



PRACTITIONER BRIEFING

# PARKING AND SUSTAINABLE URBAN MOBILITY PLANNING

How to make parking policies more strategic, effective and sustainable

# Imprint

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## About

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## Title

PARKING AND SUSTAINABLE URBAN MOBILITY PLANNING

How to make parking policies more strategic, effective and sustainable

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# 1. Guide to the reader

This document provides guidance on a specific topic related to Sustainable Urban Mobility Planning (SUMP). It is based on the concept of SUMP, as outlined by the European Commission's Urban Mobility Package<sup>1</sup> and described in detail in the European SUMP Guidelines (second edition)<sup>2</sup>.

Sustainable Urban Mobility Planning is a strategic and integrated approach for dealing with the complexity of urban transport. Its core goal is to improve accessibility and quality of life by achieving a shift towards sustainable mobility. SUMP advocates for fact-based decision making guided by a long-term vision for sustainable mobility. As key components, this requires a thorough assessment of the current situation and future trends, a widely supported common vision with strategic objectives, and an integrated set of regulatory, promotional, financial, technical and infrastructure measures to deliver the objectives – whose implementation should be accompanied by reliable monitoring and evaluation. In contrast to traditional planning approaches, SUMP places particular emphasis on the involvement of citizens and stakeholders, the coordination of policies between sectors (transport, land use, environment, economic development, social policy, health, safety, energy, etc.), and a broad cooperation across different layers of government and with private actors.

This document is part of a compendium of guides and briefings that complement the newly updated second edition of the SUMP Guidelines. They elaborate difficult planning aspects in more detail, provide guidance for specific contexts, or focus on important policy fields. Two types of documents exist: While 'Topic Guides'

provide comprehensive planning recommendations on established topics, 'Practitioner Briefings' are less elaborate documents addressing emerging topics with a higher level of uncertainty.

Guides and briefings on how to address the following topics in a SUMP process are published together with the second edition of the SUMP Guidelines in 2019:

- Planning process: Participation; Monitoring and evaluation; Institutional cooperation; Measure selection; Action planning; Funding and financing; Procurement.
- Contexts: Metropolitan regions; Polycentric regions; Smaller cities; National support.
- Policy fields: Safety; Health; Energy (SECAPs); Logistics; Walking; Cycling; Parking; Shared mobility; Mobility as a Service; Intelligent Transport Systems; Electrification; Access regulation; Automation.

They are part of a growing knowledge base that will be regularly updated with new guidance. All the latest documents can always be found in the 'Mobility Plans' section of the European Commission's urban mobility portal Eltis ([www.eltis.org](http://www.eltis.org)).

<sup>1</sup> Annex 1 of COM(2013) 91.

<sup>2</sup> Rupprecht Consult - Forschung & Beratung GmbH (editor), Guidelines for Developing and Implementing a Sustainable Urban Mobility Plan, Second Edition.

## 2. Executive summary

In spite of the fact that effective parking management has proven to be beneficial in delivering sustainable urban mobility in our cities, it is still one of the most underdeveloped elements within Sustainable Urban Mobility Planning (SUMP) policies. In fact, good parking management can help free up valuable public space, making our cities more attractive; support local economy; reduce vehicle traffic; improve congestion, road safety and air pollution; and moreover generate revenues to invest in sustainable mobility and urban improvements.

This document provides a 'Practitioner's Brief' based around the *EU PUSH & PULL* project's '16 good reasons' for introducing parking management in cities and its role in urban mobility and SUMP. Once the findings and recommendations from the on-going Horizon 2020 follow-up project *Park4SUMP (2018-2022) are delivered*, this Practitioner's Brief will be further developed into a 'Topic Guide' on **how to integrate parking management into SUMP**. This will be based on all the work in *Park4SUMP*: research in 14 EU countries and the experience of 16 partner cities in introducing/adapting parking policies in their new and improved SUMP with the help of a new tool, PARKPAD, and in implementing the best practice and innovative parking solutions.



### 3. Introduction

#### 3.1. Urban transport problems associated with parking

Cars only drive on average for one hour a day, and the remaining 23 hours they are parked somewhere (Donald Shoup, UCLA, 2005). Urban space allocated for stationary car traffic tend to be in disproportion to its share in use. In the City of Graz, despite the fact that car accounts for only 47% of the mode share, it takes up 92% of the urban space used for stationary traffic.

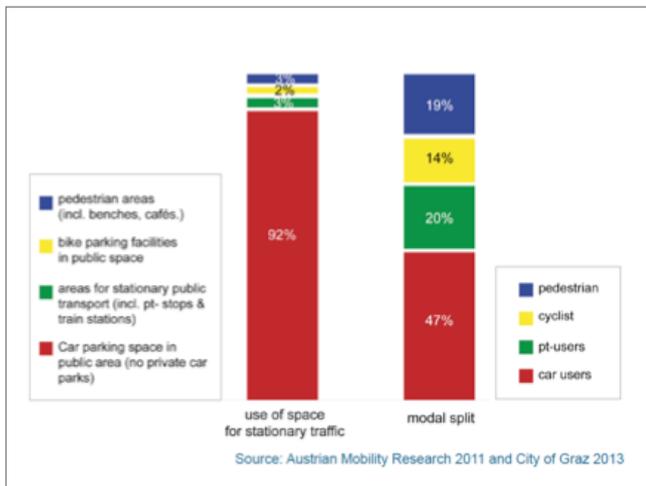


Figure 1: Urban space for cars versus modal split

Meanwhile cyclists and pedestrians accounting for 33% of the mode share but only receive 5% of the urban space for stationary traffic.

