970; Audirac *et al.*, 2012). With this as a background, one can conclude that earlier western development assistance has led us to the challenging situation of urban mobility that we find ourselves in today.

To argue that the European motive for ongoing development assistance is purely self-beneficial and based on future possible carbon trading is however rather far-fetched. Even though a global emissions trading scheme is supported in the COP 21 Paris agreement, both Colombia and Peru do not have emissions trading schemes (EMS) yet in place at this moment (The Climate Policy Info Hub, 2019), that would make it possible for European actors to access their carbon emissions market. With the short-term ambitions for emission reductions, it is also doubtful that policies such as the TRANSPerú NAMA would create a platform that could economically benefit European actors.

What however has been demonstrated in this thesis is the view of modernity the European stakeholders have when it comes to Sustainable Urban Mobility, and some of its consequences for urban development in emerging cities in Latin America. A good example of this is the *Integrated public mass transport system, Modernization of the public transport vehicle fleet and establishment of a single transport authority* in Lima, all mentioned as “main mitigation areas” of the TRANSPerú NAMA (Capone and Velezmoro, 2015). This falls very close to the establishment of the SITP system, significantly reducing accessibility for the poor in Bogotá. Integration of the public transport system, different actors and stakeholders in the transport sector are also core elements of the *SUMP guidelines*. In Lima and Bogotá, the formality of integrated public transport authorities has been considered distinctive, and thus the slight lack of success for prior projects. For the goal of an integrated public transport system, the expertise for the integration of the different actors in the transport sector could favourably be taken e.g. from the case of Bogotá, not from examples in Europe.

6 Conclusion

Levels of private transportation modes are rising in Latin America at a rate that has never been encountered before. While the economies are growing, so are the urban populations as well as the income-gaps and sociospatial segregation in emerging cities. Based on research related to this topic and ten interviews carried out in the emerging cities of Bogotá and Lima, it is certain that a solution to this problem has to be found. The application of the European model of Sustainable Urban Mobility on emerging cities in Latin America has however shown to result in severe challenges due to different urban structures and mobility culture. Typical issues such as urbanisation and corruption are

often implied to be the main contributors for the harsh mobility situations, whereas this thesis shows that the non-contextualised approaches for battling these challenges are the main problem. This concluding chapter shows that the core argument, that the European concept and model of Sustainable Urban Mobility need to be contextualised in order to reach the desired outcomes in emerging cities. Subchapter 6.1 also includes suggestions for a contextualisation of the Sustainable Urban Mobility models as well as recommendations for future development activities in the field, and the final concluding remarks are given in subchapter 6.2.

6.1 Suggestions for Sustainable Urban Mobility planning, development assistance and further research

Based on the findings from a comparison of ten interviews, and the ascertainment that the European sustainable mobility model must be contextualised for emerging cities, four general suggestions and in the same time answers to the research questions of this thesis are presented. The purpose of the recommendations is to be taken into consideration for future urban planning, development assistance and research in the field of Sustainable Urban Mobility in emerging cities in Latin America.

6.1.1 Different urban structures of emerging cities lead to consequences for Sustainable Urban Mobility in Latin America

High levels of urbanisation, economic growth and climate change vulnerability are without doubt challenges for urban mobility that need to be confronted in Latin American emerging cities. Whether the European model of Sustainable Urban Mobility planning is the right approach to tackle these issues are however not true. In order to answer the first research question: *what are the differences to be considered for Sustainable Urban Mobility planning in emerging cities compared to how the concept is implemented in Europe?* One needs to mention the different socioeconomic structures of emerging cities. As discussed in subchapter 5.3, the main goal of ongoing SUM development assistance in Latin America is the reduction of GHG emissions. In Europe, the reduction of GHG emissions in the urban transport sector often goes hand in hand with poverty reduction and accessibility improvement, as urban citizens with the highest car usage often live in the outskirts of the cities, and these districts also tend to be the poorer urban areas. The urban distrital and socioeconomic structures of emerging cities in Latin America however

differ from the ones of European cities. As noted from the interviews carried out in Bogotá and Lima, the urban dwellers in the poor areas in the city outskirts have very limited access to any types of transport and their main modes are walking or biking. This entails that no immediate reductions of GHG emissions would be reached through public transport extensions in these areas. On the contrary, emissions would momentarily increase through such initiatives. For this reason, ongoing projects of Sustainable Urban Mobility are focused on wealthier urban areas where automobility is high. On paper, and for a short-term period, this method presumably reduces CO₂ emissions. Because of the nature of emerging cities, with high levels of economic growth, population increase and raising prices of real estate and housing, the “poor” areas are eventually still going to emerge. As no improvements of accessibility to public transport have been made prior to the gentrification, citizens are going to start using private transportation instead, that in a long-term perspective increases GHG emissions (Mejía-Dugand *et al.*, 2012). Apart from increasing automobility, it also contributes to the car-orientated mobility culture of the poor.

A suggestion to the complex situation of GHG emissions reduction is thus to focus on poverty reduction in a short-term perspective, while reducing GHG emissions in a long-term perspective and not the other way around. This means that the focal point of public transportation system extension, despite the temporarily increasing GHG emissions, would need to be on poorer urban areas. This however does not mean that improvements, for example when it comes to non-motorised transport, could not be reached in wealthier areas as well.

6.1.2 The greatest challenges to overcome

The answers for research question number two, *what are the main challenges and possibilities of Sustainable Urban Mobility for emerging cities in Latin America, based on the cases of Bogotá and Lima?* has been presented in the comparison of challenges and possibilities in Bogotá and Lima in subchapter 5.2. Some aspects tend to be city-specific and some can be assumed to commonly characterise emerging cities in Latin America. As the suggestions mentioned in this concluding chapter are meant to improve the Sustainable Urban Mobility planning on a large scale and present solutions for a general contextualisation of the SUMP model, not only for Lima and Bogotá, the focus is on the general aspects for future urban development.

