

Guidelines for the Development of Sustainable Urban Mobility Plans (SUMP) in ASEAN Metropolitan Regions



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Guidelines for the Development of Sustainable Urban Mobility Plans in ASEAN Metropolitan Regions

The ASEAN Secretariat
Jakarta

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For inquiries, contact:

The ASEAN Secretariat

Community Relations Division (CRD)

70A Jalan Sisingamangaraja

Jakarta 12110, Indonesia

Phone : (62 21) 724-3372, 726-2991

Fax : (62 21) 739-8234, 724-3504

E-mail : public@asean.org

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Table of Contents

Preface.....	9
Executive Summary.....	11
1) Objective.....	15
2) Sustainable Urban Mobility Planning in ASEAN.....	16
2.1. An Overview of Urban Mobility Challenges in ASEAN.....	16
Challenges for urban development and the mobility system.....	16
Challenges in the urban transport planning process.....	17
2.2. An Overview of ASEAN Policies Related to Urban Mobility.....	17
3) What is a Sustainable Urban Mobility Plan (SUMP)?.....	20
3.1. Creating A Sustainable City.....	20
Increasing the quality of life.....	20
Improving the accessibility of transport.....	21
Creating economic benefits.....	22
Contributing to climate and environmental goals.....	23
3.2. Implementing Change.....	24
Creating synergies across sectors and boundaries.....	24
Making more effective use of limited resources.....	25
Gaining better access to financing and funding.....	26
Better data management and monitoring system to ensure the quality.....	28
4) SUMP Steps for ASEAN Cities and Regions.....	32
4.1. Phase 1: Preparation and Analysis.....	34
Objectives.....	34
Activities.....	34
List of main outputs of the preparation and analysis phase.....	44
4.2. Phase 2: Strategy Development.....	45
Objectives.....	45
Activities.....	45
List of main outputs of the strategy development phase.....	51

4.3. Phase 3: Measure Planning.....	52
Objectives.....	52
Activities.....	52
List of main outputs of the measure planning phase.....	61
4.4. Phase 4: Implementation and Monitoring	62
Objectives.....	62
Activities.....	62
5) Summary and Recommendations to Implement SUMP in ASEAN Cities.....	67
Planning strategically through collaboration	67
Leveraging finance for SUMP.....	69
Using digital tools to support the SUMP	71
References.....	72

List of Good Practice Examples

Box 1: Cooperation in a SUMP.....	25
Box 2: Participation in a SUMP.....	28
Box 3: MobiliseYourCity SUMP Model Terms of Reference.....	29
Box 4: Assessment of the impact of SUMP.....	30
Box 5: Resilience management in SUMP.....	31
Box 6: Strong political leadership for sustainable urban development.....	35
Box 7: Taipei: Cross-departmental cooperation for a green mobility policy.....	37
Box 8: The City Resilience Action Planning Tool (CityRAP Tool).....	38
Box 9: Lille, France: Political committee to steer metropolitan parking policies.....	39
Box 10: General Santos City, Philippines: Walkable public spaces development through public-private stakeholder partnerships.....	41
Box 11: Developing SUMP in Latin America.....	42
Box 12: MobiliseYourCity Emissions Calculator.....	46
Box 13: Singapore: Clear long-term strategy for mobility.....	48
Box 14: Vitoria-Gasteiz, Spain, Bologna, Italy and Thessaloniki, Greece: Forum for stakeholder participation.....	50
Box 15: Common vision on sustainable mobility in Guadalajara, Mexico.....	51
Box 16: Guangzhou, China: Holistic planning of a Bus Rapid Transit (BRT) system.....	53
Box 17: Guangzhou, China: Holistic planning of a Bus Rapid Transit (BRT) system.....	54
Box 18: MobiliseYourCity SUMP core impact indicators.....	55
Box 19: MobiliseYourCity a global partnership to promote local SUMP implementation.....	57
Box 20: Ha Noi & Ho Chi Minh City, Viet Nam: Funding for sustainable transport development.....	59
Box 21: MobiliseYourCity SUMP annotated table of contents.....	61
Box 22: Mandalay (Myanmar) and Medan (Indonesia) involved in a SUMP process.....	64
Box 23: Community of Practice online platform “Plataforma de Movilidad Urbana Sostenible en Latino América”.....	66

List of Abbreviations

ADB	Asian Development Bank
ARSSLT	ASEAN Regional Strategy on Sustainable Land Transport
ASEAN	Association of Southeast Asian Nations
ASI	Avoid-Shift-Improve
ASUS	ASEAN Sustainable Urbanisation Strategies
BAU	Business as Usual
FUA	Functional Urban Area
GHG	Greenhouse Gasses
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
IDB	Inter-American Development Bank
ITS	Intelligent Transport System
KLTP	Kuala Lumpur Transport Strategic Plan
MER	Monitoring-Evaluation-Reporting
MRV	Monitoring-Reporting-Verification
MYC	MobiliseYourCity
MPAC	Masterplan on ASEAN Connectivity
OECD	Organisation for Economic Co-operation and Development
SDG	Sustainable Development Goals
SUMP	Sustainable Urban Mobility Plan
TOD	Transit Oriented Development

Preface

The Twenty-Seventh ASEAN Transport Ministers (27th ATM) Meeting held on 11 November 2021 has adopted the Phnom Penh Declaration on Sustainable Urban Mobility¹. This Declaration recalls the regional and international commitments for sustainable urbanisation and mobility, including those under the ASEAN Sustainable Urbanisation Strategy launched in 2018 under initiative of Master Plan on ASEAN Connectivity 2025 as well as the ASEAN Regional Strategy on Sustainable Land Transport, adopted at the 24th ATM on 8th November 2018.

The Phnom Penh Declaration highlights the importance of applying the AVOID–SHIFT–IMPROVE approach to practicable and sustainable urban transport system planning, governance, and management, and in particular the transition to cleaner energy (Cf. Kuala Lumpur Transport Strategic Plan of 2015), and, in view of the implementation of this approach, encourages the promotion, development and operationalisation of Sustainable Urban Mobility Plans (SUMP) at national, metropolitan and city levels. This present Guidelines on SUMP provides guidance on the use of collaborative planning tools to deal with design, implementation, financing, and monitoring of complex mobility-related measures and projects in the metropolitan regions in ASEAN.

SUMP will also make an important contribution to the ASEAN Comprehensive Recovery Framework (ACRF), particularly on Broad Strategy 5: Advancing Towards a More Sustainable and Resilient Future, emphasising the importance of further actions towards active mobility and support to build green infrastructure, as well as the improvement of infrastructure and connectivity as one of the priority areas of the ASEAN Economic Community Blueprint 2025.

Integrated and participatory planning processes are an investment of mainly time and goodwill on behalf of decision makers and experts with the aim to achieve more multi-function and higher quality plans, designs and investment projects. This investment in thorough preparation will pay back manifold through investment projects that are fitter for purpose, better accepted, supported and adopted by all stakeholders and, therefore, quicker and more efficient in implementation and throughout their lifetime.

The elaboration of large SUMP also requires effective governance structures that incorporate all substantive and geographical dimensions of mobility in modern urban systems. In this regard, this present Guidelines on SUMP is accompanied by a “Toolbox for the Establishment of Metropolitan Transport Executives (MTE) in ASEAN Metropolitan Regions”, which supports the management of complex and multi-disciplinary issues relating to metropolitan transport systems. These documents aim to improve integration of transport and land use planning in ASEAN.

1 <https://asean.org/wp-content/uploads/2021/11/phnom-penh-declaration-on-sustainable-urban-mobility.pdf>

Executive Summary

In the ASEAN Region, growing urbanisation has led to the physical expansion of cities and infrastructure systems. Through the concentration of shared workplaces and the expansion of housing, rail and roads, new functional urban areas have emerged. These metropolitan areas/regions, which reach far beyond administrative boundaries, are important for their economic power but massive commuter flows, the complex and multi-layered urban transport systems and key transport nodes create huge challenges for the planning of a smooth and sustainable regional transport system.

There are a number of barriers to address these challenges. Sound and effective decision-making in the complex regional governance structure, financing of further integrated and comprehensive planning processes and new additional infrastructures and services, and stringent implementation. There are few integrated planning processes for land use and transport planning in ASEAN. The observation is that these are not following quality criteria and standardised procedures. Instead, sector planning is well established. Therefore, many individual plans exist but are not fully implemented. In addition, plans tend to be redundant, outdated, or overcome by the rapidly changing reality of urban development.

ASEAN has set-out goals to establish “sustainable infrastructure” as most relevant for urban mobility in the region. As such, there is a need to coordinate existing resources to deliver support across the full life cycle of infrastructure projects, including lessons-learnt exchange among the ASEAN Member States, while simultaneously pursuing economic growth improvement and better quality of life. To follow the proven concept of Sustainable Urban Mobility Planning could be a solution for the variety of governance structures and planning processes at the metropolitan scale in the ASEAN metropolitan region and could support to achieving ASEAN objectives.

These Guidelines present Sustainable Urban Mobility Planning as a strategic and integrated methodology which aims at improving accessibility and quality of life through a shift towards sustainable mobility. Sustainable Urban Mobility Planning can help ASEAN metropolitan regions create sustainable cities and regions and implement change by:

- Fostering the integrated development of all relevant transport modes from a holistic perspective, which includes collective mobility, active mobility, multimodality, road traffic and parking, and urban logistics
- Promoting sustainable transport systems that are economically successful by better coordinating transport and land use planning.
- Addressing accessibility for the entire functional area rather than a municipality in its administrative boundaries. However, expanding the scope of a SUMP to a metropolitan area requires coordinated metropolitan planning to help identify common problems.
- Helping governments address the climate crisis by strongly advocating fact-based analyses and thereby creating a strong basis for meeting climate targets.
- Aiming at establishing cooperation of a wide range of departments relevant to mobility within the planning area and promoting active exchange with high levels of government, as well as building cooperation with the private sector.

- Improving the bankability of projects in action plans through a systematic and strategic planning process that creates transparency and accountability.
- Using participatory planning with a clear communication and engagement strategy for people to take ownership of Sustainable Urban Mobility Planning and the policies it promotes.
- Providing a systematic approach to data management as a tool for analysis, monitoring, and information for decision-makers and the public.
- Taking the challenge of planning in times of uncertainty by emphasising the establishment of effective governance and communication structures as well as creating a fact-based process of goal development and monitoring.
- Promoting multi-level governance and the elaboration of National Urban Mobility Policies for national governments to effectively enable cities to deal with sustainable urban mobility challenges while achieving national economic, environmental, and social objectives.

These Guidelines intend (i) to identify the challenges in urban transport planning and ASEAN policies related to urban mobility and (ii) to create awareness among the actors for further discussions on the required preconditions, competencies, and capacities to conduct a Sustainable Urban Mobility Planning process. A step-by-step orientation, which is divided into four (4) phases of the planning process, tailored to current planning practices and resources in the region, is introduced as well as the main products within the different steps of the planning process. For each phase, the Guidelines provide common definitions, examples, lessons learnt, best practices and recommendations on different aspects of the planning process while considering different institutional, environmental, and social contexts and conditions.

Sustainable Urban Mobility Planning is always based on existing planning practices to initiate integrated planning processes on the local or regional level. Established dialogues among stakeholders or temporary working structures could be used, further developed, and gradually expanded. Depending on the local or regional planning status and existing planning documents and sector plans, new or updated planning products are developed collaboratively. The result could be a new comprehensive planning document, i.e. Sustainable Urban Mobility Plan (SUMP) or complementary products to already existing plans (e.g., masterplans).

The objectives throughout the process to develop a SUMP are as following:

1. In the inception phase, policymakers should take an explicit decision to prepare a SUMP or to carry out Sustainable Urban Mobility Planning for a defined geographical scope. Following this, the management and working structure need to be set up, and a capacity-building programme should be approved. Once working structures are in place, an analysis of the mobility situation is conducted. The first phase is concluded with a completed review of the financial and institutional capacities and the planning situation and a summary of the mobility problems and opportunities in the defined SUMP planning area.
2. In the second phase, a future urban mobility vision is determined, based on the previous diagnosis. The primary outcomes are a clear vision and strategy for urban mobility, which needs to be elaborated with key stakeholders and users. A business-

as-usual (BAU) scenario and alternatives with short and long-term actions can be used for weighing the options. The alternative scenarios are assessed against an optimal scenario for meeting the SUMP vision and objectives.

3. In the third phase, the planning process shifts from the strategic to the operational level. The focus is on the selected scenario and prioritised measures, as well as the description of monitoring arrangements. Measures will be described with as much specificity as possible to ensure that they are clearly defined, comprehensive, and well-coordinated. Important tasks in this phase are the definition of financial mechanism with identified funding sources, financial flows and OPEX and CAPEX estimates at the minimum for the entire SUMP and better for each of the prioritized measures. The measure-planning phase is concluded with the preparation of the implementation phase and submission of the SUMP to the decision-makers of the competent political body, which must then adopt the plan.
4. The final phase focuses on implementing the measures and related actions defined in the SUMP, accompanied by systematic monitoring, evaluation, and communication. In this sense, it is a handover of the SUMP to the sectoral planning departments which prepare the implementation of the projects following local and national requirements. Further in-depth analyses such as feasibility studies are commissioned, and tenders for planning and construction measures are prepared. The development of a monitoring system and its implementation are crucial elements of implementation planning and management.

The transfer of the Sustainable Urban Mobility Planning methodology needs to consider the specific planning context. This means that some phases appear more relevant and might be more time and resource-intensive than others. The process results in an adapted, contextual, and region-specific process that prioritises measures according to its concrete planning, policy, and transport reality. These Guidelines provide a summary of barriers that ASEAN metropolitan areas are facing to develop and implement Sustainable Urban Mobility Planning along with a set of recommendations, as follows:

1. Raise awareness on the concept of SUMP at the ASEAN city-level and national-level, supported through National Urban Mobility Policies (NUMP).
2. Coordinate multilevel governance of SUMP.
3. Promote cooperation between institutions and stakeholders.
4. Cooperate and incorporate the informal transport sector in the SUMP creation process.
5. Be more considerate of the climate change implication on the transport sector.
6. Implement SUMP pilot and demonstration projects.
7. Account for informal transport offer when planning a SUMP.
8. Conduct a cost-benefit analysis prior to SUMP implementation.
9. In case of inconsistent databases, prioritize quality and regularity over quantity in the collection process.
10. Develop the community of practice to exchange experience and know-how among ASEAN local and national administrations.

1) Objective

ASEAN Member States and local governments recognise the urgency to make urban and regional transport more sustainable, for the sake of continued economic growth, equity, safety, health, and the environment. These guidelines aim to raise awareness for Sustainable Urban Mobility Planning and to provide practical information how the concept can be adapted to metropolitan regions in ASEAN for common urban mobility challenges shared by many medium-sized metropolitan regions in the ASEAN region².

Sustainable Urban Mobility Planning is a process based on the definition of common objectives and the use of collaborative planning tools to deal with design, implementation, financing, and monitoring of mobility-related measures and projects. This mobility planning approach is being successfully implemented in a variety of contexts, at diverse scales, in a wide range of cities and regions in Europe and around the world. The variety of successful application of the SUMP approach suggests that it can also be applied in ASEAN. The strengths of Sustainable Urban Mobility Planning are its goal-oriented and effective planning and its flexibility, which allows adapting to different contexts and levels of planning. Sustainable Urban Mobility Planning requires resources and capacities, but it pays off, as it creates numerous benefits for all stakeholders in the metropolitan region.

The Guidelines start with an analysis of sustainable urban mobility challenges in ASEAN and ASEAN's policy background related to urban mobility planning (chapter 2). This is followed by a summary of Sustainable Urban Mobility Planning, focussing primarily on the opportunities to overcome common planning challenges in ASEAN's metropolitan regions (chapter 3). In the last chapter, the paper outlines an adjusted SUMP approach for ASEAN, tailored to current planning practices and resources in the region (chapter 4). Throughout these Guidelines, international good planning practices (see boxes) are presented, which showcase how other cities and regions have managed the challenges of SUMP and serve as input and inspiration for ASEAN cities and governments.

² These Guidelines are developed by ASEAN Land Transport Working Group (LTWG), with the assistance from GIZ under ASEAN-German Cooperation on Sustainable Design of Urban Mobility in Middle-sized Metropolitan Regions in ASEAN ("SMMR"). The Guidelines are a non-legally binding document and can be updated by ASEAN Member States for LTWG's consideration, as and when necessary.

2) Sustainable Urban Mobility Planning in ASEAN

2.1. An Overview of Urban Mobility Challenges in ASEAN

Challenges for urban development and the mobility system

Many ASEAN cities face urban sprawl caused by urbanisation due to an increase in urban population. Population growth in ASEAN Member States has almost doubled from 355.1 million to 649.1 million between 1980 and 2018 (ASEAN Secretariat, 2019), and is predicted to reach 741 million by 2035 (ASEAN Secretariat, 2013). More than a third of the population already lives in cities, while over 90 million additional people are expected to move there by 2030 in search of better employment opportunities (Woetzel et al., 2014). Given the continued rapid concentration of activities in cities, the cost of urban housing has increased. This pushes people to the urban fringe and has led to urban sprawl with growing numbers of commuters travelling between suburbs and city centres.

The mobility system in most metropolitan regions in ASEAN has not kept pace with growing transport demand. Besides the continuous In many metropolitan regions, public transport hardly covers the urban area and provides low levels of service; and facilities for cycling and walking tend to be of low quality. The combined urban sprawl and the absence of attractive sustainable transport alternatives increasingly shifts transport to private automobiles. The number of private vehicles has increased by 3.2 % annually from 2005 to 2015 and is forecasted to grow further in the coming years (PWC, 2015; OECD 2019).

