Which future for the Brussels' public bicycles service?

Synthesis - April 2024

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Commissioner

BRUSSELS-CAPITAL REGION

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Contents

Glossary

B2C	Business to Customers
B2G2C	Business to Government to Citizens
BCR	Brussels-Capital Region
BM	Brussels Mobility
BS	Bike share | Bike sharing
e-SB	Electric Shared Bikes
LTR	Long-Term (bicycle) Rental
MaaS	Mobility as a Service
PB	Public Bicycles
PT	Public Transport
SB	Shared Bicycles
SGEI	Service of General Economic Interest
STIB-MIVB	Brussels public transport company (Société des Transports Intercommunaux de Bruxelles Maatschappij voor het Intercommunaal Vervoer te Brussel)

1. Context of the study

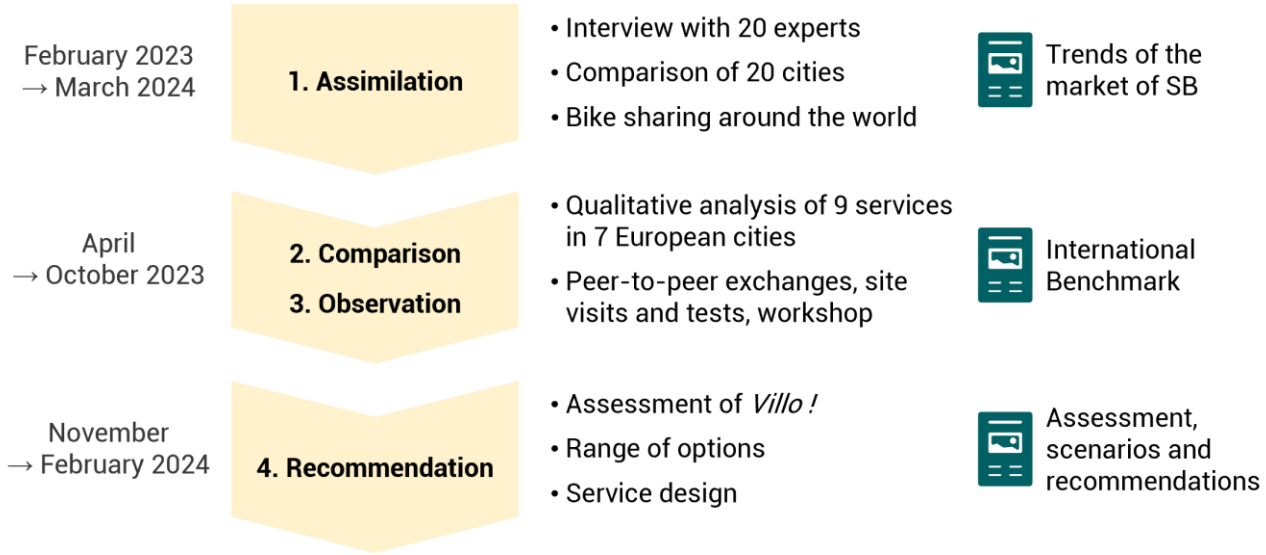
GOUVERNEMENT DE LA RÉGION DE BRUXELLES-CAPITALE
BRUSSELSE HOOFDSTEDELIJKE REGERING
GOVERNMENT OF THE BRUSSELS-CAPITAL REGION

"Public bicycles as the fourth pillar of public transport in Brussels (metro, tram, bus and bicycle)". This is the ambition of the Brussels-Capital Region Government to provide access to a bicycle and develop shared mobility, in line with Good Move, the 2020-2030 regional mobility plan.

BRUSSELS MOBILITY
BRUSSELS REGIONAL PUBLIC SERVICE

The *Villo !* concession with JC Decaux ends on 16 September 2026. Brussels Mobility's Organising Authority for Mobility supported this study to devise a more attractive public bicycle service and an appropriate governance. Benchmark feedback from Belgian and European metropolises lay at the core of the methodology *(Figure 1)*.

Figure 1: Study methodology



The scenarios and recommendations (chapters 7, 8, 9, and 10) are explorations by the consultants to stimulate reflection for future political and technical decisions.

2. One-page summary

Situation in 2024

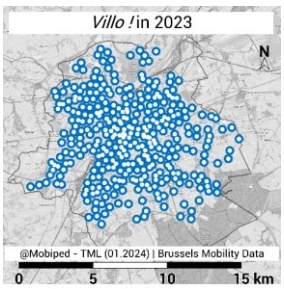
Villo ! is the Public Bicycle (PB) service in Brussels. It enables anyone to:

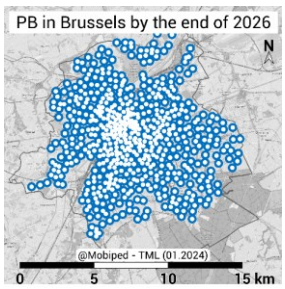
- Rent a bike 24/7 for a single trip, like a mobility insurance with no commitment.
- Ride a bike even when facing issues to buy, repair, or park their own bike.

The "Public Bicycle and outdoor advertising" concession is inadequate and outdated.

The 5,000 PB are not very attractive. Electrification with a removable battery is a failure and suffers from the comparison with private free-floating Shared Bikes (SB).

The 350 stations are very far apart: 390 metres on average between 2 neighbouring stations, compared to 290 in Antwerp and 280 in Paris.





The modal shift objective is not precise enough to be assessed properly.

Proposals for the end of 2026

After *Villo !*, the Region is offering a new, more attractive Public Bicycle (PB) service and a Long-Term (bicycle) Rent (LTR) service. LTR enables people to:

- Get trained to cycle in an urban environment.
- Experiment with a wider bike selection.
- Try a quality bike and a cyclist lifestyle.

PB has a dedicated contract of 8 to 10 years. LTR is considered separately.

7,500 e-PB, with integrated battery:

- Offer a better user experience.
- Attract new user profiles.
- Perform like in Luxembourg and Marseille.

The network will be densified, with 600 stations (350 existing sites + 250 new ones) to ensure competitive travel times. At the stations, e-PB can be charged with new and modular equipment.

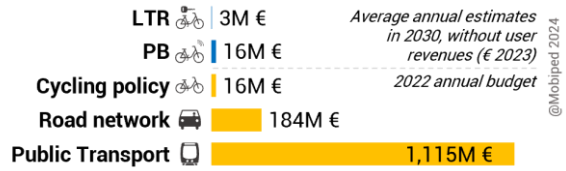
Public objectives of PB are appropriate, achievable, measurable, and assessed annually.

Outline of the future public transport service in Brussels

The public network

- 600 PB stations
- 66 bus lines
- 17 tram lines
- 4 metro lines

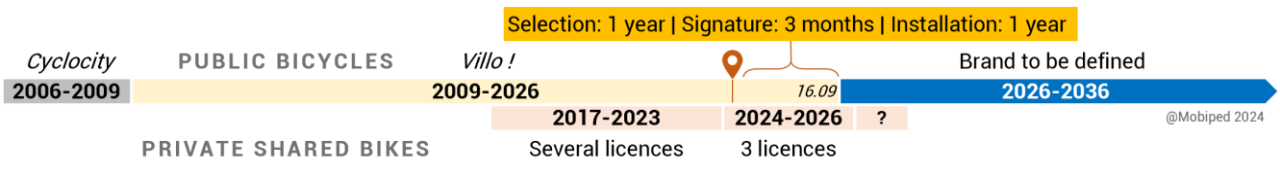
Annual budget



Roles

- Brussels Mobility defines the public service obligations (e.g., fares, accessibility, MaaS, etc.).
- The Regional Government consolidates funding.
- The STIB-MIVB coordinates the selection process and contracts with the PB provider.
- The STIB-MIVB supervises the contract and Brussels Mobility participates in the evaluation and development.
- The PB provider supplies, installs, repairs, and redistributes the bikes.
- STIB-MIVB interacts with customers (website, app, customer relations, communication, sales) to offer a unique Public Bike + Bus + Tram + Metro experience.

A tight schedule for smooth installation and operation



3. Public Bicycles rental services

Bike rental services

To access a bike, it is possible to buy, borrow, or rent one for a few minutes, hours, days, or months *(Figure 2)*. This study mainly focuses on back-to-many PB and broaches public LTR.

Public bicycles (PB): Bike Sharing (BS) services enable one-way trips by renting a bike for the length of the trip. It removes the obstacles associated with buying a bike, parking at home/one's destination, maintenance, and the risk of theft. 1,600 towns and cities worldwide have at least one PB service [11]. Public Bicycles (PB) are a type of BS because they benefit from public funding.

Long-Term (bicycle) Rent (LTR): LTR services enable people to rent a bike and accessories (basket rack, child seat) for several months and benefit from various services (repairs, insurance in case of theft). LTR services remove the obstacles associated with buying a quality bicycle and encourage people to adopt a cycling lifestyle before considering buying their own bike.

Complementary services

First, PB systems provide rapid access to a bicycle in public spaces, like a mobility "insurance". LTR enables targeted groups to try out a type of bike and experiment with a cyclist lifestyle before becoming a cyclist with their own bike. Second, PB has a quantitative impact on the number of citizens who cycle at least once a year. LTR has a qualitative impact on its customers' skills to cycle in an urban environment *(Figure 2)*.