In every city as vehicle traffic increases, so does the demand for parking. When car drivers cannot find a parking space nearby, they tend to start complaining, spend a lot of time searching for a space, and sometimes park inconsiderately or illegal. "Parking and loading spaces should be plenty, close to the destination, high quality and preferably free of charge" is often the wish of those residents, businesses and visitors who speak up. When businesses and retailers are faced with the introduction of controlled and paid parking, they often fear a loss of business and income.

Parking controls and pricing are often perceived to be a 'rip off' measure, causing resistance to and distrust of the organising authorities. The least we can say is that parking management has caused many political and public controversies.

For these reasons, parking management has often remained a domain untouched by decision makers, unless parking problems have spiralled out of control and/or the city wants to gain financial revenue. This has led to a merely **reactive and operational way of dealing with parking**, mainly only responding when a specific problem pops up (at a certain location), and/or using an **isolated approach**, further **facilitating car use**. Thus a predict and provide mechanism – often focussing on infrastructure – has dominated parking policy in many cities for many years.

Meanwhile we can see the results of such policies: car-oriented developments and cluttered urban space dominate cities, while at the same time increased motorised traffic further and negatively affects the liveability of cities.

### 3.2. Barriers to parking management in cities

There are barriers that hold back policy makers and city administrations who might wish to introduce parking management to its full extent in their cities using a strategic and integrated approach, as a crucial part of their SUMP. Some of these barriers are very similar to the ones that have been seen to affect **SUMP-take up**<sup>3</sup>. In summary:

- Lack of (general) awareness about parking management and its benefits
- Lack of understanding of the parking management concept, its process or how it fits into a SUMP
- Lack of support (either institutional at a higher level, or lack of resources)
- Lack of institutional cooperation (both horizontal as vertical)
- Inconsistencies with, or limitations resulting from other policies and/or legislation that hamper a holistic approach to parking management
- Lack of public participation when developing parking policies.
- Lack of political buy-in and fear among politicians that they may be rejected by their voters.

The remainder of this Briefing document will address these barriers and provide recommendations for overcoming them.

<sup>3</sup> Previously described in several publications on SUMP, e.g. in Ch4llenge Project, CIVITAS SUMP up and CIVITAS PROSPERITY

### 3.3. 16 good reasons for parking management

More and more cities understand the need for a change. Since the 90s, step by step, sometimes by trial and error, cities have been showcasing the substantial advantages of (more) sustainable parking policies and practices<sup>4</sup>. Parking becomes an integrated part of transport demand management practices (Litman, 2006; Ison and Rye, 2008) and gets a higher rank on the urban political agenda and in the planning process. The EU PUSH & PULL project detailed and documented the following *'16 good reasons for parking management'*<sup>5</sup> (2015). These evidence and fact-based information sheets provide the necessary information and convincing arguments for practitioners to consider implementing parking management in cities. These arguments are all based on the central tenet that **Parking Management is key to managing urban mobility:**

1. Public space has a high value and therefore should be paid for if used for parking.
2. Parking management contributes to a more sustainable modal choice and therefore quality of life.
3. Parking Management leads to less park search traffic.
4. Parking management has a good impact – acceptance – ratio compared to other demand management measures like road pricing.
5. People usually moan before new parking management is introduced but initial opposition turns to support when they realize its positive impacts.
6. Parking management protects European historic cities from an “invasion” of parked cars.
7. Parking Management does not kill the high street - it can support the local economy.
8. User-friendly parking areas within walking distance of key locations are acceptable.
9. Parking Management will not stop companies investing in your city.
10. Guaranteed parking spaces at workplaces influence modal choice significantly.
11. Parking management contributes to road safety.

<sup>4</sup> Kodransky and Hermann (2011) have reviewed successful parking policies in European cities

<sup>5</sup> For more advantages & arguments for 'good parking policy', see the Push&Pull brochure: *'16 good reasons for parking management'*, 2015

12. Enforcement of parking violations is necessary – and not harassment of car users.
13. Carefully chosen parking standards can have a positive impact on housing and other real estate projects.
14. Correct rates, prices and appropriate fines are key to the success of parking management.
15. **Parking Management can raise municipal revenue that can be used to encourage sustainable mobility.**

### 3.4. Understanding the parking management concepts - fields of activities

Parking management activities can be developed and implemented under – logical related - topic areas. The following seven clusters<sup>6</sup> have been selected in Park4SUMP due to their fundamental importance to parking management as an effective tool of sustainable urban mobility planning.

1. The **extension of parking management** is the key if more car travelers are to be influenced by priced and/ or time and space limited parking.
2. **Earmarking revenues** from paid parking to sustainable mobility measures should become a logical cost-benefit element for integration into SUMP, while solving many financial SUMP support problems.
3. **Standards** for parking in new developments can have a big influence on mobility behaviour and car ownership.<sup>7</sup>
4. **Enforcement** is vital for parking management to function effectively.
5. **Parking management** – including data collection, exchange and smart interoperational use - has to become a **backbone of the SUMP** as it is the main push activity to tame steadily increasing car use.
6. **Technological and institutional/societal innovations** empower effective parking management at lower cost and more efficient enforcement, whilst safeguarding equitable access.
7. **Accompanying – push & pull - measures** are supportive to behavior shift of different target groups: residents, visitors, employees

For existing case studies, see the *[PUSH&PULL Catalogue of Parking Management Case Studies](#)*. The remainder of this Briefing document will handle more examples.

<sup>6</sup> CROW – KpVV selected similar key categories of parking measures affecting behaviour.

<sup>7</sup> The ECF's *Report 'Making buildings suitable for sustainable mobility'* also determined where in Europe conflicting mobility incentives – in terms of regulations for both car and off-street bicycle parking are occurring. For Car Parking it showed that in 53% of all countries and 75% of the regions ( in Belgium and Germany) have MINIMUM car parking requirements in place. For bicycle parking requirements this is respectively 25% and 30%.