Urbanisation and population increase are the largest challenge in both Bogotá and Lima according to the interviewees. It is also a phenomenon that especially affects emerging cities in Latin America and the Global South. Some of the interviewees however argued that it is not urbanisation *per se* that is the real challenge, but that the city is unable to handle this process and that the expansion is uncontrolled. This can be interpreted in two ways: either it is the lack of resources that makes the city unable to tackle the high levels of urbanisation. As both Bogotá and Lima still have somewhat low levels of GDP per capita, this is an option that cannot be neglected. When comparing the economic growth of Colombia presented in subchapter 2.2 with the population growth in subchapter 4.2, one can however note that the recent economic growth rate has been significantly higher than the population increase. As suggested in subchapter 5.2, the *uncontrolled* urbanisation can also be a result of using the wrong models for urban planning. If the approaches used to handle urbanisation, such as SUMP, are based on the needs for emerging cities in Latin America or whether they are based on the European paradigm of urban development.

Regardless of the origin of the urbanisation related challenges, this study has shown that a long-term approach for addressing these issues is to be encouraged. A holistic approach is also to be emphasised in order to show the strong connection between the SUMP and other plans for urban development, such as plans for housing and urban expansion. In this way, one can attempt to foresee the urban expansion, and improve accessibility in emerging areas before it is too late.

Followed by urbanisation, administrative challenges are considered as critical issues for Sustainable Urban Mobility in emerging cities. These include corruption, but also political continuity that tends to be significant challenges for the implementation of SUMP, infrastructure projects and mobility measures. To address these challenges, the importance of transparency in the planning process as well as citizen inclusion need to be pointed out. Citizen engagement and activism, when it comes to supporting sustainable transport modes, is growing in both Bogotá and Lima. So is the interest in the third sector as well as among politicians. It is therefore important to establish support for the projects not only for the ruling party, mayor or politicians but also in the opposition, the private and third sector as well as among citizens in order to encourage a long-term approach. As

argued by Lankao⁷, it is important to brace a localised approach, where e.g. environmental and infrastructural challenges are based on local needs (Lankao, 2007).

What further must be considered is the climate in Latin America and in other parts of the Global South, which is significantly warmer on average than in most cities in Europe. This is however in most cases not seen as a challenge for Sustainable Urban Mobility, but instead as a possibility. Warm winters facilitates the use of year-around non-motorised transportation, and a strong sunlight is an opportunity for electromobility using renewable energy.

6.1.3 Focus on existing mobility culture

The answer for the third research question, *In which ways could the local mobility culture be accounted for in reconstructing a new mobility paradigm?*, suggests that for a successful implementation of a SUMP in emerging cities it is crucial to keep in mind that the citizens in Europe might have different habits and views of mobility compared to in Latin America. One example for this, as argued by the interviewees in both cities, is the view of the ownership of a car as a symbol for power, wealth and freedom, that tends to be considerably strong especially among the poor. A similar challenge is the fear of insecurity both when it comes to violence when moving around in the city, especially with non-motorised transport modes or in the public transport system. The same type of fear exists for aggressive drivers and intense traffic.

In both cases of Lima and Bogotá, one can see examples of how mobility culture is not taken into consideration for projects in Sustainable Urban Mobility. In Bogotá on the one hand, the SITP system was established in order to replace the “inefficient” and “unsustainable” informal bus system, that did not have constant routes and set timetables. The old buses were organised into fixed lines based on environmental and cost-beneficial evaluations, resulting in inaccessibility for people in less wealthy areas and decreased popularity for the system. To sum up, many of the poor that used the old system are now forced to walk, and many of the people who can afford private transportation will favour cars or motorbikes instead of public transport. In Lima on the other hand, the informal

⁷ Discussed in subchapter 2.12

systems still exist and remain popular. The interest for public transport such as Trenelectrico, Metropolitano and the corridor buses has not been as much of a breakthrough as planned, due to the formal, and for Peruvians unfamiliar, structure of the systems.

Also, the cultural challenges are to be improved and therefore need to be considered. However, assuming that the SUMP would create a “new mobility culture” in itself is questionable. Instead, this research suggests that the traditional mobility culture needs to be built upon. In cases where people fear traffic or violence, a special focus needs to be put on these two challenges in order to prevent them, and in this way improve the culture. When citizens see car ownership as a goal in their life, sustainable thinking and electromobility can be encouraged as alternatives. And yet importantly, one should make the most of the already existing culture and traditional systems of public transport in order to improve them, instead for dismantling them. As the Avoid - Shift - Improve method has been condemned in subchapter 5.4, there is a need for a new method of considering mobility culture in SUMP processes, as well as preparing for the “shift” from private transportation to sustainable modes (Hidalgo and Huizenga, 2013b).

6.1.4 Preventive approach for Sustainable Urban Mobility development

The current SUMP model applied on projects for improving the mobility situations of emerging cities in Latin America is focussed on encouraging people using private transport to favour sustainable modes. The argument of this thesis is that, given to the large amount of people still without access to any types of transport, one should instead try to push people not to use private transport in the first place. In order to present a solution covering this issue and all of the other solutions mentioned above, a strong suggestion is that a preventive long-term approach for urban development, or *source directed preventive policy*, needs to be put in place (Tjallingii, 1995).

A preventive approach is often used for development projects in the Global South and entails that the problem needs to be addressed before the damage has actually started. This means that public transport has to be extended to poor areas *before* citizens start using private transport, to city outskirts *before* the city has thoroughly expanded to these areas in an uncontrolled way and that political support needs to be found in the political opposition and civil society *before* the term of a new administration. Kenneth Hewitt

describes this approach with the words: *disasters are certainly associated with communities suffering lack of development. They are also linked to the style and direction of development.* This means that, instead of continuously trying to cover up after ourselves, we should try to prevent the urgent need of development by avoiding forthcoming hazards (Hewitt, 2013).

6.2 Final remarks

To conclude, it is important to point out that there are significant challenges and a need for improvements of urban mobility in emerging cities in Latin America, such as urbanisation and economic growth, that need to be addressed. But as said, these are *challenges* and not *problems*. The problem stressed in this thesis relates to how these challenges are being addressed in the transport sector, that is through the European model for Sustainable Urban Mobility planning, has been presented through a critical assessment of modernisation theory. This assessment in combination with original data and relevant scientific literature has shown that the application of the European model for Sustainable Urban Mobility on emerging cities in Latin America, without taking the different urban socioeconomic structures and mobility culture into consideration, might result in reduced GHG emissions in short-term but has negative effects both on socioeconomic inequality and long-term GHG emissions on a long-term basis.