Urban sprawl and a low-capacity transport system have led to massive traffic congestion that harms the economy, health, and the environment. Large cities like Manila, Jakarta, and Bangkok have been suffering from traffic jams for years. Medium-sized metropolitan regions might face the same if they continue to grow as expected. In 2019, Manila, Philippines, was recognised as the second most congested city in the world. Jakarta and Bangkok ranked 10th and 11th (Tomtom International, 2019), where a commuter spends about 64 hours in traffic per year in these cities (ASEAN Secretariat, 2018)³. The Asian Development Bank (ADB) estimates that road congestion costs the Asian economies about 2 to 5 % of their gross domestic product (GDP) every year due to time losses and higher transport costs.

³ Traffic index provided by Tomtom International covering 416 cities in 57 countries https://www.tomtom.com/en_gb/traffic-index/ranking/

By way of illustration, the total time-related costs of commuting in Indonesian cities are currently estimated at IDR 498 trillion (US\$37 billion) per year. They could increase by over 41 % by 2020 (ADB, as cited in the ASEAN Secretariat, 2018). With its impact on air quality, congestion affects not only the environment but also the health of the citizens. In 2018, about 200,000 people died of premature death caused by air pollution in Southeast Asian countries. The estimated cost of fossil fuel-related air pollution is, on average, 2.2% of Southeast Asian countries' GDP, reaching as high as 4 % of GDP in Viet Nam and Laos (Greenpeace, 2020).

Challenges in the urban transport planning process

Most metropolitan regions in Southeast Asia face considerable challenges in implementing urban mobility planning. In its masterplans, ASEAN has identified three main common obstacles to the implementation of urban mobility plans in ASEAN Member States. These include:

- **Decision-making barriers** (lack of cooperation and information sharing between agencies, overlapping mandates and lack of identification of project priorities).
- **Financial barriers** (limited fiscal capacity, lack of a sufficiently attractive return on investment to encourage investors, and limited access to alternative sources of funding).
- **Implementation barriers** (lack of robust long-term strategic planning to support implementation, lack of capacity in terms of human resources, technology, technical expertise or materials, and lack of coordination among authorities, private sectors, and citizens) (The ASEAN Secretariat, 2016; The ASEAN Secretariat, 2018; SMMR Project, 2019).

Planning and consultation processes are not always fully implemented, especially at the metropolitan level. There are few integrated planning approaches for land use and transport planning and often unsystematic planning processes. While sector planning is well established, many individual plans exist which are not fully implemented. Plans tend to be redundant, outdated, or overcome by the rapidly changing reality of urban development.

2.2. An Overview of ASEAN Policies Related to Urban Mobility

ASEAN has set-out goals for sustainable mobility development, publishing several documents to overcome the multidimensional challenges in urban and transport development. These demonstrate ASEAN's commitment to improving sustainability as well as the quality of mobility planning, connectivity, and economic efficiency in the urban mobility sector. The core guidance document for ASEAN Member States on sustainable urban mobility is the Master Plan on ASEAN Connectivity (MPAC 2025), which is a multi-year, project-centric, cross-pillar, and cross-sectoral policy document. MPAC 2025 shall contribute to achieving political security, economic and socio-cultural stability of an ASEAN community through five strategic objectives, namely, sustainable infrastructure, digital innovation, seamless logistics, regulatory excellence, and people mobility⁴ (ASEAN Secretariat, 2016). In addition, urban mobility is also mentioned in the ASEAN Transport

⁴ In this context the term means immigration and human resources quality.

Strategic Plan 2026-2025 / Kuala Lumpur Transport Strategic Plan (KLTSPP) under sustainable transport.

The objective to establish “sustainable infrastructure” is most relevant for urban mobility. The aim is to coordinate existing resources to deliver support across the full life cycle of infrastructure projects in ASEAN regions, including lessons-learnt exchange among the Member States, while simultaneously pursuing economic growth improvement and better quality of life (ASEAN Secretariat, 2016). To achieve the goal⁵ of “sustainable infrastructure”, the KLTSPP is established to enhance the adoption of experiences, projects, and knowledge related to sustainable transport, among other transport modes. Furthermore, two additional documents, namely the ASEAN Regional Strategy on Sustainable Land Transport (ARSSLT) and the ASEAN Sustainable Urbanisation Strategies (ASUS, 2018) also contribute to the successful implementation of the MPAC 2025.

The KLTSPP as the ASEAN Transport Strategic Plan 2016-2025 is the project-specific strategy in the transport sector to achieve the goal of regional connectivity under MPAC 2025 and the ASEAN Economic Community (AEC) 2025. The KLTSPP focuses on five thematic clusters: air transport, land transport, maritime transport, sustainable transport, and transport facilitation. The plan was developed through consultation and input from the ASEAN Secretariat and all working groups as well as sub-working groups under the responsibility of the Senior Transport Official Meeting (STOM) (ASEAN Secretariat, 2015). Sustainable transport is one of the KLTSPP strategies, which provides a regional policy framework to support sustainable transport, such as low carbon modes of transport, energy efficiency and user-friendly transport initiatives, and integration of transport and land use planning. Moreover, the “Avoid-Shift-Improve” approach (ASI) is promoted as the principal means to support sustainable transport at the Member States and the regional level.

The ASEAN Regional Strategy on Sustainable Land Transport (ARSSLT), developed by the ASEAN Land Transport Working Group with support from GIZ, focuses on sustainable land transport. The ARSSLT should accelerate the implementation of KLTSPP and support the ASEAN Member States to meet their Sustainable Development Goals (SDG). It also addresses the ambitions of the AEC and other community pillars, such as the ASEAN Socio-Cultural Community (ASCC), particularly in the fields of energy, connectivity, climate change, environment and science, and technology (the ASEAN Secretariat, 2019). While the KLTSPP widely focuses on technical aspects, the ARSSLT is directed at national action plans. It follows a set of principles for the development of transport policies, such as the “Avoid-Shift-Improve” approach, people-oriented transport planning, integration of land-use and transport planning, environmentally friendly vehicles, and promotion of Sustainable Urban Mobility Plans (ASEAN Secretariat, 2019, pp. 24-26).

⁵ The Sustainable infrastructure strategy consist of three main strategic objectives, such as: 1). increase public and private infrastructure investment in each ASEAN Member State; 2) Significantly enhance the evaluation and sharing of the best practices on infrastructure productivity in ASEAN; 3) Increase the deployment of smart urbanization model across ASEAN (ASEAN Secretariat, 2016).

Another related document under the scope of MPAC’s “sustainable infrastructure” key initiative is the ASEAN Sustainable Urbanisation Strategy (ASUS). ASUS is a strategic document that assists local governments in ASEAN to advance sustainable urbanisation and resilience. This document focuses on six areas: civic and social, health and well-being, security, industry and innovation, built infrastructure, and quality environment (ASEAN Secretariat, 2018). The “built infrastructure” framework is aiming at mobility and urban resilience. It is targeting the creation and improvement of bus rapid transit (BRT) systems and the enhancement of traffic management systems in cities. Furthermore, this framework is also closely aligned with existing sustainable urbanisation frameworks such as the Urban Green Growth program for Southeast Asia by the OECD, the Emerging and Sustainable Cities program by IDB, the Cities Database Indicator by ADB and the City Prosperity Index by UN-Habitat III (the ASEAN Secretariat, 2018).

The overview of current and previous urban mobility policies shows that the development and implementation of Sustainable Urban Mobility Plans (SUMP) are in line with current transport strategies (e.g. KLSTP, ARSSLT, and ASUS). How SUMP can contribute to achieving the goals of “sustainable infrastructure” as formulated in MPAC 2025 is discussed further in chapters 3 and 4.

3) What is a Sustainable Urban Mobility Plan (SUMP)?

Sustainable Urban Mobility Planning⁶ is a strategic and integrated approach to urban transport planning. It contributes to improved accessibility and quality of life through a shift towards sustainable mobility. It supports fact-based decision making guided by a long-term vision. This requires a thorough assessment of the status quo and future trends, a shared vision with strategic objectives, and an integrated set of measures from different policy areas, including regulation, promotion, financing, technology, and infrastructure. The SUMP concept places particular emphasis on the involvement of citizens and stakeholders and the cooperation among actors in public administrations and with the private sector.

Sustainable Urban Mobility Planning sets a new standard for innovative transport planning. It helps cities and regions to integrate transport modes and encourage sustainable mobility. It contributes to realising key mobility goals, such as better air quality, improved accessibility, and mobility, increased road safety, decreased traffic noise, higher energy efficiency, and enhanced quality of life and helps cities and regions to reduce their climate impact from transport.

The following is a widely accepted definition of a Sustainable Urban Mobility Plan (SUMP), which shall summarise the main results of the entire SUMP process:

“A Sustainable Urban Mobility Plan is a strategic plan designed to satisfy the mobility needs of people and businesses in cities and their surroundings for a better quality of life. It builds on existing planning practices and takes due consideration of integration, participation, and evaluation principles⁷.”

3.1. Creating A Sustainable City

Increasing the quality of life

The economic growth in the ASEAN region, the demographic change resulting in growing cities and regions, as well as the related increase in individual motorised transport has significant (positive and negative) impacts on the quality of life in Southeast Asia. Policymakers have recognised the urgent need for more sustainable mobility policies and, consequently, ASEAN is promoting the ASI approach to reduce the negative impacts of motorised traffic and to modernise the transport system.

⁶ Sustainable Urban Mobility Planning refers to the development and implementation process. A Sustainable Urban Mobility Plan (SUMP) is a document and as such the main output of the process. In the following the abbreviation ‘SUMP’ is used synonymously for the process and the plan.

⁷ Rupprecht Consult (editor), Guidelines for Developing and Implementing a Sustainable Urban Mobility Plan, Second Edition, 2019, p.9. The rest of this chapter is also based on the Guidelines, which have been developed by the same authors as this paper

Traditionally, the focus is mostly on the “Improve” aspect of ASI with an emphasis on cleaning up the vehicle fleets, on optimising the performance of the existing system (e.g. traffic flows); these are essential short-to-medium-term measures.

SUMP incorporates all aspects of ASI and sets the focus on people, their quality of life from a holistic perspective (e.g. as motorists, as well as pedestrians; as beneficiaries of economic development, as well as individuals that suffer from bad air quality). SUMP asks the fundamental question “In what kind of city do we want to live?”. In this sense, SUMP supports a broader transformation process of urban and metropolitan areas that are safe, healthy, and accessible to all. Many cities have developed such plans in recent years. In Europe, there are over 1,000 SUMPs by now, and a wealth of practical SUMP experience has been created. Policymakers have realised that in addition to master and sector plans, integrated planning strategies (e.g. well-coordinated mobility and land use policies) can set clearer priorities on sustainable mobility solutions.

In the Global South, through the MobiliseYourCity Partnership, currently 29 SUMP are being supported by EU partners in cities from Asia, Africa, Latin America, and Eastern Europe with an aggregate population of 70 million. From the completed SUMP have already been approved and identified nearly 10 billion worth of euros of finance-ready investments and measures. The implementation of these plans will provide access to safe and efficient public transport to 6 million additional people and reduce annual transport related GHG emissions by 20% at city level.

MobiliseYourCity Partners also support sustainable urban mobility at national level in 12 countries, including the preparation of 6 national urban mobility policies and programmes (NUMP) from which 3 have already been approved. MobiliseYourCity Partnership support its member cities and countries worldwide has allowed to secure 922 million euros in financing of sustainable mobility measures.

Improving the accessibility of transport

With urban growth and uncoordinated land-use policies, few ASEAN cities and regions allocate sufficient budgets to provide adequate public transport systems and services. For people in urban and peri-urban areas, it is therefore often difficult to commute to work or education or conduct economic activities without using the private vehicle. Nowadays, to ensure vital urban functions, transport policy in the ASEAN region is focusing on building new infrastructure to improve the connection within metropolitan regions, for example through BRT and improved traffic management. But often these local measures are not well coordinated with regional planning activities. For future transport policy in the ASEAN region, a more explicit focus on accessibility in the entire metropolitan area would be desirable.

A SUMP addresses accessibility for the entire ‘functional urban area’ (FUA)⁸ rather than a municipality in its administrative boundaries. Planning based on actual flows of people and goods (in the area where they originate and end) is an essential criterion for making planning relevant and comprehensive. Everyone, including women, children, older people, and those with disabilities, should be accounted for when tackling accessibility. Urban and transport planners should identify and eliminate obstacles and barriers and ensure that people with disabilities can access public transport, public facilities, and services.

Urban and transport planners know that a lack of coordination between municipalities in the same FUA bears the risk of inconsistency, which often aggravates mobility problems instead of solving them effectively. For example, if a core city tries to decrease car-based commuting (for example, to reduce congestion and air pollution), it would be counterproductive if surrounding municipalities developed new housing areas without public transport access. Such inconsistencies could result in even more congested roads, longer commutes, and higher pollution.

Expanding the scope of a SUMP to a metropolitan region is complex, but coordinated metropolitan planning helps identify common problems that require cooperation (e.g. congested roads for commuters). Regional collaboration could also create the framework for identifying opportunities that benefit all involved municipalities (e.g. quality commuter train or bus services, Park & Ride, bicycle highways).

Creating economic benefits

Economic losses due to traffic congestion, negative impact on public health due to vehicle-exacerbated air pollution, and other external costs⁹ of transport are a major challenge in ASEAN cities and regions and need urgent attention. The internalisation of these costs (for example, by following the polluter-pays principle) is not always a realistic policy option. There are several examples of cities which combine mixed-use areas, high-quality public transport, walking, and cycling infrastructure, and often with access policies for certain vehicles and are still economically prosperous although car traffic volumes have been decreased.

8 The Functional Urban Area (FUA) is the integrated area of daily flows of people and goods; it is sometimes referred to as the “commuting zone”. Depending on the local context, this might be a city and its surrounding peri-urban area, an entire polycentric region, or some specific constellation of municipalities. This is the definition of the FUA by OECD: “population density to identify urban cores, and on travel-to-work flows to identify the hinterlands whose labour market is highly integrated with the cores.” (OECD, 2013).

9 “External costs, also known as externalities, arise when the social or economic activities of one (group of) person(s) have an impact on another (group of) person(s) and when that impact is not fully accounted, or compensated for, by the first (group of) person(s). In other words, external costs of transport are generally not borne by the transport user and hence not taken into account when they make a transport decision. Cars exhausting NOx emissions, for example, cause damage to human health, imposing an external cost.” (European Commission 2019).

SUMP promotes sustainable transport systems that are economically successful by better coordinating transport and land use planning (e.g. by incorporating Transit-Oriented Development (TOD)). Also, non-motorised transport (for the first and last miles), electric mobility, and Intelligent Transport Systems (ITS) are promoted. The strategic character of SUMP provides businesses with the needed planning certainty for larger-scale investments in line with the transport development goals, fostering sustainable development, and economic prosperity. Currently, most urban and metropolitan regions in South-East Asia are competing in the global economy based on lower production costs. In the medium and long-term, however, an attractive and healthy urban environment will increasingly become a success factor in attracting outside investment (especially in the service sector) and an educated workforce. Creating an attractive and sustainable city pays off.

Contributing to climate and environmental goals

Greenhouse gas (GHG) emission reduction is a high-level political and social goal at national and global levels. ASEAN Member States have committed to transport related Nationally Determined Contributions (NDC) and adopted the Sustainable Development Goals (SDG), the New Urban Agenda, and ratified the Paris Agreement. They acknowledge that urban agglomerations play an essential role in GHG emission reductions and in addressing the challenge of high air pollution.

SUMP helps governments address the climate crisis: Climate-related goals are a key feature in most SUMPs. The SUMP process strongly advocates fact-based analysis and thereby creates a strong basis for meeting climate targets. The integration of infrastructure, systems, and services facilitates the creation of “climate policy packages”. The SUMP requirement of defining clear goals, supported by indicators, monitoring, and evaluation, delivers a valuable knowledge base for decision-makers and planners about the effective CO₂ reduction measures in their area. SUMP builds connections between local, regional, and national stakeholders and policy sectors and engages these cooperatively in the process. This enhances the coherence of policymaking and helps the implementation of the climate transition. Finally, quantifying GHG emission reductions could provide access to additional financing sources, such as climate finance, that can positively influence the implementation of the SUMP policies.

The SUMP can also integrate and take into account other climate change-related policies while creating synergies between institutions i. e. the central government, local governments etc. One of the possibilities for cities is to carry out the transport energy transition in cooperation with the energy sector. This is extremely crucial, as due to rapid motorisation, the demand for transport in the region is set to increase by 60% from 2013 to 2040 and the transport sector in the region is highly dependent on fossil fuels. 25% of total energy-related CO₂ emissions in 2015¹⁰ originate in the transport sector.

10 <https://asean.org/book/asean-regional-strategy-on-sustainable-land-transport/>

A reduction in fossil fuel reliant transport through the use of electric vehicles, shared mobility including public transport but also the promotion of multimodality can significantly reduce the impact of urban mobility on CO2 emissions. For example, the promotion of environmentally friendly vehicles, such as electric vehicles, should be accompanied by the utilisation of environmentally friendly fuel or renewable energy for electric power generation. This reinforces the coherence of climate-friendly policy and decision-making.

3.2. Implementing Change

Creating synergies across sectors and boundaries

Institutional cooperation is a major challenge in many cities and regions, but it has proven to be also a major success factor of effective transport planning and policymaking. Proactive cooperation and information-sharing between various government agencies avoid inconsistent policies across sectors and territories.

SUMP explicitly addresses this challenge, aiming at establishing cooperation of a wide range of departments relevant to mobility within the planning area (e.g. land use and spatial planning, social services, health, energy, education, enforcement, and policing). SUMP also promotes active exchange with higher levels of government (e.g. agglomeration/ region and national level), as well as building cooperation with the private sector (e.g. transport service providers, but also employers, landowners). As experience proves, the management of the SUMP process should lie in the hands of an inter-institutional steering group where the most relevant actors are represented. For cooperation to work well on the practical level, high-level management support is crucial.