## 4. The SUMP principles in the context of parking management

In this chapter the sustainable parking policy **anchor points** in the SUMP process are presented. Using some basic take-home considerations and recommendations will help you find the right ones to set up – step by step - a more holistic and strategic approach to an approved Parking policy.

Note: This practitioner briefing does not yet provide a full guidance, but brings a first understanding of how parking policies can be integrated into SUMP. Later updates will provide more detailed guidance based on the results of the Park4SUMP project.

### 4.1. Plan for sustainable mobility in the 'functional city'

Parking management can contribute to a sustainable **vision** for your city, and therefore for the defined **SUMP objectives**.

- Improve Liveability
- Improve air quality and reduce noise
- Reduce congestion
- Improve (multimodal) accessibility (of functions)
- Improve social inclusion
- Improve (quality of and fair distribution of) public space
- Improve economic vitality

Parking management has direct relevance to all these objectives, although accessibility, quality of life and economic vitality are usually explicit (Ison, S. and Mulley, C.). Decision makers and transport professionals can ask themselves: what is the main reason we implement parking management? Are there any reasons other than SUMP to implement parking management?

In Cologne one way to improve multimodal accessibility is the creation of Mobility Hubs. They provide access to a range of transport options (including e.g. e-bikes and car sharing, hereby improving the flexibility of urban mobility and reducing the need for private car ownership. [www.grow-smarter.eu/fileadmin/editorupload/12Solutions/Factsheets/Sustainable\\_urban\\_mobility/S12.3\\_F45\\_GrowSmarter\\_Mobility\\_Station.pdf](http://www.grow-smarter.eu/fileadmin/editorupload/12Solutions/Factsheets/Sustainable_urban_mobility/S12.3_F45_GrowSmarter_Mobility_Station.pdf)

When you want to approach parking holistically and strategically, start with an overall **vision, strategy and goal(s)** → **SUMP Cycle step 5 & Milestone 2**, and translate these subsequently into **operational action plans** → **SUMP Cycle step 7** using a mix of measures.

Parking policies are well suited to be **implemented incrementally** → SUMP Cycle steps 7 & 10 When you have no experience start e.g. in the heart of the City or in areas where the problems are worst. Step-by-step you can broaden ambitions and **(geographical) scope** → SUMP Cycle step 2.1. Progressed cities maybe want to introduce differentiated parking tariffs, like Madrid already did in 2014:

Since July, 1st 2014, the fee motorists have to pay for on-street parking in the Spanish capital depends on the engine type and construction year. Electric vehicles can park for free; hybrids have a 20% reduction while heavy polluting vehicles pay 20% extra.

Park and ride (P&R) or bike and ride (B&R) facilities should be located at the edge of the city or, even better, in areas where commuters live and where they can have good access to the heart of the city by public transport. At the same time the number of parking spaces in the centre must be reduced, otherwise P&R will only create additional supply that will result in additional car traffic. So, one measure benefits the other.

The graph below illustrates a logical development pattern for cities' parking policies.

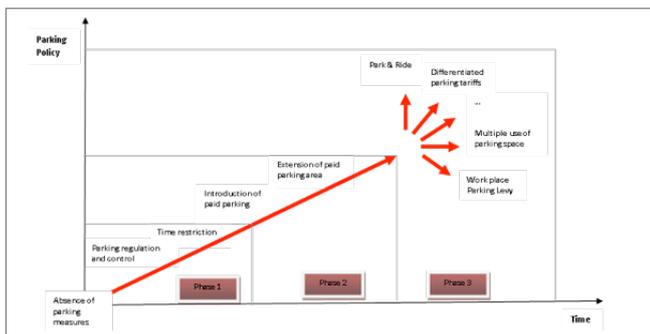


Figure 2: Development pattern of parking policies  
 Source: Push&Pull Training Material "Setting the framework for parking policy" by Prof. G.Mingardo, Erasmus UPT. <http://push-pull-parking.eu/index.php?id=55>

## 4.2. Develop a long-term vision and a clear implementation plan

Parking reappears throughout the planning cycle developed in the guidelines as an element in the long-term vision for transport and mobility development for the entire urban agglomeration, covering all modes and forms of transport including public and private, passenger and freight, motorised and non-motorised, moving and parking, as a practical measure and as a source of revenue. The latter will become important for funding your SUMP, see 3.3. and especially 4.2.

The formation of a vision, problem definition and the parking task (an ambition formulated as a strategy towards implementation) are strongly related. The vision development provides answers to questions such as: For which target groups do I want a high-quality parking offer? Do all cars have to be off the streets? How can I guarantee excellent overall accessibility of my city centre but discriminate in favour of certain modes?" A clear **definition of the parking task** → SUMP Cycle steps 4,5,6 is closely related to the vision. The relationship between parking policy and mobility policy emerges in the development of the vision for the SUMP.

The best **timing for starting with a sustainable parking policy** → SUMP Cycle step 2 is when you are starting the SUMP process, when you prepare a next generation SUMP, or even when you are faced with a new situation (e.g. national SUMP guidelines). Make use of this starting position to integrate both timing and the process.

Sustainable parking policy checklist<sup>8</sup>

- What is the vision for the development of my city and how does current and future parking fit to it?
- Is public space fairly distributed?
- How can I make my city more accessible for pedestrians, cyclists or public transport?
- Does my parking policy support walking, bicycle use or public transport?
- Which target groups are more and less welcome to travel by car into my city?
- Where and for whom do I wish to create a high-quality parking offer?
- What functions do I want to be present in my public space?
- How much should my parking policy cost?
- How much revenue could parking management gain (that could be used to finance sustainable modes or other activities for the people)?
- How do I link my location policy to my parking policy?