This thesis argues that the current application of the European model for Sustainable Urban Mobility on emerging cities in Latin America has failed. This entails that the main argument mentioned in subchapter 1.3 is accurate. The fundamental properties, such as encouraging sustainable modes of transport over traditional transport and velocity, citizen engagement and improving quality of life of the model remain useful as they reflect the needs presented by the data analysis of the interviews. However, in order to address these issues sufficiently, not only the *SUMP guidelines* but the whole concept of Sustainable Urban Mobility needs a contextualisation taking the distinctive socioeconomic and cultural urban structures of emerging cities in Latin America into consideration.

Bibliography

ACEA (2017) *Vehicles Per Capita, by Country*. Available at: <https://www.acea.be/statistics/tag/category/vehicles-per-capita-by-country> (Accessed: 14 August 2019).

Adger, W. N. *et al.* (2003) 'Adaptation to climate change in the developing world', *Progress in Development Studies*, 3, pp. 179–195. doi: 10.1191/1464993403ps060oa.

Alegre Escorza, M. *et al.* (2018) *Encuesta Lima Cómo Vamos 2018*. Lima. Available at: <http://www.limacomovamos.org/cm/wp-content/uploads/2018/12/EncuestaLimaComoVamos2018.pdf> (Accessed: 23 June 2019).

Andrews, C. J. (2008) 'Greenhouse gas emissions along the rural-urban gradient', *Journal of Environmental Planning and Management*, 51(6), pp. 847–870. doi: 10.1080/09640560802423780.

Ardila-Gómez, A. (2004) *Transit Planning in Curitiba and Bogotá. Roles in Interaction, Risk, and Change*. Massachusetts Institute of Technology. Available at: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.192.2179&rep=rep1&type=pdf> (Accessed: 28 June 2019).

Audirac, I. *et al.* (2012) 'Declining Suburbs in Europe and Latin America', *International Journal of Urban and Regional Research*, 36(2), pp. 226–244. doi: 10.1111/j.1468-2427.2011.01093.x.

Banister, D. (2008) 'The sustainable mobility paradigm', *Transport Policy*, 15, pp. 73-80. doi: 10.1016/j.tranpol.2007.10.005.

Banister, D. (2011) 'Cities, mobility and climate change'. doi: 10.1016/j.jtrangeo.2011.03.009.

Bernstein, H. (1971) 'Modernization theory and the sociological study of development', *The Journal of Development Studies*. Henry Bernstein, 7(2), pp. 141-160. doi: 10.1080/00220387108421356.

Bissell, D. (2010) 'Passenger mobilities: affective atmospheres and the sociality of public transport', *Environment and Planning D: Society and Space*, 28, pp. 270–289. doi: 10.1068/d3909.

Bloom, D. E., Canning, D. and Fink, G. (2008) *Urbanization and the Wealth of Nations*. Available at: <http://www.hsph.harvard.edu/pgda/working.htm> (Accessed: 6 August 2019).

Brand, P. and Dávila, J. D. (2011) 'Mobility innovation at the urban margins: Medellín Metrocables', *City*, 15(6), pp. 647–661. doi: 10.1080/13604813.2011.609007.

Capone, C. and Velezmoro, J. (2015) *TRANSPerú Sustainable Urban Transport NAMA Peru*. Available at: <http://www.mtc.gob.pe/> (Accessed: 23 June 2019).

Carlos Belalcazar, L., Cuellar Álvarez, Y. and Clappier, A. (2017) *Towards a Sustainable Mobility in Bogota, Colombia*. Available at: <https://www.researchgate.net/publication/317605833> (Accessed: 17 January 2019).

Carrillo, P. E., Malik, A. S. and Yoo, Y. (2016) 'Driving restrictions that work? Quito's Pico y Placa Program', *Canadian Journal of Economics*, 49(4), pp. 1536-1568. doi: 10.1111/caje.12243.

Cerrutti, M. and Bertonecello, R. (2003) 'Urbanization and Internal Migration Patterns in Latin America Marcela Cerrutti Rodolfo Bertonecello', in *Conference on African Migration in Comparative Perspective*, pp. 4–7. doi: 10.1111/wusa.12227.

Cervero, R. (2005) 'Progressive Transport and the Poor: Bogota's Bold Steps Forward', *ACCESS Magazine*, 1(27). Available at: <https://escholarship.org/uc/item/3mj7r62w> (Accessed: 21 June 2019).

Cervero, R. (2013) 'Linking urban transport and land use in developing countries', *Journal of Transport and Land Use*, 6(1), pp. 7–24. doi: 10.5198/jtlu.v6i1.425.

Clark, S. D. (2007) 'Estimating local car ownership models', *Journal of Transport Geography*, 15(3), pp. 184–197. doi: 10.1016/j.jtrangeo.2006.02.014.

de Coninck, P. and Engelskirchen, M. (2019) *EUROCLIMA+ Urban Mobility*. Available at: <http://euroclimaplus.org/en/about-mobility/description-urban> (Accessed: 8 August 2019).

Deloitte (2018a) *City Mobility Index Bogotá*. Available at: <http://www.deloitte.com/insights/future-of-mobility> (Accessed: 20 June 2019).

Deloitte (2018b) *City Mobility Index Helsinki*. Available at: <http://www.deloitte.com/insights/mobility-index> (Accessed: 20 June 2019).

Dempsey, N. *et al.* (2009) 'The Social Dimension of Sustainable Development: Defining Urban Social Sustainability', *Sustainable Development*. doi: 10.1002/sd.417.

Dirlik, A. (2003) 'Global Modernity?: Modernity in an Age of Global Capitalism', *European Journal of Social Theory*, 6(3), pp. 275–292. doi: 10.1177/13684310030063001.

Economist Intelligence Unit (2010) *Latin American Green City Index*. Available at: https://eiperspectives.economist.com/sites/default/files/Study-Latin-American-Green-City-Index_WEB_0.pdf (Accessed: 2 August 2019).

Fernández-Maldonado, A. M. (2008) 'Expanding networks for the urban poor: Water and telecommunications services in Lima, Peru', *Geoforum*, 39, pp. 1884–1896. doi: 10.1016/j.geoforum.2007.11.007.

Fraser, E. D. G. *et al.* (2006) 'Bottom up and top down: Analysis of participatory processes for sustainability indicator identification as a pathway to community empowerment and sustainable environmental management', *Journal of Environmental Management*, 78(2), pp. 114–127. doi: 10.1016/j.jenvman.2005.04.009.

de Freitas Miranda, H. and da Silva, A. N. R. (2012) 'Benchmarking sustainable urban mobility: The case of Curitiba, Brazil', *Transport Policy*, 21, pp. 141–151. doi: 10.1016/j.tranpol.2012.03.009.