Making more effective use of limited resources

The ASEAN Member States have developed an urban mobility policy framework (e.g. KLTSP, ARSSLT) that aims to facilitate priority setting and effective use of financial resources as a precondition for implementing efficient and effective transport options. Considering the financial resource limitations in the ASEAN region, all projects must pull in the same direction, and resources are concentrated on highly effective measures and investments that are entirely in line with the identified development objectives. Given comparable contexts, the most resource-effective solution has been to commit a significant part of investments to active and collective mobility and better integration of modes. SUMP fosters the integrated development of all relevant transport modes. These are collective mobility (traditional public transport as well as new sharing services), active mobility (walking and cycling), multimodality, road traffic and parking, and urban logistics while supporting a shift towards sustainable mobility. It also aims to better coordinate between transport and land use planning (e.g. based on Transit-Oriented Development (TOD)) to save limited space and to avoid follow-up costs of urban sprawl.

Moreover, SUMP suggests a systematic regional process, which sets objectives and prioritises measures, based on acceptability and value for money. SUMP advocates highly integrated sets of measures, including an objective-driven combination of regulatory, promotional, financial, technical, and infrastructure policies. Many cities and metropolitan regions have experienced that this approach has helped to maximise synergies and has increased acceptability of measures that are effective, but less popular.

Another factor of the efficient use of resources that is often neglected are human resources. Knowledge gaps are most acute in technology domains and innovative policy concepts. The awareness, perceptions, and preferences of decision-makers can also be a handicap. SUMP include a clear capacity assessment, cross-institutional pooling of human resources, and identification of external support needs. Regardless of the use of sophisticated planning techniques and tools, SUMP focuses on supporting a change process through establishing multi-stakeholder cooperation, collective knowledge and capacity development, and fact-based learning.

Box 1: Cooperation in a SUMP

Achieving institutional cooperation in the SUMP preparation and implementation process is of particular importance because pragmatic cooperation with actors helps deliver a SUMP that is accepted and effective practically and financially. A significant outcome of institutional cooperation is the attraction of additional external funding, through the alignment of the SUMP goals to the objectives of funding bodies. Finally, institutional cooperation provides control over several local transport networks and infrastructure, such as public transport networks and parking. Issues to address in institutional cooperation are:

- **Leadership and responsibility:** When considering the SUMP as a project, the role of the project management becomes essential, and the appointment of the project management (a project manager and/ or project managing unit) is crucial. There are many formations in which the management of the SUMP as a project can take shape, in the best practices, there is a clear mandate for a specific administrative unit within the local authority to conduct the SUMP process. Within this unit, a person or team can be assigned to take the SUMP process further. Often temporary cross-sectoral working groups are being established, especially when planning for a metropolitan region. These groups need to be appointed and could be formalised and developed further.
- **Partnership:** Different types of stakeholders must be involved in the cooperation process, including organisations and stakeholders who are not usually engaged in classic transport management activities. The composition of a SUMP partnership needs to be determined based on the functional and geographical scope and relevant skills, capacities, and knowledge. Also, the roles of the partners, the structure, and the rules of the partnership need to be defined and agreed upon as well as the allocation of tasks, resources, and responsibilities.

- **Complexity:** Due to the diversity of topics and stakeholders involved, the complexities and difficulties of coordination with other fields of urban policy are high. There could be uncertainties on how to bring in other sectors and raise interest in the SUMP and convince transport and non-transport stakeholders to take part in the SUMP process. Especially for this topic, it would be helpful to provide planning examples as models or pilots.
- **Transparency and sharing of information:** Reluctance to share data or information due to claims of confidentiality or organisational culture, concerns about admitting mistakes, or requirements to protect personal data can all act to complicate cooperative planning.
- **Support:** SUMP is a local and regional planning process, but it needs to be established on each political level. Closer cooperation at the local government levels and adjustments, trust, and support from the state governments are required. The preparation of a SUMP and the implementation of measures need financial, human, and other resources (e.g. land) and are unlikely to be in the hands of only one actor. Input from different sources as well as the agreement on the allocation of the funds is a fundamental issue.
- **Legal environment:** The diversity in national (or regional) regulations on integrated planning and institutional cooperation has been identified as a confusing issue in the context of SUMP. Before implementing a SUMP, legal advice on institutional cooperation obligation and the processes that are required need to be sought. In addition to this national (or regional) legislation, a framework provided by ASEAN could give further guidance.
- **Implementation:** Also, and especially for the process of implementing the prioritised measures and projects, further intensive cooperation is needed, especially within the city administration or the region. The staff of strategic planning must continue to cooperate with the sectoral planning. This concern, for example, the evaluation of project progress and necessary measures for adaptation. Processes must be set up for monitoring and reporting to policymakers and the public. In this sense, a continuous reporting and exchange process must be established.

Gaining better access to financing and funding

Lacking resources is among the most significant general challenges of transport policy. There is particularly intense pressure in many cities and metropolitan regions in the ASEAN region. Especially larger infrastructure projects often require a mix of private investments and public sources of financing, including national and international subsidies, loans, or green bonds. These investors need confidence in the returns on investments, i.e. in repayment of debts and achievement of expected impacts. International support is being increasingly coupled to expected sustainable development benefits that need to be demonstrable and quantifiable at the project preparation stage. Through scenario building, ex-ante impact assessments, and a strong mitigation focus, SUMPs can meet the necessary criteria to attract these valuable external resources, by aligning with the evolving priorities of development organisations.

SUMP improves the bankability of action plans: A systematic and strategic planning process creates transparency and accountability, given the contribution of a range of stakeholders to the goals and strategic objectives, scenario development, and objective setting. On this basis, key stakeholders systematically select the most effective package of measures and communicate them to the public. This approach has proven to deliver effective mobility plans with a low risk of failure. Based on the strategic objectives, the SUMP Guidelines recommend developing short-term (2-3 year) action plans with transparent budgets and responsibilities based on longer-term strategies. Transport authorities can plan consistently over a longer timespan instead of taking ad-hoc decisions (sometimes following short-term political goals).

Winning public support

The transformation to a more sustainable transport system requires the effort and support of all stakeholders and the general public. Many mobility measures are associated with disruptive changes for citizens, businesses, and providers of transport services. Advocating changes in individual mobility behaviour may require a change in public mindsets.

A key methodological component of a SUMP is to follow a transparent and participatory approach throughout the planning process. Planning professionals continue to play the lead role in analysing challenges, modelling scenarios, proposing measures, and evaluating their impacts. Transport stakeholders and citizens are engaged in discussions, especially in developing long-term visions (“In which kind of city do I want my children to live?”) as well as in providing comments on action plans in their communities. Participatory planning with a clear communication and engagement strategy is a prerequisite for people to take ownership of the SUMP and the policies it promotes.

Early and active involvement makes public acceptance and support more likely, thereby minimising political risks and facilitating implementation. It also helps not to miss essential perspectives. A further aspect of SUMP is to involve other transport stakeholders (e.g. departments within the own organisation or in other institutions) whose activities may have an impact on mobility (or who may be affected by the SUMP under development).

Box 2: Participation in a SUMP

Transparency of the process is one of the strongest assets of the SUMP process, as it proposes to address the lack of trust between people and authorities, as well as large private investors. A dialogue-based participation process is crucial for the joint analysis of local mobility problems, the development of common objectives and targets, identification of mobility strategies, and selection of measures that are widely accepted and supported. While there are clear benefits from participation, there are also challenges to running an effective participation process in SUMP development and implementation.

- **Awareness and benefits:** All levels of society are seldom fully aware of sustainable urban mobility. Mobility consultations often focus only on the direct actors, users, and beneficiaries neglecting those who are in the periphery of decision making but most affected, and who derive their livelihood out of the transport systems. In this sense, planning authorities often lack the understanding to conduct legitimate participation and to take expert knowledge seriously. The inclusive SUMP process constitutes an opportunity to implement policies and guidelines that respond to the needs of more vulnerable groups of users or groups that tend to be difficult to engage. Competencies could be increased step-by-step over a longer period, and it could be helpful to start to include local or regional “champions”.
- **Budget and skills:** Planning authorities often face limitations in financial and personnel resources required for SUMP development, let alone for participation. Various skills and substantial know-how are needed to plan and carry out participation activities. These need to be coordinated with other SUMP-related activities, and inputs from citizens and stakeholders need to be fed back into technical planning and political decision-making.
- **Engagement techniques:** A wide range of involvement techniques is available from which a planning authority could find a suitable combination. The stages for which participation will be pursued, and the participation methods suitable to each need to be identified. The participation concept should be appropriate to the local context, planning experience, resources, and capacities. A lot of cities have already initiated dialogues, but those need to be more productive and long-term. Further, planning authorities need to guide and facilitate the discursive planning process, react adequately to conflicts that may arise, and ensure constant monitoring and quality control.

Better data management and monitoring system to ensure the quality

As with any comprehensive and integrated planning approach, SUMP relies heavily on facts and quality data. The lack of sufficient data (both in terms of quality and quantity) for planning and lack of tools and processes for data management and data governance is a widespread challenge in ASEAN metropolitan regions. Reliable data on transport demand and actual transport flows in all modes is essential to analyse the current situation of the mobility system (even more so if a transport simulation model is used). Additional data is needed to set a baseline or to build and assess policy options of alternative scenarios. Moreover, the monitoring and evaluation of mobility measures continuously deliver data updates. Collected and analysed data can be turned into relevant information to assess the progress towards strategic objectives and targets.

SUMP provides a systematic approach to data management as a tool for analysis, monitoring, and information to decision-makers and the public. Systematic monitoring of measures allows for fine-tuning and adaptation to changing circumstances and helps increase public and political support through “evidence”. For example, a set of high-level indicators that are specially selected to support communication with the public has had a positive impact on the support for mobility measures in many cities. Examples for such indicators are the number of people seriously injured or killed in traffic, the number of residents exposed to low air quality, or travel time savings.

SUMP sources data from other planning exercises such as sector and masterplans (e.g. urban development strategy, clean air plan, noise action plan, energy action plan) to avoid double work. Data sharing between institutions, primarily between all transport stakeholders, is often a severe challenge when SUMP development is starting. Data governance and building trust between “competing” data owners (as part of a general stakeholder cooperation process) is, therefore, an essential element of SUMP. As SUMP is a tool that originates from planning practice, it recommends concentrating on a small number of core indicators and using standard indicators from national statistics wherever possible and establishing clear monitoring procedures for all indicators.

Box 3: MobiliseYourCity SUMP Model Terms of Reference

The preparation of a SUMP usually falls under the responsibility of the metropolitan regions’s transport authority, or related entity. However, many cities decide to contract consultants to perform specific tasks during the preparation process. These tasks may range from individual assignments, such as conducting a thorough urban mobility diagnosis, to supporting the entire development of the SUMP. MobiliseYourCity SUMP Model Terms of Reference provide a ready-to-use document to select the consultant responsible for supporting the development of a SUMP. It contains a complete overview of tasks and deliverables to be performed by the consultant for a full SUMP development, and as such can be easily adapted to each local context. The SUMP Model Terms of Reference are available in the MobiliseYourCity Website <https://changing-transport.org/toolkits/sump>

To be able to do this, authorities need to ensure sufficient management and technical capacities. During the inception phase, staff skills and capacities may be assessed, and appropriate measures for capacity building approved. Capacity development, which aims at three different levels (individuals involved at the core of the planning process, organisations that provide transport services, stakeholders, and society at large) needs to be tailored to the specific needs of the city. Traditional approaches, such as the transfer of knowledge and skills through long-term counselling and (online) training, but also workshops, conferences, study tours, and peer-to-peer-learning could be considered. Many cities see good planning examples from the same planning contexts as extremely helpful for their approach, e.g. by facilitating South-South cooperation or the systematic collection of experiences and samples. A goal could be to initiate a SUMP learning community in which regional knowledge partners can be integrated.

Box 4: Assessment of the impact of SUMP

The direct impact of a SUMP on for example traffic congestion levels, CO₂ emissions or urban air quality is hard to quantify due to the multiple and diverse measures implemented throughout a SUMP. However, impact assessments can be conducted regarding specific measures to understand their impact on CO₂ emissions, air quality of congestion levels. Such impact assessment has been conducted in Turin (Italy) when the city implemented a trial of a MaaS service. As a result of the trial period, by avoiding the use of private cars, 30 people have saved about 72kg of CO₂ emissions, which further contributed to an improvement in the air quality of the cityⁱ. Another trial measure in the city tackling Urban Freight Logistics. The replacement of 43 highly polluting freight vehicles with zero-emission vehicles (such as natural gas, electric or hybrid vehicles) has led to respectively a 12% and 70% reduction in CO₂ and NO_x daily emissions. Assuming a large-scale implementation involving up to 10% of the delivery vehicles fleet, the resulting impact in terms of CO₂ emissions would be 71 tons per year and 0.6 tons of NO_x per yearⁱⁱ. Hence, implementing a SUMP with a diverse set of measures can help to reduce CO₂ emissions and improve air quality and traffic congestions levels.

i https://sumps-up.eu/fileadmin/user_upload/Tools_and_Resources/Publications_and_reports/Good_Practice_Fact_Sheets/SUMPs-Up_-_City_Good_Practice_Factsheets_compressed.pdf

ii https://sumps-up.eu/fileadmin/user_upload/Tools_and_Resources/Publications_and_reports/Good_Practice_Fact_Sheets/SUMPs-Up_-_City_Good_Practice_Factsheets_compressed.pdf

Planning in times of uncertainty

Policymakers and planners are understandably sceptical towards integrated and comprehensive planning approaches that appear to require additional funding, time, and capacity compared to a traditional masterplan that is developed among professionals alone. The starting point of SUMP in a situation of dynamic and rapid growth (and, additionally, with high disruption potential from technological and societal developments), it is essential to achieve broad (fact-based) agreement on the fundamental objectives of (transport) policy. Progress needs to be monitored closely and flexibility on the means to achieve goals retained. Therefore, SUMP distinguishes between strategic (medium to long-term) planning and (short-term) action planning that should be updated every few years. SUMP takes up the challenge of planning in times of uncertainty by emphasising the establishment of effective governance and communication structures (like stakeholder cooperation and public engagement) as well as creating a fact-based process of goal development and monitoring. SUMP is designed to equip planners and decision-makers with the structures and tools to cope with dynamic change

Gaining national support through National Urban Mobility Policies (NUMPs)

While planning and developing an urban mobility system is mostly the responsibility of local governments, it is not solely a local concern but rather a national interest. National Urban Mobility Policies are an opportunity for national governments to effectively enable cities to deal with sustainable urban mobility challenges while achieving national economic, environmental and social objectives. For a NUMP, national governments put in place a strategic and action-oriented framework that enhances cities' capacities to plan, finance and implement sustainable urban

mobility measures. The creation of NUMPs can promote a more coordinated approach to SUMP preparation and implementation, facilitating easier access to funding or political support in their development. NUMPs can also create synergies between the creation of SUMPs and other national policies, such as environmental, social or economic ones. For example, with the “Thailand Clean Mobility Programme”, Thailand aims at significantly improving air quality whilst at the same time developing a programme of projects to enhance urban mobility across urban areas.

Box 5: Resilience management in SUMP



To sustain urban life during crises and to reduce the vulnerability of the transportation system, planners and policymakers must ensure that all its elements are integrated, resourceful, inclusive, flexible, redundant, robust and reflective. The challenge for ASEAN cities is to achieve quick, short-term responses to a crisis without compromising the long-term functioning and evolution of the urban mobility system and related strategies.

The Covid-19 pandemic has already triggered the need for better responsiveness to such crises. It is necessary to bring SUMP and resilience together. SUMP offers a sustainable planning framework that is particularly conducive to the integration of resilience principles. SUMP promotes the diversification of mobility systems as well as accepting and integrating different perspectives and vulnerable groups. SUMP should be able to respond to short-term emergencies as well as maintain long-term goals. Short-term agility in combination with the longer-term capacity to adapt

is key to avoid future crises by anticipating and preparing for the impacts of these shocks and stresses on transportation systems. The systematic planning logic behind the SUMP cycle provides exactly this: an opportunity for cities to structurally incorporate resilience into urban mobility planning.

The established concept of SUMP provides the ideal planning framework to develop a resilient mobility system for the short-term adaptation to crisis and the long-term sustainable urban mobility strategy. The incorporation of resilience into Sustainable Urban Mobility Planning helps cities to simultaneously prepare better for disruptive realities and achieve long-term sustainability of mobility. ASEAN cities implementing a SUMP can incorporate resilience management simultaneously or integrate their new SUMP into their resilience management framework.

For more information, see https://www.eltis.org/sites/default/files/sump_topic-guide_planning_for_more_resilient_and_robust_urban_mobility_online_version.pdf

4) SUMP Steps for ASEAN Cities and Regions



These Guidelines intend to identify the challenges for metropolitan regions associated with urban mobility and to introduce the concept of Sustainable Urban Mobility Planning. It also elaborates on the main products developed within the process. The aim is to create awareness among the actors and to discuss required preconditions, competencies, and capacities to conduct a SUMP process. It is also essential to raise awareness on the importance of goal orientation, cooperation, participation and sustainable measures packages in implementing a SUMP.

These Guidelines introduces the SUMP cycle, which offers a step-by-step orientation of the planning process. The SUMP cycle is a simplified and idealised representation, helping planners to structure and keep track of a complex process. It is categorised into 4 phases, each with three steps. The phases are (1) Preparation and analysis, (2) Strategy development, (3) Measure planning, (4) Implementation, and monitoring¹¹.

Depending on the local and regional planning situation, steps and activities can be adapted and skipped (if suitable results are already available, e.g. from a related planning process) or repeated at a later stage. Such customisation to the specific planning context must be carried out by the local and regional actors themselves¹².