Figure 2: Overview of bike rental services

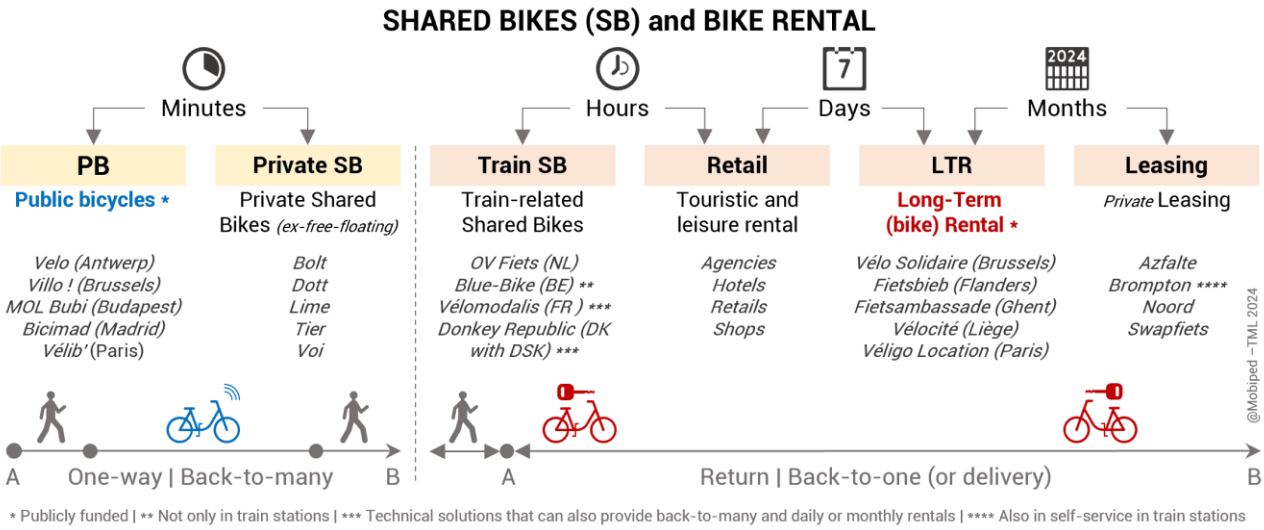
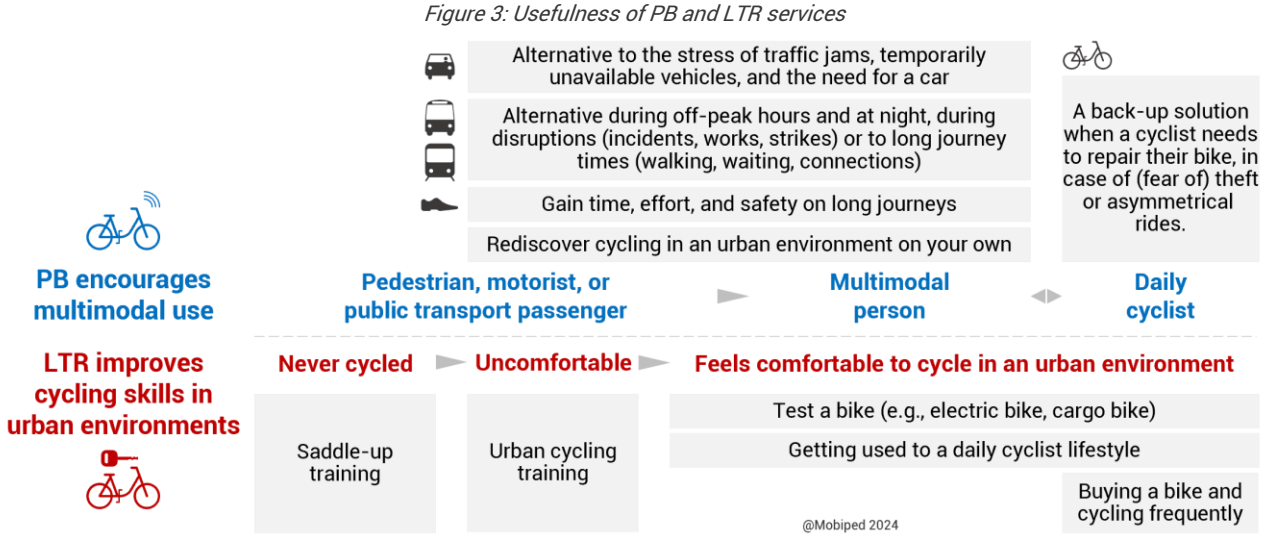


Figure 3: Usefulness of PB and LTR services



4. International lessons

A robust approach

Partnership with 9 European areas

Seven PB and two LTR services (both Belgian and European) were selected from 20 European cities and then analysed *(Figure 4 and Figure 6)*.

The Brussels delegation, made up of delegates from the Minister's office, Brussels Mobility, STIB-MIVB, and the consultants, visited services in Antwerp, Budapest, Madrid, Marseille, and Paris.

Discussions continued in Brussels at a workshop to share the results of the benchmark *(Figure 5)*.

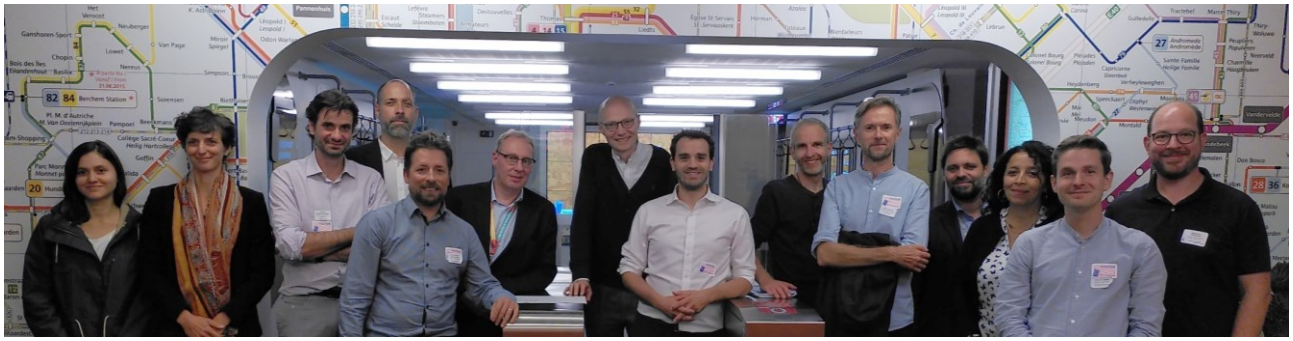
Immersion in the PB market

The consultants also:

- Read the reference publications.
- Participated in the main professional conferences in Europe.
- Observed and tested 30 other PB services.
- Interviewed 20 experts from 15 countries/4 continents and spoke to 40 service providers.
- Exchanged views with PB officers in 20 other cities: Amsterdam, Barcelona, Bern, Chicago, Geneva, Grenoble, Lyon, Milan, Munich, Vienna, etc. *(List of contacts and cities can be found in the acknowledgements section on page 29)*

Figure 4: Nine publicly funded bike rental services in seven European cities, studied in detail

Figure 5: Participants in the benchmark results workshop | 3 October 2023 | STIB-MIVB headquarters in Brussels



From left to right: I. Cabello, A. Gilette (ILE-DE-FRANCE MOBILITÉS), C. Mateo Martin (EMT MADRID), P. Dalos (BKK), C. De Voghel (BRUSSELS MOBILITY), D. Dumont (STIB-MIVB), M. Nicaise (STIB-MIVB), B. Beroud (MOBIPED), B. Van Zeebroeck (TML), J. Vanhee (FIETSAMBASSADE), M. Langlois (STIB-MIVB), F. Ulrich (SAVM), P. Jamin (GREATER AIX-MARSEILLE-PROVENCE) and M. Fierling (SAVM). Were also present: J. Kawan, S. Vandenhende (BCR MINISTER OFFICER), E. Peduzzi (TML), H. Lyssens and J. De Keyser (CITY OF ANTWERP), and C. De Bruyn (LANTIS) | Photo: E. Peduzzi (TML)

Figure 6: Main characteristics and indicators of the 9 services under study

	City Country Service	Authority	Supplier & Operator	Launch	Bikes	Stations	Bikes/ 10,000 residents	Rent/ bike /day	Rent/ 1,000 residents
	**Antwerp City** *Belgium* Velo Antwerpen	City of Antwerp	Clear Channel Clear Channel	2011	4,200	303	88	3.93	34.4
	**Antwerp Region** *Belgium* Donkey Republic	Lantis (Antwerp Transport Region)	Donkey Republic Donkey Republic	2022	2,150 (1,850 ⚡)	430	19	0.46	0.9
	**Brussels** *Belgium* Villo !	Brussels-Capital Region	JC Decaux JC Decaux	1| 2005 2| 2009	5,000 (1,800 ⚡)	345	34	0.67	2.2
	**Budapest** *Hungary* MOL Bubi	BKK Budapest Mobility Agency	Next Bike Csepel	1| 2014 2| 2020	2,200	190	23	3.71	8.4
	**Madrid** *Spain* Bicimad	City of Madrid	PBSC EMT	1| 2014 2| 2023	3,000 ⚡ 7,000 ⚡	264 611	23	3.15	6.2
	**Marseille** *France* Levélo	Greater Aix-Marseille-Provence	Fifteen Inurba	1| 2007 2| 2022	2,000 ⚡	200	23	8.60	6.9
	**Paris** *France* Vélib' Métropole	Syndicate Autolib' Vélib' Métropolis	Smoove (Fifteen) Smovengo	1| 2007 2| 2017	20,000, (8,000 ⚡)	1,443	38	7.12	23.3
	**Ghent** *Belgium* Fiets Ambassade	City of Ghent	Fiets Ambassade	1| 2002 2| 2017 under the Fiets Ambassade brand	9,000 LTR + 1,000 special bicycles	Long-term bike rental			
	**Paris** *France* Véligo Rental	Ile-de-France Mobilités	Fluow	2019	20,000 ⚡ LTR 1,000+ cargo bikes ⚡				

Photos: B. Beroud

Comparison of rentals and station density

Lower usage in Brussels

Villo ! is one of the least successful PB, with 0.55 trips/bike/day, whereas Paris and Barcelona have a ratio of 6.4. These figures are based on annual trips to avoid seasonal bias and on contractually stipulated bicycles, as the percentage of bicycles available for rent widely varies. In Marseille, there were on average 700 PB available for rent, whereas the contract expects 2,000 PB *(Figure 7 and* Figure *8)*.

Figure 7: Trips/contractually stipulated bike/day in 20 European cities in 11 countries in 2022

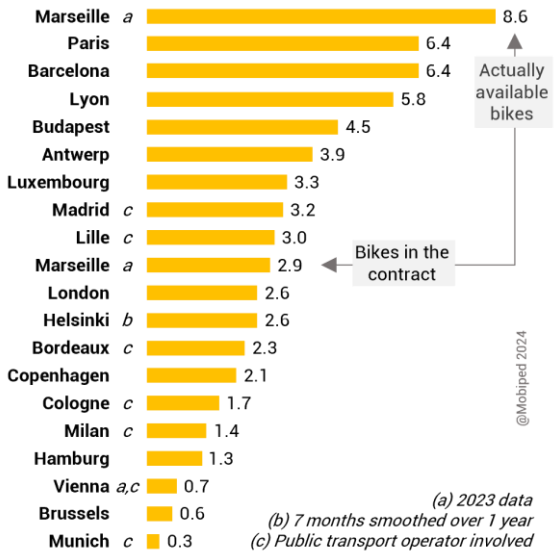
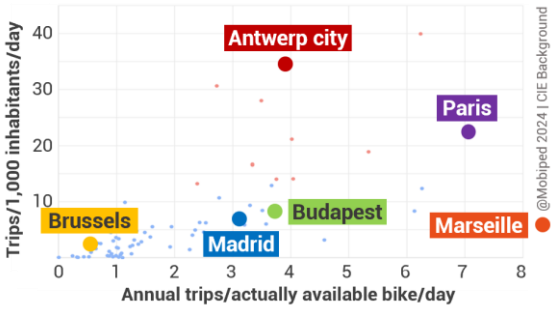


Figure 8: Trips/1,000 residents vs. trips/actually available bike/day (CIE background, all SB types combined [4])



PB is assisting the growth and development of a cycling culture (Madrid, Marseille, Paris). It is also very popular in Antwerp, where the cycling modal share is already very high (32%).