### 4.3. Assess current and future performance

In the **analysis phase** → **SUMP Cycle step 3**, existing data on the parking offer and demand is very valuable. **Additional research** → **SUMP Cycle steps 2.4 and 3.1** might sometimes be needed.

Parking figures indicate a size-order of the parking requirement for a type of facility. They can vary according to the type of area, functions (and their sphere of influence) and e.g. existing parking regulations. Also mobility characteristics of users (probably already collected for your SUMP) – such as modal split and car ownership – help determine parking needs. When speaking about integrated urban transport policies, the “interoperability of data collection and use should be encouraged. Data standardisation can also support this integration of parking with mobility. Shared data models and integrated data platforms for replicability of smart parking/mobility solutions will become more important.

For further information on different types of parking research (when – what – how), ITS and data interoperability supporting a sustainable parking & mobility policy, the authors of this practitioners briefing defer to separate publications.<sup>9</sup>

<sup>8</sup> Flanders (BE) Guidance to Sustainable Parking policy (Vademecum Duurzaam Parkeerbeleid), 2007. The guidance document was developed as a topical Annex of the existing L-SuMPs Decree/legislation of 2003.

<sup>9</sup> The EU adopted early on the so-called ITS Directive 2010/40/EU (European Parliament and Council of the European Union, 2010). Among other areas, it encompasses the provision of EU-wide Real-Time Traffic Information (RTTI) services (European Commission, DR 2015/962/EU) and Multimodal Travel Information (MMTI) services (European Commission DR 2017/1926/EU). The availability, through National Access Points (NAPs), of accurate and up-to-date data is crucial, but also data sharing of information such as availability of parking places is key, as well as ensuring some degree of data format standardisation and interoperability (e.g. applying DATEX II standard for road transport).

Further guidance on ITS can be found in the Practitioner briefings on the role of ITS in Sustainable Urban Mobility Planning. (<https://www.eltis.org/guidelines/second-edition-sump-guidelines>).

## 4.4. Develop all transport modes in an integrated manner

Although parking seems – most logically – primary directed to car-policy/mode, smart Parking Management is an important leverage factor to a more balanced and integrated development of all modes, while especially encouraging a shift to sustainable modes, by aiming e.g. at **‘nudging’ drivers’ choices** → SUMP Cycle steps 7 and 12.1

More and more SUMPs pay attention to improved cycling policy<sup>10</sup>. Also here is a direct link with parking: due to more cycling trips and an increasing number of residents in towns and city centres, the demand for bicycle parking facilities also increases. There is a clear need, for those who want to cycle, to keep the bike safe, secure and in good condition.



Figure 3: Bicycle parking regulations and creative good practice solutions fit into SUMP policy©M21

Also, the complex operations of urban goods transport<sup>11</sup> and the variety of problems that they cause, further complicate policymaking in the area of urban mobility. Parking (and loading/unloading) is among the most significant challenges in this field.



<sup>10</sup> Further guidance on Cycling and SUMP can be found in the Practitioner Briefings on Cycling [\[https://www.eltis.org/guidelines/second-edition-sump-guidelines\]](https://www.eltis.org/guidelines/second-edition-sump-guidelines).

<sup>11</sup> <http://ec.europa.eu/transport/sites/transport/files/2018-urban-logistics-study-the-integrated-perspective>  
Further guidance on sustainable urban logistics planning can be found in the respective Topic Guide. [\[https://www.eltis.org/guidelines/second-edition-sump-guidelines\]](https://www.eltis.org/guidelines/second-edition-sump-guidelines).

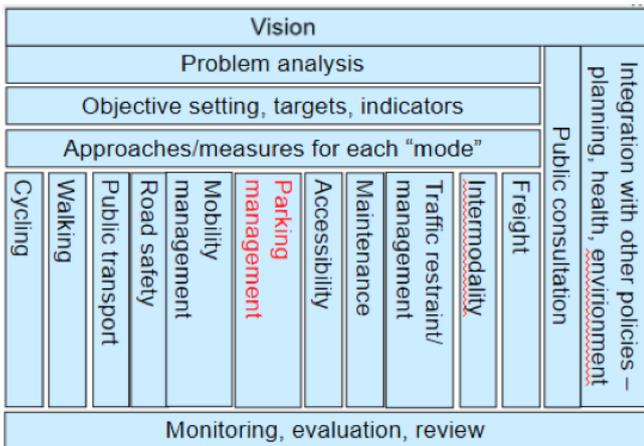


Figure 4: Structure of the SUMP including Parking Management Source: PROSPERITY Training Material "General SUMP introduction" developed by ENU

It is important to note that users of different travel modes experience very different levels of service, with car users usually getting higher levels of service. Parking policy can help to change this balance. **Therefore, highlight the benefits of parking policy → SUMP Cycle steps 1.3, 8.1. and 8.4** at an early stage in your SUMP. For example, the **earmarking of parking revenues is very cost-beneficial to SUMP → SUMP Cycle step 8.2. and 9.1** and there is potential for improvements in accessibility as well as the quality of neighbourhoods.