At the end of phase 3, the plan shall be delivered, which will constitute the SUMP of a city or metropolitan region. The final SUMP document shall summarise the main results of the entire SUMP process¹³ for short-term measures, medium-term measures, and long-term measures. The last and fourth phase focuses on the implementation of the strategy and selected measures and projects.

11 These four phases include 12 main steps, which are further broken down into 32 activities. For more information see second edition of the SUMP Guidelines.

12 The need for flexibility is understood and planners are encouraged to make reasonable adaptations as required by their specific situation as long as the overall principles of SUMP are followed, which are ❶ Plan for sustainable mobility in the “functional urban area”, ❷ Cooperate across institutional boundaries, ❸ Involve citizens and stakeholders, ❹ Assess current and future performance, ❺ Define a long-term vision and a clear implementation plan, ❻ Develop all transport modes in an integrated manner; ❼ Arrange for monitoring and evaluation, ❽ Assure quality

13 This final report shall follow the MobiliseYourCity SUMP standard table of contents.

4.1. Phase 1: Preparation and Analysis

Objectives

In the inception phase, policymakers should take an explicit decision to prepare a SUMP for a defined geographical scope. Preferably, the planning area would include the metropolitan region, but should at least cover the entire area within city boundaries. Following this, the management and working structure (project manager, SUMP core group, and steering and technical committee) need to be set up, and a capacity-building programme should be approved. Once working structures are in place, an analysis of the mobility situation is conducted. The first phase is concluded with a completed review of the planning capacities and the planning situation and a summary of the mobility problems and opportunities in the defined SUMP planning area.

Activities



A stock-taking process is carried out in the beginning that gathers information about relevant public and private entities and key stakeholders, their roles and legal mandate, financial capacities, responsibilities, and competencies for different aspects of mobility planning. This includes an evaluation of technical skills, availability of staff, and financial resources to develop the SUMP, as well as the identification of support and training needs. The primary aim of these steps is to setup active working structures on the local or regional level.

What is needed is a managing entity that leads the process with the mandate of the political decision-makers. The question is how to start if leading authorities with legal capacity are missing, especially when working on a metropolitan scale. Metropolitan regions are not typically single political entities, but functional areas, which are going across regional and local administrative boundaries. In the absence of a Metropolitan Transport Executive (MTE), it could be considered to use the existing organisational structure and to appoint a leading entity or to set up a temporary working group (encompassing stakeholders from transport and land use planning from each spatial level) which may be converted into formal structures at a later stage.

How to strategically encourage stakeholders to be involved in SUMP committedly remains a question. Due to the importance of political support for the whole process, discussions are needed on how to raise awareness among decision-makers (mayors and other transport officials) of the urgency of sustainable urban transport and the usefulness of strategic planning that seeks to identify and implement validated solutions. Each city or region needs to define which of the tasks should be carried out by the managing entity and which of the tasks should be tendered out to consultants. It needs to be ensured that the process in each of the phases and activities is supervised and controlled by the public body. Besides, consultants' work and deliverables need to be quality checked.

Box 6: Strong political leadership for sustainable urban development

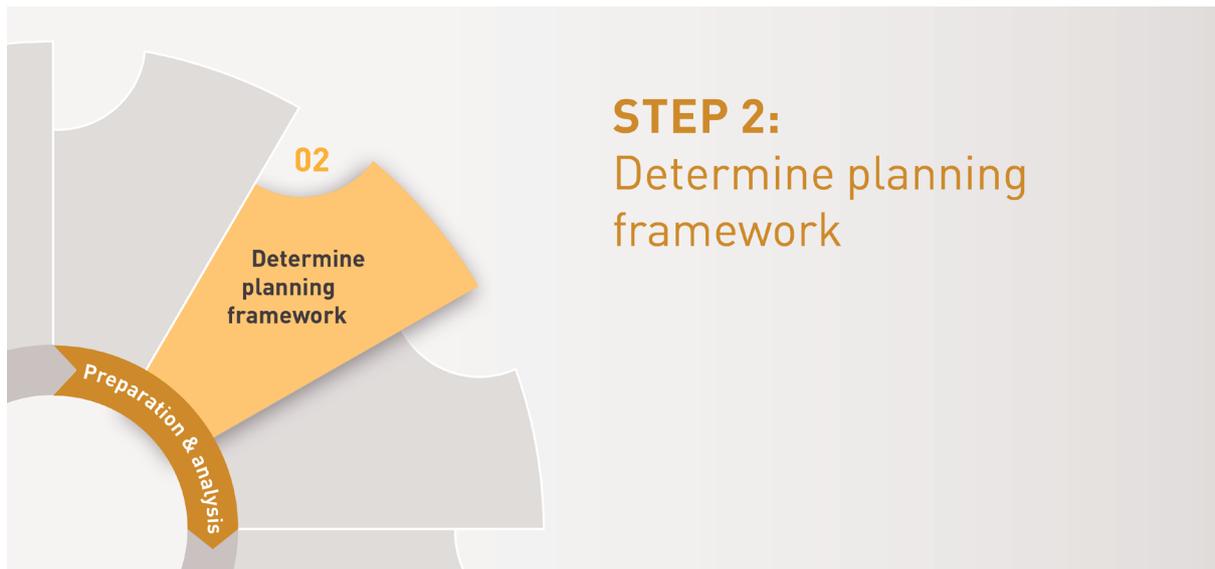
All cities, from small towns to mega cities, benefit from strong political support for steering a city towards a sustainable mobility development. High-level political support is equally important for starter cities, which need an impulse to start planning for sustainable mobility, as it is for more experienced cities, which need to take strong decisions to further improve their policies. There are numerous examples of high-level politicians that have offered strong support to sustainable mobility and the transformation of their city. The mayors often focus on a specific measure, objective, or vision. London's (UK) Mayor Sadiq Kahn focused his strategy on accessibility, air quality and "healthy streets" for its citizens. Former mayor of Curitiba (Brazil), Jaime Lerner, had a strong vision for making major changes towards a green, innovative, and sustainable city, transforming from car-friendly to being a truly innovative urban laboratory for public transport, active travel and green land use.



Groningen 's (NL), Vice-Mayor for Mobility, Paul de Rook, pursues the long bicycle-friendly tradition of the city. Currently, the mayor of Ambato (Ecuador), Javier Altamirano, is strongly supporting the SUMP development for his city, while announcing it publicly and promoting a close collaboration between government, universities, and the private sector.

Images: Curitiba's tube-shaped stations of the bus rapid system (©Urbs – Urbaniza T o d Curitiba, 1992); Euro-clima+ workshop for Ambato's work for sustainable mobility (<https://euroclimaplus.org/en/recent-events-urban/news-urban/468-ambato-s-work-towards-sustainable-mobility-is-restarting>)

Sources: Alacántra (2019), Rupprecht et al. (2019)



After confirmation of the SUMP's geographical scope, an inventory and synthesis of relevant national frameworks, master plans, sector plans, projects, and studies should be carried out. A good overview of what is available helps establish a plan that builds upon existing activities and is coherent with sector plans. The definition of the geographical planning scope may be particularly important in areas without institutionalised metropolitan regions, or if those that exist do not represent the Functional Urban Area. The coordination of metropolitan planning itself is demanding and complex. It increases if planning takes place across national borders such as between Thailand and Lao PDR, i.e. between Nong Khai and Vientiane. As the need for cross-border and inter-urban planning and coordination can be expected to increase due to the increased development of sustainable transport infrastructure, the question is how and which functional and workable units could be established.

Box 7: Taipei: Cross-departmental cooperation for a green mobility policy

Linking planning processes and coordinating between municipal departments always has high potential for innovative and comprehensive policies and their long-term improvement of the mobility system. The Taipei municipality has initiated a policy of green mobility, the “Bike-Bus-Metro-Walk-Policy” which links land use planning with urban planning, urban design, urban re-generation and ICT. The policy is carried by several planning authorities, led by the local government and is a result of cross-departmental governance. The main focus of the policy is to coordinate actions for Transit Oriented Development (TOD), to steer the development of multimodal hubs and public spaces and improve the walking and cycling system of Taipei. One example of the policy implementation is the liveable “TOD corridor”, which creates space for walking and cycling through bicycle ways and pedestrian space, hand in hand with the reallocation of road space in the metro corridor. Other collaborative actions under the policy are the multimodal hubs, an integrated ticketing system, sharing systems, smart parking and other mobility management actions.



Source & image: Chang (2018) ; <https://events.development.asia/system/files/materials/2018/07/201807-integrated-transport-system-development-taipei.pdf>

The SUMP process is set within the framework of current planning practices including relevant legislation, rules, schemes, licenses, concessions, and policies, and especially the legal planning and reporting requirements of superior planning levels for land-use planning, transport, infrastructure development, and environment protection. The aim is to adapt the planning process to local and national contexts so that a high degree of complementarity between SUMP and the legally required (or established) planning methodology is achieved. It is essential to define how the SUMP and other planning documents and policies can be integrated. Concerning this requirement to create coherence between the different planning levels, the national level, in particular, is of importance for guiding and setting standards. Because of the various national planning and governance systems, a coordination function could be helpful.

Many cities and regions already have transport masterplans, which reflect the planning status and present prioritised measures. An assessment of these existing masterplans could help to identify which previously prioritized measures align with the city's vision and goals, to complement previous plans with new measures, to increase the acceptance and ownership of some measures through participatory planning, and to discard irrelevant measures through dedicated consultations with key stakeholders. In practical terms, masterplans can be good starting points for local or regional SUMP processes.

Instruments such as the SUMP Self-Assessment¹⁴ could help to determine the current planning situation and to identify gaps and the necessary improvements. One element to qualify an existing masterplan could be, for example, the organisation of a visioning workshop to establish a clear long-term strategy. It would be helpful to do this analysis on concrete cases so that for example the national level could develop guidance on this process.

Box 8: The City Resilience Action Planning Tool (CityRAP Tool)

One approach of starting an urban planning process in developing or emerging regions is through local capacity building. The CityRAP tool, developed by DiMSUR (sub-regional Technical Centre for Disaster Risk Management, Sustainability and Urban Resilience) offers a comprehensive toolkit, including training exercises and activities, that aims at sub-Saharan African municipalities to understand and work on actions for building urban resilience. With four different phases, the municipal staff is led through a participatory, proactive, and clear process to build capacities and take up the leadership of future planning. The tool has been used in many places, such as South Africa, Ethiopia, Cabo Verde, Malawi and Madagascar.



Source: UN-Habitat, DiMSUR (2014), <http://capacitybuildingunhabitat.org/wp-content/uploads/workshops/>
Image: Training on urban resilience tool in South Africa (©UN-Habitat – Fruzsina Straus)

14 The SUMP Self-Assessment is an online survey (<https://www.sump-assessment.eu/start>) which evaluates and improves mobility planning in a city or a functional urban area. The results show how well planning activities are fulfilling the principles of a Sustainable Urban Mobility Plan (SUMP).

Transparency of the planning process is an essential component of SUMP. A work plan should provide an overview of all milestones, timelines, involved actors, proposed methodologies, and formats to present results. The desired output of the process also needs to be defined. Stakeholders could decide which planning steps, results, and improvements are required to be based on the starting point of planning, the available capacities, and the interests of stakeholders. In that sense, local and regional stakeholders need to determine if they aim for a comprehensive plan (SUMP), or partial products, such as a mobility strategy, or goals with related action options. For this process, it could be helpful to receive national or ASEAN guidance on where the need for additional planning activity is seen in general and what quality of planning should be pursued, and the criteria followed.

When defining the product, it also needs to be clarified how much budget is available for the local and regional process. Usually, this depends on the duration and intensity of the cooperation, and whether model analyses are carried out. The question then arises of how the SUMP process can also be supported financially.

Box 9: Lille, France: Political committee to steer metropolitan parking policies

The Métropole Européenne de Lille (MEL) covers 95 different municipalities with 1.1 million inhabitants. In 2013, the MEL set up a parking committee so that political and technical representatives of the metropolitan and municipal level can reach agreement on parking policies. The committee aims to agree on a shared vision on the parking policy at the metropolitan level, to control individual car transport and increase quality of life in the city. With all municipalities being invited to bi-annual meetings, the participation of all public authorities in an institutional framework allows for reaching political consensus. Representatives have the opportunity to discuss regulations, while the main policy decisions are taken for the metropolitan planning framework, such as the SUMP. The transparency and neutrality of the framework is a major factor of success. The committee plans to introduce a white book on parking which will define the principles for parking policies to be integrated in the SUMP.

Source: Rupprecht et al. (2019)



In this step a thorough mobility diagnosis should be conducted. This requires various mobility related data and information. In addition to the collection of new data through e.g., traffic counts and surveys and also with the help of new digital methods a stock-taking of existing data, data inventories, and surveys will support effective and efficient data collection and analysis. To avoid an excessive collection, planners will want to set targets and may even preselect measure packages/ actions. Existing transport (infrastructure) project's planning documents may also entail valuable data (e.g. Cost-Benefit Analysis, Feasibility Studies) which can be integrated into the stock-taking of planning. Third parties, such as mobile phone providers, transport services dispatchers would also be able to contribute with data at low or no cost. The mobility situation and trends are analysed from the perspective of all transport modes and for relevant sustainability aspects (e.g. GHG emissions¹⁵, traffic safety, gender, liveability etc.) by using an appropriate set of quantitative and qualitative data resources. Identified transport challenges may lead planners when agreeing on accentuated analysis of certain aspects.

15 MobiliseYourCity has developed the tool - TRIGGER - to estimate the GHG emission reductions that can be expected with the implementation of the SUMP.

Box 10: General Santos City, Philippines: Walkable public spaces development through public-private stakeholder partnerships

Strong stakeholders' participation is the cornerstone of the Green GenSan movement towards the city's vision to be the Green City of Southern Philippines. In the past three years, some of the public-private projects initiated are the: (1) conversion of the 12-hectare government centre into a walkable public space, (2) developing pocket parks in all the barangays of the city, (3) redevelopment of pocket parks in residential subdivisions, (4) reclaiming of pedestrian lanes and parking spaces and (5) converting strategic idle road networks into child-safe spaces. Most projects are in the planning or implementation stage and are compliant with universal accessibility, child safety, sustainable urban design, and urban regeneration standards. Once developed, these walkable public spaces are programmed to be the green mobility hubs of the city.



The projects are in collaboration with the local government and some national government agencies, as well as private professional groups, alumni associations, civic groups, schools, homeowners' associations, and other non-government organizations.

*Source: GSC Tourism Council
Image: Walkable Government Centre*

Due to the high importance of more and better public transport services for ASEAN metropolitan regions, this sector could also be a focus of surveys and conceptual studies. A significant difficulty is the high degree of informally organised public transport services.

The challenge of this branch is data and the high amount of relatively small operating entities. Nonetheless, these services are essential for the overall accessibility of a city and region. Since data on the local and regional levels is usually scarce, developing a data inventory that identifies the availability and quality of data could be considered.

Additional sources of information can be obtained from previous studies done by researchers (e.g. internal government studies or private studies) or international cooperation (e.g. the studies provided by the World Bank, ADB, GIZ, or any credible NGO). Moreover, it can be beneficial to collaborate with local universities and academics to conduct further (joint) studies. A baseline report presenting the main problems and opportunities of the mobility system serves as a critical reference for the mobility strategy and scenario developed in the next planning phase.

Box 11: Developing SUMP in Latin America

Some Latin American cities such as Ambato (Ecuador) and Antofagasta (Chile) have started the SUMP processⁱ. In the meantime, Trujillo (Peru) is almost finalising its SUMP, being the first medium-sized Peruvian city in applying the SUMP concept and adapting it to its own context.

Antofagasta is a medium-sized city in the north of Chile and started the development of its SUMP in 2019. Two key aspects that stand out from SUMP Antofagasta experience are the excellent level of cooperation across boundaries and the strategic approach to re-invent the participatory process via a participatory website.

From the beginning of the project, many of the key stakeholders, for instance, the regional government (GORE), MINVU, the Ministry of Transport of Chile, CREO Antofagasta, a public-private committee consisting of more than 60 organisations, among others, took part in meetings, agreements and showed high interest in cooperating for the progress of the SUMP. The excellent levels of cooperation enabled official support from the political leaders for the development and implementation of the plan. Recently, the Antofagasta SUMP management team hosted an online workshop. The team presented the results of the analysis of the mobility situation and the outcomes of the planning practice assessment. For the assessment, the planners used the SUMP Self-assessment tool to get insights on the effectiveness of the social, political and institutional processes in Antofagasta. This was crucial for the setting of the baseline (at the end of phase 1 of the SUMP cycle) before starting the strategy development process (phase 2 of the SUMP cycle).

The SUMP management team in Antofagasta consists of various stakeholders engaged on three working levels, (1) policy and strategy, (2) technical management and (3) technical implementation. The first level consists of the regional government, municipality of Antofagasta, and the secretary of transport planning. The second level is constituted by the technical table, which includes among others the Department of Transport and the regional ministerial secretaries of housing, transport, public works, environment. On the last level, technical and administrative experts, and consultants are engagedⁱⁱ.



Figure: SUMP Antofagasta website (©PMUS Antofagasta website)

Moreover, the Antofagasta regional government launched a SUMP dedicated homepage (<http://movilidadantofagasta.cl/>). It provides information about the SUMP and aims not only to inform citizens on the SUMP progress but also to engage them in participatory activities such as surveys and consultations along with the development of the plan. Communication with the public becomes a tool during the pandemic COVID-19 crisis to foster public participation.

ⁱ These cities are currently part of the Euroclima+ program, funded by the European Commission and implemented among others by GIZ.