Fusch, P. I. and Ness, L. R. (2015) *Are We There Yet? Data Saturation in Qualitative Research*, *The Qualitative Report*. Available at: <http://www.nova.edu/ssss/QR/QR20/9/fusch1.pdf> (Accessed: 1 April 2019).

Gallego, J., Montoya, S. and Sepulveda, C. (2016) *Effect of socio-economic stratification on house value in Bogota*. Available at: <https://pdfs.semanticscholar.org/6b1f/b30912226148335ee3c77064af81db9a3396.pdf> (Accessed: 20 June 2019).

Gilbert, A. (2006) 'Good urban governance: Evidence from a model city?', *Bulletin of Latin American Research*, 25(3), pp. 392–419. doi: 10.1111/j.0261-3050.2006.00204.x.

GIZ (2004) *Sustainable Urban Transport: Avoid-Shift-Improve (A-S-I)*. Available at: http://www.sutp.org/files/contents/documents/resources/E_Fact-Sheets-and-Policy-Briefs/SUTP_GIZ_FS_Avoid-Shift-Improve_EN.pdf (Accessed: 20 June 2019)

Gomez, M. (2019) *EUROCLIMA+ Urban Mobility Reveals 19 New Projects in Latin America - Changing Transport*. Available at: <https://www.changing-transport.org/euroclima-urban-mobility-reveals-19-new-projects-in-latin-america/> (Accessed: 29 September 2019).

Griffin, K. and Enos, J. (1970) 'Foreign Assistance: Objectives and Consequences', *Economic Development and Cultural Change*, 18(3), pp. 313–327. Available at: <http://www.jstor.org/stable/1152061> (Accessed: 13 June 2019)

Grimm, A. M., Barros, V. R. and Doyle, M. E. (2000) 'Climate Variability in Southern South America Associated with El Niño and La Niña Events', *Journal of Climate*, 13. Available at: [https://journals.ametsoc.org/doi/pdf/10.1175/1520-0442\(2000\)013%3C0035%3ACVISSA%3E2.0.CO%3B2](https://journals.ametsoc.org/doi/pdf/10.1175/1520-0442(2000)013%3C0035%3ACVISSA%3E2.0.CO%3B2) (Accessed: 6 August 2019).

Gröger, O., Gasteiger, H. A. and Suchsland, J.-P. (2015) 'Review—Electromobility: Batteries or Fuel Cells?', *Journal of The Electrochemical Society*, 162(14), pp. A2605–A2622. doi: 10.1149/2.0211514jes.

Guzman, L. A., Oviedo, D. and Cardona, R. (2018) 'Accessibility changes: Analysis of the integrated public transport system of Bogotá', *Sustainability (Switzerland)*, 10(11). doi: 10.3390/su10113958.

Haas, W. *et al.* (2015) 'How circular is the global economy?: An assessment of material flows, waste production, and recycling in the European union and the world

in 2005', *Journal of Industrial Ecology*, 19(5), pp. 765–777. doi: 10.1111/jiec.12244.

Hardoy, J. and Pandiella, G. (2009) 'Urban poverty and vulnerability to climate change in Latin America', *IIED*, 21(1), pp. 203–224. doi: 10.1177/0956247809103019.

Heinonen, J. and Junnila, S. (2011) 'A carbon consumption comparison of rural and urban lifestyles', *Sustainability. Molecular Diversity Preservation International*, 3(8), pp. 1234–1249. doi: 10.3390/su3081234.

Hewitt, K. (2013) 'Disasters in “development” contexts: Contradictions and options for a preventive approach', *Jàmbá: Journal of Disaster Risk Studies*, 5(2), pp. 1–8. doi: 10.4102/jamba.v5i2.91.

Hidalgo, D. and Huizenga, C. (2013a) 'Implementation of sustainable urban transport in Latin America'. doi: 10.1016/j.retrec.2012.06.034.

Hidalgo, D. and Huizenga, C. (2013b) 'Implementation of sustainable urban transport in Latin America', *Research in Transportation Economics*, 40, pp. 66–77. doi: 10.1016/j.retrec.2012.06.034.

Hidalgo, D. and King, R. (2014) 'Public transport integration in Bogotá and Cali, Colombia - Facing transition from semi-deregulated services to full regulation citywide', *Research in Transportation Economics*, 48, pp. 166–175. doi: 10.1016/j.retrec.2014.09.039.

Hiscock, R. *et al.* (2002) 'Means of transport and ontological security: Do cars provide psycho-social benefits to their users?', *Transportation Research Part D: Transport and Environment*, 7(2), pp. 119–135. doi: 10.1016/S1361-9209(01)00015-3.

Huang, R., Zhang, S. and Liu, C. (2018) 'Comparing urban and rural household CO2 emissions-case from China's four megacities: Beijing, Tianjin, Shanghai, and Chongqing', *Energies*, 11(5). doi: 10.3390/en11051257.

Hüging, H., Glensor, K. and Lah, O. (2014) 'Need for a Holistic Assessment of Urban Mobility Measures - Review of Existing Methods and Design of a Simplified Approach', *Transportation Research Procedia*. Elsevier B.V., 4, pp. 3–13. doi: 10.1016/j.trpro.2014.11.001.

Ibeas, A., Dell’olio, L. and Montequín, R. B. (2011) ‘Citizen involvement in promoting sustainable mobility’, *Journal of Transport Geography*, 19, pp. 475–487. doi: 10.1016/j.jtrangeo.2010.01.005.

Janoschka, M., Sequera, J. and Salinas, L. (2014) ‘Gentrification in Spain and Latin America - a Critical Dialogue’, *International Journal of Urban and Regional Research*, 38(4), pp. 1234–1265. doi: 10.1111/1468-2427.12030.

Jirón, P. (2013) ‘Sustainable Urban Mobility in Latin America and the Caribbean’, *Global Report on Human Settlements 2013*. Available at: <http://www.unhabitat.org/grhs/2013> (Accessed: 22 February 2019).