**Integrated parking policies → SUMP Cycle step 7.2** go beyond car parking, but also facilitate bicycle parking and even regulate parking for vans, tourist buses and trucks.<sup>13</sup>

Within the framework of EU Urban transport leverage policies, parking management is currently also referred to as one of several Urban Vehicle Access Regulations.<sup>12</sup>

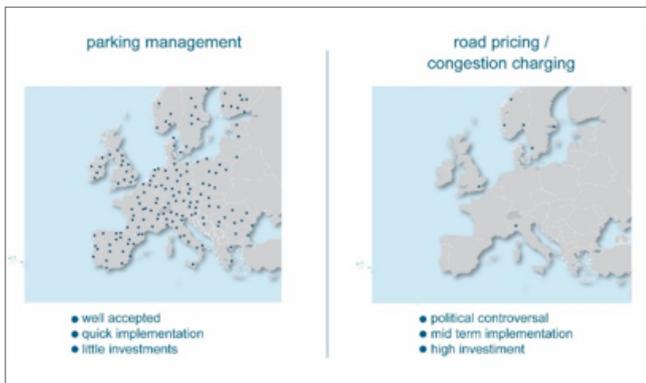


Figure 5: Comparison effectiveness parking management versus other UVAR Source: Push&Pull, 16 good reasons for parking management (2015).

<sup>12</sup> [https://ec.europa.eu/transport/sites/transport/files/uvar\\_final\\_report\\_august\\_28.pdf](https://ec.europa.eu/transport/sites/transport/files/uvar_final_report_august_28.pdf)

<sup>13</sup> <https://ec.europa.eu/transport/sites/transport/files/2019-study-on-safe-and-secure-parking-places-for-trucks.pdf>

## 4.5. Cooperate across institutional boundaries

Strong political leadership is of utmost importance to ensure support for the SUMP process –.However, **cooperation between different institutional actors → SUMP Cycle step 1.2 and 2.2** is also important. This includes the municipal mobility department, sometimes the police (performing the enforcement), and in some cases (semi) private parking institutions, and the higher governmental level defining regulations on parking that might be hampering an efficient change... In some bigger cities also cooperation between district levels and surrounding (more) rural municipalities are needed to prevent displacements of one problem to another area...

Looking at **institutional reorganisation**, we notice that metropolitan areas try to centralise competences in the field of parking in order to enable metropolitan parking planning and management. These centralisation processes take time and meet resistance from municipalities within the metropolitan area. The centralisation can be the result of regional **legislation → SUMP Cycle steps 2.1 and 2.2**. Cities establish municipal parking companies or agencies. Several authorities look into cooperation, and pooling of resources between authorities, to increase efficiency and reduce costs.

Another way to increase efficiency is the principle of territorial management contracts. In this case the city issues a call for tender for an integrated offer of urban management activities. These packages of activities include street furniture, lighting, waste management, ... and parking! In this way, consortiums of **service providers → SUMP Cycle step 10.2** can find synergies between services that can **reduce costs**. Other examples of service integration can be found in integration of safety, information and enforcement assignments in the activities of the parking wardens – thus creating a league of ‘city ambassadors’

## 4.6. Involve citizens and relevant stakeholders

Parking attracts the interest of different road users:

- Residents are interested in an attractive neighbourhood, with good quality and safe urban space. They might also be interested in finding on street parking close to home for short-stay use (loading and unloading) or for longer-stay use (nighttime parking). Private parking space at home or close to home is not always used for car parking, creating additional pressure on the street parking capacity.
- Visitors are interested in affordable parking close to their destination. Visitors can be shoppers, commuters, people engaging in leisure activities, tourists etc.

Something of a misconception is the notion of ‘free’ parking. If a visitor to city x does not pay a fair price for parking in the city, then the visitor is subsidised by the city and local inhabitants will pay – via taxes – for the visitor’s parking space.

- Professional ‘kerb space’ users such as urban logistics and deliveries companies who need reassurance about availability of free spaces in order to conduct their activities in an efficient way.
- Specific user groups such as drivers with disabilities will need to be accommodated onstreet in order to be able to reach destinations of their choice.

The challenge for local authorities is increased as these user groups do not share the same expectations and needs towards the parking system in terms of cost, (assured) availability and capacity.

- **Public acceptance → SUMP Cycle steps 1.4 and 11.2** is a major challenge. The only feasible way to get people to accept new parking management measures is to show them that the situation will improve as a result of the changes you propose. Be very clear about how those measures work and how much – if anything – people will have to pay, and explain what any new parking revenue will be used for. See also the ParkPAD tool explanation (3.1.8) on how to actively involve stakeholders.
- Communication and participation are the buzz words of a supportive SUMP. Start to develop a communication plan or strategy towards citizens and visitors about parking as part of your SUMP and communication strategy.

## 4.7. Arrange for monitoring and evaluation

Monitoring and Evaluation are key instruments for parking policy. The use of data can help policy makers in the debate with the most important stakeholders in parking policy, namely citizens, retailers and business sector. Rather than relying on feelings and emotions, data can provide policymakers with objective information to frame the discussion. Not only this allows for more constructive discussions but sometimes it can also avoid drastic policy changes (and related costs) based on emotional issues.

- Parking research gains value if it is included in a **monitoring process**. Characteristic of a monitoring process are regularly recurring measurements and a clear link with policy, implementation and adjustment of the policy.

At present, P&R's have become very popular in many European metropolitan areas. However, the impact of this kind of parking infrastructure has been criticized by many suggesting that P&R can have a "limited or even counter-productive effect on its policy goals, particularly those to reduce car use" (Meek et al, 2009, p. 468). Here we present the findings of a users' survey (N=738) conducted in nine rail-based P&R located around the cities of Rotterdam and The Hague (The Netherlands) in order to get an overview of their impact in terms of vehicle km travelled (VKT) and vehicle emissions (CO<sub>2</sub>, NO<sub>x</sub>, PM<sub>10</sub> and SO<sub>2</sub>).