ⁱⁱ More information on the governance structure can be found in the SUMP Antofagasta website: <http://movilidadantofagasta.cl/equipo-pmus/>

Meanwhile, other cities such as **Ambato** in Ecuador, located in the central Andes of the country, advance also actively with SUMP development. Ambato started the process in 2019 and had shown positive pre-conditions for the progress of the Plan. Such pre-conditions include good political leadership and support for the SUMP development. The new elected Ambato mayor promoted sustainable mobility as a cornerstone in his campaign. Therefore, he aligned his interests with the development of the SUMP for his city. He announced several times in the media his strong support for sustainable mobility planning with a long-

term vision and commitment to achieve broader political goals, such as the Ecuadorian Nationally Determined Contributions (NDC) to reduce greenhouse emissions and mitigate climate change. In that way, the political leaders in Ambato strengthened their commitment and support for the SUMP development by following the Mayor's priorities and fostering close collaboration between government, academia and the private sector as a virtuous circle that enables more comprehensive benefits for Ambato development.



Image: Ambato reinforces its commitment to sustainable mobility (©ChangingTransport.org)

Trujillo, a medium-sized city in the north of Peru, will be concluding the SUMP process in 2020. The following aspects need to be highlighted: The National Program for Sustainable Urban Transport (PROMOVILIDAD) created by the national government and the Ministry of Transport fosters the development of SUMPs in Peruvian cities with at least 100,000 inhabitants. This framework aims to support sustainable urban mobility with integrated transport systems, a focus on gender, high-quality standards, better accessibility, social equity and financial and environmental sustainability.

PROMOVILIDAD's main functions include supporting agreements and contracts, supervision of compliance, provision of technical assistance on the development of urban transport projects, reinforced technical capacity and support along projects' lifecycleⁱⁱⁱ. The national program was approved by mid-2019 and since then has pushed the progress of the SUMP significantly in Trujillo and other medium-sized Peruvian cities such as Arequipa and Piura.



Image: Sustainable Urban Mobility Committee (©COMUS)

ⁱⁱⁱ Further information at <https://busquedas.elperuano.pe/normaslegales/decreto-supremo-que-crea-el-programa-nacional-de-transporte-decreto-supremo-n-027-2019-mtc-1792885-4/>

The Sustainable Urban Mobility Committee for the SUMP Trujillo 'COMUS' was formed last year and launched officially by the Mayor of the city. The COMUS is an inter-municipal platform conformed by 17 members including the Mayor (who presides the Committee), offices of various sectors as well as the neighbourhood committee and district municipalities. It has a Technical Management Unit that manages, organises, and sets the direction of the SUMP process and six technical tables in specific topics such as urban planning and mobility, public transport, non-motorised transport, climate change and sustainable transportiv. The creation of the COMUS committee is an important achievement that highlights the significant commitment by the local authorities on supporting the development of SUMP and on fostering collaboration and cooperation among stakeholders. Traditionally, transport planning in Peru has been characterised for the low levels of cooperation between institutions and limited involvement of citizens in the process; in contrast, the creation of the COMUS committee is a shift of paradigm. SUMP is a tool that will help Peru to accomplish the objectives of the 2030 agenda for sustainable cities, the Sustainable Development Goals and national ambitions to transform mobility in Peru for the better.

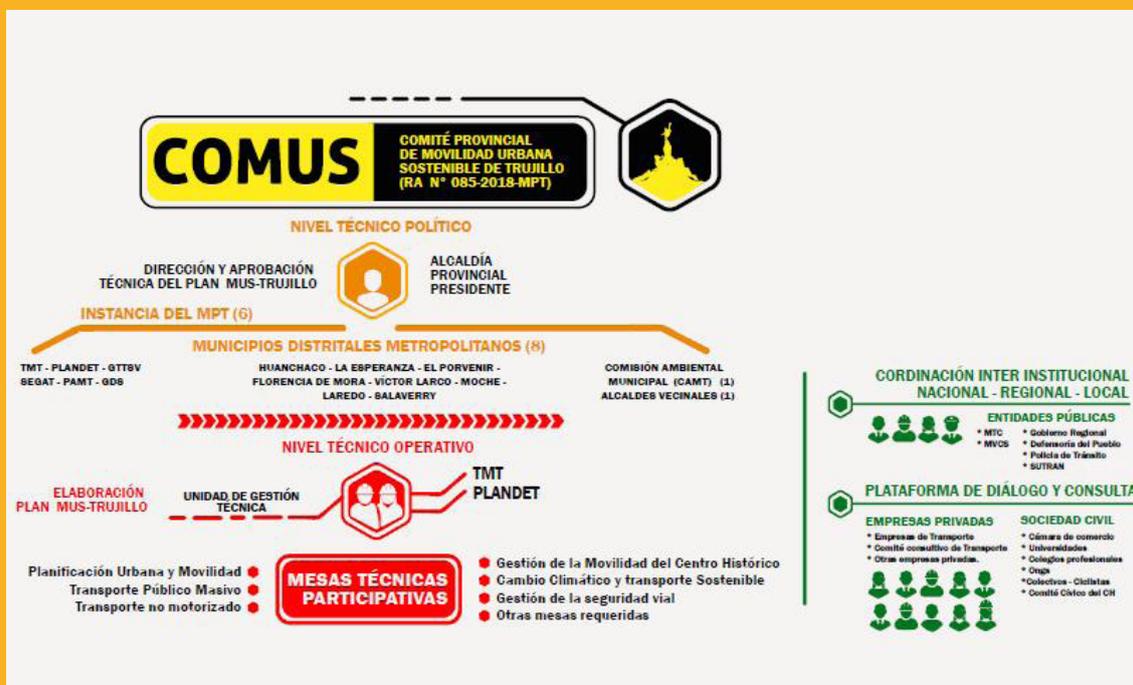


Figure: COMUS organisation structure (©COMUS)

List of main outputs of the preparation and analysis phase

- A workshop to kick-off the SUMP process, organised by the SUMP management team.
- A stakeholder mapping supporting the identification of actors that should be involved.
- The overview of the mobility situation and planning framework can be summarised in a brief diagnosis report.
- For a more straightforward process of sharing results and breaking down the main problems and opportunities, the key findings can be brought together in a baseline report.

4.2. Phase 2: Strategy Development

Objectives

In this phase, a future urban mobility vision for the FUA is determined, based on the previous diagnosis work. The primary outcomes are a clear vision and strategy for urban mobility, which needs to be elaborated together with key stakeholders and citizens. A business-as-usual (BAU) scenario and alternatives with short and long-term actions can be used for weighing the options. These are then assessed against the BAU scenario to formulate an optimal scenario for meeting the SUMP vision and objectives.

Activities



Scenario development helps planners and decision-makers to evaluate the risks and opportunities of measures because of current trends, possible changes of circumstances, and expected future trends. A business-as-usual scenario (BAU) forecasts the development assuming a continuation of existing policies and implementation of currently planned measures. Alternative scenarios describe forecasted developments resulting from different strategic policy priorities (e.g. public transport vs active mobility vs electromobility). Such scenarios exemplify the impact of policy directions. They allow weighting measures for their effectiveness, prioritising short and long-term actions. Measures for road safety, decarbonisation, equitable accessibility, and liveability are certainly recommended in cities and regions. Air pollution, traffic noise, and congestion are relevant, especially in larger FUA.

Box 12: MobiliseYourCity Emissions Calculator

The MobiliseYourCity Emissions Calculator is used to understand the GHG Mitigation potential of SUMP and NUMP. Specifically, it helps countries and cities calculate transport GHG emissions for a reference year and business-as-usual scenario (BAU), compared to a SUMP or climate scenarios. As a result, the tool provides data on the calculated transport demand, energy consumption and GHG emissions. This data gives an overview of the relevance of each transport mode regarding the total GHG emissions within the defined territory. It also enables users to quantify and monitor the impact of a bundle of mitigation actions according to the ASIF approach (Avoid, Shift, Improve, Fuels).

For more guidance on emission calculation see <https://www.mobiliseyourcity.net/mobiliseyourcity-emissions-calculator>

For comparability, different alternative sustainable urban transport scenarios with defined measures and actions for the short-term (2-3 years) and mid-term (10-15 years) should be developed. Internationally, plans use 2050 as the long-term scenario target year. Scenario building techniques could be quantitative (modelling) or purely qualitative (based on expert judgement or past results of policy strategies in the city or similar urban contexts), or a combination of both. Appropriate planning horizons for the specific planning context of fast growth could be defined to support the process.

It is essential to discuss these scenarios with a broad range of stakeholders from all parts of society (citizen participation), policymakers, and experts to achieve a common understanding and agreement. Moreover, a comprehensive discussion can help to estimate the feasibility of achieving a proposed scenario and ultimately ease implementation. While this might be new for many planners, decision-makers, and stakeholders, which might have limited experience with scenario development or the organisation of a consultation process to discuss scenario results this enables the SUMP process to conclude with an agreeable, implementable result supported by the various sectors of society.

SUMP is a complex process that has to be planned well. There is a risk that due to lack of time or resistance, consultation does not happen. The aim is to improve planning through consultation and dialogue and to test the appropriate formats with which the actors are familiar and feel comfortable. Ideally, all organisations who start SUMP share the objective to create manageable processes while producing relevant results. For example, the emphasis in metropolitan regions can be on a focused process with local and regional leaders and powerful decision-makers of the metropolitan region, further supported by professional moderation. It is essential to learn from experience so that local and regional actors can also see the benefits of consultation and trust-building. The question is how to raise awareness of this crucial issue, reduce barriers, and build confidence.



This step aims to develop a consensus on a shared mobility vision with clear objectives and strategies that specify the direction for urban mobility improvements based on the comparison of the scenarios. The decision-makers should be involved in defining the future strategic direction actively. The mobility vision can, for example, be linked to the national mobility policy and existing city visions (i. e. some cities want to become a “smart city,” and others want to become a “sustainable city”).

The vision often includes objectives such as reduced levels of automobility, increased shares of sustainable modes (walking, cycling, public transport) in the modal split, improved accessibility and quality of life (with geographic rebalance in favour of poorly served areas), increased road safety and reduction of emissions (local pollutants and greenhouse gases), better integration of land use and mobility planning, but also institutional and organisational rearrangements. More specifically for public transport, the vision can also address in particular improved regulation of public transport operators/ paratransit operators, enhanced capacity of the public transport authority, institutional development, capacity development etc.

In any case, it should be made sure that the objectives are reachable and address as many as possible the identified significant mobility problems according to the strategic priorities. While this may be a new approach to stakeholders, for whom the benefits of vision development might not be obvious, transparent processes and formats, as well as professional moderation, may clarify the benefits. Here, too, gaining experience in strategy building with adapted, simple formats and processes is vital. The value of jointly developed strategies can be seen when they provide the necessary legitimacy for the implementation of measures and are an element for access to funding for sustainable solutions. This should correspond with funding and policy evaluation criteria on the national level. In this sense, bridging the gap between strategic planning and implementation needs to be considered.

Box 13: Singapore: Clear long-term strategy for mobility

A long-term strategy needs a clear vision with defined targets. Singapore developed a comprehensive strategy, the “Land Transport Master Plan 2040,” that includes long-term perspectives, clear visions and a strategy for urban life in Singapore. It defines three thrusts that goes beyond infrastructural improvements and technological advancements, focusing on the people and their quality of life . The transport plan sets clear priorities for the future and targets that focus on the citizens, their travel time, quality of life and their safety. It brings together transport planning with other highly relevant policy fields, as land use, health, inclusion and energy. The three thrusts are:

- **45-Minute City with 20-Minute Towns**

A city where most people can make the commute to work within 45 minutes, using “Walk-Cycle-Ride” modes. In 20 minutes, the nearest neighbourhood centre can be reached by foot, bike or public transport.

- **Transport for all**

A transport system for everyone’s needs, with a focus on barrier-free public transport and special attention to people with disabilities and people of all ages.

- **Healthy Lives and Safer Journeys**

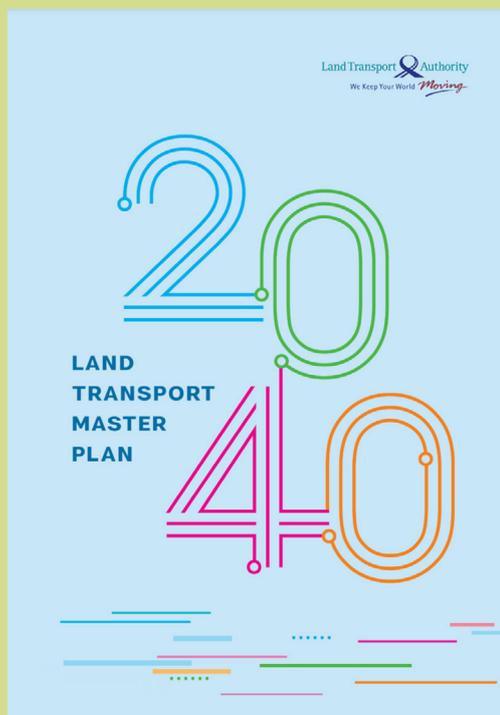
More space for public transport, active mobility and community uses, including pedestrian and cyclist space and public transport stations. A public transport fleet with clean energy usage and road safety goals towards “Vision Zero” through behaviour change, infrastructure design and traffic schemes.

Singapore’s transport strategy was developed in close collaboration with a wide stakeholder network “through the Community Partnership Network (CPN) division of the Land Transport Authority (LTA). Not only were commuters, transport employees, the private sector, academics and experts involved, but also local communities through different engagement formats. Feedback from the participants indicated that the sessions helped them better understand the considerations behind Singapore’s land transport planning and policies. Using both online and in-person participation formats also enabled all citizens to give feedback on the plan.

Using both online and in-person participation formats also enabled all citizens to give feedback on the plan.

Source: Government of Singapore (2020), Land Transport Master Plan 2040: <https://www.lta.gov.sg/>

Images: ©Singapore Land Transport Master Plan 2040





Once vision and objectives are set, defining strategic indicators and targets are the next step. Strategic indicators should enable the monitoring of progress made towards the achievement of each of the objectives. Working with just a few indicators on the strategic level may prove more practical and realistic, especially for those cities and regions that have limited resources or less experience with strategic transport planning. The list of indicators should be easy to understand and reflect the critical issues in the city (e.g. number of fatalities in road accidents, the share of the sidewalks and pedestrian crossings with low quality, or level of air quality)¹⁶. The targets set for the strategic indicators should be SMART: specific, measurable, achievable, realistic, and time-bound. Targets should be ambitious but realistic; this also means clearly describing which indicator should change by how much by which year (e.g. 30% reduction of GHG emissions from urban transport within ten years). Intermediate targets that represent milestones towards the long-term targets also need to be included (e.g. 15% reduction of GHG emissions from urban transport within five years).

¹⁶ MobiliseYourCity partnership has suggested a list of impact and the investment indicators (see MYC Model Terms of References and Annotated Outline for SUMP).

**Box 14: Vitoria-Gasteiz, Spain, Bologna, Italy and Thessaloniki, Greece:
Forum for stakeholder participation**

The three south-European cities Vitoria-Gasteiz, Bologna and Thessaloniki have one thing in common: they developed their SUMP or other mobility measures in close collaboration with local stakeholders and citizens through extensive participation methods. All three cities created a “mobility forum”, which brings together actors such as municipalities from the metropolitan region, citizens, city departments or the private sector.

The Spanish city of **Vitoria-Gasteiz** received much attention in the last few years through their comprehensive “Superblock” concept, which is one of the key strategies to achieve the city’s SUMP targets. A superblock is a geographical space that covers several city blocks that can only be used by pedestrians, cyclists, services and neighbours’ cars, while other private cars and public transport are restricted to the streets surrounding the blocks. In the context of developing Vitoria-Gasteiz first SUMP, the city formed a citizen forum for sustainable mobility, which is led by an interdepartmental technical committee, involving different municipal departments such as the department of economic development, department of environment and public space, public health unit, local police, traffic and mobility service, citizen participation service etc.

The participatory process to develop a SUMP resulted in the “Citizens Pact for Sustainable Mobility” for the future development of the mobility system. To avoid initial concerns from some citizens and shopkeepers directly affected by the superblock implementation, a permanent contact with citizens associations was kept by the municipality. Also, a communication and awareness campaign was launched to create a favourable perception towards a new culture of sustainable mobility. At first, there was also opposition among some municipal officers and political stakeholders, but that was overcome thanks to the existence of a permanent working group that meets weekly to assure a strong consensus regarding the measures to be implemented.

Bologna’s SUMP was developed together with citizens and stakeholders through the so called “Sustainable Mobility forum” aiming to engage through participatory, informative and communicative activities, such as online surveys, e-newsletters and a dedicated website. Stakeholders and citizens from 55 municipalities were invited to take part in different workshops and other kind of events to co-create a common understanding of the SUMP’s strategy, its objectives, policies and actions. This process allowed Bologna to develop a metropolitan SUMP which is integrated with land-use and logistics planning and experiences high acceptance levels by the public.

In **Thessaloniki**, a mobility forum was set up in 2016 after the SUMP adoption. This forum acted as an assembly for all stakeholders, whereby the Ministry of Transport, the Regional Unity, the municipalities, universities and research institutes (AUTH and HIT-CERTH), public transport operators, the local Chamber of Commerce and Industry, citizens associations and NGOs were involved. It aims to present the progress of implementation, to discuss the way forward and to allocate responsibilities. Also, it provides the ideal framework to coordinate the metropolitan SUMP development and to find a common vision and strategy for all SUMP’s developed by different municipalities in the metropolitan area.

Source: Rupprecht et al. (2019), Escudero, J. C. (2013)

Box 15: Common vision on sustainable mobility in the Metropolitan Area of Guadalajara, Mexico

In the Metropolitan Area of Guadalajara (ca. 5 million inhabitants) urban mobility used to be managed by the municipalities' agencies of transport and infrastructure and planned by the federal government. In a major effort to improve integrated urban planning in the rapidly growing metropole, the 10 municipalities are now represented by IMEPLAN, the metropolitan institute for planning and urban management. This way, urban and mobility management was diversified by a new institutional layer.