Kapoor, I. (2002) ‘Capitalism, culture, agency: dependency versus postcolonial theory’, *Third World Quarterly*, 23(4), pp. 647–664. doi: 10.1080/014365902200000531.

Lankao, P. R. (2007) ‘Are we missing the point? Particularities of urbanization, sustainability and carbon emissions in Latin American cities’, *Environment & Urbanization*, 19(1), pp. 159–175. doi: 10.1177/0956247807076915.

Litman, T. (2013) ‘Measuring Transportation: Traffic, Mobility and Accessibility’, *ITE Journal*. Available at: <https://pdfs.semanticscholar.org/a084/703ad74f513743d8be26b02b4492ea3d1c23.pdf> (Accessed: 7 October 2018).

Löhr, E. *et al.* (2017) *Transport in Nationally Determined Contributions (NDCs)*. Bonn. Available at: https://www.international-climate-initiative.com/fileadmin/Dokumente/2018/180205_GIZ-Ricardo_Transport-in-NDCs_Synthesis-Report.pdf (Accessed: 20 January 2019).

Lomasky, L. E. (1997) ‘Autonomy and automobility’, *Independent Review*, 2(1), pp. 5–28.

Mejía-Dugand, S. *et al.* (2012) ‘Lessons from the spread of Bus Rapid Transit in Latin America’, *Journal of Cleaner Production*, (50), pp. 82–90. doi: 10.1016/j.jclepro.2012.11.028.

Mettauch, M. (2013) *Bogota wins City Climate Leadership Award for urban transport (Colombia) | Eltis*. Available at: <https://www.eltis.org/discover/news/bogota-wins-city-climate-leadership-award-urban-transport-colombia-0> (Accessed: 16 July 2019).

Mignolo, W. D. (2011) 'Introduction: The Global South and World Dis/Order', *The Global South*, 5(1), p. 1. doi: 10.2979/globalsouth.5.1.1.

MobiliseYourCity (2019) *Urban Mobility Planning Methodologies*. Available at: <http://mobiliseyourcity.net/resources/urban-mobility-planning-methodologies/> (Accessed: 16 August 2019).

Montezuma, R. (2005) 'THE TRANSFORMATION OF BOGOTA, COLOMBIA, 1995-2000: INVESTING IN CITIZENSHIP AND URBAN MOBILITY', *Global Urban Development*, 1. Available at: <http://globalurban.org/Issue1PIMag05/Montezuma PDF.pdf> (Accessed: 27 January 2019).

Municipalidad de San Isidro (2015) *Plan de Movilidad Urbana Sostenible de San Isidro 2016 - 2018*. Lima. Available at: <https://es.calameo.com/read/00421043987f954ce1fc6> (Accessed: 24 July 2019).

NationMaster (2014) *Motor vehicles per 1000 people: Countries Compared*. Available at: <https://www.nationmaster.com/country-info/stats/Transport/Road/Motor-vehicles-per-1000-people> (Accessed: 14 August 2019).

Newman, P. W. G. (1999) *Sustainability and cities: Extending the metabolism model, Landscape and Urban Planning*. doi: 10.1016/S0169-2046(99)00009-2.

Nygren, A. (1998) 'Environment as Discourse: Searching for Sustainable Development in Costa Rica', *Environmental Values*, 7(2), pp. 201–223. Available at: http://www.environmentandsociety.org/sites/default/files/key_docs/ev_7no.2_nygren_anja_0.pdf (Accessed: 22 August 2019).

Obeng-Odoom, F. (2015) 'Sustainable Urban Development in Africa? The Case of Urban Transport in Sekondi-Takoradi, Ghana', *American Behavioral Scientist*, 59(3), pp. 424–437. doi: 10.1177/0002764214550305.

Observatory of Economic Complexity (2017) *What does Germany export to Peru?* Available at: https://oec.world/en/visualize/tree_map/hs92/export/deu/per/show/2017/ (Accessed: 9 August 2019).

Pieterse, J. N. (2001) 'Trends in Development Theory', in *Development Theory: Deconstructions/Reconstructions*, pp. 1–17. Available at: [https://moodle.helsinki.fi/pluginfile.php/2317428/mod_resource/content/1/Trends in Development Theory.pdf](https://moodle.helsinki.fi/pluginfile.php/2317428/mod_resource/content/1/Trends_in_Development_Theory.pdf) (Accessed: 15 March 2019).

Pope, C., Ziebland, S. and Mays, N. (2000) 'Analysing qualitative data', *Education and debate*, 320. Available at: www.bmj.com (Accessed: 4 May 2019).

Poveda, A. C. (2011) 'Economic Development, Inequality and Poverty: An Analysis of Urban Violence in Colombia', *Oxford Development Studies*, 39(4), pp. 453–468. doi: 10.1080/13600818.2011.620085.

Robinson, J. (2006) *Ordinary Cities: Between Modernity and Development*. Edited by G. Bridge and S. Watson. London; New York: Routledge.

Rodriguez-acosta, C. a and Rosenbaum, A. (2005) 'Local Government and the Governance of Metropolitan', *Public administration and development*, 306, pp. 295-306. doi: 10.1002/pad.387.

Rodríguez Hernández, C. and Quiros, T. P. (2016) 'BALANCING FINANCIAL SUSTAINABILITY AND AFFORDABILITY IN PUBLIC TRANSPORT THE CASE OF BOGOTA, COLOMBIA', in. Available at: <https://www.itf-oecd.org/sites/default/files/docs/colombia-financial-sustainability-affordability-public-transport-peralta.pdf> (Accessed: 5 August 2019).

Roque, D. and Masoumi, H. E. (2016) 'An Analysis of Car Ownership in Latin American Cities: a Perspective for Future Research', *Periodica Polytechnica Transportation Engineering*, 44(1), pp. 5–12. doi: 10.3311/pptr.8307.

Sarmiento, O. L. *et al.* (2010) 'Quality of life, physical activity, and built environment characteristics among colombian adults', *Journal of Physical Activity and Health*, 7(SUPPL.2), pp. 181–195. Available at: https://cicloviarecreativa.uniandes.edu.co/english/advocacy/anexos/08_sarmiento

_jpah_2009_0228.pdf (Accessed: 21 June 2019).

Satterthwaite, D. (2003) 'The Links between Poverty and the Environment in Urban Areas of Africa, Asia, and Latin America', *The Annals of the American Academy of Political and Social Science*, 590(1), pp. 73–92. doi: 10.1177/0002716203257095.