Key success factors for PB

- A dense network of stations
- A quality bicycle adapted to the area
- An easy user experience
- Simple and attractive pricing
- A strong identity linked to the region
- An engaged service provider
- Dedicated and long-term public funding

Due to insufficient density

The length of a PB trip depends on the distance travelled on foot (point A → picking up the bike), by bike (including the detour if a station is full) and on foot (dropping off the bike at point B). The average distance between two nearest stations is almost 400 metres in Brussels, while it is less than 300 metres in Antwerp, Paris *(Figure 9),* and Barcelona. Moreover, usage is higher in the city centre. A service that serves less populated areas or areas with less activity reduces its performance. The density of *Villo !* stations is insufficient in the city centre compared to other cities, and there is a lack of continuity on the outskirts *(white catchment areas 150 m around the stations, Figure 10)*.

Figure 9: Cross-analysis of "station density" and "average distance between two nearest stations".

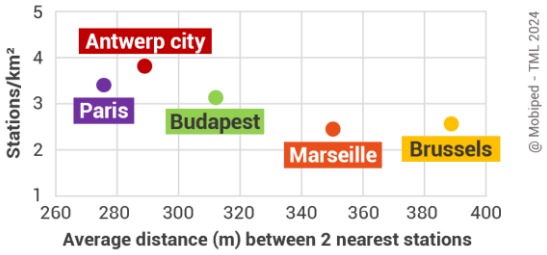
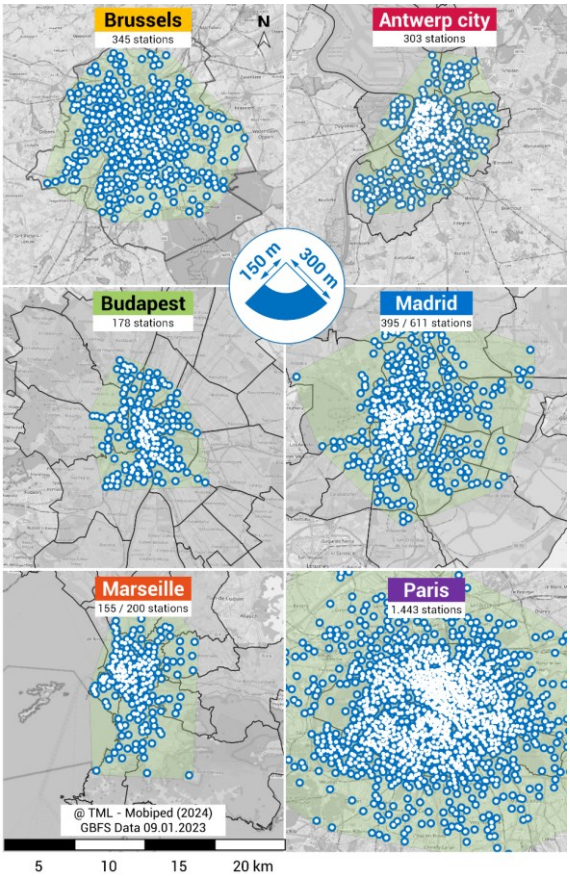


Figure 10: 150 m (white) and 300 m (blue) catchment areas around PB stations - Single map scale



Public intentions and impacts

Laudable intentions, but not assessed

With PB, the analysed public authorities target motorists (encouraging modal shift, reducing usage, offering an alternative), public transport passengers (facilitating the first and last mile, etc.), and new PB users.

But most of these intentions are not translated into objectives that can adequately evaluate the public policy and thus weigh up the real direct and indirect impacts. While PB removes the barriers to access a bicycle for hundreds of thousands of citizens and enables them to develop multimodal skills, its impact on mobility, viewed in isolation, is rather weak.

Audiences reached

PB reaches tens of thousands of residents, with annual subscription rates of 12% (Antwerp), 7% (Paris), and less than 2% for the other analysed cities. However, the underrepresentation of women and people with few qualifications, low incomes, and low digital literacy is an important challenge for this public investment.

Role in cycling

PB accounts for 20% of cycle journeys in cities where the cycling modal share is less than 3% (Greater Paris, Marseille, Madrid). The more people cycle in a city, the lower the PB share in cycling trips. No study seems to quantify the perceived causality of "users who ride their own bike after using PB".

Impacts on car use

As with many mobility services, the direct impact on car use is limited. The number of car km avoided at the metropolitan level represents less than 0.1% of car km (Brussels, Lyon [2]). On the other hand, PB appears to have an indirect impact on car use and ownership *(Figure 11)*.

Figure 11: Indirect impact of PB and LTR on cars [7]

	PB	LTR
Decline in car use	26%	49%
No need to buy a car	18%	20%
Parting with a car	7%	6%

Financing a PB service

Does advertising finance PB? Not really

On the one hand, PB and outdoor advertising are no longer linked. Public contracts now focus on PB only (Antwerp, Budapest, Marseille, Paris). In some cases, PB may be linked to the delegation of public transport services (Bordeaux, Lille) or included in a set of cycling services: PB, LTR, cycle services centre, parking (Nantes, Rennes).

On the other hand, "advertising finances PB" or "it's free for the city" are misrepresentations. In 2004, JC Decaux offered Greater Lyon 5.2 million (M) euro a year to operate outdoor advertising in public areas. Once PB service was included, the proposal dropped to 1.4M €/year [1]. This 3.8M €/year shortfall, which is invisible in the public budget, is in fact the price of the service for the public authorities. Moreover, mixing advertising and PB ensures that changes to the PB service require advertising space negotiations (Brussels).

Public service = Public money

As with public transport, PB is funded primarily by local authorities, with potential support from European funds (Budapest, 40M € in Madrid). Secondly, users pay part of the cost of the service, sometimes with the help of their employer via a mobility budget. Lastly, private funding can be sought through naming (MOL Bubi oil company in Budapest or banks like Santander Cycles in London and Citibank/bike in New York), advertising on bicycles (e.g., airline company in Milan), or financing of stations (Antwerp Region).

What is the price of a PB service?

Data from the benchmarked PB services

Price for the public authority: 1,000 to 4,000 € excluding tax/year/bike (mechanical or electric).

User revenue coverage: 26 to 66%.

Remaining expenses for the public authority: 450 to 2,800 € excluding tax/year/bike.

Financial ratios :

- 0.35 to 2.48 € excluding tax/trips (STIB-MIVB in 2022: 2.58 €/trip).
- 0.17 to 0.95 € excluding tax/km (STIB-MIVB in 2022: 0.38 €/passenger kilometre).

More than just a bike project

PB is a multidisciplinary project at the crossroads of cycling policy, shared mobility services, MaaS (digital, big data, customer databases), and public space (charging through the grid network, parking). Moreover, PB has a strong political and media resonance. It's easier to communicate about a service than an infrastructure (Budapest).

E-PBs, a game changer

While e-PBs with integrated batteries present several challenges (electrification of stations, battery charging, skilled human resources, risks of failure, fire, and theft), their impact is considerable. They are generating more trips than removable batteries (Bordeaux, Brussels, Lyon), attracting new users (women ↗ 9%, average age ↗ 7 years [7]), and increase the distances travelled (↗ 1 km in Paris). In mixed fleets, e-PBs are preferred to pedal bikes, which increases wear, tear, and costs and impacts the availability of charged bikes *(Figure 12)*. Finally, they are strongly transforming usage in hilly cities *(Figure 13)*.

Figure 12: Overuse of e-PBs in mixed fleets

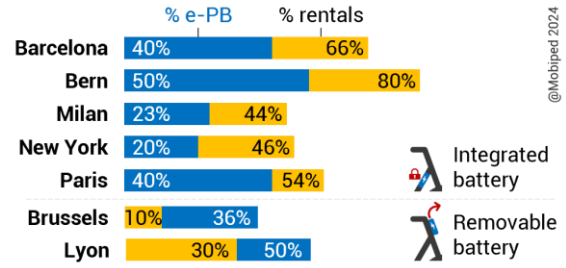
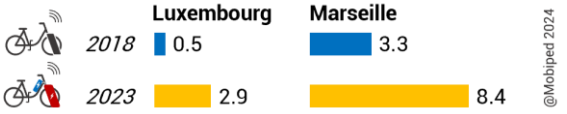


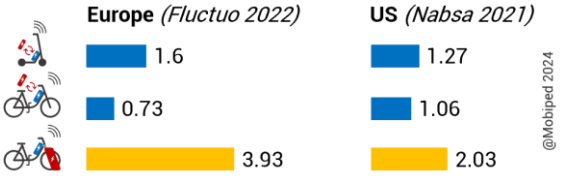
Figure 13: Annual trips/bike/day, before and after electrification of the PB fleet



Docking stations, a safe bet

PBs with docking stations are more widely used than free-floating PB and scooters in both Europe and the United States *(Figure 14)*.

Figure 14: Comparison of PB trips/vehicle/day for docked PB, dockless PB, and dockless e-scooters [5, 12]



Complex installation and operation, requiring careful preparation

Deadlines for a successful transition

To ensure a smooth transition, a minimum of one year is recommended to select the consortium, plus one year to order, deliver, assemble, and install, from the time the contract is signed to the last possible legal recourse. These timescales are crucial to avoid:

- A five-month suspension of the service (Budapest).
- Being affected by the elections (Madrid).
- Having only 30% of the bikes (Marseille).
- Losing 80% of rents in one year (Paris).

The operator, a partner to challenge

As PB is a complex project in terms of implementation and contract execution, it is preferable for the PB operator to be locally based (Antwerp). If the authority and the operator have to work in tandem, the authority carries out its own analyses without the filter of the operator, via field audits and duplicates of the operator's data in real time (Paris).

Cost control + Success management

Any self-service public space activity is structurally exposed to negligence, misuse, vandalism (Cologne), and theft (Marseille). These costs are provisioned in the applicant's initial price or in a dedicated budget, with any positive balance being reinvested in the service (Antwerp).

PB also deal with commuter flows, requiring a budget to rebalance bikes at stations on the outskirts or in single-function neighbourhoods (housing, employment, or shopping). Drop zones (racks or parking areas delimited by paint), overflow (overcapacity of a full station), or e-PB reduce but do not avoid this need for rebalancing.

Success disrupts the operator's economic equilibrium. The more bikes are rented, the more vulnerable the PB become. Beyond a certain threshold, maintenance costs soar, and the operator tries to reduce the number of rents (Paris). Changes in operator costs from additional usage are not specified in the original contract and are no longer covered by user revenues based on tariffs set by the government. Thus, once a certain level of success is reached, it is necessary to accept a deterioration in service provision.