Urban mobility management and the use of sustainable planning measures play a key role in reaching the Metropolitan Land Plan's (POTmet, 2015) objective of creating a compact and sustainable city. But although sustainable urban mobility has risen on the agenda of citizen groups and planning institutions in the city, many stakeholders and citizens are against policies that disadvantage or cut down the car road space. In some cases, built cycling infrastructure had to be reversed into parking and road space for motorised transport. Guadalajara reacted by fostering exchange and debates between the disagreeing groups of stakeholders. New boards and communication departments within agencies were created to put sustainable

mobility's technicalities and benefits higher on the agenda. A comprehensive update of the PMUS (Spanish for SUMP) aims at including all sectoral plans and exercising participative and collaborative mobility planning in a metropole. The early involvement of citizens and municipal institutions is a complex, but very effective measure to succeed in metropolitan planning.



Source: Strunden (2020)
Image: GuadalajaraGob

List of main outputs of the strategy development phase

- A visioning and goal setting workshop with stakeholders and citizens to develop a shared understanding of possible future options.
- A SUMP strategy, including the shared vision and objectives, as a result of the visioning and goal setting exercises.
- A presentation of all developed scenarios with at least a BAU and an alternative (low carbon) scenario.
- A set of locally achievable but ambitious (above business-as-usual) targets.

4.3. Phase 3: Measure Planning

Objectives

In the third phase, the planning process moves from the strategic to the operational level. The focus is on the selected scenario and prioritised measures, as well as the description of monitoring arrangements. Measures will be described with as much specificity as possible to ensure that they are clearly defined, comprehensive, and well-coordinated. The measure planning phase is concluded with the preparation of the implementation phase and submission of the SUMP to the decision-makers of the competent political body, which is then adopting the plan.

Activities



The retained scenario should be described in detail, providing a cost estimation and the scope of the feasibility studies necessary for its implementation. The environmental and social impact of the measures and the need for land acquisition should be defined. Factors such as the ease of implementation, the severity of risks, and the degree of preparedness should be described. To ensure that the selected scenario indeed contributes to the agreed-upon targets, the impact may be assessed against the core indicators. The SUMP should encompass a comprehensive set of complementary and mutually supportive measures. Larger and more costly infrastructure measures should be complemented with packages of smaller and less expensive (soft) measures, such as transport demand management, educational, promotional, or awareness-raising measures. Not more than three levels of priority (e.g., high, medium, and low priority) should be defined. SUMP thus offers an approach to review the level of policy integration of large urban transport infrastructure projects and, if necessary, to add such soft policies.

The prioritised measures need to be broken down into short-, medium- and long-term actions. A detailed action description encompasses information on costs, legal requirements, expected contribution to objectives, as well as suggested priorities, responsibilities, and timeline. The measures can be grouped, for example, by transport modes, by location, and by themes (public transport, non-motorised transport, traffic, road safety, emissions of GHG, resilience to climate events, etc.) to support the identification of (financially) feasible integrated packages of measures. Monitoring and evaluation should be planned for each action. A set of core indicators is defined that allows for monitoring and evaluation of main measures with reasonable effort considering available data and limited resources for the collection of new data as well as of small-scale indicators.

Box 16: Guangzhou, China: Holistic planning of a Bus Rapid Transit (BRT) system

Between 2004 and 2010, the city of Guangzhou implemented Asia's highest capacity BRT system. It was the first of its kind to achieve metro-like passenger-frequencies of 50,000 passengers an hour and 800,000 a day. The BRT system is the first one being directly connected to the city's metro system, and it complements its stations with bicycle infrastructure.

With the BRT lines as the centre-piece of this major project, the new bus system is part of a larger multimodal transport network and an integrated planning approach. Not only the citizen's needs for a better public transport system were considered (e. g. higher frequencies, improved safety, comfort, commuting time), but also expectations and needs of users of other transit modes (bus, metro) and pedestrians and cyclists. Therefore, this holistic approach did consider design and integration features, not only for the BRT stations, but also for the overall urban

space. Stations were built pedestrian-friendly with bridges, bike parking and sharing were implemented, and a greenway with bike lanes, pedestrian space, parks and play grounds follows the BRT corridor through the city. Major projects like the BRT system in Guangzhou are in strong need of an integrated planning approach, considering the overall transport network, as well as citizen's needs, other complimentary measures, and the integration of stakeholders. The framework of SUMP offers a holistic approach of integrating major projects into the bigger picture of the mobility system, for ensuring improved quality of life and a long-term sustainable approach.



Source: C40 Cities Climate Leadership Group (2016), Far East Mobility (2020)

Images: BRT system (©ITDP); Bicycle parking at BRT station (©Karl Fjellstrom, Far East Mobility)

Each indicator has a definition, a reporting format, how data is measured, how the indicator value is calculated from the data, and how often it will be measured. It is also determined who is responsible for data collection, the reporting budget as well as a baseline value, i. e. a starting value and a target value of desired change. Whenever possible, standard indicators that are already well defined and where people know how to measure and analyse them should be used. The Global Partnership MobiliseYourCity has suggested a list of standard core indicators for SUMP.

Box 17: Guangzhou, China: Holistic planning of a Bus Rapid Transit (BRT) system

Marikina City developed a 50 km bikeway system within the city to promote cycling and improve safety and accessibility for cyclists. The construction started in 2002 as an “experimental” approach, in which the city planners learnt and adapted their plans through the process. The network connects the city’s residential areas, particularly low-income communities, to work, markets, schools and other important places.

With the infrastructural development of the bikeway system, sidewalk and drainages were improved and roads were maintained and widened to make more space for cyclists. For the overall promotion of cycling and the improvement of road safety, the city implemented consistent new regulations and traffic rules and organised a bicycle safety campaign including safety education and information.



For promoting multimodal mobility, a bicycle parking station was set up at the train station. Overall, the project also aimed at the recovery of public spaces, together with the improvement of green space and space for active mobility. After the finalisation of the construction, the municipality still works on promoting cycling, for example through a bicycle loan for city employees, in-school bicycle safety education and cycling clinics or events. Also, the infrastructure is still being improved through signages, bicycle parking and bicycle stations.

Source: Marikina City (2008)
Image: ©Aldrin B. Plaza, <https://blueprint.onemega.com/make-bike-lanes-work/>

Box 18: MobiliseYourCity SUMP core impact indicators

MobiliseYourCity core impact indicators help cities monitor the impact of their plans from a sustainability perspective. They are quantifiable and are aligned with the Sustainable Development Goals (SDGs).

These indicators represent a standardised list for the urban mobility sector, and should be complemented with tailored indicators that can respond to the specific content of each SUMP.

1. Transport-related GHG emissions: Reduction of yearly GHG emissions in a SUMP scenario compared to a BAU scenario.
2. Access to public transport: Proportion of the population living within 500 meters of a public transport stop with a minimum average of 20-minute service.
3. Road safety: Traffic fatalities by all transport accidents (road, rail, etc.), per 100.000 inhabitants, per year.
4. Air quality: Mean annual urban air pollution of fine particulate matter (in μg PM 2.5) at road-based monitoring stations.
5. Modal share of non-motorized transport and public transport: The proportion of trips travelled with non-motorized modes and public transport as a share of total trips travelled.
6. Affordability of public transport: Percentage of disposable income spent on public transport for uses part of the second quintile household group.

The full methodology (definition, quantification, etc.) of the SUMP core impact indicators is available on https://www.mobiliseyourcity.net/sites/default/files/2020-11/Data%20Needs%20and%20Uses_MobiliseYourCity%20Core%20Impact%20Indicators.pdf

The following matrix shows examples of measures broken down into short, mid and long-term associated with the indicators to evaluate them. It aims at clarifying how certain measures can be broken down in time and being evaluated by specific indicators.

SUMP Element		Example	Measured by	
Objective		Reduce local pollution	Number of days exceeding critical air pollution levels	
Transport objective		Increase use of non-motorised modes	Share of walking and cycling trips	
Measures	Short-term	Build cycling lanes	Create temporary cycling lanes on main roads	% change in cycling trips
	Mid-term		Reduce vehicle access to certain routes	Km of roads/lanes freed from motorized traffic
	Long-term		Build segregated cycle lanes	Km of segregated cycle lanes built
	Short-term	Pedestrianize city centre streets	Create car free days/weekends/week	Number of streets pedestrianized
	Mid-term		Reduce access of shopping streets to certain types of vehicles	% of vehicle access
	Long-term		Pedestrianize city centre shopping streets	% completion of pedestrianisation of city centre
Resources		Investment and maintenance costs	Transport investment and maintenance costs for new/improved infrastructure	

Moreover, the MobiliseYourCity Monitoring and Reporting approach for GHG emissions provides clear guidance and MRV methodology encompassing box ex-ante and ex-post evaluations as well as the periodic monitoring of GHG emissions associated with the development and implementation of SUMPs and NUMPs¹⁷.

The increasing number of internet users in the ASEAN Member States¹⁸ can be an advantage, as it makes it possible to provide an online-based platform (website or apps) for the monitoring and evaluation process. Such an online platform is a useful tool for citizens to get directly involved when SUMP measures are implemented, e.g. people can easily report to the related government body via apps/websites whenever any problem occurs during the implementation of the project.

17 MobiliseYourCity Monitoring and Reporting Approach for GHG emissions is available in the MobiliseYourCity [website](#).

18 From 2008 to 2013 the number of internet user in ASEAN grew 16 percent annually (The World Bank, 2014 as cited in Woetzel et al., 2014). The internet penetration within ASEAN reached 65% in 2019. Social media penetration 63% and Mobile connectivity 132%. (ASEAN UP, 2019).

Box 19: MobiliseYourCity
a global partnership to promote local SUMP implementation



The Partnership is jointly co-financed by the European Commission's Directorate-General for International Cooperation and Development (DG DEVCO), the French Ministry of Ecological Transition and Solidarity (MTES), the French Facility for Global Environment (FFEM), the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMU) and the French Development Agency (AFD). The implementation of the financed activities is conducted in coordination with national and local governments and initiated by the AFD, the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and includes the support of organisations like the Centre d'études et d'expertise sur les risques, l'environnement, la mobilité et l'aménagement (Cerema), the Agence de l'environnement et de la maîtrise de l'énergie (ADEME), the Codatu NGO and the Wuppertal Institute.

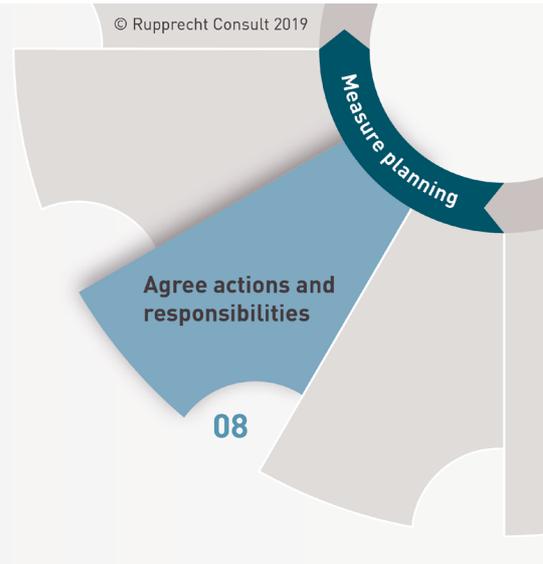
On its principles, MobiliseYourCity Partnership's objective is to develop more inclusive, liveable, and economically efficient cities, to reduce GHG emissions from urban mobility and to increase the possibilities for urban citizens to have access to public transportation services. MobiliseYourCity partners have the target to work in close collaboration with 100 cities in 20 countries and to develop Sustainable Urban Mobility Plans (SUMP) and National Urban Mobility Policies (NUMP) at the global scale.

Since its creation, MobiliseYourCity has become the leading global Partnership for increasing investment for sustainable transport solutions. In 2021, the Partnership has more than 60 partner cities with a combined population of over 75 million people in 32 countries. AFD and GIZ is supporting the elaboration of SUMPs and NUMPs. The Partnership expects to continue to grow and to see tangible results for sustainable mobility.

In Asia, the MobiliseYourCity partnership engaged several activities under European Union and Asian Development Bank (ADB) financing such as the MobiliseYourCity India Program or at the national level to support national urban mobility policy development in Thailand, the Philippines, Pakistan, Myanmar and Indonesia. In addition to technical assistance provided in the region, the Partnership aims at involving new partners and to provide tools and reinforce capacities of its members to ensure the implementation of the SUMPs.

STEP 8: Agree actions and responsibilities

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Thorough financial planning is needed to ensure that the identified measures and actions are economically sound and financially viable. Therefore, funding sources beyond the local budget need to be defined, and a financial plan developed. A detailed financial scheme can be included in the plan itself or is part of a separate process. In either case, a budget for each prioritised action and long-term arrangements for the distribution of costs and revenues among all involved organisations need to be agreed upon before SUMP adoption.

Following actions should be carried out:

- Identification of available funding and financing sources, as well as the ability of the organisations involved in the SUMP to access or capture them.
- An organisational assessment as financial commitments and capacities of the different organisations vary, and they have different legal rights and responsibilities related to finance.
- Identification of the legally appropriate borrowing entity for measures that require external financing as well as an assessment of the creditworthiness.
- Identification of sources of funding for further detailed feasibility and market studies that are required for larger investments.

An inventory of potential funding sources and competing budgets assesses the amount of money that would realistically be available for the measures, both for investment and operational expenditures, including:

- Local taxes: a special local transport tax for public transport paid by public or private enterprises, developers;
- Revenue funding: tickets, parking fees, city centre pricing, congestion charging, advertisements.
- Private sector involvement in either capital, investment, operations, or a combination of both, e.g. through public-private partnership arrangements;

- Fundraising activities involving appropriate sponsors (but consider compatibility with marketing strategy);
- Local budgets: from different municipalities and different policy domains;
- National/ regional subsidies and funding from ASEAN;
- International financial institutions;
- External loans, municipal and green bonds.

When developing financing options, the specific context of the member state for which the SUMP is being prepared needs to be considered. This is especially the case where the central government is likely to have more control over the city's finances, and donor financing might be both more important and more uncertain. The availability of funding may also depend on whether the main city transport infrastructure is likely to be financed by the central government as part of a national inter-urban transport project.

Box 20: Ha Noi and Ho Chi Minh City, Viet Nam: Funding for sustainable transport development

As a city developing a SUMP or working on other sustainable development projects, funding is an essential door opener for its implementation. There is a diversity of funding available, and one needs to get an overview over the possibilities, as it can also attract co-funding. Hanoi and Ho Chi Minh City in Vietnam used funding from the Climate Investment Fund (CIF) and the Clean Technology Fund (CTF) to finance the sustainable development of their transport system. For one major 3.5 billion US-\$ project, the CTF financed 250 million US-\$, which were mainly used for the extension of the urban rail and bus system and the renewal and modernization of the vehicle fleet. Both funding sources are available for all developing countries, while CIF can also promote national projects and attract co-financing for financing the sustainable development of urban transport.



Source: CIF (2020), Bräuninger et al. (2012)

More information: <https://www.climateinvestmentfunds.org/>

STEP 9: Prepare for adoption and financing

Prepare for adoption
and financing

09

Measure planning

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A roadmap for an optimal implementation of the SUMP over the next 15 years should be developed. Relevant factors in defining the agenda include:

- the availability of funds (in volume and overtime),
- the sequential stages of implementation,
- the time required for feasibility studies,
- environmental and social assessments,
- review and approval by all stakeholders,
- mobilisation of resources,
- the establishment of specific institutional and legal arrangements if required (as in the case of public-private partnerships),
- preparation of detailed engineering whenever necessary,
- selection of suppliers and contractors,
- setting up an MRV system and assuring the availability of data required and
- communication strategy development and implementation.

Such schedule should also include mechanisms for periodical review to check and update the SUMP (every 3 to 5 years), based on arising new challenges, unforeseen events, technological upgrades or disruptions. The implementation roadmap should also ascertain what entities will take responsibility for implementing the various measures in the SUMP (including the preparatory studies) and what support they may need to be able to do so.

All activities necessary for successfully carrying out these stages should be identified and presented in a time-specific action plan. Although this plan should cover the entire SUMP implementation period, it is recommended to put a particular emphasis on a realistic and fundable short-term (5 years) priority action plan to ensure that the implementation phase immediately follows the planning phase. Most cities need financial and operational support to implement the measures. The question is to what extent these mechanisms exist or need to be developed.

Box 21: MobiliseYourCity SUMP annotated table of contents

At the end of the planning process, a plan shall be delivered, which will constitute the SUMP of a city or metropolitan region. A SUMP document summarizes the main outputs of the entire SUMP process, including the results of the urban mobility diagnosis, the comparison of scenarios, the SUMP vision, the selected measures and the implementation and monitoring plan. MobiliseYourCity SUMP Annotated Table of Contents provides information and easy-to-use guidance on how a SUMP document is best structured and what information it should contain to achieve compliance with international SUMP standards.