Scholl, L. and Gray, C. (2016) *Mobility and Accessibility effects of IDB-supported BRT systems in Cali and Lima*. Available at: <https://publications.iadb.org/.../Urban-Transport-and-Poverty-Mobility-and-Accessibility-Effects-of-IDB-supported-BRT-Systems-in-Cali-and-Lima.pdf> (Accessed: 4 June 2019).

Scott, A. J. (2011) 'Emerging cities of the third wave', *City*, 15(3–4), pp. 289–321. doi: 10.1080/13604813.2011.595569.

Shergold, I. and Bartle, C. (2016) *The Economic Benefits of Sustainable Urban Mobility Measures Independent Review of Evidence: Summaries*. Available at: www.eltis.org/mobility-plans (Accessed: 4 June 2019).

Stilwell, F. (1998) *Towards sustainable cities; A Submission to the House of Representatives Standing Committee on Environment Inquiry into Sustainable Cities*. Australia.

Stone, B., Hess, J. J. and Frumkin, H. (2010) 'Urban form and extreme heat events: Are sprawling cities more vulnerable to climate change than compact cities?', *Environmental Health Perspectives*, 118(10), pp. 1425–1428. doi: 10.1289/ehp.0901879.

The Climate Policy Info Hub (2019) *The Global Rise of Emissions Trading | Climate Policy Info Hub*. Available at: <https://climatepolicyinfohub.eu/global-rise-emissions-trading> (Accessed: 13 August 2019).

The Population Reference Bureau (2018) *Degree of urbanization (percentage of urban population in total population) by continent in 2018*. Available at: <https://www.statista.com/statistics/270860/urbanization-by-continent/> (Accessed: 5 January 2019).

The World Bank (2010) *Cities' Contribution to Climate Change*. doi:

10.1109/CIC.2015.7408676.

The World Bank (2014) *CO2 emissions (metric tons per capita) GDP per capita (current US\$) for Australia, Brazil, Colombia, Germany, Peru, United States*. Available at: <https://data.worldbank.org/indicator/EN.ATM.CO2E.PC?locations=BR-DE-CO-PE-US-AU> (Accessed: 22 September 2019).

The World Bank (2017) *GDP per capita (current US\$) for Australia, Brazil, Colombia, Germany, Peru, United States*. Available at: <https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=BR-DE-CO-PE-US-AU> (Accessed: 22 September 2019).

The World Bank (2018a) *CO2 emissions (metric tons per capita) Brazil, Colombia, Peru*. Available at: <https://data.worldbank.org/indicator/EN.ATM.CO2E.PC?locations=CO-BR-PE> (Accessed: 15 August 2019).

The World Bank (2018b) *GDP per capita (current US\$) Brazil, Colombia, Peru*. Available at: <https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=BR-PE-CO> (Accessed: 15 August 2019).

The World Bank (2018c) *Urban population (% of total population)*. Available at: <https://data.worldbank.org/indicator/sp.urb.totl.in.zs> (Accessed: 15 August 2019).

The World Bank (2018d) *Urban population (% of total population) Brazil, Colombia, Peru*. Available at: <https://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS?locations=BR-PE-CO> (Accessed: 15 August 2019).

Tjallingii, S. (1995) *Ecopolis: Strategies for Ecologically Sound Urban Development COST C11 View project*. Available at: <https://www.researchgate.net/publication/281207281> (Accessed: 14 August 2019).

Wefering, F. et al. (2013) *Guidelines - Developing and implementing a sustainable urban mobility plan, ELTISPlus*. Available at: http://www.eltis.org/sites/eltis/files/sump_guidelines_en.pdf (Accessed: 29 August 2019).

2018).

World Population Review (2019a) *Bogota Population 2019*. Available at: <http://worldpopulationreview.com/world-cities/bogota-population/> (Accessed: 9 February 2019).

World Population Review (2019b) *Lima Population 2019*. Available at: <http://worldpopulationreview.com/world-cities/lima-population/> (Accessed: 23 June 2019).

Yi, Z. *et al.* (2017) 'Strategic Approaches to Sustainable Urban Renewal in Developing Countries: A Case Study of Shenzhen, China', *Sustainability*, 9(8), p. 1460. doi: 10.3390/su9081460.

Annex

Interview questions (Bogotá, activists & civil society)

MAIN DISCUSSION POINTS

1. How would you describe the situation of Sustainable Urban Mobility in Bogotá at the moment?
2. How would you describe the citizen mobility culture in Bogotá?
3. What are the greatest differences in mobility culture and accessibility when it comes to social classes or urban areas?
4. What are the biggest challenges and possibilities for Sustainable Urban Mobility in Bogotá in a future perspective?

OTHER POSSIBLE DISCUSSION POINTS AND FOLLOW-UP QUESTIONS

1. Can you see any changes in mobility culture in the last 20 years? How has recent mobility and transport improvement affected this?
2. Which citizens are the ones that suffer the most from limited access to mobility in Bogotá and why?
3. Who are the ones using public transport the most? Who is biking or walking and who is using transportation modes?
4. What are the main aspects of mobility development you would improve? Which aspects do you think average citizens would like to improve?
5. With a fast overlook of the *SUMP guidelines*, is there something you would find inapplicable in the case of Bogotá?
6. Can citizens be heard when it comes to urban mobility policymaking and planning in Bogotá?
7. Colombia and Bogotá can in many ways be considered a forerunner when it comes to Sustainable Urban Mobility planning and policymaking in Latin America. Why do you think that Colombia is so advanced, compared to countries like Peru, that has experienced similar levels of economic growth?

Interview questions (Bogotá, NGO's)

MAIN DISCUSSION POINTS

1. How would you describe the situation of Sustainable Urban Mobility in Bogotá at the moment?
2. How would you describe the citizen mobility culture in Bogotá?
3. What are the greatest differences in mobility culture and accessibility when it comes to social classes or urban areas?
4. What are the biggest challenges and possibilities for Sustainable Urban Mobility in Bogotá in a future perspective?