PB and Public Transport (PT) complement each other

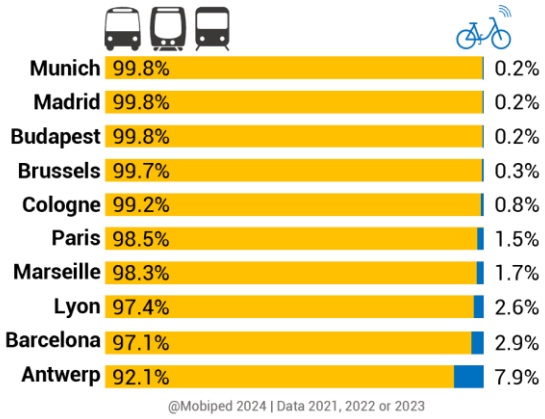
Inter- and multimodal users

As PB and PT customer databases belong to different owners, the GDPR does not allow a detailed analysis of inter- and multimodal journeys. However, surveys indicate that 80% of PB users are multimodal (Paris, Budapest) and more than 25% travel intermodally by train, metro, tram, and bus (Antwerp).

PB ⇔ 1% of the PT network

In a very simplified view, the PB network accounts for 1% of journeys *(Figure 15)*, 1% of human resources, and 1% of the annual budget of urban public transport networks. "Rather than being frightened by cycling, the public transport operator should put its energy into attracting multimodal subscribers. A cyclist is more likely to be a public transport passenger than a car driver" (Budapest).

Figure 15: Share of cumulative journeys by urban public transport and public bicycles



2 parallel and complementary networks

Unlike back-to-one BS, where bikes are taken and left at the same train station, back-to-many PB are not extensions of urban public transport. Instead, PB runs on its own network. Many stations cater for a maximum number of potential origins and destinations.

The proximity of PB stations to public transport stops enhances the mobility experience for both public transport passengers and cyclists by providing additional flexibility.

PT-PB integration is overvalued

As in the case of MaaS, the discourse emphasises the value of PT-PB integration without mentioning the multi-parameters of so-called total integration. The integration generally implies discounts for public transport subscribers or the use of the public transport network's ticketing system. The ultimate integration would consist of a single mobility ticket that enables all modes of transport to be used equally. This does not seem to have been implemented yet.

Two distinct operating businesses

Operating a public transport network involves carrying passengers according to a line-based logistics. Operating a PB network involves making bicycles available according to a diffuse logistics system that depends on individual users' rent. While support functions can be pooled (Madrid), there seem to be no economies of scale between PB and PT regarding operations. This is confirmed by:

- The separation of activities within the same public mobility service between Keolis and its subsidiary Cykleo (Bordeaux).
- The relocation of a PB warehouse previously located on a bus depot site also belonging to the transport public manager (Madrid).

Attention to governance

The best performing PB services in Europe *(Figure 7)* are run directly by the public authorities (Antwerp, Barcelona, Budapest, Marseille, Paris). Direct involvement of the public transport operator gives interesting results in the context of a public service (Madrid) or multimodal public service delegation (Bordeaux, Lille). It is less convincing in other cities (Cologne, Milan, Munich, Vienna).

Key success factors to involve the PT operator:

- Treats modes fairly.
- Makes the specificity of the bike their own.
- Gets involved in supervision without blindly trusting the PB operator, despite the low weight of PB compared to public transport.
- Respects the distribution of roles defined by a RACI matrix (Responsible, Accountable, Consulted, Informed).

Bike Share market trends

Diversification on all fronts

The BS market has diversified and expanded:

- Electrification of bicycles.
- Digitalisation of the user experience.
- The rise of shared micromobility.
- Diversification of pricing ranges.
- Customer acquisition with free rides.
- Contactless payment.
- Modular parking, sometimes uncontrolled.

Cities take back control

To regulate public space, some cities have banned free-floating, imposed a limited number of licences, charged fees (35 €/year/bike in Brussels), or provided dedicated back-to-many drop zones/mobility hubs (Budapest, Grenoble, Paris, etc.). Others have banned private scooter services (Paris, Barcelona) or private bike sharing services, retaining public services only (Luxembourg, Lyon).

2 competition-enhancing models

There are two business models *(Figure 16)*:

B2G2C players (Business to Government to Consumers/Citizens): Their customers are local authorities, for whom they contribute to the service delivered to citizens. The main international B2G2C players are suppliers (Fifteen, PBSC), operators (Clear Channel, Inurba, Serco, Serveo, Velogik), or both (JC Decaux, Nextbike).

B2C players (Business to Consumers): their customers are the end-users. The main operators are Bolt, Dott, Lime, Pony, Poppy, RideMovi, Tier, and Voi. They generally operate several types of micromobility vehicles in a free fleet without docking stations.

An unstable B2C market

After years of success in the quest for market share, with ever lower prices due to cheap money in the stock markets, the rise in interest rates put an end to easy money. Investors are now pressing these services to become profitable. Yet micromobility players are struggling to find their business model, as evidenced by the Dott-Tier/Next Bike merger in 2024 and the setbacks of Superpedestrian, Spin, and Bird in 2023. Profitability of scooters is already uncertain. The economic equation is even more perilous for private e-BS, which are 50% more expensive to buy, heavier, bulkier, costly to move, and less profitable.

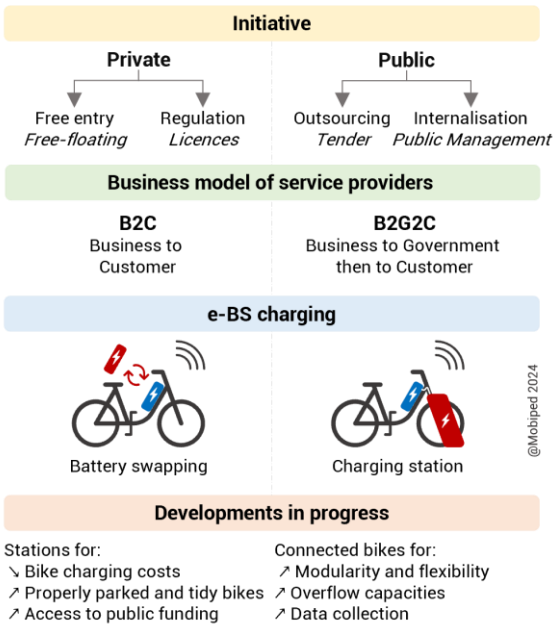
Multi-operator charging stations

To reduce the human resource costs involved in swapping batteries, free-floating operators are developing their own stations (Bolt) or free-floating bicycle manufacturers (Navee, Okai, Segway) are retrofitting their bicycles to be compatible with the new multi-operator stations (Knot, Metromobility, Noval, StandAB).

In search of public money

The Cycling Industry Europe's group of experts on shared bikes (B2C and B2G2C) has issued the following message: "BS is not a private service, but a public service that needs to be financed". Some players, such as Donkey Republic, are responding to tender calls in several "vervoerregio's" in the Flemish Region. For their part, Dott invites cities to create the best ecosystem for achieving public objectives, rather than having the best PB service. This can take the form of micro-subsidies (Molière Project in Brussels) or of a subsidy of 125 € excl. tax/e-PB/year (Ghent).

Figure 16: Main characteristics of bike sharing markets and their current developments



A blessing for Brussels

Brussels benefits from its visibility as the European capital. Moreover, the absence of a national oligopoly, as is the case in many countries, enables an attractive competition. Several B2C and B2G2C players have already expressed an interest in the Brussels project, which is to be one of the next major PB systems in Europe.

LTR, an inspiring service

The LTR market

Compared to PB, public LTR is less known and developed. The main examples can be found in:

- France: Véligo Location (Paris), MVélo + (Grenoble), Free Vélo'v (Lyon).
- Belgium: Fietsambassade for students (Ghent), Vélocité (Liège), Ottignies, Gembloux, Mons.

The average size of such services is around 35 to 40 bicycles per 10,000 inhabitants [8]. Grenoble is an exception, with a service that is growing year on year *(Figure 17)*.

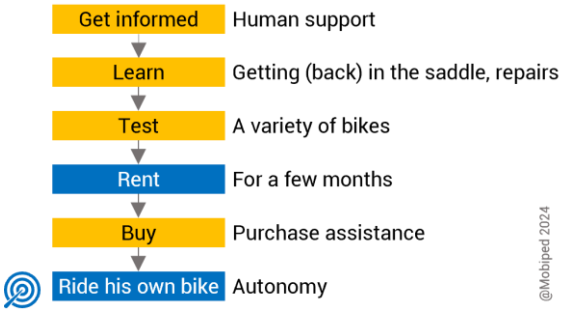
Figure 17: LTR service sizes in France and Wallonia.

	LTR/10,000 residents
Small towns in Wallonia	15
Average in France	33
Liège Vélocité	40
Grenoble	250

An integrated approach to mobility management

LTR at the Fietsambassade (Ghent) and Véligo Location (Paris Ile-de-France) help people become cyclists in various steps: get information, learn, test, rent, buy, be autonomous *(Figure 18)*. This way, the public authorities provide a one-off financial boost to try out a cyclist lifestyle on a quality bicycle. In Paris, the rental period is limited in time to encourage the beneficiary to buy and use their own bike without benefiting from any other public aid.

Figure 18: Integrating LTR into the pathway to become an autonomous urban cyclist



PB and LTR complement each other

PB and LTR are distinct and complementary services that coexist in several cities (Bordeaux, Lyon, Nantes, Paris).

A study of the situation in Paris provides some orders of magnitude *(Figure 19)* that admittedly should be considered cautiously, since *Vélib'* (PB) and *Véligo Location* (LTR) are two of the best-performing premium services in Europe. Véligo Location offers a 100% electric fleet, including home delivery or delivery points throughout the Ile-de-France region (80 km from north to south and 100 km from west to east). The costs are therefore higher than those of other LTR services in France.

Figure 19: Comparison of PB Vélib' Métropole and LTR Véligo Location in Paris (2022 data)

	PB	LTR
Offer		
Service	PB	LTR
Rental period	Minutes	Months
Number of bikes	20,000 (8,000 ⚡)	20,000 ⚡ + 1,000 cargo bikes ⚡
Uses in 2022		
Long-term subscribers	378,000	22,000
Trips	44.2 M	7.8 M
Average distance (km)	3.8 ⚡	4.1 ⚡
Km travelled	148 M	32 M
Parisian financial ratios		
Price paid € excl. tax/bike/year	2,571 €	~ 1,000 €
User revenues € excl. tax/bike/year	1,268 €	Unknown
Contractual relationship	Public contract	Concession
Remain to pay € excl. tax/bike/year	1,303 €	~ 1,000 €
€ excl. tax/km	0.18 €	0.63 €
€ excl. tax/trip	0.59 €	2.56 €
Financial ratios (French averages for mechanical and electric bicycles combined)		
Remain to pay (€ excl. tax/bike/year)	1,981 € *(b)* 1,490 € *(c)*	300-800 € *(a)* 225 € (b) 490 € (c)
€ excl. tax/km	0.56-1.35 € *(b)* 0.35 € *(c)*	0.10 € *(b)* 0.57 € *(c)*

a: ADEME 2016 [6] | b : ADEME 2021 [8] | c: AAVP 2023 [7]

5. Bikesharing in Brussels

Key dates

2005 The City of Brussels launched Cyclocity, with 250 bikes and 25 stations.

2009 The Brussels-Capital Region awarded JC Decaux the contract to supply and operate 5,000 *Villo !* vehicles, 360 stations, and 347 advertising spaces.