For further guidance see <https://www.mobiliseyourcity.net/annotated-table-contents-sustainable-urban-mobility-plans-sumps> as well as <https://changing-transport.org/toolkits/sump>

List of main outputs of the measure planning phase

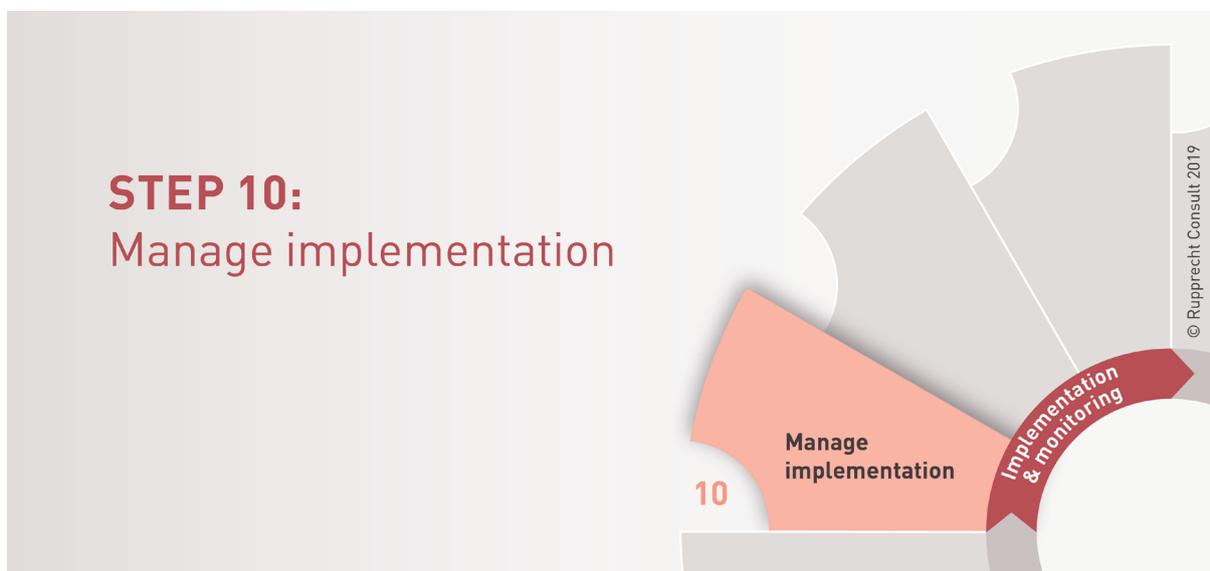
- A sound financial plan that defines how to finance the actions of the SUMP.
- A document showing the core indicators, including how to manage monitoring.
- A clear implementation plan including timing, budget, allocation of responsibilities, and outline of the resources required.
- A high-quality final SUMP document that is ready for its adoption.

4.4. Phase 4: Implementation and Monitoring

Objectives

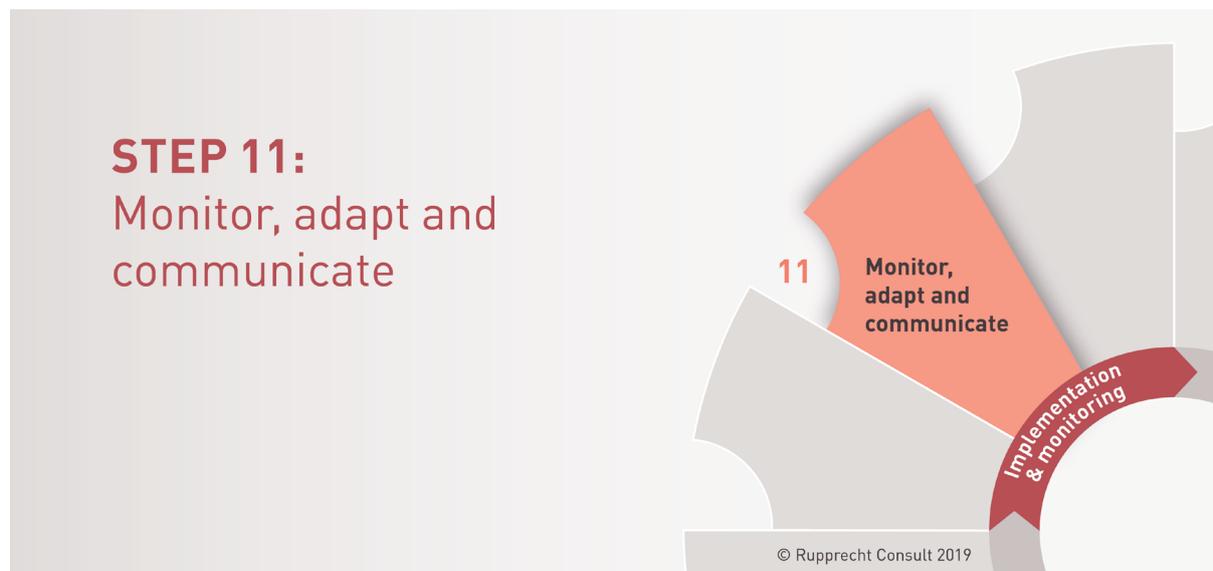
The fourth phase focuses on implementing the measures and related actions defined in the SUMP, accompanied by systematic monitoring, evaluation, and communication. In this sense, it is a handover of the SUMP to the sectoral planning departments which prepare the implementation of the projects following local and national requirements. Further in-depth analyses such as feasibility studies are commissioned, and tenders for planning and construction measures are prepared. The setting up of a monitoring system and its implementation is a crucial element of implementation planning and management.

Activities



This is a critical phase as it is the transition from planning to implementation and the handover from the strategic to the technical teams. In order not to disconnect the process and to ensure that the SUMP is the guiding principle as an overarching strategy, it is crucial to maintain contact between the strategic and the technical team (action managers). The question here is how this can be efficiently organised and how to avoid bureaucratic overload and whether the management team will continue to operate. To check the general status of action implementation meetings of action-managers should be organised. This can be particularly difficult if there is generally little capacity (human resources, technology, technical expertise) available for implementation, and there are no resources to carry out continuous feedback loops between implementation and the strategy or for contingency activities in case actions are not on track.

Another important step for implementation is procurement and, in this area, sustainable public procurement of products and services. Procurement is usually one of the earlier parts of action implementation, but relevant during the entire implementation stage depending on the timing of the different actions. The procurement of more sustainable products and services should be possible even if purchase prices are higher. But any infringement with local or national law needs to be avoided. For SUMP implementation, it is difficult when there are few opportunities or no framework for sustainable public procurement. It could be considered to add sustainability aspects, either as minimum requirements or as award criteria that help offers to score higher and use life cycle costing, instead of the only purchase price, as cost criterion.



Through regular and systematic monitoring and management, problems should be identified early. Also, adaptations might be necessary if new and better measures, actions, or technologies might be available or new knowledge could make a measure obsolete. In this respect, there is a continuous need for flexibility and adaptation to new requirements. Various kinds of internal factors relating to planning (e.g. time or budget) or external factors (e.g. public disagreement with (bold) actions, political legislature, regulation processes etc.) could be a showstopper for implementation or result in a major deviation from the agreed strategy.

If, for example, a measure encounters strong opposition, it could help to turn it into a temporary experiment or pilot that will be evaluated after a certain amount of time (e.g. one year), and then keep or discontinue it depending on the results. Often, opposition decreases once people and politicians get used to the change and see the benefits.

Box 22: Mandalay (Myanmar) and Medan Metropolitan Area (Indonesia) involved in a SUMP process

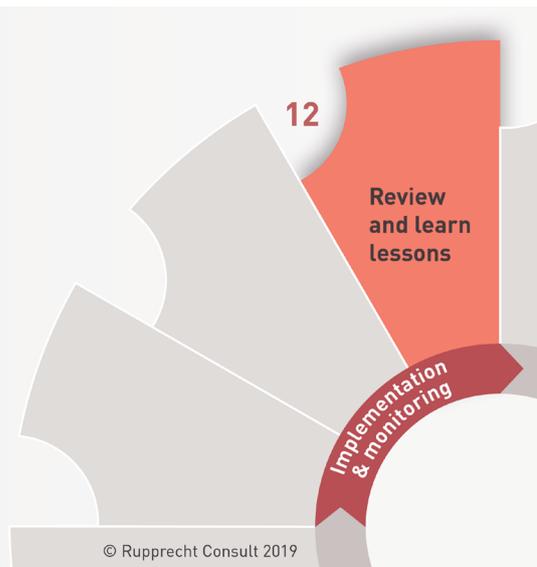
Mandalay and Medan Metropolitan Area (which consists of Medan City, Binjai City, Deli Serdang Regency and part of Karo Regency) have joined the MobiliseYourCity Partnership in 2020. Since early 2021, both cities are engaged in a SUMP elaboration process with the financial support of the Agence Française de Développement (AFD), one of the main implementation partners of the Partnership. Considering demography and economic dynamics, those cities are distinct. Medan Metropolitan Area counts a population of more than 4.7 million while Mandalay, being the second city in Myanmar, has around 1.7 million inhabitants. Mandalay main economic activities are related to tourism and trade while Medan Metropolitan Area is one of the major economic hubs of the Indonesian Archipelago as the city has a port to enhance international import/export activities. In addition, if the mobility in those two cities is mostly affected by traffic congestion due to the increasing number of cars, Mandalay remains a city with mainly motorbikes as daily means of transport with a poor public bus service and most commuters in Medan Metropolitan Area are using informal private minibuses.

Beyond the SUMP that aims at providing scenarios and solutions to improve the mobility in the cities, those tools will also introduce for Mandalay and Medan Metropolitan Area new practices for planning the mobility. In particular, the SUMP methodology relies on the participation of a diversity of economic and institutional stakeholders as the involvement of the local population. The SUMP that are elaborating in those cities are also developed with the purpose to create and install a Mobility Observatory. In this regard, the SUMP process for those ASEAN cities is not only a mobility plan as an outcome, but the SUMP adoption comes with the creation of practical tools to lead and monitor its implementation, collect mobility data, and adjust the orientations of the plan to target the development of strategic and key transport projects.



Image: Rickshaw in Mandalay and Becak in Medan <https://www.jetstar.com/sg/en/inspiration/articles/ind-medan-reasons-to-visit> ; <http://www.duplisea.ca/photos/myanmarphotos-2mandalay.html>

STEP 12: Review and learn lessons



When implementation is carried out, the progress of the implemented actions should be publicly communicated. That way, citizens can experience real changes in their city or neighbourhood and can make the connection if they have provided input to the planning process. Citizens and stakeholders who are directly affected by certain actions should be particularly addressed. In this respect, measures to involve stakeholders and the population need to be carried out again to ensure that communication and dialogue is a continuous process and does not stop with planning.

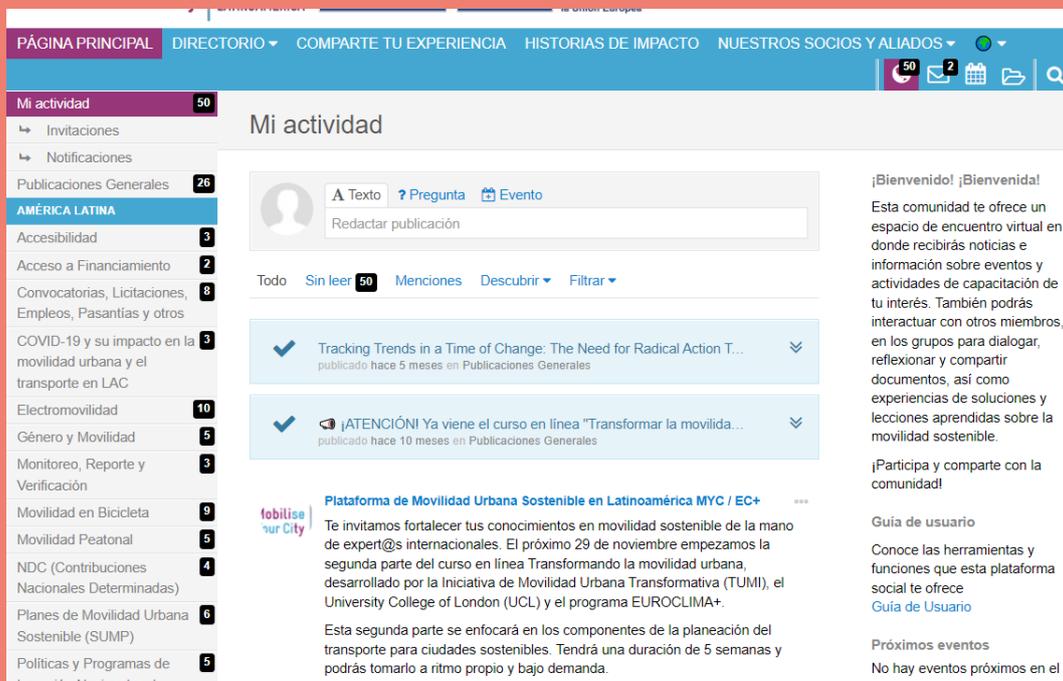
Also, the engagement of politicians plays an essential role during implementation. Often even politicians are non-experts, and they have concerns about certain measures and indicators, therefore indicators need to be presented in the form of high-quality figures that are easy to understand. Also, an update on the implementation status should be given to the local council regularly to raise general awareness and interest for urban mobility.

All this is intended to promote the learning process for the local authority. It should enable the planning process to be continually improved. To that extent, a community of practice can be created using an online platform to share experiences and practices at the local, national or regional level.

Box 23: Community of Practice online platform “Plataforma de Movilidad Urbana Sostenible en Latino América”

This Community of Practice online platform offers users a virtual meeting space where they will receive news and information on events and training activities of interest to them. They are also able to interact with other members, in groups to discuss, reflect and share documents, as well as experiences of solutions and lessons learned on sustainable mobility.

This virtual meeting place for collaborative learning aims at promoting cities developing more accessible and low carbon mobility. It brings together sustainable urban mobility practitioners to share relevant information for regional discussion, exchange local experiences, form alliances and synergies between different actors to enhance actions, disseminate specialised technical training opportunities and creation networks of contacts. The platform is divided in thematic groups in addition to a general one to ensure easy communication on specific topics.



Source: MobiliseYourCity

List of main outputs of the implementation phase

- Factsheets that describe the aspects of each action to the departments and institutions in charge of their implementation.
- Technical specifications for products and services considering sustainability aspects, either as minimum requirements or as award criteria that help tenders to score higher.
- Monitoring results and regular communication with different target groups (stakeholders, the wider public, politicians, and the city council) about the progress of implementation and improvements of strategic indicators (fatalities, air quality etc.).

5) Summary and Recommendations to Implement SUMP in ASEAN Cities

Planning strategically through collaboration

Regarding the decision-making process, the focus on collaborative and participatory planning of the SUMP approach poses a problem for large metropolitan regions with disarticulated municipal mobility management. Large metropolitan regions tend to be divided into multiple municipalities, each of which may or may not have administrative structures already in place. The shift from technical, traditional planning practices to a strategic method requires more collaboration and participation on the municipal and regional level and a long-term vision for mobility. This would require more effort to put together a mobility management team compared to other municipalities which already have one in place.

The regular exchange of information, and an institutionalised coordination of plans and measures (through boards, councils, round tables etc.) is a time-intensive and long-term process. The legal scope of metropolitan management has to be agreed nationally. Sector planning is essential but should be complemented with systematic cross-sectoral and regional/metropolitan mobility planning. On a regional/metropolitan scale, a steering and coordinating team can avoid contradiction, overlapping mandates and facilitate communication. This team should join political, social and economic debates in urban development to increase sustainable mobility on the public agenda. As this institutional organisation takes time, political turnover might play a role in the advancement of planning and implementation.

To create a common understanding of the integrated process, its positive future impact and its necessity, it is crucial to involve all city agencies and stakeholders from the mobility sector. This legitimises the SUMP approach, communicates common ownership and makes it less dependent on political mandates. For the same reason, it is important to involve citizens and citizen associations from early onwards. Broad communication of the milestones and the opportunity to participate in the vision will improve citizens' identification with the measures and have a strong effect on the plans reach and acceptance.

Recommendations

1. **Raise awareness on the concept of SUMP at the ASEAN city level and national level, i.e. through National Urban Mobility Policies (NUMP).** It is essential to raise awareness on the concept of SUMP at the local, regional and national level to enable cooperation between the planning sector and political decision-makers. In doing so, it facilitates change at the local, regional and national level in the long-term.
2. **Consolidate the national framework of SUMP to provide support for cities and regions and to provide political stability.** In addition to raising awareness on the concept of SUMP at different decision-making levels, there is a need to strengthen the national framework for SUMP implementation at the local level. In doing so, it ensures the continuous development of the SUMPs locally without being impacted by political turnover in the national government. Providing a legal framework at the national level will also support cities and regions in implementing their SUMP by referring to its legal framework in a national context.
3. **Coordinate multilevel governance of SUMP.** There is a need to clarify the roles and responsibilities of the different levels of governments involved in the SUMP creation process. In doing so it ensures that each stakeholder involved in the process is aware of their role and their contribution to the SUMP. It also enables rapid response to crises and the implementation of effective management of transport systems. What is needed the most is stakeholders' interest in sustainable mobility and increasing awareness of cooperation needs between the planning sectors and political decision-makers to facilitate change at the local and regional level in the long term.
4. **Promote cooperation between institutions and stakeholders.** Cooperation between public institutions and external stakeholders is essential in the creation and implementation of SUMPs. Cooperation will allow for the continuous embeddedness of SUMP in institutional and political practices. It also helps in integrating SUMP within local frameworks and align with other city planning frameworks and policies. Stakeholder cooperation is key to ensure the diverse inclusion of stakeholders' needs and solutions. Cooperating with local stakeholders will also help create a sense of shared ownership and a joint vision of sustainable mobility.
5. **Cooperate and incorporate the informal transport sector in the SUMP creation process.** The informal transport sector provides an important share of the transport offer in ASEAN cities. It is therefore critical to engage with this sector during the SUMP creation process to provide effective transport systems and improve working conditions for all providers. Further cooperation and partnership with the informal transport sector are essential for a successful modernisation and increase in innovation. Account for these services when planning new transport infrastructures. Private partnerships and cooperation with the informal transport sector can also be possible to improve their offer (e.g. partner with local financial service providers to implement contactless payments).

- 6. Be more considerate of the climate change implication on the transport sector.** Climate change and extreme weather events can negatively impact ASEAN cities' transport system. Policymakers, planners and decision-makers need to better understand the impacts and vulnerabilities related to climate change on their transport system to adapt and plan robust, flexible and integrated systems. Considering climate change implications on the transport sector translates, for example, in speeding up and scaling up the energy transition of the transport sector but also collaborate with other institutions at the national, regional and local level to integrate climate policies in SUMP. Impacts of climate change and extreme weather events can be reduced through cooperation at the metropolitan level and across urban sectors in the implementation of adaptation and mitigation measures. Decision-makers should also consider implementing resilience management at their city level and incorporate resilience planning in their SUMP to better prepare their transport systems to future crises.