OTHER POSSIBLE DISCUSSION POINTS AND FOLLOW-UP QUESTIONS

1. Can you see any changes in mobility culture in the last 20 years? How has recent mobility and transport improvement affected this?
2. Which citizens are the ones that suffer the most from limited access to mobility in Bogotá and why?
3. What are the main aspects of mobility development you would improve? Which aspects do you think average citizens would like to improve?
4. What are the differences between municipalities in Colombia when it comes to Urban Mobility?
5. How has urban mobility culture been taken into account for urban planning in Bogotá?
6. With a fast overlook of the *SUMP guidelines*, is there something you would find inapplicable in the case of Bogotá or to other cities in Colombia?
7. Colombia and Bogotá can in many ways be considered a forerunner when it comes to Sustainable Urban Mobility planning and policymaking in Latin America. Why do you think that Colombia has focused so much on urban mobility, compared to countries like Peru, that has experienced similar levels of economic growth?
8. What differences can you see between municipalities in Colombia when it comes to urban mobility development?

Interview questions (Bogotá, municipal union)

MAIN DISCUSSION POINTS

1. How would you describe the situation of Sustainable Urban Mobility in Bogotá at the moment?
2. How would you describe the citizen mobility culture in Bogotá?
3. What are the greatest differences in mobility culture and accessibility when it comes to social classes or urban areas?
4. What are the biggest challenges and possibilities for Sustainable Urban Mobility in Bogotá in a future perspective?

OTHER POSSIBLE DISCUSSION POINTS AND FOLLOW-UP QUESTIONS

1. Can you see any changes in mobility culture in the last 20 years? How has recent mobility and transport improvement affected this?
2. Which citizens are the ones that suffer the most from limited access to mobility in Bogotá and why?
3. What are the main aspects of mobility development you would improve? What aspects do you think average citizens would like to improve?
4. What are the differences between municipalities in Colombia when it comes to Urban Mobility?
5. How urban mobility culture been taken into account for urban planning in Bogotá?
6. With a fast overlook of the *SUMP guidelines*, is there something you would find inapplicable in the case of Bogotá or to other cities in Colombia?

7. Colombia and Bogotá can in many ways be considered a forerunner when it comes to Sustainable Urban Mobility planning and policymaking in Latin America. Why do you think that Colombia is so advanced, compared to countries like Peru, that has experienced similar levels of economic growth?

8. What differences can you see between municipalities in Colombia when it comes to urban mobility development?

Interview questions (Lima, activists & civil society)

MAIN DISCUSSION POINTS

1. How would you describe the situation of Sustainable Urban Mobility in Lima at the moment?
2. How would you describe the citizen mobility culture in Lima?
3. What are the greatest differences in mobility culture and accessibility when it comes to social classes or urban areas?
4. What are the biggest challenges and possibilities for Sustainable Urban Mobility in Lima in a future perspective?

OTHER POSSIBLE DISCUSSION POINTS AND FOLLOW-UP QUESTIONS

1. Can you see any changes in mobility culture in the last 20 years? How has recent mobility and transport improvement affected this?
2. Which citizens are the ones that suffer the most from limited access to mobility in Lima and why?
3. Who are the ones using public transport the most? Who is biking, walking or using alternative transportation modes?
4. What are the main aspects of mobility development you would improve?
5. Which aspects do you think average citizens would like to improve? Are there any distinctions between social classes or urban areas?
6. With a fast overlook of the *SUMP guidelines*, is there something you would find inapplicable in the case of Lima?
7. Can citizens be heard when it comes to urban mobility policymaking and planning in Lima?
8. There are clear differences between urban mobility development and policymaking in Peru and Colombia, despite both countries experiencing similar amounts of economic growth. What do you think is the reason for Colombia to invest more in mobility?

Interview questions (Lima, NGO's)

MAIN DISCUSSION POINTS

1. How would you describe the situation of Sustainable Urban Mobility in Lima at the moment?
2. How would you describe the citizen mobility culture in Lima?

3. What are the greatest differences in mobility culture and accessibility when it comes to social classes or urban areas?
4. What are the biggest challenges and possibilities for Sustainable Urban Mobility in Lima in a future perspective?

OTHER POSSIBLE DISCUSSION POINTS AND FOLLOW-UP QUESTIONS

1. Can you see any changes in mobility culture in the last 20 years? How has recent mobility and transport improvement affected this?
2. Which citizens are the ones that suffer the most from limited access to mobility in Lima and why?
3. Who are the ones using public transport the most? Who is biking, walking or using alternative transportation modes?
4. What are the main aspects of mobility development you would improve?
5. Which aspects do you think average citizens would like to improve? Are there any distinctions between social classes or urban areas?
6. With a fast overlook of the *SUMP guidelines*, is there something you would find inapplicable in the case of Lima?
7. Can citizens be heard when it comes to urban mobility policymaking and planning in Lima?
8. There are clear differences between urban mobility development and policymaking in Peru and Colombia, despite both countries experiencing similar amounts of economic growth. What do you think is the reason for Colombia to invest more in mobility?

Interview questions (Lima, municipal union)

MAIN DISCUSSION POINTS

1. How would you describe the situation of Sustainable Urban Mobility in Lima and other municipalities in Peru at the moment?
2. How would you describe the citizen mobility culture in Lima and other municipalities in Peru?
3. What are the greatest differences in mobility culture and accessibility when it comes to social classes or urban areas?
4. What are the biggest challenges and possibilities for Sustainable Urban Mobility in Peruvian municipalities in a future perspective?

OTHER POSSIBLE DISCUSSION POINTS AND FOLLOW-UP QUESTIONS

1. How has recent mobility and transport improvement (last 20 years) affected the mobility culture?
2. Which citizens are the ones that suffer the most from limited access to mobility in Lima and why?
3. What are the main aspects of mobility development you would improve?
4. Which aspects do you think average citizens would like to improve? Are there any differences between social classes or urban areas?

5. What are the main differences between municipalities in Peru when it comes to Urban Mobility?
6. How urban mobility culture been taken into account for urban planning in Lima?
7. With a fast overlook of the *SUMP guidelines*, is there something you would find inapplicable in the case of Lima or in other municipalities in Peru?
8. What are the main differences you can identify between urban mobility development in Peru compared to other Latin American countries?