2017 Arrival of the first private, free-floating SB such as Billy-Bike and Obike, followed in subsequent years by Gobee.bike, Dott, Jump, Lime, Pony, Bolt, Dott, Voi, Tier, and Poppy.

2018 Ruling on private Bike Share.

30% of *Villo !* vehicles are powered by removable batteries.

2024 Awarding of 3-year licences to Bolt, Dott, and Voi to deploy a maximum of 7,500 bicycles in 3,000 drop zones shared with scooters (1,600 drop zones deployed by the end of 2023).

2025 5,000 *Villo !* + 7,500 private SB, together 12,500 contractually provided SB.

2026 16 September: End of the *Villo !* concession. The next step will be decided in 2024.

31 December: End of the 3 licences assigned to private operators.

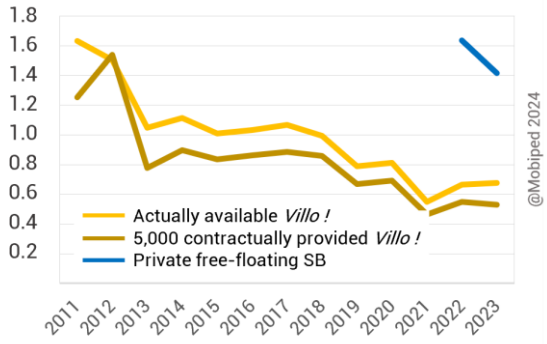
Constantly declining use

Since its launch, the number of trips/*Villo !* per day has been falling steadily *(Figure 20)*. In 2023, there were 970,000 trips, i.e.:

- 0.53 trips/contractually provided bike/day, for 5,000 contractually provided bikes (brown line).
- 0.67 trips/actually available bike/day for an average of 3,935 actually available bikes (yellow line).

With an average of 2,346 actually available bikes in 2023, private e-SB generated 1,212,000 trips, or 1.42 trips/actually available bike /day (blue line).

Figure 20: Contractually and actual PB trips/day/Villo ! from 2011 to 2023 and free-floating PBs in 2022 and 2023



Local associations (BRAL, GRACQ, FIETSERSBOND, CYCLO) in favour of PB and LTR

Villo !, a service that needs improving

Villo ! suffers from several issues: heavy bicycles that are not always in working order, users who are not listened to enough (customer service, user committee), poor image of the service, complex process for a single use/test.

Considering PB as a tool

PB can be a tool to facilitate acceptance of the traffic changes in the Good Move plan, for example by organising a consultation on the placement of stations. PB also contributes to the functionality economy. However, PB is not a means to get people who have never cycled before into the saddle.

PB, a public service

These associations prefer public governance to abandoning the service to the private market, with its more precarious working conditions. They warn that the digital divide must be taken into account, believe PB can be integrated into public transport provision, and call for consultation before setting up stations in popular neighbourhoods.

Diversifying investment in cycling

The associations are in favour of the idea of an LTR and call for continued investment in the cycling system as a whole.

Feedback from surveys of users and non-users of *Villo !*

Two surveys of micromobility users [15] and non-users [16] in 2023 identify the obstacles to *Villo !* use and possible improvements *(Figure 21)*:

- Access time as well as type and condition of the bike are the main obstacles to *Villo !* use.
- The image of *Villo !* is positive among users, but rather neutral among non-users. 62% of non-users consider it a positive thing to keep a PB service in stations.
- Non-users say they will use PB if the offer were more attractive and are positive about an integration with STIB-MIVB.
- 30% don't cycle because they don't have a bike. 70% don't because they feel unsafe cycling: risk of accident, lack of facilities.

Figure 21: Opinions of Villo !- and micromobility users and Villo !-non-users living in the Brussels Region (2023)

Survey participants	Barriers to using *Villo !* (1 answer)	Barriers to using *Villo !* (Several answers)	Villo ! image	Future user if …	Other comments
Regular users *Villo !* [15] *660 responses*	42% Bike condition 22% Access time 17% Bike weight	73% Bike condition 69% Access time 64% Bike weight	79% 15% 6%		87% of *Villo !* users cite "saving time" as a reason for using it. It is the main reason for 56% (*1,350 responses*).
All micromobility users [15] *2,411 responses*	30% Access time 24% Bike condition 12% Type of bike + No e-PB	50% Weight + bike condition 40% No e-PB 38% Access time	42% 36% 22%	61%: Rates < free-floating 56%: Pedelecs 35%: Basket	A declared interest in: > 60%: STIB-MIVB bicycles > 70%: PB + STIB-MIVB offers > 80%: PB in STIB-MIVB fares, shared mobile app, stations closed to the STIB-MIVB network.
***Villo !* non-users, BCR residents** [16] *304 responses*	33% Access time 18% Bike type 15% Bike condition	40% Transport of children and goods not possible 32% Bike weight 31% Bike type (No pedelecs)	33% 49% 18%	With a more attractive offer 35% 25% 40%	Keep a PB with docking stations: 62% | 23% | 15% Do not cycle because ○ 55%: Risk of accident ○ 32%: Weather ○ 30%: No bike ○ 25%: Lack of facilities

Disappointing results for *Villo !* but real opportunities for a future PB service

Villo !'s strengths

- Coverage of the whole region
- Good end-user value for money
- 16% of Brussels residents have tried *Villo !* [3]
- *Villo !* is a recognised brand
- 15 years' experience
- Allocated ground surface, with grid access

Villo !'s weaknesses

- Insufficient density of stations
- Unsatisfactory user experience
- Competition from free-floating e-BS
- Women and low incomes under-represented
- Low direct impact on car and bicycle use
- Disadvantageous contract for the public authority

Opportunities

- Identified weaknesses that can be improved
- 50% of Brussels residents could benefit from easier access to a bicycle
- Integration with public transport
- E-PB, a game changer adapted to the local topography
- Many interested service providers
- Complementary with LTR

Threats

- Feeling of unsafety when cycling in traffic
- Transition and electrification risks
- Competition from private SB in drop zones
- Unsecured budget and risk of vandalism
- Disregard for vulnerable profiles
- Lack of supervisory culture and associated budget

6. Possible objectives of a PB service

Avoid inappropriate targets

"Aiming for a modal shift towards soft mobility", as described in the *Villo !* concession, is too ambitious for PB alone. The modal shift is an objective at the level of the Good Move regional mobility plan [18], which includes measures to restrict car use and offers a wide range of alternatives, to which PB makes a modest contribution.

Moreover, owning a bike does not mean using it, especially for people with limited experience of cycling in traffic. Good cycling conditions and safety therefore remain necessary [19].

Precisely defined objectives that can be assessed

As part of a quality approach to PB *(Figure 22)* and in the spirit of BYPAD [13] and Good Move *(Figure 23)*, the objectives SMART (Specific, Measurable, Acceptable, Realistic, Time-bound) are proposed.

Figure 22: Quality approach proposal applied to PB in Brussels

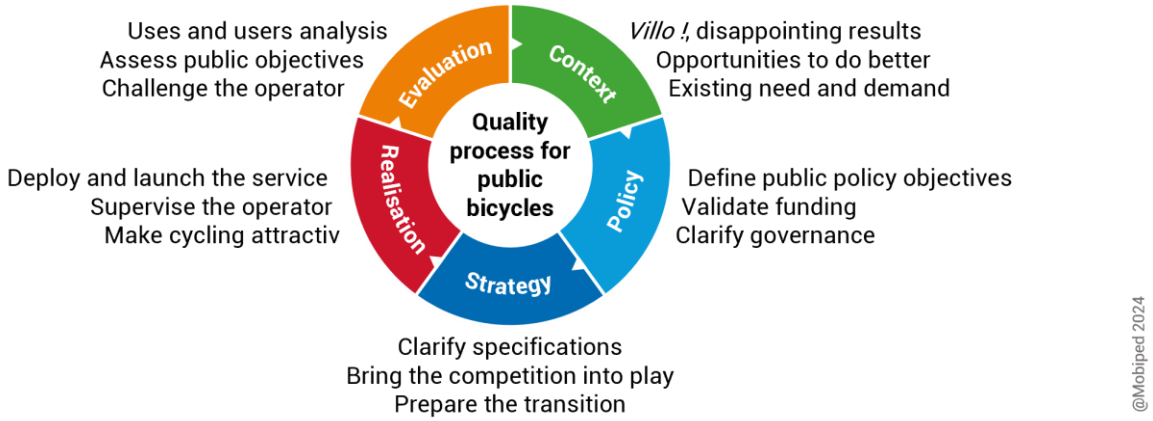


Figure 23: Possible examples of PB public policy objectives for each Good Move focus area

	Good Move focus	Objectives and criteria applied to PB, in the service's annual review
A	Good Neighborhood	**An useful service for Brussels residents**: 50% of subscribers are female. 10% of Brussels' residents are long-term subscribers.
B	Good Network	**A dense network**: 50% of households within 150 m of a PB station.
C	Good Service	**An efficient service**: PB trips account for more than 2% of STIB-MIVB journeys.
D	Good Choice	**Multimodal use**: 20% of STIB-MIVB subscribers use PB at least once a year.
E	Good Partner	**Federated local players** (elected representatives, STIB-MIVB, Sibelga, etc.) around and thanks to cycling.
F	Good Knowledge	**Continuous improvement**: assessment of usages and public policy.

7. Explored scenarios

Five scenarios analysed

One LTR scenario and four PB scenarios were analysed. PB bikes are 100% electrified, with the ambition of a public service: social fares, full coverage of the Region, continuity of the service, a public brand *(Figure 24)*.