Unintended effects P+R	The Hague 2008 (200 surveys)		Rotterdam 2008 (547 surveys)	
	Km	Kg CO <sub>2</sub>	Km	Kg CO <sub>2</sub>
Total km saved	-869.9	-172.3	-1,559.0	-308.7
Extra km abstraction PT	661.3	130.9	2,710.0	536.6
Extra km abstraction bike	32.3	6.4	121.0	23.96
Extra km (partial) abstraction bike	88.1	17.4	-	-
Total extra km	781.7	154.7	2,831.0	560.53
Net change	- 88.2	-17.5	+ 1,272	+251.8

Figure 6: Unintended effects of Park and Ride

- In addition, the question remains how to **measure success** → **SUMP Cycle step 7.3** in parking:
  - What is success for cities? What are the policy and operational objectives in place?
  - How do we measure impacts on-street parking policies? (Looking at traffic indicators, cruising time etc.)
  - How do we measure system outputs such as revenue, geographical coverage of the enforcement etc?
  - How do we measure process indicators such as customer satisfaction and acceptance, cost of operations etc.?

With increased digitalisation of parking, cities can also start building new **indicators** → **SUMP Cycle step 6.1** to better understand the parking situation, such as (peak) occupancy, accumulative zonal occupancy, revenue, returning visitors, origin of visitors and others. This can lead to more informed urban development and SUMP activities: Make informed decisions about land use, building regulations and new parking infrastructure: the **data** generated by parking → **SUMP Cycle steps 7.3, 11.1 and 12.1** can be merged with other data sets to establish a detailed picture of the actual mobility needs and patterns for specific sites. This can inform decisions about parking standards in buildings, new construction of publicly accessible parking spots etc.

### 4.8. Assure quality

A new tool - **ParkPAD** which is under development within the Park4SUMP project<sup>14</sup> - will soon provide an audit scheme that helps cities to review the quality and comprehensiveness of their parking policies and the organisational set-up for them, and to achieve consensus on improvements by developing an action plan for parking management that aims to increase overall quality, and be used as part of their SUMP.

ParkPAD will include the collection of information about the overall mobility and parking situation in the city. A key aspect is to establish an ‘auditors group’ (consisting of elected politicians, city authorities, lobby group members, transport users, retailers etc.), all with their own assessment of and view on parking. The process also includes undertaking a number of local meetings to

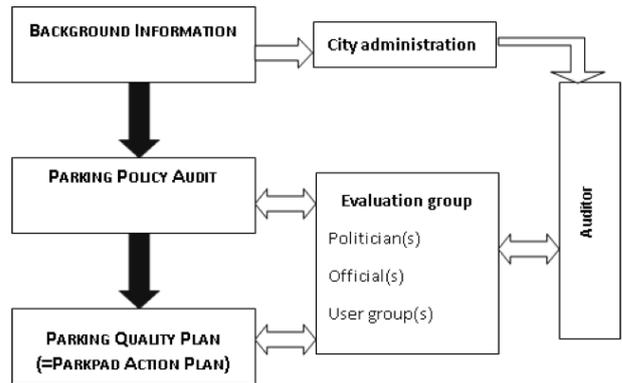


Figure 7: The ParkPAD helps cities to review and improve their parking strategy

work towards building a consensus on the future of the city’s parking policy and practices. These will result in a **Parking Policy Quality Plan** and PARKPAD Action Plan as part of the city’s SUMP, comprising the priorities for innovative, effective and locally acceptable package of parking management measures.

→ SUMP Cycle steps 7.1, 8.3, 8.4 and 12

<sup>14</sup> ParkPAD certification is foreseen due spring 2020.



Figure 8: The 12 Steps of SUM-Planning (SUMP 2.0)

## 5. Parking management fields of activities that make a difference

### 5.1. Transcend the demand & supply choice in parking

It should be clear that that sustainable parking policy transcends the classical parking paradigm – following the demand or controlling the supply? – that cities most of the time were facing. Also Prof. G.Mingardo<sup>15</sup> (Rotterdam University) pleads a **multiple goal approach**, hereby taking into account more behavioural determinants (what affects the target group; either resident, shopper, tourist, employee...) and not just focussing on infrastructure or single use objectives.

Parking policy and management measures are **not alone standing**. In practice, **measures can support or undermine each other**. However, integrated parking management can serve different sustainable mobility objectives.

The following elements with regards to [SUMP] objectives and effective parking strategies can be included in a SUMP:

Accessibility:

- Where and when can vehicles go in the city, where do they park?
- Traffic volume for vehicles moving people or goods
- Parking as enabler for multimodality: bicycle parking, park & ride, park & bike...
- Parking for the disabled<sup>16</sup>

Environment:

- Where and when can vehicles go in the city?
- Promotion of clean vehicles through tariffs
- Enabling electric vehicles charging

Liveability:

- Residential parking schemes (including double use and/or tradable parking rights)
- Increase quality of public space for pedestrians
- Reduction of search time and search traffic

Enabling economic development:

- Accessibility planning of new developments, including a rational number of parking capacity
- Accessibility of shopping, touristic destinations (coaches)
- Parking infrastructure in use for logistics operations
- Management of parking for specific large events

<sup>15</sup> CROW/KpVV Study and publication on 'Parking and Behaviour' (Parkeren en Gedrag)

<sup>16</sup> Parking card for disabled people

There is a standardised model of parking card for disabled people which is recognised in all EU countries. The Community standardised model of parking card allows a disabled person who is entitled to use certain parking facilities in his EU country of residence to move more easily in the territory of another EU country and avail themselves of all the parking facilities granted to the disabled in that EU country. The Community model was introduced by Council Recommendation 98/376/EC .

This Recommendation provides for the standardisation of the layout of parking cards for people with disabilities and their recognition by the EU countries, in order to facilitate such people's freedom of movement by car.

## 5.2. Earmarking parking revenues as inclusive financing strategy

There is no other domain where cities can make this much difference for SUMP, as by **earmarking** revenues from paid parking to finance other sustainable mobility solutions. It could become a strategic starting point in the SUMP-planning that the revenue earned from parking management should be used for the implementation and promotion of sustainable transport measures. If implemented, there is a permanent availability of money and it is not necessary to get an own budget for every year.