SWOT analysis of responses from Bogotá including frequency

| | Positive impact | Negative impact |
|-----------------|---|--|
| Internal | <p style="text-align: center;"><u>Strengths</u></p> <p>Local government pushing for electrification of vehicles</p> <p>Good length of infrastructure for bicycling I</p> <p>High modal share of bicycling (9%), walking (20%) and public transport (70%)</p> <p>Governmental (local) approaches to improve mobility culture (e.g. Al colegio en bici, ciclovía) I</p> <p>Mobility (sharing) culture changing rapidly</p> <p>Constantly improving density of buildings</p> <p>Community participation & activism in mobility & infrastructure improvement I I</p> <p>Masterplan for urban development (including mobility) existing since 2004</p> <p>Bicycling increasing, good attitude towards cycling & public transport I I</p> | <p style="text-align: center;"><u>Weaknesses</u></p> <p>Lack of infrastructure; not enough roads, not enough space I I</p> <p>Unorganised population growth</p> <p>Overregulation (e.g. Pico y placa does not work, people buying two vehicles</p> <p>Accessibility in poor areas, outskirts of the city I</p> <p>Electric grid not yet sufficient for electrification of vehicles</p> <p>High velocity, accidentability rate I I I</p> <p>Collaboration</p> <p>Transmilenio system old, ran by diesel leading to air pollution I I</p> <p>Lack of political continuity I I</p> <p>Corruption I I</p> <p>No constant mobility culture</p> <p>Public transport hardly accessible for people with disabilities</p> <p>Need for a car to be successful, reaching outskirts</p> <p>Insecurity</p> <p>Increasing levels of motorbikes I</p> <p>Low levels of overall PT accessibility (particularly in the South, outskirts)</p> <p>High levels of pollution from freight</p> <p>Chaotic PT system</p> <p>Low levels of citizen education</p> <p>More than 30 000 taxis contributing to chaos</p> |

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| | | <p>Third city in the world, where most time is lost in a traffic jam</p> <p>Transmilenio system overloaded, overcrowded, does not meet demand</p> <p>Housing prices too high</p> <p>Low levels of comfortability (in transmilenio)</p> <p>Violence in the public transport system</p> |
| External | <p style="text-align: center;"><u>Opportunities</u></p> <p>Obligatory mix of diesel and biodiesel</p> <p>Good climate for bicycling, walking etc.</p> <p>Geographic opportunities (Bogota is flat)</p> <p>National policies and regulations for sustainable transport in process</p> <p>Legal basis for participation of citizens</p> | <p style="text-align: center;"><u>Threats</u></p> <p>Urbanisation; uncontrolled I I I</p> <p>High costs of security</p> <p>Lack of technology for producing sustainable fuel (biodiesel)</p> <p>Depending on road transport (no trains)</p> <p>Air pollution I I</p> <p>Public thought: need of streets</p> <p>High levels of immigration (Venezuela)</p> <p>National dependence of roads (no trains)</p> <p>Challenging geography for long-distance transport</p> <p>National government can only finance between 40-70% of infrastructure development</p> <p>Lack of future perspective (whole Latin America)</p> <p>Disrespect for rules, signs and signals and law enforcement I I I</p> <p>Problems with punctuality I</p> |

SWOT analysis of responses in Lima including frequency

| | Positive impact | Negative impact |
|-----------------|--|--|
| | <u>Strengths</u> | <u>Weaknesses</u> |
| Internal | <p>Low levels of crime; fear mostly for traffic</p> <p>Ciclovía - Initiative for improving mobility culture</p> <p>Increasing interest for biking I</p> <p>Well-established and increasing interest for activism and grassroots level activities I I</p> <p>People respect bikers</p> <p>Recent approaches for citizen and civil society participation in planning and decision making</p> <p>Modal split; car usage increasing but not high</p> <p>Possibility and willingness to extend metropolitan and the train</p> <p>Sustainable thinking increasing I</p> <p>Initiatives to increase biking by local government (e.g. Bike to work)</p> <p>Current city administration & mayor interested in mobility improvement</p> <p>Possibilities for electromobility</p> | <p>Corruption I I I</p> <p>Infrastructure I I</p> <p>Slow completion of infrastructure, roads</p> <p>No infrastructure for electric cars</p> <p>Inexistence of good political decisions and rules for using the streets</p> <p>Parking</p> <p>Poor education</p> <p>Poor infrastructure, bike lanes I</p> <p>Biking seen as an initiative for the elite</p> <p>Low accessibility for people in the outskirts</p> <p>Fragmented governance, city segregation (many cities within Lima) I I I</p> <p>A bike lane in one district does not continue in the next district I</p> <p>Financial issues; not all districts can meet the same budget,</p> <p>Political continuity, short term vision I</p> <p>Fear of traffic, velocity for bikers I I</p> <p>Chaos; traffic not organised at all</p> <p>Chaos; lack of planning and purpose I</p> <p>Culture of entrepreneurship, free market; many different actors in transport profiting from the chaos</p> <p>Unsustainable modes of transport; moto taxis, motorised bikes</p> <p>Air pollution I I I</p> <p>Avoiding regulation, low law enforcement I I</p> <p>Metropolitano; overused I I</p> <p>City are huge, challenge for accessibility in the outskirts</p> <p>Local government prioritises automobility</p> <p>Lima built as a city for cars</p> <p>Violent environment</p> <p>Drivers lack respect for other actors in traffic (e.g. Pedestrians, bikers)</p> |

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|------------------------|---|---|
| | | <p>Informality in the transport sector</p> <p>Capitalist culture; owning a car equals status, power</p> <p>Lack of intermodality, connectivity</p> <p>Unorganised city expansion, informal settlements have been transformed to city districts I I (connected to urbanisation)</p> <p>Mostly small overloaded vehicles in use for transportation (taxis, mini vans)</p> |
| <p>External</p> | <p><u>Opportunities</u></p> <p>Geographical opportunities for non-motorized transport: flat surface, good weather</p> <p>Different districts in Lima not responsible for transport – possibility to unite</p> <p>Potential for renewable energy (sun, wind)</p> | <p><u>Threats</u></p> <p>Undeveloped mobility culture in Peru</p> <p>Aggressive driving, confrontations between the people</p> <p>Construction slow because of required studies prior to implementation (archaeological, environmental) that take 3-10 years</p> <p>No participation - General idea that there is no expertise in the grassroots</p> <p>Urbanisation, overpopulation, huge increase in population I I</p> <p>Immigration</p> <p>Financial; Lack of funding, people accept money for whatever without having the capacities to implement it</p> <p>Bad leadership in Peru compared to other countries in Latin America, lack of political will</p> |