Figure 24: Characteristics of 5 possible 2027 scenarios, at the end of Villo ! and the private BS licences

1 | LTR + Training + Sales

- Parking bays in public spaces and parking at home or at the destination
- At home or at the destination
- 1 B2G2C public service | Other private services remain possible
- Brussels (Vélo Solidaire), Liège, Paris (Véligo Location)

2 | Private e-SB in drop zones

- 3,000 drop zones in public spaces (as planned)
- Battery swapping
- 0 public B2G2C services | 3 private B2C services
- Amsterdam, Ghent, Geneva

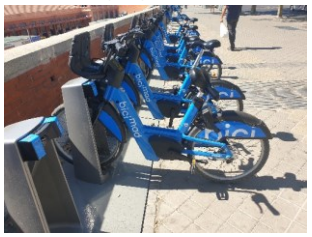
3 | Public e-PB in drop zones

- 3,000 drop zones in public spaces (as planned)
- Battery swapping
- 1 public B2G2C service | 0 private B2C services
- Gdansk, Rouen

4 | E-PB stations + drop zones

- 350 stations + 350 drop zones/bicycle racks in public spaces
- At station + battery swapping
- 1 public B2G2C service | 3 possible private B2C services
- Stuttgart

5 | E-PB charging stations



- 600 stations in public spaces
- At station
- 1 public B2G2C service | 3 possible private B2C services
- Luxembourg, Madrid, Marseille, Paris

Photos: 1 in Paris, 2 in Brussels, 4 in Stuttgart, and 5 in Madrid (B. Beroud) | 3 in Rouen (Inurba)

Questions and answers for each scenario

1 | Is LTR opportune? Yes.

Compared to private players, public LTR would make it possible to:

- Offer a variety of bike types/sizes/models: mechanical, electric, folding, cargo, adapted, children's, etc.
- Invite thousands of Brussels residents to adopt a cycling lifestyle through a range of services and human support (without commercial ulterior motives) to inform, train, test, rent, equip, and advise on the purchase of a bicycle. *Vélo Solidaire's* activities (saddle-up training, aid for bike purchasing) are perfectly in line with this approach.
- Investing public money in a more targeted way to reach vulnerable groups and avoid car-driven kilometres.

As this study focuses mainly on PB, a feasibility study of LTR is required.

2 to 5 | Is SB desirable? Yes.

More than 1,600 towns and cities around the world have BS, including some that were initially reluctant (Amsterdam, Ghent, Grenoble). The question is no longer "should back-to-many BS be deployed? but "what role should public authorities play?".

2 | Do private SB players provide a public service by themselves? No.

The presence of free-floating private SB might lead one to think that a publicly funded PB is unnecessary. But private SB do not seem to meet the ambitions of a public service on their own and illustrate several market failures:

- Uncertain service continuity.
- No upper limit in pricing policy.
- Widening the digital gap through exclusive use of smartphones and apps.
- Regulatory efforts to maintain territorial coverage are uncertain.
- Lower performance for free-floating than station-based services *(Figure 14),* except in Brussels. PB stations form a network industry, generating a natural monopoly to be regulated by local public authorities [1].

And even within the licensing framework, private SB seem to need public money.

3 to 5 | Is it worth investing public money in PB? That's a political decision.

As with all public policies and mobility services, PB has limits and benefits *(Figure 25)*. The remainder of the study explores this public investment.

Figure 25: Limits and benefits of investing public money in PB

	Limits	Benefits
	Cycling is very popular in Flanders and the Netherlands, despite theft and parking constraints. The PB budget could be invested in addressing barriers to using a quality bicycle by making it easier to acquire, maintain, and store a bicycle theft-free.	PB eliminates the barriers to access a bicycle for 100,000 to 500,000 Brussels residents, like a "mobility insurance". Even with massive investments in dismantling these barriers, many citizens will continue to face them. However, PB should not be a pretext for not investing in better cycling conditions.
	PB accounts for only a small proportion of bicycle trips compared to its share of the cycling budget.	Public investment in cycling is not in line with the objectives of increasing the modal share of bicycles compared to cars (e.g., leasing company cars, tunnels). And the €/trip ratio is lower for a well-used PB than public transport *(see page 10)*.
	Less efficient than LTR in terms of public euros excl. tax/km travelled.	Complementary to LTR and more effective in terms of the number of citizens reached.
	Widens the sociological gap, with underrepresentation of vulnerable groups.	Although underrepresented, several thousand of vulnerable people have access to a bicycle.
	Presence of private SB at lower public cost.	Makes cycling part of Brussels public transport and contributes to the culture of multimodality.
	Total carbon footprint potentially negative if low usages and few former motorists.	Total carbon footprint potentially positive, in contrast to much public funding.
	Negligible impact on avoided car kilometres.	Development of multimodal skills. Reduction of motorisation attractiveness [7].

3 | What if PB were only available in drop zones? Not so interesting.

Free-floating PB in the 3,000 planned drop zones, in place of *Villo !* and private licences, presents several economic and political risks, as described below.

First, this solution seemingly saves costs on stations. However, the cost to the public authorities would be close to a dock-based PB because of the operating and battery swapping costs (duplicate of batteries, human resources). Moreover, accessible pricing would increase usage and therefore swapping costs.

Second, drop zone parking increases the risk of theft, vandalism, and bikes lying on the ground or obstructing walkways. Technological solutions (GPS, cameras, photos, fall detectors) do not seem satisfactory at this stage, as they remain either imprecise, only available on a smartphone, or dependent on the responsiveness of the operator. And even with penalties, parking outside drop zones persists (5% in the Antwerp Region). Bikes branded "paid for with public tax money" lying on the ground or parked in a disorderly way would be difficult to accept for citizens and elected representatives.

4 | Is the best of both worlds possible? Hmmm, that's very uncertain.

The mixed scenario of "charging stations + drop zones with dedicated racks" is a tempting way of limiting investment and operating costs and ensuring orderly parking. Moreover, the market is moving in this direction with new charging stations and connected bicycles *(Figure 16)*. But many unknowns remain:

- No player does both jobs well.
- There is no experience feedback and no consensus among service providers on the optimal percentage between stations and drop zones with dedicated racks (10 to 90%).
- The investment is more expensive because of high requirements to both the bike (Internet of Things, shock resistance) and the station (secure parking, charging).
- There is confusion among citizens between parking facilities for personal bikes, PB, and private SB in drop zones.
- It is difficult to control whether the bike is properly attached to the dedicated rack, with the possibility for PB to lie on the ground or on footpaths.

5 | Is dock-based PB still an option? Eventually, yes.

With a 100% electrified fleet, the 100% charging stations option seems to be the most relevant and reassuring PB scenario in terms of:

- Performance, with more use for docking than free-floating *(Figure 14)*.
- Quality of service, with automated battery charging that is not dependent on human resources.
- Cost control, with less exposure to vandalism and theft, and no variable battery swapping costs.
- Image, with orderly PB.

There are, however, constraints to be anticipated:

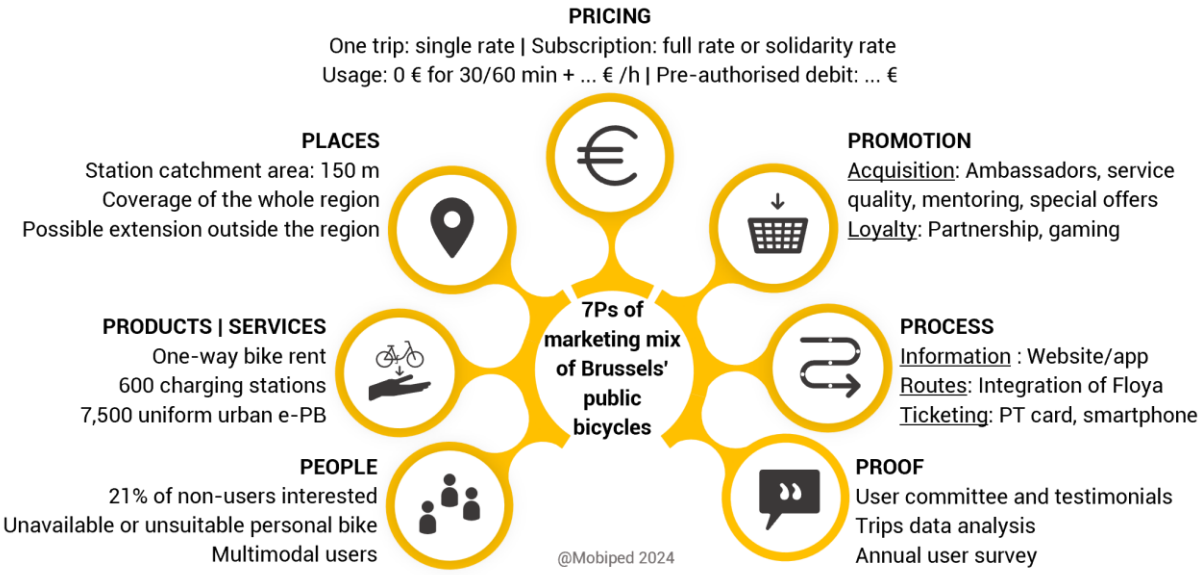
- Long and risky transition, as it relies on the decisions and timetable of the electricity grid operator and land planning authorities.
- Long contract to depreciate investment costs.
- Limited flexibility to move stations, but with possible intermediate solutions: station on platform, manned station at events.
- Limited station capacity and the cost of regulating between stations.

Scenarios 1 (LTR) and 5 (e-PB with charging stations) have been selected.

8. Marketing mix for a PB service

The proposals below are structured on the 7Ps of the marketing mix *(Figure 26)*.

Figure 26: Simplified view of the 7Ps of the user-centric marketing mix for future PB in Brussels.



PB meets the needs of many Brussels residents

Access to a bike for everyone

PB gives hundreds of thousands of Brussels residents the opportunity to use a bicycle, even if their environment makes it difficult to have permanent access to this mean of mobility *(Figure 27)*.

Tens of thousands of prospects

In addition to current *Villo !* users, several tens of thousands of residents are potential prospects if the service is improved *(Figure 28)*.

Figure 27: Percentage of the Brussels population unable to access a quality bicycle

Obstacles to getting a bike	Brussels residents
"I don't have a bike..."	... mechanical bicycle (53% of households), ... electrically assisted bicycle (89%) [17]
"I can't buy a bike"	6% of households do not own a bicycle for lack of financial means [20]
"I can't park my bike"	26% of households cannot easily store a bike (near) their home [17]
"I'm afraid of theft"	29% of cyclists had their bike stolen less than two years ago [14]
"I'm not used to riding a bike"	60% of Brussels residents did not cycle the previous year [17]

Figure 28: Potential market and prospects for PB in Brussels

Mobility practice	Potential prospects
"I already use *Villo !*"	23,000 *Villo !* subscribers and 45,000 rentals by non-subscribers by 2022 [9]
"I might be interested"	21% of non-users of *Villo !* in Brussels say they may be interested in PB [16]
"*Brupass* + PB? Ok"	9% STIB-MIVB subscribers are willing to pay an extra 17 €/year for PB and 21% are willing to pay 3 €/month of their choice [21]
"I travel less than 5 km"	60% of intraregional trips	48% of trips by car [17]
"I don't have a car"	54% of households do not have a car [17]

A public bicycle rental service

Rent a bike for the length of a trip

Users over 14 years old can rent a bike (or several bikes) 24/7 from a PB station in the public space. They rent the bike for the length of their journey and drop it off near their destination. Having a bike near you or a parking space close to your destination is not guaranteed, just as there is no guarantee to get a seat on public transport or to drive a car at the maximum speed allowed during rush hour.