The objective of this mechanism is not only parking regulation and management but also the more strategic management of traffic in a sustainable way. This would lead to operational synergies – parking can include bicycle parking; enforcement could prioritise public transport routes; and enforcement staff could also offer information about the city and alternative modes, giving this staff a more positive image.

The city of *Ghent* (BE) already applies the earmarking principle with success.

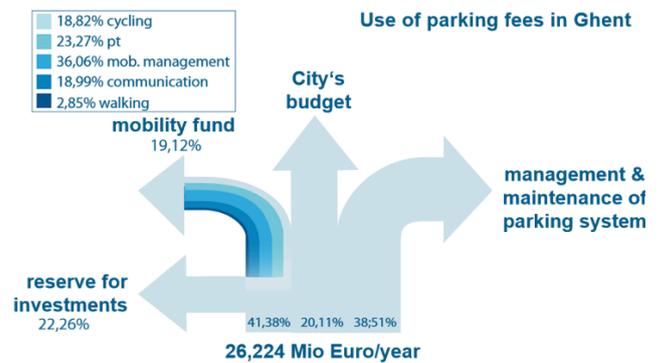


Figure. 9: Use of parking fees in Ghent, Belgium.

## 6. Game changer examples

Three good practise examples showcase how parking management can be implemented incrementally while also developing the SUMP, and thus become a game changer in Urban Mobility:

### 6.1. Tallinn (EST): starting the SUMP integration from analysis

The city of Tallinn has research based parking provision requirements from 2006 and this has been updated several times based on internal knowledge. Also to some extent national standards are used, where general parking provision is set. This has led to a situation, where the City of Tallinn has no clear view of future scenarios for parking policy and can only give vague messages to real estate developers. Well compiled parking policy is and should remain a very important measure to promote the goals set out in the city's Sustainable Urban Mobility Plan (SUMP). The city is in the middle of compiling a comprehensive SUMP, where parking plays a very important role. Therefore; Tallinn has started to collaborate with spatial experts, who will examine parking from a totally new perspective.

#### Data collection

“The city values experience above material input, meaning we must measure and understand the experience of places, as well as the environment ” says Liivar Luts, Tallinn's leading Mobility Department's expert. The challenge for urban management is that - in order to better respond to the new mindset - it needs to anticipate sustainable development at a moment when cities are only just starting to advance in terms of experience and socio-economic development. It means analysing and planning space not only from the perspective of location and accessibility but from the activities and values it provides and generates.

#### The new parking experience

All vehicles require parking space but traditionally the area, the location and the pricing are looked from the perspective of function and land use. Parking today is no longer the place where the vehicle is left but is the starting point of a new experience. Going to work, meeting people and reaching home, are becoming part of our daily experience the parking is the moment where we shift from one experience to another. Therefore the parking places has to be seen as an element of urban life. The interaction between the driver and the parking space should be streamlined and be experienced as a natural move between different activities. Parking should be analysed both from the physical perspective (the space it occupies, its size, location and provision etc.) and also from as an experimental element between activities. That is why today we can no longer think just of where the parking place is located but what the activities around parking areas are and how popular they are.

#### Sustainability

Drafting a parking policy plan that is sustainable both for the environment and for the social and economic transformation of the city requires a new analytic approach. The main challenge for planning today is that systemic changes driven by new Technologies and unpredictable labor and economic patterns, makes it unsustainable to think of one solution for one parking plan of one city. Therefore in order to plan for sustainable urban communities it necessary to introduce the idea of assemblage and flexibility, meaning to provide a plan and a policy that allows the parking areas and their prices to adapt to system change in the coming future.

“During the Park4SUMP project implementation best practices from partner cities will be discussed and possible solutions adapted to City of Tallinn parking policy. Also ParkPAD tool will give us better understanding of how to solve parking related issues and ensures the process of high level stakeholder's involvement.”

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## 6.2. Sint-Niklaas (BE): 2nd generation SUMP as the momentum for policy integration

Sint-Niklaas is a small city in the heart of Flanders (BE), located in the economic triangle Antwerp – Gent – Brussels. During a short period of time multiple policy plans were being adopted and initiated. Prior to the SUMP, the Masterplan Public Space and the urban planning 'Lobes-model' were adopted by the city council. At the same time of the mobility plan's trajectory also the city's climate plan was developed.

This multitude of new policy plans has created an important momentum in Sint-Niklaas to shape the city's mobility vision and policy for the coming decennia, including the parking policy. The Lobes city model was used as the starting point to start working on subjects such as traffic circulation, road safety and parking. With its limited size, the core city is very much suited to the bicycle, almost every destination can be reached in less than 10 minutes. In combination with the ambition of the city to aim for climate neutrality, to pursue road safety and to boost bicycle use an enhanced bicycle policy was an obvious choice.

In the new mobility plan among the priorities there are the implementation of an integral parking policy and the completion of a bicycle plan, including a bike parking plan (2016).

In the long run a more car free inner city will cause a number of changes. Short-term parking policy and resident-parking will be to the utmost served by the current centre parking facilities. Visitors and long-term parkers will be gathered in multimodal nodes around the city or in new parking facilities on the outskirts of the car free city centre. Because residents and short-term parkers are directed towards the current center parking facilities a lot of free space is created in the streets. The on-street parking can be adapted to a more qualitative design of the public domain. Outside the car free city center a blue zone with resident cards will be introduced. This is to prevent parkers shifting into the zone just outside the paid parking-zone in spite of the residents.