- 7. Implement SUMP pilot and demonstration projects.** Pilot and demonstration projects allow making the action lines of a new SUMP visible in the city. It also helps during the evaluation of measures and enables their easy reproduction in another part of the city. Pilot projects can also promote SUMP implementation and inspire other cities to develop their strategies based on the success of the pilot measure. Cooperation with local stakeholders and especially private stakeholders can allow for the quick implementation of pilot and demonstration projects.

Leveraging finance for SUMPs

One of the biggest barriers to SUMP is the limited fiscal capacity of metropolitan regions. The SUMP usually involves large-scale infrastructure projects and the development or modernisation of mass transit. With the integrated approach of the strategic plan, it is easier to identify the most effective measures in a transparent and accountable way. To improve the SUMPs bankability, the proposed projects need to provide a solid return on investment, specify all CAPEX and OPEX, and ideally integrate external costs to further substantiate the need for investment. In the metropolitan regions of the ASEAN, private car ownership is growing particularly strong, and congestion and air pollution are beyond critical thresholds. The internalisation of costs and calculation of saved damages for sustainable transport is, therefore, necessary to leverage financing. Cities could combine private and public funding sources and also make use of international grants and loans in Climate Finance.

Investing in a SUMP can be a challenge in some cases if the benefits and returns on investment of SUMP implementation are not clear. But investing in the development and implementation of a SUMP does provide benefits in other sectors at local, regional and national level. SUMPs help diversify mobility options by providing alternatives to individual car use, which can reverse the trend of increasing car use and decrease congestion levels. The implementation of SUMP policies could also lead to a decrease in air pollution, which can prevent deaths and provide social and economic advantages associated with improved air pollution (See section 3.1). Encouraging public transport and active mode of transport in a SUMP can increase the health of citizens and can effectively contribute to tackling road safety problems. Overall, the benefits associated with the implementation of SUMP contributes to a higher quality of life and the internalisation of the costs associated with traditional transport system's negative externalities.

Recommendations

8. **In case of weak data basis, prioritise quality and regularity over quantity in the collection process.** When data collection is difficult, planners and decision-makers can limit themselves to a smaller number of data. It is more useful to regularly get a general status update than to conduct very detailed analyses every 10 years. To reduce efforts in collecting data, ASEAN decision-makers can use existing data collected by other organisations or cooperate with other organisations as much as possible.
9. **Create a community of practice to exchange know-how and planning practices among ASEAN cities and countries.** ASEAN cities can benefit from implementing sustainable mobility measures that have been implemented in other partner cities or countries. Creating a community of practice platform where such knowledge and practices can be shared is essential for ASEAN Member States and cities to learn from each other. A similar approach to Latin American cities implementing SUMPs of creating a community of practice online platform can be taken (see box 18).

Using digital tools to support the SUMP

In terms of technical requirements, strategic planning techniques require transport modelling tools and a solid data basis which are often not available. By investing into the digitalisation of transport and diversifying the collection of relevant data, cities can gradually feed more information into the decision-making and planning process. The digitalisation of transport makes it easier to overview the planning process but also has significant impact on closing large data gaps on for example women, traditional, non-registered modes of transport and travel patterns. Apart from transport modelling, digitalisation and online formats are an adequate platform for citizen participation programmes and accelerate the communication of new projects.

Recommendations

- 10. Account for informal transport offer when planning a SUMP.** Informal transport is present across ASEAN Member States and provides services that complement public transport and regular private services. It is essential to account for this offer when planning a SUMP. In doing so, it helps promote complementarity instead of competition by avoiding investing in the development of a similar offer via public transport services. Integration of informal transport in SUMP could entail reforming the sector through new business and organisational models, tighter regulatory frameworks and public investment.
- 11. Conduct a cost-benefit analysis prior to SUMP implementation.** Cities can conduct a cost-benefit analysis when deciding on the measures for their SUMP, similarly to Arad (Romania) that found that €2.2 million will be gained for every €1 million invested.

References

- Alcántara, Ana (2019): Ambato strengthens its commitment to sustainable mobility. Website <https://www.changing-transport.org/ambato-strengthens-its-commitment-to-sustainable-mobility/> accessed 09.07.2020.
- Alcántara, Ana (2019): Reinicia el trabajo de Ambato hacia la movilidad sostenible. Website <https://euroclimaplus.org/contact-9/noticia-urbano/467-reinicia-el-trabajo-de-ambato-hacia-la-movilidad-sostenible/> accessed 09.07.2020.
- SMMR Project (2019): Analysis of Challenges and Opportunities: Mobility in Three Metropolitan Areas. Analysis of Transport Development in three South-East Asian Metropolitan Areas participating in the SMMR Project: Can Tho (Vietnam), Phnom Penh (Cambodia) and Vientiane/Nong Khai (Lao PDR/Thailand). Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH.
- ASEAN (n.y): Overview on ASEAN Transport Ministers (ATM) Meeting. Website: <https://asean.org/asean-economic-community/asean-transport-ministers-meeting-atm/overview/> accessed 03.03.2020.
- ASEAN UP (2019): Southeast Asia Digital, Social and mobile 2019. Website: <https://aseanup.com/southeast-asia-digital-social-mobile/> accessed 29.02.2020.
- Bräuning, Prof. Dr. Michael, and Schulze, Dr. Sven, and Leschus, Leon, and Perschon, Dr. Jürgen, and Hertel, Christof, and Field, Simon, and Foletta, Nicole (2012): Achieving Sustainability in Urban Transport in Developing and Transition Countries. On Behalf of the Federal Environment Agency Germany.
- C40 Cities Climate leadership group (2016): Good practice Guide Bus Rapid Transit, http://c40-production-images.s3.amazonaws.com/good_practice_briefings/images/2_C40_GPG_BRT.original.pdf?1456788644/ accessed 09.07.2020.
- Canales, Pilar (2018): Antofagasta: Primera ciudad de Chile con Plan Movilidad Sustentable. Website: <https://www.diarioantofagasta.cl/medio-ambiente/92655/antofagasta-primera-ciudad-chile-plan-movilidad-sustentable/> accessed 29.02.2020.
- Chan, Sok (2019): A Chokehold on Phnom Pehn's Traffic. Capital Cambodia. Website <https://capitalcambodia.com/a-chokehold-on-phnom-penhs-traffic/> Accessed 18.03.2020.
- Chang, S.K: Jason (2018): Integrated System Development in Taipei, Knowledge Sharing Seminars: Asia Development Bank, <https://events.development.asia/system/files/materials/2018/07/201807-integrated-transport-system-development-taipei.pdf/> accessed 09.07.2020.
- Chinellato, Matilde, and Morfoulaki, Maria (2019): Sustainable urban mobility planning in metropolitan regions. Sustainable urban mobility planning and governance models in EU metropolitan region.
- CIF (Climate Investment Funds, 2020), <https://www.climateinvestmentfunds.org/> accessed 09.07.2020.

Comité de movilidad urbana sostenible – Trijulo (2020): Movilidad urbana sostenible. Website: <https://mus-trujillo.com/> accessed 09.07.2020.

Escudero, Juan Carlos (2013): Vitoria-Gasteiz 2013 SUMP Award: Finalist factsheet, https://www.eltis.org/sites/default/files/2013_sump_award_finalist_factsheet_-_vitoria-gasteiz-final.pdf accessed 09.07.2020.

European Commission (2019): Handbook on the external costs of transport. Brussels.

European Commission, COM (2013) 913: Together towards competitive and resource-efficient urban mobility. Brussels.

Far East Mobility (2020): Inside story of how BRT was implemented in Guangzhou. Website: <https://www.fareast.mobi/en/brt/guangzhou/> accessed 09.07.2020.

Greenpeace (2020): Toxic Air: The Price of Fossil Fuel. Website <https://www.greenpeace.org/southeastasia/publication/3603/toxic-air-the-price-of-fossil-fuels-full-report/> accessed 02.03.2020.

Greaves N., Dr. Phiu Nual K., Srisaka N. (2019) Development of a National Urban Mobility Programme - an Inventory and Assessment of National Urban Mobility in Thailand. https://www.changing-transport.org/wp-content/uploads/2019_Thailand_Development-of-a-NUMP.pdf

Global Green Growth Institute-GGGI (2019): Phnom Penh Sustainable City Plan 2018-2030.

Gobierno Regional de Antofagasta (2020): Plan de Movilidad Urbana Sostenible (PMUS) Antofagasta). Website: <http://movilidadantofagasta.cl/>, accessed 09.07.2020.

Government of Singapore (2020): Land Transport Masterplan 2040, https://www.lta.gov.sg/content/dam/ltagov/who_we_are/our_work/land_transport_master_plan_2040/pdf/LTA%20LTMP%202040%20eReport.pdf, accessed 09.07.2020.

Marikina City (2008): Climate change and health in cities (the bicycle friendly city). Good practice awards, <http://www.alliance-healthycities.com/PDF/WHOAward2008/GoodPractice/ClimateChange/WHO2008-GPA-Climate-Marikina.pdf>, accessed 09.07.2020.

MobiliseYourCity Partnership (2020): SUMP Toolkit. Annotated Outline for Sustainable Urban Mobility Plans (SUMP) provided by Rupprecht Consult.

MobiliseYourCity Partnership (2020): Sustainable Urban Mobility Plan (SUMP). Model Terms of Reference.

Municipal Arad, 2017. Planul de Mobilitate Urbană Durabilă al Municipiului Arad, pp 288-289

OECD (2013): Definition of Functional Urban Area (FUA) for the OECD metropolitan database. Website: <https://www.oecd.org/cfe/regional-policy/Definition-of-Functional-Urban-Areas-for-the-OECD-metropolitan-database.pdf> accessed 26.02.2020

OECD (2014): Towards Green Growth in Southeast Asia. Solutions for Policy Makers.

OECD (2019): Economic Outlook for Southeast Asia, China and India 2019: Towards Smart Urban Transportation, revised version. OECD Publishing, Paris.

Rupprecht, Siegfried, and Brand, Lasse, and Böhler-Baedeker, Susanne, and Brunner, Lisa Marie (2019): Guidelines for Developing and Implementing a Sustainable Urban Mobility Plan, Second Edition, Cologne.

Rye, Tom (2019): CIVITAS Prosperity project, Experience and good practice in Sustainable Urban Mobility Planning in other European countries.

Strunden, Anouchka (2020): International Cooperation on Sustainable Urban Mobility Planning in Latin America. Investigating collaborative Planning Practices in the Metropolitan Area of Guadalajara. (Master's thesis) URL: https://urbanstudies.brussels/sites/default/files/2020-11/2020_Strunden.pdf.

SUMPs-Up (n.d.) SUMP Good Practice Factsheets. https://sumps-up.eu/fileadmin/user_upload/Tools_and_Resources/Publications_and_reports/Good_Practice_Fact_Sheets/SUMPs-Up_-_City_Good_Practice_Factsheets_compressed.pdf

Sunberg, Rasmus (2018): SUMPs-Up Manual on the integration of measures and measure packages in a SUMP. Start for beginner cities. https://sumps-up.eu/fileadmin/user_upload/Tools_and_Resources/Publications_and_reports/Manuals/SUMPs-Up_-_Measure_Selection_Manual_-_Beginner_Cities.pdf

The ASEAN Secretariat (2013): ASEAN+6 Population Forecast. Chairmanship of ASEAN in 2013. Brunei Darussalam.

The ASEAN Secretariat (2015): Kuala Lumpur Transport Strategic Plan (ASEAN Transport Strategic Plan) 2016-2025. Jakarta

The ASEAN Secretariat (2016): Masterplan on ASEAN Connectivity 2025. Jakarta.

The ASEAN Secretariat (2018): ASEAN Sustainable Urbanisation Strategy. Jakarta.

The ASEAN Secretariat (2019): ASEAN Regional Strategy on Sustainable Land Transport. Jakarta.

The ASEAN Secretariat (2019): ASEAN Key Figures 2019. Jakarta.

Tomtom Internationa (2019): Traffic Index 2019. Website https://www.tomtom.com/en_gb/traffic-index/ranking/ accessed 04.03.2020.

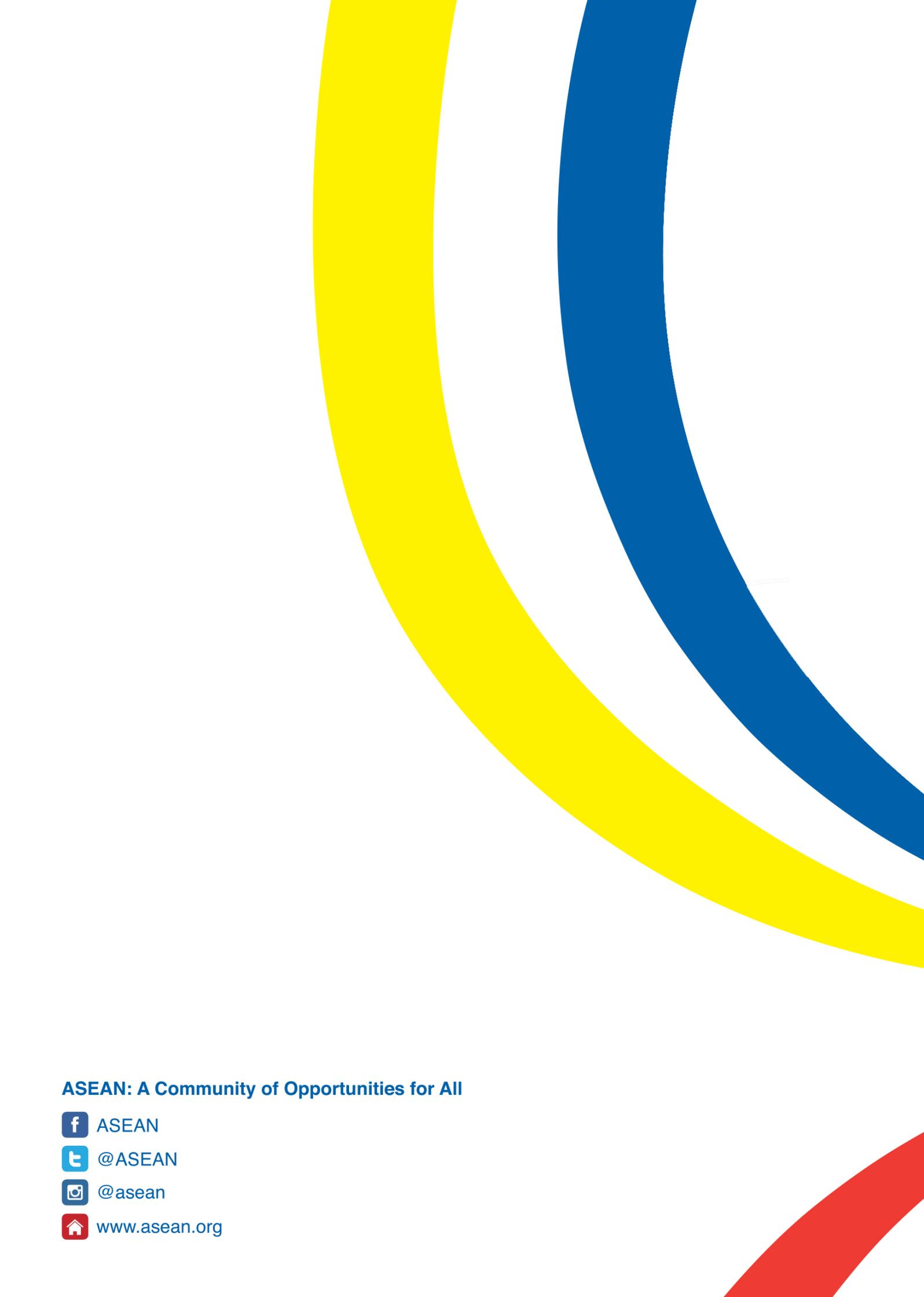
UN-Habitat, DiMSUR (2014): City RAP Tool – City resilience action planning tool, [http://capacitybuildingunhabitat.org/wp-content/uploads/workshops/2018-city-resilience-action-planning-tool-training-of-trainers/Preparatory%20Phase/CityRAP%20Tool%20Briefing%20\(to%20be%20reviewed\).pdf](http://capacitybuildingunhabitat.org/wp-content/uploads/workshops/2018-city-resilience-action-planning-tool-training-of-trainers/Preparatory%20Phase/CityRAP%20Tool%20Briefing%20(to%20be%20reviewed).pdf), accessed 09.07.2020.

Vientiane Times (2017): Expressway to Ease Vientiane Traffic Jam. National Thailand. Website <https://www.nationthailand.com/ann/30335060> Accessed:18.03.2020

Woetzel, Jonathan, and Tonby, Oliver, and Thompson, Fraser, and Burt, Penny and Lee, Gillian (2014): Southeast Asia at the Crossroads: Three paths to prosperity. McKinsey Global Institute, McKinsey & Company.

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- EZ-link Card (Lim, 2021: <https://blog.moneysmart.sg/transportation/ezlink-fun-facts/>)
- Phnom Penh CityBus (Khmer Times, 2019: <https://www.khmertimeskh.com/50629292/lets-ride-on/>)
- Lao High-speed Train (Gerin, 2021: <https://www.rfa.org/english/news/laos/high-speed-train-10192021141727.html/>)
- Garden in Bangkok (Proebst, 2017: <https://theculturetrip.com/asia/thailand/articles/the-most-beautiful-parks-and-green-spaces-in-bangkok/>)
- Train in Lao PDR (SMMR Team, 2019)
- SUMP cycle (Rupprecht Consult)



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