100% electric public bikes

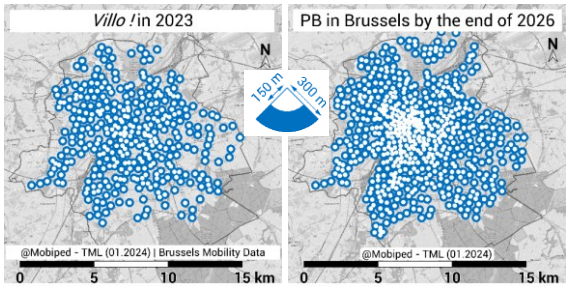
E-PB are justified in Brussels because of the hilly topography (including in the city centre), the competition from private SB, and the negative image of the current service that needs to be improved.

A homogeneous fleet, rather than a mixed fleet, is preferred in order to simplify the fare structure (on the user side), regulation and maintenance (on the operator side), and contractual monitoring (on the authority side). Cargo bikes could be included as an option, but it is technically unlikely that they could be parked and charged in the same stations. LTR is better suited to offer a variety of bike sizes and models.

100% charging stations

The stations are connected to the electricity grid, so there is enough capacity to charge each bicycle at the same time. Charging and secure parking are based on the three-part "Bicycle <> Hook <> Street equipment", the design of which is often interconnected. The current *Villo !* three-part is exclusively owned by JC Decaux and protected by patents. If the Region were to buy and keep the furniture, the outgoing incumbent would have an undeniable advantage, unthinkable under public procurement law. The future incumbent will therefore provide the entire "Bicycle <> Hook <> Equipment" three-part, with its own equipment to secure and supply the bicycles.

Figure 29: Catchment area for 350 stations in 2023 (left) and 600 stations by the end of 2026 (right)



A denser network of stations

To continue to cover the entire Region and reduce access times to stations *(Figure 29 and Figure 30)*, at least 600 stations are required:

- 350 current locations (in orange),
- 250 new locations (in blue): 35 in the pentagon, 70 in the first crown and 150 in the second crown *(Figure 31)*.

An extension to neighbouring towns may be considered, with specifications to be defined.

Figure 30: Average distance between 2 nearest PB stations

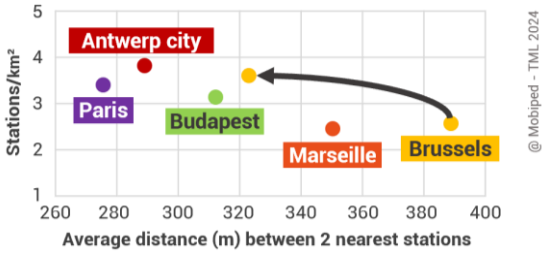
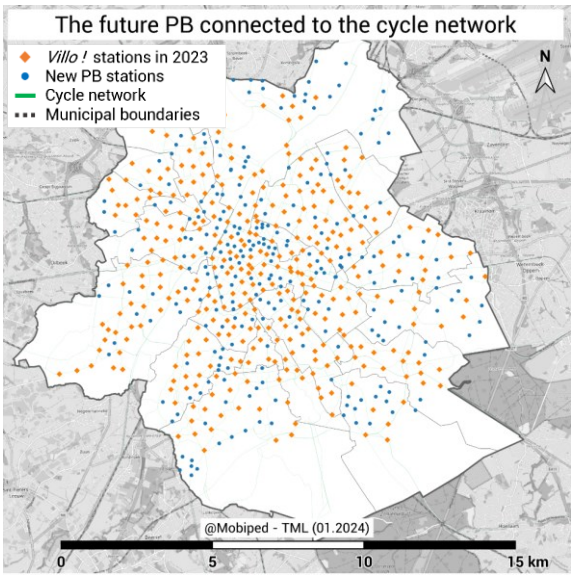
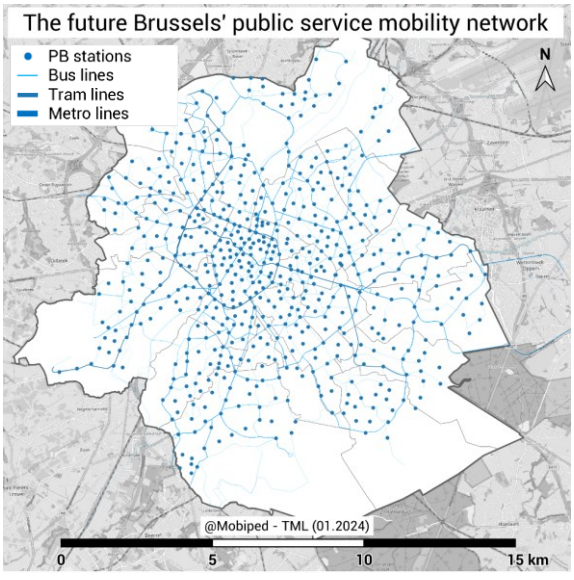


Figure 31: PB stations network in the cycling network (top) and in the public transport network (bottom)





Multimodal pricing

Pricing: a sensitive equilibrium

Ideally, pricing will be attractive, simple, equitable, incentive to return the bike, restrictive to prevent abuse (e.g., overuse by food delivery), adapted to encourage multimodality, and balanced to finance the service *(Figure 32)*.

Figure 32: Principles of a PB fare structure

Unlocking	One-way and return tickets Short packages (day, week) Full-fare or discount monthly/annual membership (Affordable, Public transport membership ticket holder) Extra cost if 3+ releases/day
Usage	0 € for 60 min + ... €/h
Payment	Pre-authorised debit (reserve frozen during rental period)

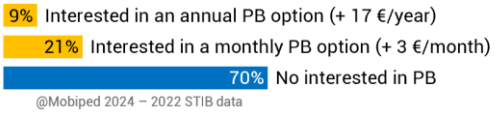
Towards a single multimodal ticket?

Ideally, one ticket would allow use of both PT and PB. But to charge for the duration of the rent period and reduce the risk of theft, users need to be identified. This cannot be done with anonymous paper tickets or Mobib basic tickets. Contactless payment would lead to paying twice. STIB-MIVB subscribers, however, are already identified on their digital pass or *personal Mobib* card. Activating the PB option could be done by giving consent to prepayment and acceptance of the General Terms and Conditions (GTC) (the latter also whenever they are updated).

What kind of tariff integration?

It is possible to integrate PB into the PT subscription with or without a price increase *(Figure 33)*. If PB is included in the basic PT subscription at the current fare, user revenue will not contribute to financing the service. If it is included with an increase justified by the upgraded mobility offer, each subscriber will contribute to financing the service, even without using it.

Figure 33: STIB-MIVB subscribers' interest in a PB option with their subscription [21]



Willingness to attract users

Acquisition of new user profiles

Attract	Save time: proximity, availability, and ease of use | Good value for money and quality of service
Communicate	Public branding: purchase of *Villo !* from JC Decaux [23], STIB-MIVB, naming, other? Multi-channel strategy with well-known ambassadors
Provide	Special commercial offers (e.g., 1st journey for free) and partnerships
Invite back in the saddle	Helping people who can cycle to feel confident with the service (bikes, fares, digital interfaces)

Building users' and cyclists' loyalty

Convert	Invite to subscribe after a test
Maintain	Relevant goodies for urban cyclists News and practical advice
Stimulate	Gaming and partnerships programs
Listen to	User Committee
Promote	Invite users to ride their own bike

An optimised user experience

Find out more	Digital: Website, app Human: STIB-MIVB agents
Register	Creating or using an account (eID, Floya's future "account-based identification")
Buy	Credit card: contactless on the bike or at the kiosk, online, in the App, etc. | Electronic wallet | Direct debit from bank account Option: Paypal, cash
Identify yourself	Possible ticketing media: digital (digital ticket, app) and non-digital (e.g., personal Mobib card) Option: bank card, text message
Book	Bicycle: 5 min maximum Parking slot: 30 min (premium service)
Choose	Information on the quality of the bike
Orientate yourself	PB maps, route search engines (PB app, Floya, Google Maps, private MaaS)
Parking	Smartphone-free bike return

Usage assessment

To improve the service and evaluate the public policy related to the initial objectives, it is essential to understand and know users. This can be done through a user committee, an annual user survey, and big data analysis to identify inter- and multimodal practices (only possible if there is a single owner of the PB and PT databases).

9. Sizing and budget

System size

600 charging stations and 7,500 e-PB

To maintain a good balance of bikes/station (10 to 14 in the benchmark) based on the recommended minimum of 600 stations *(Page 22)*, 7,500 e-PB would be contemplated, i.e., one PB for every 165 residents of Brussels.

Based on a simplified socio-economic analysis, the carbon and societal balances are positive only with high usage rates, a modal shift away from the car *(Figure 34)*, and a high average travelled distance.

*Figure 34: External impacts of a PB (*both investment and operation over a 10-year period included)*

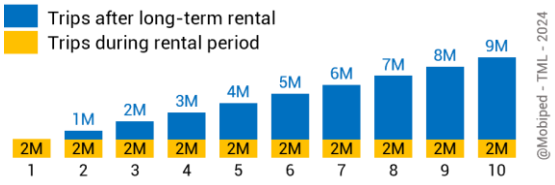
	😟	😊
Assumptions		
Trips/bike/day over one year	2	5
Users who would have used the car	7%	12%
Average distance per rent (km)	2.5	3.1
Impacts*		
External impacts (avoided km by car and public transport) [10] (M €)	9.2	31.2
Tonnes of CO_2 avoided [22]	- 60	155
Societal balance sheet (M €) : External impacts - € users - € public	- 9.2	17.5

4,500 LTR bicycles

With a reasonable target of 35 bicycles per 10,000 residents, 4,000 LTR bicycles would be provided, of which 60% electrically assisted and 40% mechanical. A further 500 mechanical bikes would be dedicated to training and discounted sales, in the *Vélo Solidaire* spirit.

After renting an LTR, around half of users will use their own bike. Over a 10-year period, this results in 20 million cumulative LTR trips and 40 million induced trips. The lack of reliable data for PB makes impossible to estimate its induced impact.

Figure 35: Trips per year during the LTR rental (yellow) and cumulative induced trips after the rental (blue)



How much would PB + LTR cost?

The BCR would pay 16 million € excluding tax/year for the 7,500 PB and 3 million €/year for the 4,500 LTR, excluding other sources of funding *(Figure 36)*. This would represent more than 50% of the annual regional budget dedicated to cycling (including facilities) and around 5% of cycle trips *(Figure 37)*. As acquiring a new customer costs 5 to 10 times more than building customer loyalty, the investment makes sense only if these services generate new cycling habits. The share of PB in the cycling budget seems high, but in reality, it is the budget devoted to cycling as a whole that is low compared with other modes (*Figure 37*) and the modal share objectives.