The bicycle parking study starts from an analysis of the operation and quality of the current bicycle parking facilities. Subsequently, a bicycle parking strategy was developed that should respond to the most important bicycle parking needs. The bicycle parking plan then contains a glimpse into the future with which Sint-Niklaas can respond to a growing bicycle share and the corresponding parking demand. An annual cycling conference is organised which examines the opinion of the residents of the bicycle policy.

Flanders will soon start drawing up regional (functional city- alike) transport plans in which parking policy will also become a very important item. City and regional transport is no longer an isolated activity, but forms part of the global mobility network, facilitating the idea of combined mobility, pre- and post-journeys with (part) bicycle, (part) car and other modes of transport. At this physical place different mobility functions meet: car sharing, proximity to public transport, bicycle parking and accessibility are all essential. Good coordination within a transparent, layered transport model is crucial here. Within the transport regions, consisting of several municipalities, alignment with specific demand is developed based on real and potential transport flows. A mode-independent, local mobility management is organized within the transport regions.

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**SUMP summary** (EN, other languages and full version available)



Figure 10: Sint-Niklaas Public Space.

### 6.3. Vitoria Gasteiz (ES): parking as leverage factor for SUMP

The capital of the Basque Country in Spain, Vitoria-Gasteiz a city of approx.. 250.000 inhabitants that changed its entire public transport system in October 2009<sup>17</sup>, and the increase in passengers shows that the change is paying off. Combined with the new bicycle lane grid and pedestrian paths, the plan is clearly influencing people’s travel behaviour.

A new network of more efficient, modern and attractive public transport was considered a necessary but inadequate condition to ensure a modal shift towards public transport. For this purpose, and following a push&pull approach to disincentivise private car use for accessing the city centre, it was considered necessary to propose a new parking policy in the centre of the city encompassing the following steps:

- Expansion of regulated parking area in the centre of the city, with more streets inside the residential parking zone, so that the previous 3,800 parking places were increased by adding 1,100 new regulated places.
- A reduction of ca. 2000 on-street parking spaces in favour of building the new tram lines.
- Differentiation of new types of regulated parking (residents only, short to medium stay only, short to medium stay and residents) rather than the only previous typology (short to medium stay and residents).
- Establishment of an annual fee in order to benefit from resident card for regulated parking, instead of the free access to the card for residents.
- Significant increase in the price per minute for parking in regulated parking area. Parking rates were tripled at the same time as the public transport service was significantly improved.
- A special regime for people who want to park for less than 15 minutes was established to avoid the practice of double parking on main roads.
- Enabling new Park&Ride car parks. The approaching roads were signposted and information about public transport was placed in these car parks.

The most challenging element has been the continued participation of all stakeholders in an ongoing process that has lasted more than seven years (participatory process through the Citizen Forum for Sustainable Mobility and an intensive communication with citizens). Each of the mobility measures undertaken was accompanied by an information campaign with illustrative material (brochures, posters), press releases, ad hoc content in the mobility page of the municipal website and even dissemination of information at street level by the local police service.

Besides doubling the number of public transport passengers between 2008 and 2018, there was a decrease of 9.5% in CO2 emissions and a reduction of 8.9% in energy consumption in the transport sector in the city over the period 2006-2014. As a result of this policy, private car use was reduced from a 36% share of all trips by local residents in 2006 to only 24% in 2014<sup>18</sup>

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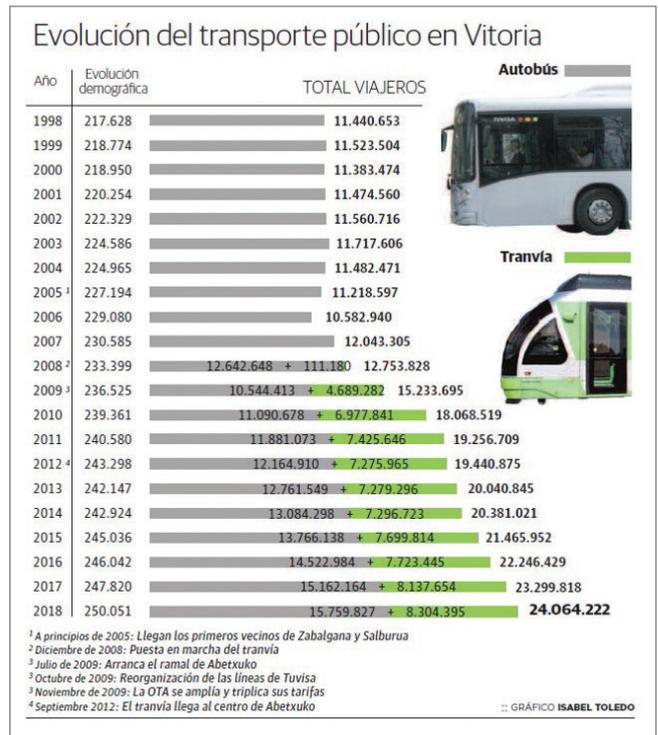


Figure 11: evolution of Public Transport in Vitoria Gasteiz, source El Correa

<sup>17</sup> SUMP objectives, page 9 from [http://sump-network.eu/fileadmin/user\\_upload/SUMPs/PROSPERITY\\_Vitoria\\_Gasteiz\\_SUMP\\_summary\\_EN.pdf](http://sump-network.eu/fileadmin/user_upload/SUMPs/PROSPERITY_Vitoria_Gasteiz_SUMP_summary_EN.pdf)

<sup>18</sup> Vitoria Gasteiz’ SUMP modal split surveys in [http://sump-network.eu/fileadmin/user\\_upload/SUMPs/VitoriaGasteiz\\_EvaluationReport\\_EN.pdf](http://sump-network.eu/fileadmin/user_upload/SUMPs/VitoriaGasteiz_EvaluationReport_EN.pdf)  
 New figures available in autumn 2019!

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