Figure 36: Financial aspects of PB and LTR in Brussels

	7,500 PB 😟	7,500 PB 😊	4,500 LTR
Per bike (€ excl. tax/bike/year)			
Public budget*	2,400	1,800	530
User revenue coverage	25%	50%	33%
Net expenditure**	1,800	900	
Per year (Millions of euros excl. tax/year)			
Public budget*	18,5	13,8	3
User revenue	4,5	6,8	1
Net expenditure**	14	7	2
Over 10 years (Millions of euros excl. tax)			
Public budget*	185	138	30
User revenue	45	68	
Net expenditure**	140	70	

* In case of a public contract and revenue collection, with a 10-year contract investment and operating | ** Without any European funding or naming.

Figure 37: Regional cycling budget versus bicycle trips

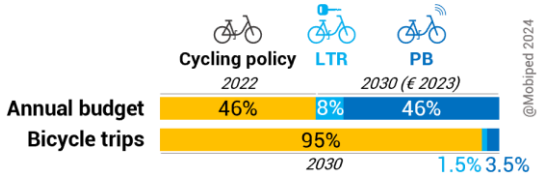
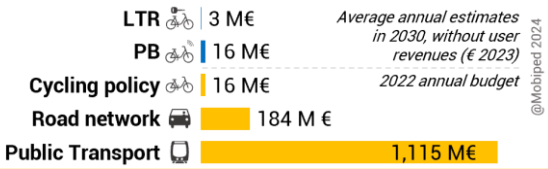


Figure 38: Regional mobility budget share in 2022



Go big or go home

To reach high levels of use that justify a public investment and to move beyond the current image of the *Villo !* system, a "supply shock" is required: densification of the current network, e-PB, quality of service, etc.

10. Possible governances

The content of the public contract

An 8 to 10-year contract focused on PB

The public contract would cover "delivery, installation, and operation on a B2G2C basis of a back-to-many public rental service of electrically assisted bicycles". An 8 to 10-year contract would enable the investment in the stations and bicycles to be paid for themselves, 10 years being the maximum duration for a Service of General Economic Interest (SGEI).

A dedicated PB tender would make it possible to:

- Focus the energy of the authority and the contractor on the quality of the PB service.
- Stimulate competition between B2G2C players and possible consortia combining charging stations players and B2C operators.
- Know the real price (Paris) and make it easier to evaluate the public policy.

It did not seem appropriate to link PB and:

- Advertising space, in the absence of economies of scale and the mistaken belief that advertising finances the service.
- Scooters in stations, because scooters could be profitable, there is no political procurement, battery models are different, and mixed operation/regulation is very complex (Chicago).
- Bicycle services (parking, long-term rent, training), because operations and contract duration differ.

The main PB stakeholders

Four stakeholders are involved in PB:

- **Citizens**: regular or occasional users, observers, people not attracted by PB, …
- **Brussels Mobility (BM)**: Organising Authority for Mobility of the Brussels-Capital Region.
- **STIB-MIVB**: Association under public law responsible for operating urban public transport within the Brussels-Capital Region.
- **PB provider(s)**: company or group of companies holding the PB contract.

Involvement of the STIB-MIVB

As a mobility manager authority, Brussels Mobility initiates the PB project, defines the public service obligations (e.g., fares, coverage, accessibility, MaaS, etc.), consolidates the funding of the service, and supports the project in conjunction with the cycling and mobility policies. Three governance options are being studied, concerning consultation, supervision, and customer relations *(Figure 39)*.

Figure 39: Governance options for the future PB

	1	2	3
Initiative	BM		
Financing	BM		
Consultation	BM	STIB-MIVB (BM supports)	
Supervision	BM	STIB-MIVB (BM supports)	
Supply	PB service provider		
Installation	PB service provider		
Operation	PB service provider		
Customer relations	PB service provider		STIB-MIVB

1 | Steered by Brussels Mobility

As with *Villo !,* Brussels Mobility issues the tender specifications and carries out the supervision. The outlook within the Brussels administration does invite the search for a route outside BM to guarantee sufficient staff to carry out this work properly. With the aim of integrating PB into the PT service in Brussels, the STIB-MIVB is the ideal partner for an approach similar to that for MaaS.

2 | The STIB-MIVB as technical coordinator

The STIB-MIVB would be responsible for the:

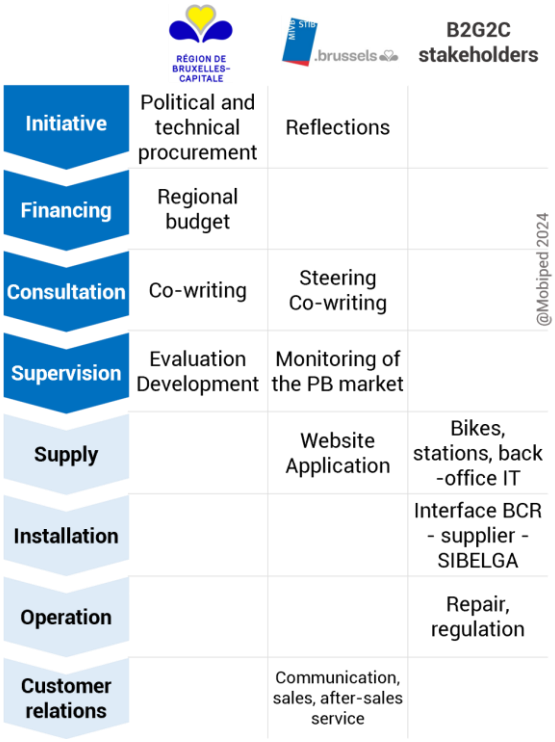
- Consultation, by bringing its technical experience to the selection process.
- Supervision of the contract on behalf of Brussels Mobility, with regular exchanges between the STIB-MIVB and Brussels Mobility about evaluation of the service (supply, use, service provider performance) and its improvement (fares, consistency with regional mobility policies).

The operation of the service would be entirely entrusted to a private service provider. The STIB-MIVB could, however, be a privileged partner for pooling ticketing media (e.g., personal Mobib card with *Villo !)* and offering cross-discounts for PB and PT subscribers.

3 | STIB-MIVB in contact with PB customers

In addition to writing the specifications and supervising (option 2), Brussels Mobility would ask the STIB-MIVB to act as the PB commercial showcase, integrating PB into its interfaces (website, app, passenger information, etc.) under the STIB-MIVB brand name. The possibility of a public service fully publicly managed is ruled out because PB and PT businesses are distinct and specialised white label service providers are more experienced *(Figure 40)*.

Figure 40: Role distribution at each stage



This option would have several advantages:

- Utilise the STIB-MIVB's reputation and goodwill to reach people who are not currently cycling.
- Consider the possibility of a single bicycle, bus, tram, and metro pass along the lines of the multimodal *Brupass*.
- Offer current and future STIB-MIVB customers an alternative during off-peak hours and at night, during disturbed situations (incidents, works, strikes), or long journeys (walking, waiting, connections).
- Propose common PT and PB Terms and Conditions of Sale to facilitate registration.
- Track inter- and multimodal journeys using connected databases.

An analysis of IT development costs in relation to customer benefits will indicate the optimal level of integration.

Under European regulations, the STIB-MIVB would be qualified as a co-operator. The awarding of this economic mission without going through a call for tenders would be qualified as state aid, requiring additional accounting transparency.

Option 3 preferred

The involvement of the STIB-MIVB offers the best perspective for a common PB, bus, tram, and metro experience.

Concession or public contract?

Responsibility for commercial risk determines the choice of contractual relationship. If the revenues are collected by the public authorities, the service provider is paid 100% by the public authorities under a public contract (Marseille, Paris). If the operator collects the revenues, a concession is signed under which it receives a fixed fee that does not cover all costs, and it tries to maximise its user revenues (Antwerp). The public contract is possible in all three options mentioned above. A concession would be unlikely in option 3 because the service provider has no influence on prices or communication.

Tender with competitive dialogue?

Given the complexity of PB, many cities (Madrid, Paris, Vienna) have adopted a competitive dialogue approach. This process consists in shortlisting candidates, submitting a set of specifications, discussing every aspect of the tender with each candidate under confidentiality, and then adapting the final version of the specifications. This procedure makes it possible to:

- Challenge the ideals of public authorities with the field experience of candidates.
- Balance budget and service levels.
- Lay the foundations for the future authority-provider-operator relations.

A tight schedule

The procedures need to be launched quickly in view of planning constraints:

- Selection of candidates: 1 year minimum
- Awarding of the contract, after possible legal appeals: 3 months
- Order, delivery, and installation: 1 year
- Opening: from September 2026

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12. Table of figures

13. Acknowledgements

Brussels stakeholders

Support Committee

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Belgian and international stakeholders

Benchmarked partner cities

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Other people met during Brussels delegation visits

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Luxembourg: R. Da Silva (JC DECAUX).

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Interviewed experts

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Discussions with market players

ARCADE CYCLES, B-CYCLE, BICINCITTA, BLUE-BIKES, BOLT, CLEAR CHANNEL, CYKLEO, DB BAHN, DONKEY REPUBLIC, DOTT, ECOVÉLO, FIFTEEN, FLUCTUO, FREDO, INTUITUM, INURBA, JC DECAUX, KNOT, MASTERCARD, METROMOBILITY, NAVEE, NEXTBIKE BY TIER, NOVAL, OKAI, PBSC, PONY, PUBLIBIKE, QCIT, SEGWAY, SERCO, SERVEO, SHARED MICRO MOBILITY, STREET-STUFF, SWAPFIETS, TEMBICI, URBANSHARING, VAIMOO, VELOCITY MOBILITY, VELOGIK, VOI, WORLDLINE, WUNDER MOBILITY.

Bike share related conferences

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NextGenerationEU is a temporary recovery instrument of over €800 billion to help repair the immediate economic and social damage caused by the coronavirus pandemic. Post-COVID-19 Europe will be greener, more digital, more resilient, and better adapted to current and future challenges.

The Recovery and Resilience Facility, the centrepiece of NextGenerationEU, is endowed with €723.8 billion in the form of loans and grants to support reforms and investments undertaken by EU countries. The aim is to mitigate the economic and social consequences of the COVID-19 pandemic and to make European economies and societies more sustainable, more resilient, and better prepared for the challenges and opportunities posed by the ecological and digital transitions.

The "Preparatory study for the public bicycles in the Brussels-Capital Region in 2026: Benchmark and Recommendations" is part of these priorities established by the Brussels Government and at European level, and particularly concerns the Mobility axis and the Acceleration of MaaS deployment component. More specifically, it aims to prepare the future public bicycle service in the Brussels-Capital Region. In financial terms, "The preparatory study for the public bicycles in the BRC in 2026: Benchmark and Recommendations" will receive €197,816.75 including tax.